Economic growth, structural transformation and sectoral interdependencies in Nigeria

[1]Adetunji Adeniyi, PhD

Tunji Adeniyi and Associates Limited, Lagos, Nigeria.

E-mail: tunjiadeniyi@icloud.com www.tunjiadeniyi.io

Abstract

In Nigeria, studies in structural transformation and sectoral interdependencies, particularly, employing time series data, rebased to the same and current basis are limited. The recent economic rebasing exercise, which has made available time series data needed for this kind of analysis provides some motivation to investigate these phenomena. Meanwhile, there have been conjectural discussions on 'dwindling marginal productivity of labour', despite year-on-year economic growth in the past few decades. This suggests that, while productivity decline was evident in some sectors of the economy, there were more than proportionate and compensatory productivity increases in some other sectors of the economy, albeit less visible, to warrant aggregate growth outcome. Consequently, this research attempts to understand labour productivity distribution across the major sectors of the economy and investigates the transitions in marginal productivity of labour and the reallocation of economic activities and resources among the major sectors of the Nigerian economy during the growth period of the past few decades in order to determine sectoral interdependencies and structural transformation. Vector error correction model (VECM) econometric tool was used to investigate sectoral interdependencies, while non-parametric methods were used to unravel structural transformation. The results revealed sectoral interdependencies and a transformation of the economy from production sectors of agriculture, manufacturing, mining and quarrying to services sectors, which include, retail and wholesale trade, information communications technology, financial services, administration and social services. The administration and social services sector has assumed more than proportionate importance in employment, whereas, it has the least productivity with negative implications for the overhead cost of governance. Government should design and implement policies to realign resources allocation optimally.

Keywords: Economic Growth; Labour Marginal Productivity; Structural Transformation; Economic Sectors and Sectoral Dependencies.

Introduction

Over the last couple of decades, particularly, between 1981 and 2014, when the economy was rebased, Nigeria experienced a reasonable level of economic growth. This, also, coincided with a period of various domestic economic reforms – Structural Adjustment Programme (SAP) economic liberalisation, commercialisation, and privatisation of public enterprises - and the advent globalisation. All of these have combined to redistribute sectoral gross value added (GVA) productivity, and employment.

Furthermore, "dwindling productivity" has been fingered as a major culprit responsible for our sub-optimal economic performance. Productivity in literature is used to refer to efficiency in the utilization of productive resources (Obadan & Odusola, 2018). High productivity guarantees low average cost of production of goods and services, leading to improved general price level, welfare, economic competitiveness, better balance of payment, and stronger currency.

The contrast has been the situation in Nigeria despite the growth regime of the recent past years. Nigeria's economy has been characterised with rising production costs, double digit inflation, high and rising unemployment, rapidly depreciating value of the currency, worsening welfare leading to biting poverty that recently earned Nigeria the appellation of the 'poverty capital' of the world in development circle (IMF, 2021; FDC, 2021: NESG., 2021; World Bank, 2020).

The appropriate research questions will be: how are productivity and economic activities distributed among the various sectors of the economy? How have productivity and economic activities transitioned among the various sectors of the economy during the period under review? What lessons are there to learn to optimise productivity and resources allocation with a view to improving welfare through low average cost of production of goods and services, leading to improved general price level, economic competitiveness, better balance of payment, and stronger currency, among others?

Similarly, unemployment has been rising and biting. The question then arises as to how employment is distributed or redistributed among the various sectors of the economy? This will provide some insight for policies designed to optimise employment across the sectors in the economy, while bearing in mind the sectoral interdependencies.

The concept and measurement of economic growth

According to Kuznets (1973), economic growth is the sustained increase in productivity and living standards. Economic growth usually manifests in an increase in a country's Gross Domestic Product (GDP). According to the National Bureau of Statistics (2014) and, Adeniyi (2019) Gross Domestic Product is the total monetary value of all the legitimate final goods and services produced by the country over a specific period, usually one year. Nigeria in 2014 rebased its GDP from 1990 to 2010. This new basis of national accounting resulted in an 89% increase in the estimated size of the economy to USD 510 billion as at the year ended 2014. The exercise further showed that the Nigerian economy was actually more diversified than previously recorded.

However, rebasing only provides up-to-date statistics (Adeniyi, 2019; PriceWaterCoopers, 2015). It does not represent increase in productivity or increase in real output.

It is important that GDP is calculated accurately and up-to-date to enhance comparability among countries (PriceWaterCoopers, 2015). A recent comparison of the tax revenue-to-GDP of Nigeria to other countries, for example, supports GDP rebasing by Nigeria. According to PriceWaterCoopers (2015) the tax-to-GDP ratio compares the amount of tax collection to the nominal GDP. Generally, the ratio in developing countries is around half of what obtains in developed nations. The 2012 data stand at 44.6% for France; Sweden, 45.6%; UK, 39%; US, 27%; Tanzania, 12%; and, Burkina Faso, 11.5%. If we consider all the three tiers of government, Nigeria had about 14.6% and 7.8% before and after rebasing respectively (Adeniyi, 2019; PriceWaterCoopers, 2015). Furthermore, accurate and current data will make planning, implementation, monitoring, and evaluation of programmes more robust and informed.

Economic growth is usually estimated in real or inflation adjusted terms, in order to remove the potential distortion ascribable to inflation on the prices of goods and services produced. Consequently, economic growth is the increase in the inflation adjusted market value of all legally recognised finished goods and services produced by an economy over time (Adeniyi, 2019). It is measured as the percentage rate of increase in real GDP. One of the notable observations of the rebasing exercise in Nigeria is the fact that it has resulted in lower estimates of real GDP growth rates compared to previous estimates (Adeniyi, 2019; NBS, 2014).

The concept and measurement of structural transformation

According to Herrendorf *et al* (2013) structural transformation is the reallocation of economic activities across the various sectors of the economy - agriculture, manufacturing, and services. Jayasooriya (2017) defined structural transformation as the reallocation of economic activities across three broad sectors (agriculture, manufacturing, and services) that accompany the process of modern economic growth. Employment intensity of output growth, for example, changes with changes in technology, institutional arrangements in the labour market and changes in wage policies (Dopke, 2001). Mkhize (2015) found that in South Africa, employment is transitioning from the primary to the tertiary sectors when he investigated the sectoral employment intensity of output growth in the non-agricultural sectors of the country. Apart from structural shifts, he further found that increasing capital intensity in South Africa has reduced the job creating capacity of aggregate and sectoral output growth. According to Kwon (2015) the current employment transition is from service to knowledge. This is said to influence income inequality, the same way transition from agriculture to industry did.

The most commonly used model of economic growth – the one sector model – among other things, abstracts structural transformation, accompanying the growth process. Lately, however, researchers and policy makers have commenced focusing attention on the sectoral reallocation of economic activities and resources accompanying economic growth, because it is believed that the

process may be inefficient and would, therefore, require policy intervention (Herrendorf *et al*, 2013). Researchers have extended the one-sector model to multi-sectors and found that it provides insight into structural transformation and some other economic issues of interest. It confirmed Kuznets' (1973) observation that growth is accompanied by the migration of population from the rural to urban areas, with implications for movement of employment out of agriculture.

According to Herrendorf *et al* (2013) the question of economic interest, therefore, is whether structural transformation, itself, arises as a result of efficient equilibrium in resources allocation. According to them, it is difficult to achieve exact balanced growth and structural transformation simultaneously. They suggested settling for approximate balanced growth instead. Taking into consideration changes in the structural composition of the economy is important in unravelling changes in economic aggregates outcomes.

In examining the effects of globalisation on the micro anatomy of sectoral employment trends in Germany, Dauth *et al* (2017) observed that though the share of manufacturing in real GDP has remained fairly constant since the 1960s in the USA, its proportion of contribution to total employment has been on constant decline. Rodrik (2016) had ascribed the decline to the advent of labour-saving technology. However, Autor *et al* (2016 and 2013) fingered increased trade with China. The German experience is a little different. In Germany, even though there is structural transition from manufacturing to services employment because of technology advancement, the rate of that transition is tempered, in contrast, by trade with China and Eastern Europe with which Germany has maintained positive net export and current account surpluses, unlike in the case of the USA. In Nigeria, Adeniyi (2019) found that institutional voids in the agricultural sector leading to the exportation of raw agricultural produce and the importation of industrial raw materials that can, ordinarily, be produced in Nigeria is leading to the exportation of jobs to the external sector.

Structural transformation is a process and a continuum for as long as development occurs (Herrendorf *et al*, 2013). Consequently, there is need to study and understand its features using long time series data. They identified the following measures of structural transformation: employment shares, value added shares and final consumption expenditure shares.

The concept and measurement of sectoral interdependencies

According to Jayasooriya (2017), there are limited research in the area of sectoral growth and their interdependencies. In Nigeria, studies in this area are also limited, particularly those employing time series data, rebased to the same and current basis (Adeniyi, 2019).

The impact of structural transformation of Sri Lanka's economy on sectoral interdependencies was evaluated by Jayasooriya (2017) to provide evidence for policy making. He employed econometric method of vector auto-regression, including causality and co-integration, to analyse time series secondary data to investigate long-run relationships among the major economic sectors of Sri Lanka. Besides, the evidence of structural economic changes, the results indicated a uni-directional

causality from agricultural GVA to industrial GVA, and a bi-directional causality between agricultural GVA and services GVA. In Nigeria, Adeniyi (2019) found that the employment elasticity of agricultural value added became significant, at 95 per cent confidence level, only after the effect of the GVA in the other sectors of the economy were introduced in vector error correction model (VECM) analysis of time series economic data.

The concept and measurement of productivity

According to Obadan and Odusola (2018) productivity is the relationship between the quantity and quality of output of goods and services and the quantity of factors of production (labour, capital, and technology) required to produce them. It measures the efficiency of resources utilization. Productivity is said to improve when less resources and costs are employed to produce a given quantity of output or when the same level of inputs produce more quantity and quality of output.

Productivity could either be measured relative to all factors of production or relative to a single factor. When it is measured against all factors, it is described as Total Factor Productivity (TFP) while partial productivity refers to when it is measured against one factor – capital or labour. It can be measured either at the firm, industry, sectoral or aggregate levels.

The concept and measurement of employment, unemployment and underemployment rates

In Nigeria, according to NBS (2015), unemployment is an estimate of the number of people actively looking for job as a percentage of the labour force. The labour force population consists of all persons in the age bracket of 15-64 years. Consequently, unemployment, includes persons in the age bracket of 15-64 who, in the period under reference, were available for work, actively seeking for work, but were without work (Adeniyi, 2019).

An individual is considered as employed if he or she is engaged in the production of goods and services, thereby contributing to the GDP in a legitimate manner, which is a component of the National Accounts and receives any form of remuneration for the job. A person is unemployed if he or she did nothing at all or did something but not up to twenty hours a week. Underemployment, on the other hand, occurs if a person works less than forty hours, but work more than twenty hours, on the average a week and / or if he or she works forty hours but he or she is engaged in an activity that underutilises his or her skills, time, and educational qualifications. By implication, rural farmers farming only seasonally will be considered underemployed if they do nothing off-season. However, if they work in both dry and wet seasons, they will be considered involved in full employment, (Adeniyi, 2019; NBS, 2015). This underscores the importance of irrigation and other farm management practices that guarantee all-year farming.

The internationally accepted definition of employment, underemployment, and unemployment does not consider the quantity / suitability of wages earned, or whether the person involved in a particular job or economic activity is looking for another job or unhappy with his current job. Rather, employment, underemployment, and unemployment are treated as a function of a person's involvement or otherwise in economic activity, even if that activity is aimed only at making ends

meet. The suitability of wages is covered under other quality of living standards indicators, such as, poverty, etc., and not in determining whether one is employed, underemployed, or unemployed, which is a function of economic engagement (Adeniyi, 2019; NBS, 2015).

The principal link through which the poor benefits from economic growth is in the amount of employment it creates. Economic growth is necessary, particularly as the population grows, to provide job for those seeking to work. In an economy with low or no job intensity of growth, unemployment remains stubbornly high even when the economy is growing. Therefore, a major interest of economic policy is to improve the employment generating capacity of growth (Adeniyi, 2019; Ajilore & Yinusa, 2011).

Khan (2001), Kapsos (2005) and Islam (2004) observed that employment intensity of growth has over-emphasised employment growth over productivity growth. While employment growth emphasises the number of jobs created, productivity growth emphasizes the qualitative aspect of growth in terms of the number of "decent jobs". Consequently, both the employment elasticity of growth and the productivity intensity of growth are needed to achieve economic development objectives, such as poverty targeting.

Methodology

Secondary macroeconomic data were collected from the National Bureau of Statistics (NBS). The macroeconomic variables of Gross Domestic Product (GDP), Sectoral Gross Value Added (sectoral GDP), aggregate employment, sectoral employment, from 1981 to 2014 were collated into a table of data. The data were regrouped from 46 subsectors in the national accounts into 6 major sectors based on similarity and in line with the presentation of employment data from National Bureau of Statistics as follows: Agriculture (1-4); Mining and Quarrying (5-8); Manufacturing (9-21); Construction (24) Trade and Services (22, 23, 25-41); Administration and Social Services (42-46) (NBS, 2016).

The data was analysed and presented with descriptive or non-parametric statistics of tables, percentages, graphs, etc. Sectoral marginal productivity of labour was computed for each sector, and sectoral interdependences were investigated with econometric analysis at 95 per cent confidence level. The data was first lagged to achieve long-term stationarity and take care of time trend in years. Except for trade and services sectoral data that was never stationery, and hence not analysed, other sectoral data were stationery at second order. Sectoral employment elasticities of gross value added growth (GVA) growth, wage rate, interest rate, and inflation rate were measured in the other sectors, using Vector Error Correction Model (VECM) regression at $\alpha_{0.05.}$ The results were discussed and inferences drawn to form the basis of recommendations and conclusions.

A system of six simultaneous equations of aggregate employment in the economy was developed to simulate sectoral interconnectedness. The simultaneous equations (equation 1 below) were then solved with VECM for employment elasticity in the various sectors (Tables 3 to 7 of appendices) of the economy, except for trade and services sector, where the GVA series were not stationary at the second order like all the other GVAs, interest rate, wage rate and inflation rate series.

Scenario 1: lntot_empl = f (lnemp_agric, lnemp_non-agric, lngva_agric, lngva_nonagric.)

Scenario 2: lntot_empl = f (lnemp_agric lnemp_minin lnemp_manufac lnemp_const lnemp_admin lngva_agric lngva_minin lngva_manufac lngva_const lngva_admin)

Scenario 3: lntot_empl = f (lnemp_agric lnemp_mini lnemp_manufac lnemp_const lnemp_admin lninflation lnwap_rate lnminWage)

Scenario 4: lntot_empl = f (lngva_agric lngva_minin lngva_manufac lngva_const lngva_admin lninflation lnwap_rate lnminimWage)

Scenario 5: lntot_empl = f (lngdp lninflation lnwap_rate, lnminim_wage)

Scenario 6: lnemp_agric = f (lnemp_minin lnemp_manufac lnemp_const lnemp_admin lngva_agric lngva_minin lngva_manufac lngva_const lngva_admin).. …. ……. (1)

Furthermore, the result of VECM for the construction sector (Table 6 of appendices) was not discussed along with the other sectors below, as there was no plausible scenario where the error is reduced continuously over the years.

