Journal of Economic Studies (JES)
Department of Economics,
Nnamdi Azikiwe University, Awka,
Anambra State, Nigeria.
Web: www.nauecojournals.com
ISSN 1119-2259

FINANCIAL DEVELOPMENT AND UNEMPLOYMENT RATE IN NIGERIA

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Abstract
Achieving full employment remains a persistent macroeconomic challenge in Nigeria, where unemployment is influenced by both financial and non-financial sector dynamics. This study examined the impact of financial development on Nigeria's unemployment rate using the data for the period 1980-2023, focusing on four key dimensions: financial access, financial depth, financial efficiency, and financial stability. The study is anchored on the Keynesian and Neo-Keynesian theories of unemployment, the McKinnon-Shaw hypothesis, and the theory of financial intermediation, offering a comprehensive framework for understanding the link between financial systems and labour market outcomes. Using the Nonlinear Autoregressive Distributed Lag (NARDL) model, the analysis captures both the long-run and short-run asymmetric effects of financial development indicators on unemployment. The results reveal that in the long run, negative shocks to financial access and financial efficiency exert significant effects on unemployment, while other indicators such as financial depth and stability remain statistically insignificant. In the short run, however, none of the individual financial development variables show a statistically significant influence on unemployment. The error correction term is negative and significant, confirming a stable long-run relationship and indicating a relatively fast speed of adjustment toward equilibrium. The findings underscore the need for well-targeted financial sector reforms and inclusive financial policies that support labour market recovery and sustainable economic development. Based on the findings, the study concludes that financial development is an important but indirect and delayed mechanism for reducing unemployment in Nigeria. Therefore, reforms aimed at enhancing financial inclusion, improving financial market depth and efficiency, and stabilizing the financial system must be accompanied by policies that address labour market frictions, skill mismatches, and economic diversification.

Keywords: Financial Access, Financial Depth, Financial Efficiency, Financial Stability, Unemployment.
JEL Classification Codes: B26, D53, E44, F43

1.0 Introduction

Full employment represents one of the major macroeconomic goals of every economy and every government, regardless of the differences in approaches, pursues its attainment (Islam, 2018). This pursuit is justified given the critical

place that employment of resources, particularly human resources. Development is a broad concept. It does encompass welfare of the people. According to Pham, Talavera and Zhang (2018), employment increases national output and the development of all sectors of an economy. However, in spite of the nobleness of this goal, it's been long established in literature that its attainment is difficult in most countries, particularly in developing countries (Brown, 2020; Prachowny, 2012).

Nigeria is one of the major economies in Africa that are plagued with problems of unemployment. For the last decade and beyond, the rate has been on an increasingly growing trend. As recorded by the NBS, for example, the rate of unemployment rose from 7.2% in 2014 to 12.2% in 2016 and up to 33.3% in 2020. After the change of methodology for calculating the nation's unemployment rate in 2023, the rate dropped drastically to 4.1% and by 2024 Q4, NBS reported a relatively increased rate of 5.3%. It should be noted that several critic and commentators including World bank have opined that while the new methodology reported a much-reduced rate, it does not necessarily imply any improvement in the nation's employment level. In fact, World Bank (2023) reported a low unemployment-high poverty dichotomy observed in the Nigeria economy. Over the years, the Nigerian government has initiated several programs aimed at reducing unemployment. These include the establishment of the National Directorate of Employment (NDE) in 1986, designed to provide vocational skills and job creation opportunities. Subsequent interventions such as the Youth Enterprise with Innovation in Nigeria (YouWIN) in 2011, the Subsidy Reinvestment and Empowerment Programme (SURE-P) in 2012, and the N-Power scheme in 2016, sought to support entrepreneurship, public works, and youth engagement. One of the key channels through which employment can be improved is through a well-developed financial system. Financial development plays a vital role in fostering economic growth by mobilizing savings, facilitating investment, and improving the allocation of resources across the economy. A sound and efficient financial sector can stimulate private sector activity, enhance access to credit, and support the growth of small and medium-sized enterprises (SMEs), which are crucial drivers of job creation. Improved financial development, reflected in better financial access, depth, efficiency, and stability can reduce unemployment by enhancing the capacity of the financial system to support productive economic activities.

In Nigeria, a number of financial sector reforms have been implemented over the years with the aim of enhancing financial intermediation and improving overall economic performance. Key reforms include the bank consolidation exercise of 2004, which increased the capital

base of banks; the introduction of the Financial System Strategy 2020 (FSS 2020), aimed at transforming the financial sector into a growth catalyst; and the development of financial inclusion frameworks such as the National Financial Inclusion Strategy (NFIS). These initiatives were expected to strengthen the financial system, increase credit availability, and improve access to financial services. Despite these efforts, unemployment rates have been persistently high. These outcomes suggest that more structural issues, particularly those tied to the functioning of the financial system, may be undermining these interventions. However, questions remain about the extent to which these reforms have translated into tangible employment outcomes.

