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Understanding the relationship between growth and employment in Nigeria

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Abstract: This study examines the relationship between growth and employment in Nigeria to gain insights into the country's paradox of high economic growth alongside rising poverty and inequality. The methodology adopted is the Shapley decomposition approach, complemented with econometric estimation of the country's employment intensity of growth.

The findings indicate that Nigeria's growth over the last decade has been 'jobless' and sustained largely by factor reallocations rather than productivity enhancement. Labour reallocations have been mainly from agriculture and manufacturing towards the low productive services sector. Employment elasticity of growth was positive and quite low, reflecting the country's poor overall employment generation record, especially in manufacturing.

Keywords: Employment, growth, poverty, employment elasticity, growth decomposition, Nigeria
JEL classification: E24, J21, O47, P52

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1   Introduction

Nigeria has maintained remarkable growth over the last decade, recording an average growth rate of 6.8 per cent from a large economic base and the potential for further growth is reasonably high. Real gross domestic product (GDP) growth was estimated at 6.23 per cent in 2014 compared to 5.49 per cent in 2013. The rebasing of its GDP in April 2014 by the National Bureau of Statistics to better reflect the size and structure of the economy, saw it surge past South Africa to become Africa's largest economy with a rebased GDP estimate of USD454 billion in 2012 and USD510 billion in 2013. The rebased GDP, using updated prices and improved methodology, also reveals a more diversified economy than previously thought. The Nigerian economy now appears to be more diversified, with rising contributions of previously undocumented services (including the entertainment industry) to GDP. In addition, as a result of banking sector reforms, especially the bank consolidation exercise of 2004, an increasing number of private Nigerian banks are present in many African countries.

However, given the country's high population, per capita GDP was only USD2,980 in 2013, ranking 131st in the world compared to South Africa which had a per capita GDP of USD6,886 at 88th, according to the World Development Indicators (World Bank 2015). The rebasing also indicated that the Nigerian economy is transforming from an agrarian economy to a tertiary service economy, without going through the intermediate stage of industrialization. This atypical transition, the so-called 'tertiarization' that has so far failed to deliver quality jobs poses challenges for the sustainability and inclusiveness of economic growth in Nigeria.

Nor has recent growth translated into significant social and human development contrary to the postulates in the development literature that associate faster economic growth with poverty reduction. The 2010 Nigeria Poverty Profile Report by the Nigeria National Bureau of Statistics (NBS 2010a) estimated the poverty incidence at 69 per cent in 2010, up from 54.4 per cent in 2004, using the Harmonized National Living Standard Survey (HNLSS) of 2009/10. The country's performance is at odds with the general international trend of poverty reduction, in particular in other countries experiencing rapid economic growth (Ajakaiye et al. 2014).

Nigeria's socioeconomic indicators are also poor. The level of unemployment increased from 23.9 per cent in 2011 to 25 per cent in 2014, while the country's human development index (HDI) value increased by only 8.1 per cent in the last decade from 0.466 in 2005 to 0.504 in 2013, positioning the country at 152 out of 187 countries. Albeit marginal, Nigeria has made some progress in other development indicators. According to the UNDP (2014) HDI, which takes into account life expectancy and literacy as well as per capita GDP, life expectancy at birth increased by 6.9 years between 1980 and 2013, mean years of schooling increased by 0.2 years, and expected years of schooling increased by 2.3 years. Gross national income per capita also increased by about 25.7 per cent between 1980 and 2013.

The country remains highly dependent on the oil sector as this sector accounts for about 70 per cent of government revenues and 85 per cent of exports. While oil revenues have helped support the country during times of boom, the oil sector also presents a major challenge during periods of burst. For example, crude oil prices lost over 50 per cent in the last quarter of 2014 and traded close to $50pb at the end of the year. Consequently, the IMF, in its Article IV Consultation, had downgraded Nigeria's growth forecast from 5 per cent for 2015 to 4.8 per cent.

The country's vulnerabilities rose in the build up to general elections in 2015 and fiscal buffers reduced substantially. As a result of rising uncertainties prior to the elections, the Nigerian economy suffered some setbacks against the backdrop of weakening macroeconomic variables

and massive outflows of foreign portfolio investments. In a bid to shore up the Naira value and preserve the external reserves, the Central Bank (CBN) devalued the Naira in November 2014 by 8.4 per cent (SeeNews 2015). However with sustained pressure on the foreign exchange, the CBN shut down the official window in February 2015 implying another tactical devaluation of the Naira. This move led to relative stability in the currency market as the CBN intervened to meet excess demand through special interventions. Given continued efforts of the CBN to support the Naira in the face of declining oil prices, Nigeria's external reserves plummeted to USD30.3 billion as at 17 March 2015—barely enough to cover six months of imports—a threshold which posed a major threat to Nigeria's balance of payments transactions.

Perceived neglect and economic marginalization have also fuelled resentment in the predominantly Muslim North. The militant Islamist group, Boko Haram, has grown increasingly active and deadly in its attacks against state and civilian targets, including the April 2014 abduction of 276 schoolgirls from Chibok which attracted extensive international attention.

Meanwhile, Nigeria's democratic process was further consolidated with the relatively peaceful outcome of the general elections held in May 2015 which ushered in a new regime. For the first time in the country's history, power was successfully transferred from a ruling government to the opposition. Elected officials both at the federal and state level are already confronted with a perfect storm in the area of the economy as a result of dwindling revenues. The challenges for the new administration include the diversification of the economy, blockage of fiscal leakages, prioritization of government expenditures to boost investment in critical infrastructure, and job creation. While intuition suggests that employment growth and poverty reduction are closely linked, there has been little research in this area in Nigeria apart from Treichel (2010). This paper therefore tries to fill this gap by studying the experience of Nigeria, where average annual economic growth has reached 6.8 per cent in the last decade, but unemployment has been rising persistently. In line with the orientation of the project, the Nigerian case study intends to deepen our understanding of the character of Nigeria's non-inclusive growth experience and identify the potential limits and constraints to inclusive growth experience and the likely domestic and external economic growth opportunities available for Nigeria in the medium- to long-term, and explore how these can be exploited.

2   Background

2.1   Stylized facts of labour markets, education, and growth in Nigeria

Nigeria has continued to witness significant growth above the continental average in the last one and a half decades. Table 1 shows that Nigeria's GDP grew from 3.1 per cent in the 1990s to more than an average of 5 per cent beginning in 2000, largely driven by the value addition from the service sector. The major service subsectors include retail and wholesale, real estate, information, and communication (Barungi et al. 2015).

Table 1: Growth and share of different sectors in Nigerian GDP growth, 5-year averages (1990–2014)

|	1990–94	1995–99	2000–04	2005–09	2010–14
Agriculture value added (% of GDP)	25.4	27.5	29.2	25.1	21.9
Industry value added (% of GDP)	24.8	22.4	22.3	21.2	25.5
Services value added (% of GDP)	49.8	50.1	48.4	53.7	52.6
Growth in GDP (%)	3.1	2.1	6.5	6.3	5.7

Source: Authors' computation from underlying data obtained from World Development Indicators, 2015 (World Bank 2015).

The evidence in Table 1 suggests that the process of structural transformation has commenced in Nigeria, but the country is also making the atypical transformation from agriculture to services and this is not unique to Nigeria. Industry, particularly manufacturing, has transformed in several ways especially with the dominance of global supply chains. As Rodrik (2014) recently established, manufacturing has become much more capital- and skills-intensive, with diminished potential to absorb large amounts of labour released from low-productivity agriculture. Not surprisingly, several developing countries in Latin America and Sub-Saharan Africa are witnessing what Rodrik (2015) described as premature de-industrialization as the bulk of excess labour is currently absorbed in non-tradable services operating at very low levels of productivity in activities such as retail trade and housework. This has sparked the debate on whether a services-led model can deliver rapid growth and good jobs in Africa, the way that manufacturing once did. Ghani and O'Connell (2014), using historical data, established that services can indeed be a growth escalator while sceptics like Rodrik (2014) and Kormawa and Jerome (2015) posit that services can hardly deliver rapid growth and good jobs especially in developing countries since the majority are still operating at low margins and low levels of productivity.

Structure of Nigeria's employment

In Nigeria, the total labour force is made up of persons aged 15–64 years excluding students, home-keepers, retired persons, stay-at-home parents, and persons unable to work or not interested in work (Kale and Doguwa 2015), while the unemployment rate is the proportion of the labour force who were available for work but did not work for at least 39 hours in the week preceding the survey period. The labour market and employment situation as presented in Figure 1 reveals that there was an average increase of 2.8 per cent in the population growth between 2010 and 2014. Nigeria's population rose from 138.6 million in 2005 to 159.7 million in 2010 and 178.5 million in 2014. In the same vein, the labour force, made up of the total number of employed and unemployed persons, increased by 2.9 per cent on average, from 65.2 million in 2010 to 72.9 million in 2014. However, the total labour force in full remunerative employment increased at an average of 2 per cent over the period compared to 6.1 per cent and 16.48 per cent for the underemployed and unemployed population respectively.

Figure 1: Trend in population and labour market situation (in millions), 2005–14
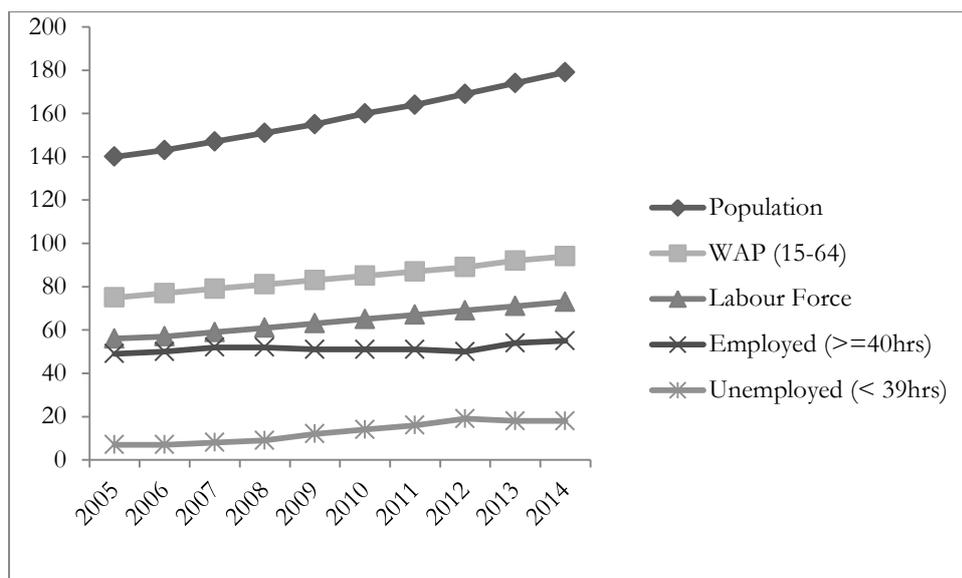
Figure 2 presents the data on employed persons in Nigeria by sector from 1970 to 2014. Agriculture has continued to provide most of the jobs for the country's labour force albeit that this is declining. In 2014, it accounted for 45 per cent of all jobs, down from 51 per cent in 2000. The services sector is the second largest job-providing sector rising from 24 per cent in 2000 to 44 per cent in 2014, while the share of the manufacturing sector fell from 11 per cent in 2000 to 6 per cent in 2014. While the service sector is the fastest growing sector, the fall in employment in manufacturing industries explicates significant levels of de-industrialization. Its composition fell from 12.3 per cent in 1970 to 9.3 per cent in 2005 and 6 per cent in 2014. The industrial sector, especially manufacturing, is in a deplorable situation. Its contribution to GDP has been declining since the structural adjustment era and it is currently in the abysmally low single digits. The decline in industrial capacity, especially in heavy industry, has had serious impacts on Nigeria's long-term economic growth and poverty reduction. Despite the high economic growth witnessed in the last one and a half decades, the country has not yet been able to transform into an innovation-based high-skill (knowledge) economy. Hence, its trade composition and pattern are based on primary production, with very little role played in the global value chain.