Result of the Findings

Structural transformation

Tables 1 and 2 present respectively the sectoral transition of contribution to GDP and the sectoral transition of employment contribution between 1981 and 2014. The two tables show the following: Between 1981 and 2014, the contribution of the Agriculture sector to GDP increased by 48.4% from 15.5% to 23.0%, whereas its contribution to employment declined by 24.5% from 68.3% to 51.6%.

In the same period the contribution of Mining and Quarrying sector to GDP declined by 68.0% from 33.1% to 10.6%, but, its contribution to employment remained unchanged at 0.2%.

During the review period, the contribution of the manufacturing sector to GDP declined marginally by 1.0% from 10.1% to 10.0%, whereas its contribution to employment decreased substantially by 42.9% from 2.1% to 1.2%.

Between 1981 and 2014, the contribution of the Construction sector to GDP declined by 32.1% from 5.6% to 3.8%, whereas, its contribution to employment increased by 40.0% from 0.5% to 0.7%.

In the same period, the contribution of Administration and Social Services declined by 2.4% from 8.5% to 8.3%, whereas its contribution to employment increased by 57.3% from 26.2% to 41.2%. By implications, there has been a relative decline in the productivity of the public sector as more people are doing less. Secondly, the higher relative contribution to employment suggests overstaffing in the public sector, which also partly explains the relatively high recurrent expenditure of government and the high cost of governance.

The contribution of Trade and Services to GDP increased by 63.8% from 27.1% to 44.4%, whilst its contribution to employment increased by 66.7% from 2.7% to 4.5%. In the same period, the

contribution of total non-Agriculture to GDP declined by 8.9% from 84.5% to 77.0%. However, the contribution to employment increased by 52.7% from 31.7% to 48.4%.

In summary, the following generalisations can be drawn:

The Agriculture sector remains a significant and increasing contributor to Nigeria's GDP.

Trade and Services sector has emerged as a strong and fast-growing contributor to Nigeria's GDP. Its contribution increased by 63.8% between 1981 and 2014 to a staggering 44.4% of GDP. This is understandable because it consists of the fast-growing ICT and Financial Services sub-sectors of the economy.

Employment is transitioning from production in the real sectors of Agriculture and Manufacturing to the Services sectors in Administration and Social Services, and Trade and Services sectors.

The Public sector (Administration and Social Services) has emerged as a major provider of employment. With its contribution to employment increasing from 26.2% in 1981 to 41.2% in 2014, it is playing catch-up with Agriculture whose contribution to employment, though still high, reduced from 68.3% in 1981 to 51.6% in 2014.

Table 1: Sectoral Transition of Contribution to GDP Between1981 and 2014 (%)

Sectors	Agric	Mining & Quarrying	Manufacturing	Construction	Admin & Social	Trade & Services	Non-Agric	GDP
1981	15.5	33.1	10.1	5.6	8.5	27.1	84.5	100
2014	23.0	10.6	10.0	3.8	8.3	44.4	77.0	100
% Change	48.4	(68.0)	(1.0)	(32..1)	(2.4)	63.8	(8.9)	0.0

Source: Analysis of data collected at National Bureau of Statistics (NBS).

Table 2: Sectoral Transition of Employment Contribution Between1981 and 2014 (%)

Sectors	Agric	Mining & Quarrying	Manu-facturing	Construction	Admin &Social	Trade & Services	Non-Agric	GDP
1981	68.3	0.2	2.1	0.5	26.2	2.7	31.7	100
2014	51.6	0.2	1.2	0.7	41.2	4.5	48.4	100
% Change	(24.5)	0.0	(42.9)	40.0	57.3	66.7	52.7	0.0

Source: Analysis of data collected at National Bureau of Statistics (NBS).

Pattern of Sectoral Contribution to Aggregate Employment in Nigeria.

The contribution of agriculture to employment in Nigeria, though declined over the years, still remains very high. From Figures 1, at the appendices and 8, immediately below, it can be seen that agriculture's contribution to employment experienced a marked drop in 2007, from when it has assumed another steady decline, with a gradient similar to that of the previous years. Similarly, the

contribution of manufacturing to employment declined throughout the period. However, the rate of decline has become steeper since 2007.

Also, the relative contribution of mining and quarrying to employment, though declined between 1981 and 2006, has been on a slow ascendancy since 2007. This is a function of the weakening contribution of the main sectors, particularly agriculture, and a renewed interest in solid minerals and artisanal mining sub-sector, which provides immediate absorption for transiting rural farmers.

Employment contributions in the construction, trade and services, and administration and social services sectors were on a low rise from 1981 to 2006. These have assumed a steeper rise since 2007.

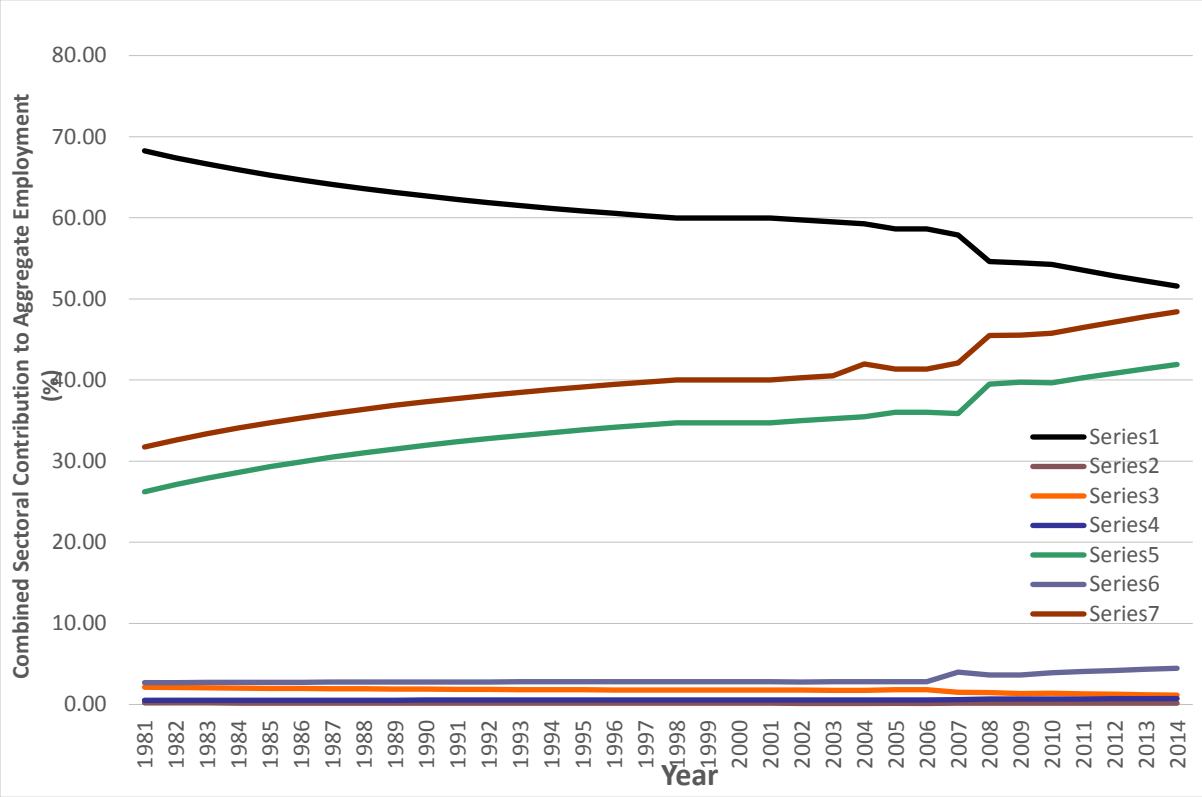

Figure 8: Pattern of Sectoral Contribution to Aggregate Employment (%) in Nigeria [1981-2014].

Source: Analysis of data collected at National Bureau of Statistics (NBS).

NB: Where: -

Series 1 = Agriculture
Series 2 = Mining and Quarrying
Series 3 = Manufacturing
Series 4 = Construction
Series 5 = Administration and Social Services
Series 6 = Trade and Services
Series 7 = Total Non-Agriculture

Figure 16, immediately below, presents the pattern of the contributions of all the sectors of the economy to Gross Domestic Product (GDP). From figures 16 and 9, agriculture is a significant and increasing contributor to Nigeria's GDP. Mining and quarrying (Figures 16 and 10) is a rising but an unstable contributor to the GDP. The contribution of manufacturing to the GDP of Nigeria remained flat between 1981 and 1999 from when it started rising till date (Figures 16 and 11). Construction's contribution to GDP declined between 1981 and 1985, rose slowly thence till 2004 where it rose steeply thereafter (Figures 16 and 12). As can been seen from Figures 16 and 13 administration and social services contribution to GDP rose steadily all through the period. Trade and Services sector has emerged as a strong and fast-growing contributor to Nigeria's GDP (Figures 16 and 14). This is understandable because it consists of the fast-growing ICT and Financial Services sub-sectors of the economy. The contribution of non-agriculture to GDP generally rose steadily all through the period (Figures 16 and 15).

Pattern of sectoral contribution to GDP in Nigeria between 1981 and 2014

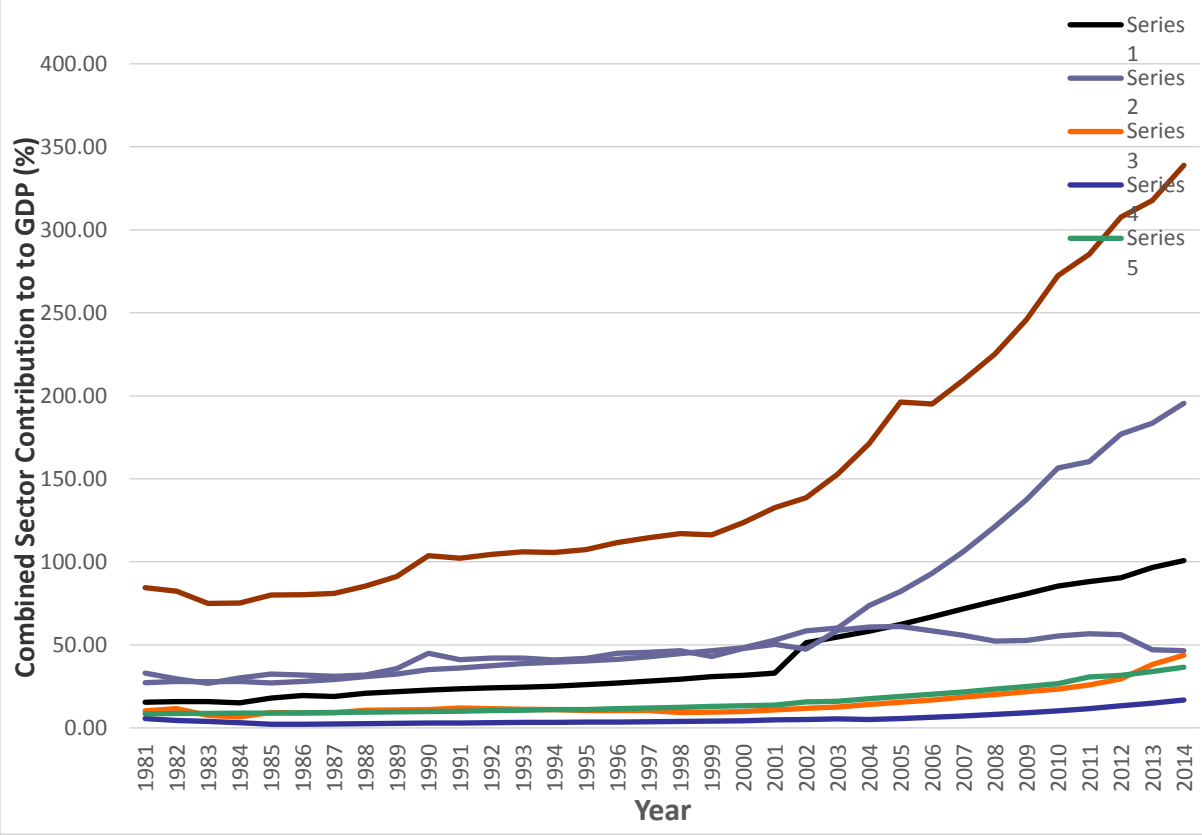

Figure 16: Pattern of Sectoral Contribution to GDP (%) in Nigeria [1981-2014].
Source: *Analysis of data collected at National Bureau of Statistics (NBS).*

Pattern of the marginal productivity of labour in Nigeria between 1981 and 2014

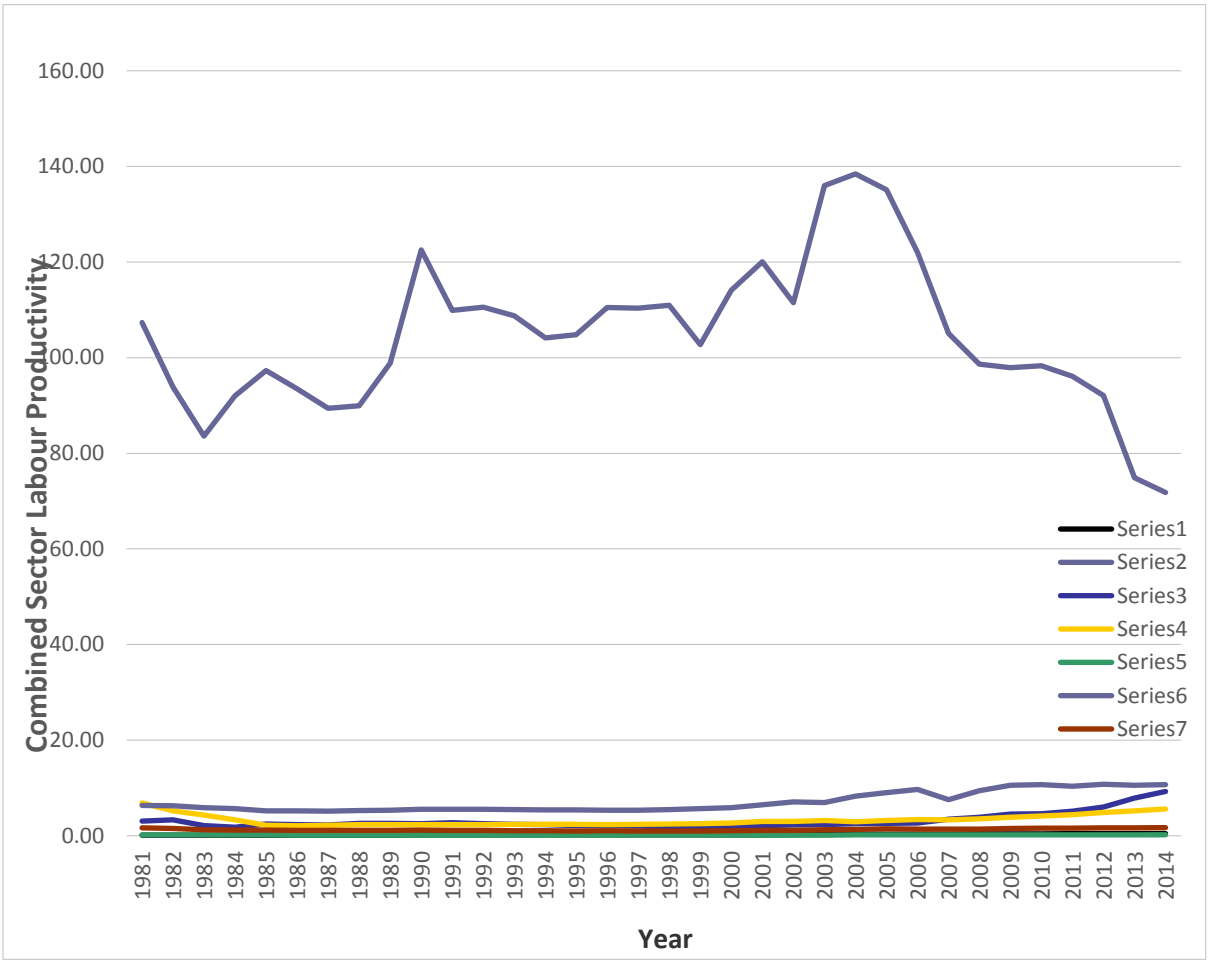

Figure 24: Pattern of Sectoral Labour Productivity in Nigeria [1981-2014].
Source: *Analysis of data collected at National Bureau of Statistics (NBS).*