This study, therefore, seeks to examine the impact of financial development on the unemployment rate in Nigeria. Specifically, it aims to assess whether improvements in the financial sector have contributed to reducing unemployment, and to identify which dimensions of financial development—access, depth, efficiency, and stability—have been most influential. The findings of this study will help verify the role of Nigeria's financial system in promoting employment and provide insights that can inform policies geared toward inclusive economic growth.

2. Literature Review

Basic Theories

This study draws on two key theories to explore the relationship between financial development and unemployment in Nigeria:

Theory of Financial Intermediation posits that efficient financial institutions allocate savings to productive sectors. Hence better intermediation reduces credit misallocation and finances employment- generating sector.

McKinnon-Shaw Hypothesis posits Financial Liberalization, which implies that higher real interest rates boost savings and investment. They argue that financial liberalization increases access to capital, enabling businesses to expand and hire.

Empirical Literature

For a comprehensive insight into the impact of financial development on unemployment rate in Nigeria from 1980-2023, this study discussed some empirical literature as follows;

Adeleke and Alabede (2021) analysed the patterns and correlates of financial inclusion (FI) in Nigeria. The study used a spatial and disaggregated approach to analyse the geographical distribution of the level of FI in Nigeria. The methodology of the study involves analysing the geographical distribution of the level of FI with Global Moran's I, Local Moran's I, and spatial regression techniques. The study also uses an

OLS model and a spatial error model to explain the variation in the geographical pattern of FI in the country. The study found evidence of geographic clustering of FI, with Lagos and Ogun States emerging as high FI clusters while a low cluster was detected in Kano State. The study also found that gender (female), employment, sub-national domestic debt burden, and owning a bank verification number explained 68.6% (OLS model) and 71.2% (spatial error model) of the variation in the geographical pattern of FI in the country. The study recommends region-specific policies to improve the level of FI in Nigeria. The paper highlights the need for policies that address the key drivers of FI, such as gender, employment, and access to financial services. The study also recommends policies that address the regional disparities in FI, such as policies that target the low FI cluster in Kano State.

Amakor and Eneh (2021) examined the effect of financial inclusion on the unemployment rate in Nigeria from 1986 to 2019 using secondary data sourced from CBN statistical bulletin and Index Mundi. The study used Commercial banks' loans and advances (CBLA) to rural communities and Microfinance banks' loans and advances (MFBLA) to rural communities as proxies for financial inclusion while the unemployment rate is used as the dependent variable. The study employs the Ordinary Least Square Method to test the hypothesis. The findings reveal that Microfinance banks' loans and Advances have a significant relationship with GDP per Capital Income and Human Development Index, but an insignificant relationship with the unemployment rate, while CBLA is negatively related to the unemployment rate. The study concludes that MFBLA has increased the standard of living of rural dwellers more than CBLA except in the case of employment. The study recommends that MFBLA should be directed towards entrepreneurial development other than commercial activities. This study recommended that MFB needs to be empowered for more expansion which will create more employment opportunities for rural dwellers.

Mehry et al. (2021) investigated the impact of financial inclusion on the unemployment rate in developing countries. The study used a multidimensional approach to construct a new financial inclusion index for 43 developing countries based on three dimensions: access to, usage of, and quality of financial services. The study used a dynamic two-step system, the Generalized Method of Moments (GMM), to empirically assess the impact of financial inclusion on the unemployment rate of 35 developing countries for the sample period from 2009 to 2018. The literature review of the study provides a theoretical discussion of how some of the possible channels through financial inclusion may impact the unemployment rate.

The study found that financial inclusion has an impact on decreasing the unemployment rate in developing countries. The empirical findings suggest that an increase in the level of financial inclusion in developing countries decreases their unemployment rate. Moreover, the level of education, inflation rate, and economic growth have a significant negative impact on the unemployment rate. The variables used in the study are the financial inclusion index, unemployment rate, level of education, inflation rate, and economic growth. The study recommends that policymakers should focus on increasing the accessibility of the weaker group of society to formal financial services to serve at the individual level and benefit at the national level.

Chletsos et al. (2021) noted that despite voluminous research on the relation between financial fragility and growth, the effect of financial fragility on employment is understudied. Therefore, they went ahead to conduct a global panel study using a data set that ranged from 1998 to 2017, the variables used in the analysis include financial fragility indicators such as bank non-performing loans and bank costs to income ratio. The findings suggest a negative association between financial fragility and employment at the country level. This negative effect is more pronounced in the post-crisis period and in more rigid labour markets. It is also higher in developing/emerging economies compared to developed countries. However, the impact of financial fragility on employment can be mitigated in countries with a higher level of financial market development. The study recommends considering the structure of the labour market and growth patterns when analysing the relationship between financial fragility and employment. It also suggests that policies promoting financial market development can help mitigate the negative effects of financial fragility on employment.

