# A decomposition analysis of the nexus between employment and credit in West Africa's biggest economies

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21 May 2023

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**Peter Nuhu[1], Dramani Bukari[2] and Yusif Sulemana[3]**

**Abstract**

The World Economic Forum in 2014 reports that persistent jobless growth is one of the topmost challenges the globe faces. International Labour Organisation (ILO) data indicates that Ghana's employment elasticity of output has been fallen since 1992; from 0.76 in 1992-1999 to 0.5 since 2006. This trend implies that from 1992, the ability of the Ghanaian economy to create jobs as it grows has been shrinking. Similarly, estimates show that Nigeria's output elasticity of employment averages 0.39% across all sectors. Through decomposition, this paper investigates the nexus between credit and employment with the view to answering the following questions. i. How does economic activity impact employment creation in developing countries like Ghana and Nigeria? ii. How does credit intensity impact employment creation? iii. How important is sectoral credit mix to creating employment? And iv. Should sectoral employment factor guide credit extension? The results for both countries show that total change in employment consequent on credit availability has been positive. However, the adoption of credit as a trigger for employment creation must not only be intensified but also deliberately targeted at the sectors of the economy that offer the greatest potential for job creation.

**Key Words:** Credit, Employment, Economic Activity, Unemployment, Ghana, Nigeria

**JEL Classification:** E24, E44, E51, O55, O57

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## 1. Introduction

The pursuit of sustained and rapid economic growth remains the cornerstone of the macroeconomic policy of governments, especially in the developing world. This can be explained by the fact that employment creation is incident on economic activity (Acaroglu, 2015). Okun's Law establishes a positive relationship between employment and economic growth; noting that output depends on how much labour is employed in the process of production (Okun, 1962). The empirical evidence appears to support this in many countries in spite of the knowledge that advancements in artificial intelligence is leading to some level of substitution of robots for human labour which can be disruptive to the hypothesis in Okun's Law. For instance, data from ILO shows that the unemployment rate in countries such as China, India, South Korea and Mexico remains below the world average since the beginning of this century. Accordingly, growth theories and attendant empirical studies form the mainstay of economics, with the primary goal of seeking the optimum route to sustainable economic growth for employment creation.

Finance-led economic growth is one of the very early routes proponents such as (Schumpeter, 1911) canvassed. They argued that finance is positive for growth (Osman, 2014). And that, the shifting of savings to productive investments, in the form of credit, improves the productivity of businesses and for that matter the economy. According to (Okorie & Chikwendu, 2019), the most important source of financing investment by private sector enterprises in developing economies is credit. This is demonstrated in a number of studies. For instance, testing for causality between bank credit and growth in Nigeria, (Okafor, et al., 2016) found a one-way causality from credit to growth. Similarly, (Olowofeso, et al., 2015) found a statistically significant positive impact of private sector credit on growth. Other studies (Demirguc-Kunt & Levine, 2008; Hondroyiannis, et al., 2005; Rajan & Zingales, 1998; Jayaratne & Strahan, 1996; King & Levin, 1993), in one way or the other, also provide strong supporting evidence to the nexus between credit and growth. In this respect, Domestic Credit to the Private Sector (CPS) as a percent of Gross Domestic Product (GDP) has increasingly become one of the widely adopted indicators in examining the influencers of economic growth.

Not surprisingly, in most developing economies like those studied in this paper, CPS has been growing as a percent of GDP. For example, in 1991, Ghana's CPS (% of GDP) was 3.7%; this in 2020 tripled to 11% of a bigger GDP. Similarly, Nigeria registered 5.2% in 1991. In 2020, this more than doubled to 12.1%. In nominal terms, CPS rose from $345.7 million and $2.7

billion in 1991 to $8.8 billion and $47 billion in 2020, in Ghana and Nigeria, respectively. Alongside this, economic growth has also been robust especially since the turn of the century. Data from the World Bank shows that GDP growth in Ghana has averaged 5.8% since 2000. Similarly, growth in Nigeria has averaged 5.3% from 2000 to 2020.

Nevertheless, employment creation has remained a challenge and has become ubiquitous around the world. ILO data indicates that Ghana's employment elasticity of output has been fallen since 1992. From 1992 to 1999, it stood at 0.76; from 1999 to 2006, it fell to 0.67 and again to 0.5 from 2006 onwards. This trend gives an indication that since 1992, the ability of the Ghanaian economy to create jobs as it grows has been shrinking. The situation in Nigeria is not different. According to estimates by (Capazario, et al., 2020), Nigeria's output elasticity of employment averages 0.39% across all sectors. The disconnect between growth and employment has had disproportionate long-term impact on young people, especially in developing countries. At the global scale, data from the World Bank suggests that average unemployment stood at 5.7% in 2016 and 6.6% in 2020. Yet, unemployment amongst the youth in the same period was 15.5% in 2016 and 17.2% in 2020. Thus, unemployment is not only high among the youth, its rate of increase is also relatively faster. Specific to the case studies here, unemployment stood at 5.7% and 8.4% in 2017 and 4.7% and 9.7% in 2020 in Ghana and Nigeria, respectively. However, youth unemployment in the two countries rose from 8.7% and 14.5% in 2017 to 9.5% and 19.7% in 2020, respectively.

The preceding narrative, that growth as occasioned by credit availability appears to have a positive relationship with unemployment, runs counter to theoretical propositions that credit must positively influence employment. Particularly so, as economic growth outpaces population growth; giving rise to what has been christened 'jobless growth'. The World Economic Forum in 2014 reports that persistent jobless growth is one of the topmost challenges that the globe faces. As discussed, economic growth has averaged over 5% in both Ghana and Nigeria consequent on a growing credit to the private sector, at least, since the turn of the century. Yet, employment generation has remained sticky, at best. This therefore raises a number of questions that needs to be addressed. These includes:

i.    How does economic activity impact employment creation in developing countries like Ghana and Nigeria?

ii.   How does credit intensity impact employment creation?

iii.  How important is sectoral credit mix to creating employment?

iv.      Should sectoral employment factor guide credit extension?

Indeed, there is no better time to investigate these questions than now given the impact of the Covid-19 pandemic on global and more specifically African economies. The pandemic ushered in Africa's worst recession in five decades in 2020. According to the 2021 Africa Economic Outlook presented by the Africa Development Bank (AfDB), Africa's GDP declined by 2.1% in 2020 and 1.5% in West Africa due to Coivd-19. Economic activity has since begun rebounding but even before that there is a need for time series decomposition of past factors like credit especially as it relates to employment creation. The paper therefore aims to investigate the foregoing questions with focus on the two biggest economies in West Africa; Ghana and Nigeria.

The rest of the paper is organised as follows: the next Section presents an overview of the global unemployment trend since 1991. Section 3 presents the theoretical and empirical connections between credit and employment while Section 4 details of the method and the dataset utilised. Section 5 discusses the results and concludes the study.

