
ASYMMETRIC INFLUENCE OF FINANCIAL DEVELOPMENT ON UNEMPLOYMENT IN NIGERIA

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Abstract

The existing studies show conflicting results in the interaction between unemployment and financial development. In this study, we examine the asymmetric effect of financial development on unemployment in Nigeria. Using Nonlinear Autoregressive Distributed Lag (NARDL) technique to analyse data spanning for a period of 1980-2017, the results show the existence of long run equilibrium among the variables. The Wald test confirms that there is asymmetric linkage between financial development and unemployment in the long run and short run. The findings confirm that the positive components' effects are more when compared with the negative components' effect of financial development on unemployment. There is need to have a policy in place to boost job creation and employment opportunities via conducive financial market development conditions which can be sustained even in the long run. Overall, the study shows that financial sector development is an essential component of the economy that influences job creation and unemployment asymmetrically.

Keywords: Finance, Unemployment, Asymmetries, Nigeria

JEL Classifications: E24; O16

Introduction

The extant studies build on various economic theories to show that financial development has the potential of affecting employment by granting adequate financial access to entrepreneurs and individual households at lower costs for financing productive investment which in turn contributes to output growth and job creation (Hassan, *et al*, 2011; Cojocaru *et al*, 2016; Bayar, 2016). A good financial reform policy, if properly implements, may as well improve the level of monetary authority control system, boost saving mobilization and efficient allocation of financial resources. In this case, intermediation functions of financial institutions become efficient and enhance interest rate affordability (Levine, 2005; Ajide, 2019a). Based on this theoretical preposition, few scholars have empirically examined the interactions between finance and unemployment (Bayar, 2016; Rafiu, 2019). They show that the function of financial institutions such as granting loans and acceptance of deposits are increasingly identified for the possibility of reducing poverty and unemployment through productivity growth in an economy (Zhuang *et al.*, 2009). In addition, the existing studies also confirm that disruptions in financial systems may harm the economic activities which poses unemployment problems to an economy (Barro, 2001; Claessens *et al*, 2012; Bayar, 2016). This means that financial sector activities may influence the real sector of the economy positively or negatively.

Furthermore, the existence of imperfections in the financial market can create serious problems in the real sector, especially for individual entrepreneurs without collaterals and credit histories; and with no connection to existing business investment (Gulde, *et al*, 2006). Therefore, financial constraints could serve as obstacles to firm growth and employment creation which worsening the

unemployment problem of an economy ((Kim *et al*, 2018). Following this line of arguments, this paper advances the literature by investigating the asymmetric effects of financial development on unemployment situations in Nigeria. To the best of the author's knowledge, this empirical contribution, most especially in the context of Africa, is missing. The goal of the study is to fill this gap. The model used by the previous studies assume that financial development variable is symmetrically affecting unemployment, but the reality shows that this may not be the case.

In this study, financial development is recognized as an important determinant of unemployment in the labour market. While labour market relies on economic activities in a nation, any changes in economic activities may bring drastic changes in the labour market and have further impacts on employment. Inefficient functioning of the financial sector may influence unemployment status leading to decrease in household income, aggregate demand, savings, lending and production activities in general. This means that changes in financial development would affect employment. In other words, positive or negative shocks in financial sector may lead to an increase or decrease in unemployment. This scenario calls for an empirical investigation into the nonlinear relationship between financial development and unemployment which has been neglected in the literature. In relation to this, Chen *et al.*, (2020) hint that examining the nonlinear relationship between two economic variables is very essential due to its significant contributions to sectoral specific policy formulation. It has been argued that economic agent's reaction to economic variables could be different in a period of positive shocks and negative shocks of the same magnitudes (Shahbaz *et al*, 2017; Olanipekun *et al*, 2019; Hatemi-J, 2019). Negative shock's reaction of economic agents is more when compared to positive shocks (Hatemi-J, 2019). Examining potential existence of nonlinear relationship can also be inferred from the presence of asymmetric information phenomenon in the financial market. In this case, capturing asymmetries in the financial markets become necessary in Nigeria where there is weak institutions and poor corporate governance in financial sector.

