URBANISATION, FOREIGN DIRECT INVESTMENT AND UNEMPLOYMENT IN NIGERIA

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ABSTRACT

The study examines the effects of urbanization and FDI on unemployment in Nigeria during the period from 1981 to 2019 using the ARDL approach to cointegration and error correction analysis. It finds inter alia that urbanization plays significant role in reducing unemployment in the country in the short-run and long-run. FDI is found to exacerbate the unemployment problem in both time horizons, while domestic investment attenuates it. Based on the findings, the paper recommends among others, rapid urban development and expansion, and implementation of policies and programmes targeted at encouraging domestic investment, as some measures to curtail unemployment in the country.

Keywords: *Urbanisation, Rural-Urban Migration, Foreign Direct Investment, Unemployment, Employment.*
JEL Classification Codes: *E24, F21, P25*

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1.   Introduction

One of the problems plaguing Nigeria's economy is the high rate of unemployment. This phenomenon adversely affects the country economically, psychologically and socially. The country's National Bureau of Statistics (NBS) recently reported that unemployment rate in the country in the second quarter of 2020 was 27.1%, up from 23.1% recorded in the third quarter of 2018. Rural unemployment rate was 28% in second quarter of 2020 up from 23.9% in third quarter of 2018, while urban unemployment was recorded as 25.4% for second quarter of 2020 up from 21.2% in third quarter of 2020 (NBS, 2020). Youth (aged 15-34 years) unemployment was 34.9% in second quarter of 2020, up from 29.7% in third quarter of 2018. Factors responsible for the high and rising unemployment in the country include job losses caused by low level of investment and dwindling business profitability engendered by unfavourable business and investment climate, inadequate skills or skill mismatch, etc., rising supply of labour resulting from huge turnout of graduates from the nation's learning institutions, which outstrips demand for labour in the labour market, poorly developed infrastructure, unproductive government policies, recent COVID-19 pandemic, etc. Though various levels of government have taken measures to halt or combat the problem, yet it remains insurmountable.

In Nigeria, modern jobs seem to be concentrated mainly in the urban centres (towns and cities), which constitute the hub of economic activities and responsible for the bulk of the nation's output of goods and services. The urban centres are the seats of governments, hold more infrastructures, and attract more investment including domestic and foreign investment. The search for more decent jobs or the desire to be (more) gainfully employed and the neglect of the rural areas by various governments are principal factors that prompt able-bodied men and women to migrate to urban centres, raising the population therein. Thus, urbanization rate in the country has been rising over the last four decades.

Unemployment in Nigeria is affected by numerous factors. These have been investigated by various researchers (Aigheyisi, 2015; Oaikhenan & Aigheyisi, 2015; Ogbeide, et al., 2015). This study examines the potential effects of urbanization and foreign direct investment (FDI) on unemployment in Nigeria. The study has some theoretical underpinnings. The Beckmann's (1976) and Mossay and Picard's (2011, 2013) urban models, and the product cycle theory respectively predict that urbanization through social interactions and FDI inflows can engender reduction in unemployment. Urbanisation in Nigeria has been a

major pull factor in rural-urban drift, and this has had some implications for (un)employment. Inflow of FDI to the country has also had some implication(s) for (un)employment therein.

The research questions of this study relate to whether urbanization and the inflow of foreign direct investment (FDI) to Nigeria's economy affect the rate of unemployment. The objectives of the study are to examine the effects of urbanisation and FDI on unemployment in Nigeria.

This paper contributes to extant knowledge by examining econometrically, the effect of urbanization on unemployment in Nigeria from a macroeconomic perspective. To my knowledge based on a wide search of the literature, this has not be done by any prior studies. Known previous studies such as Saheed et al. (2018) and Fagbohunka (2018) used primary data and basic statistical analysis to analyse the relationship at local government area and state level. The outcome of the study will provide useful guides for design of policies and programmes aimed at urban job-creation, expansion of urbanization through opening up of rural areas as well as making FDI in the country pro-development.

The paper is organized as follow. This section has introduced the study. The next section (Section 2) reviews relevant literature. The methodology is discussed in Section 3. The empirical analysis is done in Section 4. The paper is concluded in Section 5 with some policy recommendations.

2.   Brief Background of Study
The trends in urbanization, FDI inflows and employment in some key sectors of the economy, as well as the possible driving forces behind them are briefly discussed in the section. This is done with a view to understanding the relationship among the variables.

The rate of urbanization in Nigeria has been quite rapid. Data from the World Bank's World Development Indicators (WDI, 2020) shows that urbanization measured as population in urban agglomerations of more than 1 million (% of total population) has been consistently rising over the last four decades. The trend is shown in Figure 1.

Figure 1

Urbanisation Rate in Nigeria
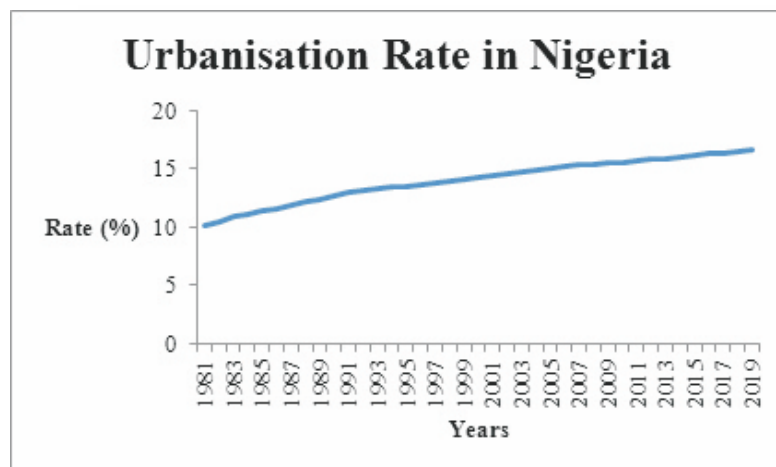
Source: WDI (2020).

