

## Research Article

# Framework for Examining the Correlation Between Trade Liberalization and Employment in Nigeria

Anderson Emmanuel Oriakpono<sup>\*</sup> , Abdullahi Habib, Balarabe Ladan

Department of Taxation and Fiscal Policy, ANAN University, Kwall, Nigeria

## Abstract

This research examines the relationship between trade liberalization and employment in Nigeria using a retrospective research approach. The study considers variables such as the employment rate, trade openness index, foreign direct investment, and currency exchange rate. The analytical framework combines classical linear regression and Auto Regressive Distributed Lag (ARDL) models to capture both short-term and long-term dynamics. Diagnostic tests, including descriptive statistics, Augmented Dickey-Fuller (ADF) test, Perron Unit Root Test, ARDL-Bound test, and Error Correction Model (ECM)-ARDL test, are conducted to analyze the collected data. The study utilizes secondary data from the statistical bulletin of the Central Bank of Nigeria (2018) covering the period from 1985 to 2018. The findings of the study are mixed. The error correction estimates indicate a negative relationship between the trade openness index and the employment rate. On the other hand, foreign direct investment shows a negative relationship with employment rate, but this relationship is not statistically significant. The exchange rate demonstrates a positive and significant correlation with the employment rate. It was recommended that, Diversifying Nigeria's economy by promoting domestic industries like agriculture, manufacturing, and services to create job opportunities and reduce import dependence. Implement effective labor market policies including job training, worker protections, and competitive labor market measures to mitigate negative impacts of trade liberalization on employment. Target FDI to sectors with high job creation potential, incentivizing investments, supporting technology transfer, and fostering partnerships for employment growth in Nigeria.

## Keywords

Trade Liberalization, Employment, Nigeria, Economic Analysis and Labour Market

## 1. Introduction

The pursuit of enhancing productive employment stands at the heart of macroeconomic strategies aimed at alleviating poverty in many nations. However, the effectiveness of employment creation policies in developing countries often falls short due to the significant gap between job availability and the number of active job seekers [135]. In Nigeria, trade liberalization holds promise for its agricultural and industrial

sectors, offering easier access to global markets for its abundant resources and agricultural products such as cocoa, yam, and rice [119]. The industrial sector stands to benefit from importing equipment for mining and processing activities [6], potentially leading to increased job opportunities. Financial analysts and economists have extensively studied the relationship between trade liberalization and labor market out-

<sup>\*</sup>Corresponding author: a634463210@yahoo.com (Anderson Emmanuel Oriakpono)

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comes such as income distribution and unemployment [12, 36, 51, 65, 68, 95-96, 127, 134]. While some argue that trade openness may lead to job losses in import-competing industries [132], others suggest it can create additional job opportunities as more companies produce output for global markets [79]. However, the relationship between trade openness and unemployment varies depending on factors such as production structures [81]. Trade may increase job turnover as workers shift between sectors, temporarily raising frictional unemployment. Some models suggest that trade liberalization can exacerbate unemployment [26, 27, 34, 35, 40] while others propose it may decrease [49, 67]. Notably, trade has had differing effects on unemployment across countries, attributed partly to differences in labor market institutions [84]. Overall, this paper seeks to contribute to understanding the complex relationship between trade liberalization and unemployment.

### 1.1. Statement of the Problem

Until recently, trade liberalization was widely seen as a catalyst for development, aiming to enhance trade relationships and embrace globalization. However, in Nigeria, the adoption of trade liberalization through the Structural Adjustment Programme (SAP) in 1986 did not yield expected benefits for the labor market. Despite expectations of stimulating domestic production and generating employment, the unemployment rate in Nigeria has shown erratic trends since then National Bureau of Statistics of Nigeria in the year [104]. This raises questions about the actual impact of trade liberalization on job creation in Nigeria, necessitating further investigation into its relationship with job creation trends.

### 1.2. Objectives of the Study

This study aims to investigate the correlation between trade liberalization and job creation in Nigeria. The specific objectives are:

- To ascertain the relationship between trade openness and the employment rate in Nigeria.
- To analyze the impact of foreign direct investment on the employment rate in Nigeria.
- To assess the influence of currency exchange rates on the employment rate in Nigeria.

### 1.3. Research Questions

This study addresses the following research questions:

- What is the extent of the impact of trade openness on the employment rate in Nigeria?
- What is the nature of the relationship between foreign direct investment and the employment rate in Nigeria?
- How does the fluctuation in currency exchange rates affect the employment rate in Nigeria?

### 1.4. Research Hypotheses

The following null hypotheses are formulated to achieve the objectives of the study and address the research questions:

H01: There is no significant relationship between trade openness and the employment rate in Nigeria.

H02: There is no significant relationship between foreign direct investment and the employment rate in Nigeria.

H03: There is no significant relationship between currency exchange rates and the employment rate in Nigeria.

## 2. Literature Review

### 2.1. Conceptual Framework

#### *Trade Liberalization and Its Effects*

Trade liberalization is the process of removing or reducing barriers to the free exchange of goods between nations. These barriers can include tariffs, duties, surcharges, and non-tariff barriers such as licensing rules and quotas. The goal of trade liberalization is to promote free trade, increase economic growth, and improve efficiency in resource allocation.