Unlike previous studies, the study benefits from the newly introduced composite financial development index developed and introduced by IMF to capture the complex multidimensional aspects of the financial sector of the economy in terms of depth, access and efficiency. The existing studies show conflicting results on the relationship between unemployment and financial development due to inappropriate estimating techniques which are not driven from the data generating process or choice of improper proxies of financial developments (Ogbeide *et al*. 2015, Ilo, 2015; Chen *et al*, 2020). Our study deviates from the extant literature by examining the non-linear issues in the relationship using Nonlinear Autoregressive Distributive Lag (NARDL) of Shin *et al*. (2014). Therefore, the main question is: are any asymmetries between financial development and unemployment? This paper provides answer in the context of Nigeria.

Overview of Financial Development and Unemployment in Nigeria

Unemployment is a global issue but the rates and its extent are different from countries to countries. It can be defined as the situation where individuals are willing and ready to work but the opportunity to partake is not forthcoming. It has remained one of the most prominent issues in the macroeconomics. Scholars document that population growth without adequate plans is one of the causes of higher level of unemployment rate in Nigeria (Okojie, 2013; Boateng, *et al*, 2017). The unemployment rate in the country is experiencing persistently increase over the years especially among the youth. One of the factors attributes to the problem of unemployment is the abandonment of agricultural sector in 1970s in favour of oil boom which has led many workers to

search for greener pasture in the oil and gas sector of the economy (Nuga & Asimiea, 2015). Another cause is the macroeconomic and financial crisis of the 1980s (Njoku & Ihugba, 2011). Table 1 shows the total, female, male and youths' unemployment rate in Nigeria. Starting from 2005, the total unemployment rate grows to 7.04 percent after reducing to 3.70 percent in 2013 from 2005 which is about 4.30 percent. In terms of gender, female unemployment rate seems to be very high compared to male unemployment in Nigeria. The youth unemployment rate is about 13.41 percent in 2017 after moving up from its lowest value in 2015.

Table 1: Categories of unemployment rate (% of labour force) in Nigeria

Years	Total	Youth	Female	Male
2005	4.30	9.87	4.36	4.26
2006	4.22	9.85	4.22	4.21
2007	4.13	9.85	4.10	4.15
2008	4.05	9.84	3.98	4.10
2009	3.97	9.84	3.88	4.05
2010	3.90	9.85	3.78	4.00
2011	3.83	9.78	3.65	3.97
2012	3.76	9.77	3.56	3.93
2013	3.70	9.77	3.48	3.88
2014	4.56	8.52	4.09	4.95
2015	4.31	8.05	3.86	4.68
2016	7.06	13.06	6.32	7.67
2017	7.04	13.41	6.32	7.65

Source: World Bank Development Indicators (2019)

In addition, financial sector is an essential components of the Nigerian economy. Financial development means improvement in all financial intermediation components including pooling of savings, efficient allocation of financial resources, and diversification of financial risk (Levine, 2005). Table 2 presents the composite index of financial development in Nigeria from 2005 to 2017.

Table 2: Financial development index for Nigeria

Years	CFD	FI	FM	FID	FIA	FIE	FMD	FMA	FME
2017	0.24	0.26	0.21	0.07	0.13	0.60	0.07	0.50	0.06
2016	0.23	0.26	0.20	0.07	0.13	0.60	0.06	0.50	0.06
2015	0.24	0.25	0.21	0.07	0.13	0.59	0.06	0.50	0.09
2014	0.24	0.26	0.21	0.07	0.14	0.60	0.06	0.51	0.09
2013	0.23	0.24	0.22	0.06	0.13	0.56	0.07	0.50	0.09
2012	0.23	0.24	0.21	0.06	0.12	0.56	0.05	0.50	0.10
2011	0.21	0.22	0.21	0.06	0.13	0.49	0.04	0.49	0.10
2010	0.20	0.18	0.21	0.06	0.13	0.37	0.05	0.50	0.11
2009	0.25	0.27	0.23	0.09	0.13	0.62	0.07	0.50	0.15
2008	0.29	0.26	0.31	0.08	0.11	0.63	0.10	0.50	0.37
2007	0.27	0.24	0.30	0.06	0.08	0.60	0.18	0.50	0.22
2006	0.22	0.20	0.23	0.05	0.05	0.54	0.08	0.50	0.12

2005	0.21	0.19	0.22	0.05	0.05	0.51	0.07	0.50	0.09
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Source: IMF Database (2019)

It shows an improvement from 2005 to 2009 after which it drops to 0.20 in 2010. We also present some components of the index which include financial market development index (FM) and financial institutions development (FI) while FID is the depth of financial institutions, FIA represents the financial institution access, FIE is financial institution efficiency. FMD is the depth of financial market, FMA is the financial market access while FME is measured the efficiency of financial market in Nigeria. Meanwhile, among the indices, Table 2 shows that the most developed aspect of the financial sector is financial access due to the recent national adoption of financial inclusion policy (Ajide, 2020). In addition, the new financial reforms introduce interest rate liberalization. In which, the Nigerian economy performs well until financial crisis of 2008 through 2010 where the interest rate brings harshness to business environment leading to impede investment by small and large scale investors. From this period, the official unemployment rate has been steadily increase as can be seen in Table 1. However, the true effects can easily be discovered by conducting regression analysis which is the aim of the study.