## 2. Global unemployment trend

In 2020, data according to (O'Neill, 2022) shows that some 37.72 million people fell into unemployment; bringing the table number of unemployed people to around 224 million, around the globe. Even though there was some reversal in the unemployment figures in 2021, the general trend shows a steady rise in the number of unemployed people since 1991. In 1991, some 114 million people were unemployed. This almost doubled to 214 million people in 2021 (see Figure 1).
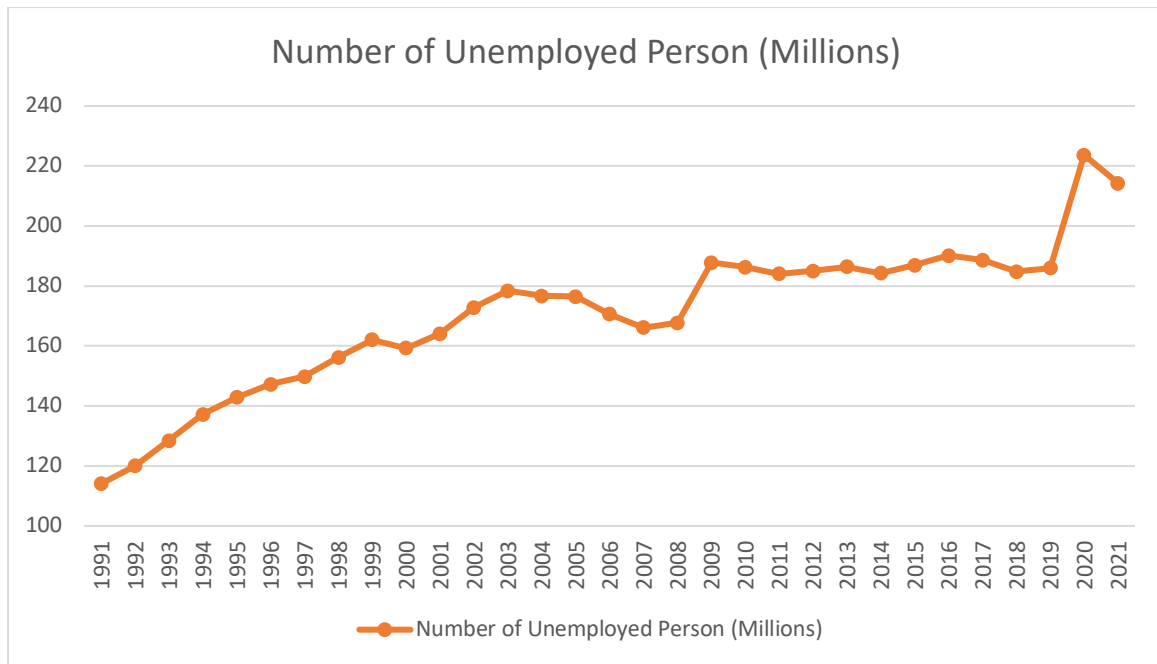
*Figure 1: Global unemployment in millions*

When the unemployment figures are decomposed on regional basis, the data according to the World Bank (World Bank, 2022), shows that the East Asia & Pacific region posts the lowest unemployment rates since 1991. The region's unemployment has risen from 2.5% in 1991 to 4.3% in 2020 i.e. annual average of 3.8%. In the North America region, the unemployment rate has oscillated wildly during the period. From 7.1% in 1991, it fell to 4.3% in 2000, 9.5% in 2010, 3.9% in 2019 and 8.2% in 2020. As such, while unemployment was the highest in the region in 2010, it was the lowest in 2019 alongside East Asia & Pacific. Yet, overall, the annual average rate of 6.1% posted for the period is the second lowest globally. On the other hand, the Europe & Central Asia region has consistently witnessed the highest unemployment rate since 1991 until after 2017 when the Latin America & Caribbean region overtook it.

Unemployment rate in Sub-Saharan Africa, for the entire period, remained relatively stable at an annual average of 6.3%. The rate, like all the other regions except East Asia & Pacific, is above the world average of 5.7% for the period. Nevertheless, a further disaggregation of the data reveals a disparity at the sub-regional level. Whiles the West and Central Africa sub-region's unemployment rate has averaged below 5%, that of East and Southern Africa sub-region has averaged above 7%. That notwithstanding, the deviation between the two sub-regions around the continental rate has gradually been closing especially since the turn of the decade (see Figure 2).
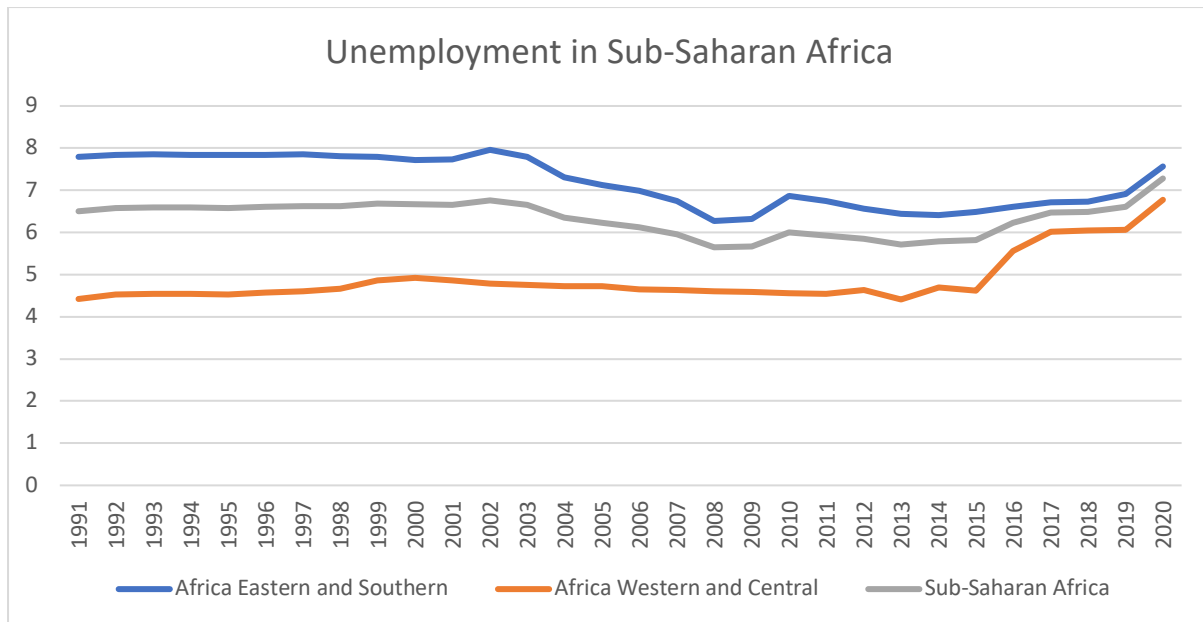
*Figure 2: Africa's unemployment*

## 3. Relationship Between Credit and Employment

From the outset, it is important to note that credit impacts employment through production and growth, as espoused in the opening section. Also, the theory of production is categorical on the interplay of scarce factors of production. An extension of the typical neoclassical Solow growth model indicates the impact of factors such as capital and technology on output. As espoused by (Trew, 2006; Levine, 1997), credit availability impacts growth by impacting capital accumulation and innovation in technology. (McKinnon, 1973) argues that while a farmer could increase their use of commercial fertilizer from own savings, it is impossible for a poor farmer to finance the investment required for adopting new technology from current savings. The literature further asserts that the ability of the credit market to select optimal projects and allocate resources optimally, given better information, is at the heart of its ability to impact growth (King & Levin, 1993; Greenwood & Jovanovich, 1990).

That said, whiles there appears to be some consensus on the impact of credit on growth, there are two main schools of thought on how support must be extended. They argue on the lines of balanced or unbalanced growth. Supporters of balanced growth including Rosenstein-Rodan and Nurkse, contend that growth must be driven by investment; simultaneously and proportionately allocated to all sectors of an economy. This, they argue is necessary to engender the forward and backward linkages required for all-inclusive expansion. Advocates of unbalanced growth also assert that for underdeveloped economies, investments are suitable if they are targeted at sectors offering the highest growth potential or areas where there is

comparative advantage. For instance, prioritizing industrial growth will indirectly pull up the agriculture sector as the demand for industrial materials grow.

