

ECONOMIC DIVERSIFICATION, INSTITUTIONAL ENVIRONMENT AND INDUSTRIALIZATION IN NIGERIA

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Abstract

Pre-independence Nigerian economy was dominantly agrarian employing about 70% of the working population and contributing more than 42% to GDP. With the exploration of crude oil in commercial quantity, instead of diversifying the economy, emphasis shifted from the agricultural sector to the oil sector. Consequently, the industrial sector that was being propelled by the agricultural sector started struggling from abandonment and collapse. Although efforts have been made since late 80s to diversify the Nigerian economy, the economy is still monolithic with oil export being in excess of 90% of total export. It is against this backdrop that this study investigates the nexus between economic diversification, institutional environment and industrial development in Nigeria. Using quarterly time series spanning from 1996Q1 to 2016Q4, the study employed generalized method of moment (GMM) with HAC-Newey-West weighting matrix. The results obtained indicate that investing into technology and human development (which are critical for improving the nation's economic complexity) as well developing institutions with efficient outcomes are critical industrialization. The results also show that to ensure sustainable diversification and industrialization outcomes, low inflation, stable currency price and healthy financial sector are sine quo non. We therefore recommend that effort should be

made to building institutional framework that could guarantee property rights, low transaction costs and enhance the development of technical expertise and critical infrastructure that could catalyze industrial development.

Keywords: Agricultural sector, Diversification, Industrialization, Institution, Nigeria

INTRODUCTION

Early trade theories, especially the Smithian and Ricardian typologies, emphasized concentration of economic activities in few sectors in which the country commands production advantage. Invariably, countries that are endowed with natural resources specialize in the production and export of such commodities. The hypothesized outcome is increased global output and improved welfare among the trading countries. But those countries whose production advantage is in the production and exporting of primary goods and raw materials may be trapped in low wage economies and underdevelopment. Imbs, Jean and Wacziarg (2003) contended that for a natural-resource-abundant economy to experience long term sustainable development, it must first embark on 'broad-based' economic development or more technically, economic diversification.

Ramcharan (2005) and Brainard and Cooper (1968) opined that returns across economic sectors may be imperfectly correlated due to the risky nature of economic activity. Brainard and Cooper further noted that natural resource abundant economies such as the oil-producing economies are more susceptible to fluctuations and uncertainties arising from international trade transactions in several ways. First, high level of primary product export concentration could make the economy vulnerable to commodity price volatility which can result in abrupt contraction of public resources. Commodity price volatility in monolithic economies may spawn structural unemployment issues and engender systemic risks. Such vulnerability may also engender spillover effects in other sectors of the economy leading to a recession as witnessed in Nigeria from 2016 to 2017. Second, the oil sector and indeed many primary sectors have weak links to the rest of the economy, and, as a rule, do not generate much. This implies that investments in these sectors and their expansion have a low impact on the growth and productivity of other sectors leading to a high concentration of gross domestic product (GDP) and a low impact on job creation. Third, high concentration in one sector is linked to low productivity and competitiveness. Over reliance on a single dominant economic sector could lead to deindustrialization and low productivity in the lagging sectors. Low productivity raises commodity prices thereby lowering its potential for competition in the marketplace employment

(Fathi, 2014; Temursho, 2016). In other to provide economic buffer to external shocks and uncertainties, countries emphasize economic diversification. Economic diversification can reduce the economic impact of shocks. It also raises an economy's international competitiveness through increased productivity and better terms of trade (Shediac, Abouchakra, Moujaes and Najjar, 2008; Ramcharan (2005).

In Nigeria, effort has been made to diversify away from the oil sector to the agricultural sector. Though diversifying into agriculture is beneficial since it reduces import of food items or even guarantees food security, the risk of weak commodity prices or weak terms of trade remains grossly uninsured. Virtually, all the developed nations of the world attained that status through industrialization rather than primary product specialization in the production of primary products. Industrialization has been identified as the key to economic development and the panacea for backwardness that characterize developing nations. Usman and Wanjuu (2014) assert that industries have more backward and forward linkages with other sectors of an economy. For instance, the industrial sector utilizes intermediate inputs from the primary and service sectors, thereby providing markets for these sectors. It also supplies its output to both sectors. The industrial sector exhibits increasing returns to scale with greater ability to diffuse technology in the economy than the primary sector. Usman and Wanjuu further states that industries have higher marginal revenue products of labour than the marginal revenue product of labour in the primary sector. In other words, releasing labour force from the primary sector to the industrial sector would not only increase industrial output but also increases the marginal product of labour in the primary sector as well as increase the overall revenue.