Literature Review

Theoretical issues

Financial market imperfections which include: presence of transaction costs and information asymmetries provide an important role in fluctuating business and investment environment as documented in new-Keynesian preposition (Gatti & Vaubourg, 2009). Belke and Fehn (2002) and Fechs and Fuchs (2003) provide a theoretical analysis to demonstrate that insufficient financial capital reduces the emergence of new firm creation leading to drastic reduction in employment opportunities. This provides a theoretical basis for interacting asymmetrically the financial market development with employment fluctuation in an economy (Arnold, 2002; Gatti & Vaubourg, 2009). Financial sector development may affect employment by granting access to financial markets at lower costs and making funds available for firms' investments and individual entrepreneurs. In this case, unemployment is affected through output growth (Caporale *et al.*, 2015; Cojocaru *et al.*, 2016). However, the extent at which financial development affects employment depends on the labour market structure (Caporale *et al.*, 2015; Bayar, 2016). Labour market can be a substitute or complementary factor in relation to financial sector. For instance, if the relationship between capital and labour is substitute, relaxing firms' financial constraints may allow firms to substitute capital for labour and as well allow firms to invest more on capital intensive technologies which may increase the level of unemployment rate in an economy (Pagano & Pica, 2012). Furthermore, frictions in capital market which leads to asymmetry information, moral hazard and agency problems in the market may as well limit the ability of firms to borrow in the financial sector. By limiting the borrowing capacity, firms and entrepreneurs are discouraged and the chances of job creation is limited. Consequently, financial sector may decrease or increase the level of unemployment rate due to over or underinvestment in an economy (Greenwald & Stiglitz, 1987; Schularick & Taylor, 2012; Kim, Chen & Lin, 2018).

Previous contributions

Few studies have empirically investigated the impact of financial development on unemployment in which their conclusion remains mixed. The study of Gatti and Vaubourg (2009) relates unemployment to financial development in selected OECD countries. They show that stock market development has negative impact on unemployment rate. Using GMM estimation technique,

Dromel *et al.* (2010) show, after employing a panel data of 19 OECD countries for a period of 1982-2003, that there is a negative relationship between unemployment and financial development. Using ARDL techniques, Shabbir *et al* (2012) show that there is a negative effect of financial development on unemployment in the long run in Pakistan. The study of Aliero, Ibrahim and Shuaibu (2013) documents that financial development reduces unemployment in Nigeria after using ARDL estimation technique and employing data spanning for a period of 1980-2011. In Turkey's study of Kanberoglu (2014) which examines the relationship between financial indicators and unemployment. Their regression shows that broad money supply impacts positively on unemployment rate while there is negative impact of financial development on unemployment over a period of 1985-2010. Ilo (2015) confirms that capital market development has no impact on unemployment in Nigeria while Ogbeide *et al.* (2015) show that there is positive relationship between banking sector development and unemployment in Nigeria. Using 10 EU countries, Çiftçioğlu and B e i n (2017) also show that financial development correlates with unemployment negatively after employing panel data estimation techniques. However, their results are not robust to different measures of financial development.

Bayar (2018) examines the relationship between unemployment, financial development and domestic investment in 16 emerging economies for a period of 2001-2014. He documents that investment has negative impact on unemployment while there is no significant relationship between unemployment and financial development. The results also show that there is unidirectional causality from finance to unemployment rate. Furthermore, Kim, Chen and Lin (2018) investigate the effect of credit market on unemployment rate using a panel of developed and developing countries. The results show that financial development increases with unemployment and the magnitude effect is stronger for young workers than female ones. Ernst (2019) demonstrates that broad financial sector regulation impacts unemployment and employment opportunities. In specific, he finds that financial regulations stabilize the employment status after financial crisis. Rafiu (2019) also finds inconclusive evidence in the finance-unemployment nexus. He demonstrates that the results are sensitive to the proxy for financial development in Nigeria.

