NEXUS BETWEEN ENTREPRENEURSHIP AND UNEMPLOYMENT REDUCTION IN NIGERIA

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Abstract

This study examines the nexus between entrepreneurship and unemployment reduction in Nigeria from 1999 to 2022. Annual time series data were collected from World Bank Indicator and Central Bank of Nigeria (CBN) statistical bulletin on the variables such as unemployment rate (UEPR,), being the dependent variable, and entrepreneurship (ENTRE), domestic investment (DOIE), interest rate (INTR) and institutional quality (INSQ) as the explanatory variables. The Auto Regressive Distributed Lag (ARDL) was utilized to ensure that the objective of the study was achieved. From the long run result of the study, entrepreneurship, domestic investment, interest rate and institutional quality have positive effect on unemployment reduction in Nigeria, however in the short run, the result revealed that entrepreneurship and interest rate have negative relationship with unemployment reduction while domestic investment and institutional quality have positive relationship. From these findings, it concludes that entrepreneurship in Nigeria will help to reduce unemployment rate. The study, therefore, suggests establishment of a conducive environment, as it has the potential of reducing unemployment rate in Nigeria. Domestic investment should also be encouraged so as to have more people employed into the labour force and this will help reduce unemployment rate in Nigeria.

Keywords: Entrepreneurship, Unemployment, Entrepreneur, Nigeria.

JEL Classification Codes: E24, E26, O30

1. Introduction

The nexus between entrepreneurship and unemployment reduction has attracted significant scholarly attention as countries worldwide seek strategies to combat unemployment. Entrepreneurship is recognized as a driver of economic development, generating job opportunities, fostering innovation, and stimulating economic activities (Brixiová, Ncube, & Bicaba, 2020). These dynamic addresses unemployment challenges by absorbing unemployed individuals and lowering unemployment rates. Global unemployment rates have fluctuated in recent years, with a decline to 5.8% in 2022 from 6.9% in 2020, driven by economic recovery

post-COVID-19. However, projections for 2024 suggest a modest rise to 5.2% due to economic challenges and growing social inequalities (International Labour Organisation, ILO, 2023; 2024).

Between 1999 and 2022, Nigeria experienced significant fluctuations in unemployment rates. The National Bureau of Statistics (NBS) reported relatively low unemployment in 1999, which began to rise steadily in the early 2000s, reaching 10.4% by 2015 due to economic challenges and structural labour market issues. Unemployment peaked at 23.1% in the third quarter of 2018 during an economic recession and widespread job losses. By the second quarter of 2020, unemployment reached 27.1% due to the COVID-19 pandemic's severe impact on economic activities. As of the fourth quarter of 2022, the rate slightly decreased to 33.3%, reflecting ongoing economic recovery efforts (National Bureau of Statistics, 2022).

The Global Entrepreneurship Monitor (GEM, 2019) report highlights entrepreneurship levels across Sub-Saharan Africa, showing Nigeria at 44%, which is low compared to Uganda (79%), Botswana (72%), Angola (70%), and Malawi (70%). Despite being the "giant of Africa," Nigeria struggles with rising graduate unemployment, with approximately 5.2 million Nigerian university graduates unemployed (Longe, 2017). Many Nigerian graduates studying abroad return to compete for scarce job opportunities (Sania & Jamilb, 2020). Unemployment in Nigeria, a labour-surplus economy, remains a significant socio-economic problem exacerbated by underemployment, rural-urban migration, and the growing output of graduates produced annually by higher institutions.

Entrepreneurial activities in Nigeria have evolved significantly from the pre-colonial era, where trade and craftsmanship dominated, to the modern economy driven by small and medium enterprises, innovation, and digital entrepreneurship. Traditionally, Nigerian entrepreneurs were involved in traditional businesses such as agriculture, blacksmithing, and textile production, which formed the backbone of local economies (Adebayo & Oke, 2021). Independently, there has been increased industrialization and government-driven enterprises, though the government has re-emphasized private-sector-driven entrepreneurship to address structural economic challenges. The role of entrepreneurs in the development of the Nigerian economy has been very instrumental in setting up businesses, fostering innovation, and creating employment opportunities in the fields of agriculture, manufacturing, technology, and services (World Bank, 2023). They identify market gaps, mobilize resources, and take financial risks to develop products and services that meet the needs of consumers (Olayemi, 2020). Despite their

important roles, entrepreneurs in Nigeria face challenges such as inadequate infrastructure, lack of access to capital, incoherent policies by the government, and high operating costs (Adebayo & Oke, 2021).