Although, the role of industrialization in economic development has been intensively investigated (Effion & Udah, 2014; Alege & Ogun, 2005; Chong & Calderon, 2000; Ekpo, 2005), little attention has been given to the nexus between institution, industrialization and diversification in the process of economic transformation and development. Therefore, the objective of this paper is to examine the relationship between economic diversification, institutional environment and industrialization in Nigeria. This paper will deviate from existing studies by examining diversification-industrialization-institution nexus in Nigeria from 1996 to 2016 using macroeconometric procedure. The rest of the paper is organized as follows. Section Two discusses the stylized facts about industrialization, diversification and institutional environment in Nigeria. In Section Three, the theoretical and empirical literature on industrialization, diversification and institutional environment in Nigeria are reviewed. Section Four contains the methods and estimation procedure and while the results obtained are presented and discussed in Section Five. Section Six provides policy implications and recommendation.

INDUSTRIALIZATION & DIVERSIFICATION IN NIGERIA: A LOOK AT THE STYLIZED FACTS

The masterpiece of Nigeria's economic development plans, policies and programs is economic diversification (National Planning Commission, 2004, 2009; Ministry of Budget & National Planning, 2017). This development strategy is in tandem with African Transformation Report (2014) which noted that the two essential requirements for economic development are acquiring the capability to produce a widening array of goods and services and choosing which ones to specialize in based on international relative prices. The industrialized or developed economies of today have gone through a phase of diversifying production before specializing to take better advantage of market opportunities. In other words, specialization is a market-based choice to focus on a subset of goods and services that a country is capable of producing, rather than a choice forced on a country because it lacks the capabilities to produce anything else.

Table 1 Contributions of Nigeria's Agricultural and Oil Sectors to GDP (1970 -2016)

Years	Contribution to GDP				Export			
	Agricultural Sector		Oil sector		Oil export		Non-oil export	
	Nominal Value (N billions)	% of total	Nominal Value (N billions)	% of total	Nominal Value (N billions)	% of total	Nominal Value (N billions)	% of total
1960	1.42	63.5	0.007	0.3	0.009	2.7	0.33	97.3
1970	2.58	48.8	.49	9.3	0.51	57.3	0.38	42.7
1980	10.01	20.2	14.14	28.5	13.63	96.1	0.55	3.9
1990	84.34	31.5	100.22	37.5	106.6	97	3.3	3
2000	1,192.91	26	2,186.68	47.7	1,920.9	98.7	24.8	1.3
2010	10,273.65	35.2	9,747.36	33.4	11,300.5	94.1	711.0	5.9
2015	19,636.97	20.9	5,990.42	6.4	8,184.5	92.5	660.7	7.5
2016	21,523.51	21.2	5,367.32	5.3	8,178.8	92.6	656.8	7.4

Source: CBN, 2009, 2016

Nigeria specialized in agriculture from pre-independence till late 60s when oil exploration became dominant as the new commodity of comparative advantage. As shown in Table 1, agricultural sector contributed about 63.5% of nominal GDP in 1960 while oil sector contributed paltry 0.3%. In the same vein, non-oil export and oil export were 97.3% and 2.7% respectively in 1960. The economy, no doubt was predominantly agrarian. The pattern changed in the late 60s due to the commercial exploration of crude oil. By 1970, crude oil export has risen to 57.3% from 2.7% in 1960. This trend has continued till recent time as crude oil export stood at 96.2% in 2016. Figure 1 clearly shows that the Nigerian economy is highly undiversified and highly concentrated. Using both Herfindahl-Hirschman index of concentration and Finger-Krein in

index of diversification, Nigerian economy is less diversified than the US, France, South Africa and other oil producing economies such as Iran, Saudi-Arabia and Algeria. When compared with 21 top African economies, Figure 2 shows that Nigeria is not only ranked worst in diversification but has not also recorded any significant improvement in diversifying the economy.

