

Government Diversification Policy, Industrial Sector and Output Growth in Nigeria

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Abstract

In reactions to the persistent economic uncertainty bedevilling Nigeria for the past decades, economic observers/analysts have increase call for policy shift in order to confront this menace. The call for viable alternatives to oil revenue became serious in the events of the latest Nigeria economic crisis occasioned by the continuing fall in crude oil prices. Evaluation of past economic policies/plans have generated conflicting views amongst economic analysts and policy makers on whether or not they have supported and propelled diversification via sustainable sectorial growth especially the industrial sector and by extension output growth of the economy. It is in the light of the foregoing that this paper estimates the extent to which diversification policies outcome variables in Nigeria over the years have enhanced industrial as well as output growth in Nigeria, using time series data for the period 1970 – 2016. In addition, the paper analyzed sectorial growth pattern for the last decade, in a view to ascertaining the most diversifiable potential sectors that are capable of placing Nigeria economy to a sustainable output growth path. In estimating these, an Error Correction Classical Linear Regression approach and trend analyses were adopted. The estimated result shows that industrial share to GDP and output growth per capita in Nigeria, on average, exhibits positive reaction to the observable changes in the index of government diversification (DIV), human capital per person (HK), number of persons employed (EMP) and domestic credit allocated to private sector by banks (CRA). However, while impact of government diversification index is significant to output growth per capita, it is insignificant to industrial sector growth in Nigeria. In a reverse manner, domestic credit allocated to private sector proved to significantly impact on industrial sector growth but insignificant to output growth per capita. The paper also find trend and descriptive results that investing in agricultural sector alone cannot yield the desired sustainable output growth in Nigeria, since sectors such as industry, construction, services and trade have shown serious contribution to output growth during the period of economic boom, and should also be effectively developed. Thus, governments should focus on holistic but industrialization oriented diversification policies with high level of transparency and accountability, if the dreams of the country moving from oil dependent economic to a more diversified economy will be realized. This could be best achieved by building strong and competitive institutions and encourage conducive business environment with good private sector funding via policy instruments.

Keywords: *Government diversification policy, Output growth, Industrial sector growth, Industrialization process*

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Background to the Study

Prior to the discovery of crude oil in a large scale in late 1960s and the subsequent oil boom in 1970s, the major source of revenue in Nigeria was agriculture and extraction of solid minerals (Anyaehe & Areji, 2015). This, however, ushered Nigeria into a new era of monolithic economy following the prosperity and abundance resulting from the oil windfall due to the increase in global oil prices precipitated by the Arab Israeli crisis. The huge oil blessing preceded to visible decline in the productivity of vital sectors such as agriculture, manufacturing, solid mineral extraction, the service sector, an appreciation in exchange rate and import subsidies. Presently, statistic has it that oil contributes over 80% of the government's budget and over 90% of Nigeria's external earnings (Anyaehe & Areji, 2015).

Nigeria is Africa's most populous country with over 182 million people of whom close to 54 percent or 98 million live on less than \$1 a day (World Bank, 2016). In 2014 and 2015, Nigeria maintained a steady population growth rate of 2.6 with female population of 49 percent of total population (World Bank, 2016). Despite being African highest oil producer, after the fall of Libya, and one of the world's ten major oil exporters (with crude oil production exceeding 2 million barrels per day in 2006 till 2014, Nigeria has experienced a rather disappointing sectorial and output growth over the last four decades, with minimal improvements in living standards and extensive macroeconomic instability. Several factors including poor management of resources, over-dependent on oil as source of revenue, poor human capital investment, widespread corruption, political instability, under-investment on key infrastructure, lack of diversification, and the 'Dutch disease' have jointly resulted to lack of sustainable growth bedeviling the economy.

The country, undoubtedly, has had chequered growth trajectory driven by the vicissitudes of volatile world crude oil prices. In effect, growth of the economy moves up with an increase in prices of crude oil and down, sometimes negative, at every slight fall in crude oil prices, an indication that Nigeria economic growth is highly, almost, entirely driven by the world crude oil prices. This was in line with the alarm raised in 2nd quarter of 2014 by the then Minister of Finance, Okonjo-Iweala, when she warned that the falling crude oil prices is expected to impact negatively to growth in months to come (Eboh, 2014). The recent economic recession in Nigeria following the fall in crude oil prices and the subsequent negative growth of the economy in fact exposed the vulnerable nature of a Nigerian monolithic economy. Statistics show that the country recorded negative growth of 2.06% in the first and second quarters of 2016. Also considering the relative neglect of government of other sectors and the capital intensiveness of the oil and gas industries the Nigerian economy has been hit by persistent high unemployment. Expectedly, attention of scholars had shifted towards economic diversification as a remedial for this quagmire.