The rapid urbanization in the country may contributed to job-creation and/or unemployment reduction therein due to social interactions among urban dwellers, greater domestic investment and increased inflow of FDI to the urban areas, *inter alia*. In turn, job-creation in urban areas may have ignited the impetus for intensification of rural-urban drift as more people tend to relocate to the urban centres in search of greener pasture and markets for their products and services. However, there is also "the other side of the coin" to urbanization in the country. The adverse consequences of rapid urbanization in Nigeria include development of slums, escalation of crime rate, engagement in low income and low productivity jobs, unemployment, etc. (Oyeleye, 2013).

Though the Federal and State governments have made efforts to attract more Foreign Direct Investment (FDI) into the economy, FDI inflows have been quite low and unstable. These may be attributed to several factors including behavioural factors such as high crime rate, insecurity, etc., which have been found to adversely affect the attractiveness of the economy to inflow of FDI (Aigheyisi, 2019) and other factors such as inadequate infrastructure, especially energy and transportation infrastructure, uncertainty caused by political factors. The trends in FDI inflow to Nigeria's economy are shown in Figure 2.

Figure 2

Trends in FDI inflows to Nigeria
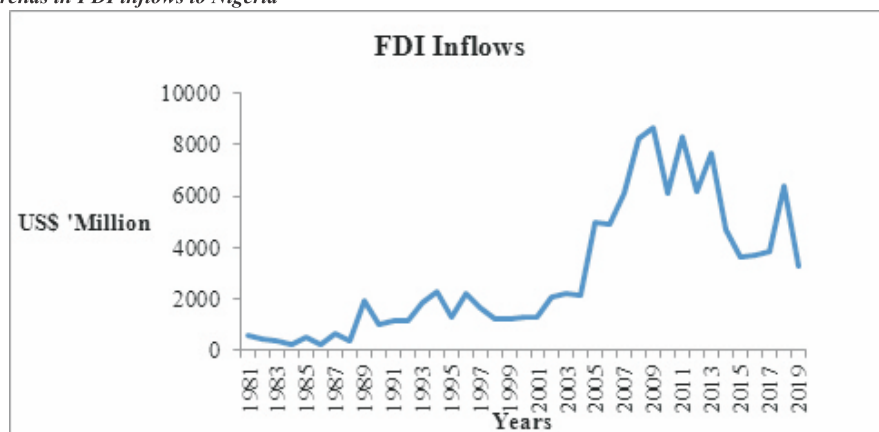
Source: United Nation's Conference on Trade and Development (UNCTAD) Handbook of Statistics (2020).

FDI in Nigeria is unevenly distributed across various sectors of the economy and tends to be concentrated in a few sectors of the economy such as the extractive sector (particularly oil and gas sectors), manufacturing, telecommunications, banking, etc. (Doguwa *et al*., 2014; Oloyede, 2014, Aigheyisi, 2015). These sectors account for low percentage of the employed labour force. Activities in the oil and gas sector subsector of the industrial sector adversely affect employment in the agriculture sector (which provides employment to largest percentage of the nation's population (FAO, 2012; Edewor, *et al*., 2018) through the negative externality or spillover effects of oil spillage, posing severe dangers to plants and aquatic life. The trends in employment in agriculture and employment in industry in Nigeria over the last three decades are shown in Figure 3.

Figure 3.

Trends in Employment in Agriculture as a Percentage of Total Employment, and Employment in Industry as a Percentage of Total Employment.
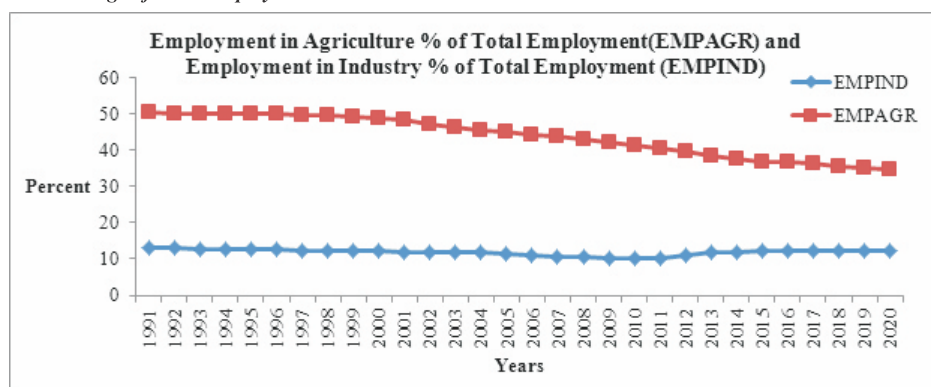
Source: Data from the World Bank's Development Indicators (2020).

The trend reveals that industrial employment has been considerably less than agricultural employment, and agricultural employment generally followed a declining trend over the years.

3. Literature Review

This section presents a review of the theoretical and the empirical literature. The gap in the literature is identified and the intended contribution of the study to existing knowledge is highlighted.

3.1. Brief Conceptual Clarification

Unemployment is a situation where able-bodied men and women, ably and eminently qualified and actively seeking jobs are unable to find any decent jobs. The NBS uses a variant of the ILO measure of unemployment and measures the unemployment rate as: "the proportion of those in the labour force (not in the entire economic active population, nor the entire Nigerian population) who were actively looking for work but could not find work for at least 20 hours during the reference period to the total currently active (labour force) population" (NBS 2020, p.9). The unemployment rate is measured as the proportion of the labour force that is unemployed.

