“Foreign direct investment inflow and employment in Nigeria”

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Abstract
The advent of globalization has spurred the level of foreign direct investment (FDI), which has increased the employment level and economic growth in countries around the world. This scenario has also been debated in the extant literature. It is on this backdrop that this study was inspired to examine the relationship between FDI and the level of employment in Nigeria. The article uses the Fully Modified Ordinary Least Squares (FMOLS) and the Johansen co-integration econometric approach on the data, which were sourced from the World Development Indicators (WDI) of the World Bank and the Central Bank of Nigeria (CBN) statistical bulletin. The investigation period covered thirty-two years (1985–2017). Also, the authors adopted the theory of absorptive capacity as the baseline for the model. Results obtained from the study showed that foreign direct investment is statistically significant and positively related to the employment level in Nigeria. These findings imply that a 1 unit increase in the inflow of foreign direct investment to the Nigerian economy is capable of increasing the level of employment by about 0.97 units. Therefore, based on findings, the study is concluded by recommendations that the Nigerian economy should become viable through effective trade policies and programs, which are capable of attracting foreign direct investment into the Nigerian economy for employment creation.

Keywords
globalization, economic growth, foreign direct investment, international trade

JEL Classification
F60, F43, P33

INTRODUCTION
It has been argued in the literature that there is no country sufficient on its own, including the developed countries of the world. In this wise, countries of the world required one level of foreign investment or the other to complement the capacity of local investment for more employment creation, growth and development.

Foreign direct investment (FDI) is often seen as the main factor in developing economies, which has resulted in a rise in employment rate, economic growth and development (Jibir & Abdu, 2017). FDI in developing economies is also seen to augment the domestic investment and an indispensable source of financing deficits in the current account (Afolayan, Okodua, Matthew, & Osabohien, 2019; Onimisi, 2012; World Bank, 2002; Dollar & Kraay, 2000). FDI can be said to be an investment made to achieve long-term interest in management normally about 10% of the voting stock in a firm established in a different economy, which is different from the country of the investor (World Bank, 2002, 1996).

Mostly, FDI is observed to be a stimulant for the growth of developing economies of the world. This is because FDI influences the economic
growth by stimulating the domestic investment and facilitates the technological transfer in host economies (Afolayan et al., 2019; Matthew, Ede, Osabohien, Ejemeyovwi, Fasina, & Akinkeplumi, 2018; Adeleke, Olowe, & Fasesin, 2014; Falk, 2009). Well-harnessed inflows of FDI can bring about the availability of modern technologies, which yield a rise in the availability of tradable goods and also bring about employment opportunities (Young, Hood, & Peters, 1994). FDI does not only guarantee the transfer of intangible assets to another country; nevertheless, it also plays an important role in the growth and development of indigenous entrepreneurship and makes the spillover of knowledge possible. Such spillovers of knowledge contribute to the creation of new enterprises in the host country. FDI has been a phenomenon that has been growing over the years. The reports showed that the proportion of world FDI increased from 5% to about 16% between 1979 and 1999. The proportion of world inflows of FDI to GDP creation rose from 2% to 14%.

The Government of Nigeria has established various institutions, rules, laws, regulations, and policies aimed at encouraging and increasing the human capital FDI (Ejemeyovwi, Osabuohien, & Osabohien, 2018; Matthew & Johnson, 2014). For example, in the year 1995, the Nigeria Investment Promotion Commission (NIPC) was created through the Decree number 16 of the year 1995. The Law created allows for foreign investors to be able to establish the businesses with 100% ownership, which must be registered under the Corporate Affairs Commission according to the provisions made available by the Companies and Allied Matters Decree of 1990. The company’s registration is completed with NIPC. The NIPC Decree ensures foreign investment against nationalization or confiscation, which brings about adequate protection by the government. The Nigeria Investment Promotion Commission (NIPC) Decree nullifies the IDCC Decree number 36 of 1988, and the NEPD of 1972 as amended in 1977 and in the year 1989, which formerly reserved the ownership of certain businesses to Nigerians (Matthew & Johnson, 2014).