The trend of crude oil prices in the recent years show a steady fall. Statistics from the National Bureau of Statistics (NBS, 2017) have shown that oil prices fell 66.8% from \$114/barrel recorded in June 2014, to \$38/barrel by December 2015. This fell even further in 2016, to \$31.4 as the world sees a global glut (reduction) in oil supply and slowing demand especially in emerging countries. While the price level itself is a problem, a bigger challenge lies with oil price volatility. As a nation that relies so much on oil for its revenues, the implicit multiplier effects for the entire economy, have been most staggering and pervasive (Yemi, 2017). This is in-view of the fact that over the last few years, the global economy was rocked by three momentous shocks: i) the wind-up of the quantitative easing in the US which ended a monthly

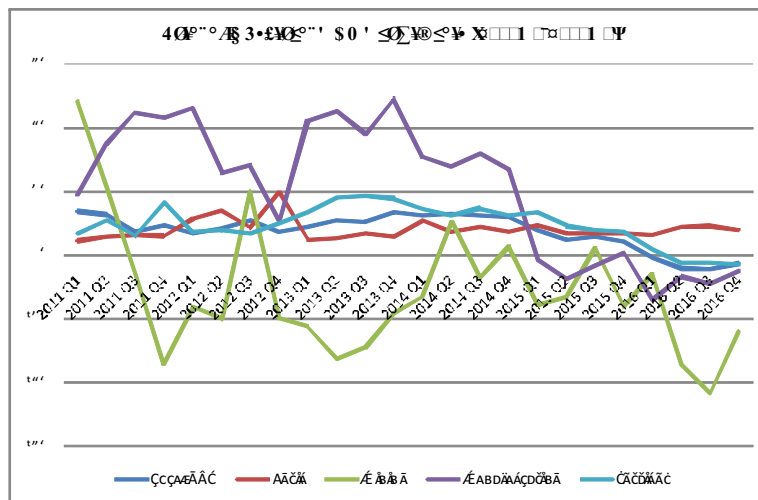
injection of US\$85 billion into U.S. and global financial markets; ii) the widespread geopolitical tensions; and iii) the collapse of commodity prices – including gold, steel, cocoa, crude oil, etc. However, the most damaging factor is the development in the international oil market which exposed the fundamental vulnerabilities of oil exporting countries like Nigeria as commodity exporting countries generally endured unfavourable conditions (Emefiele, 2016). The poor economic activity generally reflected a sharp contraction in the oil sector, due to the combined effects of low crude oil prices owing to supply glut among OPEC members and low production arising from militancy and pipeline vandalism in the Niger delta region of the country.

The imbalances and strains in the economy, as is visible in all economic sector including household sector, stemming from near total collapse in the price of our country's main foreign exchange earner, is something to worry about. In fact, very few Nigerian had anticipated the extent and severity of the economic and financial storm that has subsequently enveloped markets and the entire economy in the recent times. Even with the recent announcement by the NBS that Nigeria is out of recession, nothing serious has changed; the harsh economic condition is still felt by the citizenry.

Despite the unprecedented number and scale of the policy intervention and measures introduced to diversify the economy by developing other sectors, such as Nigeria Industrial Revolution Plan (NIRP) – initiated to boost manufacturing activities and the National Enterprises Development Programme (NEDEP), systemic pressures have yet to fully abate. Nigeria economy is still wallowed with unfriendly business environment ranking, high bottlenecks, poor patronage of locally made goods, wider gap between skills required by industry and those provided by our educational institutions, and very difficult access to finance for our Small and medium-Scale Enterprises (SMEs). In fact, the contributions of primary and secondary sectors to real GDP still stand at about an average of 63 per cent and 11 per cent, respectively (CBN, 2016). Agriculture's share of GDP has been overriding, while manufacturing share has remained at single-digit. These abysmal performances of the primary and secondary sectors compounded with the fact that Nigeria economy is highly susceptible to external shocks aggregates to negative output growth recorded in the recent times.

Stylized Fact for Nigeria

Nigeria economy performance since mid-2011 has been less-than-envisaged with medium-term outlook remaining fragile. Though, the economy officially slipped into recession after the second quarter of 2016 when GDP dipped by -2.06 percent. The growth rate declined by 1.70 percentage points compared with the contraction of 0.36 percent recorded in the preceding quarter and lowered by 4.41 percentage points compared with the growth rate of 2.25 percent recorded in the corresponding quarter of 2015. According to statistics from the National Bureau of Statistics (NBS, 2017), the Nigerian economy recorded its lowest growth rate in three decades. However, before the first quarter of 2016 the signals for impending economic recession were quite visible. Economic outlook of Nigeria at the growth performance in various sectors since 2011 indicated that the economy had been drifting downward steadily.