Urbanisation refers to the shift of population from rural to urban areas, engendering increase in urban population and decrease in rural population. This shift is influenced by several factors (also referred to as the pull-factors) in

the urban areas including better access to electricity, access to clean and safe water, access to improved healthcare services, access to qualitative education and the prospect of employment amongst others. The push-factors are absent of, or scarcity of these in the rural areas. Reasons for shift of population towards the urban centres include the need to access modern basic amenities and other facilities which enhance living standards, as well as the need to be adequately employed. Sadly, there have been many impediments to accessing and enjoying these facilities (Tacoli, *et al*., 2014). The recent fast pace of urbanisation has left much to be desired. The UN-Habitat and IHS-Erasmus University Rotterdam (2018, p.31) aptly noted that "Rapid urbanization in Africa often results in the urbanization of poverty and manifests itself in mushrooming urban informal settlements (slums)". The consequence has been escalation of crime and insecurity, youth unrest, etc. (CIA, 2007).

FDI involves establishment of production plants in an area (rural or urban) of a country by foreign firms or multinational corporations. It also involves ownership of controlling stake in a production facility in a host country by foreigners. It may be resource-seeking or market-seeking. Resource seeking FDI aims at exploiting resources abundantly available in a locality, and is thus determined principally by availability of such resources. Market-seeking FDI aims at expanding markets for outputs of foreign firms in the region, country or locality. Associated with market- seeking objective of FDI are the needs for diversification, and spread or reduction of firms' risk. Establishment of such production facilities by foreigners in a locality may imply ceteris paribus creation of more jobs, building of infrastructure including road and energy infrastructures and introduction of foreign technologies and other facilities which were hitherto not in existence or were inadequate. These (depending on a host of factors including environmental laws and regulations and other government regulations and policies) and increased government-presence and domestic private sector investment are expected to engender urban development and expansion, and creation of suburbs (UN-Habitat, 2018).

3.2   Theoretical Literature
The Okun's Law explains the relationship between economic growth and unemployment. The law posits that economic growth is associated with reduction in unemployment. Economic growth refers to expansion in real output or real GDP. It is also measured as expansion in real output per man or per capita. The urban centres account for significant portion of a nation's GDP as it constitutes

the hub of economic activities (ILO, 1996; Wiebusch, 2012; Sanchez-Reaza, *et al.*, 2016). Thus, ceteris paribus, the more urbanized the cities are, the greater the level of investment and

3.3   Empirical Literature

Empirical literature on the relationship between urbanisation and unemployment, and FDI and unemployment are reviewed in this section.

3.3.1   Urbanisation and Unemployme

Few studies have empirically investigated the effect of urbanization on unemployment. This section briefly reviews the empirical literature.

In a study to investigate the relationship between urbanization and unemployment across the world (keeping other factors constant), Haq, *et al.* (2012) employed non- probability sampling correlation techniques for analysis of cross country data of 2010 for countries across the globe. Result from the nonprobability sampling technique showed positive relationship between the variables, implying that urbanization was associated with higher rate of unemployment. The correlation analysis showed positive correlation between the variables in underdeveloped and developing countries, and negative correlation between them in developed countries. These suggest that the effect of urbanization on unemployment is dependent on the level of development of the economy.

Fagbohunka (2018) employed primary data to examine the effect of urbanisation on employment and other variables in Ikare Akoko, Ondo State Nigeria. The analysis involved simple descriptive statistics. The study found that urbanization adversely affects employment in the area. Also adversely affected by urbanization are infrastructural and housing facilities. The study also found that high pace of urbanisation is associated with increase in crime rate. A major weakness of this study is the employment of descriptive statistics which in my opinion do not adequately measure cause-effect relationships among variables.

Miltra (2019) examined the effect of urbanization on women employment in Odisha, Eastern India using district level data for 2010-12 period. The methodology involved factor analysis. The study found negative relationship between the variables, suggesting that urbanization adversely affects women employment in the state. Major weaknesses of the study include the length of period covered by the study which is only two years, and may be considered

inadequate to draw a general conclusion on the effect of urbanization on female employment. The suitability of the methodology employed is also questionable as the method is designed to investigate relationships for complex concepts that are not easily measured, and variables such as urbanization and employment do not perfectly fit in that category of immeasurable concepts.

Other economic activities including production, consumption and exchange therein, leading to expansion of the GDP. This is envisaged to engender reduction in unemployment as predicted by the Okun's Law. Thus, urbanization can be related to unemployment through its linkage with real output.

Gutkind (1968) noted that rural-urban migration (in Africa) is not new, but what is new is the intensity of the migration which has some implication for unemployment. The Beckmann's (1976) and Mossay and Picard's (2011, 2013) urban models with global social interactions (both cited in Sato and Zenou, 2014) explain the relationship between urbanization and employment which may result from social interaction in urban centres. Peer effects and social networks resulting from (weak and strong) social interactions in urban centres could impact labour market outcomes (Sato & Zenou, 2014).

Whereas rapid urbanization has the advantage of economies of scale and numerous social and economic externalities such as skilled workers, social and cultural amenities, etc., these may however be dwarfed by the cost of urbanization which include emergence of slums, overstretched health facilities and other public utility facilities, and environmental polution with adverse health consequences (Todaro, 1997; Boadi, *et al.*, 2005; Aliyu & Amadu, 2017). These could affect productivity of, as well as supply and demand for labour.

The product cycle theory can be used to explain the mechanism through which FDI affects (un)employment. FDI affects unemployment through the channels of export substitution and reimports (Agarwal, 1996). Standardisation of products and their production technology brings about emergence of new competitors. This would force foreign producers to move production plants nearer to foreign markets which were hitherto the destinations for their export products, to reduce cost of transportation or exporting, and take advantage of possible cheap labour where there is abundance of it, for cost advantage. Thus, exports get substituted (export substitution transpires), and would engender reduction of unemployment in the domestic (home) economy if the foreign firm is producing

more than one export product, ceteris paribus. Where foreign affiliates of domestic firms produce goods which are imported into the domestic market as input for production or sold to final consumers, such goods are referred to as reimports. Considering that the bulk of the production process was handled by the foreign affiliate, actual or potential domestic production and employment will be adversely affected by reimports, *ceteris paribus* (Agarwal, 1996).