Adopting the use of Nonlinear Autoregressive Distributed Lag (NARDL) technique, Ajide (2020), examined the asymmetric effect of financial development on unemployment in Nigeria. It analysed data from 1980-2017 and found a long-run equilibrium among the variables. The study found an asymmetric linkage between financial development and unemployment in both the long run and short run. The positive components' effects of financial development on unemployment were more significant than the negative components' effects. The paper also, recommended the implementation of policies to boost job creation and employment opportunities through conducive financial market development conditions, which can be sustained in the long run. It emphasizes that financial sector development is an essential component of the economy that influences job creation and unemployment asymmetrically.

Osuka et al (2019) investigated data for the period covering 1981 to 2015 to determine how unemployment responds to financial deepening in Nigeria. The authors relied on ECM as well as three variables to proxy financial development namely broad money, private sector credit and market capitalization and established that financial deepening lowers unemployment in Nigeria

Eckstein et al. (2019) examined the intricate relationship between financial risk and unemployment within the context of the United States, utilizing time series data spanning the years 1982 to 2012. Through a comprehensive analysis, the study investigated key variables, including unemployment, vacancies, market tightness, default risk, interest rates, and spreads. To delve into this relationship, the paper adopted a Dynamic Matching and Bargaining (DMP) model augmented with financial intermediation shocks, effectively assessing the influence of financial risk on unemployment dynamics. The model is meticulously calibrated to align with the business cycle statistics encompassing unemployment, vacancies, and market tightness within the US economy. Rigorous robustness analyses are conducted, systematically scrutinizing the sensitivity of outcomes across various parameters and definitions. Notably, the findings underscore that financial intermediation shocks play a pivotal role in elucidating a significant portion of the cyclical fluctuations observed in unemployment, vacancies, and market tightness. Particularly insightful is the model's adept explanation for the surge in unemployment during the Great Recession. The authors suggest that interventions by the Federal Reserve contributed to mitigating the escalation of unemployment. As a resounding implication, the research underscores the imperative of integrating considerations of financial risk when unravelling the intricacies of macroeconomic undulations, specifically emphasizing its profound impact on the labour market.

The scope of the study by Pietrucha and Acedanski (2017) encompasses an expansive analysis of 144 economies on an annual basis. At the heart of the investigation lies the central focus on financial depth, a critical variable gauged by the private credit-to-GDP ratio. Methodologically, the study adopted a cross-sectional regression approach to meticulously unravel the intricate relationship between financial depth and the post-crisis behaviour of the real sector. Employing Ordinary Least Squares (OLS) estimation, the parameters are rigorously derived, underpinned by heteroskedasticity-consistent standard errors to enhance robustness. Notably, the study's major revelations underline those alterations in financial depth leading up to the crisis wield a significant influence over the subsequent real sector response post-crisis. Remarkably,

nations witnessing a surge in credit-to-GDP ratios before the crisis exhibit a more pronounced real sector reaction after its occurrence. Furthermore, the analysis dispels notions of negative implications stemming from financial depth, as the study unveils no evidence linking it to a heightened extent of GDP contraction following the 2007+ financial crisis. Intriguingly, certain calculations even allude to a marginally positive impact, hinting those countries with greater financial depth encountered a relatively milder collapse during this period of turmoil.

Adenuga and Omotosho (2013) provided a comprehensive exploration of financial development within the context of Nigeria from 1975 to 2012. The study, concentrating its focus squarely on this nation, the research delves into the intricate interplay between financial depth, financial access, and economic growth. Two distinct metrics are employed to gauge financial depth: the ratio of broad money supply to output and the ratio of credit to the private sector to output. Meanwhile, financial access is quantified by the population served per bank branch. Situated as the main dependent variable, economic growth takes centre stage. Employing an error correction model, the study dissected the long-term relationship between financial depth, financial access, and economic growth in Nigeria. The investigation's critical revelations unveil the pivotal role of heightened financial depth, as exemplified by the ratios of broad money supply and credit to the private sector to output, in catalysing output growth throughout the study's temporal scope. Intriguingly, a significant inverse correlation is established between the population per bank branch and economic growth, underscoring the substantial impact of financial access on Nigeria's growth trajectory. Informed by their findings, the study lends support to the ongoing financial inclusion initiative spearheaded by Nigeria's Central Bank, positioning it as a potent catalyst for bolstering the nation's growth prospects.