Evidence from the graph above show a visible signs of shift in the aggregate supply curve in Nigeria since 2011 with the downward trend in the growth of mining sector GDP. This deceleration started in the third quarter of 2011 when it recorded a negative growth rate of -3.24 percent. With the exception of the third quarters of 2012, second and fourth quarters of 2014 and the third quarter of 2015, the economy recorded negative quarterly growth rates in almost 17 quarters. This deceleration started in the manufacturing sector in first quarter of 2014 and persisted until first quarter of 2015. In the services sector, the deceleration started in the second quarter of 2015, until the economy went into recession.

In the light of the above economic outlook for Nigeria, a number of pertinent questions are raised: To what extent has the structure and composition of the Nigerian economy as it influence growth in both industrial as well as output? Which sectors of Nigeria economy have greater potential to drive diversification policy and sustainable output growth? This paper explores the extent the structure and composition of the Nigerian economy in the light of diversification programmes and policies of governments over the years have influenced industrial as well as output growth in the country. It analyses the effects of diversification policy outcome variables on industrial sector performance and output growth in Nigeria. In addition, it empirically determines sectors with prospects for rapid growth to facilitate the diversification drive as well as articulates policy recommendations capable of bringing well diversified economy.

Output Growth and Economic Diversification (Literature/Concepts and Theories)

Output growth, ordinarily, refers to the increase of an economy's capacity to produce those goods and services needed to improve the wellbeing of the citizen in increasing numbers and diversity over a period of time. It is the steady rising levels of national income by increasing the production capacity of the economy (diversification) overtime (Todaro & Smith 2009). On the other hand, Sustainable Output Growth, basically, refers to a steady increase in real output of goods/service resulting from changes in the economic structures, values and institutions. It means a sustained increase in volume and value of output of goods and services in the economy over a period of time. It implies general improvement in the overall economic lives and welfare of the citizenry. It is a period of sustained growth in human and material resources, per capita real income and entire wellbeing of the people. According to Todaro and

Smith, (2009) sustainability in growth translates to overall changes in economic lives including changes in the physical reality and state of mind of the people through social, economic and institutional process targeted towards obtaining a better life for the citizens.

Growth is sustained when there is clear diversification of economic activities. Diversification, according to Samuelson (1968) is an act of investing in a variety of assets, mentioned its benefit as that which reduces risk especially in the time of recession, inflation, deflation etc. Economic diversification strives to smooth out unsystematic risk events in a portfolio so that the positive performance of some investments will neutralize the negative performance of others. Economic diversification means diversifying a country's sources of economic growth and income in such a way that the country becomes more or less equally dependent on all sectors of the economy (Economic Diversification Strategy Document, Botswana, 2011). In the other words, an economy is diversified when no sector is singled out as a major driver of country's domestic economic activities (source of income, market for export or growth). Diversification is generally taken as the process in which a growing range of economic outputs is produced. This means that it is a process of broadening the range of economic activities both in the production and distribution of goods and services. Diversification of economic base does not only lead to increase in output but it also enhances stabilization of economies, while in contrary, a mono-economy will always be predisposed to internal and external vicissitudes (Anyaehe & Areji, 2015).

In literature analysts have shown strong positive association between diversified economic activities and output growth. For example, Muttaka (2015) examined the effect of Nigeria's oil dependency on economic growth, where he argued that the country heavy reliance on her huge crude oil resources and mismanaged is the major source of setback to growth. He identified investment, governance and regional dimensions of economic diversification as well as human and natural resources as key drivers of economic diversification. He maintained that of all the other drivers, good governance remains a prerequisite in building an enabling environment for such diversification. Shitu (2017), building on the idea in Neoclassical model, used historical method to analyze the constraints and challenges in Nigerian agriculture, abandoned for decades due to wealth of oil and gas production. In the end, he concluded that increased expenditures (i.e. spending), savings and capital investments by government and private initiatives must be sustained in the agriculture sector for accelerating growth and development.

Plethora of growth theories abound that associates sustainable growth with diversification. In fact, four major competing thoughts dominated growth theories in the literature. There are: i) Theories and patterns of structural change; ii) The linear stages of growth model iii) International dependence revolution and iv) Neo-classical Growth Model (counter revolution). The dominant paradigm in the early growth theories was that developing countries must follow the part of economic success of the developed countries if they were to achieve aggressive economic growth and integration. They argued that most economies of developing countries are essentially agrarian economies based on subsistence production and lack basic modern economic structures. To bring into the sustainable growth process of the developed countries, they must increase savings and aggregate investment in the economy leading to accumulated capital stock (the principle of capital fundamentalism).

For instance, in the linear stage theory of W.W. Rostow (1960), known as Rostow's Stage Theory of Growth, economies are growth in five (5) stages of economic growth and development. This comprises the traditional society, the precondition for takeoff into self-sustaining growth, the stage of takeoff, the drive to maturity and the stage of high mass production and consumption. This theory argued that all advanced countries had passed through the “take off” stage into self-sustaining growth. The under developing countries are still either in the traditional or 'pre conditional' stage and they need to emulate the growth pattern of advanced economy in order to take off in their turn into self-sustaining economic growth. The theory suggests that the principal strategies of development that are necessary for any 'take off' stage are the mobilization of domestic and foreign savings in order to generate efficient investment to accelerate economic growth.