Aikaeli, *et al*. (2021) employed correlation and three-stage-least squares (3SLS) techniques to examine the relationships among rural-urban migration, urbanisation and urban unemployment in Tanzania's Mainland using 1988, 2002 and 2012 census surveys. The study found that urbanization and urban unemployment are strongly positively correlated. Urbanisation was associated with higher unemployment rates in the Mainland. The 3SLS estimates reveal that both variables were driven significantly by propensity of urban in-migration and differentials in rural-urban per capita income.

The effect of rural-urban migration on inflation and unemployment in urban areas of Lagos State, Nigeria was examined in Saheed *et al*. (2018) using descriptive statistics and analysis of variance (ANOVA). Data used for the study were primary data collected through informal interview and structured questionnaires. The study found that rural-urban migration was associated with increase in urban unemployment in the state.

3.3.2 FDI and Unemployment

Quite a number of studies have empirically examined the effect of FDI on (un) employment in various countries and region. Some of the studies are reviewed in this subsection. The subsection begins with a review of the effect of FDI on unemployment in countries other than Nigeria, but it is concluded with a review of the relationship between the variables in Nigeria.

Balcerzak and Zurek (2011) examined the impact of FDI on unemployment in Poland during the period from 1995 2009, using vector autoregressive (VAR) analysis. The study found that positive shock to FDI inflows engendered reduction of unemployment in the country, though this effect was transient. It was also observed from the impulse response function that though FDI decreased initially with rise in unemployment (in the first two years), it however began to rise continuously thereafter.

[2]The countries are Argentina, Chile, Colombia, Philippines, Thailand, Turkey and Uruguay

Mucuk, *et al*. (2013) investigated the effect of FDI in seven developing countries[2] within a panel data analytical framework. The reference period of the study was 1981-2009. The analysis involved DOLS, FMOLS and panel Granger causality. The DOLS result shows that FDI was associated with increase in unemployment in Argentina and Turkey, but a reduction in unemployment in Thailand. The effect of FDI on unemployment in other countries was not significant. For the group regression, FDI inflow was positively and significantly related to unemployment, suggesting that on aggregate, FDI inflows worsen the unemployment problem. Whereas the signs on coefficients of the regressors were same in the FMOLS result, unemployment effect of FDI was only significant in Turkey. The causality test result showed no significant causal relationship between the variables. It should be noted that the outcome of the causality test does not contradict the outcome of the DOLS and FMOLS (which actually indicated and measured the long run relationships), but only suggests that no variable has sufficient information to predict other variables in the short run.

Bayer (2014) investigated the effects of FDI, exports and economic growth on unemployment in Turkey during the period from 2000 to 2013. The ARDL approach to cointegration and error correction modeling was employed for analysis of quarterly data on the variables. The study found long run relationship among the variables. It also found that economic growth and exports reduced unemployment while FDI raised the level of unemployment in the country in the long run.

The effect of FDI on unemployment in Pakistan during the 1995-2011 period was examined in the study by Zeb (2014) using multiple regression analysis (OLS technique). The study found that FDI significantly reduced unemployment in the country. Inverse relationship was also found between inflation and unemployment, validating the short run Philips Curve prediction. Population was found to be positively and significantly related to unemployment in the country. The unemployment effect of corruption was positive, but not significant. A weakness of the study is the methodology employed. Caution should therefore be taken in accepting the conclusion of the study considering that the methodology employed is not justified by the result of the unit root test which found the variables to be first- difference stationary.

The effect of FDI on employment and unemployment in V4 countries (Visegrad Group comprising four Eastern and Central European Countries namely Czech

Republic, Hungary, Poland and Slovakia) during the period from 1993 to 2012 was examined in the study by Brincikova and Darmo (2014) within a panel data setting using both static and dynamic models. The study found that FDI positively affected employment in the V4, though the effect is significant at the 10% level; the unemployment effect of FDI was not statistically significant.

Strat, *et al*. (2015) examined the causal relationship between FDI and unemployment in 13 EU countries during the period from 1991-2012. The Toda-Yamamoto (TY) approach to Granger causality test was performed for the analysis. The study found unidirectional causality running from FDI to unemployment in four countries namely Bulgaria, Estonia, Hungary and Malta. The authors opined that the implication of these observations is that FDI has significant impact on unemployment in the countries. Evidence of unidirectional causality from unemployment to FDI was indicated for Czech Republic, Romania and Slovakia, suggesting, according to the authors, that higher unemployment was associated with greater inflows of FDI to the countries. There was however no evidence of causal relationship between the variables in Cyprus, Poland, Slovenia, Latvia, Croatia, Latvia and Lithuania. Though the focus of the study was on the causal relationships among the variables, it should be noted that the TY causality test does not measure the nature and size of impact of one variable on the other.

Irpan *et al.* (2016) examined the effect of FDI on unemployment in Malaysia during the period of 1980 to 2012, using the ARDL modeling approach to cointegration analysis. The study found significant negative long run effect of FDI on unemployment in the country, suggesting that inflow of FDI into the economy contributes significantly to reduction of unemployment therein. The unemployment effects of GDP, exchange rate and FDI outflows in the country were not statistically significant.

The foregoing reviews are on countries other than Nigeria. The effect of FDI on (un)employment in Nigeria has also been investigated by several researchers. Ogbeide *et al*. (2016) employed the two-step approach to error correction modeling (ECM) and OLS technique to investigate the determinants of unemployment in Nigeria. The results showed that for the period 1981-2013, FDI was associated with significant reduction in unemployment in Nigeria. Same outcome was found for the long run. Adeyemi (2018) examined the effect of FDI on employment in Nigeria during the period from 1999 to 2016 using the

Johansen approach to cointegration and error correction modeling. The study found that the effect of FDI on employment is positive, but significant only in the long run. Osabohien *et al*. (2020) using the Johansen cointegration test and the FMOLS technique also found that FDI positively and significantly affected employment level in Nigeria during the 1985 to 2017 period. Oluwatoyin and Temiloluwa (2017) investigated the effect of FDI on employment generation in Nigeria during the 1981-2014 period. The study employed the Johansen cointegration test. The normalize long run equation revealed positive and significant effect of FDI on employment in the country. Johnny *et al*. (2018), employing OLS technique for estimation of simple linear regression model, also found negative but non-significant effect of FDI on unemployment in Nigeria during the period from 1980-2015. Contrary to these findings, Onimisi (2014) using multiple regression analysis found that FDI negatively affected employment in the country during the 2002-2012 period in Nigeria.