Figure 2: Trends of employment by economic activity (shares), 1970–2014
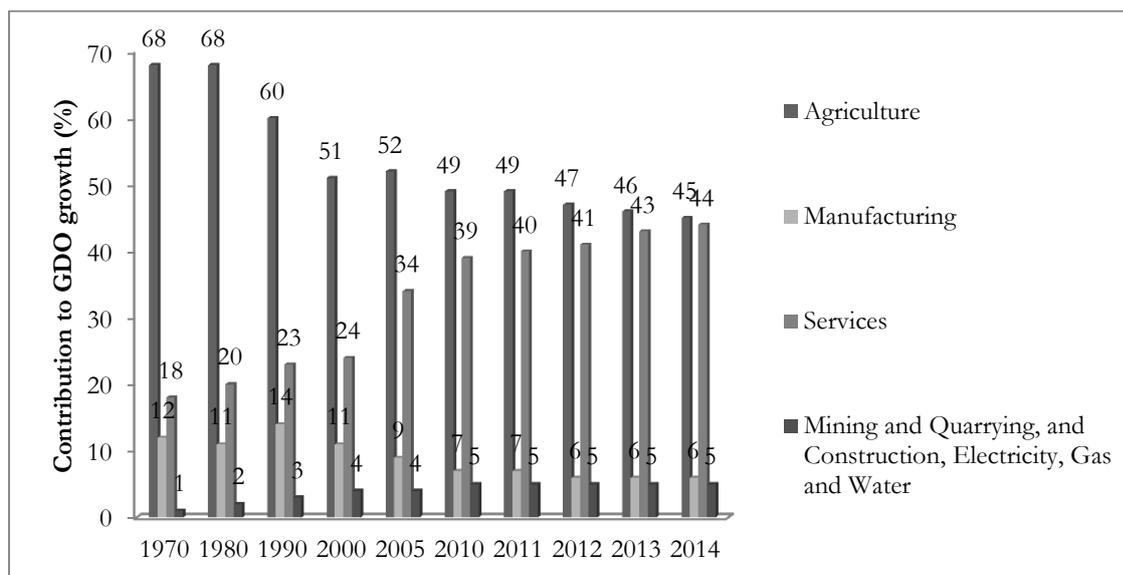
Source: Authors' computation from underlying data obtained from NISER (2015).

Profile of unemployment in Nigeria

The unemployment rate across Nigeria has been very high since the beginning of this century. The indicator which measures the proportion of active population that is without and actively seeking work increased to 25.1 per cent in 2014 from 24.7 per cent in 2013 as shown in Figure 3. Since 2000, the rate of unemployment has grown at a compound annual average of 4.8 per cent, even as it has continued to fluctuate and intensify.

Figure 3: Unemployment rate in Nigeria, 1967–2014
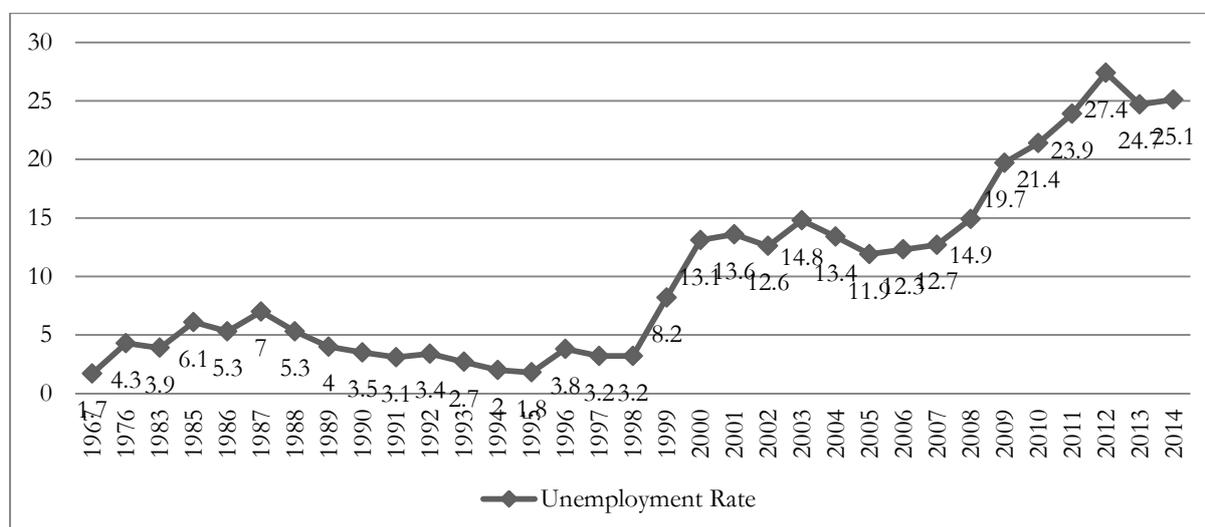
Source: Authors' computation from underlying data obtained from NBS (2014).

Rising rural unemployment is also evolving sectorally, as opportunities are shifting away from agriculture, despite the high prevalence of subsistence farming. Stagnating production and low productivity in the sector, where more than half of the rural population work, and the high growth witnessed in the services sector, are key reasons for the large variations across urban and rural labour groups. The unemployment rate is much higher in the northern part of the country where two-thirds of the population engage in subsistence agriculture, and relatively lower in the

southern part where more than half of the population engage in self-employed wage work (World Bank 2015).

Data from the NBS also shows that there is a higher incidence of unemployment for women than men; and in recent times, their access to quality job opportunities declined even further—while the number of unemployed males has hovered around 7–8 million in the past 5 years, the number of the unemployed female population increased from 6.7 million in 2010 to over 10 million in 2014 (NBS 2015b).

Youth unemployment on the other hand is intensifying. Large concentrations of youth, both trained and untrained, educated and uneducated, are idle and without any hope of securing a decent job. Youth unemployment was recorded as 45.8 per cent in 2014. As can be seen from Figure 4, unemployment is generally high regardless of level of education. For example, as at 2014, unemployment rates among persons who never attended school, and those with secondary and post-secondary education hover around 25 per cent while the unemployment rate among persons with primary education or below is somewhat lower at 15.1 per cent and 17.1 per cent respectively. Among those who have secondary and post-secondary education, skills gaps and job search barriers are major barriers to gainful employment

Figure 4: Unemployment rate (%) by educational group, 2010–14
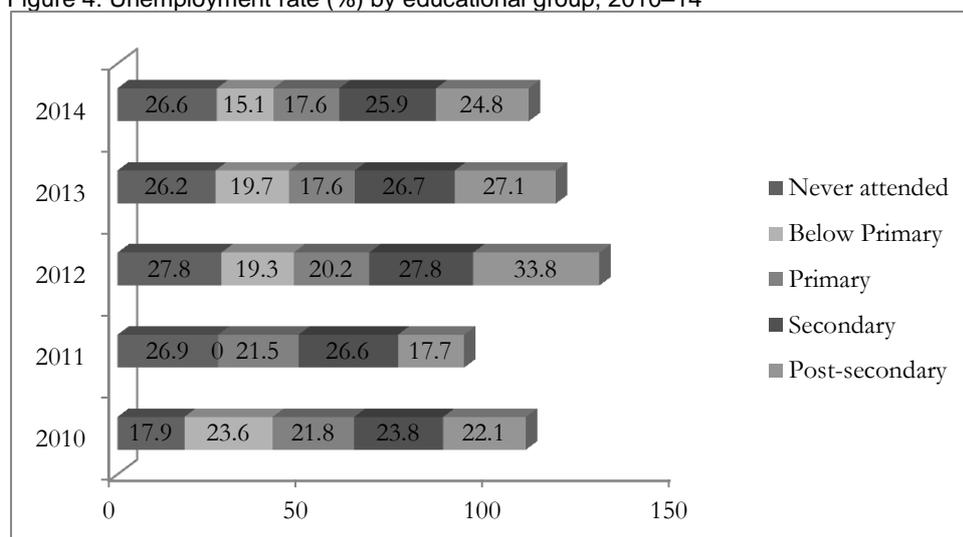
Source: Authors' computations based on data from NBS (2015b).

3   Brief review of the literature

The current phenomenon of 'jobless growth' witnessed across several developing economies, some in Africa, poses far-reaching challenges on the age-old economic assumption of growth in GDP directly resulting in an increase in employment. Okun's (1962) pioneering and seminal contribution provided some evidence in this regard. In his study of the statistical relationship between a country's unemployment rate and economic growth rate, he demonstrated that there is a positive relationship between output and employment given the logical conclusion that output depends on the amount of labour used in the production process. According to Okun's law, to achieve a 1 per cent decline in the unemployment rate, real GDP must grow by approximately 2 per cent faster than the growth rate of potential GDP over the same period. However, economic realities have since evolved. Given that this statistical relationship was established based on a regression analysis, it would somewhat depend on the time periods used.

Today, jobless growth has emerged as a global phenomenon. In its outlook on the 2015 Global Agenda, the World Economic Forum (WEF) reports that deepening income inequality and persistent jobless growth are two of the most pressing challenges currently confronting mankind. Jobless growth exists where economies exiting recessions demonstrate economic growth while employment is either decreasing or barely stabilizing (WEF 2014). In such situations, unemployment remains stubbornly high despite economic growth. According to WEF, these characteristics are often a result of technologically derived job displacements.

Ahsan et al. (2010) argue that higher employment is not usually associated with higher per capita GDP. In their investigation of the aggregate growth profile of India, findings showed a negative relationship. The study was carried out on poverty rates, employment, and the working-age population and observed over ten-year periods corresponding to the years 1983–93 and 1993–2003.