The theoretical model for this paper is built around the latter theory that corrects the defect of the early theory, especially the Neo-Classical Growth theory (NGM). The neo-classical growth theory attributable to the works of Robert Solow corrects the defect of Harrod-Domar growth theory. Harrod-Domar growth theory is seen as being rigid in its analysis of growth which is underlined by Leontief type production function, characterise by fixed capital-labour proportions. This theory demonstrated that countries with higher savings ratio are expected to grow faster than those with lower rates. The challenge of development to the Less Developing Countries (LDC) is the relatively low level of new capital formation. The simplified model demonstrated the relationship between the net saving ratio (s) and capital-output ratio (K). It sees net savings (S) as being proportional to output or national income (Y).

$$S = sY \text{-----} (1)$$

Equation 1 implies that output of national income (Y) is an induced function of saving, and net investment (I) represents change in the capital stock (K), given in equation 2.

$$I = \Delta k \text{-----} (2)$$

In this function, capital-output ratio is directly proportional to national output or income (Y)

$$k/Y = k \text{ Or } \Delta k/\Delta Y = k \text{ Or } \Delta k = k.\Delta Y \text{-----} (3)$$

the assumption is that net savings must be equal net investment (S = I), implying that:

$$S = sY = I = \Delta k = k\Delta Y \text{-----} (4)$$

By simply dividing through equation 4 by Y and k translate to:

$$\Delta k/Y = s/k \text{-----} (5)$$

Equation 5 states that the rate of growth of national output is determined jointly by net national saving ratio (s) and the national capital-output ratio (k).

Harrod-Domar theory in equations 4 and 5 ignored the concept of diversification (factor substitution). This formed one of the major defects inherent in the Harrod-Domar growth model that the neo-classical growth model augmented for. Solow in neo-classical growth

model dropped and replaced the assumption of a Leontief type production function by a more a production function characterized by well behaved negatively sloping isoquants. This production function was considered more realistic as it recognized the possibility of diversification or factor substitution. The Neo- classical, regarded as counter revolution growth theory was built on principle of less or non-government intervention in the economies of the Less Developing Countries (LDC), (concept of Laissez faire). It calls for markets liberalization through the dismantling of public ownership, statist planning, and government diversification of economic activities.

The production function of the neo-classical growth model permits variation in the capital-output ratio k , given room for the correction of an alteration in k .

$$s/k = n \text{ ----- (6)}$$

From equation 6, the capital stock grows at a slower rate than the labour force when $sk > n$, and this implies a fall in the capital-output ratio, k . Conversely, it could lead to s/k raising and restoring the equality of s/k and n in the process. On the other hand, when $s/k < n$, it implies that the capital stock growth rate outstrips the labour force growth rate as well as the output growth rate. The resulting rise in the capital-output ratio k will bring about a fall in the s/k ratio thus again restoring the equality between s/k and n .

Given the above scenario, the neo-classical growth model as augmentation of Harrod-Domar growth model uses changes in capital output ratio, k , to describe the possibility of correcting any discrepancy between the warranted and natural growth rates. The neo-classical growth model sees rate of output growth of an economy as endogenously determined by government and policy makers and factor substitution (diversification).

Methodology

Pre-Estimation Method

Economic diversification is measured in this paper as the inverse of the concentration ratio, calculated using the Herfindahl-Hirschmann index (HHI). HHI is widely used to measure market concentration and also economic diversity (extent to which a particular economy is dominated by a few sectors). HHI is calculated using the formula in equation 7.

$$HHI = \sum_{i=1}^n S_i^2 \text{ ----- (7)}$$

where,

- HHI = Herfindahl-Hirschmann index (concentration ratio),
- S_i = share of economic activity in sector i in total GDP, and
- n = number of sectors in the economy.

The Herfindahl-Hirschmann concentration index theoretically ranges from zero to one with higher values indicating high concentration and consequently lower diversification such that a country with a perfectly diversified economy will have HHI close to zero (Acar & Sankaran, 1999). After obtaining the diversification index the relationships among government diversification, industrial and output growth is captured with an extended neo-classical growth model which incorporates economic diversification as one of the potential determinants of growth.

$$\Delta y_t = \alpha y_{t-1} + \beta x_t + e_t \quad \text{-----} \quad (8)$$

where,

- Δy_t = change in the dependent variables (Industry share of real GDP (IND) and Output-side real GDP per capita (RGDP)),
- y_{t-1} = initial output per capita
- x_t = vector of determinants of growth, and
- α and β = parameters to be estimated
- e_t = the residual error term