According to Abu-Akeel, [2] trade liberalization represents the removal or reduction of restrictions or barriers to the free exchange of goods between nations. This can lead to various benefits, including increased competition, lower prices for consumers, access to a wider range of goods and services, and greater efficiency in resource allocation.

#### *Trade Policy Trends*

1960s - 1970s: Nigeria initially pursued an import substitution industrialization strategy, implementing measures like quantitative constraints and high import taxes to protect local industries. Edwards [39] notes that during this period, there were restrictions on imports from Japan, as well as controls on the repatriation of profits and capital goods imports.

1980s - 1990s: The focus shifted towards export promotion and the use of local raw materials in industrial production. Import duties were raised, and trade controls became more rigid, as highlighted by Anowor, Ukwani, and Ikem [10].

1999 - 2006 (NEEDS Era): Trade policies aimed at enhancing domestic industries, promoting exports, and broadening the trade regime through progressive liberalization. Yakubu and Akanegbu [138] emphasize the adoption of measures such as partial abolition of import licenses and tax incentives for businesses.

After 2006: Objectives included promoting domestic and international trade, deregulation, and export development. However, challenges like export competitiveness persisted, as discussed by Okafor [112].

#### *Trade and Unemployment*

The impact of trade liberalization on unemployment is a subject of debate. Dutta and Dutta [37] argue that trade openness can reduce unemployment by improving aggregate labor productivity and creating more job opportunities. However, Helpman and Itskhoki [65] contend that lower trade

barriers can lead to increased unemployment, especially if workers reallocate to sectors with fewer job prospects.

#### *Trade Liberalization and Nigerian Labour Market*

Trade liberalization under Structural Adjustment Programs (SAP) led to job losses and de-industrialization in Nigeria. The importation of finished goods contributed to the closure of local industries, resulting in unemployment, as noted by the Group Managing Executive of Chanrai Group of Companies.

Concepts of Employment, Unemployment, Underemployment, and Full-Employment

Employment refers to engaging in productive activities for pay or benefit, according to the International Labour Organization (ILO). Unemployment occurs when individuals are unable to find work despite actively seeking it, as defined by Okoye [115]. Underemployment involves working in a capacity lower than one's qualifications or desired hours. Full employment refers to a situation where all qualified individuals who want to work can find employment.

#### *Types of Unemployment*

Types include frictional, structural, cyclical, and technological unemployment, each caused by different factors such as mismatched skills or economic downturns, as observed by Okafor [113].

#### *Causes of Unemployment in Nigeria*

Factors contributing to unemployment in Nigeria include rapid population growth, political instability, lack of quality education, inadequate infrastructure, and economic recessions, as highlighted by Chukuezi [32].

#### *Government Initiatives to Tackle Unemployment*

Various government programs, such as the Osun State Youth Empowerment Scheme (OYES), YOU-WIN, SURE-P, and N-Power, aim to create jobs and empower Nigerian youths through training and financial support.

## 2.2. Theoretical Framework

The theories of trade are discussed below:

**Mercantilist View:** The Mercantilist view, which emerged during the early modern period, was advocated by economists such as Thomas Mun and policymakers like Jean-Baptiste Colbert. The Mercantilist view gained prominence in the 16th century. Mercantilism emphasizes accumulating wealth through a positive balance of trade, achieved by exporting more than importing. In the context of Nigeria's trade liberalization and job creation, Mercantilism might advocate for protectionist policies to shield domestic industries from foreign competition, potentially limiting job creation. Critics argue that Mercantilism's focus on accumulating bullion through protectionism may hinder economic growth and job creation by limiting access to foreign markets and impeding the flow of capital and technology [70].

**Absolute Advantage Theory:** Proponent: Adam Smith proposed the Absolute Advantage theory in his work "The Wealth of Nations," published in 1776, year Propounded: 1776. The Absolute Advantage theory suggests that countries should specialize in

producing goods and services they can produce more efficiently than others. In the context of Nigeria, this theory might imply focusing on industries where the country has a clear advantage, such as agriculture or oil production, potentially leading to job creation. Critics argue that the Absolute Advantage theory oversimplifies trade dynamics by disregarding factors like technological disparities and economies of scale, which could impact job creation in Nigeria [83-85].

**Theory of Comparative Advantage:** The Theory of Comparative Advantage was first expounded by David Ricardo in his book "Principles of Political Economy and Taxation," published in 1817. The Theory of Comparative Advantage argues that countries should specialize in producing goods and services in which they have a lower opportunity cost compared to other countries. In the context of Nigeria, this theory suggests that the country should focus on industries where it has a comparative advantage, such as agriculture or certain manufacturing sectors, even if it doesn't have an absolute advantage in those industries [122]. Critics argue that the Theory of Comparative Advantage assumes full employment and static conditions, which may not hold true in the real world. Additionally, it may not account for factors like technological advancements and changing factor endowments over time [3].

In the context of the study "The Nexus Between Trade Liberalization and Job Creation in Nigeria," the theory that best explains the relationship is the Heckscher-Ohlin Model (H-O Model).