Employment, economic growth, and reduction of poverty are major concerns for most developing economies in the world (Osabohien, Matthew, Gershon, Ogunbiyi, & Nwosu, 2019; Matthew, Osabohien, Urhie, Ewetan, Adediran, Oduntan, & Olopade, 2019). The need to provide and improve the employment by job creation serves as a means used to alleviate poverty in developing countries, and this is very important to third world countries. For developing countries, the high rate of poverty prevents communities, families, and individuals from having basic human needs such as adequate shelter, good clothing, adequate supply of good water, security, good food and nutrition. The governments of these developing countries are always coming up with different means that can reduce and alleviate poverty in their countries, such as donor support and through the increment in the domestic revenue of the country.

1. LITERATURE REVIEW

Nigeria is faced with a double constraint. Firstly, Nigeria has low domestic revenue, and also a low level of government investment in infrastructure and provision of social services. Secondly, Nigeria has low capital and investment in the private sector due to the high rate of poverty (Okunlola, Osuma, & Ehimare, 2019). In respect to this, FDI becomes a very important source of private finance (Chea, 2011). As a result of the major role of FDI in host economies, the global FDI inflows rose from about USD 160 billion in 1988 to about USD 1,229 billion in 2014. FDI also played a major role in the economic growth and development strategies of many developing countries like Nigeria. FDI is a major component of the world economy and globalization, as well as helping to improve the employment rate, technology advancement, productivity developments, and, finally, the economy’s growth (Asiedu, 2006). The FDI plays an important role in enhancing the level of development, investments, foreign exchange, among others, in emerging economies (Smith, 1997; Quazi, 2007). The problem of unemployment has been a major concern across the developing economies of the world. This problem of employment which has eaten deep into developing economies, is one of the major reasons for the macroeconomic objective of full employment level. The general effect of the FDI on employment may not be easily assessed in Nigeria. The reason for this assertion is due to
data paucity, the difficulty in managing the exogenous factors and conceptual problems in job creation in Nigeria. Due to the above result, it is very important to undertake such a study to examine if there is a significant relationship between FDI and job creation in Nigeria.

Abor and Harvey (2008) conducted a study on FDI’s effect on employment in Ghana. The study provided a view on the effects of FDI inflows on job creation in the host nation. The impacts of inflows of FDI on employment and income were estimated by simultaneous panel regression in this study, of which the results suggested that foreign direct investment positively and significantly impacts the employment level generated in Ghana but there exists an insignificant effect on the incomes earned. The report also supported that FDI inflows do not have a quantitative nor qualitative impact on employment. Income, productivity, and some other major factors were considered in this research work by Abor and Harvey (2008).

Shaar, Hussain, and Halim (2012) examined how FDI and unemployment rate are related to Malaysia using time series data covering the period from 1980 to 2010. Shaar, Hussain, and Halim (2012) analyze the long-run relationship between FDI and unemployment rates using a thirty-year timeline. The study used the GDP, FDI, and unemployment rates in the model. Shaar, Hussain, and Halim (2012) found that FDI and the rate of unemployment in Malaysia are negatively related using the ordinary least square method. In the same vein, Mpanju (2012) examined how FDI and employment creation are related in Tanzania from 1990 to 2008. Mpanju (2012) used a quantitative technique, which involved the collection and analysis of similar research reports and data banks, which includes World Investment Reports, UNCTAD (UNCTAD), International Monetary Funds (IMF), and some others.

Mpanju (2012) found that employment and FDI are significantly and positively related. The study revealed that the inflows of FDI play a great role in the creation of employment in Tanzania. Ugochukwu, Okorie, and Onoh (2013) in a study on the connection between FDI and economic growth in Nigeria found that there exists a positive relationship between FDI and economic growth but FDI’s impact on economic growth is insignificant in Nigeria. Following the study by Olusanya (2013), which focused on the effect of FDI inflows on the Nigerian economy’s growth between the pre-deregulated and post regulated periods, the Granger causality test found a causal relationship between economic growth and FDI inflow.