Yet, while the above arguments form the crux of policy itself and is at the heart of both classical and Keynesian theories, the basis of economic policy, itself, is to provide subsistence and full employment (Chaturantabutara, 1968). Indeed, the concept of (un)employment has been fundamental to economic theory. Keynesians explain unemployment as a consequence of defective demand and use of existing capital stock whiles non-Keynesian unemployment theorists relate it to factor inadequacy. The neoclassicals developed their concept of labour supply on the basis that as rational economic agents, individuals seek to maximize their utility and so enter the employment market at a point when the market wage is above the reservation wage. Thus, factors increasing the reservation wage lower employment probability. (Bergern & Everaert, 2008) distinguished between structural and cyclical unemployment. However, while these theoretical positions are well-articulated, the empirical linkage between growth and employment was established by Okun's Law. Okun proved an inverse correlation between economic growth and unemployment rate; estimating how much GDP could likely be lost as unemployment tops its natural rate. The Law is built on the premise that output is a consequence of the amount of labour used in the production process. While literature, over time, has affirmed the stability and significance of this law, it is useful "only to the extent that the natural rate of unemployment is properly measured" (Wen & Chen, 2012).

In sum, the intricacies established by all these theories are expected to simplify policy design and implementation and make results more attainable. Yet, the dynamism and constant changes in conditions and variables have always left many questions unanswered. The growth and continuous improvement in technology has had extremely positive impact on industrial output and economic growth as envisaged by theory, but also on labour employability in production. The theoretical position in respect of technology introduction is that, in the short run, technology replaces labour and thus reduces employment. But, in the long term, the associated increased productivity causes an increase in demand and, by so doing, employment. Theory espouses that technology reduces cost of production and consequently impacts prices, profits and wages in the long run. This causes demand for both consumption and investment goods and services to expand and thereby leading to employment creation. (Cardullo & Ansal, 1997) summarized this as "*therefore, long term employment effect of new technologies depends very much on rapid growth of markets or large enough economic growths in countries.*"

Empirically, (Oxford Economics, 2018) notes that the introduction of industrial robots in the automotive industry has caused huge job cutbacks. In fact, it is estimated that 8.5% of the world's manufacturing workforce may be displaced by industrial robots by 2030. (Hova, 2017) concludes that technological changes can replace low skilled labour in industries with matured demand and low-income elasticity. The paper argues that technological changes benefit highly skilled workers. However, in product elastic industries, increased productivity occasioned by technological changes or introduction offsets its employment effects. (Frey & Osborne, 2013; Frey & Osborne, 2017) analysed the US economy and found that 47% of jobs risk being replaced by Information and Communication Technologies (ICTs) within two decades. The rest of the 53% of jobs are characterised by perception and manipulation, social and creative intelligence. These results were confirmed by the results of (Bowles, 2014) that 47% to over 60% of the work force in the European Union (EU) will be replaced by ICTs with the next 20 years. (Arntz, et al., 2016) further confirms these findings for Germany, Austria, Belgium Estonia, and Finland, albeit moderately. In addition, the findings of (Kindberg-Hanlon, 2021) are also consistent. However, (BGC, 2015) found that the introduction of ICTs will cause a 6% increase in employment.

In respect of the financial development—which among others occasion increased credit access—cum growth nexus favour, a larger proportion of literature favour a positive relationship between credit growth and economic growth, on the whole (Rajan & Zingales, 1998; King & Levin, 1993; Olowofeso, et al., 2017; Guiso, et al., 2004a; Guiso, et al., 2004b). The relationship between growth and employment is established as shown above, and empirically as shown in the following (Olamade, 2020; Ajalaiye, et al., 2016; Sodipe & Ogunrinola, 2011). Thus, the relationship between credit growth and employment through economic growth is also discernible. (Bertand, et al., 2007) assessing the French banking sector reforms of 1985 shows that growth in employment was accelerated in sectors that are dependent on the banking sector. (Nickell & Nicolitsas, 1999) finds that financing constraints discourage hiring by British firms. Similarly, (Gutierrez & Tobal, 2021) assessed the impact of increased bank credit to Small and Medium-sized Enterprises (SMEs) on formal employment in Mexico for the period 2010-2016 using a modified Bartik-type instrument. The results show that credit supply shocks impact formal employment largely; a one standard deviation increase in credit shock causes 0.45 percent points or 13% of the mean expansion in annual employment growth. They conclude that credit availability or the lack of it is significant

employment creation. Again, (Bueso-Merriam, et al., 2016) measured the medium and long run effect of credit access on employment, amongst others, for the San Juan Province. The Paper utilised the lagged dependent variable method to assess 664 companies. It found that credit access positively impacts employment by 4.3%. On the other hand, (Kahn, et al., 2016) examined how micro-credit impacts employment in Bangladesh and Pakistan using OLS and fixed effects regression methods and finds that whiles there is no statistically robust evidence linking micro-credit to employment increase in Pakistan, there is substitution of employment-for-pay with self-employment as a result of micro-credit availability in Bangladesh.

Thus, the evidence shows that not all credit growth occasion employment creation. As stated by (Pagano, et al., 2012), financial development could, in principle, lead to jobless-growth because easing access to credit could spur firms' ability to acquire capital-intensive technologies; as shown by (Oxford Economics, 2018). Accordingly, a decomposition of the employment and credit nexus is essential to bring a comprehensive understanding on what accounts for the different outcomes. Particularly so, when aggregate figures fail to present a precise representation of the situation. For instance, while the aggregate figures indicate a growth in credit, a decomposition of the figures shows different trends at the sectoral level. Credit to the services and agricultural sectors grew marginally from $4.2 billion and $338 million in 2016 to $4.3 billion and $379 million in 2020 in Ghana, respectively. In Nigeria, there is a more than 300% jump in credit to the services sector of $78.6 billion in 2020 compared to 2016. Credit to industry and agric however saw marginal increase in 2020 relative to 2016. That said, it is only industry that witnessed steady marginal increases from 2017 to 2020. To what extent does this disparity affect employment creation as a consequence of credit growth? Decomposing the relationship should elucidate on the effects of economic activity, credit intensity and mix, and employment factor at the sectoral level. To the best of the author's knowledge, there is no existing literature that has done this. This present study will fill this gap.

## 4. Methodology and Data Set
### 4.1 Methodology
To analyse the country level employment creation, paying particular attention to the impact of domestic credit to the private sector, the following model is used. Thus, Aggregate Employment (E) in a country from the various sectors (i) is

$$E = \sum_i E_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots equ(1)$$

Specifically, equ(1) is expressed as below

$$E = \sum_i Q \times \frac{C}{Q} \times \frac{C_i}{C} \times \frac{E_i}{C_i} \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots equ(2)$$

Where
Q = Aggregate Economic activity in the country
C = Domestic credit to the private sector in the country
$C_i$ = Domestic credit to sector i in the country
$E_i$ = Employment created by sector i in the country

equ (2) can be rewritten as follows

$$E = \sum_i AE \times IE \times CM \times E_f \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots equ(3)$$

Where
AE = Activity Effect
IE = Intensity Effect
CM = Credit-mix Effect
$E_f$ = Employment-factor Effect