#### *Heckscher-Ohlin Model (H-O Model)*

**Proponents:** Eli Heckscher and Bertil Ohlin developed the Heckscher-Ohlin Model in the early 20th century. The model was initially developed by Heckscher in 1919 and later refined by Ohlin in the 1930s. The Heckscher-Ohlin Model suggests that countries should specialize in industries that utilize their abundant factors of production. The Heckscher-Ohlin Model emphasizes comparative advantage based on differences in factor endowments between countries. It suggests that countries should specialize in producing goods that utilize their abundant factors of production more intensively and trade these goods with other countries.

In the case of Nigeria, trade liberalization may lead to job creation through the exploitation of its abundant factors of production, such as labor. By opening up trade and specializing in industries where it has a comparative advantage, Nigeria can attract investment, boost exports, and create employment opportunities [5].

Additionally, trade liberalization can stimulate economic growth, leading to increased demand for labor across various sectors of the economy. As Nigeria focuses on exporting goods and services in which it has a comparative advantage, it can generate more employment in those industries, thus contributing to job creation [137].

While other theories like Absolute Advantage and Early Trade Theory (Mercantilism) provide valuable insights into trade dynamics, the Heckscher-Ohlin Model's focus on factor endowments and specialization aligns closely with the poten-

tial impact of trade liberalization on job creation in Nigeria. Therefore, the H-O Model is the most relevant theory in explaining the nexus between trade liberalization and job creation in Nigeria. Critics argue that the model's assumption of fixed factor endowments overlooks the dynamic nature of factors like labor and capital in the modern global economy, which could impact job creation outcomes in Nigeria. It is important to note that the model's assumptions and predictions may not fully capture the complexities of the real-world economy, and other factors such as technology, institutions, and government policies also play a crucial role in the relationship between trade liberalization and job creation [48]. On the other hand, a part of the Heckscher-Ohlin model that suitably explains the topic "The Nexus Between Trade Liberalization and Job Creation in Nigeria" is the prediction of factor abundance and factor intensity in production. In the context of Nigeria, which is rich in natural resources and has a relatively abundant supply of labor, the model would predict that trade liberalization would lead to increased exports of goods that use these factors relatively intensively, leading to job creation in those sectors.

### 2.3. Empirical Review

In Wake, Uma, and Tuma's [136] investigation of trade policy impacts on Nigeria's unemployment rates from 1970 to 2010, it was found that while real output and income per capita were associated with decreased unemployment in the long run, trade openness was linked to increased unemployment. Additionally, foreign policy shocks, as indicated by commodity prices, had a positive short-term effect on unemployment but did not contribute to restoring equilibrium in the long term. Saibu, Omoju, and Nwosa [128] explored the relationship between trade openness and unemployment and poverty rates in Nigeria from 1986 to 2010. They discovered that foreign direct investment negatively affected economic development and unemployment rates but positively impacted the poverty rate in the long run. Conversely, trade openness had a significant positive effect on economic development and unemployment rates but negatively influenced the poverty rate. Yemi Meroyi [92] focused on the impact of trade liberalization on employment during military and civilian regimes in Nigeria from 1980 to 2012. They found that imports had a negative association with employment, while foreign direct investment increased job creation. However, export intensity decreased employment during both regimes. Balogun and Risikat [20] investigated the poverty and employment impact of trade liberalization in Nigeria from 1985 to 2010. They found that while total trade increased, the fortunes of agricultural and industrial sectors worsened due to skewed product incentives and declining trade terms. Likita, Idisi, and Charity [82] examined the effect of trade liberalization on SME growth in Nigeria from 1986 to 2016. They found that trade openness positively impacted SME performance, leading to increased production. They recommended government support to enhance SME development. Akinyemi,

Ebiefie, Adekojo, and Ibiyemi [6] studied the relationship between trade liberalization and employment generation in Nigeria from 2003 to 2014. They found that trade tariffs significantly affected job creation, emphasizing the need for government policy to encourage tariffs and foreign direct investment.

### 3. Methodology

The research methodology employed in this study adopts an ex-post facto research design, focusing on investigating historical data to explore potential relationships between variables. The model specification defines key operational measures for variables such as employment rate, trade openness index, foreign direct investment, and currency exchange rate. The analytical framework utilizes a classical linear regression model and an Auto Regressive Distributed Lag (ARDL) model to capture both short-term and long-term dynamics. Data for the study are sourced from secondary sources, specifically the statistical bulletin of the Central Bank of Nigeria [30], covering the period from 1985 to 2018. The method of data analysis combines classical linear regression and Auto Regressive Distributed Lag (ARDL) models to capture both short-term and long-term dynamics. Diagnostic tests, including descriptive statistics, Augmented Dickey-Fuller (ADF) test, Perron Unit Root Test, ARDL-Bound test, and Error Correction Model (ECM)-ARDL test, are conducted to analyze the collected data.