Inekwe (2013) focused on the relationship between employment and FDI in the manufacturing and service sectors in Nigeria. This study applied the Johansen multivariate co-integration test and VECM and found that FDI manufacturing sector is positively related to employment, while the service sector revealed that FDI and employment rate are negatively related. Nayyrazeb (2014) examined FDI and unemployment in Pakistan considering population size, rate of inflation as key explanatory variables for the period from 1955 to 2011. The multiple regressions were used to analyze the effects of FDI and other explanatory variables on unemployment rate reduction in Pakistan. The results posit that FDI is a key player in the reduction of the unemployment rate in Pakistan. Jude and Silaghi (2016) assessed the effects of foreign direct investment on employment in both short and long-term in twenty Central and European countries. The study by Jude and Silaghi (2016) stated that the long-term was chosen because in the long-term, there is some relationship between foreign and domestic companies, which has led to increased local content in production. The result of this study was only valid for the European Union (EU) member countries out of all the twenty countries that were enlisted.

2. METHODOLOGICAL APPROACH

This study adopted the theory of absorptive capacity as a baseline theory for the model. The rationale for this theory is that the theory asserted that local firms could easily learn technological know-how and business skills from international firms if local firms have at minimum preliminary technology change, skilled workers, and managerial skills. To absorb these benefits, firms in host economies should be able to have an initial level of technology to assimilate the technological advancement resulting from FDI inflows. The theory explains that the procedure of absorption is contingent on local firms’
skills and capabilities. FDI may also transfer its benefits through the labor force to the host economy.

To obtain an empirical estimate of the effect of FDI on employment, the model for the study is drawn from the empirical work of Massoud (2008). Therefore, the baseline model is as follow:

\[ EMPL = f(FDI, INF, REER), \]  

(1)

where \( EMPL \) is total employment rate, \( FDI \) represents foreign direct investment inflow, \( REER \) is the real effective exchange rate. Equation (1) is the implicit form of the model, while the explicit form of the model is shown in equation (2):

\[ EMPL = \infty + \alpha FDI + \Omega REER + \beta INF + \mu. \]  

(2)

In equation (2), \( \infty \) is the constant term, \( \alpha, \Omega, \) and \( \beta \) are the parameters of the explanatory variables to be estimated, \( \mu \) is the stochastic term. The stochastic term represents other important explanatory variables not included in the model. The a priori expectation is that the coefficient of \( FDI \) is expected to show a positive sign meaning that a rise in \( FDI \) inflow may result in a rise in employment level. The coefficient of the real effective exchange and inflation rates is not certain as it depends on its variability within the period.

2.1. Estimation technique

This study used the Fully Modified Ordinary Least Squares (FMOLS) and the Johansen co-integration. The reason behind this is the fact that the data used is time series, and over time, it has been discovered and proven that time-series data are non-stationary. Hence, there is a need to carry out a unit root pre-test to control for the problem of time series non-stationarity.

The co-integration technique is an improvement of the OLS method. Two or more individually integrated series are said to be cointegrated if a lower order of integration exists in their linear combinations. To apply the Johansen co-integration, the unit test is first conducted to check for stationarity in time series data. Phillip-Perron unit root test is used in this study. The presence of unit roots means that time series under consideration are non-stationary. The unit root test is conducted to determine the nature of the stationarity of variables.

3. RESULTS AND DISCUSSION

The descriptive statistics of the variables used in the study is shown in Table 1, which contains data on the mean variables, median, standard deviations, skewness, kurtosis, Jarque-Bera, probability, sum, sum of squared deviations.