To strengthen entrepreneurship, the Nigerian government has instituted various programmes and policies aimed at enhancing business growth and sustainability. Among these, the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) trains, funds, and gives policy support to SMEs (CBN, 2022). The CBN has also introduced intervention programmes such as the Agricultural Credit Guarantee Scheme Fund (ACGSF) and the Anchor Borrowers' Programme (ABP), to help agribusinesses and small-scale farmers (CBN, 2022). On the other hand, the Bank of Industry's (BOI) Youth Entrepreneurship Support (YES) Programme helps the youths by offering them financial assistance as well as skills in entrepreneurship (CBN, 2022). With the advent of technology, digital entrepreneurship is blooming through government-supported initiatives such as the Nigeria Digital Economy Policy and Strategy (NDEPS) to drive innovation and business growth in the economy via digital transformation (World Bank, 2023). These efforts have however contributed to job creation, economic diversification, and increased global competitiveness for Nigerian entrepreneurs, but the rate of unemployment in Nigeria is still very high.

Empirical research on the relationship between entrepreneurship and unemployment presents mixed results. Some studies, including Mohammed (2022), Okeke et al. (2020), and Seiyabo (2020), found a positive relationship (refugee effect). Conversely, other studies, including Jeraldine (2021), Ayinde (2020), and Apaydin (2018), reported an inverse relationship (Schumpeter effect). These inconclusive findings highlight the need for further empirical research. This study aims to explore the nexus between entrepreneurship and unemployment reduction in Nigeria to contribute to this ongoing debate.

2. Literature Review

This section therefore reviews some of the concepts, theoretical literature, empirical works by scholars on the subject matter and also identifies the gap in the literature.

2.1 Conceptual Issues

2.1.1. Entrepreneurship

Global Entrepreneurship Monitor (GEM, 2021) defines entrepreneurship to be the process of being actively involved in starting or managing a new business, identifying opportunities for a startup, considering the idea of starting a business, or planning to establish one. Afolabi (2015) defines entrepreneurship as the ability and willingness to establish, collocate and handle a business enterprise, as well as its associated risks so as to make profit. The formation of new firms is the most apparent manifestation of entrepreneurship. In this study, entrepreneurship is seen as the process by which self-employed entrepreneurs operate businesses in all sectors of the economy such as agriculture, retail, technology, and others. This employs more people hence contributing to the development of an economy. This is very important in the reduction of unemployment and in fostering economic growth, as many people start businesses due to limited formal job opportunities

2.1.2. Unemployment

According to ILO (2021), unemployment can be described as "an individual belonging to active population (16 -64), without a job, qualified and ready for employment, and currently seeking employment." This includes anyone who is unemployed & keeps reaching out to connections about job opportunities or applying for jobs. This description of unemployment is explicit and stringent; it does not simply include "anyone who is unemployed." ‘The working population, or the segment among those who are ready and willing to work, includes both jobless and job-seeking individuals. Thus, in the context of this study, unemployment is defined as the situation in which those who are capable and actively seeking for jobs could not get jobs.

2.2. Theoretical Review

2.2.1. Theory of Innovation (Schumpeter)

According to Schumpeter (1934), the underlying force driving increases in employment and decreases in unemployment is innovation, which creates more jobs than it destroys. Entrepreneurs introduce new products, markets, production techniques, technologies, or organizations, raising investments to materialize these innovations. Domestic investment expenditures increase demand for economic resources, raising their prices and encouraging other entrepreneurs to adopt these innovations. Schumpeter argues that economic development disrupts existing equilibriums through spontaneous and discontinuous transformations in

economic activities. He defines development as a process driven by entrepreneurial innovations, which act as catalysts for dynamic changes by combining resources and processes in novel ways. Unlike the traditional view that consumers drive economic change, Schumpeter emphasizes that producers lead and educate consumers when necessary. Thus, economic development is characterized by the implementation of new combinations driven by entrepreneurial activities, reshaping the economic landscape intermittently (Schumpeter, 1934). This theory is related to this study in that when business are created through innovations and new products and services that generate employment opportunities are introduced, people would be gainfully employed and this would help to reduce unemployment rate in Nigeria.