The mathematical form of the econometric model can be expressed as follows:

$$EPR_t = \alpha_0 + \alpha_1 TOI_t + \alpha_2 FDI_t + \alpha_3 CEXR_t + \sum_{i=1}^n \beta_i EPR_{t-i} + \sum_{i=1}^n \gamma_i TOI_t + \sum_{i=1}^n \delta_i FDI_{t-1} + \sum_{i=1}^n \theta_i CEXR_{t-i} \mu_t$$

Where:

1.  $EPR_t$  represents the employment rate at time  $t$ .
2.  $TOI_t$  represents the trade openness index at time  $t$ .
3.  $FDI_t$  represents the foreign direct investment at time  $t$ .
4.  $CEXR_t$  represents the currency exchange rate at time  $t$ .
5.  $\alpha_0$  represents the intercept or constant term.
6.  $\alpha_1, \alpha_2, \alpha_3$  represent the coefficients associated with the respective independent variables.
7.  $\beta_i, \gamma_i, \delta_i, \theta_i$  represent the coefficients associated with the lagged values of the variables for employment rate, trade openness index, foreign direct investment, and currency exchange rate, respectively.
8.  $\mu_t$  represents the error term or stochastic variable at time  $t$ .
9.  $n$  represents the lag order selected based on lag selection criteria.

The model includes lagged values of each variable to capture any potential dynamics or time lags in the relationships. The coefficients associated with these lagged values ( $\beta_i, \gamma_i, \delta_i, \theta_i$ ) indicate the impact of past values of each variable on the current employment rate. The lag order  $n$  is determined based on lag selection criteria such as information criteria.



## 4. Results and Discussions

The adopted variables all have unique and peculiar trends. A straight analysis without the observation of this trend would

limit the nature of the conclusion and recommendation made by the study. In light of this, the study employs descriptive statics of employed variables as presented in the table below;

**Table 1.** Descriptive Statistics Output of employment Rate (EPR), Trade Openness Index (TOI), Foreign Direct Investment (FDI) and Currency Exchange Rate (CEXR) in Nigeria for 1985 to 2018.

	EPR	TOI	FDI	CEXR
Mean	90.07353	0.323247	0.855148	99.01177
Median	90.50000	0.346800	0.617137	115.2551
Maximum	98.10000	0.589200	2.554953	306.0802
Minimum	76.10000	0.073600	0.002675	0.893800
Std. Dev.	6.364548	0.115505	0.772042	86.46218
Skewness	-0.601364	-0.114387	0.599632	0.683628
Kurtosis	2.353602	2.821900	2.132075	2.893351
Jarque-Bera	2.641214	0.119080	3.104666	2.664418
Probability	0.266973	0.942198	0.211753	0.263894
Sum	3062.500	10.99040	29.07504	3366.400
Sum Sq. Dev.	1336.746	0.440269	19.66962	246698.4
Observations	34	34	34	34

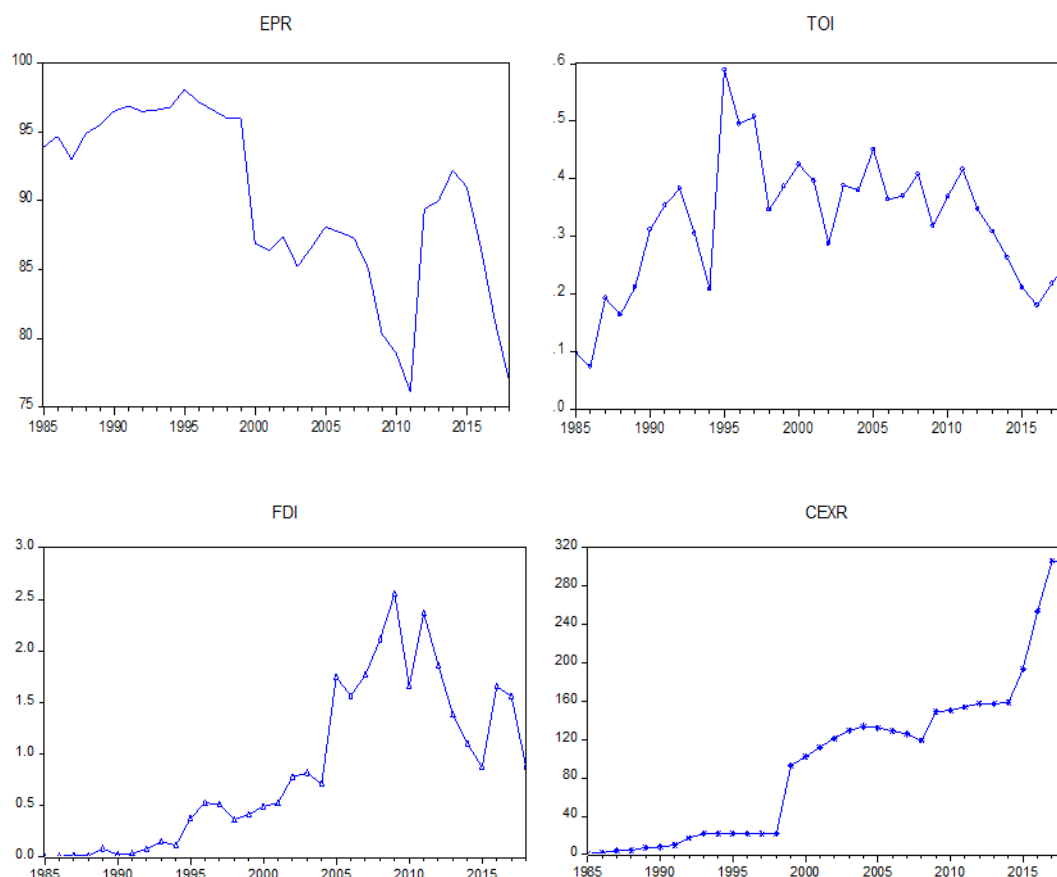
The average employment rate is seen to be 90.07%. This shows that the level of job creation in Nigeria is at 90.07%. This, therefore, shows a high level of job creation. But it fails because, the standard unemployment rate should be between 4% to 5% leaving the employment rate to be between 95% to 96%, a threshold which Nigeria falls below. This, therefore, shows that employment generation is not ideal as it stands. The negative skewness (-0.601364) shows the potential of employment generation decreasing overtime. The JarqueBera probability value of 0.266973 is above the 0.05 threshold and shows that the distribution of the employment generation is normally distributed.