Table 1. Descriptive summary

<table>
<thead>
<tr>
<th>Variables</th>
<th>EMPL</th>
<th>FDI</th>
<th>REER</th>
<th>INF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>27.36154</td>
<td>27.56400</td>
<td>108.5575</td>
<td>19.20808</td>
</tr>
<tr>
<td>Median</td>
<td>29.25000</td>
<td>27.29217</td>
<td>95.52759</td>
<td>12.55000</td>
</tr>
<tr>
<td>Std. dev.</td>
<td>3.545936</td>
<td>0.815043</td>
<td>53.69031</td>
<td>17.95479</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.696585</td>
<td>0.087863</td>
<td>1.652719</td>
<td>1.862130</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>2.189969</td>
<td>1.529802</td>
<td>5.168347</td>
<td>5.203670</td>
</tr>
<tr>
<td>Jarque-Bera</td>
<td>2.813946</td>
<td>2.375060</td>
<td>16.92995</td>
<td>20.28680</td>
</tr>
<tr>
<td>Probability</td>
<td>0.244939</td>
<td>0.304974</td>
<td>0.000211</td>
<td>0.000039</td>
</tr>
<tr>
<td>Sum</td>
<td>711.4000</td>
<td>716.6640</td>
<td>2822.495</td>
<td>499.4100</td>
</tr>
<tr>
<td>Sum sq. dev.</td>
<td>314.3415</td>
<td>16.60736</td>
<td>72066.22</td>
<td>8059.360</td>
</tr>
</tbody>
</table>

Table 1 summarizes the different descriptive statistics of all the variables used in the study. The mean is used to calculate the median distribution function or what one intends to do next time one does a similar statistical experiment. The average value of Employment, logged FDI, Real Effective Exchange, and Inflation Rate are 27.36, 27.52, 31.16, 108.56, and 19.21, respectively. The standard deviation calculates the dispersion from the mean of the data set. It can be viewed as a measurement of variability. The higher standard deviation values mean higher data variability. The standard deviation is shown in Table 1: \( EMPL \) is 3.55; \( LNFDI \) is 0.8; \( REER \) is 53.69; \( INF \) has a standard deviation value of 17.95.

Skewness in distribution is the measure of asymmetry. When the mound-shaped distribution is symmetrical, the average, median and mode values are the same or almost the same. The mean is lower than the median of skewed-left distributions and the median is lower than the mode. The mode is the smallest value of skewed-right distributions, the mean is the next highest and the mean is the highest. \( LNFDI \) with a skew of 0.815 shows that the distributions are positively skewed and normally distributed because their value is about zero. The distorted \( EMPL \) of -0.696 indicates that the distribution is negatively skewed and not normal-
ly spread. The distorted REER of 1.652 reveals that the distribution is also tilted to the right and not normally distributed. Also, INF, with skewness of 1.86, indicates that the distributions are positively skewed and normally distributed.

The kurtosis measures how heavy or light the tails of the variables data distribution are. The kurtosis of the standard normal distribution is 3. A positive value means that you have heavy-tails (many data in your tails), while a negative value means that there are light-tails (i.e., little data in your tails). The kurtosis value for REER is 5.17, while that of INF is 5.20. This means that data sets distributions are all leptokurtic with excess positive kurtosis meaning that the series is above the sample mean and have fat tail. WhileEMPL has the kurtosis value of 2.18, LNFDI also has the value of 1.53, meaning that they have a platykurtic distribution with tailed distribution.

### 3.1. Econometric results

As pointed earlier, this study used time-series data from 1991 to 2017. The method of econometric analysis used is the Phillips-Perron unit root test, Johansen co-integration test and FMOLS method of analysis, which were carried out using the EViews 10 package to achieve the specified objective of the study.

This sub-section reveals the nature of stationarity of the variables as concluded using the T-statistics of and p-value of Phillips-Perron unit root test, as shown in Table 2.

The findings of the unit root analysis described in Table 2 were obtained using the unit root test of the Phillips-Perron method. The result reveals that all the variables are stationary after the 1st difference.