Some papers have also focused on sectoral patterns of economic growth. For instance, Datt and Ravallion (1998) using a model of the joint determination of consumption poverty measures, agricultural wages, and food prices, showed that growth in farm productivity brought about gains for poor rural households via large gains in wages and prices. Hull (2009), in her investigation of the relationship between economic growth, employment, and poverty reduction, identifies sectors as 'more productive' and 'less productive', such that growth in a sector will not directly lead to general benefits to all sectors of the economy. This highlights the relevance of the productivity intensity of sectors as a tool for profiling growth. Loayza and Raddatz (2010) also find that growth in unskilled-intensive sectors contributes more to poverty reduction by providing better jobs. Using a sample of 106 growth spells covering 39 countries, Gutierrez et al. (2007) also concluded that the sectoral growth pattern and employment/productivity profile vary significantly among countries. According to their study, the sectoral pattern of employment generation and productivity growth are key determinant factors of the rate of unemployment.

The World Bank (2005), in its study of 14 countries, noted that three countries which experienced pro-poor growth witnessed more labour-intensive growth. In another country-specific panel data analysis for the manufacturing industry carried out on eight Central and Eastern European Countries, employment was completely de-linked from output, mostly in medium- and low-skilled sectors (Onaran 2008). This result was particularly apparent in the Czech Republic, Bulgaria, and Romania, not only in the first period of transition recession, but also in the post-recession period. Boeri and Garibaldi (2006) had also provided evidence that in the aftermath of 1996, the period of economic downturn in the CEE-10 led to significant job destruction, and growth in GDP did not result in statistically significant job creation. This study was also consistent with Lehmann (1995), who argued that capital and managerial shortages could lead to weak labour demand.

The structure of economic integration has also had significant impacts on employment and wage indices. Reinert and Kattel (2004) argue that Europe's qualitative shift from the Listian symmetrical economic integration to an integrative and asymmetrical integration led to structural changes towards a larger wage spread and wages falling as a percentage of GDP in favour of the finance, insurance, and real estate subsectors.

The employment effects of foreign direct investment (FDI) have also been studied. In their paper covering economic transformation and industrial restructuring in Central and Eastern Europe, Geishecker and Hunya (2005) argue that a reduction in employment was a result of a fall in supplier linkages of state-owned enterprises which had been cut by foreign companies. In this case, job growth spurred by FDI inflows did not sufficiently offset the contraction in domestic employment. This effect is credible, particularly given the distinction between market-

seeking FDI (local market-oriented) and efficiency-seeking FDI (export-oriented) as explicated by Zhang and Markusen (1999) and Narula and Dunning (2000) respectively. In this regard, sufficient focus should also be placed on the employment effects of FDI outflows, which have the propensity to transfer jobs from high-wage countries to low-wage countries.

Based on recent studies on Africa, it has been observed that the continent's rapid growth over the last decade has so far not been able to create significant employment opportunities. Ancharaz (2010) alludes to the hypothesis that such growth has been driven largely by commodity exports. Export-led growth does not necessarily translate into higher employment levels, considering that extractive industries are generally capital-intensive and may not create many jobs, especially for women, as they expand. Resource-driven countries in the continent are further faced with lack of export diversification and equally concentrated markets. Ancharaz (2010) confirmed that export growth was strongly correlated with real GDP growth, particularly in Angola, Gabon, and Nigeria.

Olotu et al. (2015) view the phenomenon as a result of an inability to fully utilize available factors of production. The study on Nigeria argues that jobless growth is increasing as a result of the very high number of graduates produced every year, and the country's incapacity to absorb them. The country's growth and business environment which has not been able to significantly expand the formal sector, has left the economy largely trapped in its pre-2001 trajectory when it started to witness a sustained expansion in its non-oil economy.

On the empirical front, the World Bank has in recent years developed the Job Generation and Growth (JoGGs) decomposition tool to link 'changes in employment, output per worker and population structure at the aggregate and sectoral level' (World Bank 2010). Using Shapley decompositions, the methodology decomposes growth in GDP per capita in two consecutive periods, in its employment, productivity, and demographic components to disentangle the sources of output per worker growth. The JoGGs decomposition tool has been adopted to analyse the incidence of jobless growth in Uganda (Bbaale 2013) and Rwanda (Malunda 2013). In Uganda, Bbaale proved that the industrial and services sectors have higher prospects for alleviating poverty through productivity and employment generation. On the other hand, Malunda's research on employment intensity in Rwanda showed that the country's manufacturing sector lagged behind other sectors in terms of output and productivity growth. His results also showed that growth in the East African country's dependency ratio impacted negatively on its per capita GDP growth.

Byiers et al (2015) also recently studied employment means in a group of Development Progress countries[1] from Latin America, Africa, and Asia using the JoGGs decomposition tool, particularly in the context of economic structural transformation. The paper showed that inter-sectoral shifts contributed more to growth than rising productivity within them. These labour movements were also towards the services sector including precarious, low-productivity jobs, rather than manufacturing. Byiers et al (2015) additionally raised a rather crucial aspect of employment dynamics, underscoring the importance of politics as a key determinant of employment progress. New assessments of African government policies and institutions have emphasized governance as a crucial factor responsible for the uneven growth performance in most of Africa (AfDB 2013).

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[1] Including Brazil, Cambodia, Chile, Ethiopia, India, Indonesia, Mauritius, Mongolia, South Africa, Sri Lanka, Thailand, Uganda, and Vietnam.

4 Growth and labour market analysis

4.1 The data

To profile Nigeria's growth in terms of the employment and productivity of sectors, we make use of aggregate data: total GDP, population, and employment from 2005–14, at five-year intervals (2005–09) and (2010–14) as presented in Table 2. Monetary data are sourced from the NBS (2015a) and World Bank WDI (2015). Population and labour statistics are sourced from UN-DESA (2015), NBS (2015b) and NISER (2015).[2] The sectoral disaggregation of the economy into agriculture, mining, quarrying and construction, manufacturing, and services is due to data limitation. Results are presented in the stepwise approach using the Job Generation and Growth Decomposition (JoGGs) Tool from the World Bank.

4.2 Methodology

We adopted the methodology of Gutierrez et al. (2007)[3] and the World Bank stepwise decomposition approach using the Shapley decomposition method (World Bank 2010) to untangle the roles of output per worker, employment, and population structure in growth changes at the aggregate and sectoral levels. The Shapley decomposition method presented in a stepwise manner is utilized to decompose per capita GDP growth into output per worker, employment, and capital. Following this method of decomposition, GDP per capita, Y/N=y can be written as:

$$\frac{Y}{N} = \frac{Y}{E}\frac{E}{A}\frac{A}{N}$$

(1)

or $\qquad y = \omega^* e^* a$

Where Y is total value added, E is employment, A is the population of working age, and N is the total population. The ratio ω = Y/E is output per worker (labour productivity), e =E/A is the ratio of people employed to the total working-age population (i.e. employment rate[4]), and a =A/N is the ratio of working-age population to total population (i.e. dependency ratio).

Applying the Shapley decomposition approach to Equation (1), the changes in per capita value added can be decomposed into changes in labour productivity, changes in employment rates, and changes in the dependency ratio. The approach is based on the marginal effect of eliminating the change in each of the contributory components in a sequence on the value of a variable and for

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[2] Employment and unemployment data are compiled by NISER from the erstwhile National Development Plan, 1980–84, the National Rolling Plans (1990–2003), NBS Statistical Fact Sheets, the database of the National Manpower Board 1970–2005, and other publications.

[3] The methodology followed the World Bank job generation and growth decomposition tool process. Detailed methodology is available in the tool's appendix.

[4] Although employment rates as defined by ILO measure the population that 'participates' in the labour market, while participation is defined as all those looking for jobs or already employed, in developing countries the definition of participation is very blurry because employment may be low due to agents that are seasonally unemployed. We therefore believe that in the case of developing countries, a better measure of the labour force is the working age population rather than those actively participating in the labour market.

each component, by considering all possible alternatives, thus eliminating residuals using weighted average. Each component thus has the interpretation of a counterfactual. For instance, from Equation (1), the amount of growth that can be attributed to changes in output per worker (ω) is obtained by calculating the resulting growth in per capita value added under the hypothetical scenario in which employment rate (e) and the share of the working-age population in total population (a) had 'remained constant',[5] but output per worker had changed as observed. The result between the hypothetical growth and the observed growth is defined as the contribution of changes in output per worker to per capita value added growth. The same interpretation applies to other components.

Shapley decomposition has the advantage of being additive. Therefore, if the marginal contribution of each component to the observed change in per capita value added, obtained through Shapley decomposition is $\overline{\omega}, \overline{e}, and\ \overline{a}$, then:

$$\frac{\Delta y}{y} = \overline{\omega} + \overline{e} + \overline{a} \qquad (2)$$

While $\overline{e}$ refers to changes in employment as a fraction of the working-age population (employment rate), the term $\overline{\omega}$ captures changes in output per worker and $\overline{a}$ reflects changes in the demographic structure of the population, i.e. changes in the dependency ratio. Observed increase in employment rates ($\overline{e}$) will reflect increases in participation and movements of people out of unemployment and into employment.

Although, the term $\overline{\omega}$ captures changes in output per worker, the interpretation is not completely direct due to influence from the following: 1) increases in the capital/labour ratio; and 2) relocation of jobs from bad jobs sectors (low productivity) to good jobs sectors (high-productivity). Under the constant returns to scale assumption we can explain the first two influences; if $Y_t = \Phi_t f(E_t, K_t)$ where K_t is the capital stock at time t, Φ_t is a technological parameter, then we can imply that output per worker Y_t/E_t is equal to $\Phi_t f(1, K_t/E_t)$. Change in the parameter Φ_t will capture all other sources of growth not due to changes in capital/labour ratio (Solow residual). It will therefore mainly capture changes in technology and relocation of production between sectors with different productivity levels (inter-sectoral shifts). However, we should note that it may also capture cyclical behaviour of outputs; given that firms operating in economic downturns may have underutilized capital, when the demand rises again, this will be reflected as a rise in output per worker. The third influence is from workers moving to a high-productivity sector from a low-productivity sector, so that at the aggregate level, average output per worker increases.[6]

The last component in Equation (2) reflects changes in the demographic structure of the population. For instance, due to growing dependency ratio, an increase in labour productivity and employment may affect per capita income negatively if the employment and productivity growth is not sufficient to counter the rapid growing young or ageing population.

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[5] Components can remain constant by treating them in various ways: by leaving them in the level observed in the initial year, or the two start at the final year or one of them can stay in the level observed in the initial year and the other start at the level observed in the final year. Choice of treatment depends on decomposition approaches but as mentioned above, the Shapley decomposition approach uses a weighted average of each possible alternative and therefore eliminates residuals.

[6] Output per worker in this paper may be referred to as productivity under the assumption that it encompasses all three influences.