From the review, it is evidenced that the literature still remains unsettled in examining the relationship between financial development and unemployment. This present study provides further insights by investigating asymmetrically the impact of financial development on unemployment in Nigeria.

Data and Methodology

This study examines the asymmetric impact of financial development on unemployment in Nigeria over a period of 1980-2017. Our choice of variables is derived from the past studies as documented in the literature review section. This study considers the use of Non-linear ARDL. It is a new technique that decomposes financial variable of interest into positive and negative components in a bid to ascertain its impacts on a dependent variable dynamically. The technique was developed by Shin *et al.* (2014). In using the NARDL procedure, we follow the study of Shin *et al.*, (2018); Ajide (2019b) and Chen *et al*, (2020). We consider the following non-linear cointegrating regression:

$$UN_t = \gamma_0 + \gamma_1 LCFD_t^+ + \gamma_2 LCFD_t^- + \gamma_3 BSC_t + \gamma_4 GDPG_t + e_t \quad (1)$$

Where UN is unemployment rate sourced from Central Bank of Nigeria (CBN) statistical Bulletin and National Bureau of Statistic, LCFD is the natural log of Broad Based Financial Development Index developed by IMF and sourced from IMF financial statistic Database. The index covers financial depth, financial access and efficiency. Using this index, it means our measure of financial development comprises financial depth (liquidity and size), financial access (by individuals as economic agents and firms) and financial efficiency (by providing financial services at lower cost with sustainable revenues) (Čihák *et al.*, 2012). BSC is banking system crisis and GDPG is GDP per capita growth rate. These two control variables are considered because studies show that unemployment correlates with financial crisis. The impact of financial crisis may slow down economic activities (ILO, 2010; Arpaia & Curci, 2010). In addition, Tesfaselassie and Wolters (2018) show that economic growth affects unemployment. Data on the two variables are sourced from World Bank Development Indicators. γ_i represents the matrix of long run coefficients in which the asymmetric impact of financial development are accounted for. In specific, we decompose the impact of financial development into positive change ($LCFD_t^+$) and negative change ($LCFD_t^-$). These changes have partial summations as stated below:

$$LCFD_t^+ = \sum_{i=1}^t \Delta LCFD_t^+ = \sum_{i=1}^t \max(LCFD_i, 0) \quad (2)$$

$$LCFD_t^- = \sum_{i=1}^t \Delta LCFD_t^- = \sum_{i=1}^t \min(LCFD_i, 0) \quad (3)$$

We posit that positive shocks to financial development would affect job creation thereby reducing unemployment rate in the economy as opposed to the negative changes of the financial development on unemployment rate. In this case, the magnitude of the coefficient is postulated to be $\gamma_1 > \gamma_2$. Furthermore, we re-specify the equation (1) in NARDL form which as well captured error correction component:

$$\begin{aligned} \Delta UN_t = & \gamma_0 + \sum_{i=1}^q \Pi_i \Delta UN_{t-i} + \sum_{i=0}^q \gamma_i \Delta LCFD_{t-1}^+ + \sum_{i=0}^q \theta_i \Delta LCFD_{t-1}^- + \sum_{i=0}^q \partial_i \Delta BSC_{t-i} \\ & + \sum_{i=1}^q \pi_i \Delta GDPG_{t-i} + \gamma_1 UN_{t-1} + \gamma_2 LCFD_{t-1}^+ + \gamma_3 LCFD_{t-1}^- + \gamma_4 BSC_{t-1} \\ & + \gamma_5 GDPG_{t-1} + e_t \end{aligned} \quad (4)$$

q is lag order. The advantage of NARDL is that (1) it is used when the period is short. (2) It can be used irrespective of the order of integration (3) the short run and long run asymmetric impact can be captured. Furthermore, we apply Augmented Dickey Fuller (ADF) and Philip-Peron (PP)'s unit root test in examining the stationarity level of the variables while co-integration is considered via Nonlinear bound test which compares the F-statistic with critical value of upper and lower bound (Pesaran *et al.* 2001; Shin *et al.* 2011). In our final step, we drive the cumulative dynamic asymmetric impact of a 1-percent change in positive and negative shocks of financial development as stated in equation (5) and (6).