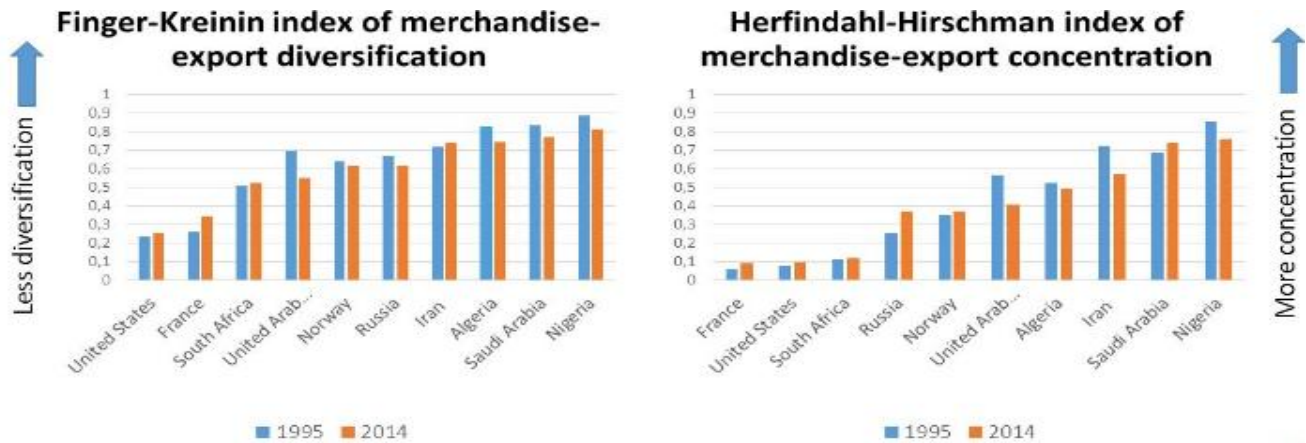
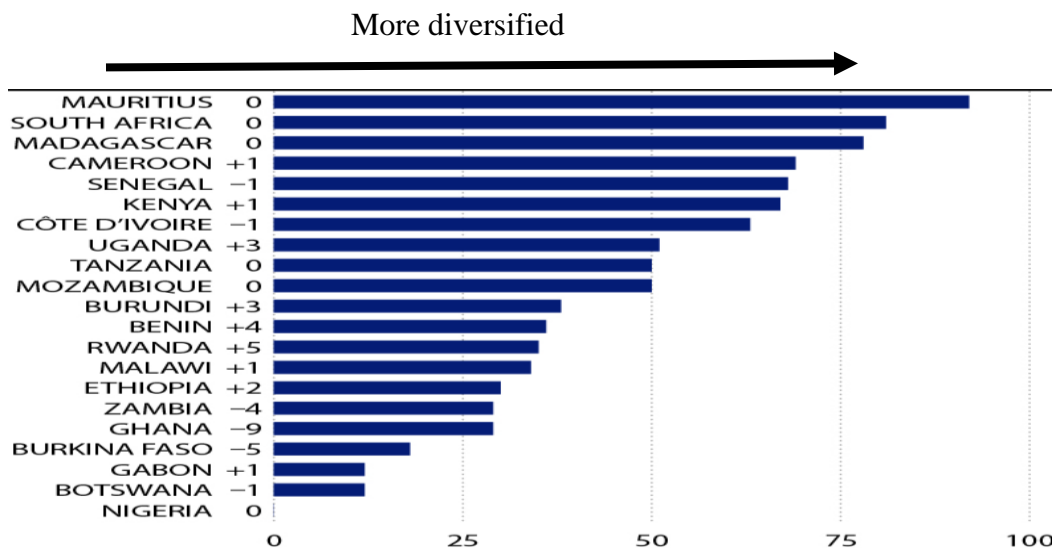


Figure 1 Merchandise Export Concentration and Diversification in 1995 and 2014

Figure 1 and 2 reveals the fragile nature of Nigerian economy which is narrowly based on the production and export of primary products- unprocessed agricultural products in the 60s and 70s and crude oil since 70s.