Changes in these effects will be estimated as follows:

$$\Delta_{tot} = E^T - E^0 = \Delta_{AE} + \Delta_{IE} + \Delta_{CM} + \Delta_{E_f} \dots \dots \dots \dots \dots \dots \dots \dots \dots equ(4)$$

$$\Delta_{AE} = \sum_i (E_i^T - E_i^0)/(lnE_i^T - lnE_i^0) \, ln\left(\frac{AE^T}{AE^0}\right) \dots \dots \dots \dots \dots \dots equ(5)$$

$$\Delta_{IE} = \sum_i (E_i^T - E_i^0)/(lnE_i^T - lnE_i^0) \, ln\left(\frac{IE^T}{IE^0}\right) \dots \dots \dots \dots \dots \dots equ(6)$$

$$\Delta_{CM} = \sum_i (E_i^T - E_i^0)/(lnE_i^T - lnE_i^0) \, ln\left(\frac{CM_i^T}{CM_i^0}\right) \dots \dots \dots \dots \dots \dots equ(7)$$

$$\Delta_{E_f} = \sum_i (E_i^T - E_i^0)/(lnE_i^T - lnE_i^0) \, ln\left(\frac{E_{f_i}^T}{E_{f_i}^0}\right) \dots \dots \dots \dots \dots \dots equ(8)$$

With
$$L(a,b) = \frac{a-b}{lna - lnb} \quad for \; a \neq b \; \; and \; \; = a \; \; for \; a = b$$

The above approach follows the Logarithmic Mean Divisia Index (LMDI) model and chosen because of its theoretical foundation and practical advantages as evident in its adaptability and ease of use and interpretation of results (Ang, 2004; Ang, 2005). The approach overcomes various drawbacks associated with imperfect decomposition (Tunc, et al., 2009; Ang & Liu, 2001).

**4.2 Data set**
In this paper, the data on economic activity[4], domestic credit to private sector and sectoral employment (% of total employment) for 2016-2020 for both Ghana and Nigeria were accessed from the World Bank Open Data. Domestic credit to private sector (current US$) is a derived factor; being a product of Domestic credit to private sector (% of GDP) and GDP (current US$). It represents total financial resources extended to the private sector in the economy by financial corporations in the form of loans, procurement of nonequity securities, trade credits as well as other accounts receivable. Data for credit to the various sectors of the Ghanaian economy is extracted from the Banking Sector Reports published by the Bank of Ghana (BoG). These reports are released following the BoG's Monetary Policy Committee meetings to highlight developments in the financial sector. For Nigeria, this data was extracted from the Central Bank of Nigeria's Annual Statistical Bulletin. Agriculture sector is an aggregation of agriculture, fisheries and forestry. Industry sector is made up of mining and quarry, manufacturing, oil and gas, power and energy, and construction; whiles the services sector includes real estate, finance, insurance and capital market, education, oil and gas services, power and energy services and others.

**5. Results and conclusion**
**5.1 Results**
Before presenting the result of the analysis, it is essential to present an overview of the general economic trend with regards to employment and credit performance in the two economies using data sourced from the World Bank open data. This will put the decomposition results into proper context. As evident from Figure 3 (A), economic activity since the turn of the 21st century has been robust; growing from 4.98 billion US$ in 2000 to 72.35 billion US$ in 2020. During this entire period, economic activity contracted only in 2009 as a consequence of the 2008/9 global financial crisis and 2014/15 following the severe power crisis that plagued the Ghanaian economy. In 2014/15, there were rolling power cuts in Ghana due to supply

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[4] For economic activity, GDP (current US$)—total gross value added by residents—is utilised.

shortages. This affected productivity as producers were forced to cut back on production in response to the growing cost of maintaining private standby generators.

In Nigeria, though the trend shows an overall growth from 69.45 billion US$ in 2020 to 432.29 billion US$ in 2020, there have been three periods of economic contraction; 2009, 2014-2017 and 2020 (see Figure 3 (B)). While the 2009 and 2020 contractions are attributable to the 2008/9 global financial crisis and Covid-19 pandemic, respectively, the major growth reversal and the consequent recession—2014-2017—was attributable oil sector performance. As an economy that depends heavily on oil, the 2014 oil price shock caused real GDP growth to drop from 6.2 percent year-on-year in 2014 to 2.7 percent in 2015. This was further worsened by the oil production shortages of the following. The resultant 1.5 percent recession in 2016 showed this underperformance and the spill over to the real sector (PwC, 2017).
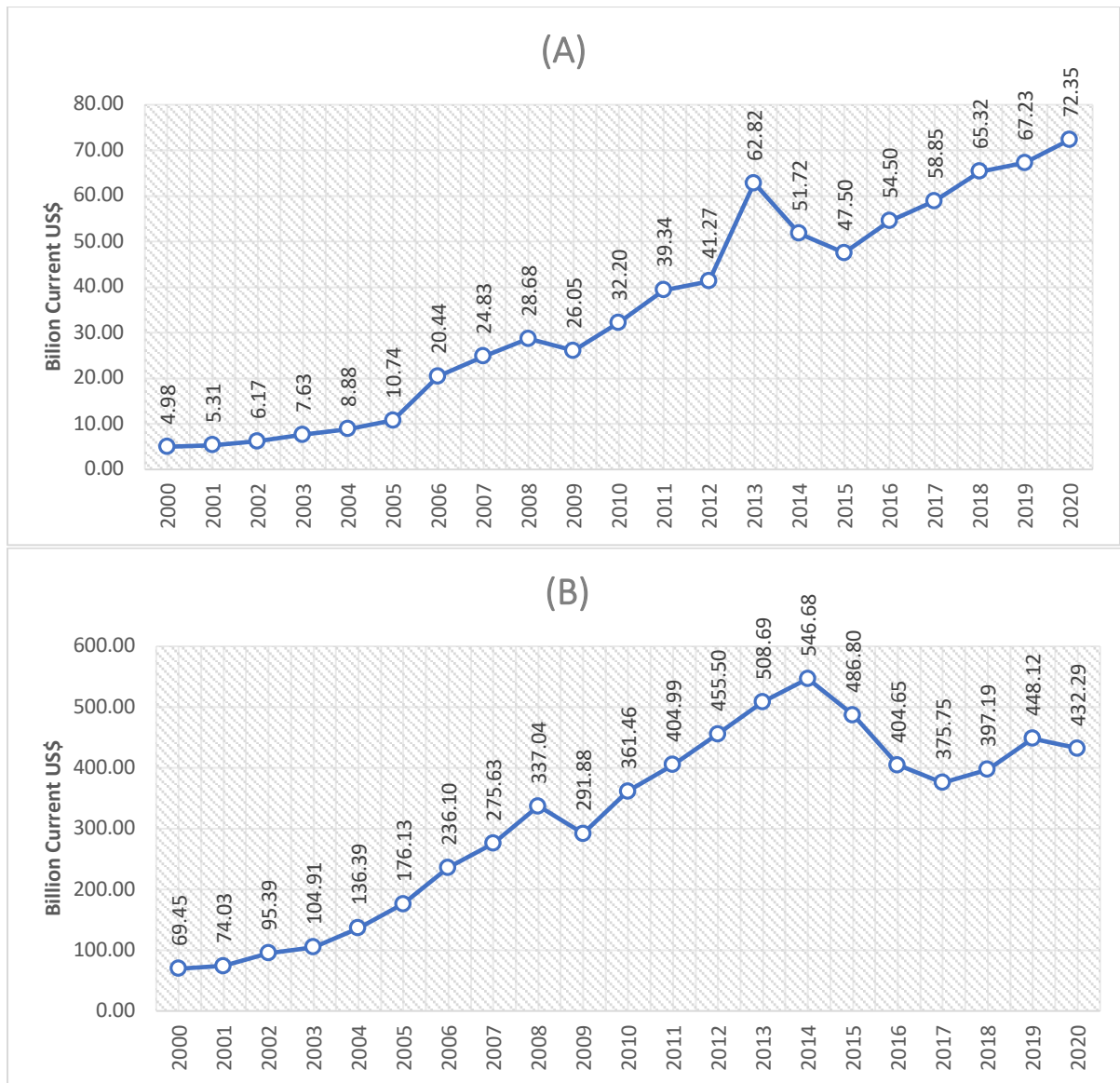
*Figure 3: Trend of Economic Activity*