2.3 Empirical Literature Review

Mohammed (2022) investigated the impact of entrepreneurship development on job creation in 2022, using primary data from Sabon Gari Local Government Area, Kaduna State, Nigeria. The study employed binary logit regression analysis, with a sample of 331 entrepreneurs selected through simple random sampling and analyzed using descriptive statistics and binary logit regression. The findings revealed that despite entrepreneurship's role in job creation, youth unemployment remains high in Nigeria. The results showed that 79.7% of the sampled entrepreneurs had employed one or more persons, indicating a reduction in unemployment. The role of entrepreneurial education in youth employment, and schemes that boost youth entrepreneurship was studied by Olufemi (2020). Data was collected from the primary source by using a structured questionnaire. The sample was selected using a stratified random sampling technique. The target respondents were youths between the ages of 20 and 40 years. Data was gathered from 220 youth entrepreneurs in Lagos, Nigeria. The study found that parents and family influenced their decision to start a business. Lack of access to finance and financial risks were also found to be significant factors that discouraged youths against starting up a business.

Ayinde (2020) conducts an econometric analysis of the relationship between entrepreneurship and unemployment for Sub-Saharan Africa between 2006 to 2016. Using a sample of ten countries, the study examines the impact of entrepreneurial start-ups on job creation in Sub-Saharan Africa. The study employed traditional panel data techniques, including pooled OLS, random effect, and fixed effect, and discovered a positive relationship between the two variables, implying that entrepreneurship if properly promoted, has the potential to significantly reduce unemployment in the region if it well harnessed. Okeke et al. (2020) investigated youth entrepreneurship and unemployment in Delta State, Nigeria, focusing on its

potential as a solution to unemployment and a driver of economic development. Using a survey research methodology, 370 respondents were selected from a population of 10,000 through simple random sampling. The findings revealed that youth entrepreneurship positively influences young people's lives and reduces unemployment. Technical innovation, creativity, and opportunity recognition were identified as having a positive influence on unemployment reduction.

Seiyabo (2020) examines the concept of Entrepreneurial Development as a panacea to graduate unemployment in Nigeria, adopting the multi-stage sampling technique; primary data were obtained from 360 respondents comprising lecturers and students of Niger Delta University Amassoma, Bayelsa State Nigeria, by means of structured questionnaires. The study revealed a positive and significant relationship between the development of adequate entrepreneurship curricula in Nigeria tertiary institutions and the production of innovative entrepreneurs.

Okafor (2019) investigates entrepreneurship development as a strategy of lowering unemployment in Nigeria, with the study area being selected small scale enterprises in Anambra State. The study used a descriptive survey to evaluate the contribution of the government in attempting to make the process an effective means of addressing the problem of unemployment. According to the findings, tertiary institutions and other entrepreneurial training centres can be reformed to better suit the demand of trainees. Also, it was revealed that the costs of doing business in Nigeria has a negative impact on the development of entrepreneurship in Nigeria.

Apaydin (2018) investigates the links between unemployment and entrepreneurship in Turkey. He conducted empirical research to determine whether or not the effects of Schumpeter and Refugee are valid. The Autoregressive Distributed Lag- ARDL method was used, and secondary data on unemployment rate and entrepreneurship (proxied by self-employment) from Turkey from 2000 to 2016 was adopted. The estimation results show a negative correlation between entrepreneurship and unemployment. As a result, as the rate of entrepreneurship rises, the rate of unemployment decreases or vice versa. The direction of causality is from entrepreneurship to unemployment. In other words, while the Schumpeter effect is valid, the Refugee effect is ruled invalid.

Ezeanokwasa and Nwachukwu (2014) examined the effective entrepreneurship skills in reducing unemployment through small business innovation in Nigeria. The research design used was descriptive research design and questionnaire was distributed to the participants.

Frequencies, arithmetic means, standard deviations and t-statistics was used to analyze the data. The findings of the study showed that the contribution of entrepreneurship skills towards reducing unemployment in Nigeria include Improvement in the standard of living through innovation that led to introduction of high goods and services and conservation of foreign exchange as a result from reduced importation of machines and equipment, raw material and payment to foreign export. Musa and Semasinghe (2013) explored the relationship between entrepreneurship rate and unemployment rate using exploratory research. However, the study found that increase in entrepreneurship activities reduced unemployment, at the same time, high rate of unemployment led to decrease in entrepreneurial activity in an economy.