The pattern of labour marginal productivity graph immediately above (Figure 24) shows the lopsided distribution of labour productivity in favour of the mining and quarrying sector. The comparatively very high productivity in the mining and quarrying sector indicates that the sector is comparatively technologically more intensive, using comparatively less labour to produce very high output value. The other sectors are very labour-intensive, and provide opportunities for mechanisation and innovation.

Transitions in productivity in the individual sectors are better appreciated in the disaggregated graphs in Figures 17 to 23 of the appendices. In the Agricultural sector (Figure 17) the marginal productivity of labour initially rose steadily between 1981 and 2001. It experienced a leap in 2002, when it started to rise with a relatively steeper gradient. Figure 18 shows that the marginal productivity of labour in the mining and quarrying sector is like an uneven inverted parabola, with a spike in 1990 and a peak in 2004 and 2005. It is a smother version of the graph of oil prices in constant 2014 Dollars, indicating that real productivity of labour in oil and gas during the period

may have been flat and that activities in the solid mineral sub-sector was low and inconsequential. Labour marginal productivity was almost flat in the manufacturing sector between 1981 and 1999 when it reached a floor from where it has since been on the ascension to date (Figure 19). Labour marginal productivity dropped sharply in the construction industry between 1981 and 1986. It has since been rising slowly, but steadily (Figure 20). Figure 21 shows that marginal labour productivity in the administration and social services sector assumed the shape of a shallow parabola, declining from 1981 to 1997 when it began to rise; and it has been rising since then. Marginal labour productivity in the trade and services sector declined for a short period from 1981 to 1987 when it started to rise. It rose to 2009 when it started to plateau out, assuming the shape of half a parabola (Figure 22). Figure 23 shows that marginal labour productivity in the non-agricultural sectors assumed the shape of a full parabola, initially declining at a declining rate from 1981 to 1999 when it started to rise till date.

Sectoral interdependencies

The study found, using vector error correction model methodology, the interdependence of current employment in one sector on previous employment in some others, suggesting the transitioning of employment from one sector of the economy to the other. Specifically, the current level of employment in the Agricultural sector is negatively influenced significantly by the last two years' level of employment in the Agricultural sector. The inter temporal elasticity of employment is -1.94, meaning that a one per cent change in the past two years' employment in the Agricultural sector results in 1.94 per cent change, in the opposite direction, in this year's level of employment in the Agricultural sector.

Furthermore, the elasticity of employment in the Agricultural sector with respect to the non-Agricultural Gross Value Added is 0.39, positive and has a lag of 2 years. This means, a one per cent change in the level of Gross Value Added in the non-Agricultural sector in the prior 2 years is accompanied by a change, in the same direction, of 0.39 per cent in current year's employment in the Agricultural sector.

Similarly, current employment level in the Mining sector is significantly influenced by the immediate past Gross Value Added in Agricultural sector. More specifically, the growth elasticity of employment in the Mining sector with respect to Gross Value Added in Agriculture is -0.891 and lagged by one year. This means that one per cent change in Gross Value Added in Agriculture in the immediate past year is accompanied by a 0.891 per cent change in the employment level this year in the Mining sector in the opposite direction.

Also, current employment in the Mining sector of the Nigerian economy is significantly influenced by the Gross Value Added of the previous year in the Manufacturing sector. Specifically, the employment intensity of growth in the Mining sector with respect to Gross Value Added in the Manufacturing sector of the economy is 1.241, positive and lagged by one year. This means, a one per cent change in the level of Manufacturing Gross Value Added of the immediate past year is accompanied by a 1.241 per cent change in employment in the Mining sector in the same direction.

Furthermore, current employment in the Mining sector of the Nigerian economy in the period under review is significantly influenced by two-year lagged Gross Value Added in the Construction sector. The inter-temporal employment intensity of growth in the Mining sector with respect to Gross Value Added in the Construction sector is -0.447 and lagged by two years. In other words, a one per cent change in prior two years' Gross Value Added in the Construction sector is accompanied by a 0.447 per cent change, in the opposite direction, in employment in the current year in the Mining sector.

Employment in the Manufacturing sector is influenced significantly by the immediate past year's employment level in Agriculture. The coefficient of intensity is -11.133 and lagged by one year. This implies that a one per cent change in the immediate past year's employment in Agriculture is associated with 11.133 per cent change, in the opposite direction, in employment in the Manufacturing sector.

Employment in the Manufacturing sector is also influenced significantly by the immediate past year's employment in the Mining sector. Specifically, the employment intensity of growth in the Manufacturing sector with respect to employment in the Mining sector is 5.134 lagged by one year. This means that a one per cent change in the level of employment in the immediate past year in the Mining sector is accompanied by a 5.134 per cent change, in the same direction, in employment in the Manufacturing sector.

Furthermore, the current level of employment in the Manufacturing sector is significantly affected by the last two years' employment in that sector. The intertemporal employment intensity of growth in the Manufacturing sector is -3.044 with a lag of two year. This means that a one per cent change in the level of employment of the past two years in the Manufacturing sector results in a change in the current year employment level by 3.044 per cent, in the opposite direction, in the same (Manufacturing) sector.

Also, current employment level in the Manufacturing sector is influenced significantly by previous year's employment in the Construction sector of the Nigerian Economy. The employment intensity of growth in the Manufacturing sector with respect to employment in the Construction sector is -15.197 lagged by a year. By implication, a one per cent change in last year's employment in the Construction sector of the economy, during the period under review, is accompanied by a 15.197 per cent employment change, in the opposite direction, in the Manufacturing sector.

Furthermore, the current employment level in the Manufacturing sector is significantly influenced by the immediate past year's employment in Administration. The employment intensity of growth in the Manufacturing sector with respect to employment in the Administration sector of the economy is 5.259 lagged by one year. This means a one per cent change in the immediate past year's employment in the Administration sector is accompanied by a 5.259 per cent change, in the same direction, in employment in the Manufacturing sector of the Nigerian economy during the period under review.

Employment in the Administration sector of the Nigerian economy during the period under review is significantly and positively influenced by the level of employment of the past two years in the Agricultural sector of the economy. Specifically, the employment intensity of growth in the Administration sector with respect to employment in the Agricultural sector is 2.584, lagged by two years. This implies that a one per cent change in the level of employment in the Agricultural sector two prior years is associated with a 2.584 per cent change, in the same direction, in the current level of employment in the Administration sector.

The current level of employment in the Administration sector is also significantly influenced by the immediate past year's employment in the Manufacturing sector. The employment intensity of growth in the Administration sector with respect to prior year's employment in the Manufacturing sector is -1.194. This means that a one per cent change in the employment level of the immediate past year in the Manufacturing sector is accompanied by a 1.194 per cent change, in the opposite direction, in employment in the Administration sector of the economy.

Furthermore, the current level of employment in the Administration sector is significantly and positively influenced by one-year lagged level of Gross Value Added in Mining. The employment intensity of growth in the Administration sector with respect to one-year lagged level of Gross Value Added in the Mining sector is 0.423 and positive. This means, a one per cent change in the level of the immediate past year's Gross Value Added in Mining sector of the economy is accompanied a 0.423 per cent change, in the same direction, in employment in the Administration sector of the economy.

Also, employment in the Administration sector of the economy is significantly influenced by the level of Gross Value Added in the Construction sector, lagged by two years. The employment intensity of growth in the Administration sector with respect to Gross Value Added in the Construction sector is -0.396. This means that a one per cent change in the previous two years' Gross Value Added in Construction is accompanied by 0.396 per cent change, in the opposite direction, in the employment level of the Administration sector.

Conclusions

There has been sectoral transformation of the Nigerian economy from what it used to be in 1981 and before. This has been evident in the changes in sectoral productivity distribution, sectoral contribution to employment, and Gross Domestic Product (GDP). Government and policymakers are invited to enact appropriate policies to predict the direction of sectoral transformation and ensuring that the emerging new equilibrium structures of the economy result from efficient reallocation of resources and economic activities that will generate inclusive and sustainable growth, welfare, and environmental sustainability.

Recommendations

The observed transformation in the structure and workings of the Nigerian economy calls for polices that will ensure that the emerging equilibrium structure at any time is achieved through efficient reallocation of resources. Since efficiency does not come naturally, policies must be enacted, implemented, and supervised (monitored and redirected) to achieve optimal sectoral employment generation, sectoral optimal marginal and total factor productivity and general welfare, whilst exploiting the sectoral linkages and interdependencies optimally.

References

Adeniyi, A. (2019). Economic growth and employment nexus in Nigeria's agricultural and non-agricultural sectors (1981-2014). Unpublished PhD Thesis in the Department of Agricultural Economics.

Ajilore, T. & Yinusa, O. (2011). An Analysis of Employment Intensity of Sectoral Output Growth in Botswana. *Southern Africa Business Renew*, 15(2):26-42.

Autor, D., Dorn, D. & Hanson, G.H. (2016). The China Shock: Learning from Labor Market Adjustment to Large Changes in Trade. *Annual Review of Economics* 8: 205–240

Autor, D., Dorn, D. & Hanson, G.H. (2016). The China Syndrome: Local Labor Market Effects of Import Competition in the United States. *American Economic Review* 103: 2121–68.

Dauth, W., Findeisen, S. & Suedekum, J. (2017). Trade and Manufacturing Jobs in Germany. *American Economic Review*, *Papers & Proceedings* 107(5).

Dopke, J. (2001). The Employment Intensity of Growth in Europe. *Kieler Arbeitspapiere*. No. 1021. Available at: http://hdl.handle.net/10419/17746.

Financial Derivatives Company Limited (FDC)(2021). Nigeria Economic Outlook 2021

Herrendorf, B., Rogerson, R. & Valentinyi, A. (2013). Growth and Structural Transformation: Prepared for the Handbook of Economic Growth. (Arizona State University) and (Princeton University & NBER). February 17.

International Monetary Fund (IMF)(2021). Nigeria and the IMF - International Monetary Fund https://www.imf.org › Countries › NGA.

Islam, R. (2004). The Nexus of Economic Growth, Employment and Poverty Reduction: An empirical analysis. Recovery and Reconstruction Department. ILO, Geneva.

Jayasooriya, S.P. (2017). Growth Empirics: Structural Transformation and Sectoral Interdependencies of Sri Lanka. ADBI Working Paper 728. Tokyo: Asian Development Bank Institute. Available:https://www.adb.org/publications/growth-empirics-structural-transformation-sectoral-interdependencies-sri-lanka.

Kapsos, S. (2005). Employment intensity of growth: trends and macroeconomic determinants. Employment Strategy Paper 2005/12. Geneva, ILO.

Khan, A.R. (2001). Employment policies for poverty reduction. IEPDP No. 1. ILO, Geneva.

Kuznets, S. (1973). Modern Economic Growth: Findings and Reflections. *The American Economic Review,* 63(3) (Jun., 1973), pp. 247-258. American Economic Association. URL: http://www.jstor.org/stable/1914358.

Kwon, R. (2015). A New Kuznetsian Dynamic: The Knowledge Economy and Income Inequality in the United States, 1917–2008. Available at: https://doi.org/10.1111/tsq.12106.

Mkhize, N. (2015). The Sectoral Employment Intensity of Growth in South Africa: 2000:01 – 2012:04. School of Economic Sciences, University of South Africa. P.O. Box 392, Pretoria, 0003. South Africa.

National Bureau of Statistics (NBS) (2014). The Comparability of GDP Growth Rates Pre- and Post-Rebasing. Available at: nigeriansta.gov.ng.

National Bureau of Statistics (NBS)(2015a). Nigerian Gross Domestic Product Report, Quarter Two. Issue 6.

National Bureau of Statistics (NBS)(2015b). Unemployment / Under-employment Watch.

National Bureau of Statistics (NBS) (2016). Post GDP Rebasing Revision 1981 – 2010. July 18.

National Bureau of Statistics (NBS) (2019). Consumer Price Index February, 2019. March.

Nigerian Economic Summit Group (NESG) (2021). 2021 NESG Economic outlook.

Obadan, M. I. & Odusola, A.F. (2018). Productivity and Unemployment in Nigeria. National Centre for Economic Management and Administration (NCEMA), Ibadan. **Article** *in* SSRN Electronic Journal · January 2018 DOI: 10.2139/ssrn.3101771.

PriceWaterCoopers (2015). Economic and Fiscal Implications of Nigeria's Rebased GDP. Available at pwc.com.

Rodrik, D. (2016). Premature Deindustrialization. *Journal of Economic Growth* 21(1): 1–33.

World Bank (2020). Nigeria in Times of COVID-19: Laying Foundations for a Strong Recovery World Bank Nigeria Development Update (NDU).