Equation 8 is expanded as an explicit augmented neo-classical growth model with the variables of interest. The study modelled respectively, Industry share of real GDP (IND) and Output-side real GDP per capita (RGDP) as being functions of economic diversification index (DIV), index of human capital per person (HK), based on years of schooling (or returns to education), number of persons engaged (EMP), resource allocation index (REA), domestic credit allocated to private sector by banks (CRA), and transparency, accountability and corruption in the public sector rating (CUR).

$$\Delta IND_t = \alpha + \delta \Delta DIV_t + \delta_1 \Delta HK_t + \delta_2 \Delta EMP_t + \delta_3 \Delta REA_t + \delta_4 \Delta CRA_t + \delta_5 \Delta CUR_t \quad \text{----(9)}$$

$$\Delta RGDP_t = \alpha + \lambda \Delta DIV_t + \lambda_1 \Delta HK_t + \lambda_2 \Delta EMP_t + \lambda_3 \Delta REA_t + \lambda_4 \Delta CRA_t + \lambda_5 \Delta CUR_t \quad \text{---(10)}$$

Higher economic diversification is expected to reduce exposure to exogenous shocks like oil price fluctuations thereby having a positive relationship with IND and RGDP. In the same way, index of human capital per person (HK), based on years of schooling (or returns to education), number of persons engaged (EMP), resource allocation index (REA) and domestic credit allocated to private sector by banks (CRA) are expected to positively impact on industrial as well as output growth. In line with the neo-classical growth model, a country pursuing policies leading to diversification of her economic activity (factor substitution or permitting variation in the capital-output ratio k) must score high in resource allocation index rating and structural policies cluster average rating.

Improved industrial and output growth can only be true in an economy with reasonable rate of transparency, accountability and low or no corruption in the public sector. The above relationships is supported in the work of Young (1995), who examined the effect of diversification on output growth and labour force participation in East Asia and find that the higher growth of output entirely due to rising economic diversification which increases labour force participation and empowerment in labour quality via knowledge accumulation.

Symbolically, the 'a priori' expectation of the specification of equation 7 is given as:

$$\delta, \delta_1, \dots, \delta_6 > 0 \text{ and } \lambda, \lambda_1, \dots, \lambda_6 > 0 \quad \text{-----} \quad (11)$$

The above expected sign and magnitude of the model parameters are in line with the work of Elton and Gruber (1977), in their work on economic diversification, risk reduction and economic growth. In this study it was find that most of the gains from diversification lead to continuous economic growth. Therefore, this paper uses these diversification policy outcome variables and other policy variables to examine the effect of diversification on industrial as well as output growth in Nigeria.

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Unit Root Approach

The estimation commenced with an extensive unit root test to confirm the stationary structure of the variables that entered the model. The paper employed five different unit root test approaches, the Levin, Lin & Chu t^* test, Breitung t – statistic, Im, Pesaran and Shin W – statistic, the Augmented Dickey-Fuller (ADF) – Fisher Chi-square and Phillips-Perron (PP) – Fisher Chi-square approaches. Though particular interest is given to the results of Breitung t -statistic and PP-Fisher Chi-square tests, since the two methods differ from others because they provide a more robust test for serial correlation and time dependent heteroskedasticities of the stochastic process. These approaches test the null hypothesis of unit root or non-stationary stochastic process. They use automatic lag length selection based on SIC with Newey-West automatic bandwidth selection and Bartlett kernel. Unit root is necessary in order to guarantee that our inferences regarding the important issue of integrating orders in the model is not likely driven by the choice of the testing procedure used.

The general testing procedures for most of these methods are given as follows:

$$\Delta X_t = \lambda_0 + \beta t + \gamma X_{t-1} + \delta_1 \Delta X_{t-1} + \dots + \delta_p \Delta X_{t-p} + \mu_t \quad \text{----- (12)}$$

where

- X = a variable under investigation.
- λ_0 = an intercept (showing the presence or absence of drift).
- βt = the coefficient on a time trend.
- t = the deterministic time trend.
- p = the lag order of the autoregressive process, and
- Δ = the difference operator.

The unit root test is then carried out under the null hypothesis $\gamma = 0$ against the alternative hypothesis of $\gamma < 0$.

Co-integration Tests

Having confirmed the stationary properties of the variables, we proceed to determine the existence of a long-run relationship in the model. A co-integrating relationship exists between series, if there is a stationary linear combination between them. To ensure a robustness check of the cointegration estimation, we adopted the Single-Equation co-integration method developed by Engle Granger. At the confirmation of presence of co-integration, it is useful to re-specify the model in the equivalent of Error Correction Model (ECM) form.

$$\Delta X_t = \lambda_0 + \beta t + \gamma X_{t-1} + \delta_1 \Delta X_{t-1} + \dots + \delta_p \Delta X_{t-p} + \phi ec m_{t-1} + \mu_t \quad \text{----- (13)}$$

ϕ = Adjustment parameter which shows the extent of disequilibrium in the endogenous variable corrected in each one year lag period. If statistically significant, it implies the disequilibrium will be corrected at different period, otherwise, at the same period. ECM from equation 10 is estimated as the residual of the co-integration equation which account for the speed of convergence of the endogenous variables back to equilibrium after all adjustment have taken place.