### Table 2. Stationary test using Phillips-Perron

<table>
<thead>
<tr>
<th>Variables</th>
<th>Unit root test at level</th>
<th>Unit root test at 1st difference</th>
<th>Order of integration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>T-stat</td>
<td>CV 5%</td>
<td>PV</td>
</tr>
<tr>
<td>EMPL</td>
<td>–2.549</td>
<td>–2.981</td>
<td>0.116</td>
</tr>
<tr>
<td>FDI</td>
<td>–1.598</td>
<td>–2.986</td>
<td>0.468</td>
</tr>
<tr>
<td>REER</td>
<td>–4.889</td>
<td>–2.986</td>
<td>0.125</td>
</tr>
<tr>
<td>INF</td>
<td>–2.061</td>
<td>–2.981</td>
<td>0.260</td>
</tr>
</tbody>
</table>

### Table 3. Johansen cointegration test

<table>
<thead>
<tr>
<th>Hypothesized No. of CE(s)</th>
<th>Eigenvalue</th>
<th>Trace Statistic</th>
<th>Prob.**</th>
</tr>
</thead>
<tbody>
<tr>
<td>None*</td>
<td>0.937032</td>
<td>163.4700</td>
<td>0.0000</td>
</tr>
<tr>
<td>At most 1*</td>
<td>0.853429</td>
<td>99.87194</td>
<td>0.0000</td>
</tr>
<tr>
<td>At most 2*</td>
<td>0.816975</td>
<td>55.70638</td>
<td>0.0000</td>
</tr>
<tr>
<td>At most 3*</td>
<td>0.501875</td>
<td>16.64934</td>
<td>0.0334</td>
</tr>
<tr>
<td>At most 4</td>
<td>0.026619</td>
<td>0.620537</td>
<td>0.4308</td>
</tr>
</tbody>
</table>

Trace test indicates 4 cointegration equation(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level

<table>
<thead>
<tr>
<th>Hypothesized No. of CE(s)</th>
<th>Eigenvalue</th>
<th>Max-eigen Statistic</th>
<th>Prob.**</th>
</tr>
</thead>
<tbody>
<tr>
<td>None*</td>
<td>0.937032</td>
<td>63.59803</td>
<td>0.0000</td>
</tr>
<tr>
<td>At most 1*</td>
<td>0.853429</td>
<td>44.16556</td>
<td>0.0002</td>
</tr>
<tr>
<td>At most 2*</td>
<td>0.816975</td>
<td>39.05704</td>
<td>0.0001</td>
</tr>
<tr>
<td>At most 3*</td>
<td>0.501875</td>
<td>16.02880</td>
<td>0.0260</td>
</tr>
<tr>
<td>At most 4</td>
<td>0.026619</td>
<td>0.620537</td>
<td>0.4308</td>
</tr>
</tbody>
</table>

Max-eigenvalue test indicates 4 cointegrating equations at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
derived from Phillips-Perron test after the 1st difference of 0.0002, 0.0009, 0.0004, and 0.0288, respectively. The decision rule for those using p-value is to reject the null hypothesis of the unit root if the p-value is less than the significance level. This result means that for further research, the variables now being stationary are now fit to be used for the policy inference and forecasting. The Johansen co-integration result is shown in Table 3.

From the result of the Johansen test for cointegration shown in Table 3, we start from the first row with none (no co-integration) as the null hypothesis; the likelihood ratio (LR) value or trace statistics are being compared with a 5% critical value of that row. The process was repeated until we reached the row where the trace statistics is less than the critical value. The normalized cointegrating coefficient in which the coefficient of one or two variables is normalized to one is also applied. There may be more than one table with normalized coefficients (in case of more than two variables).

3.2. Fully modified OLS result

The description of FMOLS estimation outcome provided in Table 4 shows that the inflation rate is statistically significant at the level of 5%, since the p-value is less to 0.05, but FDI and REER are statistically insignificant. Also, all the significant explanatory variables confirmed with their expected sign. The adjusted R-squared of 0.861 showed that the explanatory variables (FDI, REER, and inflation rate) explained 86.1% changes in employment level, while explanatory variables not modeled explained 13.9%, which is attributed to the error term. Therefore, with high predictive power, the goodness-of-fit of this model is adequate. The FMOLS result is shown in Table 4.