Appendices:

Pattern of sectoral contribution to employment in Nigeria between 1981 and 2014

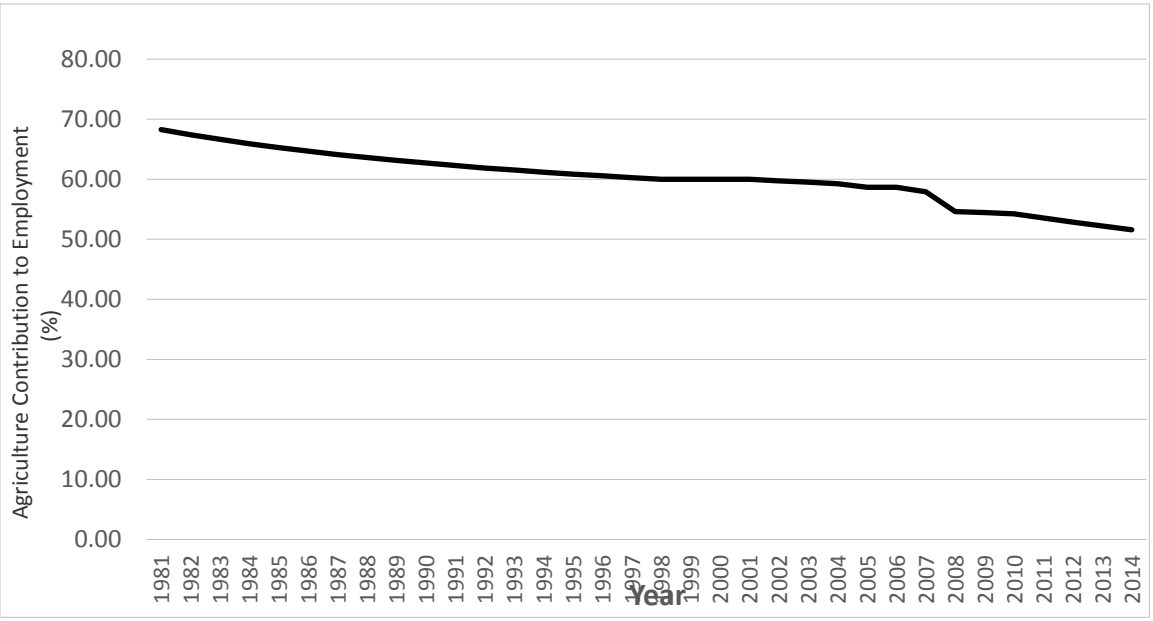

Figure 1: Agriculture's Contribution to Aggregate Employment (%) in Nigeria [1981-2014].

Source: Analysis of data collected at National Bureau of Statistics (NBS)

.

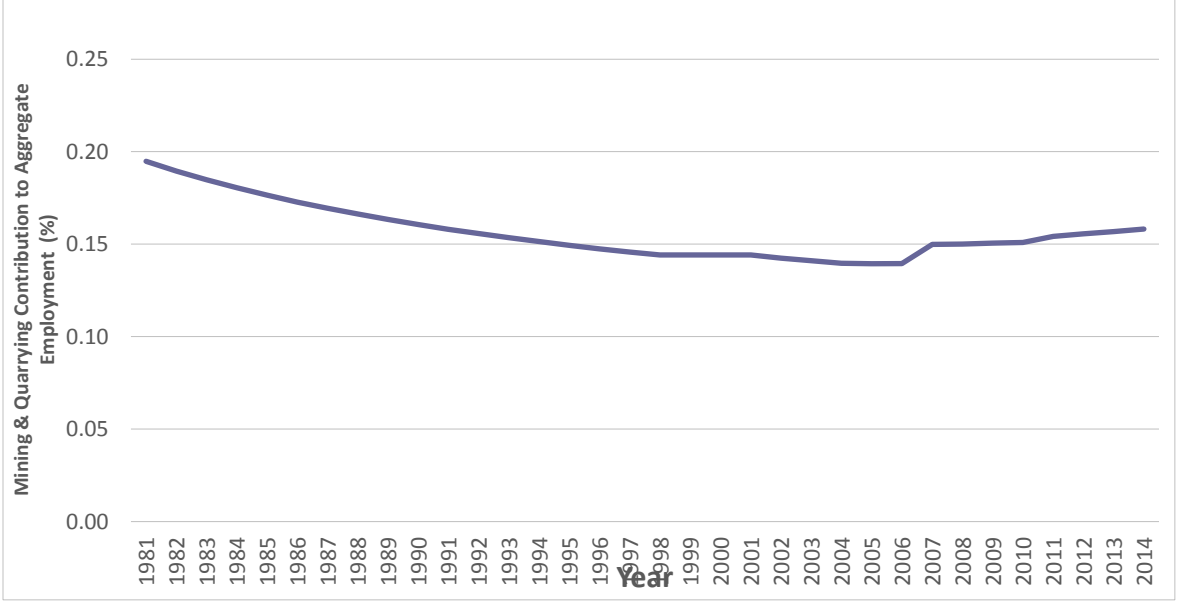

Figure 2: Mining & Quarrying Sector's Contribution to Aggregate Employment (%) in Nigeria [1981-2014].

Source: Analysis of data collected at National Bureau of Statistics (NBS).

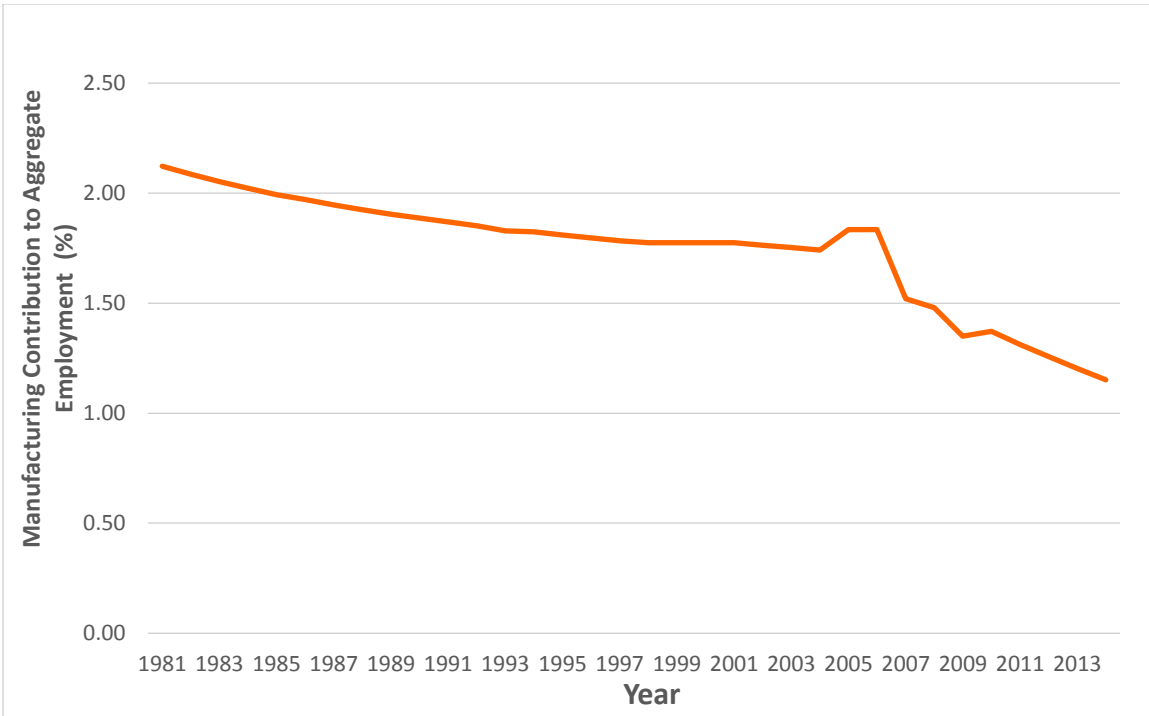

Figure 3: Manufacturing's Contribution to Aggregate Employment (%) in Nigeria [1981-2014].

Source: Analysis of data collected at National Bureau of Statistics (NBS)

.

Figure 4: Construction's Contribution to Aggregate Employment (%) in Nigeria [1981-2014].

Source: Analysis of data collected at National Bureau of Statistics (NBS).

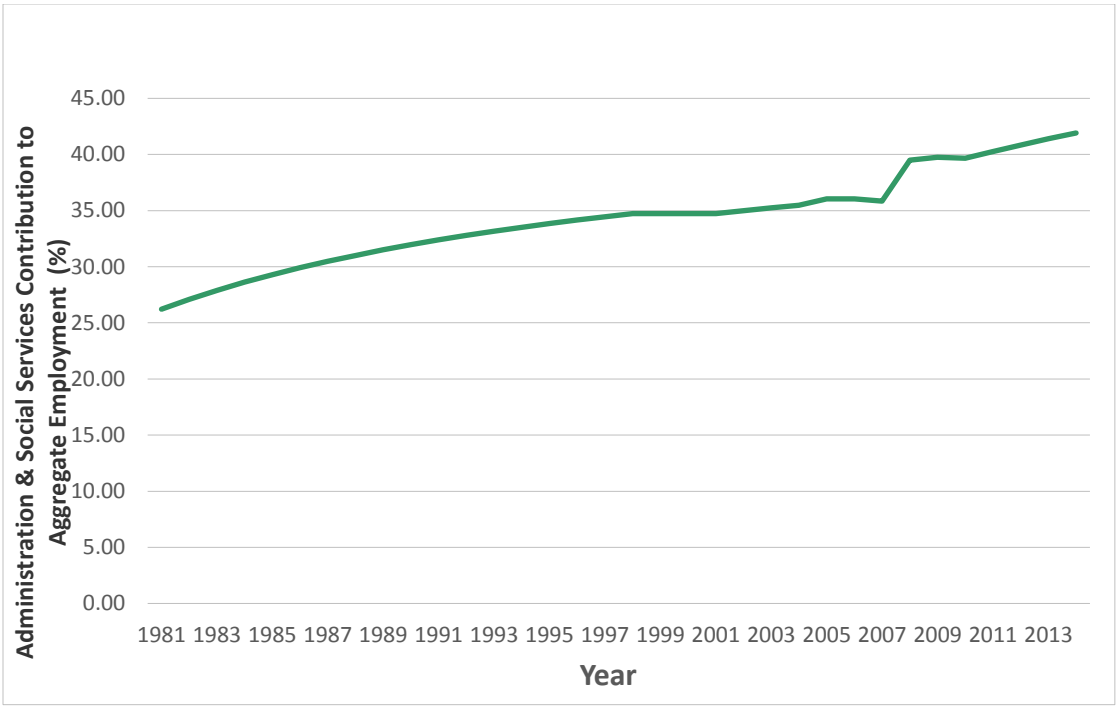

Figure 5: Administration & Social Services' Contribution to Aggregate Employment (%) in Nigeria [1981-2014].

Source: Analysis of data collected at National Bureau of Statistics (NBS).

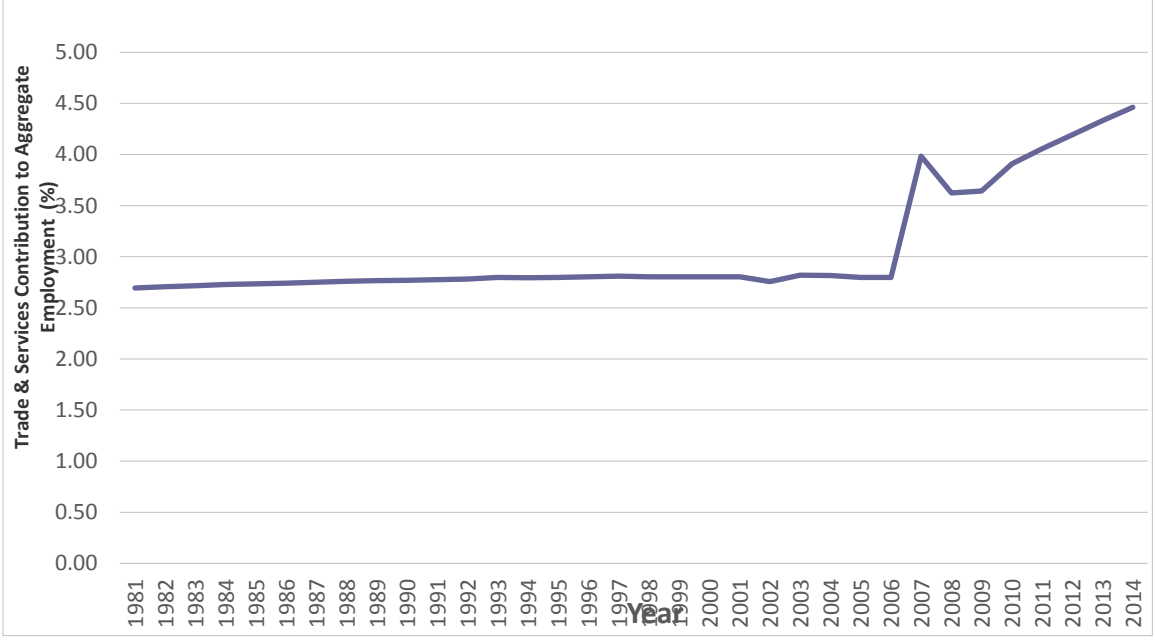

Figure 6: Trade & Services' Contribution to Aggregate Employment (%) in Nigeria [1981-2014].

Source: Analysis of data collected at National Bureau of Statistics (NBS).

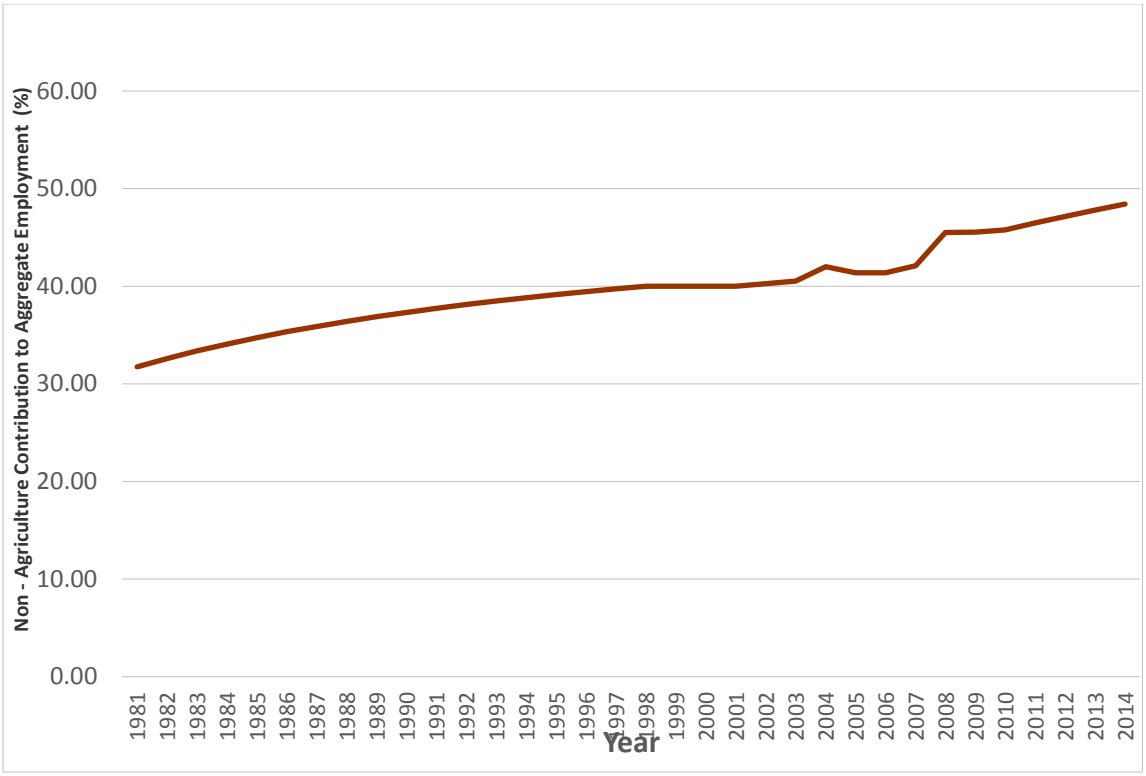

Figure 7: Non - Agriculture's Contribution to Aggregate Employment (%) in Nigeria [1981-2014].