$$dm_t^+ = \sum_{i=0}^l \partial \frac{UN_{t+i}}{\partial LCFD_{t-i}^+} \quad (5)$$

$$dm_l^- = \sum_{i=0}^l \partial \frac{UN_{t+i}}{\partial LCFD_{t-i}^-} \quad (6)$$

$$l = 0, 1, 2, \dots$$

$$l \rightarrow \infty, dm_l^+ \rightarrow \gamma_1 \text{ and } dm_l^- \rightarrow \gamma_2$$

Results and Discussion

Table 3 shows the descriptive statistics and correlations among the variables. The maximum value of unemployment rate during the period of study is about 7.06 percent with a minimum of 3.5 percent. It has an average value of 4.73 percent. The natural log value of composite index of financial development is -1.60 with a maximum value of -1.23. The GDP per capita growth is 0.92. The banking system crisis is 0.24 with maximum of 1. It is a dummy variable. Furthermore, the most volatile among the variables is unemployment rate because it standard deviation of 0.96 percent. On the correlation matrix, all the variables are within the toleration rate and there is no potential evidence of multicollinearity among the variables.

Table 3: Descriptive statistics and correlation

	UN	LCFD	GDPG	BSC
Mean	4.734553	-1.606525	0.924023	0.236842
Median	4.402000	-1.617871	1.396701	0.000000
Maximum	7.060000	-1.235278	30.35658	1.000000
Minimum	3.500000	-1.880336	-15.45478	0.000000
Std. Dev.	0.955865	0.145319	7.219622	0.430851
Observations	38	38	38	38
	UN	LCFD	GDPG	BSC
UN	1.000000	-0.004236	-0.384586	-0.199435
LCFD		1.000000	0.046485	-0.035684
GDPG			1.000000	-0.030655
BSC				1.000000

Source: Author's Computation

We also confirm the stationary level of the variables using Augmented Dickey Fuller (ADF) Test and Phillips-Perron (PP) Test (see Table 4). With the exception of GDP per capita growth rate (GDPG) that is stationery at level, I(0), other variables are integrated at first difference, I(1). This means that none of the variable is I(2). We therefore proceed to confirm the long run relationship among the variables using Bound test approach to cointegration.

Table 4: Unit root test

Variables	ADF	PP	Remarks
BSC	-5.830952*** (0.00000)	-5.830952*** (0.00000)	I(1)
LCFD	-4.652900*** (0.0007)	-6.8442263*** (0.0000)	I(1)
GDPG	-4.658803*** (0.0006)	-4.662897*** (0.0006)	I(0)
UN	-9.64344*** (0.0000)	-9.918726*** (0.0000)	I(1)

Source: Author's computation

Table 5: Bound test approach to co-integration

		Critical Bounds		
Statistics		Significance	I(0)	I(1)
F-statistics	3.623470 ^a	10%	2.45	3.52

Null hypothesis is that there is no long run co-integration. This is done using $K=4$ (where k is the fitted regressor). a- Rejection at 10%

Source: Author's computation

Table 5 shows the results of bound test approach to cointegration conducted under the Nonlinear ARDL framework with AIC lag length of 1, 3, 2, 0 and 0 for each variable in the model. As can be seen, it shows the F-statistic is significant at 10% level. Furthermore, the NARDL is premised on the fact that the key variable of interest would have different impacts in the period of negative and positive changes or shock in an economy.

Table 6: Test for symmetries

Wald Test ^a		$X^2_{statistic}$
W_{SR}		7.993898*** (0.0047)
W_{LR}		8.151555*** (0.0043)

a. The null hypothesis is the coefficients are symmetric. W_{SR} and W_{LR} denote the short- and long-run symmetries, ***significance at 1% Source: Author's computation

In this case, we present the positive and negative components of the financial development in Figures 1 and 2 while we present the Wald test for symmetries in short run and long run in Table 6.

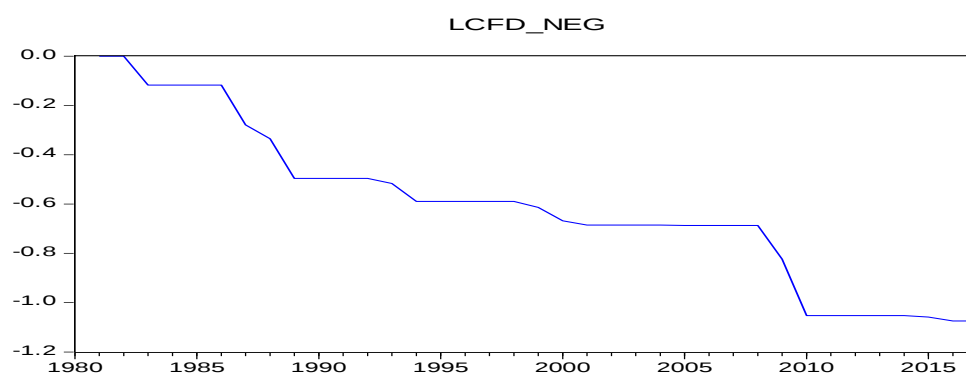


Figure 1: Negative components of composite financial development index.