Figure 4 (A) shows that the structure of Ghana's economy has changed over time. In 2000, Agriculture, forestry and fishing contributed more to overall value added than services and industry. This changed from 2005 when the services sector surpassed agric as the leading contributor. Indeed, from 2011, agriculture's contribution to the economy went below industry and has since become the lowest contributor. In Figure 4 (B), it can be seen that, in Nigeria, the services sector has consistently dominated economic activities since 2000. The positions of industry and agriculture has consistently alternated.
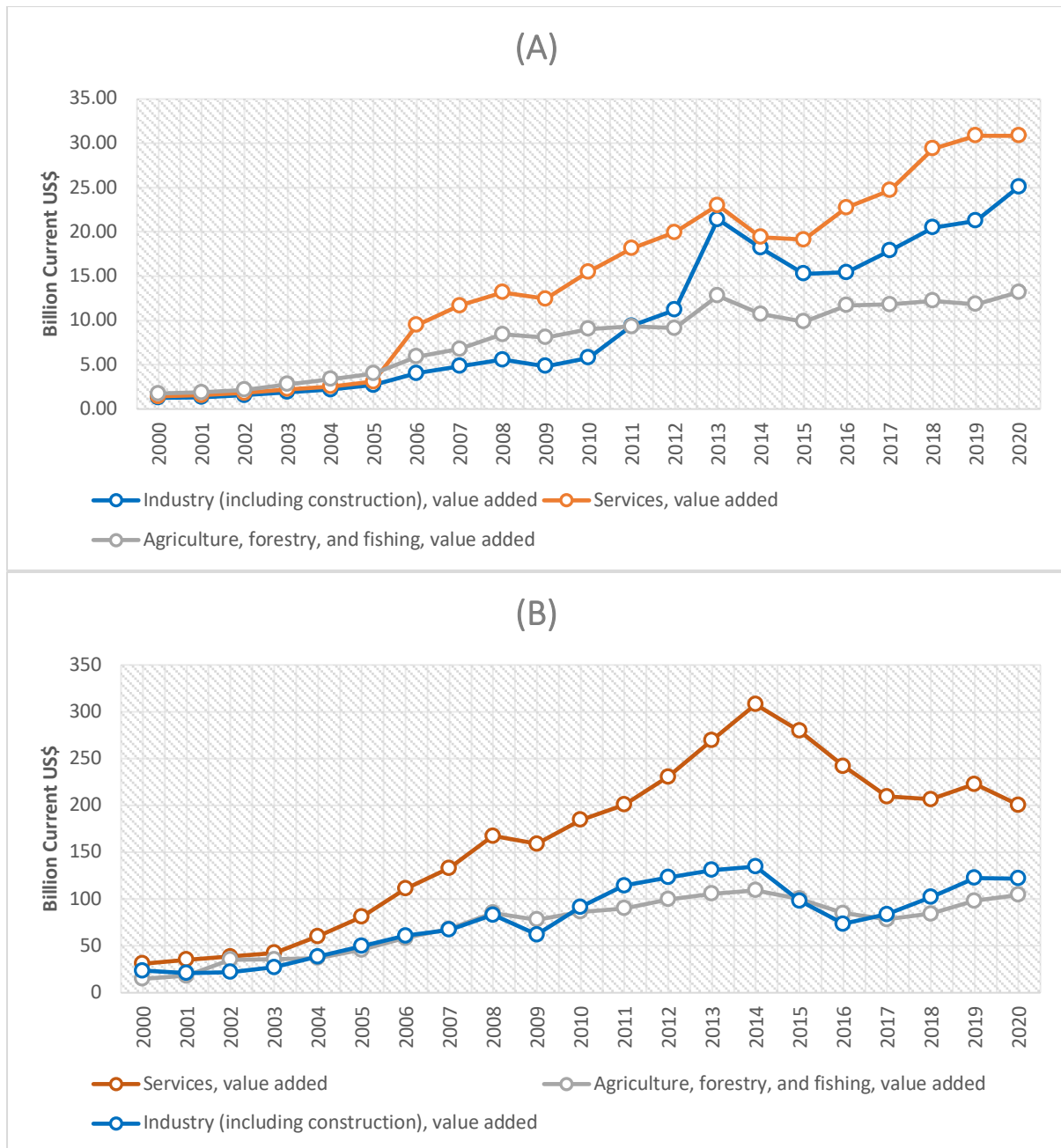
*Figure 4: Structure of Economy*

From Figure 5, domestic credit to the private sector in Ghana has not dropped below 10% of GDP since 2000; the lowest being 10.9% in 2020 and as high as 16.1% in 2015. The sharp drops from 15.5% to 11.1% and 15.6% to 12.8% in 2005-2006 and 2012-2013, respectively, is notable. For Nigeria, there have been some wild swings during the period; lowest being 8.1% in 2002 and 2006 and a high of 19.6% in 2009.
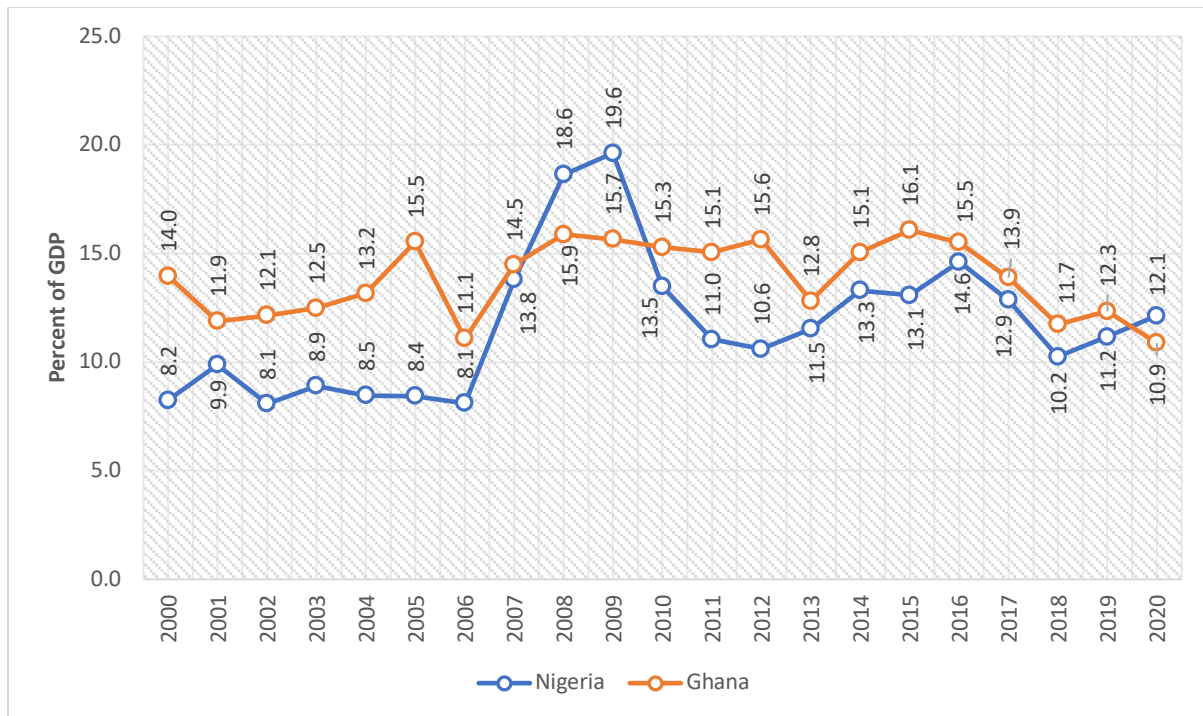
*Figure 5: Domestic Credit to the Private Sector*