2.4. Gap in the Literature

From the empirical studies reviewed, it was found that previous studies have been using different measures to proxy entrepreneurship over the years, however, this study used self-employment and also included institutional quality to fill gap found in the literature. The study of Apaydin (2018) that used self-employment rate to proxy entrepreneurship was done in Turkey. Hence, self-employment rate is used in this study because it reflects the ability of individuals to set up and maintain businesses that subsequently lead to the growth of an economy through employment opportunities. Unlike broader measures, self-employment captures grassroots entrepreneurial activities, especially in economies like Nigeria, where the informal sector is dominant. Moreover, institutional quality is one of the critical factors influencing entrepreneurial success; it shapes the aspects related to regulatory efficiency, access to finance, and business-friendly policies. Poor institutions may hinder entrepreneurship with bureaucracy and corruption, while strong institutions support a business-friendly environment. This study, therefore, incorporated both self-employment and institution quality in exploring the effect of entrepreneurship and hence filled an important gap existing in previous empirical research.

3. Methodology

The study adopts a **quantitative research design**, as it involves analyzing numerical data. The data is **time series in nature**, sourced from secondary databases, specifically the **World Bank database** and the **CBN Statistical Bulletin**. The method of data collection involves utilizing these existing official data sources for the analysis.

3.1. Model Specification

The model for this study is a slight modification of the model used previously by Apaydin (2018) which was stated as follows:

$$\text{unemp}_t = \beta_0 + \beta_1 \text{entrep}_t + \varepsilon_t \quad 1$$

Where, $unemp_t$= unemployment rates, $entrep_t$= entrepreneurship rates proxied by self-employment rate in Turkey, t = time

ε_t = Stochastic error term

The model of this study is therefore specified in its functional form as;

$$\text{UEPR} = \text{f}(\text{ENTRE}, \text{DOIE}, \text{INTR}, \text{INSQ}) \quad 2$$

The econometric form of the model is written as;

$$\text{UEPR}_t = \beta_0 + \beta_1\text{ENTRE}_{t-1} + \beta_2\text{DOIE}_{t-1} + \beta_3\text{INTR}_{t-1} + \beta_4\text{INSQ}_{t-1} + \mu_t \quad 3$$

Where, UEPR stands for unemployment rate, ENTRE depicts entrepreneurship and it is proxied by self-employment rate, DOIE is Domestic investment expenditure; INTR is Interest rate; INSQ is Institutional Quality, μ is the stochastic error term; β_0, β_1, β_2, β_3, β_4 are the coefficients' slopes.

This study presents both the long and short run ARDL models as follows:

$$\Delta\text{UERPR}_t = \beta_0 + \beta_1\text{lnUEPR}_{t-1} + \beta_2 lnENTRE_{t-1} + \beta_3\text{lnDOIE}_{t-1} + \beta_4\text{lnINTR}_{t-1} + \beta_5 lnINSQ_{t-1} + \sum_{i=1}^{p}\beta_1\,\Delta\text{lnUEPR}_{t-1} + \sum_{i=1}^{p}\beta_2\,\Delta\text{lnENTRE}_{t-1} + \sum_{i=1}^{p}\beta_3\,\Delta\text{lnDOIE}_{t-1} + \sum_{i=1}^{p}\beta_4\,\Delta\text{lnINTR}_{t-1} + \sum_{i=1}^{p}\beta_5\,\Delta\text{lnINSQ}_{t-1} - \text{Ø}\text{ECM}_{t-1} + \mu_{t1} \quad 4$$

Where, ln is the natural logarithm, Δ is first difference operator

3.2 Techniques of Estimation

The study employs the Autoregressive Distributed Lag (ARDL) cointegration technique developed by Pesaran (1997) and further redesigned by Pesaran, Shin, & Smith (1999, 2001) for bounds testing to achieve the objective. The ARDL model is selected due to its advantages over other cointegration methods. It has been shown to be robust in small sample sizes, effectively estimating and testing the long-run coefficients of main variables, notwithstanding their level of integration at level, I(0), at first difference, I(1), or a mix of both (Pesaran, 1997).