Trade openness which is a ratio of aggregate trade to output shows a mean value of 32.335. This shows that the nation is partially open by about 32.3%. This is a low threshold and shows a relatively low level of openness in the Nigerian economy. The negative skewness (-0.114387) shows the potential of trade openness reducing overtime. The Jarque-Bera probability value of 0.942198 is above the 0.05 threshold and shows that the distribution of the openness of the Nigerian economy is normally distributed.

Foreign Direct Investment as a ratio to gross domestic product shows a rate of 0.85%. This shows that the percentage of foreign investment to aggregate productivity of the nation is very low and supports the low level of trade openness. The positive skewness (0.599632) shows the possibility of increment in the quantum of foreign direct investment overtime. The JarqueBera probability value of 0.211753 is above the 0.05 threshold and shows that the distribution of the employment generation is normally distributed.

The currency exchange rate shows a mean value of 99.0, which shows that onedollar trades for about 99.01 nairas on average. The positive skewness (0.683628) shows the dwindling value of the Nigerian currency against the high-powered dollar. The JarqueBera probability value of 0.263894 is above the 0.05 threshold and shows that the distribution of the employment generation is normally distributed.

The employment of pictorial/graphical expression helps the reader understand some salient factors that the raw tabulated data might not express. In light of this, the study proceeds to present the graphical representation of variables as follows;



**Figure 1.** Stacked Graphical/Pictorial Representation of the Trend of employment Rate (EPR), Trade Openness Index (TOI), Foreign Direct Investment (FDI) and Currency Exchange Rate (CEXR) in Nigeria throughout 1985 to 2018.

While the Employment generation has observably reduced overtime (with a late recovery around 2011), other employed variables have continually increased. A key observable trend in the present volatility is the trend of the employed variables except for the currency exchange rate-which has maintained a smoothened increase overtime. This, therefore, shows a rising rate of trade liberalization and rising moderating influence of foreign direct investment and falling value of the naira to the dollar.

## 4.1 Data Analysis

### 4.1.1. Stationary Test

The identification of some variables that were not normally distributed, the study will seek to determine the internal consistency of data around their respective mean, initiating a stationarity test. The study starts with employed variables stationarity at the level as presented below in the next table;

**Table 2.** Summary Compilation of Stationarity Test of Employed Variables at Level (0).

Statistics Variable	ADF t-stat	Test Critical Values			Prob	Unit Root	Comment
		1% Level	5% Level	10% Level			
EPR	-0.934912	-3.646342	-2.954021	-2.615817	0.7642	Present	Not Stationary at Level i.e. 0(0).
TOI	-3.718737	-3.646342	-2.954021	-2.615817	0.0004	Absent	Evidence of Stationarity at level
FDI	-1.640905	-3.646342	-2.954021	-2.615817	0.4510	Present	Evidence of Stationarity at level
CEXR	-1.385173	-3.646342	-2.954021	-2.615817	0.9985	Absent	Evidence of Stationarity at level

Where: ADF - Augmented Dickey-Fuller.Prob – Probability Level

Note: All other notations are references to the study variables as highlighted in Chapter Three (Model Specification).

Source: Extract from EViews 12 Outputs (See Appendix 1)

Applying, the Augmented Dickey-Fuller test, compared with the Test Critical Values at 1%, 5%, and 10%, we can observe that all employed variables are not stationary at level except for EPR (Employment Generation) which showed stationarity at the level. This is as a result of its ADF t-statistics being less than an absolute basis than the absolute values of the test critical values at the 1% and 10% critical values. This, shows the presence of a unit root in the of this variable and the absence of a stationarity trend. This means that the variable does not behave consistently and might lead to unreliable results when used at the level. While EPR show

stationarity traits as all their ADF test statistics are greater than the various critical values at 1,5, and 10% significance level on an absolute basis. Due to the nature of observed unit root in TOI, FDI, and CEXR, the study moves to the stationarity test at first difference.