A further analysis is to understand sectoral employment and productivity intensity in relation to aggregate intensity and we can therefore re-write Equation (2) as follows without compromising.

$$\frac{\Delta y}{y} = \sum_s \overline{\omega_s} + \sum_s \bar{e}_s + \bar{a} \tag{3}$$

Where $\overline{\omega_s}$ denotes the amount of growth in output per capita that can be linked to productivity changes in sector $_s$ while $\bar{e}_s$ is the amount of growth in output per capita that can be linked to changes in the share of employment of sector $_s$. The productivity term captures growth, changes in the capital/labour ratio, and employment shifts within the sector. Most papers that analyse the sectoral growth pattern profiles aggregate growth in terms of sectoral growth with respect to productivity and employment. We can therefore say that Shapley decomposition simply sums growth in each sector multiplied by the average share of the sector in total value added. And this is equal to aggregate growth.

Following the Shapley procedure, growth episode can be profiled by: 1) growth according to aggregate productivity, employment, and demographic change; 2) growth according to changes in sectoral productivity, employment shares, and aggregate demographic; and 3) growth profile according to its sectoral pattern.

5   Results

5.1   Main variables

Nigeria recorded a growth rate of 19 per cent in per capita value added, for the 2005 to 2009 period. However, there was a significant decrease between 2010 and 2014 to 10.01 per cent. The growth in period one (2005–09) and two (2010–14) was accompanied by a 7.37 per cent and 5.93 per cent reduction in employment, and an increase in labour productivity by 29.5 per cent and 17.8 per cent in the two periods respectively. The result indicates the phenomenon of jobless growth in Nigeria. In both cases there was a reduction in the share of the employed in the total population of working age, although now reducing at a decreasing rate.

Table 2: Percentage changes in the main variables (population, employment, output, and productivity) in Nigeria, 2005–09 and 2010–14

	2005	2009	% change 2005-09	2010	2014	% change 2010-14
GDP (value added) (million Naira)	37,789 508	50,058 959	32.5	54,612 264	67,152 785	23
Total population (million)	140	155	11.3	160	179	11.8
Total working-age population (million)	75	83	10.5	85	94	11
Total number employed (million)	50	51	2.3	51	53	4.4
GDP (value added) per capita	270,726	322,169	19	341,951	376,170	10.01
Output per worker	762,612	987,175	29.45	1,066,144	1,255,779	17.79
Employment rate	66.1	61.23	-7.37	60.23	56.66	-5.93
Share of working-age population in total population	53.71	53.3	-0.41	53.25	52.87	-0.38

Source: Authors' computations based on JoGGs Decomposition Tool (World Bank 2010).

5.2 Decomposition of growth per capita

The decomposition of aggregate per capita GDP growth into its main components using the Shapley decomposition for the two periods is presented in Table 3. The table includes contribution in Naira value of 2010 to absolute observed growth in per capita GDP as well as the percentage contribution.

Table 3: Decomposition of growth in per capita value added in Nigeria, 2005–09 and 2010–14

	2005–09		2010–14	
	2010 NAIRA	Per cent of total change in per capita value added growth	2010 NAIRA	Per cent of total change in per capita value added growth
Total change in per capita GDP (value added)	51,443.48	100.00	34,219.55	100.00
Change linked to change in output per worker	76,495.76	148.70	58,809.93	171.86
Change linked to changes employment rate	-22,798.11	-44.32	-22,005.09	-64.31
Change linked to changes in the ratio of working-age population in total population	-2,254.17	-4.38	-2,585.29	-7.56

Source: Authors' computations based on JoGGs Decomposition Tool (World Bank 2010).

According to Table 3 and Figures A1 and A2 in the Appendix, while productivity was a dominant contributor, accounting for 148.7 per cent and 171.9 per cent of observed growth in the two periods respectively, growth changes linked to employment were negative. The negative contribution of employment implies that 44.3 per cent and 64.3 per cent of the change in per

capita value added can be linked to a decrease in the employment rate in Nigeria over the 2005–09 and 2010–14 periods respectively. Thus, growth in Nigeria since 2005 was a jobless growth; a growth not followed by satisfactory job creation. Interestingly, changes in the structure of the population also contributed negatively to observed growth in both periods. It was -7.6 per cent between 2010 and 2014 and -4.4 per cent between 2005 and 2009. In other words, there were more dependents (minor and elderly) depending on each working-age adult. Given the negative effect on observed growth of high dependency ratio, there may be a need to investigate the increasing population growth in Nigeria. It is, however, important to note that the negative contributions of the employment rate and population structure to the growth in per capita value added were swamped by that of growth in labour productivity over the years.

5.3 Employment generation and productivity by economic activity

Table 4 presents the data on employment by sector for 2005–09 and 2010–14. Total employment in Nigeria grew by 4.4 per cent between 2010 and 2014 compared to 2.3 per cent between 2005 and 2009. Although, the mining and services sectors registered absolute growth in the number of employed at both periods, only the service sector gained in the share of total employment in 2005–09 and 2010–14, increasing by 3.4 per cent and 6 per cent respectively. An increasing marginal shift from the agricultural sector which usually employs more than 50 per cent of the population in both absolute figures and proportion of people working in the sector can be observed. Agriculture, which is the leading employer in Nigeria, saw its output per worker increase only marginally (Figures A3 and A4). This increase can, however, be attributed to the movement of persons to better paying jobs. This phenomenon of inter-sectoral mobility which has seen people leave the agricultural sector explains a significant level of prolonged low productivity and underemployment in the sector, which, as the highest employing sector, affects the majority of the country's labour force. The widespread trend suggests that a greater problem lies in the quality of jobs created where a huge percentage of people who cannot afford not to work, engage in low productivity and low paying jobs.

Table 4: Employment by sector of economic activity in Nigeria, 2005–09 and 2010–14

	Total employment						Employment/population of working age					
	2005	2009	% change	2010	2014	% change	2005	2009	% change	2010	2014	% change
Agriculture	25,938,722	25,241,535	-2.69	25,142,003	23,872,140	-5.05	34.6	30.48	-11.92	29.56	25.29	-14.44
Manufacturing	4,607,000	3,548,572	-22.97	3,469,912	3,197,316	-7.86	6.15	4.28	-30.28	4.08	3.39	-16.97
Mining and quarrying, & construction, etc	2,048,000	2,539,065	23.98	2,610,456	2,878,999	10.29	2.73	3.07	12.22	3.07	3.05	-0.62
Services	16,959,000	19,380,145	14.28	20,001,744	23,526,545	17.62	22.62	23.4	3.44	23.52	24.93	5.99
Total	49,552,722	50,709,317	2.33	51,224,115	53,475,000	4.39	66.1	61.23	-7.37	60.23	56.66	-5.93

Note: Monetary values are 2010 Naira.

Source: Authors' computations based on JoGGs Decomposition Tool (World Bank 2010).

Employment changes by economic sector

Table 5 and Figures A6 and A7 in the Appendix are the result of the decomposition from Equation (3). Table 5 shows how growth in employment (-4.5 per cent) and (-3.6 per cent) in 2005–09 and 2010–14 respectively are distributed among economic sectors. Over the two periods to 2014, overall employment in the agricultural and manufacturing sectors fell significantly. However, while the number of people employed in the agricultural sector fell even

faster over time, the fall in manufacturing employment slowed relatively from -22.97 per cent between 2005 and 2009 to - 7.86 per cent between 2010 and 2014. Agriculture consistently had the largest negative contribution of 4.12 per cent and 4.27 per cent to the change in the employment rate in Nigeria over the 2008–09 and 2010–14 periods respectively. The global financial crises of 2007–08 had varying impacts on Nigeria's employment distribution, while employment in electricity, gas and water, and mining and quarrying declined steadily, the building and construction industry expanded, as employment of persons in the sub-sector increased from just 1.3 per cent of the total labour force in 2005 to 3.3 per cent by 2014.

Table 5: Contribution of employment changes to overall change in employment rate in Nigeria, 2005–09 and 2010–14

	2005–09		2010–14	
	Contribution to change in total employment rate (percentage points)	Percentage contribution of the sector to total employment rate growth	Contribution to change in total employment rate (percentage points)	Percentage contribution of the sector to total employment rate growth
Agriculture	-4.12	84.6	-4.27	119.5
Manufacturing	-1.86	38.2	-0.69	19.4
Mining and quarrying, and construction, etc	0.33	-6.9	-0.02	0.5
Services	0.78	-16	1.41	-39.4
Total employment rate	-4.87	100	-3.57	100

Source: Authors' computations based on JoGGs Decomposition Tool (World Bank 2010).

5.4 Sectoral employment changes to growth in total per capita output

This section investigates each sector's contribution to observed growth and employment performance. Table 6 and Figures A7 and A8 in the Appendix present the contributions of employment from various sectors to growth in total per capita output. In the 2005–09 and 2010–14 periods, employment contribution shrank in all sectors except in the services sector which more than doubled its contribution from 3642.8 Naira in (2005–09) to 8675.1 Naira in (2010–14). Of note is the fact that the contraction of employment in the agriculture sector led to a 76.9 per cent reduction in its contribution to total change in per capita output.

Table 6: Sectoral employment contribution to per capita GDP (value added), Nigeria 2005–09 and 2010–14

	2005–09		2010–14	
	Contribution to change in per capita GDP	Percentage of total change in per capita GDP	Contribution to change in per capita GDP	Percentage of total change in per capita GDP
Agriculture	-19295.1	-37.5	-26298.0	-76.9
Manufacturing	-8708.6	-16.9	-4264.7	-12.5
Mining and quarrying, and construction, etc	1562.7	3.0	-117.5	-0.3
Services	3642.8	7.1	8675.1	25.4
Total contribution	-22798.1	-44.3	-22005.1	-64.3

Note: Monetary values are 2010 Naira.

Source: Authors' computatiions based on JoGGs Decomposition Tool (World Bank 2010).

5.5   Understanding the role of inter-sectoral shifts

Structural shifts or changes are the movements of labour from low-productivity sectors to high-productivity sectors, and they have an important role in explaining the country's growth pattern. While an increase in the share of employment in sectors with above-average productivity is expected to increase overall productivity and contribute positively to the inter-sectoral shift effect, the opposite effect occurs with labour movement out of above-average productivity sectors.

In other words, if sector i experiences productivity below the average productivity level (i.e. low-productivity sector), and employment shares s_i decreases, it is expected that the sector's contribution will be positive, implying that the outflow from this low-productivity sector has contributed to the increase in output per worker. However, if the same sector experiences an increase in s_i then the inflow into this low-productivity sector will decrease output per worker and thus have a negative effect on the inter-sectoral shift term.

In Table 7, the inter-sectoral shift effect is presented. The inter-sectoral shift captures the movement of labour between sectors, implying that, on average, labour moved from lower productivity sectors to higher productivity sectors. The inter-sectoral shift effect on output per worker was 55,285.4 Naira in the 2005–09 period. However, the effect reduced marginally within the 2010–14 period (43,577.9 Naira).