3. Methodology

Theoretical Framework

The theoretical foundation on which the relationship between financial development and unemployment rate is based is the McKinnon-Shaw hypothesis (savings-Investment Equilibrium) Extended Model and the theory of Financial Intermediation.

Here, McKinnon-Shaw offered an interactive framework that describes how the development of the financial sector affects the way an economy’s economic activities are shaped. According to the framework, the intermediation role of the financial sector, in supporting reliable payment systems, might raise output and employment by mobilizing savings, distributing or rationing credit, and diversifying risks. The financial industry includes both the financial market and financial

institution. According to the World Bank, the development of each division-that is, markets or institutions-could be measured through four indicators, namely, depth, access, stability, and efficiency. In her recent analysis, Chidimma (2023) whose empirical model is adopted in this study rightly argued that improvement in any of the dimensions of financial development, (financial institution depth), for instance as measured by the proportion of private sector loans to GDP and the proportion of the money stock to GDP, and financial market depth captured using the stock market capitalization to GDP ratio could lead to the creation of more jobs due to business expansion and supporting of startups and overall increase in economic activities which shall further bring about the creation of more jobs.

Empirical Model Specification

To meet the core objective of this study, which is to examine the impact of financial development indicators on unemployment rate in Nigeria, this study adapts the model developed by Chidimma (2023). Building on the McKinnon-Shaw theory explained above, the study examined the impact of financial development indicators on unemployment rate in Nigeria. The major point of departure from the analysis by Chidimma (2023) involves the explicit incorporation of both the indicators of financial market and financial institution in our model as different from Chidimma's model that focused on the indicators of financial institutions only. Chidimma's model is presented as follows;

$$UNEMP = \pi_1 FD + \pi_2 FA + \pi_3 FS + \pi_4 FA + \mu \quad (3.1)$$

Where; Unemp is the Unemployment Rate; FD, financial depth, FA- financial Access, FE-Financial Efficiency; FS Financial Stability

To achieve the objectives of this study, the functional form of the models is stated thus:

Model 1:

$$UNEMP = f(FIA, FID, FIE, FIS) \quad (3.2)$$

Model 2:

$$UNEMP = f(FMA, FMD, FME, FMS) \quad (3.3)$$

The above models will be expressed mathematically, thus;

Model 1:

$$UNEMP = FIA + FID + FIE + FIS \quad (3.4)$$

Model 2:

$$UNEMP = FMA + FMD + FME + FMS \quad (3.5)$$

Statistically, we could then transform it to;

Model 1:

$$UNEMP = \beta_0 - \beta_1 FIA - \beta_2 FID - \beta_3 FIE - \beta_4 FIS \quad (3.6)$$

Model 2:

$$UNEMP = \beta_0 - \beta_1 FMA - \beta_2 FMD - \beta_3 FME - \beta_4 FMS \quad (3.7)$$

The Econometric form would then be;

Model 1

$$UNEMP = \beta_0 - \beta_1 FIA - \beta_2 FID - \beta_3 FIE - \beta_4 FIS + \mu \quad (3.8)$$

Model 2

$$UNEMP = \beta_0 - \beta_1 FMA - \beta_2 FMD - \beta_3 FME - \beta_4 FMS + \mu \quad (3.9)$$

Where;

UNEMP = Unemployment rate, FIA; Financial Institution Access, FID, Financial Institution Depth, FIE; Financial Institution, Efficiency, FIS; Financial Institution Stability,

FMA, Financial Market Access, FMD; Financial Market Depth, FME Financial Institution Efficiency, FMS; Financial Market Stability

β_0 = Constant term (i.e., the intercept)

$\beta 1$ - $\beta 4$ = coefficients of the explanatory variables

μ = Stochastic disturbance or Error term

3.2.1 Explanation of Variables

Unemployment: Unemployment, total (% of the total labour force) (modelled ILO estimate), serves as a primary measure of joblessness within a country's labour force, as estimated by the International Labour Organization (ILO). This index is a widely accepted and trusted metric for analysing unemployment, as it provides a consistent benchmark for international comparisons. Its use aligns with the study's objective of evaluating the impact of financial development on labour outcomes, making it an ideal choice for assessing job opportunities.

Financial Access: For financial access, the study employs two key indices: the IMF Financial Markets Access Index and the IMF Financial Institutions Access Index, referred to as FMA and FIA, respectively. These indices assess the inclusivity of financial services, considering both financial markets and financial institutions. The choice of these indices is justified by their comprehensive nature and the authority of the IMF as their source. They provide credible insights into how accessible financial services are to a country's population, reflecting dimensions such as access to banking facilities and formal financial institutions. In essence, financial inclusion is fundamental in the study as it directly influences individuals' access to credit, savings, and investment opportunities, thus impacting overall employment potential.