When variables default in attaining stationarity at level, the differencing of variables enhances the trend of variables. This is better to the logarithm which cannot manipulate negative values. The study, will, presents the stationarity test of the employed variable at first difference as follows in the next table;

**Table 3.** Summary Compilation of Stationarity Test of Employed Variables at First Difference i.e. (1).

Statistics Variable	ADF t-stat	Test Critical Values			Prob	Unit Root	Comment
		1% Level	5% Level	10% Level			
D(EPR)	-4.899966	-3.653730	-2.957110	-2.617434	0.0004	Absent	Stationary at First Difference i.e. I(0)
D(TOI)	Stationary at Level. Subsequent evaluation would lead to over-differencing (Nkoro&Uko, 2016)						
D(FDI)	-3.653730	-3.653730	-2.957110	-2.617434	0.0000	Absent	Stationary at First Difference i.e. I(0)
D(CEXR)	-4.039880	-3.653730	-2.957110	-2.617434	0.0000	Absent	Stationary at First Difference i.e. I(0)

Where: ADF - Augmented Dickey Fuller

Prob – Probability Level.

Source: EViews 12 Output

The Table above shows that all previously non-stationary variables (TOI, FDI, and CEXR) attained stationarity and lacked unit root. This, therefore, shows that, at first differencing, our used variables have a trusted trend that would enable the further analysis to be free from spurious or unreliable outputs. In view of the observation of stationarity at the level and first difference, the study will go ahead to take the Lag length selection criteria and the Autoregressive Distribu-

tive Lag Length estimate.

#### 4.1.2. Lag Order Selection Criteria

To undertake the ARDL test, the study employs the Lag Order Selection Criteria. The assumption selects the best lag length with the help of various valid criteria.

**Table 4.** Output of Lag Order Selection Criteria.

VAR Lag Order Selection Criteria			Endogenous variables: EPR TOI FDI CEXR			
Exogenous variables: C			Date: 04/26/21 Time: 11:40			
Sample: 1985 2018			Included observations: 31			
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-257.7741	NA	253.9742	16.88865	17.07368	16.94897
1	-183.0557	125.3341*	5.813754*	13.10037*	14.02552*	13.40194*
2	-170.1064	18.37962	7.496586	13.29719	14.96246	13.84003
3	-155.7170	16.71031	9.679602	13.40110	15.80649	14.18520

\* indicates lag order selected by the criterion

VAR Lag Order Selection Criteria			Endogenous variables: <b>EPR TOI FDI CEXR</b>			
Exogenous variables: <b>C</b>			Date: <b>04/26/21</b> Time: <b>11:40</b>			
Sample: <b>1985 2018</b>			Included observations: <b>31</b>			
Lag	LogL	LR	FPE	AIC	SC	HQ

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Table displayed all available criteria such as the LR, FPE, AIC, and HQ point to the sufficiency and adequacy of the first lag. This, therefore, shows that all employed subsequent tests will be evaluated applying the first lag (1) as the maximum possible lag.

#### 4.1.3. Auto Regressive Distributive Lag

Given the presence of a small sample size of the study and the stationarity test at both level  $I(0)$ , and first differencing  $I(1)$ , the study proceeds to Auto Regressive Distributive Lag (ARDL) test estimation below.

First on the Coefficient of Determination ( $R^2$ ), the observed value of 0.805141 shows that, all applied variables jointly account for approximately 80.51% of variations in the applied rate, while the remaining 19.49% can be attributed to other factors (White noise/error term) not directly captured in the model.

The F-statistics which seeks to determine the universal

utility of the model can be seen to shows a coefficient value of 28.92340, at a probability level of 0.000000. The probability level of 0.000000 is less than the 0.05 (5%) significance level and for that shows that the model is suitable for the subsequent long-run test.

The Durbin Watson shows a value of 1.932424 and shows the presence of negative serial correlation which is okay. A negative serial correlation indicates that value changes between the current variable and its immediate past values are likely to move in the opposite direction as the value changes between past and current values which limits the possibility of having biases in results for unreliable estimates and erroneous hypothesis testing.

The short run, shows that; trade openness index (TOI) and the quantum of foreign direct investment (FDI) does not significantly affect the level of employment generation in the country. Given the suitable short-run ARDL, the study proceeds to the Bounds Test.

**Table 5.** Auto Regressive Distributive Lag (ARDL) Test Estimation Output (Short-run).

Dependent Variable: <b>EPR</b>		Method: <b>ARDL</b>		
Date: <b>04/26/21</b> Time: <b>11:42</b>		Sample (adjusted): <b>1986 2018</b>		
Included observations: <b>33 after adjustments</b>		Maximum dependent lags: <b>1 (Automatic selection)</b>		
Model selection method: <b>Akaike info criterion (AIC)</b>		Dynamic regressors (1 lag, automatic): <b>TOI FDI CEXR</b>		
Fixed regressors: <b>C</b>		Number of models evaluated: <b>8</b>		
Selected Model: <b>ARDL (1, 0, 0, 0)</b>				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
EPR(-1)	0.532017	0.147729	3.601302	0.0012
TOI	-0.625740	5.281606	-0.118475	0.9065
FDI	-1.102832	1.206777	-0.913866	0.3686
CEXR	-0.026779	0.009563	-2.800281	0.0091
C	45.73369	14.21777	3.216657	0.0033
R-squared	0.805141	Mean dependent var		89.95758