Δ = Difference operator

The model was estimated using EViews 9.5 econometrics software.

Presentation Of Result

Unit Root result

From the estimated result, the null hypotheses are rejected when the probability associated to individual approach is less than 0.05 at 5% and 0.01 at 1% levels of significance, and otherwise. Table 1 presents the summary group unit root tests of the approaches in their levels and first differences format.

Table 1: Summary of Group Unit Root Analysis

Variable	Level			1 ST Difference		
	Statistic	Prob.	Cross-Sections	Statistic	Prob.	Cross-Sections
Levin, Lin & Chu t*	-2.01786*	0.1218	6	-4.48803**	0.0000	6
Breitung t-stat.	-0.53160	0.2975	6	-3.10469**	0.0010	6
	-	0.0934	6	-4.48803**	0.0000	6
	2.70568*					
Im, Pesaran & Shin	*					
ADF-Fisher Chi-sq.	1.2723**	0.8051	6	48.5634**	0.0000	6
PP-Fisher Chi-sq.	11.2117	0.6693	6	57.6746**	0.0000	6

Note: ** indicates significance at 5% and 1% level.

Source: EViews 9.5 estimate

In levels, the 5 approaches unanimously accepted the null hypothesis of unit root, implying that the variables are integrated at both 5% and 1% significance levels. However, at 1st difference, the five approaches adopted show the presents of first order (= 1) unit root among the 6 cross-section variables, a prerequisite for the presence of long-run linear combination among the variables.

Single-Equation Co-integration Test result

The Single-Equation Co-integration Test result identifies the number of stationary long-run relationships that exist among the set of integrated variables. It offers two tests, the tau-statistic and the z-statistic respectively. The deterministic cointegrating equation assume a null hypothesis that the series are not cointegrated, using an automatic lags specification based on Schwarz criterion (maxlag = 12).

Table 2: Single – Equation Co-integration Analysis

Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
RGDP	-2.758182	0.9591	-44.40269	0.0124**
DIV	-3.915084	0.5712	-56.08489	0.0108**
HK	-2.938538	0.9323	-164.8933	0.0000**
EMP	-5.755047	0.0210*	-68.20998	0.0009**
REA	-3.872634	0.5928	-52.18261	0.0125**
CRA	-5.134350	0.0939	69.48732	1.0000
CUR	-3.698475	0.6792	-700.6066	0.0001**

*MacKinnon (1996) p-values.

Result of table 2 shows that tau-statistic dictated 1 co-integrating variable (EMP) at 5% significance level, while z-statistic indicated that all the variables (RGDP, DIV, HK, EMP, REA and CUR), with the exception of CRA, are co-integrated variables at both 5% and 1% significance level. Thus, we adopted an Error Correction Model (ECM) in order to bring back the short-run integrated model back to long-run form.

Estimated Result

Evidence from the analysis' result points to the fact that industrial and output growth per capita in Nigeria, on average, exhibits significant positive reaction to the observable changes in the index of government diversification (DIV), human capital per person (HK), number of persons employed (EMP) and domestic credit allocated to private sector by banks (CRA). However, while impact of government diversification index is significant to output growth per capita, it is insignificant to industrial sector growth in Nigeria. In a reverse manner, domestic credit allocated to private sector proved to significantly impact on industrial sector growth but insignificant to output growth per capita. In fact, the empirical evidence shows that a point increase in government diversification index results to only 0.1% increase to changes in output growth per capita in Nigeria, other factors kept fixed.

Table 3: Estimated Result Summary

Variable	Dep. Var: RGDP per capita		Dep. Var: Industry share of RGDP	
	Coefficient	t-Statistic	Coefficient	t-Statistic
C	0.249837	21.80459	-0.984561	-16.45680
DIV	0.001193	3.268276	0.009756	0.397813
HK	0.355681	6.032479	0.053894	4.287851
EMP	0.446111	4.175381	10.71291	18.19539
REA	-0.200804	-2.215562	-0.547779	-1.094050
CRA	0.027255	0.688176	0.730426	3.360457
CUR	-0.105986	-7.824096	-0.094857	-4.776765
ECM2(-1),ECM2(-1)	-0.000612	13.61011	-5.56E-07	-0.112266

Also indicates from the estimated result is that industrial as well as output growth per capita in Nigeria, on average, exhibits negative reaction to the observable changes in resource allocation index (REA), and transparency, accountability and corruption in the public sector rating (CUR). The sectoral resource allocation index of the country over the period of investigation