Source: Author's computation

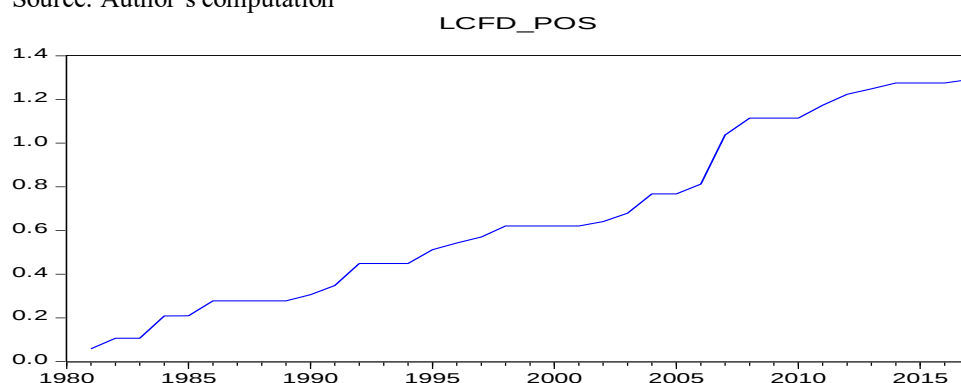


Figure 2: Positive components of composite financial development index.

Source: Author's computation

The null hypothesis of the results in Table 6 is that the variables are symmetric in the short run and long run. However, with the results presented, it show that the null hypothesis is rejected at 1% significance level. Hence, the null-hypothesis of no difference between negative and positive

partial summation is rejected which means the negative components are different from the positive components. In other words, financial developments have asymmetric behaviour in Nigerian context. It follows that the positive shocks and negative shocks influence unemployment in the short run and long run significantly and differently. Tables 7 and 8 show the short run and long run NARDL results respectively. The coefficient of error correction (ECM) is negative and significant at 1 percent level. This confirms that truly there is long run relationship among the variables in which they converge after 65.5 percent rate of adjustments. The coefficient also conforms to the economic theory because it is negative and lie within -1 and 0. The coefficients of the positive shocks to financial development is negative and significant at 5 % significance level and the same applies to lag 2 of financial development which is significant at 1% in the short run analysis. Furthermore, the coefficient of financial development in the long run regression is positive for both negative and positive components; and significant at 1 percent level. This means that financial development increases unemployment rate in Nigeria during the period of study. The negative shock is also positive in the short run. This result can be attributed to the weak regulations in the financial system bringing negative consequences to the real sectors and further deepens the unemployment situation in the long run. This confirms the recent findings of Kim *et al* (2018). In their results, unemployment rate is found to have positive correlation with financial development developing countries.

Table 7: Short run results (Dependent Variable: UN)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
$\Delta LCFD_t^+$	-7.783355**	2.826721	-2.753492	0.0113
$\Delta LCFD_{t-1}^+$	1.944096	3.840131	0.506258	0.6175
$\Delta LCFD_{t-2}^+$	-15.752407***	3.582657	-4.396850	0.0002
$\Delta LCFD_t^-$	5.975930*	3.060275	1.952743	0.0631
$\Delta LCFD_{t-1}^-$	8.666143***	2.341202	3.701579	0.0012
ΔBSC_t	1.048384**	0.373824	2.804485	0.0101
$\Delta GDPG_t$	0.002876	0.018941	0.151853	0.8806
ECM_{t-1}	-0.648545***	0.156264	-4.150325	0.0004

NB: Selected Model: ARDL (1,3,2,0,0) based on AIC , *, **, ***, Significance at 10%, 5% and 1% respectively. Note. (+) and (-) indicate the positive and negative partial sums.