This study shall further expand the knowledge on the effect of urbanization on unemployment by investigating the effect of urbanization on unemployment in Nigeria from a broader – macroeconomic – perspective. The outcome will guide policy makers in formulating and implementing urbanization-related policies aimed at reducing unemployment in the country.

Whereas several studies have examined the effect of FDI on (un)employment in Nigeria, the evidence has been mixed, and therefore inconclusive. This may be associated with the period covered by the various studies as well as data and methodological issues. This study contributes to the literature on the effect of FDI on unemployment in Nigeria by adopting the Autoregressive Distributed Lag (ARDL) modeling approach to cointegration and error correction modeling. Previous related studies on Nigeria fail to take the issues of regressor endogeneity which may affect estimation outcomes into consideration. The ARDL method has the advantage of yielding efficient and consistent long run estimates even in the presence of regressors' endogeneity.

4.   Methodology
4.1   Theoretical Framework
The Okun's Law and the Philips short run relation provide the basic theoretical framework for this study. The Okun's Law relates unemployment to economic growth. According to the Law, all things being equal, economic growth engenders reduction in unemployment. The short run Phillips curve posits

inverse relationship between inflation and unemployment in the short run and no significant relationship between them in the long run. In line with the objective of this study, a combination of these theories is modified to incorporate our variables of interest which are urbanization and FDI which have been respectively identified by the Beckmann's (1976) and Mossay and Picard's (2011, 2013) urban models with global social interactions and the product cycle theory to affect unemployment in an economy. Other variables are also incorporated as control variables.

4.2 Model and Estimation Technique

The model of the study is therefore specified functionally as:

UNEMP = f(URBAN, FDI, RGCF, RGDP, GGCE, REXPT, CPI, DCPSBY)   [1]

Where UNEMP represents unemployment rate measured as the proportion of the country's labour force that is unemployed; URBAN represents urbanization rate measured as population in urban agglomerations of more than 1 million (% of total population); FDI represents net FDI inflow; RGCF represents real gross capital formation, proxy for domestic investment; GGCE represents government final consumption expenditure; REXPT represents real exports; CPI represent consumer price index; DCPSBY represent financial development measured as domestic credit provided to the private sector by banks as a percentage of the GDP.

The study adopts the ARDL approach to cointegration and error correction modeling developed by *Pesaran et al*. (2001). The choice of this approach was informed by its flexibility in that it is applicable in cases of variables with mixed order of integration, that is they are either integrated of order 1 or order 0, so long as none of the variables is integrated of second-order. The methodology is also applicable in cases of small, finite dataset. Furthermore, the method yields long run estimates that are consistent and efficient even if there is regressors' endogeneity (Harris & Sollis, 2013). The approach involves OLS-estimation of an unrestricted ECM version of ARDL model specified as:

$$
\Delta UNEMP_t = \beta_0 + \sum_{j=1}^{p}(\eta_{1j}\Delta UNEMP_{t-1}) + \sum_{j=0}^{p}(\eta_{2j}\Delta URBAN_{t-j}) + \sum_{j=0}^{p}(\eta_{3j}\Delta LnFDI_{t-j}) + \sum_{j=0}^{p}(\eta_{4j}\Delta LnRGCF_{t-j})
$$

$$
+ \sum_{j=0}^{p}(\eta_{5j}\Delta LnRGDP_{t-j}) + \sum_{j=0}^{p}(\eta_{6j}\Delta LnGGCE_{t-j}) + \sum_{j=0}^{p}(\eta_{7j}\Delta LnREXPT_{t-j}) + \sum_{j=0}^{p}(\eta_{8j}\Delta LnCPI_{t-j})
$$

$$
+ \sum_{j=0}^{p}(\eta_{9j}\Delta DCPSBY_{t-j}) + \theta_1 URBAN_{t-1} + \theta_2 LnFDI_{t-1} + \theta_3 LnRGCF_{t-1} + \theta_4 LnRGDP_{t-1}
$$

$$
+ \theta_5 LnGGCE_{t-1} + \theta_6 LnREXPT_{t-1} + \theta_7 LnCPI_{t-1} - \theta_8 DCPSBY_{t-1} + \xi_t \qquad [2]
$$

The variables are as defined previously. Ln stands for natural logarithm. Parameters θ_1 to θ_8 represent the long run relationships, while the parameters $\eta_{1j} \ldots \eta_{9j}$ represent the short run relationships. Δ represents the first difference operator, ξ is the error term, j is the empirically determined optimal lag order of the ARDL model.

The cointegration test involves using the computed Wald's F statistic to test the joint significance of the regressors of estimated model. The null hypothesis of "no long-run relationships" ($\theta_1 = \theta_2 = \theta_3 = \ldots \theta_8 = 0$) is tested against the alternative hypothesis of "existence of long-run relationships" ($\theta_1 \neq \theta_2 \neq \theta_3 \neq \ldots \theta_8 \neq 0$). Two sets of asymptotic critical values for the F-statistic at different levels of statistical significance have been computed by Pesaran *et al.* (2001). One set comprises the lower bound critical values while the other set comprises the upper bound critical values. Where the F-statistic is greater than the upper bound critical value at the chosen level of statistical significance, this implies rejection of the null hypothesis and connotes existence of long-run relationships. The null hypothesis is not rejected if the F-statistic is less than the lower bound critical value, implying the variables are not co-integrated. F-statistic between the lower and upper bound critical values implies the test is inconclusive.