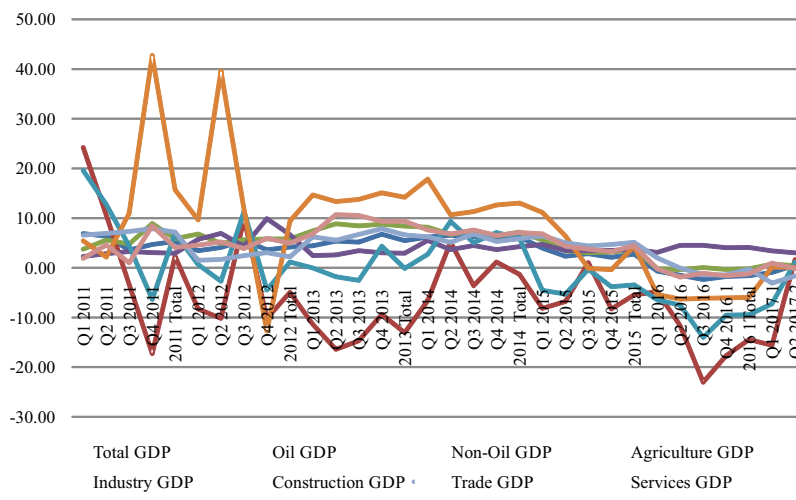
has shown negative impact on both industrial sector growth and output growth, but only significant to output growth. A percentage point increase in human capital per person significantly contributes 35 percent increases, on average, to the growth of output per capita and 5.3 percent increase to industrial output growth. Also a percentage point change in the number of persons engaged over the years, on average, positively contributes about 44 percent to output growth per capita, and approximately 11 percent to industrial output growth, other factor kept fixed. This findings stress the fact that if more persons are engaged through the programme of intensive economic diversification, out economic will growth in a sustainable rate.

The result also indicates that domestic credit allocated to private sector (CRA) by the banks in Nigeria, though positive, but contributed insignificantly to output growth of the economy. The policy implication of this result is that credit constraint has been and remained one of the major challenges of diversification target of Nigeria economy. Above all, another disappointing factor that never speaks well of the economy over many decades is the transparency, accountability and corruption in the public sector rating (CUR). The result points to the fact that a percentage point change in the transparency, accountability and corruption in the public sector, over the years, contributes 10 percent decreases to output growth per capita and 9.4 percent decreases to industrial output growth of the economy, other fact kept fixed.

This empirical finding has lay credence to the views of some economic analysts in the literature. For example Sanusi, (2010), argued that the lack of political will of the successive governments, political class and elites coupled with endemic corruption in the Nigeria system, are major factors that have snowballed the economy into present economic distress. He stressed that the major factors accounting for the relative decline of the country's economic fortunes are easily identifiable as political instability, lack of focused and visionary leadership, economic mismanagement and corruption. Mathew and Adeboye, (2016) on their paper, also stressed that Nigeria is one of few countries that is highly retarded from their past glorious heights in agriculture down to zero scale of production due to irresponsible and ill-purposeful leadership (Mathew & Adeboye, 2016).

In tracing the sector(s) with high diversification potential in Nigeria, this paper supports the view that agricultural sector, having contributed the much to GDP, has diversification potential, but its argued further that agricultural sector alone cannot yield the diversification outcomes that the economy is in dire need. Based on this fact, the paper using the latest Nigeria data from the National Bureau of Statistics (NBS) and Central Bank of Nigeria (CBN) analyzed the trajectory of sectorial growth rates and they shares to general output growth rate from first quarter 2011 to second quarter 2017 (2011Q1 – 2017Q2). The writer believe that this period covered times of economic boom as well as economic uncertainty and recession in Nigeria, and is reasonable to trace the growth trajectory that will help underpin the growth potential sectors of the economy.

General Growth rate (%) in Nigeria 2011Q1 - 2017Q2



The visible economic quagmire of Nigeria is traceable to the growth pattern in the past decade. Statistical evidence from NBS and CBN has shown the country economy growth journal of negative average growth rates. In 2011, the economy recorded its highest growth of 6.89% in 1st quarter and the lowest of 3.60% in the 3rd quarter, with an average growth of 5.31%. In this same year, the highest contributors to the growth were construction, trade and industry, with average growth rates of 15.71%, 7.21% and 6.99% respectively. Agricultural and services sectors recorded the lowest of 2.92% and 4.12% respectively. 2012 saw a decrease of 4.21% average growth rate from 5.31% of 2011. But this time around, construction and agricultural sectors took the lead, contributing 9.44% and 6.70% average growth respectively, while industry and trade contributes the least of 1.19% and 2.21% respectively. In 2013, there was a remarkable improvement in the growth rate of the economy, having recorded average growth rate of 5.49%, about 0.18% improvement over the 2011 growth rate of 5.31%. Again, the highest contributors to the growth were construction (14.22%), services (9.38%) and trade (6.64%) respectively.