Source: Analysis of data collected at National Bureau of Statistics (NBS).

Pattern of sectoral contribution to GDP in Nigeria between 1981 and 2014

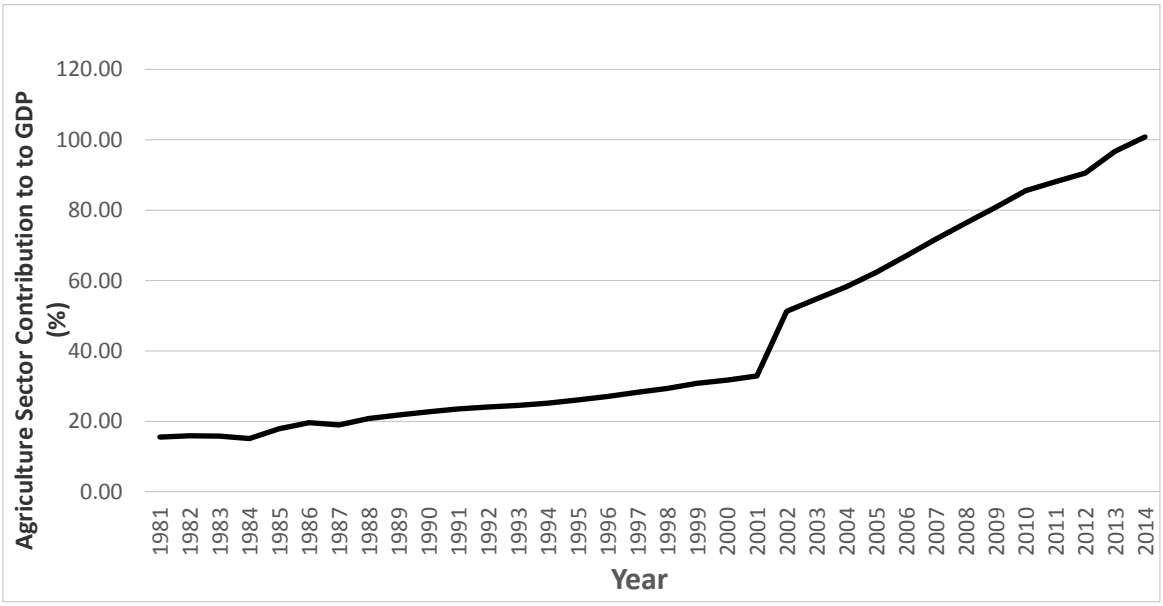

Figure 9: Agriculture Sector's Contribution to GDP (%) in Nigeria [1981-2014].

Source: Analysis of data collected at National Bureau of Statistics (NBS).

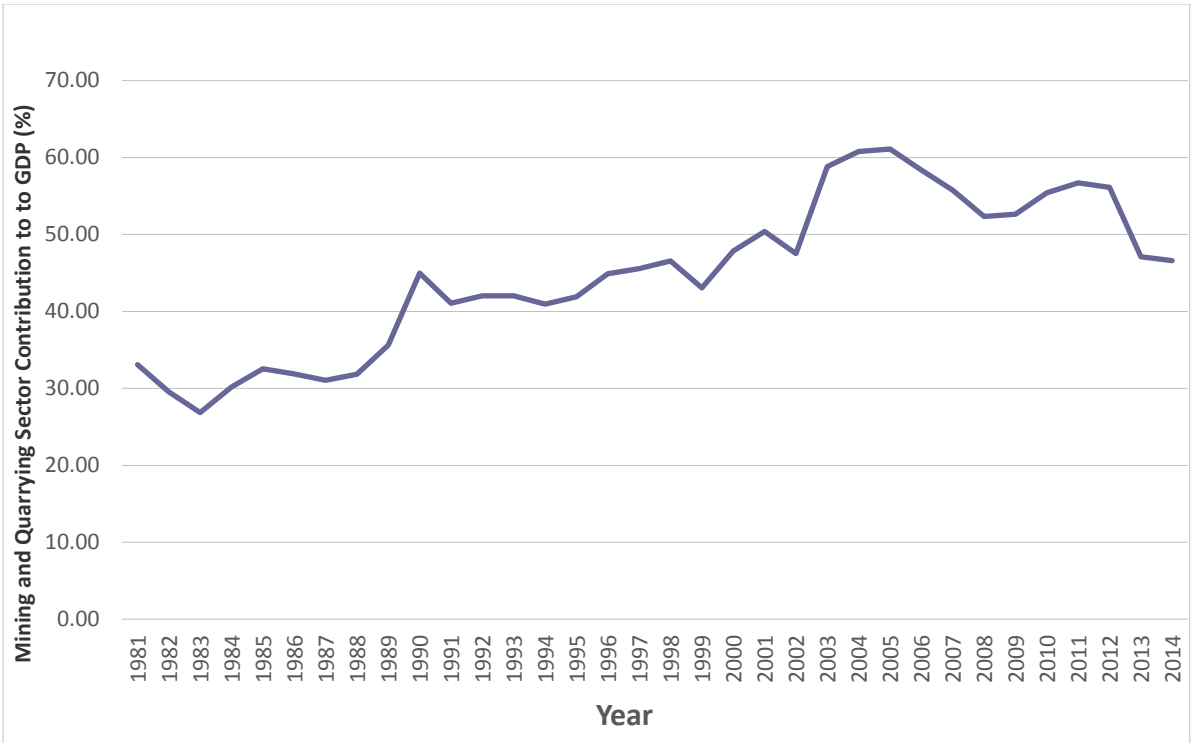

Figure 10: Mining and Quarrying Sector's Contribution to GDP (%) in Nigeria [1981-2014].

Source: Analysis of data collected at National Bureau of Statistics (NBS).

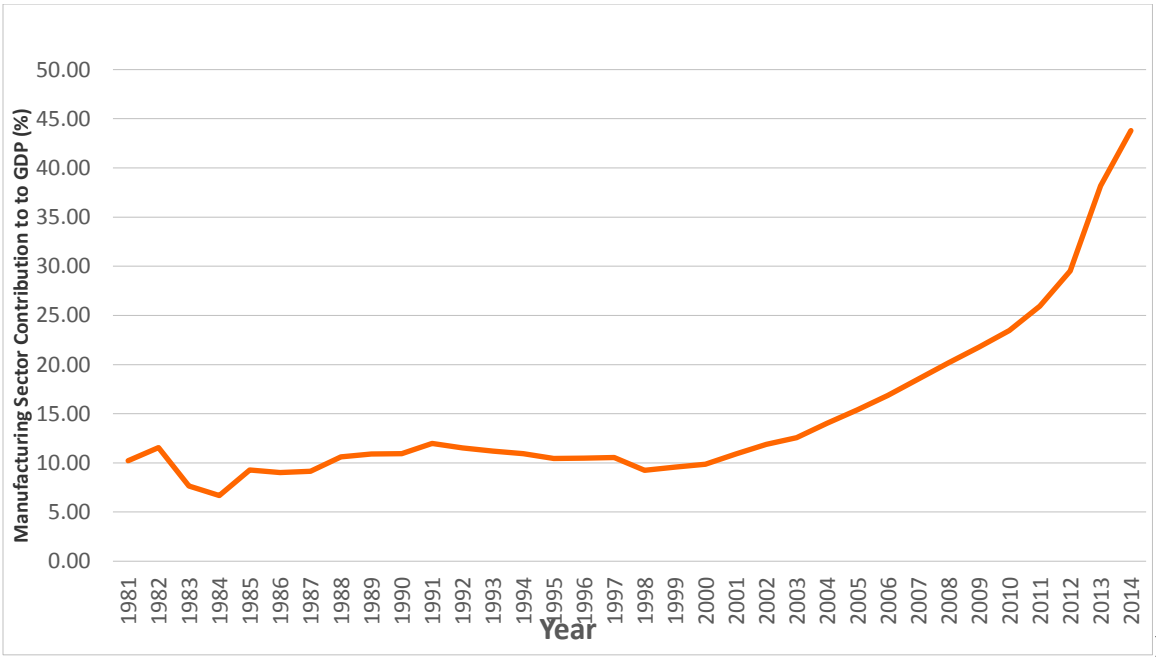

Figure 11: Manufacturing Sector's Contribution to GDP (%) in Nigeria [1981-2014].

Source: Analysis of data collected at National Bureau of Statistics (NBS).

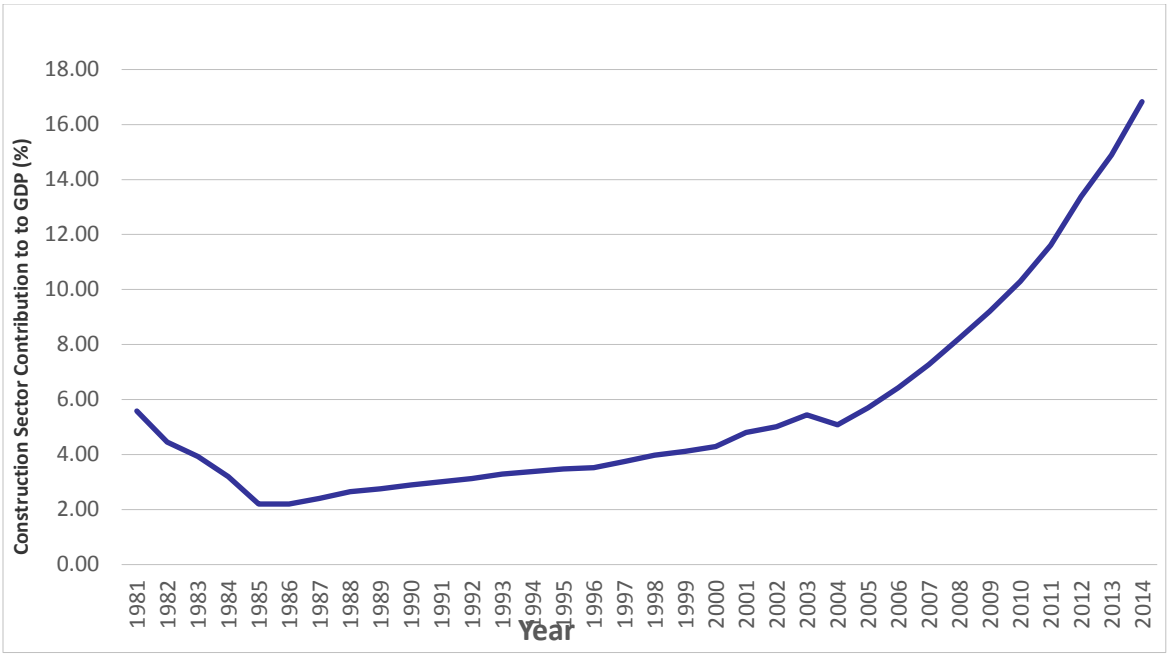

Figure !2: Construction Sector's Contribution to GDP (%) in Nigeria [1981-2014].

Source: Analysis of data collected at National Bureau of Statistics (NBS).

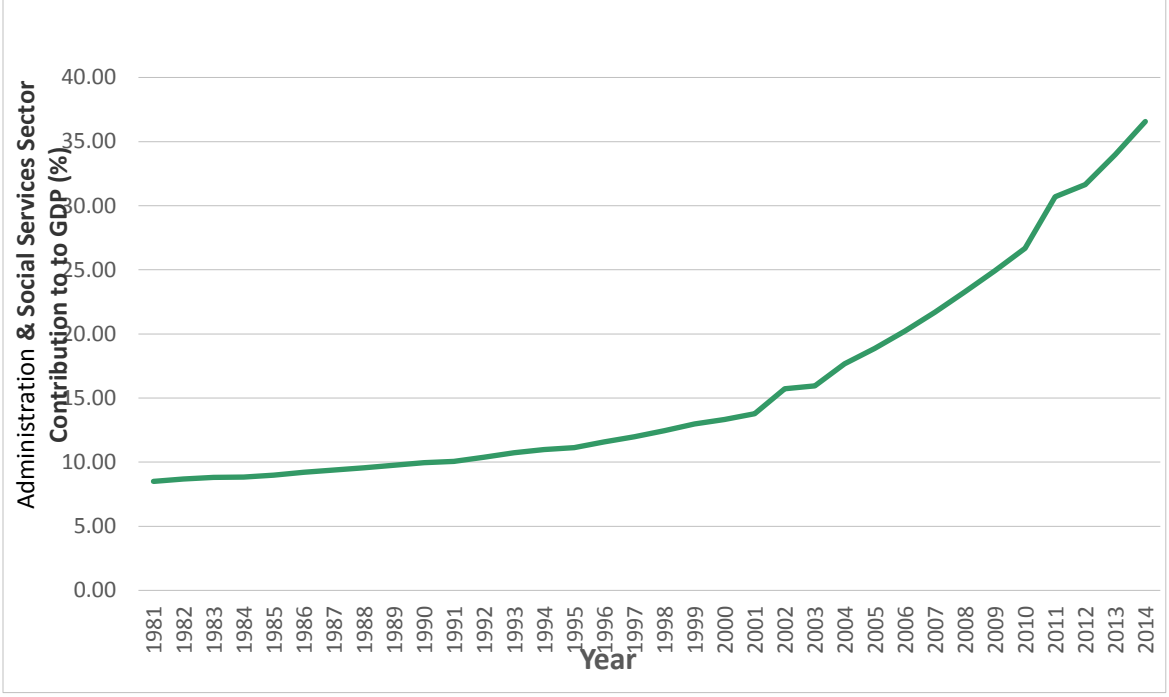

Figure 13: Administration & Social Services' Sector Contribution to GDP (%) in Nigeria [1981-2014].

Source: Analysis of data collected at National Bureau of Statistics (NBS).