The ECM is derived from the UEC-ARDL model (equation 2) as:

$$\Delta UNEMP_t = \beta_0 + \sum_{j=1}^{\delta}(\Psi_{1j}\Delta UNEMP_{t-j}) + \sum_{j=0}^{\delta}(\Psi_{2j}\Delta URBAN_{t-j}) + \sum_{j=0}^{\delta}(\Psi_{3j}\Delta LnFDI_{t-j}) + \sum_{j=0}^{\delta}(\Psi_{4j}\Delta LnRGCF_{t-j})$$
$$+ \sum_{j=0}^{\delta}(\Psi_{5j}\Delta LnRGDP_{t-j}) + \sum_{j=0}^{\delta}(\Psi_{6j}\Delta LnGGCE_{t-j}) + \sum_{j=0}^{\delta}(\Psi_{7j}\Delta LnREXPT_{t-j}) + \sum_{j=0}^{\delta}(\Psi_{8j}\Delta LnCPI_{t-j})$$
$$+ \sum_{j=0}^{\delta}(\Psi_{9j}\Delta DCPSBY_{t-j}) + \varphi ECT_{t-1} + \mu_t \qquad [3]$$

The Ψs are estimates of the respective short run effects of the explanatory variables on the dependent variable. ECT is the error correction term which *inter alia* measures the speed of adjustment to equilibrium in the event of short run deviation from the long run (equilibrium) relationship. To play the role of error correction, its coefficient (φ) is expected to be negatively signed and statistically significant. The negative and significant coefficient is further indicates co-integration. μ is the error term.

The long run equation is derived from the ARDL model as:

$$UNEMP_t = \beta_0 + \beta_1 URBAN_t + \beta_2 LnFDI_t + \beta_3 LnRGCF_t + \beta_4 LnRGDP_t + \beta_5 LnGGCE_t + \beta_6 LnREXPT_t + \beta_7 LnCPI_t$$
$$+ \beta_8 DCPSBY_t + \varepsilon_t \qquad [4]$$

The β_is (for $_i$ = 1 to 8) are estimates of the respective long run effects of the explanatory variables on the dependent variable. ε is the error term.

The *a priori* expectations are: $\beta_1 < 0, \beta_2 < 0, \beta_3 < 0, \beta_4 < 0, \beta_5 < 0, \beta_6 < 0, \beta_7 </= 0, \beta_8 < 0$

4.1.   Theoretical Justification of Apriori Expectations

Theoretically, urbanisation, FDI, domestic investment, economic growth, government consumption expenditure, exports, and financial development are expected to contribute significantly to employment generation or job creation, thus reducing the level of unemployment in the country.

Increased social interactions resulting from urbanisation translates into increase in economic activities and exchanges which engender improvement in employment or reduction in unemployment. This is the prediction of the Beckmann's (1976) and Mossay and Picard's (2011, 2013) urban models with global social interactions.

Increase in inflow of FDI into various key sectors of the economy is expected to increase the level of investment, which in turn is expected to raise the level of economic activities, aggregate demand as well as the demand for labour (thereby reducing the unemployment rate, all things being equal), as predicted by the Keynesian theory of employment theory. FDI also reduces unemployment in an economy through the channels of export substitution as foreign firms set up production plants for production of items hitherto exported by it to the economy (Agarwal, 1996).

Increase in real gross capital formation (proxy for domestic invest investment) is also expected to raise the level of economic activities and improvement in demand for labour, thereby reducing the unemployment rate.

The expected negative sign on the real GDP variable is predicated on the prediction of the Okun's law which posits that economic growth is associated with reduction in unemployment rate. The Keynesian expenditure theory helps to explain the expected negative sign on the coefficient of GGCE as the increase in government consumption expenditure engenders a boost in the level of economic activities, leading to job creation and reduction in unemployment rate, *ceteris paribus*.

Improvement in real exports which results from favourable export policies and export promotion strategies engenders a boost in output of real sectors and the exports services sectors. These will lead to employment generation, and reduction in unemployment, all things being equal.

The short-run Philips curve predicts inverse relationship between inflation (rise in CPI) and unemployment, in the short run, and no significant relationship between the variables in the long run.

Financial development which engenders efficient allocation of credits is expected to engender reduction in unemployment through its effect on investment.

4.4 Preliminary Test and Model Diagnostic Test

Prior to the model estimation, the variables were tested for unit root to ascertain their stationarity properties, and justify the appropriateness of the methodology employed. The augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP) unit root tests were employed for this. For the model diagnostics, the Jarque-Bera (JB) test for residual normality, the Breusch-Godfrey (BG) test for serial correlation, the Breusch-Pagan- Godfrey (BPG) test for heteroscedasticity, the Ramsey RESET test for model accuracy and the model stability test using plot of the cumulative sum of recursive residuals were performed.

4.5 Data

Data used for the study are annual time series data spanning the period from 1981 to 2019 on the variables of the study. Data on unemployment were obtained from Nigeria's National Bureau of Statistics, while data on other variables were obtained from the World Bank's World Development Indicators (2020).

5. Results

The preliminary unit root and cointegration tests and the results of estimation of the specified models are presented and discussed in this section. The various relevant diagnostic tests and the test for model stability are also performed.

5.1 Unit Root and Cointegration Tests.

The unit root test results are presented in Table 1. The results which include the ADF and the PP unit root tests show that the variables are of mixed order of integration, that is, while some are stationary at level or integrated of order 0 [I(0)], others are stationary at first difference or integrated of order 1 [I(1)].