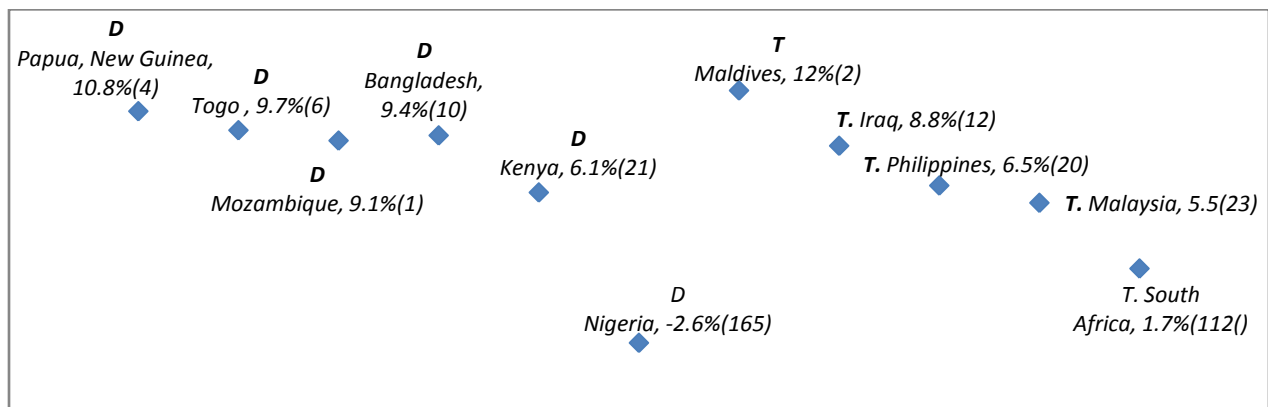


Note: The score is the average for 2009-2011. The numbers after each country name show the change and direction in ranks between 2000 and 2010.

Figure 2 Diversification Score for Top 21 African Countries

Source: African Centre for Economic Transformation, 2014

There are basically, two problems with the state of the nation. First, price of products is internationally uncompetitive and highly vulnerable to external demand shock. Competitiveness on global markets is largely low due to low productivity and technology. Productivity gains enable more goods and services to be produced from existing resources and technology. Acemoglu (2002) noted that industrial sector productivity is usually higher than primary sector productivity. Thus, most transition and developing countries are investing huge resources in growing the industrial sector: Nigeria has rather invested so much resources and time in diversifying into agriculture than industrial production. From Figure 3, industrial growth was -2.6% in Nigeria while Maldives, Papua New Guinea, Togo and Iraq recorded 12.0%, 10.8%, 9.7% and 8.8% respectively. In global ranking, Nigeria was placed on 165th position based on industrial growth. This rate of the growth of industrial activities is undesirable; Balassa (1970) states that developing and transition economies are required to grow the industrial sector more rapidly as a precondition for take off to an industrialized economy.



Note: Countries marked 'D' and 'T' are developing and transition countries respectively. The number written in bracket is the rank of the country among all countries of the world.

Figure 3 Industrial Growth and Ranking for Selected Developing and Transition Economies (2016)

To trigger the development of the industrial sector, investment in technology is *sine quo non*. According to Arrow (1962), the only effective way to acquire capabilities for new economic activities is through learning-by-doing. As a country's industrial activities advance from low to medium and high technology, it can produce goods that command higher prices in the international markets. Also, a rising capability to introduce new and improved technologies enables a country to sustain productivity growth over time. Although technological advancement can be imported, the level of technological advancement is largely congruent to the level of human development. According to United Nations Development Programme's (2017) Human

Development Report, Nigeria was ranked 152 out of 188 countries that were accessed indicating low level of human development.

The Nigerian economy witnessed average of 7.9% growth rate from 2000 to 2014. This high growth was celebrated with high expectations of even greater growth. Suddenly, in 2015 the entire growth gains were wiped as the economy nosedived into its worst recessionary experience in decades. This experience revealed the shallow waters of Nigerian economic activities. For economic progress to be sustainable, it must be well rooted with good depth. Today, the service sector has become the leading sector with about 54.6% share of the nation's value added in 2016 (CBN, 2016). The worry about this trend is the sustainability of the service sector development without a robust industrial sector. Kuznets (1973) observed that the key feature of structural transformation is a declining share of agriculture and a rising share of manufacture and then services in employment and output. But from evidence, Nigerian economy is transiting from primary product to service without passing through industrialization pathway.