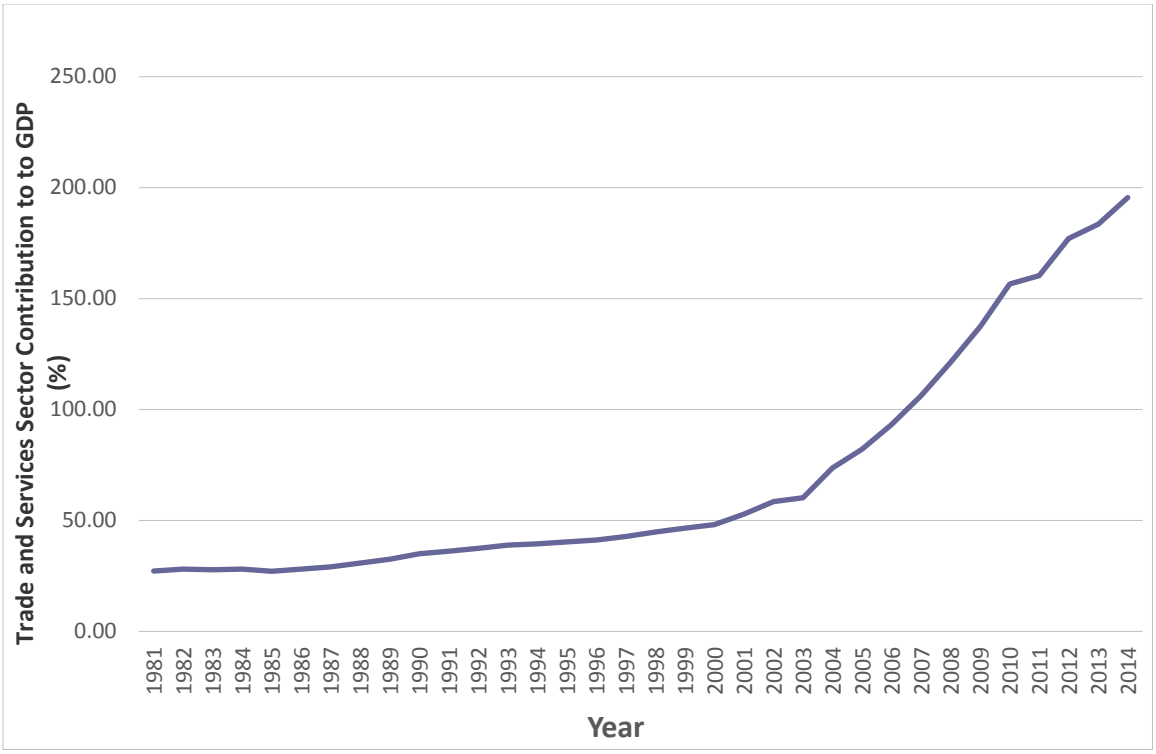

Figure 14: Trade and Services Sector Contribution to GDP (%) in Nigeria [1981-2014].

Source: Analysis of data collected at National Bureau of Statistics (NBS).

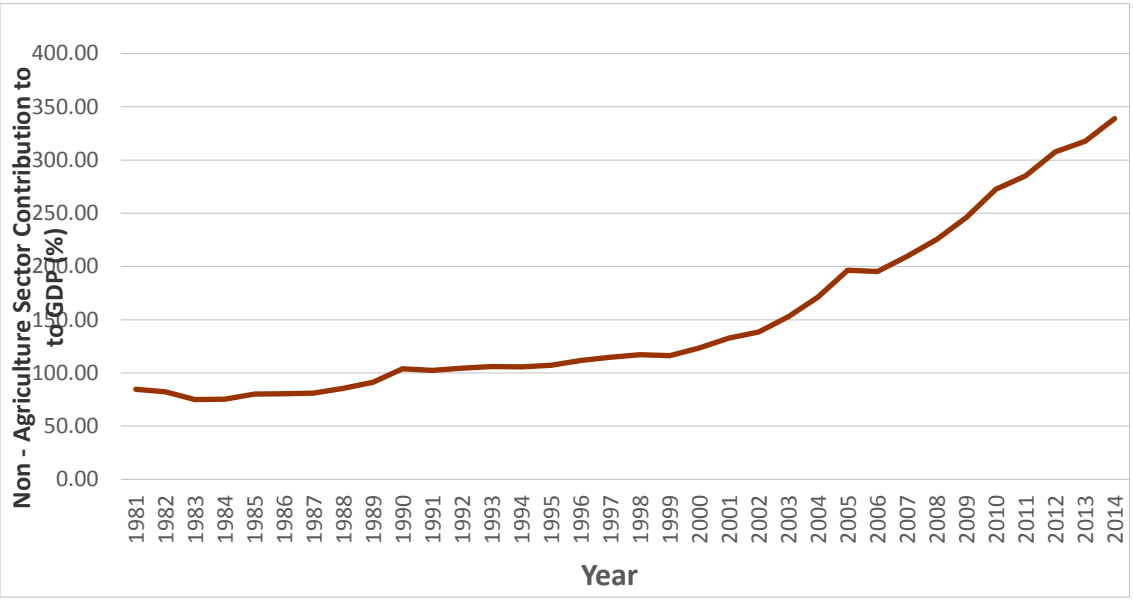

Figure 15: Non - Agriculture Sectors Contribution to GDP (%) in Nigeria [1981-2014].

Source: Analysis of data collected at National Bureau of Statistics (NBS).

Pattern of the marginal productivity of labour in Nigeria between 1981 and 2014

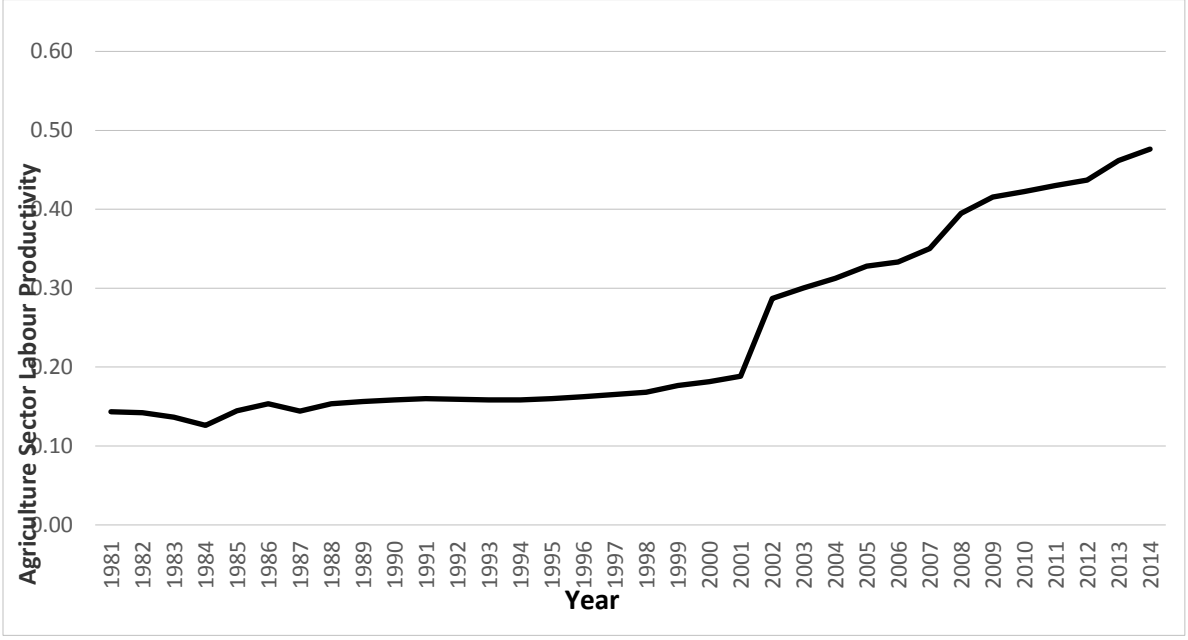

Figure 17: Agriculture Sector's Labour Productivity in Nigeria [1981-2014].
Source: Analysis of data collected at National Bureau of Statistics (NBS).

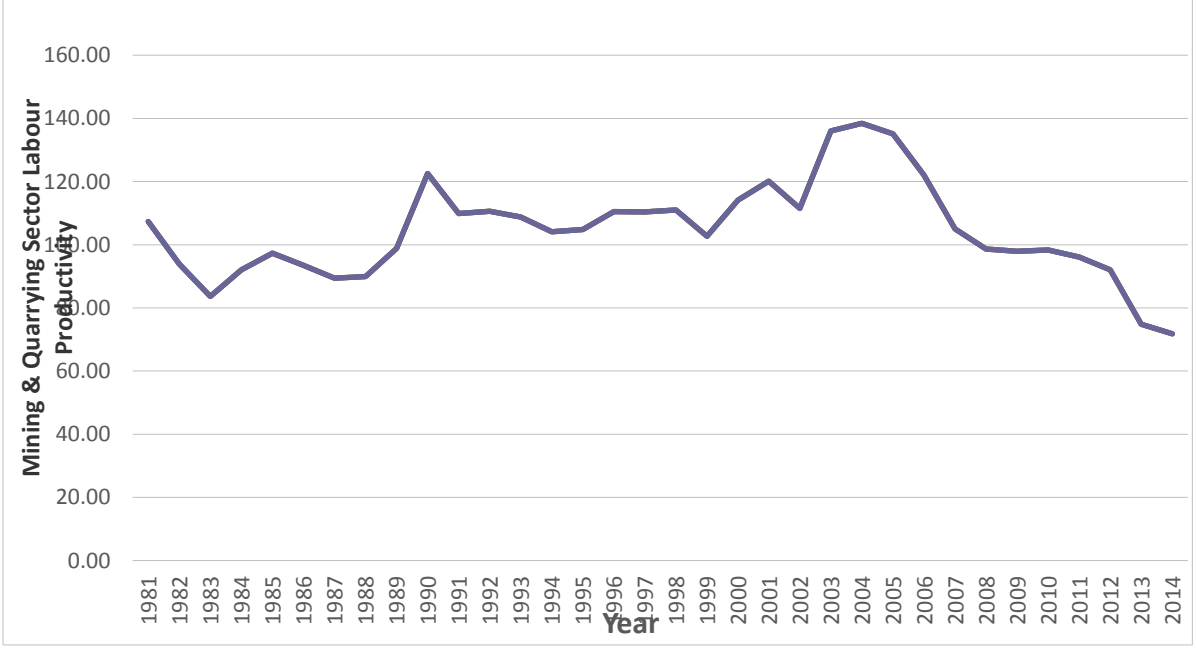

Figure 18: Mining & Quarrying Sector's Labour Productivity in Nigeria [1981-2014].
Source: Analysis of data collected at National Bureau of Statistics (NBS).

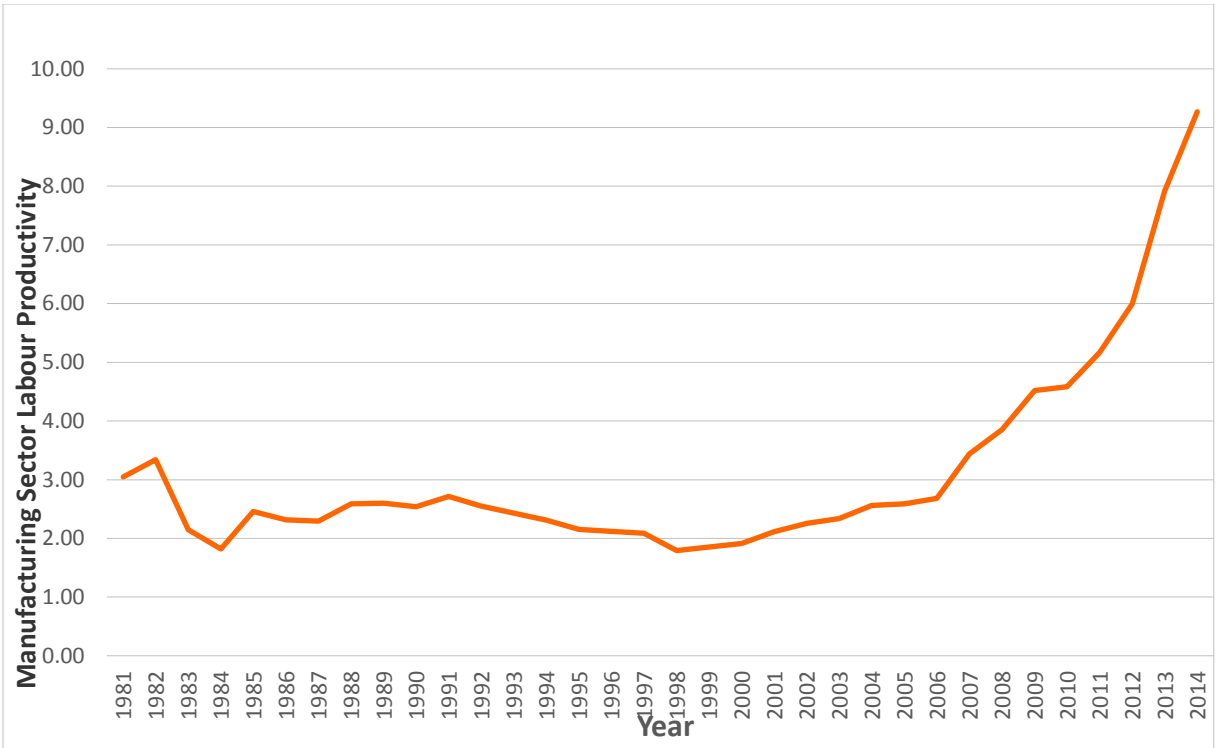

Figure 19: Manufacturing Sector's Labour Productivity in Nigeria [1981-2014].

Source: Analysis of data collected at National Bureau of Statistics (NBS).