Source: Author's Computation

Table 8: Long run results (Dependent Variable: UN)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
$LCFD_t^+$	9.464065***	2.859039	3.310226	0.0031
$LCFD_t^-$	12.712469***	3.742153	3.397101	0.0025
BSC_t	1.616517**	0.698759	2.313412	0.0300
$GDPG_t$	0.004435	0.029308	0.151322	0.8810
Constant	8.482013***	1.059693	8.004220	0.0000

NB: Selected Model: ARDL (1,3,2,0,0) based on AIC , *, **, ***, Significance at 10%, 5% and 1% respectively. Note. (+) and (-) indicate the positive and negative partial sums.

Source: Author's Computation

These results confirm the submission of Pagano and Pica (2012). They reveal that there is a significant positive relationship between financial sector development and unemployment in a panel of developing countries. Our long run results further support the work of Dromel *et al* (2012). They document that credit market imperfection leads to increase in unemployment rate in 20 OECD countries. Relaxing firms' financial constraints would allow firms to substitute capital for labour and as well allow firms to invest more on capital intensive technologies which may increase the level of unemployment rate in an economy (Garmaise, 2008; Pagano & Pica, 2012). In addition, asymmetry information in the financial market may deter the possibility of borrowing in the financial sector which limits the borrowing capacity of firms and entrepreneurs, and further

discourages opportunity for firms' expansion and to create job opportunities for the unemployed youths. This may lead to further increase in the level of unemployment rate due to underinvestment in an economy. In a related study of Borsi (2016), the results reveal that a decline in credit to private sector worsens unemployment rate while Kim *et al* (2018) state that unemployment rate increases along with concentration in the market coupled with regulations in the financial market. However, Bayar (2016) shows that the relationship between financial development and unemployment is not significant.

Our results also confirm the submission of Ogbeide, Kanwanye and Kadiri (2016). They show that in the short run and long run, credit to private sector significantly worsen unemployment level. The results suggest the presence of resource-curse effect in the economy. Meaning that huge transaction costs involved in financial intermediation limit credit to the real sector of the Nigerian economy. Rafiu (2019) also confirms that credit to private sector increases the level of unemployment rate. The recent study of Ernst (2019) further provide a justification for the positive relation between finance and unemployment. In particular, financial development may increase unemployment due to labour market turbulence as a result of financial constraints towards extending finances to businesses. Weak financial reforms and security market liberization may also account for the unfavourable labour market conditions.

In addition, the coefficients of banking system crisis (BSC) in short run and long run are positive and significant. Crisis in the economy along with over population may contribute to the increase in the level of unemployment. This means that economic downturn may influence unemployment rate in an economy. On the diagnostic indicators presented in Table 9, the F-statistic is significant and show the overall significance of the model built for the study. Durbin-Watson statistic and LM serial correlation show that there is no presence of autocorrelation. We also test for the Heteroscedasticity via Breusch-Pagan-Godfrey test. The results show that there is no presence of Heteroscedasticity in the estimated results while the Ramsey RESET test shows that there is no variables omission problem.

Table 9: Diagnostic Indicators

R-squared	0.679954
Adjusted R-squared	0.540803
F-statistic	4.886465 (PV= 0.000805)
Durbin-Watson stat	2.400789
Breusch-Godfrey Serial Correlation LM Test	1.637955 (PV= 0.2183)
Heteroskedasticity Test: Breusch-Pagan-Godfrey	0.880054 (PV= 0.5642)
Ramsey RESET Test	1.917690 (PV= 0.1489)
Normality Test (Jarque-Bera)	2.736552 (PV = 0.25452)
CUSUM	Stable
CUSUM of SQ.	Stable

Source: Author's Computation

The stability of the results is confirmed via CUSUM and CUSUM of Square as shown in figure 3. The graphs shows that the parameters are stable at 5 percent critical value.

