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Entrepreneurship Financing and Unemployment Reduction in Nigeria

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ABSTRACT: Over the years, successive governments in Nigeria have created various financing windows to address the funding needs of small-scale businesses and start-ups to promote employment and improve the living conditions of the citizens. However, in spite of available palliatives from the government and financial institutions, social indicators of economic performance continue to grow at sub-optimal rates, with adverse implications for national security and the performance of macroeconomic fundamentals. This research investigates the extent to which entrepreneurial finance provided by commercial and micro-finance banks in Nigeria contributes to unemployment reduction in the country for the period 1992 to 2017. The study employs secondary data sourced from the Central Bank of Nigeria Statistical Bulletin and World Development Indicators as published by the World Bank. The analysis using the Auto Regressive Distributed Lag model reveals that the increase in funding of small business firms did not spur job creation in Nigeria. The Granger causality estimates show the transmission of causality from financial sector credit to unemployment. Thus, we recommend the need for stakeholders in the economy especially the government to monitor banks' credits to small-scale business firms to ensure proper deployment for the expansion of job-creating activities. While it is important for banks to enhance credit to small scale businesses, the government should also ensure adequate infrastructure to support economic activities.

Keywords: Entrepreneurship, unemployment, inflation, investment, budgetary practices.

INTRODUCTION

Full achievement of the United Nations Sustainable Development Goal 1 (SDG-1) in Nigeria by 2030, which is centered on eradication of "poverty in all its forms everywhere" (United Nations [UN], 2019) requires concerted attention to entrepreneurship financing by all stakeholders. This is because entrepreneurship development remains an important strategy to accelerate poverty reduction in the economy. Rapid unemployment growth has remained a subject of great concern not only to Nigeria but many other developing and emerging nations across the globe given its pervasive implications for the social and economic health of citizens and society.

Unemployment refers to a situation where members of a society with the ability and willingness to work cannot find work to do, often as a result of the labour force growing faster than demand for it. It is largely the result of population growth leading to the growth of productive resources. Unemployment creates social tension because it contributes to insecurity in society. Issues of militancy and insurgency especially in developing countries are clear fall-outs of rising unemployment in those jurisdictions. It is often said that the idle mind is the devil's workshop, so when hands are not productively engaged, they easily engage in destructive and clandestine activities. Unemployment also has demand-shock implications owing to a non-regular income stream for citizens, which lowers aggregate demand, production, and investment, thereby reducing economic growth (Yuksel & Adah, 2017).

Unemployment contributes to the migration of human capital in search of greener pastures. Migration of human capital across international boundaries enormously affects growth and poverty in both home and destination countries. It is on record that over 247 million people migrated to countries and regions outside of their places of origin in 2013 alone (World Bank, 2019). In addition, the United Nations Department for Economic and Social Affairs (UNDESA) puts the number of international migrants (refugees inclusive) to about 258 million in 2017 (UNDESA, 2017). Also, the Nigeria Medical Association (NMA) reports that less than 60 percent of medical doctors who graduate in Nigeria are retained in the country, noting that the most skilled among the graduates leave to contribute their expertise to foreign economies (NMA, 2020).

Attainment of the twin objectives of price stability and full employment of resources constitutes a major policy challenge to governments in developing nations, particularly sub-Saharan African countries where high inflation and unemployment rates (stagflation) co-exist. Inflation and unemployment are intricately linked and, as Phillips (1958) observes, they are inversely related in the short-run but unrelated in the long-run. However, there is substantial evidence in the literature that both concepts affect

economic performance in diverse ways. Macroeconomic managers often have to contend with the dilemma of maintaining a balance between inflation and unemployment. As Vermeulen (2017) notes, central banks that seek to keep inflation at low levels through inflation targeting are often criticised for promoting unemployment.

To mitigate the growth of unemployment, governments design and implement various interventionist programmes to empower the financially vulnerable but economically active poor members of the society to engage their hands in productive activities so that they do not only create jobs for themselves but also become employers of labour, and in the process reducing unemployment. However, Ndem et al. (2018) and Ayoade and Agwu (2016) observe that some of these interventions have not successfully resolved the unemployment situation in the country. The relationship between entrepreneurship and unemployment is demonstrated in studies like Audretsch et al. (2002), Kum and Karacaoglu (2012), Dilanchiev (2014), Dvoulety and Mares (2016), among others.

Finance is critical to the transformation of innovative ideas into products and thereby advances the development of entrepreneurship. The execution of innovative projects in the early years of the industrial revolution in Europe only became possible when financial institutions attained the capacity to meet their funding requirements (Adegbite, 2015). In response to the growth of entrepreneurial activity, business enterprises employ more labour to occupy positions created, de-populating the job market in the process.

Entrepreneurial profits enable increased scope of business operations which in turn makes a demand on labour to support the resultant increase in activity. Evidence of financial sector contribution to real sector development is aptly captured in the financial economics literature (see, for example, Bagehot, 1873; Schumpeter, 1912; McKinnon, 1973; Shaw, 1973). However, Nigeria presents a different paradigm. In spite of various interventions from the government and relevant financial institutions, economic activities continue on a downward trajectory.