According to Pesaran et al. (2001), the ARDL model can be specified as:

$$y_t - y_{t-1} = c + (\lambda - 1).\ y_{t-1} + (\beta_0 + \beta_1).\ X_{t-1} + \beta_0.\Delta X_t + \upsilon_t \quad 5$$

$$\Delta y_t = c + \varphi.\ (y_{t-1} - \text{Ø}.X_{t-1}) + \beta_0.\Delta X_t + \upsilon_t \quad 6$$

Where, $\varphi = (\lambda-1)$ is the coefficient of the error correction term, $\beta = (\beta_0 + \beta_1)$ and $Ø = -\frac{\beta}{\varphi}$ are the long run coefficients of X_t. The speed of adjustment is $-\varphi$.

4. Results and Discussion

This section presents the results of the tests carried out to establish the objectives of this study, and also interprets the results for clarity and to empirically ascertain the relationship between the explanatory variables and the dependent variable.

4.1.1. Descriptive Statistics

Table 1

Descriptive Statistics Result

	UEPR	ENTR	DOIE	INTR	INSQ
Mean	1.194833	1.918612	4.002133	1.246580	1.195957
Median	1.171724	1.916069	3.979250	1.229042	1.193402
Maximum	1.522183	1.934486	4.814428	1.393926	1.506505
Minimum	0.477121	1.909296	3.321917	1.054996	1.040998
Std. Dev.	0.227251	0.008742	0.420958	0.067917	0.085631
Skewness	-1.101038	0.862104	0.248399	-0.216892	1.600246
Kurtosis	5.330743	2.227660	2.388127	4.638757	8.737463
Jarque-Bera	10.28150	3.569402	0.621197	2.873694	43.16163
Probability	0.005853	0.167847	0.733008	0.237676	0.000000
Sum	28.67600	46.04669	96.05120	29.91791	28.70297
Sum Sq. Dev.	1.187794	0.001758	4.075727	0.106092	0.168653
Observations	24	24	24	24	24

Source: Eviews 10 Output

The mean value for unemployment reduction (UEPR) is 1.1948, 1.9186 for entrepreneurship (ENTR), 4.0021 for domestic investment (DOIE), 1.2466 for interest rate (INTR), and 1.1959 for institutional quality. The skewness around their mean values gives negative values of -1.1010 for unemployment rate (UEPR), and -0.2169 for INTR. This implies that UEPR and INTR are skewed to the left since the values fall outside the boundary. Similarly, entrepreneurship (ENTRE) has positive skewness value of 0.8621, 0.2484 for domestic investment (DOIE) and 1.6002 for institutional quality, meaning that ENTR, DOIE, and INSQ are positively skewed. For Kurtosis, the values for ENTRE is 2.2277, and 2.3881 for DOIE, which are less than 3. Also, the kurtosis values for UEPR, INTR and INSQ which are 5.3307, 4.6389 and 8.7375 respectively. Furthermore, the probability value of Jarque-Bera reveals that UEPR and INSQ have probability values of 0.0059 and 0.0000 respectively However, ENTR, DOIE and INTR have probability values greater than 5%. These findings imply that most of

the variables are close to their true values with low variability, but some exhibit non-normal distributions, with UEPR and INSQ being skewed and more peaked, which could affect the reliability of statistical analysis. The normal distribution of ENTR, DOIE, and INTR suggests they are more stable and reliable for modeling, while the non-normality of UEPR and INSQ may require adjustments or alternative approaches in analysis.

4.1.2. Test of Stationarity
Table 2:
Summary of the ADF Unit Root Test

Variables	ADF @Level	Critical Value @5%	ADF@ Ist Diff.	Critical Value @5%	Order of Integration
UEPR	-2.2397	-2.9981	-7.7363	-3.0049	I(1)
ENTR	-4.9599	-3.0404	-2.1054	-3.0049	I(0)
DOIE	0.6851	-2.9981	-3.9583	-3.0049	I(1)
INTR	-2.1606	-2.9981	-5.0609	-3.0049	I(1)
INSQ	-0.5501	-2.9981	-3.8024	-3.0049	I(1)

Source: E-views 10 Output.

Table 2 summarizes results of the unit root test conducted. Its findings indicate that the real unemployment rate, domestic investment, interest rate, and institutional quality are stationary at the first difference, indicating integration of order one I(1)), while entrepreneurship is stationary at the level, indicating integration of order zero (I(0)). Consequently, all the variables are stationary, rejecting the null hypothesis of non-stationarity. Given this mixed integration orders, the ARDL Bounds test is necessary based on the postulation by Pesaran et al., 2001).