**Dependent Variable: EPR****Date: 04/26/21Time: 11:42****Included observations: 33 after adjustments****Model selection method: Akaike info criterion (AIC)****Fixed regressors: C****Selected Model: ARDL (1, 0, 0, 0)****Method: ARDL****Sample (adjusted): 1986 2018****Maximum dependent lags: 1 (Automatic selection)****Dynamic regressors (1 lag, automatic): TOI FDI CEXR****Number of models evaluated: 8**

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Adjusted R-squared	0.777304	S. D. dependent var		6.426655
S. E. of regression	3.032783	Akaike info criterion		5.195566
Sum squared resid	257.5376	Schwarz criterion		5.422309
Log likelihood	-80.72683	Hannan-Quinn criter.		5.271858
F-statistic	28.92340	Durbin-Watson stat		1.932424
Prob(F-statistic)	0.000000			

\*Note: p-values and any subsequent tests do not account for model selection.

**(i). ARDL Bounds Test**

To determine the presence of a significant long-run relationship between employed variables, the study employs the ARDL Bounds test below;

**Table 6.** ARDL Bounds Test.

<b>ARDL Bounds Test</b>		<b>Dependent Variable: D (EPR)</b>		
<b>Selected Model: ARDL (1, 0, 0, 0)</b>		<b>Case 2: Restricted Constant and No Trend</b>		
<b>Date: 04/26/21Time: 11:44</b>		<b>Sample: 1985 2018</b>		
<b>Included observations: 33</b>				
<b>F-Bounds Test</b>		<b>Null Hypothesis: No levels relationship</b>		
<b>Test Statistic</b>	<b>Value</b>	<b>Signif.</b>	<b>I(0)</b>	<b>I(1)</b>
Asymptotic: n=1000				
F-statistic	4.957434	10%	2.37	3.2
K	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66
Finite Sample: n=35				
Actual Sample Size	33	10%	2.618	3.532
		5%	3.164	4.194
		1%	4.428	5.816
		Finite Sample: n=30		
		10%	2.676	3.586
		5%	3.272	4.306
		1%	4.614	5.966

The table above shows that the F-statistics value of 4.957434 is above all finite sample figures at the 1%, 5%, and 10% level for both variables at  $I(0)$  and  $I(1)$  i.e. variables integrated at level and variables integrated at first difference. Based on this finding, this result tells of a long-run relationship between the variables, next will be to estimate the result of ARDL long run form.

## (ii). ARDL Long Run Form

To examine the nature of the relationship between employed variables, in the long run, the study presents the ARDL Long run as follows;

**Table 7.** ARDL Long Run Form and Bounds Test.

ARDL Long Run Form and Bounds Test Selected Model: ARDL(1, 0, 0, 0) Date: 04/26/21Time: 11:44 Included observations: 33		Dependent Variable: D(EPR) Case 2: Restricted Constant and No Trend Sample: 1985 2018 Conditional Error Correction Regression		
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	45.73369	14.21777	3.216657	0.0033
EPR(-1)*	-0.467983	0.147729	-3.167849	0.0037
TOI**	-0.625740	5.281606	-0.118475	0.9065
FDI**	-1.102832	1.206777	-0.913866	0.3686
CEXR**	-0.026779	0.009563	-2.800281	0.0091
Coint(ECM)	-0.303579	0.103612	-2.929964	0.0103
* p-value incompatible with t-Bounds distribution.				
** Variable interpreted as $Z = Z(-1) + D(Z)$ .				
R-squared	0.615077	Mean dependent var		34.76577
Adjusted R-squared	0.529461	S. D. dependent var		15.65381
S. E. of regression	13.74097	Akaike info criterion		8.210204
Sum squared resid	4531.542	Schwarz criterion		8.400519
Log likelihood	-110.9429	Hannan-Quinn criter.		8.268386
F-statistic	9.680138	Durbin-Watson stat		2.162895
Prob(F-statistic)	0.000993			

The probability fact that the currency exchange rate has a positive long-run relationship with the applied rate. While trade openness and foreign direct investment both have zero long-run relationship with the employment rate. The Error Correction Coefficient-Count (ECM) values of -0.303579 at a probability level of 0.0103 reveals that disequilibrium between the short and long run is adjusted backwards by 30.36%. In other words, it tells us the speed of adjustment or correction from the short run to the long run if there is any disequilibrium in each period. The table above shows that all variables show negative coefficient values in the long run as against our apriori expectation. This fact tells that an increase in various dimensions of trade liberalization will lead to a respective decrease in the employment rate (EPR). This, would, shows that trade liberalization tends to decrease or be adverse to job

creation as measured using the level of employment rate.

For the model utility, the coefficient of determination ( $R^2$ ) value of 0.615077 shows that all employed institutional funding jointly responsible for approximately 61.51% of variations in the applied rate in the longrun, on the other hand the remaining 38.449% can be attributed to other factors (White noise/error term) not directly captured in the model.

The F-statistics which tries to determine the universal utility of the model can be seen to shows a coefficient value of 9.680138 and an accompanying probability value of 0.0009993 993 which, therefore, displays a good and suitable model and universal utility. Finally, the Durbin Watson value of 2.162895 is in an acceptable range.