Table 7: Decomposition of output per worker within sector changes in output per worker and inter-sectoral shifts in Nigeria, 2005–09 and 2010–14

	2005–09		2010–14	
	Contribution to change in total output per worker	Contribution to change in total output per worker (percentage)	Contribution to change in total output per worker	Contribution to change in total output per worker (percentage)
Agriculture	62 049.3	27.6	58 706.1	31.0
Manufacturing	34 588.8	15.4	67 542.6	35.6
Mining and quarrying, and construction, etc	-64,726.9	-28.8	-22,642.9	-11.9
Services	137, 366.1	61.2	42,451.9	22.4
Inter-sectoral shift	55,285.4	24.6	43,577.9	23.0
Total change in output per worker	224,562.6	100.0	189,635.4	100.0

Note: Monetary values are 2010 Naira.

Source: Authors' computations based on JoGGs Decomposition Tool (World Bank 2010).

Table 8 and Figure 5 present a summary of the growth decomposition profile of Nigeria in percentage contribution and in Naira 2010 respectively. The demographic component accounted for a 4.4 per cent negative contribution in the 2005–09 period and a 7.6 per cent negative contribution between 2010 and 2014. Also, the total value added per capita decreased from 51,443.48 Naira in 2005–09 to 34219.55 Naira in 2010–14 (Table 8). The table reveals that the services sector played the biggest role from 2005–09 to within sector changes in output per worker and also made the highest contribution to employment changes (Figure 5). Nigeria's growth is thus mostly explained by inter-sectoral shifts.

Table 8: Growth decomposition: contribution to total growth in GDP (value added) per capita in Nigeria 2005–09 and 2010–14

| Sectoral contributions | 2005–09 | | | | 2010–14 | | | |
	Contribution of within sector changes in output per worker	Contribution of changes in employment	Contribution of inter-sectoral shifts	Total	Contribution of within sector changes in output per worker	Contribution of changes in employment	Contribution of inter-sectoral shifts	Total
Agriculture	21136.66	-19295.08	3912.63	5754.21	18205.98	-26298.02	7978.04	-114.00
Manufacturing	11782.43	-8708.56	1172.02	4245.89	20946.37	-4264.71	-986.04	15695.62
Mining and quarrying, and construction, etc	-22048.78	1562.70	10906.87	-9579.22	-7022.05	-117.46	2273.76	-4865.75
Services	46792.85	3642.83	2841.08	53276.76	13165.22	8675.09	4248.65	26088.96
Subtotals	*57663.17*	*-22798.11*	*18832.59*	*53697.64*	*45295.52*	*-22005.09*	*13514.41*	*36804.84*
Demographic component				-2254.17				-2585.29
Total change in value added per capita				51443.48				34219.55

Note: Monetary values are 2010 Naira.

Source: Authors' computations based on JoGGs Decomposition Tool (World Bank 2010).

Figure 5: Growth decomposition: percentage contributions to per capita value added Nigeria, 2005–09 and 2010–14
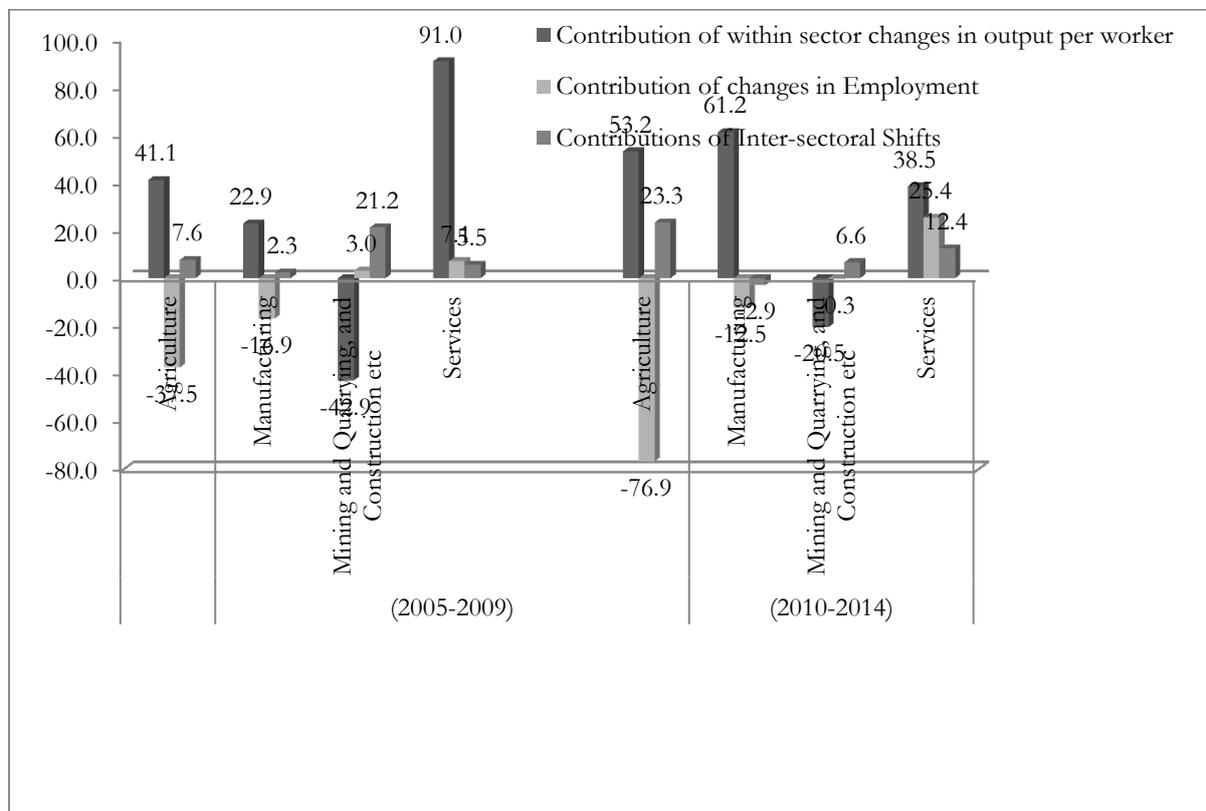
Source: Authors' computations based on JoGGs Decomposition tool (World Bank 2010).

6   Employment elasticity of growth in Nigeria, 1981–2014

A widely used indicator for analysing the relationship between growth and employment is the employment elasticity of growth which gained popularity following the seminal work of Okun (1962). Despite the widespread use of this concept especially in tracking sectoral potential for generating employment, it has some notable shortcomings (see Hull 2009). First, it is incapable of stating the actual extent of job creation. For instance, a country that grew by 1 per cent and enjoyed a 1 per cent increase in employment would have the same employment elasticity rate as a country which had a 5 per cent growth rate accompanied by a 5 per cent increase in employment. Second, the measure does not take demographic changes into account. Third, and most obvious, the employment elasticity of growth is incapable of indicating the quality of new jobs created. In spite of these criticisms, employment elasticity of growth is a convenient tool for summarizing the employment intensity of growth or sensitivity of employment to output growth (Islam and Nazara 2000).

Two major approaches have been utilized in the literature to estimate employment elasticity of output. The first is the simple arithmetic method of computing the arc elasticity by dividing the proportionate change in employment by the proportionate change in output during a given period, usually a year. While this methodology is computationally easy, findings have demonstrated that it tends to exhibit a great deal of instability and may therefore be inappropriate for comparative purposes. The base year or the terminal year may, for example, be abnormal, so that the elasticity obtained may not reflect the 'normal' technological relationship between labour and output for a given sector (Ajilore and Yinusa 2011).

The second method involves applying the econometric method of regression analysis and there are different variants. This is the approach adopted in this study. We compute a log linear regression equation between employment and GDP to generate both aggregate as well as sector-specific employment elasticities for Nigeria using annual data between 1981 and 2014. The results, which are presented in Table 9 indicate that the elasticity of employment with respect to economic growth has been generally low except for services. The aggregate employment elasticity estimates for Nigeria is estimated at 0.11, which implies that with every 1 percentage point growth in GDP, employment increases by just 11 basis points. The implication is that the relative high growth has not led to an appreciable increase in employment.

Table 9: Employment elasticities of growth in Nigeria

Sector	Estimated elasticity
Overall	0.115240***
Agriculture	0.4810***
Manufacturing	0.3030
Services	0.8531***

Note: ***, ** and * represent the significance at 1 per cent, 5 per cent, and 10 per cent, respectively.

Source: Authors' computation.

The results from the sectoral analysis indicate that agriculture has elasticity of 0.48, while services have generally been employment-intensive at 0.85. Manufacturing employment elasticity is 0.30 and insignificant. This is the sector that should constitute a repository of more productive, remunerative and, hence, decent jobs. Consistent with the earlier results, the findings thus

confirmed the low labour absorptive capacity of the Nigerian economy at the aggregate and at sectoral levels, especially manufacturing, supporting the notion that growth performance in Nigeria is, after all, a 'jobless' one.

7 Unleashing its potential

Although a number of factors have also naturally positioned Nigeria to be among the topmost economies, half a century following independence, however, Nigeria's economic growth has not only been disappointing until recently, but highly cyclical, sporadic, and non-inclusive (Ajakaiye et. al. 2014). From the aforementioned analysis, we can observe the influence of changes in the structure of the population on growth and the labour market as well as the movement to the low-productivity service sector. However, with its high level of human and natural resource endowments, Nigeria is yet to unleash its potential. Nigeria is Africa's most populous country with about 170 million people in 2013 and the sixth most populous nation in the world. The current demographic structure of the country exhibits a growing youthful population with an estimated median age of 17.9 years (17.3 for males and 18.4 for females) as well as the fact that 42 per cent of the population are aged less than 14 years, 29 per cent aged 15–19 years and 24 per cent are aged of 30–59 years (National Population Commission (NPC) [Nigeria] and ICF International 2014).

7.1 Demographic dividend

The observed demographic structure implies that Nigeria is on the verge of a major demographic transition in which the ratio of youth to other age groups' youth bulge is increasing (Bloom et al. 2010). Total fertility, which is estimated to have fallen to 5.73 in 2015, is projected to slide further to 5.10 by 2030. Hence, the working-age population, which is also estimated at 52.9 per cent in 2015, is expected to expand further to 55.1 per cent by 2030, as the under-15 population contracts. This growth would mean that the working-age population will grow from 97 million in 2015 to 151 million in 2030, representing almost 16 per cent of Africa's labour force. This youth bulge is expected to stimulate growth and development, otherwise known as demographic dividend. Recent developments among the East Asian Tiger economies such as Hong Kong, South Korea, and Singapore suggest that a demographic dividend is possible for Nigeria (WEF 2014). The expansion in the number of people in the workforce, relative to the number of dependents, should provide a significant boost in economic productivity, not only in the production of manufactured goods, services, and agricultural produce, but also in the wake of an increasing purchasing power that fuels economic growth and development.