Financial Stability: The study gauges financial stability through two distinct indices: stock price volatility and bank credit to bank deposits (%), represented as FMS and FIS, respectively. Stock price volatility tracks the stability of financial markets, assessing fluctuations in stock prices as an indicator. The bank credit-to-bank deposits ratio evaluates the stability of the banking sector by examining the lending-to-deposit ratio. Both indices are deemed reliable in assessing the stability of financial systems, providing valuable insights into market turbulence and banking sector stability. The study's choice of these indices is well-founded as financial stability is an

essential aspect of financial development, with direct implications for employment.

Financial Efficiency: Financial efficiency is assessed through the stock market turnover ratio (%) in financial markets, denoted as FME, and the bank lending-deposit spread in financial institutions, indicated as FIS. The stock market turnover ratio reveals how effectively assets are traded within financial markets, considering trading frequency relative to total market capitalization. The bank lending-deposit spread serves as an established measure of efficiency in banking operations. These indices align with the study's goal, which is to examine how financial development dimensions influence employment through efficiency enhancements. In financial markets, the turnover ratio reflects the efficiency of asset trading, while in financial institutions, the lending deposit spread signifies the efficiency of intermediation.

Financial Depth: The study measures financial depth using two indices: stock market total value traded to GDP (%) for financial markets (FMD) and private credit by deposit money banks to GDP (%) for financial institutions (FID). Stock market total value traded quantifies the depth of financial markets by comparing the value of traded securities to the country's GDP. Private credit by deposit money banks to GDP ratio gauges the role of deposit money banks in extending credit. The choice of these indices is justified by their direct relevance to the study's investigation into how the depth of financial systems influences employment opportunities. In financial markets, the total value traded reflects the market's size relative to the economy, while in financial institutions, the private credit ratio highlights the role of banks in credit extension.

4.Techniques and Procedures of Data Analysis

The non-linear autoregressive distributed lag technique (NARDL) framework provided by Pesaran and Shin (2001) has been applied within the analysis. This procedure is adopted because of the following; Empirical evidence of Asymmetry relationship. (AJIDE,2020), Resolving mixed conclusion in literature, Broader scope of analysis given the financial development dimensions. This technique avoids the categorization of variables as I(1) and I(0) by constructing bands of critical values that identifies the series to be either stationary or non-stationary processes. NARDL can differentiate between dependent and explicating variables.

we test for co-integration of the modelled variables - that is, whether long-run relationship exists between the dependent and independent variables. Once the presence of long run relationship or co-integration has been established, the next stage involves estimation of the long and short run coefficients. Error

correction modelling estimates the short run coefficients, which has been one of the ways of reconciling the long run behaviour of co-integrated variables with their short run responses. The Augmented Dickey-Fuller (ADF) unit root test was used to test for stationary of the time series data.

4.1 Empirical Results and Discussion

(a) Descriptive Statistics of the model

Table 4.1 presents the summary of the descriptive statistics i.e., the measures of central tendency which explains the extent of distribution of values of a variable around the mean and measures of dispersion-which measures the tendency of values of a variable to scatter away from the mean. The measures show Skewness, Jarque-Bera and Kurtosis.

Table 4.1: Summary of Descriptive Statistics Result

	FID	FIA	FIE	FIS	FMD	FMA	FME	FMS	UNEMP
Mean	9.525540	0.080221	6.441168	77.81298	0.820581	0.427296	5.843797	12.61985	10.88818
Median	8.321830	0.058334	7.172426	77.73962	0.580628	0.485649	4.242000	12.21732	9.510000
Maximum	20.77596	0.135062	11.06417	108.1541	6.298350	0.507519	34.78531	27.50694	33.30000
Minimum	4.948029	0.044885	0.316667	53.88782	0.108820	0.253625	1.074680	3.276806	4.400000
Std. Dev.	3.630674	0.034298	2.719260	15.33745	1.138093	0.087863	6.006202	5.425787	5.479250
Skewness	1.129851	0.523224	-0.681420	0.275250	3.681422	-0.670633	2.938131	0.839834	2.810511
Kurtosis	4.268115	1.390248	2.692096	2.097336	16.83765	1.807590	13.87319	3.270373	10.30462
Jarque-Bera	12.30968	6.758317	3.578920	2.049399	450.4354	5.904865	280.0541	5.306372	155.7477
Probability	0.002123	0.034076	0.167050	0.358904	0.000000	0.052213	0.000000	0.070426	0.000000
Sum	419.1237	3.529709	283.4114	3423.771	36.10559	18.80104	257.1271	555.2735	479.0800
Sum Sq. Dev.	566.8171	0.050585	317.9582	10115.20	55.69601	0.331956	1551.202	1265.884	1290.954
Observations	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**	**44**