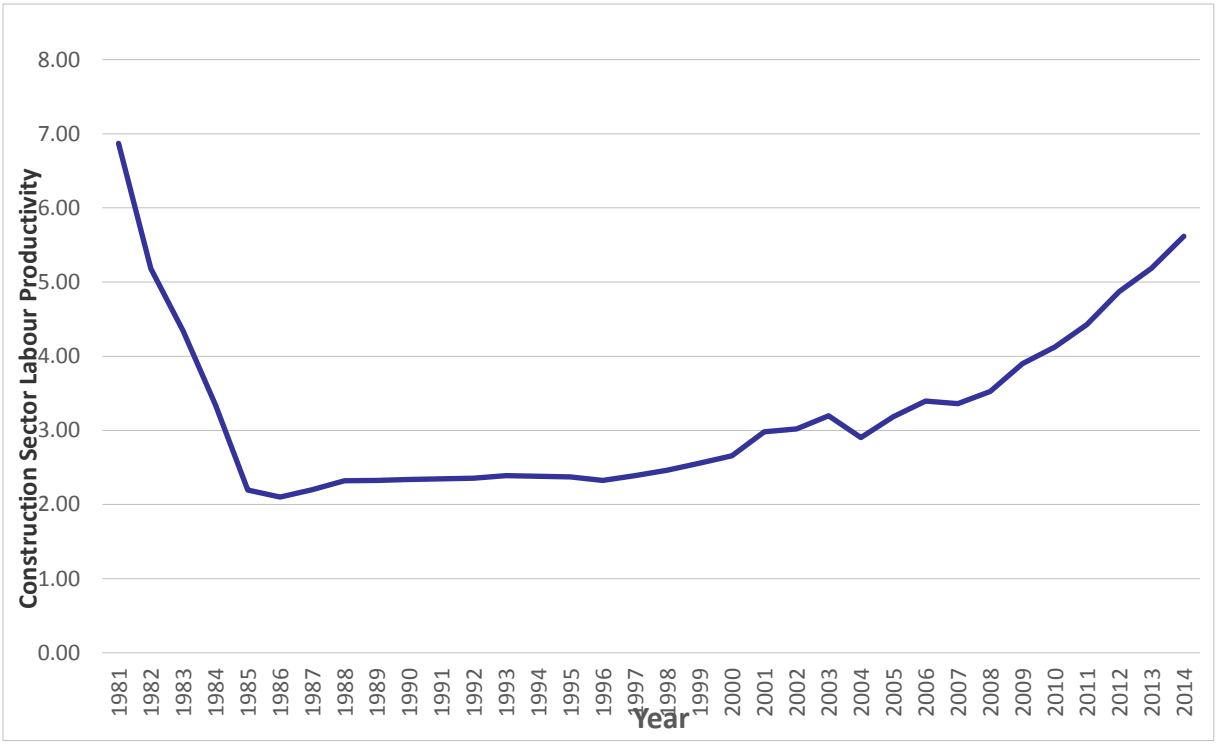

Figure 20: Construction Sector's Labour Productivity in Nigeria [1981-2014].

Source: Analysis of data collected at National Bureau of Statistics (NBS).

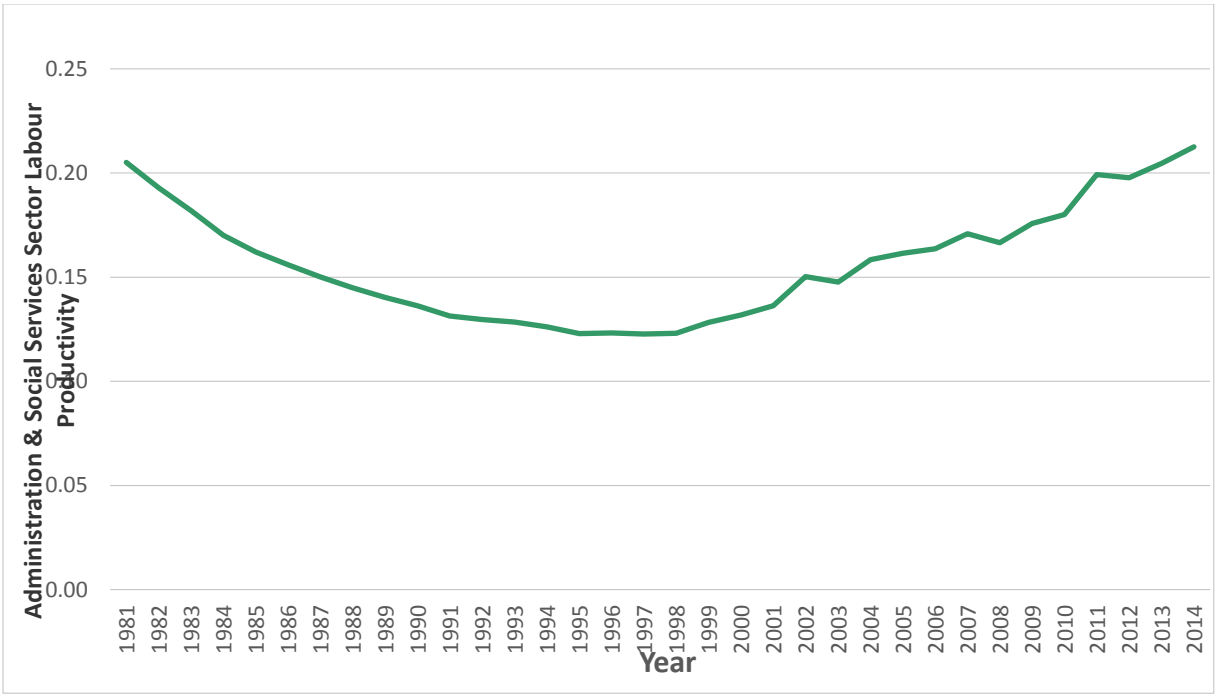

Figure 21: Administration & Social Services' Sector Labour Productivity in Nigeria [1981-2014].

Source: Analysis of data collected at National Bureau of Statistics (NBS).

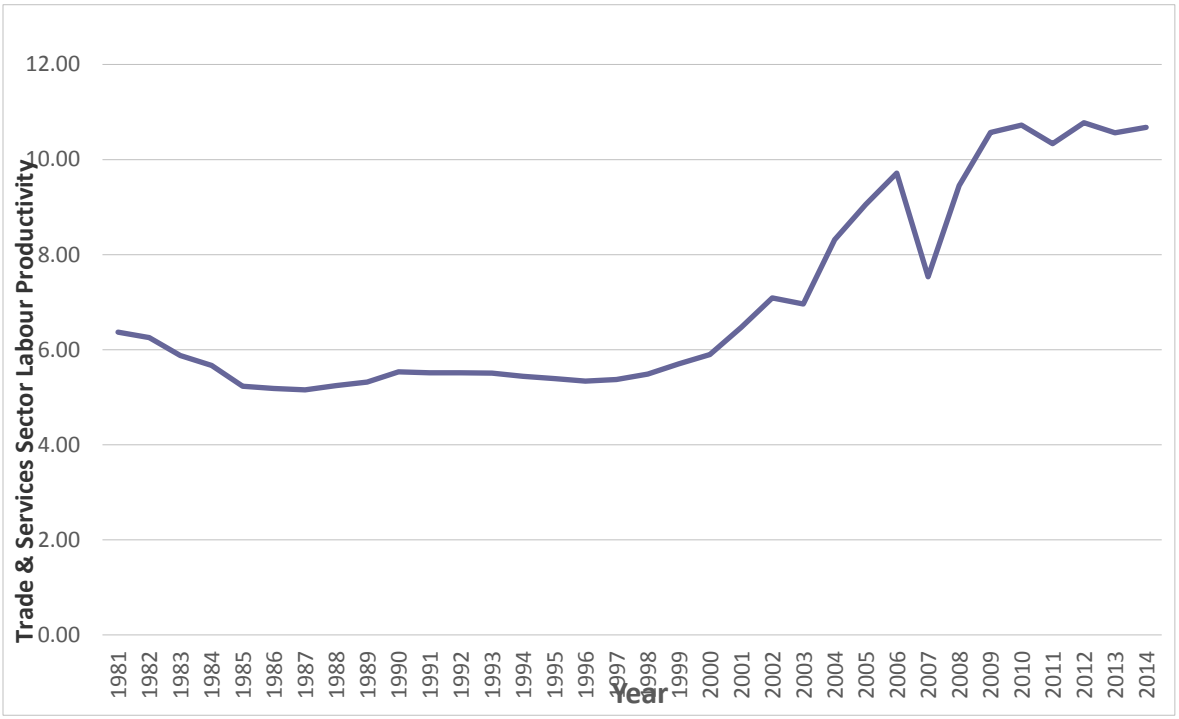

Figure 22: Trade and Services' Sector Labour Productivity in Nigeria [1981-2014].

Source: Analysis of data collected at National Bureau of Statistics (NBS).

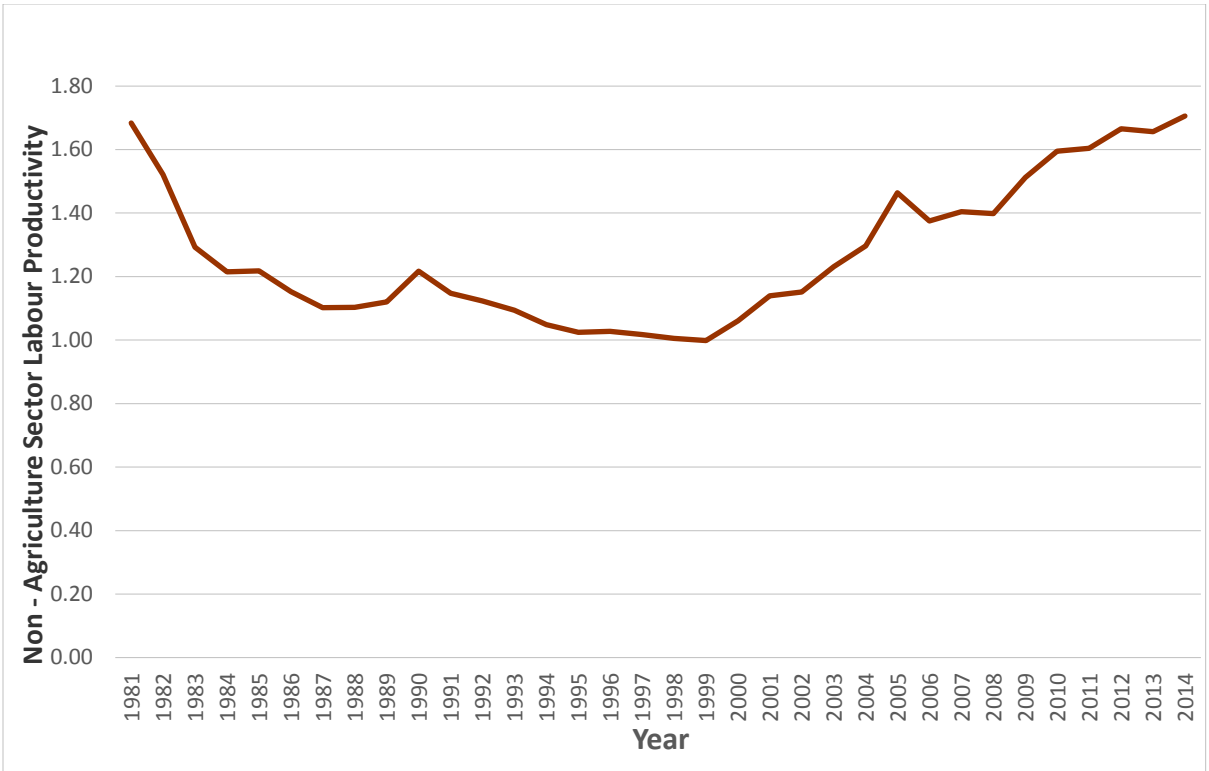

Figure 23: Non - Agriculture Sectors' Labour Productivity in Nigeria [1981-2014].

Source: Analysis of data collected at National Bureau of Statistics (NBS).

Tables 3: Employment in Agriculture Sector

	Scenario 1	**Scenario2**	**Scenario3**	**Scenario4**	**Scenario5**	**Scenario6**
	Coef. (z)	Coef.(z)	Coef.(z)	Coef.(z)	Coef.(z)	Coef.(z)
Ce1	2.45(1.34)	0.128(2.99)***	-3.135(-0.79)	-1.252(-3.34)***		-0.0611(-0.39)
Ce2	-2.07(-2.13) **	-0.114(-2.62)***	3.328(1.11)	-0.986(-3.72)***		0.009(0.33)
Ce3	-.497(-0.65)	0.275(2.95)***	-0.416(-1.26)	2.133(3.56)***		0.141(0.43)
Ce4		-0.119(-3.08)***				
Employment Agriculture(-1)	0.11(0.08)	-0.705(-2.26)**	-2.678(-1.24)			
Employment Agriculture(-2)	-1.94(-2.08)**	0.156(0.36)	-0.497(-0.49)			-0.171(-0.3)
Employment Mining(-1)		-0.449(-1.22)				-0.29(-0.73)
Employment Mining(-2)		-0.309(-0.74)				-0.038(-0.06)
Employment Manufacturing (-1)		-0.112(-0.67)				-0.734(-1.33)
Employment Manufacturing (-2)		-0.354(-1.97)**				-0.006(-0.02)
Employment Construction(-1)		0.081(0.17)				-0.012(-0.03)
Employment Construction(-2)		-0.649(-1.54)				-0.122(-0.16)
Employment Admin(-1)		-0.027(-0.07)				0.074 (0.12)
Employment Admin(-2)		0.913(2.30)**				-0.06(-0.56)
Employment Trade						0.051(0.62)
Employment Non-agric(-1)	-0.25(-0.35)					
Employment Non-agric(-2)	1.15(2.23)**					
GVA Agriculture(-1)	-0.13(-2.10)**	-0.0653(-1.98)**				
GVA Agriculture(-2)	0.018(0.34)	0.0356(0.96)		1.18(3.75)***		-0.06(-0.56)
GVA Mining(-1)		0.115(1.98)**	1.219(1.23)	0.561(2.29)**		0.051(0.62)
GVA Mining(-2)		0.126(3.54)***	0.843(0.90)	-0.184(-0.51)		0.014(0.17)
GVA Manufacturing (-1)		-0.022(-0.6)	0.089(0.09)	-0.205(-0.8)		0.107(1.26)

GVA Manufacturing (-2)		-0.069(-1.91)*	-0.332(-0.55)	-0.252(-0.56)	-0.0005(-0.01)
GVA Construction(-1)		-0.003(-0.10)	-2.303(-0.94)	-0.538(-2.82)***	-0.003(0.09)
GVA Construction(-2)		-0.14(-2.80)***	-1.589(-0.90)	0.757(3.77)***	-0.016(-0.18)
GVA Admin (-1)		0.64(3.83)***	0.974(0.92)	0.506(2.33)**	-0.023(-0.46)
GVA Admin (-2)		0.48(4.31)***	1.492(1.34)	-1.405(-2.61) ***	0.177(0.54)
GVA Trade				-2.669(-4.23) ***	0.259(0.9)
GVA Non-agric(-1)	0.085(0.70)				
GVA Non-agric(-2)	0.39(2.59)**				
GDP					
Inflation Rate(-1)	-0.002(-0.34)		-0.008(-0.72)		
Inflation Rate(-2)	0.008(1.21)		-0.001(-0.18)		
WAPLR(Weighted Average Prime Lending Rate)(-1)	-0.03(-1.56)		-0.052(-1.25)	-0.008(-0.42)	-0.0008(-0.11)
WAPLR(Weighted Average Prime Lending Rate)(-2)	-0.011(-0.67)		-0.037(-1.22)	-0.0002(-0.01)	0.006(0.83)
Minimum wage (-1)	-0.023(-2.10)**		-0.007(0.98)	0.556(3.47)***	
Minimum wage (-2)	-0.009(-1.06)		-0.001(-0.11)	0.147(1.51)	
Constant	0.04(2.68)***	0.002(-0.13)	0.009(0.44)	-0.062(-1.38)	

Source: Author's Analysis of Data collected from the National Bureau of Statistics