An empirical study carried out by Bloom et al. (2010), estimated that not only will Nigeria's economy be three times larger than today in 2030 with GDP per capita increasing by more than 29 per cent, but the country also has the capacity to lift about 31.8 million people out of poverty if it can overcome its challenges to collect its demographic dividend. In other words, if productively employed, the extra adults create a window of opportunity for significant inclusive economic growth in Nigeria. However, these dividends are not automatic (Olaniyan et al. 2012). In order to reap this demographic dividend, the country needs concrete policy actions targeted towards the creation of productive jobs for youths. Increased investment in education is necessary given that the country's adult literacy rate is only 56.9 per cent with huge variations between sex (male 65.1 per cent and female 48.6 per cent), regions, and States (NBS 2010b). Furthermore, there is a need for increased investment in health gender parity and institutions to create significant economic prosperity for all.

Apart from the population, Nigeria is endowed with highly educated individuals who mostly are unfortunately in the diaspora, even though the country is increasingly experiencing a shortage of professionals due to human capital flight. In 2007, the emigration rate of Nigerians with tertiary education was estimated to be 36 per cent while for physicians and nurses, the rates were about 13.6 per cent and 11.7 per cent respectively (Ratha et al. 2007). Long-term economic growth cannot be achieved in the absence of people with professional technical expertise and investment in the real sectors (agriculture and industry) (Mba and Ekeopara 2012). Importantly, if these external human capitals are harnessed alongside the internal ones, the growth trajectory is not only likely to be high but also inclusive.

8   Challenges of jobless growth in Nigeria

Our results show that the Nigerian economy is characterized by positive GDP growth but it is a jobless one and this is due to a number of challenges as discussed below.[7]

8.1   Challenge of low industrial base

Industry is crucial to sustaining Nigeria's economic growth. This is why economic development policies (with each having a bearing on the industrial sector) were adopted, ranging from the Import Substitution Strategy through indigenization to the Structural Adjustment Programme. The country's recent growth rate is masking serious underlying deficiencies that must be addressed if it wants any meaningful long-term transformation—a structural deficit that illustrates a reliance on primary production due to the absence of industrial capacity. Bringing to an end this problem would partly require focusing on efforts that will transform the largely agricultural economy into value added activities (Arrey 2013). Nigeria also cannot continue to depend on oil as the major source of its foreign exchange earnings. The recent crash in the price of oil and its effect on the economy further lends credence to this necessity.

8.2   Challenge of infrastructural deficits

Infrastructural services such as transport, water and sanitation, power, telecommunications, and irrigation have been critical in the structural transformation of advanced economies. They represent a large portfolio of expenditure in these economies, ranging from one-third to one-half of public investments. Besides proving that infrastructure capital has a significant positive effect on economic output and growth (Kessides 1993), studies have shown that where infrastructure appears to lead economic growth, the impact becomes relatively long term. These structural impacts are further explicated through the effect on the quality of life of citizens, as well as the influence on the marginal productivity of labour and capital for both public and private investments. The current level of infrastructure deficit in Nigeria has been identified by Sanusi (2012) as the major setback to Nigeria's Vision 20:2020 of becoming one of the 20 largest economies in 2020. The absence of infrastructural services has hindered urbanization and the demographic dividends of the country's working population boom.

8.3   Challenge of poor governance and weak institutions

Governance is one of the key factors that explain the divergence in performance across developing countries (Khan 2007). This especially defines the level of inclusiveness that policies bring, as they are formulated and implemented by institutions. The role of the government does

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[7] It should be noted that the challenges are inexhaustible and only a few selected ones are discussed in this study.

not depend solely on its involvement in the economic transformation process, but more importantly on how it is able to govern development with a decisive ideological orientation and effective institutions, and policies underpinned by adequate bureaucratic and organizational capacity and political will (Nkurayija 2011). Good governance therefore promotes democracy, human capital formation, and efficiency in the economy. Beside the weakness in the poor intermediation of production factors, is the high cost of governance—administrative costs associated with the running of government. According to (Warimeh 2007) the misuse of public funds is another cause of the increasingly high cost of governance in Nigeria. This political economy eventually creates room for corruption and passiveness, thereby weakening government plans and policies for economic growth. For instance, Nigeria's rank in government effectiveness fell from its highest level in 2000 of 30.29 to 27.49 in 2013.

8.4 Challenge of insecurity

Nigeria, in recent times, has witnessed an unprecedented level of insecurity. The phenomenon has found greater expression following the emergence of Boko Haram since 2011 which led to humanitarian crises particularly in the north eastern parts of the country (Jerome 2015). According to Nigeria's National Emergency Management Agency, at least 470,500 people were displaced in 2013 alone by such violence, and there is very little information about their protection and assistance needs. The country ranked 151 out of 162 in the 2014 Global Peace Index for major factors such as society and security as well as domestic and international conflict—with a national cost of violence estimated at USD28.5 billion.[8] These are also the associated effects of insecurity including fear, coercion, loss of relatives, properties and livelihoods, displacement, breakdown of production channels, and deprivation of basic needs, which worsen the already high level of poverty. Violence and insecurity have a global impact as they erode a country's human and social capital, reduce life expectancy at birth, destroy its productive and financial capital, and can threaten macroeconomic stability (Soares 2006; Geneva Declaration 2008). Security expenditures have the effect of eroding savings and investment in the broader economy, as well as labour productivity at the individual level. The World Development Report 2011 found that 'a country that experienced major violence over the period from 1981 to 2005 had a poverty rate 21 percentage points higher than a country that saw no violence' and for every three years a country is affected by major violence, poverty reduction lags behind by 2.7 per cent (World Bank 2011).

9 Conclusions and proposed remedial actions

9.1 Conclusions

Over the last decade, Nigeria has experienced a steady and unprecedented wave of growth which came with its unique structural changes in sectoral employment. Characteristics of this growth process in the light of findings of this study, hold an important development policy interpretation, with the need for the reallocation of people to better quality jobs in order to address unemployment, underemployment, and poverty. Nigeria will need to galvanize its policy space not only to stimulate job creation and productivity within sectors, but also to ensure sector growths that encourage labour shifts from low- to high-productivity sectors. Findings show that Nigeria's highest productivity sector is the manufacturing sector which has lagged behind in terms of contributions to output and employment elasticity of output.

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[8] http://www.visionofhumanity.org/#page/indexes/global-peace-index/2014/NGA/OVER

Although several factors have contributed to growth in Nigeria, foremost, growth has been driven by sectoral variations in terms of employment, sectoral development, and value added, but there is no significant structural change on the employment front. Even though the share of agriculture in total GDP has reduced, it is still the sector that employs the highest number of people, despite its low productivity and subsistence features.

9.2 Proposed remedial actions

Our results show that Nigeria has been experiencing jobless growth over the past decade and a half. The observed structural changes do not seem to be growth-enhancing and lack an employment generation capability. Thus, this type of growth is not inclusive.

Given the need for people to move out of less-rewarding sectors (especially agriculture and rudimentary informal services sectors) and the ongoing high rate of urbanization, underemployment has become entrenched rather than just a passing phenomenon. In the circumstances, unemployment has continued to increase, while underemployment has resurfaced as a more bedevilling challenge facing the country's large youthful labour force.

In order to remedy the situation, special attention should be paid to the development and technological upgrade of the manufacturing sector in general and labour-intensive components in particular. In addition, effective programmes for the modernization of the service sector, especially the distributive trade sub-sector characterized by informality and low productivity, should be articulated, effectively implemented, regularly monitored, and their impacts carefully evaluated to provide a basis for evidence-based pragmatic and pro-active modifications as may be necessary. There should also be resolute commitment to increasing productivity in the agricultural sector through sustained massive support for agricultural research and extension (as has been done in Brazil, China, India, and Malaysia), mechanization, commercialization of technologies, and enhanced value addition through effective support for agro-processors and agri-businesses.

For Nigeria to benefit from its demographic dividend, developing the entrepreneurial potential of its youth population is an important opportunity for growth. Specific labour-market interventions including federal and state-level youth skill building institutions e.g. post-secondary trade schools, post-tertiary education skill building institutions (as in Canada), and innovative public works programmes should be targeted towards the high number of poor and vulnerable people. Finally, federal, state, and local governments should focus on improving infrastructure and developing human capital, as essentials for inclusive growth.

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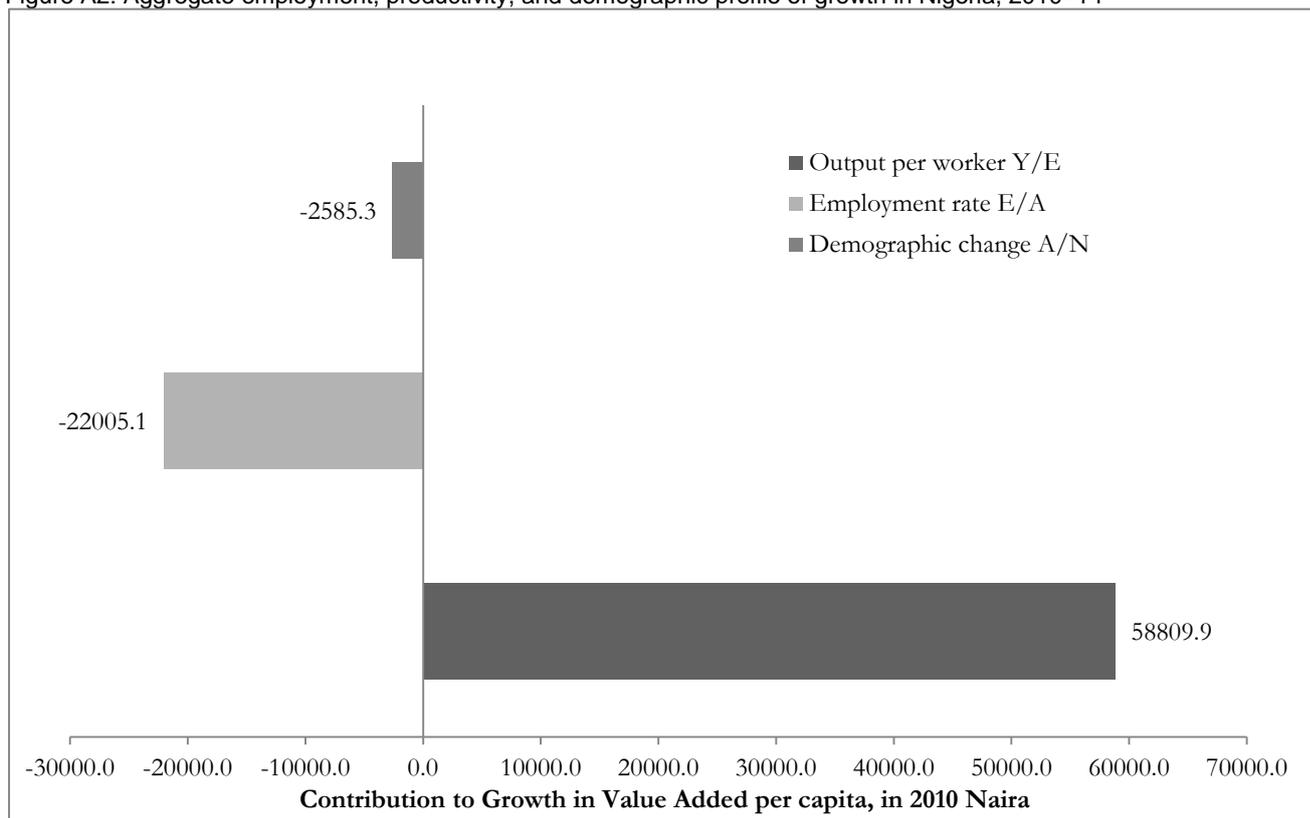
Appendix