4.1.3: Lag Length Selection
Table 3:
Summary of VAR Lag Selection Criteria
Endogenous variables: UEPR ENTR DOIE INTR INSQ
Exogenous variables: C
Sample: 1999 2022
Included observations: 23

Lag	LogL	LR	FPE	AIC	SC	HQ
0	161.4076	NA	8.53e-13	-13.60066	-13.35381	-13.53858
1	252.0484	133.9908*	3.01e-15*	-19.30856*	-17.82748*	-18.93607*

Source: E-views 10 Output.

The lag order selection criteria presented in Table 3 indicate that a lag of one is the optimal lag length for the study. Therefore, according to the decision rule, Akaike Information Criterion (AIC) was selected as the method for choosing this lag length because it has the lowest value. The decision rule is that the method with the lowest value is better.

4.1.4. ARDL Bounds Test for Cointegration

Cointegration analysis is required in time series data to assess if a long-run relationship exist or not. The relationship was checked using the ARDL Bounds test, with the findings given below:

Table 4:

Summary of ARDL Bounds Test

ARDL Bounds Test
Sample: 2000 2022
Included observations: 23
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	K
F-statistic	6.089027	4

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Source: E-views 10 Output.

Table 4 reveals that F-statistic is 6.0890. This implies the value exceeds the critical value bounds at 5% level of significance. As a result, the study state that there is a long-run relationship between these variables. This rejects the null hypothesis of no cointegration. Consequently, the study proceeds to estimate both the short-run and long-run ARDL models.

4.1.5. Autoregressive Distributed Lag (ARDL) Model

After establishing the cointegrating status of the model, the study therefore subjects the model to ARDL to generate the coefficients of the parameters of the regression model.

Table 5:

Summary of Long Run and Short Run ARDL Result

Long Run Estimate

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-43.14291	109.4371	-0.394225	0.6983
UEPR(-1)	0.283623	0.215424	1.316582	0.2055
ENTR(-1)	0.526315	1.355397	3.388311	0.0026
DOIE(-1)	0.021218	0.000203	1.072310	0.2986
INTR(-1)	0.051086	0.617311	2.482756	0.0350
INSQ(-1)	0.588505	0.866517	0.679161	0.5062

Short Run Estimate

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.471471	1.332453	-0.353837	0.7284
D(UEPR(-1))	0.410956	0.269816	1.523099	0.1485
D(ENTR(-1))	-0.141421	2.873786	-3.745157	0.0077
D(DOIE(-1))	0.021370	0.000269	1.375897	0.1891
D(INTR(-1))	-0.262063	0.567325	-4.461927	0.0008
D(INSQ(-1))	0.376905	0.677613	0.556225	0.5863
ECM(-1)	-0.687481	0.366512	-2.761112	0.0146

R-squared	0.616611	Mean dependent var	0.677273
Adjusted R-squared	0.483256	S.D. dependent var	5.477809
S.E. of regression	4.950510	Akaike info criterion	6.290230
Sum squared resid	367.6132	Schwarz criterion	6.637379
Log likelihood	-62.19253	Hannan-Quinn criter.	6.372008
F-statistic	5.785307	Durbin-Watson stat	2.000433
Prob(F-statistic)	0.000639		

Source: E-views 10 Output.

From the result in Table 5, the coefficient of the lagged value of unemployment reduction stands at 0.2836 in the long run and 0.4109 in the short run. This suggests that on average, 1

percent increase in the lagged value of unemployment reduction will increase its current value by 0.28% in the long run and by 0.41% in the short run. The coefficient value of entrepreneurship is 0.5263 in the long run and -0.1414 in the short run. It implies that if entrepreneurship is increased by 1 percent, it will reduce unemployment reduction by 0.14% in the short run and increase unemployment reduction by 0.53% in the long run. Similarly, domestic investment has coefficient value of 0.021 in the long run and 0.021 in the short run. This means that domestic investment has positive effect on unemployment reduction in Nigeria, and it will help increase unemployment reduction by 0.021% in the long run and 0.021% in the short run. However, interest rate has negative effect on unemployment reduction in Nigeria in the short run and positive effect in the long run. By implication, interest rate will reduce unemployment reduction, that is, increase unemployment rate by 0.26% in the short run and decrease unemployment rate (that is, increase unemployment reduction) by 0.051% in the long run. Also, institutional quality has positive effect both in the long and short run, and it suggests that on average, 1 percent increase in institutional quality will increase unemployment reduction, that is reduce unemployment rate by 0.59% in the long run, and 0.38% in the short run.