Table 4. FMOLS results

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coeff.</th>
<th>Std. error</th>
<th>t-stat</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>FDI</em></td>
<td>0.096671</td>
<td>0.794437</td>
<td>0.121685</td>
<td>0.9044</td>
</tr>
<tr>
<td><em>REER</em></td>
<td>–0.001</td>
<td>0.006314</td>
<td>–0.255348</td>
<td>0.8011</td>
</tr>
<tr>
<td><em>INF</em></td>
<td>–0.057076</td>
<td>0.022887</td>
<td>–2.493841</td>
<td>0.0215</td>
</tr>
<tr>
<td><em>C</em></td>
<td>–38.87701</td>
<td>13.61956</td>
<td>–2.854498</td>
<td>0.0098</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.860851</td>
<td>Mean dependent var</td>
<td>27.64400</td>
<td></td>
</tr>
<tr>
<td>Adj. R-squared</td>
<td>0.833022</td>
<td>Mean dependent var</td>
<td>3.307073</td>
<td></td>
</tr>
</tbody>
</table>

Table 4 shows that a 1 unit rise in FDI induces 0.09 unit rise in the level of employment in the long term, but this impact is not significant as revealed by the p-value of 0.9044, a value > 5%, which we have specified as commonly used in social sciences as the level of significance. The real exchange rate was also revealed to have an insignificant impact on the employment level. The empirical analysis concludes that a 1 unit rise in the real exchange rate will cause the employment level to fall by 0.0016 units. This is a very minimal effect, but it also agrees with a priori expectation that the exchange rate when increasing will cause the unemployment level in the economy to rise. Finally, the fully modified ordinary least square estimation revealed that inflation would harm the level of employment. This means that when inflation rises by one unit, then it will result in 0.057 units fall in the employment level. This also goes in line with the a priori expectation and has a significant impact, since its p-value of 0.0098 is < 5% and the null hypothesis of non-significance is being confidently rejected with 95% confidence level.

The study uses Phillips-Perron test to examine the stationarity of the time series and test the null hypothesis of a unit root. The series is expected to lack the unit root to determine the relationship between the variables in the long-term. The test was conducted at the level and first difference using the critical value of 1%, 5%, and 10% of Mackinnon. The variables of employment level (*EMPL*), foreign direct investment (*FDI*), the real effective exchange rate (*REER*), and inflation rate (*INF*) were tested. Since all variables were stationary after the 1st difference, this study was able to use the Johansen co-integration test instead of the autoregressive distributed lag model, which could have been used if the variables were stationary at different orders. However, the Johansen test showed
that there exists a long-run relationship among all the variables of interest. Both the max-eigenvalue tests and the trace test were used and they both gave 4 cointegrating equations corresponding results in the model at a 5% significance level.

Following the findings that there exists a strong long-run relationship among the variables and all the variables are integrated at 1st order I(1), the FMOLS shows independent variables were found to affect the employment level significantly. FDI was revealed to be positively and significantly related to the employment level. This means that a rise in FDI inflows will cause employment level to rise. Real effective exchange rate (REER) is a country’s currency price as regards another currency. This analysis result reveals that REER has an insignificant impact on employment but is negatively related, which is similar to that of inflation rate (consumer price index), which was revealed to affect the employment level significantly.

CONCLUSION

The motivation for this study stemmed from the fact that unemployment is one of the major problems facing the Nigerian economy, as the unemployment rate increased to about 0.23 units in 2018. One argued that the major way to create the employment for the teeming population is through FDI to augment local employment. To achieve this objective, the study used the Johansen cointegration to test for the long-run relationship between FDI and employment, and the FMOLS to examine the effect of FDI on employment level in Nigeria. Result from the Johansen cointegration showed that there is a long-run relationship between FDI and employment level in Nigeria, while the result from the FMOLS showed that FDI is significant and positively related to the level of employment in Nigeria. This implies that a 1 unit increase in the level of FDI inflows will lead to about 0.97 units increase in the level of employment in Nigeria. Based on the estimated result, one concluded that favorable environment should be created through effective and efficient favorable business and trade policies in order to attract foreign investors.

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