Source: Researchers' Computation (2024)

The descriptive statistics outline several key features of the dataset variables. For instance, the mean unemployment rate stands around 10.08%, while the median, a less sensitive measure to extreme values, is slightly lower at approximately 9.51%. Maximum and minimum values depict the range of observations, with unemployment rates varying between 4.4% and 33.3%. Skewness and kurtosis values reveal the distribution shapes and tail behaviours; variables like financial institution accessibility (FIA) and financial institution stability (FIS) demonstrate slight normal skewness as their values are between -0.5 and 0.5. Also, only financial institution efficiency (FIA) can be termed mesokurtic as its value is approximately 3. Moreover, the Jarque-Bera test, assessing normality, indicates non-normal distributions for several variables, notably financial institution depth (FID), financial institution accessibility (FIA), financial market depth (FMD), financial market efficiency (FME) and unemployment (UNEMP) as their probability are almost 0.

(b) Unit Root Test

It is important to establish stationarity because, without it, processing of data may result in biased results; hence, any interpretations and conclusions are not reliable. Stationarity is a property of a time series whose statistical properties in mean, variance, autocorrelation, etc., do not change over time.

Table 4.2: Summary of the Unit Root Tests

Variables	*ADF Test Statistic*	*Test Critical Value*	*Order of Integration*
UNEMP	-7.314349	-2.938987	**1(1)**
FIA	-4.838703	-2.933158	**1(1)**
FMA	-6.766484	-2.933158	**1(1)**
FID	-3.752232	-3.520787	**1(0)**
FMD	-2.992436	-2.931404	**1(0)**
FIE	-6.907344	-2.935001	**1(1)**
FME	-6.966000	-2.933158	**1(1)**
FIS	-6.958237	-2.933158	**1(1)**
FMS	-4.015562	-3.520787	**1(1)**

Source: Researchers' Computation (2024)

The result of the ADF unit root test is summarised in Table 4.2. Both the level series and first differenced series have been subjected to ADF tests. The decision rule is to reject the null hypothesis if the ADF statistic value exceeds the critical value at a chosen level of significance (in absolute terms). Since the above has a mixed order of level and first difference, this study proceeds with the F-bound test to confirm co-integration.

(c) Co-Integration Tests

The step aims to identify whether there are co-integrating relationships among variables. This study has employed the F-bound test in nonlinear auto-regressive distributed lag technique since the unit root test shows that the

variables are stationary at both levels and first difference. The result is summarized in Table 4.3.

Table 4.3: Summary of Co-integration Tests.

MODEL 1				
F-Bounds Test		**Null Hypothesis: No levels relationship**		
Test Statistic	Value	Signif.	I(0)	**I(1)**
F-statistic	3.784690	10%	2.13	**3.09**
K	8	5%	2.38	**3.41**
		2.5%	2.62	**3.7**
		1%	2.93	**4.06**
MODEL 2				
F-statistic	4.749730	10%	1.95	**3.06**
K	8	5%	2.22	**3.39**
		2.5%	2.48	**3.7**
		1%	**2.79**	**4.1**

Source: Researchers' Computation (2023)

Model 1

From Table 4.3, the value of the F-statistic which 3.784690 is greater than the lower and upper bound test at 5% level of significance. This shows that there is a long run relationship between financial institution indicators (accessibility, depth, efficiency and stability) and unemployment.

Model 2

From Table 4.3, the value of the F-statistic which is 4.749730 is greater than the lower and upper bound test at a 5% level of significance. This shows that there is a long-run relationship between financial market indicators (accessibility, depth, efficiency and stability) and unemployment

Given the results generated, we can then infer that there exists a non-linear long-run relationship between financial development and unemployment using both the financial institutions and financial markets models.

(d) Model Estimation/Evaluation

4.3.1: Panel A: Long Run Estimates

Since we have established that there exists a long-run relationship amongst the variables under study, we shall use the NARDL model long-run form to establish the coefficients of the regression model. The result is summarised in Table 4.4.

Table 4.4: Summary of NARDL Long run Tests.