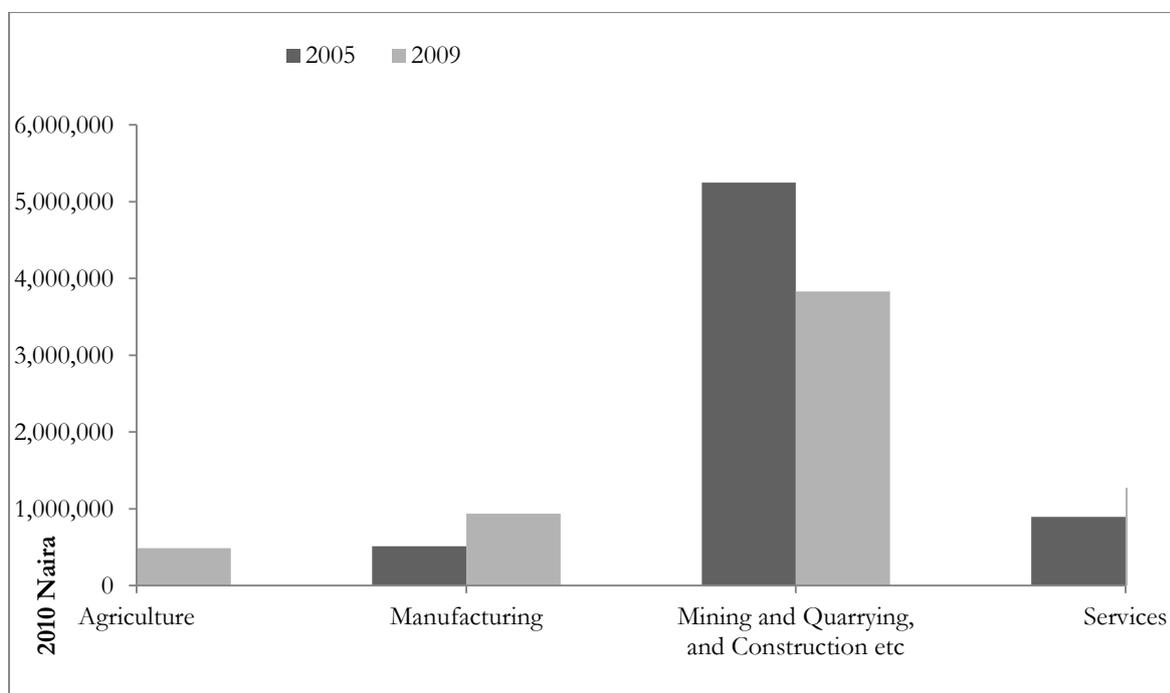Figure A1: Aggregate employment, productivity, and demographic profile of growth in Nigeria, 2005–09
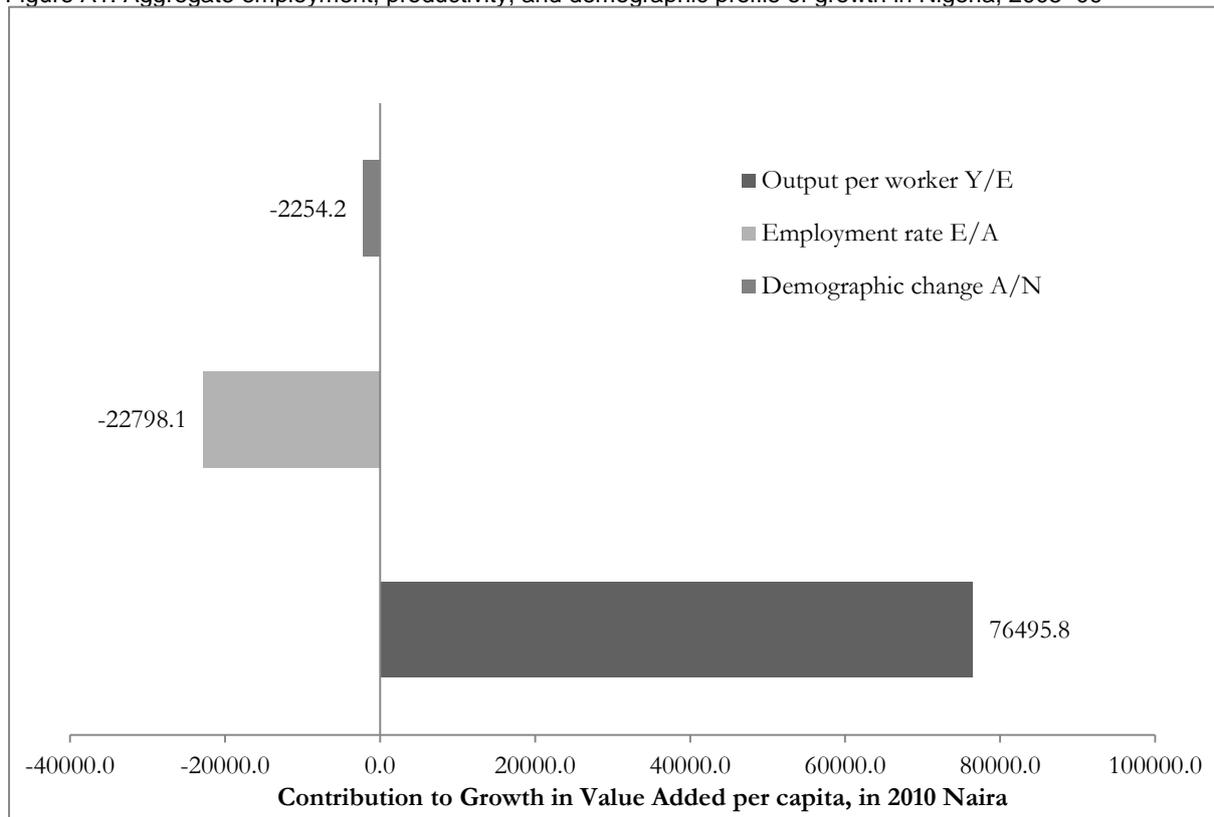
Source: Authors' computations based on JoGGs Decomposition Tool (World Bank 2010).

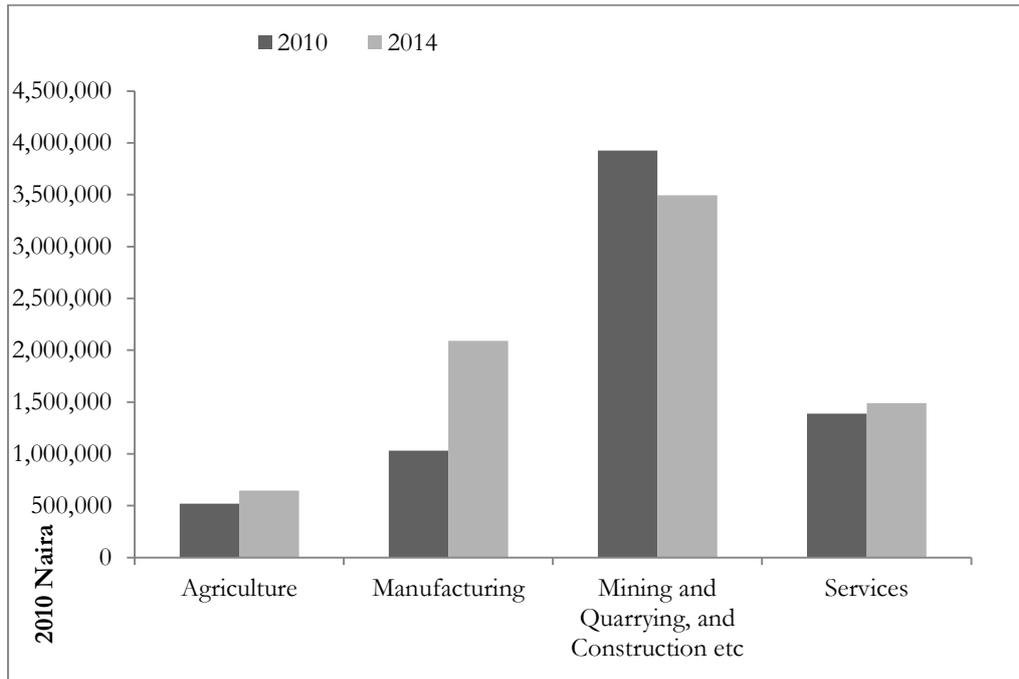Figure A2: Aggregate employment, productivity, and demographic profile of growth in Nigeria, 2010–14

Source: Authors' computations based on JoGGs Decomposition Tool (World Bank 2010).