Table 2 LPI, Custom, Infrastructure and Economic Complexity Ranking
for Selected Countries (2016)

Countries	Germany	Singapore	Belgium	South Africa	Nigeria
Logistic Performance Index (LPI) ^a	4.23(1 st)	4.14(5 th)	4.11(6 th)	3.78(20 th)	2.68(90 th)
Score Custom Efficiency ^b	4.12(2 nd)	4.18(1 st)	3.83(13 th)	3.6(18 th)	2.46(92 nd)
(Rank) Quality of Infrastructure ^c	4.44(1 st)	4.2(6 th)	4.05(14 th)	3.78(21 st)	2.4(96 th)
Global Competitive Index ^d	5.57(4 th)	5.72(2 nd)	5.25(11 th)	4.39(49 th)	3.46(124 th)

Note: (a) The *LPI* is an interactive benchmarking tool created to help countries identify the challenges and opportunities they face in their performance on trade logistics (b) Custom measure the efficiency of custom clearance service (c) Infrastructure measures the quality of state infrastructure that are necessary to support production and trade (d) Global Competitiveness Index captures the fundamentals of an economy.

The commonest explanation for this trend in Nigeria's economic development may be the nature of the institutional environment. Institutional environment that defines how the superstructure operates, how infrastructure are assigned, and the rules of the game would in turn determine the nature and structure of economic transformation. In other words, institutional differences play an important role in shaping innovation intensity and technological patterns which are top requirements for industrialization. In international trade assessment, LPI, custom efficiency,

quality of infrastructure and competitiveness index are used to evaluate the quality of institutional framework that are essential for production and trade. Table 2 shows that scored very low in quality of institutional factors. For example, in 2016, Nigeria was ranked 90th 92nd, 96th and 124th in LLI, custom efficiency, quality of infrastructure and competitiveness respectively. In all the rankings, the gap between Nigeria and South Africa (which is Nigeria's closest rivalry in terms of GDP size) is quite wide. This is suggestive of the poor institutional framework that characterized Nigeria economic environment.

THEORETICAL AND EMPIRICAL LITERATURE

Since mid-twentieth century, economists have intensified effort to explain the path to sustainable development and balanced growth. In his celebrated contribution, Rosenstein-Rodan (1943, 1961) contended that “coordinated investment” or “the big push” is the basis for accelerated development. Prof. Harvey Leibenstein in the theory of critical minimum effort asserts that for developing countries to transit from the “vicious circle” of backwardness to the status of industrialized economies, it is required that they make critical minimum effort in terms of investment (Leibenstein, 1957). In other words, economic diversification through industrialization requires a deliberate and sustained commitment that must be above certain thresholds. Although neither Rosenstein-Rodan (1943, 1961) nor Leibenstein (1957) used the term, ‘balanced growth’ their view is that contrary to Hirschman’s (1958) theory of unbalanced growth, developing economies need balanced growth approach to break the shackles of underdevelopment. It was Nurkse (1953) who expressly used the term ‘balanced growth’. Nurkse noted that balanced growth or rather diversification entails raising the productivity levels in all sectors of the economy. Productivity is a primary determinant of the size of the market. An increase in productivity (defined as the output per unit of input) increases the flow of goods and services in the economy. As a response, consumption also rises. Although Nurkse was pessimistic about export concentration, increase in market size through diversification would eventually lead to export promotion (Kongsamut, Rebelo & Xie, 2001).

From Rosenstein-Rodan (1943) and Nurkse (1953) perspective, diversification to the industrial sector in a hitherto monolithic economy would require structural transformation. According to Spolaore and Wacziarg (2013), the state of the institutional environment is critical for such transformation: from a monolithic primary sector economy to a diversified industrial economy. However, the traditional classical and neoclassical theories assumed away the place of institution in economic process. In the description of how the economy works, the neoclassical model predicts that exchange arises spontaneously from the atomistic interaction of self-seeking individuals. Goods traded in every market are assumed to be homogenous so

that prices provide the only information needed to make the decisions on production and purchasing. The walrasian condition guarantees equilibrium such that all market participants are pareto optimal and the overall economic outcome is also optimal. Thus, no institutions are necessary since exchange is simply driven by utility considerations. Although there is recognition of property rights and monetary institution in the more relaxed versions of the neoclassical model, Hodgson (1992), argued that even in the so-called relaxed versions, both the property right and monetary institutions are assumed to play neutral roles. As noted by Stein (1994), this view of the neoclassicals has been countered by the institutionalists led by Coarse (1992). Coarse (1992) and Laitner (2000) relying on the same neoclassical precepts see institutions as frameworks that must be concertedly established to reduce transaction and information costs. Laitner (2000) argued that except there is a change in the subsisting institutional arrangement that sustains monocultural economy, structural transformation may be elusive.