MODEL 1				
Variable	Coefficient	Std. Error	t-Statistic	**Prob.**
FIA_POS	-157.1316	242.7335	-0.647342	**0.5229**
FIA_NEG	-847.1801	292.6427	-2.894930	**0.0074**
FID_POS	-1.143086	1.555323	-0.734951	**0.4687**
FID_NEG	-2.200968	0.812306	-2.709530	**0.0116**
FIE_POS	-2.910004	1.328338	-2.190711	**0.0373**
FIE_NEG	-5.773161	1.775192	-3.252133	**0.0031**
FIS_POS	0.281205	0.126600	2.221202	**0.0349**
FIS_NEG	-0.479184	0.202702	-2.363979	**0.0255**
@TREND	-6.192118	2.093127	-2.958310	**0.0064**
MODEL 2				
FMA_POS	-30.47843	13.04081	-2.337159	**0.0289**
FMA_NEG	-18.82463	19.09779	-0.985697	**0.3350**
FMD_POS	34.37049	9.132116	3.763694	**0.0011**
FMD_NEG	23.75612	6.702643	3.544292	**0.0018**
FME_POS	-9.092863	1.832118	-4.963033	**0.0001**
FME_NEG	-4.548307	0.976461	-4.657951	**0.0001**

Source: Researchers' Computation from EViews 10

MODEL 1

Table 4.4 presents the estimated non-linear long-run coefficients for model 1. Specifically, the long-run non-linear partial coefficient of financial institution accessibility (FIA) is -157.13 and -847.18. This implies that an increase in financial institution accessibility, on average, will lead to a 157% decrease in unemployment while a decrease in financial institution accessibility will lead to an 847% increase in the unemployment rate in Nigeria in the long run. This means that financial institution accessibility exerts a negative effect on unemployment in the long run.

Also, the long-run non-linear partial coefficient of financial institution depth (FID) is -1.143 and -2.20. This implies that a 1% increase in financial institution depth, on average, will lead to a 1.14% decrease in unemployment while a 1% decrease in financial institution depth will lead to a 2.2% increase in the unemployment rate in Nigeria in the long run. This means that financial institution depth exerts a negative effect on unemployment in the long run.

The long-run non-linear estimate for financial institution efficiency (FIE) is -2.910 and -5.773. This signifies that a 1% increase in financial institution efficiency reduces unemployment by 2.91% while a 1% decrease in financial institution efficiency increases unemployment by 5.77% on average. This means that financial institution efficiency exerts a negative effect on unemployment in the long run.

More so, financial institution stability has a non-linear long-run estimate of 0.281 and -

0.479. This indicates that with a 1% increase in financial institution stability, unemployment increases by 0.28% while with a 1% decrease in financial institution stability, unemployment increases by 0.48% on average in the long run. This brings an inconclusive decision on the direction of impact of financial institution stability on unemployment in Nigeria.

MODEL 2

Table 4.4 also presents the estimated non-linear long-run coefficients for model 2. Specifically, the long-run non-linear partial coefficient of financial market accessibility (FMA) is -30.478 and -18.82. This implies that an increase in financial market accessibility, on average, will lead to a 30.48% decrease in unemployment while a decrease in financial market accessibility will lead to an 18.82% increase in the unemployment rate in Nigeria in the long run. This means that financial market accessibility exerts a negative effect on unemployment in the long run.

Also, the long-run non-linear partial coefficient of financial market depth (FMD) is 34.37 and 23.756. This implies that a 1% increase in financial market depth, on average, will lead to a 34.37% increase in unemployment while a 1% decrease in financial market depth will lead to a 23.76% decrease in the unemployment rate in Nigeria in the long run. This means that financial market depth in general exerts an inconclusive effect on unemployment in the long run.

The long-run non-linear estimate for financial market efficiency (FME) is -9.093 and -4.548. This signifies that a 1% increase in financial market efficiency reduces unemployment by 9.09% while a 1% decrease in financial market efficiency increases unemployment by 4.55% on average. This means that financial market efficiency exerts a negative effect on unemployment in the long run.

More so, financial market stability (FMS) has a non-linear long-run estimate of approximately 0.269 and -2.940. This indicates that with a 1% increase in financial market stability, unemployment increases by 0.269% while with a 1% decrease in financial market stability, unemployment increases by 0.294% on average in the long run. This brings an inconclusive decision on the direction impact of financial market stability on unemployment in Nigeria.

Table 4.7: Short Run Estimate Results Summary (Financial Institutions)

MODEL 1				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	-14.17224	2.051830	-6.907121	**0.0000**
D(FIA_POS)	293.6030	83.57448	3.513069	**0.0016**
D(FIE_POS)	0.335340	0.429426	0.780903	**0.4417**
D(FIE_POS(-1))	1.531907	0.457752	3.346586	**0.0024**
CointEq(-1)*	-0.756165	0.106447	-7.103699	**0.0000**
R-squared	0.591220	**Mean dependent var**		**-0.114634**
Adjusted R-squared	0.545800	**S.D. dependent var**		**4.912681**
S.E. of regression	3.310871	**Akaike info criterion**		**5.346149**
Sum squared resid	394.6271	**Schwarz criterion**		**5.555121**
Log likelihood	-104.5960	**Hannan-Quinn criter.**		**5.422245**
F-statistic	13.01672	**Durbin-Watson stat**		**2.255611**
Prob(F-statistic)	**0.000001**			