Overall, unemployment has declined from 10.4% of total labour in 2000 to 4.5% in 2020, in Ghana. During this period, employment in services and industry as a percent of total employment has risen from 31% and 14% in 2000 to 49% and 21% in 2020, respectively. Employment in Agriculture as a percent total employment, on the contrary, has declined from 55% in 2000 to 30% in 2020 (see Figure 6 (A)). In Nigeria, while the sectoral employment follows a similar trend like Ghana, the trend of overall unemployment is inverse to Ghana; rising from 3.8% in 2000 to 9.1% in 2020 (see Figure 6 (B)).
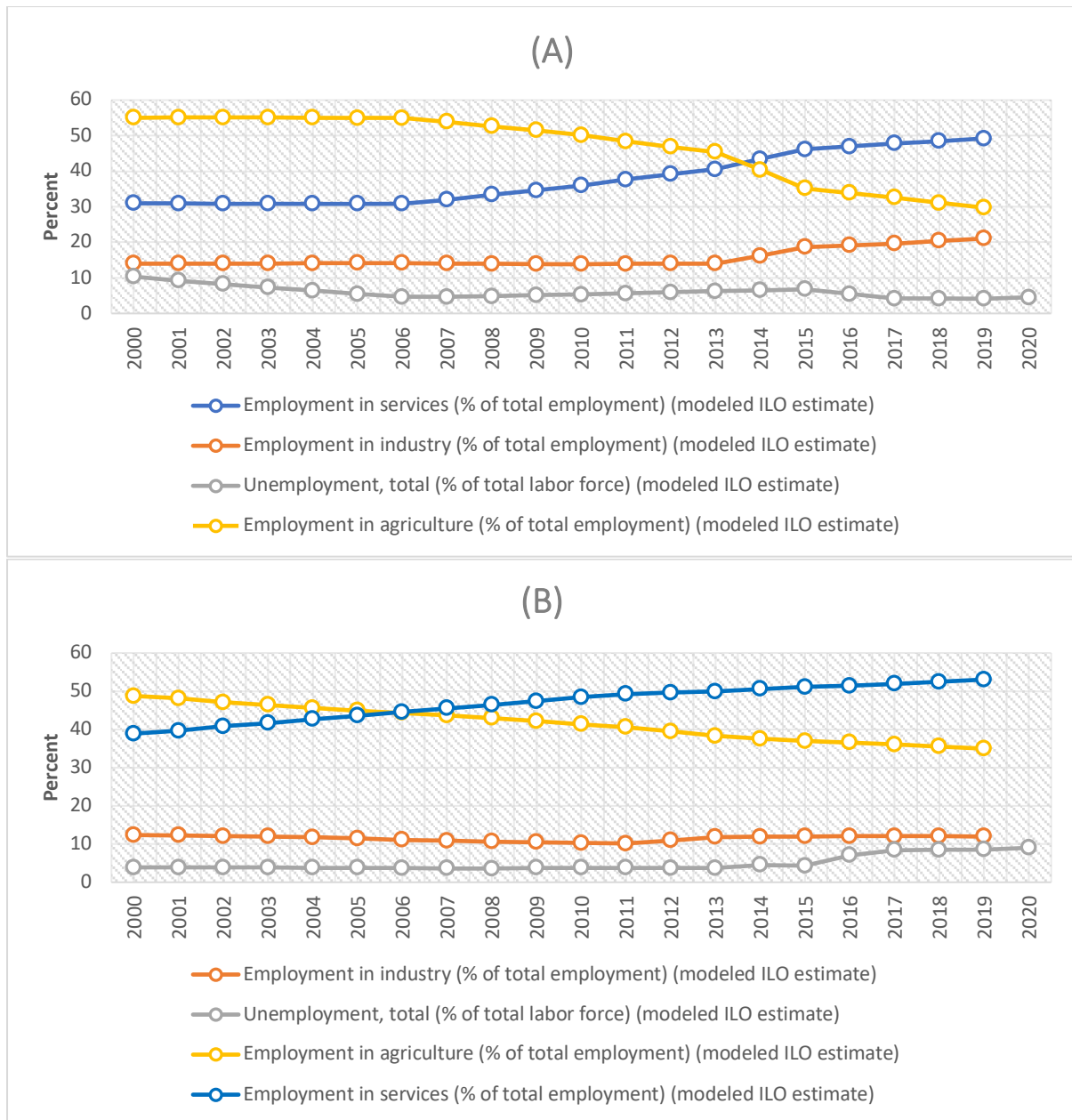
*Figure 6: Employment Trend*

The results of the decomposition analysis obtained on the basis of the equ(4) as shown in section 3, are presented in Figures 7-10. Figures 7 and 9 provide the components of the decomposition analysis for the study period 2016-2020 for Ghana and Nigeria, respectively. Figures 8 and 10 present a sectoral disaggregation of credit mix and employment factor effects for both countries for the period under review. These are based on equ. (5)-(8).

### 5.1.1 Ghana

From Figure 7, total change in employment consequent on credit availability from 2016 to 2020 has been positive; consistent with (Bertand, et al., 2007; Nickell & Nicolitsas, 1999;

Gutierrez & Tobal, 2021; Bueso-Merriam, et al., 2016). This positive employment change is attributable, significantly, to economic activity and employment factor from credit; and minimally from the sectoral credit mix i.e. growth in economic productivity is the most dominant factor influencing employment creation. This is consistent with theory as noted previously and the trend shown in Figures 3 (A) and 6 (A). The minimal impact of credit mix can be explained from the netting effect of the three sectors. As evident in Figure 6 (A), employment growth in industry and services is being negated by declining employment in agriculture. In addition, the intensity of credit impacts negatively on employment. This is also consistent with the position of (Oxford Economics, 2018) that increasing credit availability could lead to investments in and acquisition of capital-intensive technology at the expense of labour.
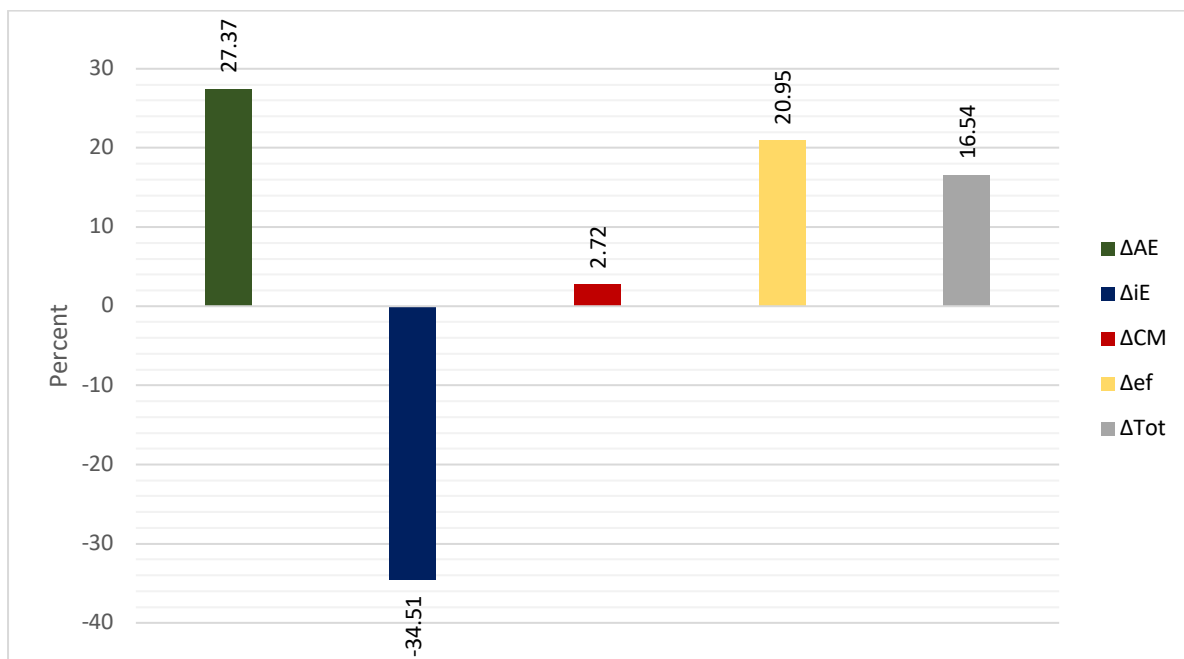