Empirical outcome on diversification, industrialization and institutional environment is characterized by significant nuances. For example, Lei and Zhang (2014) and ESCAP (2014, 2015) report that diversification is associated with higher levels of GDP. However, Hausman and Hidalgo (2014) and ESCAP (2011) obtained evidence that as economies diversify, they tend to export products that are less ubiquitous than their existing exports. Hidalgo et al (2007) and Boschma (2005) concluded that path dependent. This conclusion follows the finding that the existing product mix of the diversifying country affects the potential new products that could emerge in the economy.

RESEARCH METHODOLOGY

Strategy for Empirical Model

In the spirit of Matsuyama (1992) and Gollin (2000), we develop empirical model that incorporates institution as follows. Suppose Nigerian economy is a two-sector (industrial sector [I] and primary [P] sector) autarchy economy characterized by perfect competition and perfect factor mobility. Let us also assume that the P-sector is characterized by low productivity while the I-sector is characterized by high productivity and investment opportunities. Using Cobb-Douglas production function, the output (Y) of the P-sector and I-sector would be expressed as:

$$Y_{P,t} = \Pi_P K^{\beta}_{P,t} (T_{P,t} L_{P,t})^{1-\beta} \quad 4.1$$

$$Y_{I,t} = \Pi_I K^{\beta}_{I,t} (T_{I,t} L_{I,t})^{1-\beta}$$

T_P and T_I captures the sectoral labour augmenting technology while Π_P and Π_I measures sectoral non-labour efficiency. K and L refer to capital and labour. The equality of marginal rate of transformation (since there is perfect competition) for each sector implies that:

$$\frac{K_{I,t}}{T_{I,t}L_{I,t}} = \frac{K_{P,t}}{T_{P,t}L_{P,t}} \quad 4.2$$

Supposed the goods produced in the I-sector can be used both for household consumption and intermediate product while P-sector goods are only used for household consumption. Then the resource constraint that both sector face would be expressed as:

$$K_{I,t} + K_{P,t} \leq K_t, \quad L_{I,t} + L_{P,t} \leq 1, \quad Q = K_{t+1} - K_t = Y_{I,t} - C_{P,t}, \quad C_{P,t} \leq Y_{P,t} \quad 4.3$$

Recall that institutional economists contends that institution could accentuate diversification and industrialization through reduction of transaction cost which would increase efficiency of each sector depending on the utilization of certain institutional framework by the sector. To incorporate quality of institution (Q) into the model, we make the simplifying assumption that the relative overall efficiency of I-sector and P-sector is a function of type of institution in the economy. This can be mathematically expressed as:

$$\frac{\Pi_I}{\Pi_P} = \Phi(Q) \quad 4.4$$

where $\Phi'(Q) > 0$ and Φ a monotonically increasing function of Q.

Suppose the price of P-goods is a numerarie, then the price of I-goods would be expressed as:

$$P_{I,t} = \frac{\Pi_{I,t}T_{I,t}}{\Pi_{P,t}T_{P,t}} = \Phi(Q)R_t \quad \text{with} \quad R_t = \frac{\Pi_I}{\Pi_P} \quad 4.5$$

R_t measures the relative labor productivity. Suppose the economy is made up of homogenous consumers who derive instantaneous utility from the consumption of both P-goods and I-goods. Following Alvarez-Cuadrado and Poschk (2011), we employ a constant elasticity of substitution (CES) log-linear utility function. In other words, in any period t , the instantaneous utility function is defined as follow:

$$\lambda(C_{P,t}, C_{I,t}) = \alpha \log(C_{I,t} + \eta) + (1 - \alpha) \log(C_{P,t} - \delta) \quad 4.6$$

The share parameter α is a measure of the relative importance of I-goods (which are essentially non-food) in household's preferences; η is an initial endowment in I-goods and δ is a subsistence level of consumption of food (P-goods) required to survive. Consequently, the first order condition of household's inter-temporal utility maximization yields the following condition:

$$p_t = \frac{\alpha (C_{p,t} - \delta)}{1 - \alpha (C_{l,t} + \eta)} \quad 4.7$$

Combining equation (4.1), (4.3), (4.5) and (4.7) will yield:

$$\psi \Phi(Q) R_t (\Pi_l (K_t - K_{p,t})^\beta T_{l,t} (1 - L_{p,t}))^{1-\beta} - Q + \eta + \delta - \Pi_p K_{p,t}^\beta (T_{p,t} L_{p,t})^{1-\beta} = 0 \quad 4.8$$