Source: Researchers' Computation Using E-Views 10.0

MODEL 1

The initial observation from Table 4.7 indicates a negative intercept (C = -14.17) in the regression line. This signifies that in a scenario where all variables remain constant or at zero, the unemployment rate in Nigeria would reduce by 14.17% annually. This aligns with the theoretical expectation, considering the prior anticipation that the intercept could manifest as either positive or negative. Also, the coefficient of the error correction term (RESID_FI) is -0.756. The value of $\lambda = 0.756$ suggests that the speed of adjustment from the short run back to the long run if the model is in disequilibrium is 75.6%. Upon examining the regression results, it is evident that financial institution accessibility (FIA), financial institution efficiency (FIE) and its lag 1value, all had a positive influence on unemployment in Nigeria in the short run. These positive coefficients imply a direct correlation between the financial development indicators and the unemployment rate. In simpler terms, an increase in these indices could potentially lead to an increase in the unemployment rate.

Table 4.8: Short Run Estimate Results Summary (Financial Markets)

MODEL 2				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	10.89561	1.612927	6.755181	**0.0000**
D(FMD_POS)	1.055908	1.211660	0.871456	**0.3929**
D(FMD_POS(-1))	-13.13687	3.007812	-4.367582	**0.0002**
D(FME_POS)	-1.525898	0.562129	-2.714496	**0.0127**
D(FME_POS(-1))	3.244831	0.893400	3.632003	**0.0015**
D(FME_NEG)	-6.185363	0.803119	-7.701680	**0.0000**
D(FME_NEG(-1))	-2.271363	0.362607	-6.263972	**0.0000**
D(FME_NEG(-2))	-2.033359	0.353322	-5.754971	**0.0000**
D(FMS_NEG)	-1.206452	0.328051	-3.677637	**0.0013**
CointEq(-1)*	-1.101603	0.144285	-7.634929	**0.0000**
R-squared	0.689405	**Mean dependent var**		**-0.095000**
Adjusted R-squared	0.596227	**S.D. dependent var**		**4.973636**
S.E. of regression	3.160404	**Akaike info criterion**		**5.351595**
Sum squared resid	299.6446	**Schwarz criterion**		**5.773815**
Log likelihood	-97.03189	**Hannan-Quinn criter.**		**5.504256**
F-statistic	7.398770	**Durbin-Watson stat**		**2.325039**
Prob(F-statistic)	**0.000013**			

Source: Researchers' Computation Using E-Views 10.0

MODEL 2

The initial observation from Table 4.8 indicates a positive intercept (C = 10.8956) in the regression line. This signifies that in a scenario where all variables remain constant or at zero, the unemployment rate in Nigeria would increase by 10.9% annually. This aligns with the theoretical expectation, considering the prior anticipation that the intercept could manifest as either positive or negative. Also, the coefficient of the error correction term (RESID_FI) is -1.10, suggesting that the speed of adjustment from the short run back to the long run if there is disequilibrium in the model is approximately 100%

Upon examining the regression results, it is evident that the first lagged value of a financial market depth (FMD_POS (_1)), financial market efficiency (FME_POS, FME_NEG and its first and second lag value), and financial market stability (FMS_NEG) has a negative relationship with unemployment in Nigeria in

the short run. These negative coefficients imply an inverse correlation between the financial development indicators and the unemployment rate. However, the coefficient for financial market depth (FMD_POS) and first lagged value of a financial market efficiency (FME_POS (_1)), displays a positive relationship with the unemployment rate, indicating a direct movement.

5.Conclusion and Policy Recommendation

The findings of this study confirm that financial development affects unemployment in Nigeria in both asymmetric and dynamic ways. In particular, improvements in financial access and efficiency have a beneficial effect on employment, especially in the long run. However, the unexpected effects of financial stability and depth—particularly in the market dimension—highlight that the relationship is not straightforward and is influenced by institutional weaknesses, structural rigidities, and transitional effects in the Nigerian economy.

The study concludes that financial development is an important but indirect and delayed mechanism for reducing unemployment in Nigeria. This suggests that financial development does play a significant role in reducing unemployment, but it doesn't act immediately. Instead, its effects are indirect and take time to materialize. For instance, financial development can lead to more investment in businesses, which might eventually create jobs, but these effects are not instant.

Therefore, efforts to improve the financial system need to be complemented by policies that address issues like skill mismatches, labour market inefficiencies, and the need for a more diversified economy to make a more significant and faster impact on unemployment.

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