On the significance level, only entrepreneurship development and interest rate are statistically significant at 5 percent level, while other variables (UEPR, DOIE, INSQ) are statistically insignificant both in the long and short run. The error correction term (ECM) has a negative coefficient value of -0.6875 and p value of 0.0146. This shows that ECM is rightly signed and statistically significant and it suggests that 69% disequilibrium in the previous years will be adjusted for in the current year. The R^2 value of 0.616 reveals that the model has high explanatory power and it implies that 62% variations in unemployment reduction are explained by ENTR, DOIE, INTR and INSQ. The F-statistic value which is 5.7853 implies that the variables are jointly statistically significant. The Durbin-Watson statistic which shows a value of 2.0004 implies that the model is free from autocorrelation.

4.1.6. Post Estimation Diagnostic Tests

Table 6:

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.756962	Prob. F(5,17)	0.5928
Obs*R-squared	4.188185	Prob. Chi-Square(5)	0.5227
Scaled explained SS	1.650480	Prob. Chi-Square(5)	0.8951

Source: E-views 10 Output.

Table 6 presents an F-statistic of 0.7569 and an Obs*R-squared of 4.1882 with thier p values of 0.5928 and 0.5227, exceeding the crucial value at the 5% significance level. This shows homoscedasticity, which means that there is no heteroscedasticity. As a result, the null hypothesis of no heteroscedasticity in the residuals is accepted.

Table 7:

Summary of Serial Correlation Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.173392	Prob. F(2,13)	0.8427
Obs*R-squared	0.571618	Prob. Chi-Square(2)	0.7514

Source: E-views 10 Output.

The serial correlation test results reveal that the model is free of serial correlation as the F-statistic's p-value of 0.8427, which is greater than the crucial limit of 5%. This leads to accepting the null hypothesis, that claims the absence of serial correlation in the model.

Stability Tests

The stability test is necessary in a time series data to determine whether or not the model is stable. This study employed the Recursive OLS tests to establish the stability status, the findings are presented are presented below:

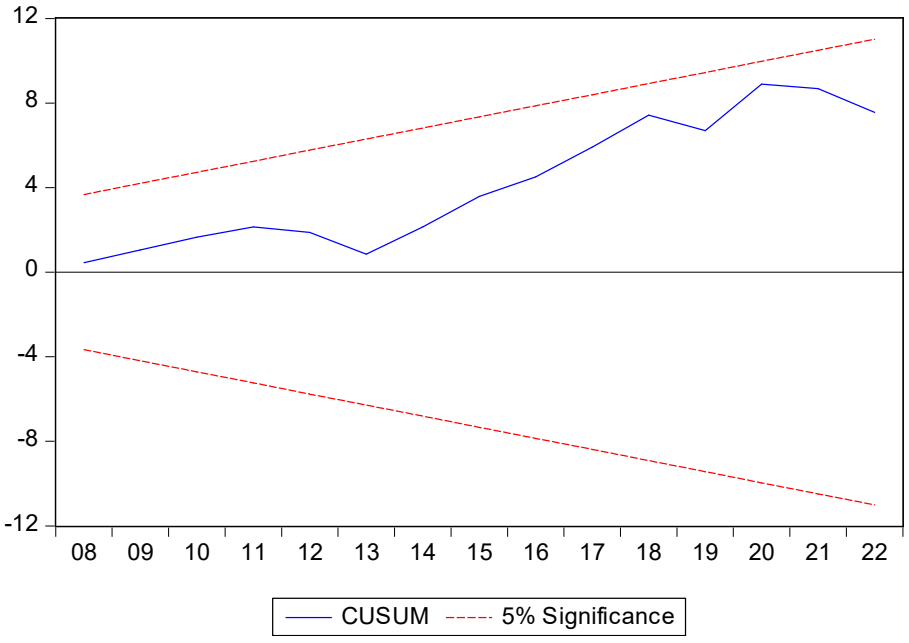


Figure 1: Cumulative Sum Test

Source: Eviews 10 Output

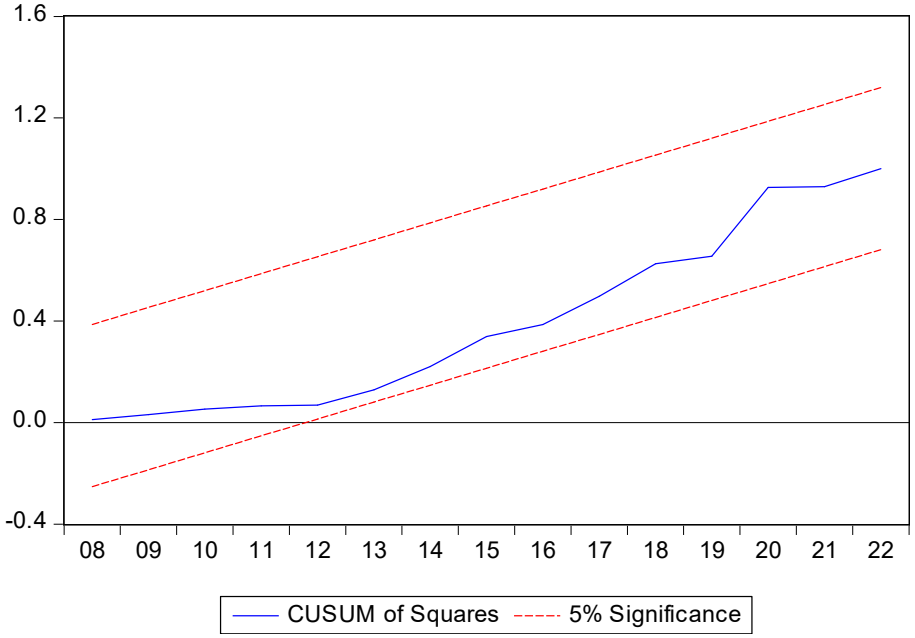


Figure 2: Cumulative Sum of Square Test

The results in Figures 1 and 2 show that our model is stable since the base lines fall within the 5 percent boundary level. Based on the decision rule, the study accepts the null hypothesis which states that the model is stable.

4.2. Discussion of Findings

The results of short and long-run estimates presented in Table 5 indicate that entrepreneurship has a negative relationship with unemployment reduction in the short run but a positive relationship in the long run. The negative relationship suggests that the development of new ideas initially increases unemployment due to challenges such as bureaucratic bottlenecks, lack of access to finance, insecurity, dilapidated infrastructure, epileptic power supply, and high interest rates. This finding contradicts a priori expectations, as entrepreneurship is generally expected to reduce unemployment. Conversely, the positive relationship in the long run implies that implementing new ideas will create more employment opportunities, thereby reducing unemployment in Nigeria, which aligns with the findings of Mohammed (2022).

Domestic investment and institutional quality positively affect unemployment reduction in both the short and long run, indicating that increased investments and improved institutional quality will provide gainful employment and reduce unemployment, consistent with a priori

expectations and the findings of Okeke et al. (2020). Interest rate, nevertheless, negatively affects unemployment reduction in the short run, as high rates deter investments, leading to increased unemployment. In the long run, interest rates positively affect unemployment reduction, implying that higher interest rates may reduce unemployment over time. While the short-run implication aligns with a priori expectations and contradicts Okolie et al. (2019), the positive long-run relationship does not conform to expectations.

5. Conclusion and Recommendations

5.1. Conclusion

This study examines the nexus between entrepreneurship and unemployment reduction in Nigeria from 1999 to 2022, using the ARDL method for data analysis. The long-run results show that entrepreneurship development, domestic investment, interest rate, and institutional quality positively impact unemployment reduction, while in the short run, entrepreneurship development and interest rate have negative effects, but domestic investment and institutional quality remain positive. The study concludes that entrepreneurship development can significantly reduce Nigeria's unemployment rate.

5.2. Recommendations

i. It is recommended that the government promote entrepreneurship, encourage domestic investment, and ensure loans are accessible to investors by reducing interest rates to foster entrepreneurial growth and create jobs.

ii. Government should create an enabling environment for the development of entrepreneurship, as it has the potential of reducing unemployment rate in Nigeria. This can be achieved through investments in infrastructural facilities that would encourage investors. The issue of insecurity should also be tackled.

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