Where $\psi = \frac{1 - \alpha}{\alpha}$

Equation 4.8 shows that the demand for all sectoral goods are all function of the relative labor productivity, relative efficiency and quality of the institutions in the economy. The comparative static of Equation 4.8 also shows that the share of labour and capital in industrial sector is an increasing function of the quality of institutions as well as the relative labor productivity. To implement the econometric estimation, other macroeconomic variables in addition to industrial output (INDOG), relative share of labour (RL) and quality of institution (QI) are added to the model. Such variables include economic diversification (ED), tax as a ratio of infrastructure (TINF), economic complexity index (ECI), inflation (INF), exchange rate pressure (ERP), human development index (HDI). Following North (1972) and Dimnwobi, Nwokoye and Igbanugo (2018), a generalized method of moment (GMM) model is specified as follows: -

$$IDOG_{i,t} = \psi_i + \sum_{k=1}^K \Phi_{i,k} X_{i,k,t} + \sum_{n=1}^N Z_{i,n,t} + \varepsilon_{i,t} \quad 4.9$$

Where X is a vector of explanatory variables such that $X=(ED, RL, TINF, INF, ECI, ERP, QI)$. Also, $Z_{i,n}$ is a vector of instrumental variables such that $Z_{i,n}$ =Real GDP, firm profit (PROF), investment (INV), FDI and lagged explanatory variables. The symbols ψ_i , $\Phi_{i,k}$ are intercept and slope parameters respectively. In estimating equation 4.9, we utilized HAC-Newey-West weighting matrix which is a heteroskedasticity and autocorrelation consistent estimator of the long-run covariance matrix of $\{Z_t \varepsilon_t(\Phi)\}$ based on initial estimate of Φ . All estimations were implemented after conducting unit root test and cointegration test using Elliott-Rothenberg-Stock (ERS) tests and Park (1992) cointegration respectively.

Data Construction and Data Source

Industrial output, INF, exchange rate, tax, INV, PROF, RGDP and FDI were obtained from CBN (2014, 2016). QI and labour (industrial and other sectors) were obtained from World Economic Outlook, WEO, (2018). ECI and HDI were sourced from OEC (2018) and UNDP (2017) respectively. Economic Diversification (ED) was constructed using Herfindahl–Hirschman index procedure (see Dimnwobi et al, 2018 for detail) such that:

$$ED = \left(\sum_{i=1}^N S^2_i \right)^{-1} \quad S_i = \frac{k_i}{\sum_{j=1}^N k_j}$$

Where, k is sectoral contribution and N is number of sectors.

Economic concentration is taken as the inverse of ED. Quarterly time series spanning from 1996 to 2016 were employed. In Nigeria, the campaign to diversify the economy has been intensified since early 90s. However, data on quality of institution was not available for early 90s. Thus, we chose 1996 as the lower period range to satisfy data availability. However, to enhance the degree of freedom, the annual data obtained were converted to quarterly data using Litterman procedure.

ANALYSIS AND DISCUSSION OF RESULTS

The result indicates that diversification and institution are necessary for industrialization. The current measure of quality of institution may be below the threshold that is required to drive industrialization. However, increasing the value by 3 point raises its effect on industrialization. Caselli, Esquivel and Lefort (1996) had earlier obtained evidence that institutional environment embodied in patent protection, regulatory framework, learning by doing and knowledge differences, contributes to productivity differentials across countries.

Table 3 Effect of Economic Diversification on Industrial Output

	Equation 1 Industrial Output growth (IDOG)	Equation 2 Industrial Output growth (IDOG)
Economic diversification (ED)	0.0119 (0.0024) ^{***}	0.0877 (0.0299) ^{***}
Institutional quality (IQI)	0.0052 (0.0309)	
IQI + 3.0		0.2761 (0.0978) ^{***}
Tax as a ratio of infrastructure (TINF)	-0.0165 (0.0051) ^{***}	-0.0247 (0.0015) ^{**}
Economic Complexity Index (ECI)	0.1494 (0.0991)	
ECI + 2.0		0.4486 (0.1524) ^{***}
Relative share of labour employment (RL)	0.1950 (0.1702)	0.0181 (0.0057) ^{***}
Human Development Index (HDI)	0.0018 (0.0017)	
HDI + 0.3		0.4801 (0.0681) ^{***}
Inflation (INF)	-0.1764 (0.0888) [*]	
INF – 5.10		0.6544 (0.4524)
Exchange rate pressure (ERP)	-0.1012 (0.0266) ^{***}	-0.1619 (0.0503) ^{***}

Obs	80	80
R²	0.7175	0.7604
S.E	5.835	0.8274
J stat (p value)	0.6048 (0.4368)	2.0530(0.4866)
IV rank	9	8
Durbin Watson	1.7349	1.7591

Table 3...