*Figure 7: Components of the change in employment in Ghana*

From Figure 8, the specific impact of sectors to total employment change for the period can be seen. Clearly, the contribution of industry to total employment change is greater than the other sectors; followed by services. Agriculture contributed negatively during the period. Precisely, the quantum and proportion of credit to industry declined from US$3.3 billion in 2016 to US$2.4 billion in 2020 i.e. 42% to 34%. On the contrary, credit to the other two sectors rose slightly during the period. The change in credit mix effect shows this. Yet, while employment in industry increased proportionately by about 3% during the period, that of services increased by about 2% and agriculture declined by about 5% (see Figure 6 (A)). Accordingly, the

employment factor of industry was the highest for the period and hence its impact on overall contribution to employment change. This could be interpreted as a confirmation of the argument that credit increases to industry could lead to adoption of capital-intensive technology at the expense of labour; the opposite of which could also be true, as shown here.
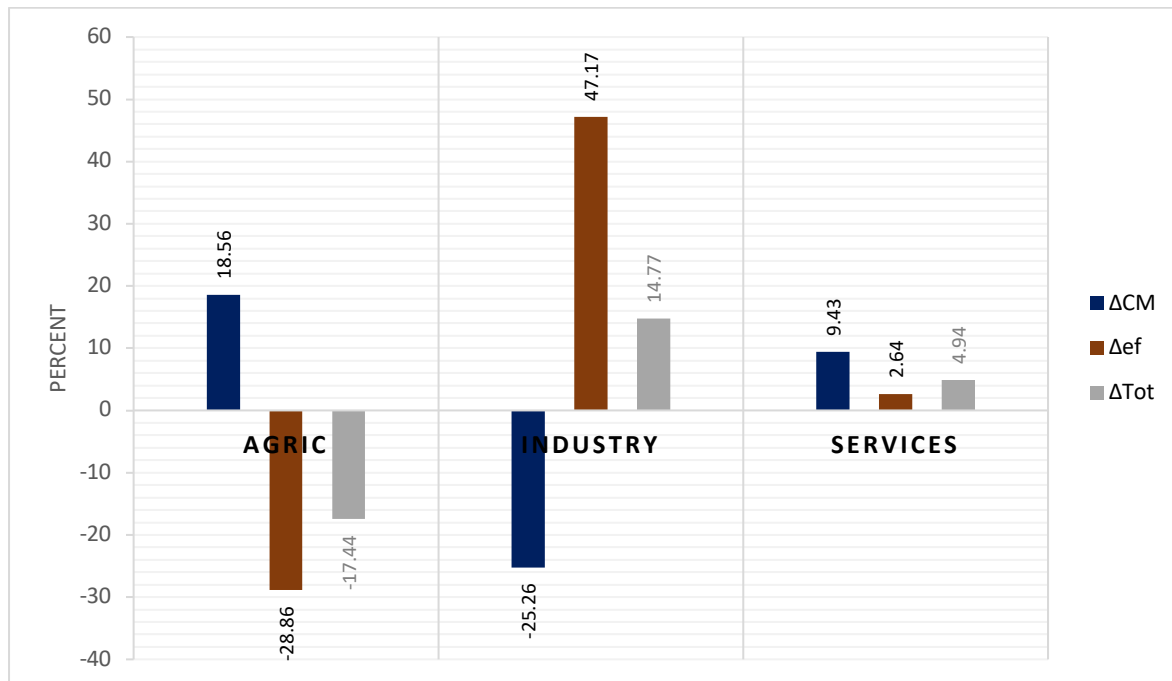


*Figure 8: Sectoral contribution to employment change in Ghana*

### 5.1.2 Nigeria

As shown in Figure 9, the positive total change in employment during the study period, as a result of credit availability, is mainly due to sectoral credit mix; with minimal push from economic activity effect. On the other hand, credit intensity effect, principally, and employment factor effect, to a lesser extent, netted off the overall impact of credit mix and activity effects described above; thus, dampening total employment change. This is not so different from the results posted for Ghana, above, in terms of positive drivers of employment change; except the employment factor effect which is negative in Nigeria but positive in Ghana.
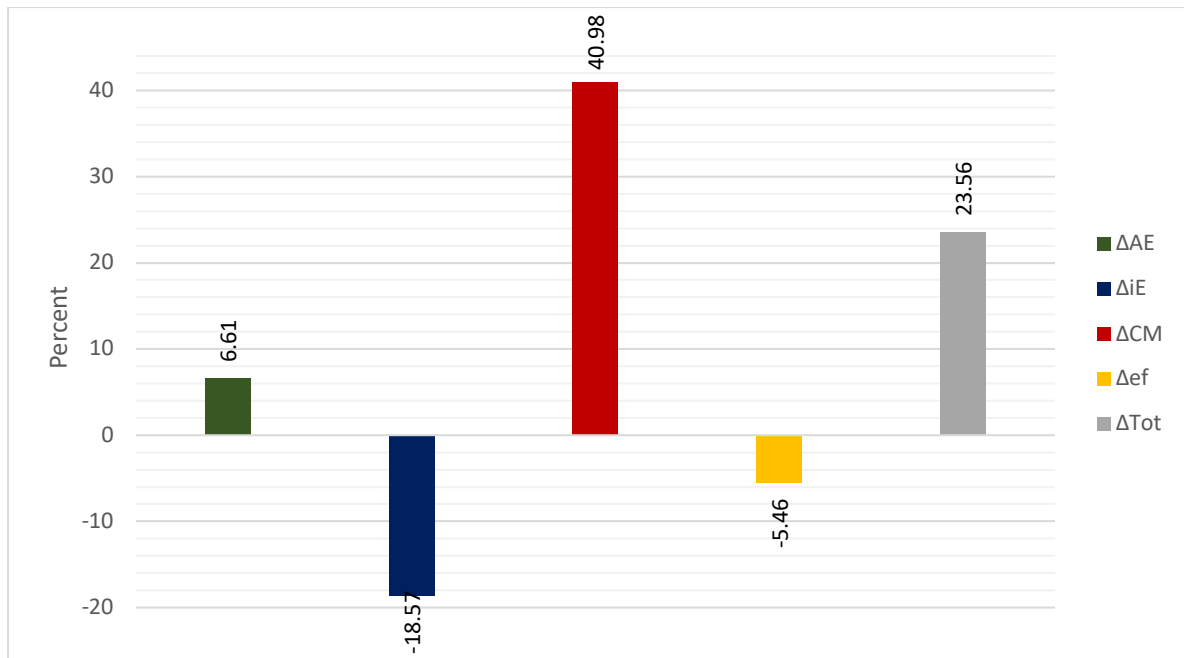
*Figure 9: Components of change in employment in Nigeria*