Tables 4: Employment in Mining and Quarrying Sector

	Scenario1	Scenario2	Scenario3	Scenario4	Scenario5	Scenario6
	Coef.(z)	Coef.(z)	Coef.(z)	Coef.(z)	Coef.(z)	Coef.(z)
Ce1		0.037(0.52)	-1.911(-0.7)	0.081(0.21)		-0.138(-1.02)
Ce2		0.038(0.48)	-1.395(-0.67)	1.096(3.99)***		0.03(1.31)
Ce3		-0.114(-1.57)	0.413(1.81)*	-1.624(-2.62)***		0.173(0.61)
Ce4		0.056(0.36)				
Ce5		-0.065(-1.00)				
Employment Agriculture(-1)		0.433(0.83)	1.969(1.31)			-0.013(-0.03)
Employment Agriculture(-2)		0.824(1.15)	0.812(1.15)			-0.563(0.1)
Employment Mining(-1)		0.096(0.16)	-0.603(-0.88)			0.159(0.27)
Employment Mining(-2)		1.391(2)**	-0.267(-0.41)			0.305(0.64)
Employment Manufacturing (-1)		0.428(1.53)	-1.07(-1.59)			0.475(1.49)
Employment Manufacturing (-2)		0.268(0.89)	-0.206(-0.50)			-0.321(-0.8)
Employment Construction(-1)		0.198(0.25)	-1.606(-0.94)			0.62(0.93)
Employment Construction(-2)		-0.750(-1.07)	-0.01(-0.01)			-0.392(-0.75)
Employment Admin(-1)		0.155(0.23)	0.708(0.96)			-0.579(-1.02)
Employment Admin(-2)		1.272(1.91)*	0.151(0.2)			0.743(1.37)
Employment Trade						
Employment Non-agric(-1)						
Employment Non-agric(-2)						
GVA Agriculture(-1)		0.022(0.41)		-0.891(-2.73)***		0.039(0.43)
GVA Agriculture(-2)		-0.104(-1.69)*		-0.285(-1.12)		0.05(0.71)
GVA Mining(-1)		0.009(0.09)*		-0.069(-0.18)		-0.154(-2.2)**
GVA Mining(-2)		-0.043(-0.73)		0.206(0.77)		-0.064(-0.88)
GVA Manufacturing (-1)		-0.062(-1.04)		1.241(2.67)***		0.064(1.79)
GVA Manufacturing (-2)		-0.076(-1.26)		0.566(2.87)***		0.029(0.96)
GVA Construction(-1)		0.068(1.49)		-0.166(-0.8)		0.042(0.55)

GVA Construction (-2)	-0.102(-1.2)		-0.447(-1.99)**	0.079(1.8)
GVA Admin (-1)	-0.292(-1.04)		0.909(1.63)	0.152(0.54)
GVA Admin (-2)	-0.234(-1.27)		0.571(0.87)	-0.025(-0.1)
GVA Trade				
GVA Non-agric (-1)				
GVA Non-agric (-2)				
GDP (-1)				
GDP (-2)				
Inflation Rate(-1)		-0.004(-0.51)	0.0002(0.01)	-0.007(-1.22)
Inflation Rate(-2)		-0.002(-0.46)	0.007(0.36)	-0.008(-1.36)
WAPLR(Weighted Average Prime Lending Rate)(-1)		-0.018(-0.65)	-0.468(-2.82)***	
WAPLR(Weighted Average Prime Lending Rate)(-2)		-0.002(-0.11)	-0.166(-1.65)	
Minimum wage (-1)		-0.009(-1.79)*	0.07(1.49)	
Minimum wage (-2)		-0.006(-0.99)	-0.021(-0.60)	
Constant	0.012(0.53)	-0.016(-1.21)	-0.01(-0.21)	-0.011(-0.98)

Source: Author's Analysis of Data collected from the National Bureau of Statistics

Table 5: Employment in Manufacturing Sector

	Scenario 1	Scenario2	Scenario3	Scenario4	Scenario 5	Scenario6
	Coef.(z)	Coef.(z)	Coef.(z)	Coef.(z)	Coef.(z)	Coef.(z)
Ce1		0.306(0.83)	-2.626(-0.12)**	0.834(1.75)		-0.101(-0.27)
Ce2		0.329(0.8)	20.739(2.45)**	0.067(0.2)		-0.03(-0.46)
Ce3		-0.185(-0.49)	-2.233(-2.40)**	-1.127(-`.49)		0.44(0.55)
Ce4		0.609(0.75)				
Ce5		-0.199(-0.59)				
Employment Agriculture(-1)		0.74(0.27)	-11.133(-1.82)*			2.361(1.71)
Employment Agriculture(-2)		3.17(0.85)	0.300(0.10)			1.594(1.66)
Employment Mining(-1)		-3.370(-1.06)	5.134(1.83)*			0.453(0.28)
Employment Mining(-2)		-2.999(-0.83)	2.441(0.92)			-4.498(-3.37)***

Employment Manufacturing (-1)	-2.331(-1.61)	-3.337(-1.22)		-2.521(-2.83)***
Employment Manufacturing (-2)	-1.436(-0.92)	-3.044(-1.79)*		-0.4(-0.36)
Employment Construction(-1)	-1.181(-0.29)	-15.197(-2.20)**		-2.914(-1.56)
Employment Construction(-2)	-1.003(-0.28)	-7.667(-1.54)		1.983(1.36)
Employment Admin(-1)	0.136(0.04)	5.259(1.76)*		3.304(2.08)**
Employment Admin(-2)	1.243(0.36)	5.378(1.71)*		-2.390(-1.58)
Employment Trade				
Employment Non-agric(-1)				
Employment Non-agric(-2)				
GVA Agriculture(-1)	-0.151(-0.53)		0.249(0.62)	-0.501(-1.94)*
GVA Agriculture(-2)	-0.275(-0.86)		-0.252(-0.81)	0.011(0.06)
GVA Mining(-1)	0.549(1.09)		1.352(2.94)***	0.228(1.16)
GVA Mining(-2)	0.317(1.03)		0.712(2.18)**	0.446(2.17)**
GVA Manufacturing (-1)	-0.109(-0.35)		-1.197(-2.11)**	-0.110(-1.1)
GVA Manufacturing (-2)	-0.090(-0.29)		-1.036(-4.28)***	-0.014(-0.17)
GVA Construction(-1)	0.010(0.04)		0.334(1.31)	-0.3 (-1.38)
GVA Construction (-2)	-0.379(-0.86)		-0.241(-0.88)	-0.061(-0.5)
GVA Admin (-1)	1.107(0.76)		-0.723(-1.06)	1.01 (1.28)
GVA Admin (-2)	1.039(1.09)		0.605(0.76)	1.473(2.11)
GVA Trade				
GVA Non-agric(-1)				
GVA Non-agric (-2)				
GDP (-1)				
GDP (-2)				
Inflation Rate(-1)		-0.060(-1.90)*	0.053(2.14)**	0.00634(0.36)
Inflation Rate(-2)		-0.002(-0.12)	0.029(1.11)	0.032(1.81)
WAPLR(Weighted Average Prime Lending Rate)(-1)		-0.270(-2.32)**	0.099(0.5)	

WAPLR(Weighted Average Prime Lending Rate)(-2)		-0.184(-2.13)**	-0.063(-0.52)		
Minimum wage (-1)		-0.007(-0.36)	-0.149(-2.6)***		
Minimum wage (-2)		0.0002(0.01)	-0.08(-1.84)		
Constant	-0.050(-0.41)	-0.043(-0.78)	0.096(1.62)		0.004(0.14)

Source: Author's Analysis of Data collected from the National Bureau of Statistics

Table 6: Employment in Construction Sector

	Scenario1	Scenario2	Scenario3	Scenario4	Scenario5	Scenario6
	Coef.(z)	Coef.(z)	Coef.(z)	Coef.(z)	Coef.(z)	Coef.(z)
Ce1		0.079(0.74)	2.136(0.79)	0.790(2.94)***		-0.208(-1.26)
Ce2		0.108(0.92)	-2.761(-1.34)	-0.104(-0.55)		0.04(1.4)
Ce3		-0.153(-1.41)	0.372(1.67)	-0.194(-0.45)		0.308(0.89)
Ce4		0.234(1.01)				
Ce5		-0.160(-1.65)				
Employment Agriculture(-1)		0.483(0.62)	1.473(0.99)			0.163(0.27)
Employment Agriculture(-2)		0.784(0.73)	-0.058(-0.08)			-0.620(-1.49)
Employment Mining(-1)		0.874(0.95)	-0.188(-0.28)			0.866(1.22)
Employment Mining(-2)		2.049(1.98)**	-0.610(-0.95)			0.898(1.55)
Employment Manufacturing (-1)		0.054(0.13)	0.273(0.41)			0.155(0.4)
Employment Manufacturing (-2)		-0.09(-0.22)	0.561(1.36)			-0.42(-0.86)
Employment Construction(-1)		-0.197(-0.17)	1.682(1)			0.225(0.28)
Employment Construction(-2)		-1.280(-1.22)	0.959(0.79)			-0.734(-1.15)
Employment Admin(-1)		0.119(0.12)	-0.192(-0.26)			-0.422(-0.61)
Employment Admin(-2)		1.767(1.78)	-0.374(-0.49)			0.976(1.01)
Employment Trade						
Employment Non-agric(-1)						
Employment Non-agric(-2)						
GVA Agriculture(-1)		0.099(1.21)		-0.188(-0.83)		0.125(1.12)
GVA Agriculture(-2)		-0.018(-0.19)		-0.29(-1.65)		0.087(1.01)

GVA Mining(-1)	0.053(0.37)		0.095(0.37)	-0.096(-1.13)
GVA Mining(-2)	-0.028(-0.32)		0.051(0.28)	-0.05(-0.56)
GVA Manufacturing (-1)	-0.057(-0.64)		-0.227(-0.71)	0.037(0.86)
GVA Manufacturing (-2)	-0.106(-1.19)		0.203(1.49)	0.006(0.16)
GVA Construction(-1)	0.079(1.16)		-0.137(-0.96)	0.058(0.61)
GVA Construction (-2)	-0.153(-1.21)		-0.007(-0.05)	0.059(1.1)
GVA Admin (-1)	0.021(0.05)		1.153(2.99)***	0.081(0.24)
GVA Admin (-2)	-0.095(-0.35)		0.814(1.80)	-0.066(-0.22)
GVA Trade				
GVA Non-agric(-1)				
GVA Non-agric (-2)				
GDP (-1)				
GDP (-2)				
Inflation Rate(-1)		0.006(-0.78)	0.006(0.49)	-0.008(-1.03)
Inflation Rate(-2)		0.002(0.59)	-0.009(-0.62)	-0.009(-1.19)
WAPLR(Weighted Average Prime Lending Rate)(-1)		0.022(0.79)	0.055(0.48)	
WAPLR(Weighted Average Prime Lending Rate)(-2)		0.02(0.97)	0.069(0.99)	
Minimum wage (-1)		-0.015(-2.98)***	-0.029(-0.92)	
Minimum wage (-2)		-0.0007(-0.11)	-0.010(-0.43)	
Constant	0.031(0.89)	0.009(0.73)	-0.025(-0.75)	-0.007(-0.53)

Source: Author's Analysis of Data collected from the National Bureau of Statistics

Table 7: Employment in Administration and Social Services Sector

	Scenario1	Scenario2	Scenario3	Scenario4	Scenario5	Scenario6
	Coef.(z)	Coef.(z)	Coef.(z)	Coef.(z)	Coef.(z)	Coef.(z)
Ce1		0.308(2.08)**	-6.349(-1.31)	-0.302(-1.04)		-0.241(-0.98)
Ce2		0.359(2.18)**	5.077(1.38)	-0.21(-1.02)		0.039(0.93)
Ce3		-0.304(-2.02)**	-0.425(-1.05)	0.465(1)		0.401(0.78)
Ce4		0.702(2.17)**				
Ce5		-0.332(-2.46)**				
Employment Agriculture(-1)		0.344(0.32)	-3.294(-1.24)			1.236(1.39)
Employment Agriculture(-2)		2.584(1.73)*	-0.221(-0.18)			0.841(1.36)
Employment Mining(-1)		-1.045(-0.82)	0.887(0.73)			0.757(0.72)

Employment Mining(-2)	0.444(0.31)	-0.343(-0.3)		-0.349(-0.41)
Employment Manufacturing (-1)	-1.194(-2.05)**	-0.6(-0.5)		-1.195(-2.08)**
Employment Manufacturing (-2)	-1.112(-0.76)	-0.292(-0.40)		-0.86(-1.19)
Employment Construction(-1)	0.027(0.02)	-2.3(-0.77)		-1.177(-0.98)
Employment Construction(-2)	-1.112(-0.76)	-0.874(-0.40)		-0.484(-0.51)
Employment Admin(-1)	-0.796(-0.57)	0.573(0.44)		0.790(0.77)
Employment Admin(-2)	1.742(1.26)	0.694(0.51)		0.44(0.45)
Employment Trade				
Employment Non-agric(-1)				
Employment Non-agric(-2)				
GVA Agriculture(-1)	-0.007(-0.07)		0.101(0.42)	0.014(0.09)
GVA Agriculture(-2)	-0.098(-0.77)		0.249(1.31)	0.072(0.56)
GVA Mining(-1)	0.423(2.09)**		-0.076(-0.27)	-0.046(-0.37)
GVA Mining(-2)	0.216(1.75)		-0.162(-0.81)	0.091(0.69)
GVA Manufacturing (-1)	-0.133(-1.07)		0.028(0.8)	0.011(0.18)
GVA Manufacturing (-2)	-0.190(-1.52)		-0.034(-0.23)	0.039(0.71)
GVA Construction(-1)	0.077(0.81)		0.09 (0.58)	-0.023(-0.17)
GVA Construction (-2)	-0.396(-2.24)**		0.227(1.35)	0.046(0.58)
GVA Admin (-1)	0.695(1.19)		-0.112(-0.27)	0.194(0.38)
GVA Admin (-2)	0.496(1.29)		-0.594(-1.21)	0.285(0.63)
GVA Trade				
GVA Non-agric(-1)				
GVA Non-agric (-2)				
GDP (-1)				
GDP (-2)				
Inflation Rate(-1)		-0.02(-1.47)	-0.004(-0.32)	-0.009(-0.87)
Inflation Rate(-2)		-0.005(-0.67)	-0.011(-0.71)	0.0005(0.05)
WAPLR(Weighted Average Prime Lending Rate)(-1)		-0.047(-0.94)	0.086(0.69)	
WAPLR(Weighted Average Prime Lending Rate)(-2)		-0.024(-0.65)	0.031(0.42)	
Minimum wage (-1)		-0.025(-2.77)***	-0.023(-0.67)	
Minimum wage (-2)		-0.005(-0.45)	0.015(0.59)	
Constant	-0.027(-0.57)	0.013(0.57)	0.089(2.46)**	0.001(0.06)

Source: Author's Analysis of Data collected from the National Bureau of Statistics