Table 1.
Summary Unit Root Test

ADF Test							
Variables	**Levels**			**1st Difference**			**I(d)**
	ADF Stat	Critical Value (5%)	Inference	ADF Stat	Critical Value (5%)	Inference	
UNEMP	-3.42	-3.53	NS	-7.30	-3.54	S	1
URBAN	-1.96	-3.54	NS	-4.05	-3.54	S	1
Ln(FDI)	-3.24	-3.53	NS	-10.11	-3.54	S	1
Ln(RGCF)	-0.60	-2.95	NS	-10.00	-2.95	S	1
Ln(RGDP)	-1.51	-3.54	NS	-3.76	-3.54	S	1
Ln(GGCE)	-1.81	-3.54	NS	-6.15	-3.54	S	1
Ln(REXPT)	-3.43	-3.54	NS	-8.78	-3.54	S	1
Ln(CPI)	-0.82	-3.54	NS	-3.92	-3.54	S	1
DCPSB Y	-4.04	-3.54	S	-	-	-	1
PP Test							
Variables	**Levels**			**1st Difference**			**I(d)**
	PP Stat	Critical Value (5%)	Inference	PP Stat	Critical Value (5%)	Inference	
UNEMP	-3.48	-3.53	NS	-10.25	-3.54	S	1
URBAN	-4.77	-3.53	S	-	-	-	0
Ln(FDI)	-3.33	-3.53	NS	-10.12	-3.54	S	1
Ln(RGCF)	-1.10	-2.94	NS	-4.76	-2.94	S	1
Ln(RGDP)	-3.15	-3.53	NS	-3.76	-3.54	S	1
Ln(GGCE)	-1.96	-3.54	NS	-6.16	-3.54	S	1
Ln(REXPT)	-3.42	-3.53	NS	-9.43	-3.54	S	1
Ln(CPI)	-1.80	-3.53	NS	-4.18	-3.54	S	1
DCPSBY	-4.34	-3.53	S	-	-	-	0

I(d) represents the order of integration of the variables

Source: Authors' estimation using EVIEWS 9

The outcome of the unit root test necessitates the use of the bounds or ARDL approach to test for cointegration as it is appropriate method in cases of variables with mixed order of integration. The result of the cointegration test is presented in Table 2. The F- test is greater than the upper bounds critical value even at the 5% level. In light of this, the null hypothesis that "no long-run relationships exist" among the variables is rejected. The inference therefore is that the variables are cointegrated. Thus, the short-run and the long-run models can be estimated.

Table 2

ARDL Bounds Test

Null Hypothesis: No long -run relationships exist		
Test Statistic	Value	K
F-statistic	5.56	8
Critical Value Bounds		
Significance	Lower Bound	Upper Bound
10%	1.95	3.06
5%	2.22	3.39
2.5%	2.48	3.7
1%	2.79	4.1

k represents number of explanatory variables

Source: Authors' estimation using EVIEWS 9

5.2 Model Estimation Results

The results of estimation of the specified models are presented and the discussed in this subsection. The estimated error correction model is presented in Table 2. The ECM results show that urbanization significantly reduces unemployment in the country in the short run. FDI is associated with increase in unemployment while domestic investment is associated with decrease in unemployment. Real GDP is not significantly associated with unemployment in the short run. General government recurrent expenditure significantly reduces unemployment in the short run. Real exports significantly reduce unemployment with a lag. The short run Phillips curve prediction is validated by the observed negative and significant relationship between CPI and unemployment. Increase in consumer prices significantly reduces unemployment in the short run with a lag. Financial development is also associated with decrease in unemployment in the short run with a lag of one year.

The error correction coefficient is negatively signed as expected and significant at the 1% level. This further confirms cointegration of the variables. Its value (-1.22) suggests that the adjustment or convergence towards equilibrium in the event of short run deviation therefrom is oscillatory, not monotonic (Narayan & Smith, 2005). The coefficient of determinant (R^2) indicated that the model has a good fit. About 84% of the variation in unemployment is explained by the model's regressors. The highly significant F-statistic indicates that the explanatory

variables jointly, significant explain variation in unemployment. The Durbin-Watson (DW) statistic points to the absence of problem of autocorrelation in the model.

Table 3

Error Correction Model based on ARDL(1, 1, 1, 1, 1, 2, 2, 2)

Variable	Coeff.	Std. Error	t-Stat	Prob.
D(URBAN)	-114.03	30.65	-3.73	0.00
DLOG(FDI)	6.81	1.50	4.55	0.00
DLOG(RGCF)	-18.48	5.66	-3.26	0.01
DLOG(RGDP)	5.56	27.19	0.20	0.84
DLOG(GGEXP)	-5.27	2.24	-2.35	0.03
DLOG(REXPT)	1.37	4.78	0.29	0.78
DLOG(REXPT(-1))	-28.40	7.27	-3.90	0.00
DLOG(CPI)	-13.32	10.24	-1.30	0.21
DLOG(CPI(-1))	-16.68	7.73	-2.16	0.05
D(DCPSBY)	-0.80	0.53	-1.52	0.15
D(DCPSBY(-1))	-1.29	0.47	-2.71	0.02
CointEq(-1)	-1.22	0.20	-6.23	0.00

R = 0.84; Adj. R = 0.62; F-stat. = 3.86, p-value = 0.01; DW stat. = 2.37

Source: Authors' estimation using EVIEWS 9

The long run effects of urbanization, FDI and other variables on unemployment are presented in Table 4. As in the short run, urbanization is also associated with significant reduction in unemployment in the long run. These findings validate the Beckmann's (1976) and Mossay and Picard's (2011, 2013) urban models with social interaction. They however contradict evidence from previous studies by Saheed, *et al.* (2018) and Fagbohunka (2018) which employed basic statistical analysis and found that urbanization exacerbated unemployment problem in Ikare Akoko, Ondo State and the urban areas of Lagos State respectively. Thus, from a broader macroeconomic perspective, urbanization is associated with reduction in unemployment in Nigeria. This is not unconnected with job opportunities and other opportunities for social interactions leading to employment in the urban areas. Also indicated is that FDI exacerbates the unemployment problem, corroborating evidence from Mucuk, *et al.* (2013) and Onimisi (2014) which also respectively found that FDI worsens the unemployment problem in Turkey

and Nigeria. This may be attributed in the concentration of FDI in a few sectors of the economy particularly the oil and gas sector which employ a very small fraction of the nation's labour force and also responsible for job-losses through land and water population caused by oil spillage. Domestic investment attenuates unemployment in the long run. This implies that domestic investment should be encouraged to promote job creation or enployment generation in the country.