## 4.2. Hypotheses Testing

To test the study hypothesis, the study employs the ARDL long run test. The t-statistics and probability level are used to accept or reject the hypothesis.

### 4.2.1. Test of Hypotheses One

$H_{01}$ : Trade openness index does not significantly influence the employment rate in Nigeria.

$H_{A1}$ : Trade openness index significantly influence the employment rate in Nigeria.

At present value, the Trade openness index shows at-statistics value of -0.118475 which is observed to be less than  $\pm 2$ . The accompanying probability level of 0.9065 is greater than the 0.05 significance level, which shows an insignificant relationship between the Trade openness index at current values and the employment rate. In light of this, the study does not reject the null hypothesis and concludes that the Trade openness index significantly influences the employment rate in Nigeria.

### 4.2.2. Test of Hypotheses Two

$H_{02}$ : There is no prevailing statistically relationship between Foreign Direct Investment and the employment rate in Nigeria.

$H_{A2}$ : There is a prevailing statistically relationship between Foreign Direct Investment and the employment rate in Nigeria.

At present value, Foreign Direct Investment shows at-statistics value of -0.913866 which is observed to be less than  $\pm 2$ . The accompanying probability level of 0.3686 is greater than the 0.05 significance level, which shows an insignificant relationship between Foreign Direct Investment at current values and the employment rate. In light of this, the study does not reject the null hypothesis and therefore concludes that there is a prevailing statistically relationship between Foreign Direct Investment and the employment rate in Nigeria.

### 4.2.3. Test of Hypotheses Three

$H_{03}$ : The currency exchange rate does not significantly influence the employment rate in Nigeria.

$H_{A3}$ : The currency exchange rate significantly influences the employment rate in Nigeria.

The currency exchange rate which is only observed at current values shows at-statistics value of -2.800281 which is observed to be less than  $\pm 2$ . The accompanying probability level of 0.0091 is less than the 0.05 significance level, which shows a significant relationship between the Currency exchange rate and the employment rate. Given these findings, the study rejects the null hypothesis and accept the alternate hypothesis that the Currency exchange rate significantly influences the employment rate in Nigeria.

## 4.3. Summary of Findings

1. Employment generation is only significantly influenced by its immediate past value and by the level of the currency exchange rate. This is supported by studies that show a positive relationship by scholars such as Krugman (1986), Messerlin (1995), Rodrik (1997), Rattso and Torvik (1998), Olomola (1995), Morawczynski and Wach (2004), Christev et al. (2005), Jenkins and Sen (2006). [31, 75, 85, 94, 99, 117, 123, 121]
2. The trade openness index shows a negative and significant influence on the employment rate in Nigeria. This is supported by studies that show a negative relationship by Lall, Lee and Vivarelli, Bernard et al., Kareem. [22, 77, 86, 87]
3. The foreign direct investment shows a negative and significant effect on employment rate in Nigeria. This is supported by studies that show a negative relationship by Lall, Lee and Vivarelli, Bernard et al., Kareem. [22, 77, 86, 87]

The aforementioned therefore shows that current attempts at trade liberalization hurt the level of job creation.

## 5. Conclusions and Recommendations

### 5.1. Conclusion

This research explores the nexus between trade liberalization and employment in Nigeria, employing an ex-post facto research approach. It investigates variables including employment rate, trade openness index, foreign direct investment, and currency exchange rate. The analytical framework integrates both classical linear regression and Auto Regressive Distributed Lag (ARDL) models to capture short-term and long-term dynamics. Various diagnostic tests, including descriptive statistics, Augmented Dickey-Fuller (ADF) test, Perron Unit Root Test, ARDL-Bound test, and the Error Correction Model (ECM)-ARDL test, were conducted to analyze the sourced data. Secondary data from the statistical bulletin of the Central Bank of Nigeria [30] spanning from 1985 to 2018 was utilized. The study's findings yielded mixed results; notably, the error correction estimates indicated a negative association between the trade openness index and employment rate. Conversely, direct foreign investment exhibited a negative and statistically insignificant relationship with employment rate. Notably, the exchange rate demonstrated a positive and significant correlation with employment rate.

### 5.2. Recommendations

1. Given the negative impact of the trade openness index and foreign direct investment on employment, there is a need to diversify Nigeria's economy. Policymakers should focus on promoting domestic industries and

sectors like agriculture, manufacturing, and services that have the potential to create job opportunities. This will reduce the country's dependence on imports and improve job prospects for the local workforce.

2. Enhance labor market policies: It is crucial to implement effective labor market policies to address the potential negative effects of trade liberalization on employment. This can include measures such as providing job training and skill development programs, strengthening worker protections, and ensuring a fair and competitive labor market. By improving the overall capacity and attractiveness of the labor market, it can help mitigate any adverse effects of trade liberalization on employment.
3. Targeted attraction of FDI: Despite the negative correlation between foreign direct investment and employment, policymakers should adopt a targeted approach to attract FDI that aligns with job creation goals. This could involve incentivizing investments in sectors with high potential for job creation, supporting technology transfer and innovation, and promoting partnerships between foreign investors and local enterprises. This will ensure that FDI contributes to job creation in Nigeria.

## Conflicts of Interest

The authors declare no conflict of interest.

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