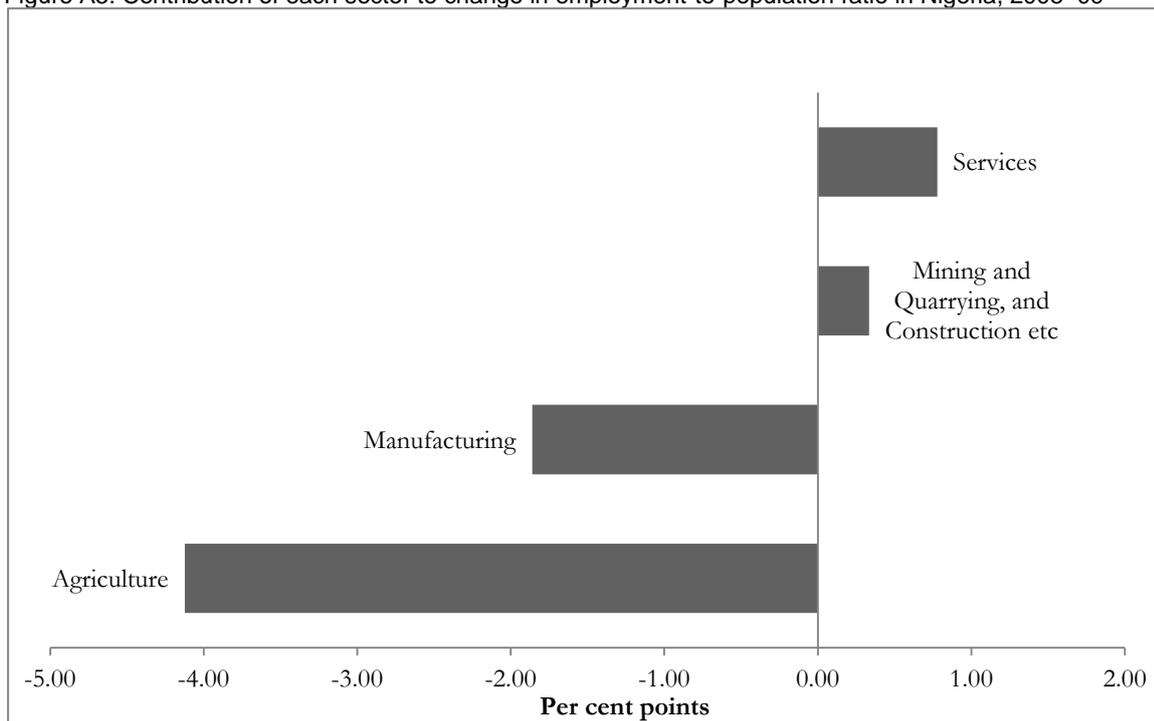Figure A3: Output per worker by sectors, Nigeria 2005–09

Source: Authors' computations based on JoGGs Decomposition Tool (World Bank 2010).
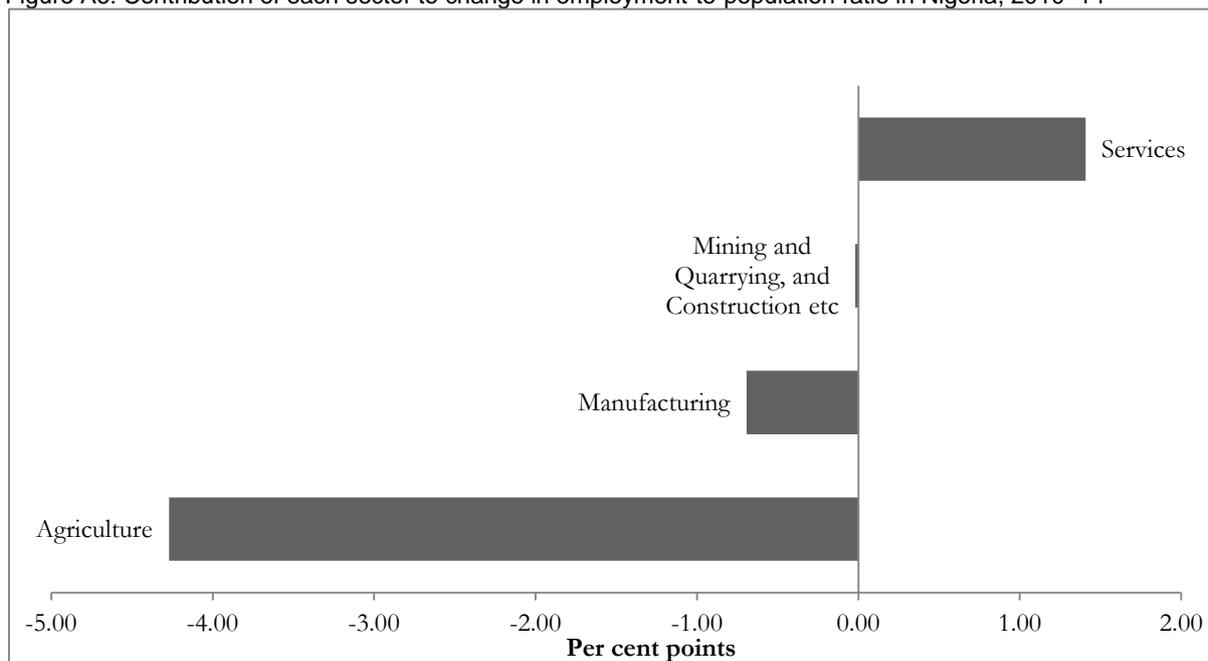
Figure A4: Output per worker by sector, Nigeria 2010–14

Source: Authors' computations based on JoGGs Decomposition Tool (World Bank 2010).

Figure A5: Contribution of each sector to change in employment-to-population ratio in Nigeria, 2005–09
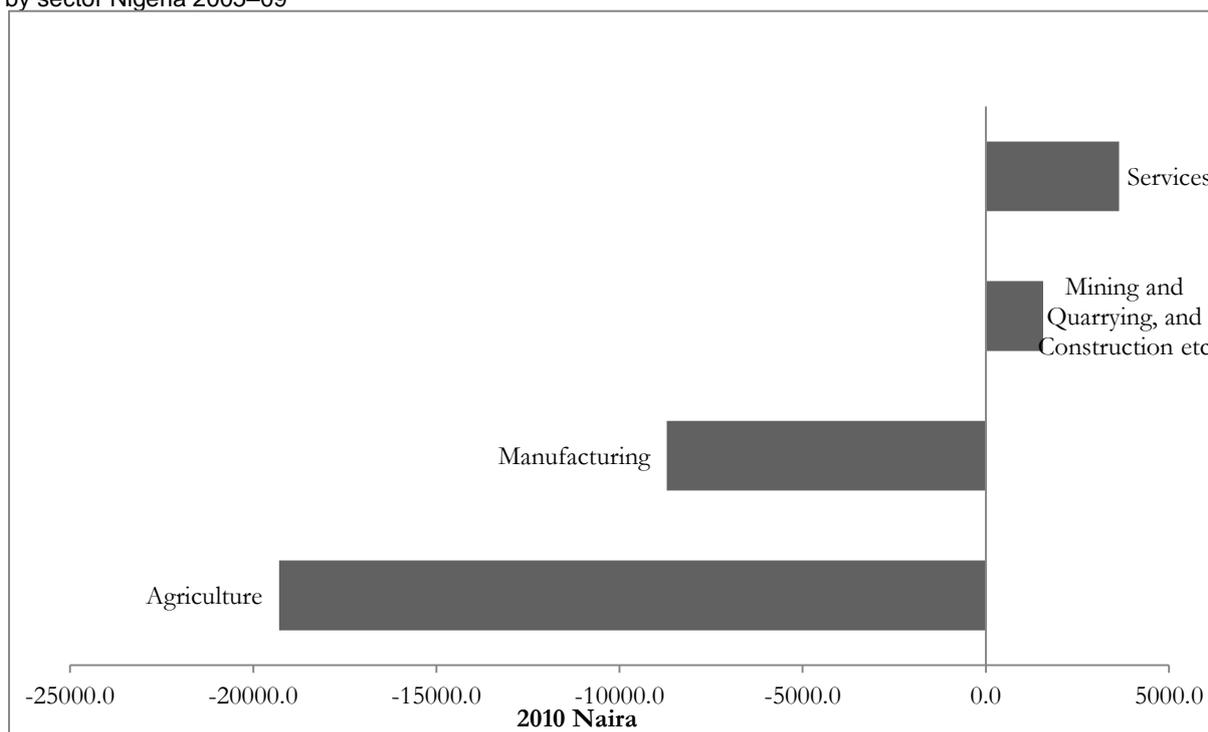

Source: Authors' computations based on JoGGs Decomposition Tool (World Bank 2010).

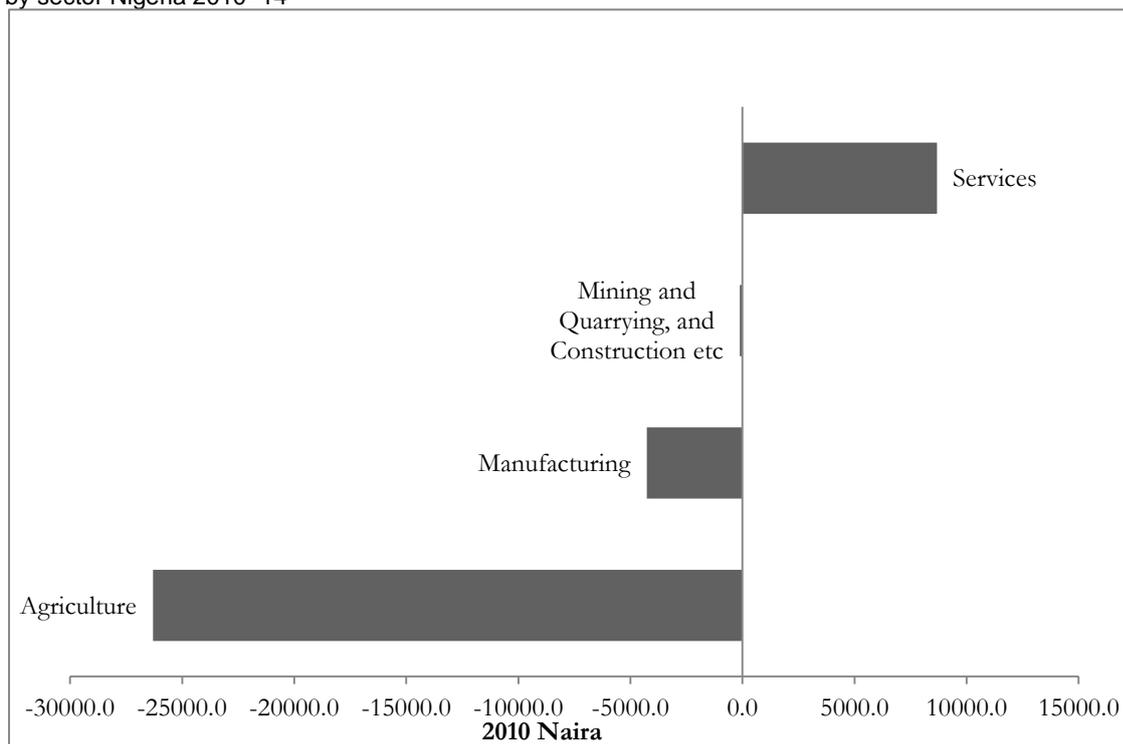Figure A6: Contribution of each sector to change in employment-to-population ratio in Nigeria, 2010–14

Source: Authors' computations based on JoGGs Decomposition Tool (World Bank 2010).

Figure A7: Contribution of change in employment-to-population ratio to change in GDP (value added) per capita, by sector Nigeria 2005–09

Source: Authors' computations based on JoGGs Decomposition Tool (World Bank 2010).

Figure A8: Contribution of change in employment-to-population ratio to change in GDP (value added) per capita, by sector Nigeria 2010–14

Source: Authors' computations based on JoGGs Decomposition Tool (World Bank 2010).