Sectoral impact to total employment change in Nigeria is depicted in Figure 10. Services offered the biggest positive impact on employment change as a result of credit availability. This is notwithstanding the fact that its share of credit actually declined from 46% in to 44% in 2020. Conversely, agriculture witnessed the biggest decline in share of total employment even though the sector actually saw a 7.1% growth in credit receipts for the period. Industry saw decline in credit receipts but a rise in its share of employment.
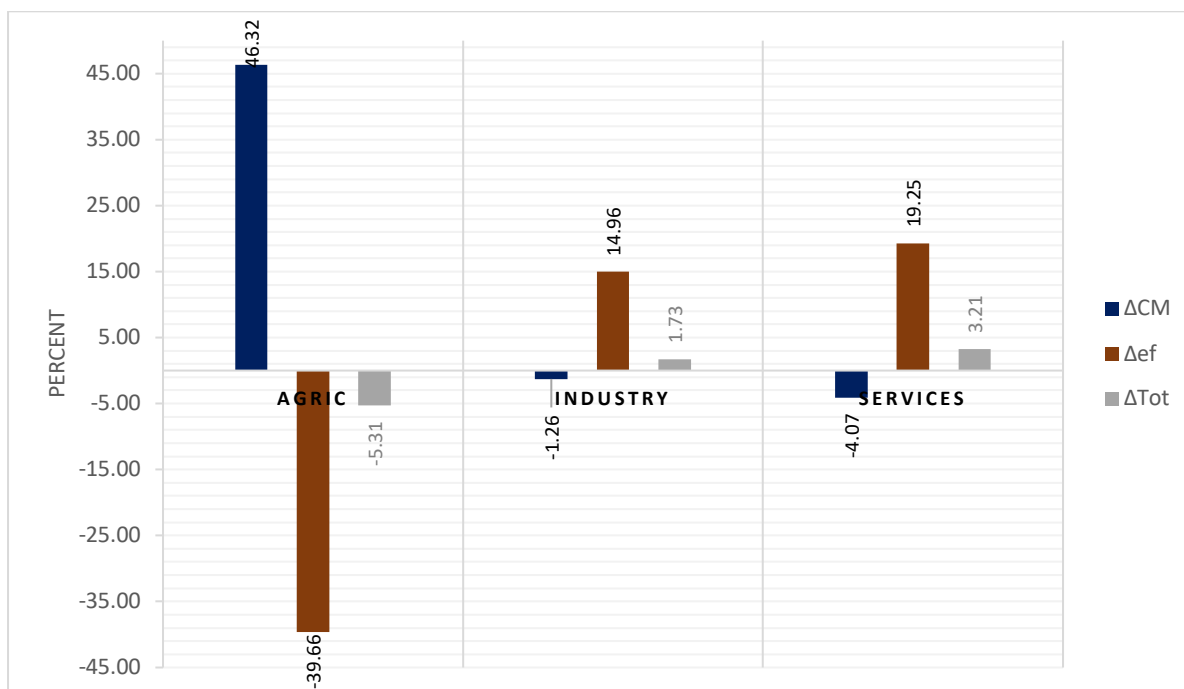


*Figure 10: Sectoral contribution to employment change in Nigeria*

**5.2 Discussion and Conclusion**

In this paper, employment changes in the two biggest economies in West Africa; Nigeria and Ghana, are assessed in the agriculture, industry and services sectors. To do this, the sectors are decomposed to analyse the different components of employment change.

In summary, the results show that economic activity positively determines changes in employment in both countries. But, while it is the main component determining employment changes in Ghana, it is not in Nigeria. Regarding intensity effect, the result revealed that credit intensity lowered employment during the study period; more so in Ghana than Nigeria. Furthermore, like economic activity, credit mix effect impact positively on employment change in both countries albeit more in Nigeria relative to Ghana. On the Other hand, sectoral employment factor effect as a result of credit availability impacts change in employment, positively, in Ghana but negatively in Nigeria. That said, overall employment change contingent on credit availability and economic activity is positive in both countries during the study period.

This result is consistent with the data as follows. First, economic activity grew averagely at 5.6% and 1.3% in Ghana and Nigeria, respectively, over the period. Second, credit intensity declined by 1.4% in Ghana and 2.4% in Nigeria. Third, the two sectors with biggest share of credit of over 90% in both countries i.e. industry and services posted positive change in their share of employment. Lastly, in Nigeria, the only sector with an increase in credit receipt posted a decline in share of total employment.

With these in mind, the results show that, change in employment can be said to be pro-cyclical, especially in Ghana, as it increases with economic growth and declines with economic contraction. Again, credit availability particularly where the biggest proportion of this credit goes into a sector like agriculture; which, characteristically, is labour-intensive in a developing economy, could impact employment change negatively as argued by (Oxford Economics, 2018). For instance, credit to agric grew by 2.3% and 7.1%, in Ghana and Nigeria, during the study period. Yet, agriculture's share of employment declined by 3.4% and 1.1%, respectively, in the corresponding period. The vice versa is also true; as credit to industry declined by 6.3% during the period, in Ghana, its share of employment grew by 3%. Similarly, in Nigeria, as credit to industry declined by 2.6%, its share of total employment grew by 0.3%. Thus, as credit

to a sector like industry is constrained, the possibility of maintaining or increasing labour intensity in order to maintain or expand productive capacity, exists.

In respect of the services sector, the results for Ghana and Nigeria are at variance. In Ghana, an expansion of credit by 0.4% led to 1% increase in the sector's share of total employment. In Nigeria, however, notwithstanding a 3.2% decline in credit, the services sector's share of total employment increased by 0.6%. In other words, the relationship between credit and employment in the services sector is positive in Ghana but negative in Nigeria. In a way, both cases can be justifiable depending on which subsectors of the services sector are the largest recipients of credit going into the sector. Where the services sector is dominated by relatively less technical subsectors like hospitality, real estate, etc., an increase in credit most likely will lead to expansion of employment. On the other hand, a services sector dominated by very technical subsectors like oil and gas, finance, insurance and capital market, etc., may not respond positively to increased credit. This is due to the fact that in such technical subsectors, credit expansion will most likely occasion investments in further technological and capital improvements; as argued by (Oxford Economics, 2018). From the data, on average in Nigeria, 43% of total credit going to the services sector, every year, goes to the oil & gas, power and finance subsectors. For more labour-intensive subsectors like education and real estate, only 1% and 11% of services credit goes to them on average, respectively. In Ghana, however, subsectors such as construction and commerce usually almost always lead in terms of credit receipts. The more technical, capital-intensive subsectors like mining and quarrying and oil & gas services account for minimal receipts of domestic credit.

In conclusion, the results presented above offer a clear picture of how credit could be used to trigger employment growth. First, it is fundamental to state that policy makers must employ the appropriate tools to sustain growth of economic activity. In addition, the employment of credit as a trigger for economic expansion and for that matter employment creation must not only be intensified but also deliberately targeted at the sectors of the economy that offer the greatest potential for job creation. Left to the market, sectors or subsectors with economic profitability will usually attract the largest proportion of credit. But, these may not necessarily offer the best opportunity for job creation. As such, this is where the use of development banks with precise mandates come in. These financial vehicles are important for the correction of the palpable market failure. It is one of the efficient ways of avoiding 'jobless growth'.

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