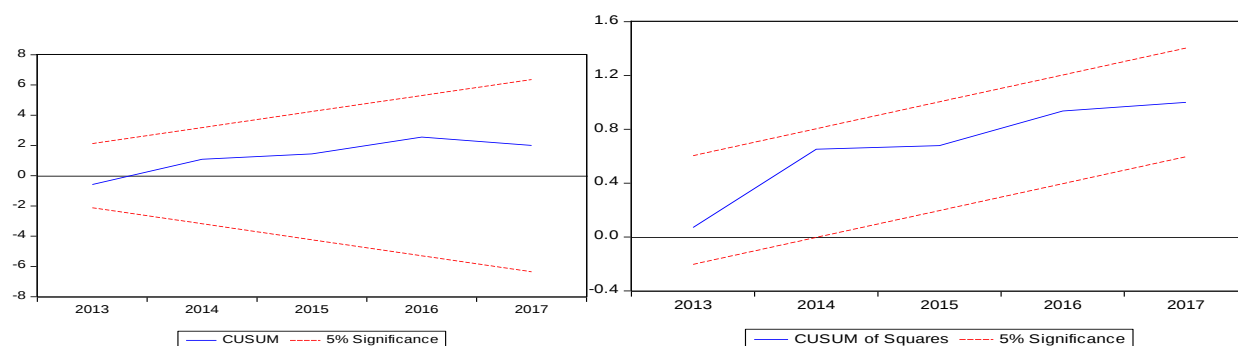


Figure 3: CUSUM and CUSUM of Square.

Source: Author's Computation

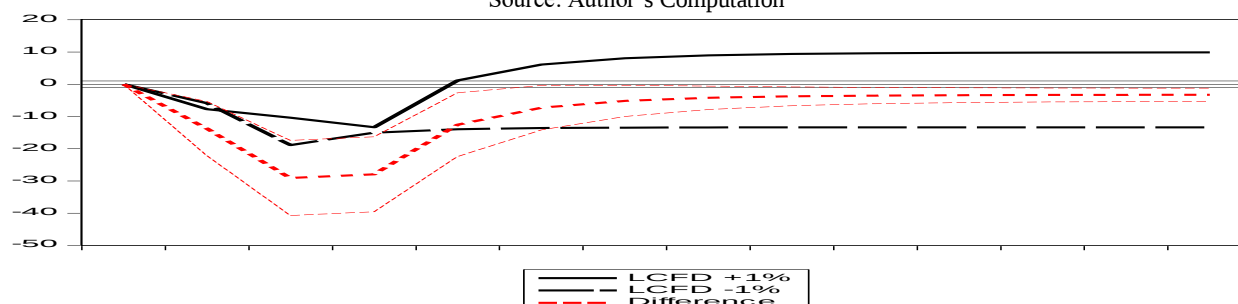


Figure 4: The Graph of NARDL Dynamic Multiplier

Source: Author's Computation

In evaluating adjustment of the nonlinearity in the existing equilibrium over the long run after passing to a new equilibrium as a result of positive and negative components of financial development, we plot the dynamic multiplier of NARDL as shown in Figure 4. The curves show the graphical mixture of the dynamic multiplier of the positive and negative decomposition of the financial development. The graphs reveal asymmetric adjustment of unemployment due to negative and positive shocks during the given period understudy. The tick red line-graph is called asymmetric curve. It shows the difference in both components of the financial development. Furthermore, the tick black line graph shows the reaction of unemployment rate to positive shocks' components of financial development at a given forecasting horizon. The dot black-line graph shows the negative reaction. The graphs show that the positive shocks are deeper than the negative shocks, and the line difference is moving towards equilibrium in the long run. This further confirms the existence of asymmetric influence of the financial development on unemployment in Nigeria.

Conclusion

In this study, we examine the asymmetric effect of financial development on unemployment in Nigeria using NARDL technique for a period of 1980-2017. In order to confirm the stationarity level of the variables, we conduct unit root tests using ADF and PP. We discover that only one variable is stationary at level while others are stationarity at first difference. We run the co-integration analysis among the variables using NARDL bound test. The results show the existence of long run equilibrium among the variables. The Wald test also confirm that there is asymmetric linkage between financial development and unemployment in the long run and short run. The findings also confirm that the positive components' effects are more when compared with the negative components' effect of financial development on unemployment in Nigeria.

Therefore, there is need to have a policy in place to boost job creation and employment opportunities which can be sustained even in the long run via conducive financial conditions. As

financial development reduces unemployment rate in the short run, long-term financial reforms' policies that would curb unemployment is paramount for Nigerian economy. In addition, it is necessary to formulate a policy that would improve the efficacy of market based financial system to increase employment opportunities in the real sectors due to weak regulation system in Nigeria. Workable prudential financial regulations may also serve as the key policy initiative that can bring unambiguous improvement in labour market situation and increase employment opportunities in the country. Overall, this study is able to show that financial sector development is an essential component of the economy that influences unemployment in Nigeria. Government needs to introduce the appropriate ingredients of regulations for effective usage of financial sector in influencing employment level in the country. In addition, it is necessary to formulate lending policy that would encourage banks to lend money to those industrialists for industrial expansion. One of the major limitation of this study is the use of one country in African continent, future study can overcome this shortcoming.

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