When in 2014, Nigeria was announced as having the highest economy in Africa (overtaken South Africa) with the highest average output growth rate of 6.22%, many analysts believe that the country has got it right, but little did they know that the joy will not last. A look at the contributing sectors to 2014 growth shows that construction and services had the highest growth rates of 13.03% and 7.12% respectively. This was followed by industry (5.97%) and trade (5.88%), Agriculture had the least contribution of 4.27% to the GDP growth rate. By 2015, the Nigeria economy growth has crashed to 2.79% from 6.22% of 2014. This time around, industrial sector had the worst growth of -3.42%, while trade contributed 5.14%, services (4.48%), construction (4.35%) and agriculture (3.72%) respectively. By 2015, it was clear that the economy was drifting into recession, when prices of commodities especially food items started going up, and election outcome fear was everywhere in the country. Expectedly, 2016 saw a negative growth rate of -1.58% with only agricultural sector having positive contribution of 4.11%, which was counselled by the negative growth in industry (-9.44%), construction (-5.95%), services (-1.19%) and trade (-0.24%) respectively.

As widely recognized in Nigeria that the economic problem is as a result of fall in crude oil prices it may interest us to note that even in 2014, which sees Nigeria became the economic giant of Africa in terms of GDP with 6.22% growth rate, oil GDP growth rate was -1.32% and non-oil GDP growth rate stood at 7.18%. Even as at 2013 when GDP growth rate was 5.49%, the oil GDP was -13.07% and non-oil GDP growth rate recorded 8.78% respectively.

Now that 2017 2nd quarter growth rate has shown a slight improvement, having recorded GDP growth rate of 0.55% back from the negative rate of 2016, the government should look back to energize these sectors that have contributed to the past when our economy look viable, and still have the highest potential for the country's economic growth. These sectors are construction, services, industry agriculture and trade as our analysis, thus far, has pointed to. Under construction, information and communication subsector has contributed more in the past and needs to be energized. Another subsector that has the potential but has not live up to expectation in the past is the utilities especially electricity, urgent attention is needed to harness this growth potential subsector. Real estate has performance remarkably over the years, but the same could not be said about education, human health & social services and administrative and business services which had recorded the poorest of all. Under industry, more attention should be paid to Solid Minerals (such as coal mining, metal ores and quarrying) and manufacturing subsector. These are areas with high potential to propel our economy to a greater height.

Conclusion

Reactions to economic recession and uncertainty bedevilling Nigeria economy over the years have heralded a new era of a reinvigorated Nigeria on the path of negative average growth rates. In effects, economic, political and policy analysts have increase the attention to unravelling the effectiveness of economic diversification on growth and development. The argument within economic discourse is that diversification is the best option to mitigate financial risk and vulnerability occasioned by over-dependent on oil revenue. The persistent economic uncertainty facing the country for the past decades have casted doubt on the effectiveness of programmes and policies by the successive government toward diversifying the economy. In contribution to the issue of diversification and Nigeria economic outlook, this paper has carefully estimated the extent to which diversification outcome variables in Nigeria over the years have enhanced growth in the industrial sector and output per capita.

Interestingly, the paper finds that the index of government diversification and a number of diversification outcome variables, such as human capital per person (HK), number of persons employed (EMP) and domestic credit allocated to private sector by banks (CRA) have impacted positive to growth. Also find is that transparency, accountability and corruption in the public sector rating has significant negative impact on growth in the industrial sector as well as output in Nigeria. In examining the sectors with high growth potential, the paper find that other sectors outside agricultural sector are very crucial to achieving the desired output growth in Nigeria. Based on these findings, the paper made some policy recommendations. Among them is a call for holistic diversification – a diversification driven by the concept of “Local Comparative Advantage” policies and programmes, since investing in agricultural sector alone cannot yield the desired output growth that will propel the country to an enviable height. Other sectors such as industry, construction, services and trade that are growth driven and have contributed massively to output growth in the times our economy was viable should also be effectively and efficiently developed. A critical look at Nigeria productive activities

points to the fact that there are regional comparative advantages, where some regions are gifted with the resources, manpower and knowledge of agriculture, others with local manufacturing, services and trade. At the core of the infrastructure agenda also, is the need to move from an extractive industry fraught with corruption concomitant with limited value-added to the productive sector of the economy. Thus, governments should build an effective industrialization oriented diversification policies with high level of transparency and accountability, if the dreams of the country shifting from oil dependent economic to a more diversified economy will be realized. This could be best achieved by building a strong and competitive institutions and encourage a business friendly environment and sustainable industrial sector growth via policy instruments.

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