*, **, *** indicates 10%, 5% and 1% significance level

Source: Authors' Computation using E-views Version 10

The result also shows that tax as a ratio of infrastructure is a disincentive to industrialization. Tax payment by firms may be distortionary if it is not accompanied by provision of infrastructural facilities that are necessary to support firm operation. In the case of dearth of infrastructure, firms will either constrain their operating budget by investing on such infrastructure or pause production activities with the opportunity cost available to the firm being output loss. The result also shows that improved human development would lead to increase in industrial production. Economic complexity is a measure of embedded technology in an economy's production process which is revealed through the competitiveness of her export (OEC, 2018). The result shows that improvement in an economy's complexity would also enhance industrialization. The evidence obtained also indicates that increase in relative labour supply is critical for industrialization. This finding is akin to Bruce (2002) where increase in industrial labour employment relative to agriculture enhanced industrial production.

Table 4 Effect of Institution and Industrialization on Economic Diversification

	Equation 3
	Economic diversification
Industrial output growth (IDOG)	0.1494 (0.0991)
Industrial output growth (IDOG) x Concentration Index	0.0183(0.0166)***
Infrastructure (IFR)	0.0260(0.2012)
Institutional Quality Index (IQI)	0.0042(0.0001)***
Inflation (INF)	-0.0153(0.0091)
Exchange rate pressure (ERP)	-0.00049(0.00002)**
Investment (INV)	0.6368(0.2657)***
Gross fixed capital formation(GFCF)	0.1304(1.251)
Financial depth(FD)	0.09259(0.0332)***
Economic complexity index (ECI)	0.1279 (1.4844)

Obs	80
R ²	0.7602
S.E	0.231
J stat (p value)	0.7864 (0.4452)
IV rank	8
Durbin Watson	1.7925

Table 4....

* , ** , *** indicates 10%, 5% and 1% significance level

Source: Authors' Computation using E-views Version 10

The result obtained shows that increasing exchange rate pressure and high inflation retards industrialization. Briault (1995) and Thornton (1996) agreed that unanticipated price changes (both goods and currency prices) generate price uncertainty thereby distorting relative price signals. It also increases decision-making errors which may force firms to exhibit investment paucity. Also, uncertainty about prices can also induce firms to increase inventories of buffer stocks and reduce expenditures on long-term basic R & D. Equation 3 estimates the effects of industrialization and institutional environment on economic diversification. The result obtained shows that the quality of institution and concentrating in the industrial sector would improve the economy's diversification outlook. This finding corroborates studies by Bardhan (2005) and Dam (2007). Deepening of the financial service sector and investment (especially in technology options) are also diversification enhancers.

POLICY IMPLICATIONS AND RECOMMENDATIONS

The key finding of this study is that quality of institution and industrialization are fundamental for sustainable diversification of the nation's economy. Institutions are needed to provide certain functions, which includes, the protection of property rights; supporting transactions (e.g. contract law, improve information flows, accommodate risk, etc.); as well as facilitating cooperation and coordination, especially where it is beneficial for society but would not likely result from the unrestrained market mechanism. This implies that the pre-requisite for achieving economic diversification is building efficient institutions. Industrialization guarantees for the production of exportation of assorted commodities that are globally competitive. The industrial sector could trigger development of both the service and agricultural sector. However, to ensure sustainable industrial development, there must be focused investment in technologies and human capital that would enhance the acquisition of capabilities for producing both medium and high tech goods. The findings also indicate that effective price control and adequate infrastructural development are critical for industrialization. Thus, it is recommended that effort should be

geared towards building institutions that would enhance the acquisition of capacity to produce assorted commodities. Government should refocus on the development of technical expertise and critical infrastructure that could catalyze industrial development. Also, economic policies should focus on maintaining stable prices and exchange rate which, indeed, are critical for sustainable diversification process.

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