The observed positive and significant long run effect of real GDP on unemployment implies that Nigeria has been experiencing "job-destroying" growth, probably driven by developments in the oil sector which is the main-stay of the nation's economy. Increase in government consumption expenditure engenders significant reduction in unemployment in the country in the long run. Real export positively and significantly affects unemployment in the country in the long run. This implies that if the current composition of the nation's export basket is sustained, exports will worsen the unemployment problem in the country. This contrary result could be associated with the composition of Nigeria's export basket which is highly concentrated in crude-oil and other primary commodities whose prices are low and unstable in the international market.

Consumer prices are positively and significantly associated with unemployment in the long run. The implication is that increase in consumer prices (or inflation) will worsen the unemployment problem in the country in the long run. This is not unexpected considering that higher consumer prices adversely affect private consumption, aggregate demand, investment and employment in the long run. The effect of the proxy for financial development on unemployment in the long run is not significant. This suggests that the level of financial development is not a key determinant of unemployment rate in Nigeria in the long run.

Table 4

Long Run Coefficients based on ARDL(1, 1, 1, 1, 1, 2, 2, 2)

Variable	Coeff.	Std. Error	t-Stat	Prob.
URBAN	-32.88	6.37	-5.16	0.00
LOG(FDI)	10.07	1.84	5.48	0.00
LOG(RGCF)	-23.56	6.94	-3.40	0.00
LOG(RGDP)	54.60	16.62	3.28	0.01
LOG(GGEXP)	-13.87	3.06	-4.54	0.00
LOG(REXPT)	45.89	9.16	5.01	0.00
LOG(CPI)	12.60	2.63	4.78	0.00
DCPSBY	0.10	0.47	0.21	0.84
C	-1438.53	301.32	-4.77	0.00

Source: Authors' estimation using EVIEWS 9

5.3   Diagnostics

Various diagnostic checks were performed for the underlying ARDL model. The results are presented in Table 5. The result of Jarque-Bera test for residual normality indicates that the residuals of the normally distributed. The serial correlation test result indicates absence of problem of serial correlation. The heteroscedasticty test result indicates that the residuals are homoscedastic. The Ramsey regression equation specification error test (RESET) result indicates that the specification of the regression equation is error-free.

Table 5

Diagnostic Tests

Tests	Test Stat.	p-value
Residual Normality (Jarque -Bera)	0.81	0.67
Serial Correlation (Breusch -Godfrey LM test)	1.82	0.20
Heteroscedasticity (Breusch -Pagan -Godfrey)	1.35	0.28
Ramsey RESET	2.37	0.15

Source: Authors' estimation using EVIEWS 9

5.4   Stability Test

The stability of the model is tested using the chart of cumulative sum of recursive residuals (CUSUM) prescribed by Brown, *et al*. (1975). The result is presented in Figure 4. The chat lies between the critical bounds at the 5% significance level. It can be therefore be inferred that the parameters of the model are quite stable.

Figure 4.

CUSUM
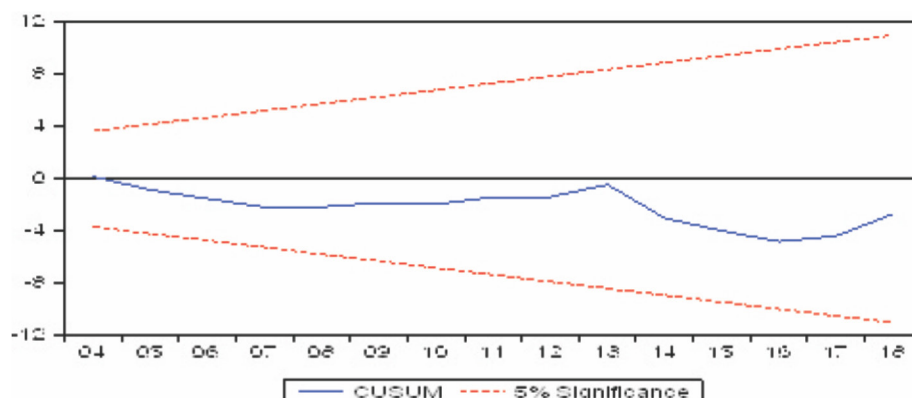
6.   Conclusion and Recommendations

The study examined the effect of urbanization and FDI on unemployment in Nigeria. Using the ARDL approach to cointegration and ECM, it found that urbanization significantly reduces unemployment in Nigeria in the short- and long-run. FDI was found to exacerbate the unemployment problem in the short-run and long-run in the country. However, it was found that domestic investment significantly reduces unemployment in the country in both time horizons.

Other findings of the study are that the country experiences jobless growth, and that economic growth in the country has been associated with rising unemployment. Government final consumption expenditure is associated with significant reduction in unemployment in the short-run and in the long run. Whereas real exports may engender reduction in unemployment in the short run, if the current composition of the country's exports is sustained, it may worsen the unemployment problem in the long run. Increase in consumer prices reduces unemployment in the short run, but it worsens the unemployment problem in the long run in the country. Financial sector development plays significantly

role in reducing unemployment in the short run, but its long run effect is not significant.

Based on the empirical evidence, it is recommended that Nigeria's government embraces urban development projects and, expansion and creation of more urban (cities and sub-urban) centres as this would engender reduction in unemployment considering that the cities or urban centres are the hub of economic activities. In doing this, the government should also ensure steps are taken to achieve balanced growth through economic and export diversification so that the nation's economic growth will be job-creating. Domestic investment should be encouraged, while policies and incentives are employed to make FDI contribute to employment generation in all sectors of the economy. Cautious increase in government final consumption expenditure is required to stem the tide of unemployment in the country. The monetary authority should also wield its instruments to control prices in the economy so as to prevent high inflation therein.

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