Empirical evidence on the nexus between entrepreneurship financing and unemployment is rather inconsistent, hence the imperative for further inquiry. In addition, extant literature shows that this relationship has largely been explored from the perspective of commercial bank credit to the private sector. Little, if anything at all, is known of the role of micro-finance bank lending in reducing unemployment. This study not only incorporates micro-finance bank lending but also takes account of gross fixed capital and fiscal deficits as possible predictors of unemployment as they have not been significantly captured in literature. This study, therefore, investigates how business financing by financial institutions

contributes to the mitigation of unemployment in Nigeria. The role of commercial and micro-finance banks in this regard is the major focus of this research while gross fixed capital and fiscal deficits are introduced as secondary explanatory variables.

THEORETICAL AND EMPIRICAL LITERATURE REVIEW

The study reviews the literature on the nexus between unemployment and selected variables (financial sector development, gross fixed capital, inflation, economic growth, fiscal deficits, and entrepreneurship) within the context of the finance-led growth hypothesis and the Schumpeter effect and Refugee effect hypotheses of the unemployment-entrepreneurship relationship. The finance-led hypothesis links the growth of economic activities and financial system development. Finance-led theorists like Bagehot (1873) and Schumpeter (1912) argue that financial sector development initiates, drives, and supports the expansion of economic activities. They contend that the sector mobilizes and deploys capital to promote enterprise development.

Regarding the relationship between unemployment and entrepreneurship, two distinct views in the literature are relevant to this study: the Schumpeter effect and the Refugee effect. The Schumpeter effect describes a situation whereby an increase in the level of entrepreneurial activities leads to a decrease in the unemployment rate (Audretsch & Fritsch, 1994; Garofoli, 1994; Audretsch et al., 2002). On the other hand, the Refugee effect describes a direct relationship between unemployment and entrepreneurship, which suggests that a high rate of unemployment correlates with a high level of entrepreneurial activities (Evans & Jovanovic, 1989; Evans & Leighton, 1990; Blanchflower & Meyer, 1994).

Empirical evidence on the relationship between unemployment and the selected variables is organized in this work according to the thematic style in order to show the commonality of ideas in line with relevant sub-headings.

Financial Development and Unemployment

The role of financial development in the growth of real activities is established in the scholarly works of Bagehot (1873), Schumpeter (1912), McKinnon (1973) and Shaw (1973). These studies support the supply-leading hypothesis that efficient financial systems stimulate technological innovations by identifying and funding entrepreneurs that demonstrate the capacity to transform innovative ideas into marketable products. Thus, successful entrepreneurship creates jobs and reduces unemployment.

Omofa (2017) examined the applicability of the supply-leading hypothesis of finance in Nigeria by evaluating the response of economic growth and unemployment to financial sector development using the 3-Stage Least Square (3SLS) method. The result indicates that though interest rate and

exchange rate strongly influence unemployment, only the exchange rate substantially affected growth.

Using data from 16 emerging economies from 2001–2014, Bayar (2016) conducted a panel study on the interaction among financial development, unemployment and domestic investment. The panel result indicates that financial development did not significantly correlate with unemployment. Country level results however show that the proxies exhibit a substantial impact on unemployment for some of the countries in the sample but not for others. The study also reveals the robust causal impact of financial sector development on unemployment. The author used the Durbin-Hausman co-integration test developed by Westerlund (2008), and Dumitrescu and Hurlin (2012) causality test to analyze the data.

Studies like Hassan et al. (2011), Caporale et al. (2015) and Cojocaru et al. (2016) show that financial sector development facilitates employment generation (reduce unemployment) by catalysing the flow of funds to entrepreneurs thereby raising growth. The authors posit that developed financial markets promote access to cheap money for productive investment, a major driver of long-run growth.

Yuksel and Adah (2017) employed quarterly data between 2003 and 2016 to examine major determinants of unemployment in Turkey based on the method of Multivariate Adaptive Regression Splines (MARS) developed by Friedman (1991). The study shows that interest rate exerts a strong positive influence on unemployment. The positive influence of interest rates on unemployment suggests that as funds become more expensive, borrowing for productive activities contracts, leading to an increase in unemployment. Based on a study of selected OECD countries, Baccaro and Rei (2007) report a high rate of unemployment *vis-à-vis* interest rate increase.

Gatti and Vaubourg (2009) conducted a panel study of selected OECD countries between 1980 and 2004 to ascertain the connection between financial sector development and unemployment. The panel regression result suggests that interaction between the financial and labour markets, in the context of unemployment reduction, depends on the strength of regulation of the labour market. It specifically indicates that unemployment is heightened by increased credit supply in countries that present weakly regulated and coordinated labour market conditions, and vice versa. On the other hand, high stock market capitalization and low banking concentration reduce unemployment in countries with weak labour market regulation, union density and coordination in wage bargaining but not vice versa. The work of Shabbir et al. (2012) also observes that stock market capitalization contributed significantly to unemployment in Pakistan between 1973 and 2007, and causality runs from

financial sector development to unemployment. The research used ARDL and Granger causality tests to estimate the nexus between financial development and unemployment. On the other hand, Ilo (2015) did not establish a substantial relationship between unemployment and capital market development during the 1986–2012 period.

In a related study, Kanberoğlu (2014) explored the link between financial development and unemployment in Turkey during 1985–2010 and observes that though a broad money supply has a strong positive effect on unemployment, financial development shows a significant negative effect on unemployment during the period. The work of Ogbeide et al. (2015) presents robust evidence of a positive relationship between Nigeria's unemployment status and banking sector development. The study by Eke et al. (2018) examined causal transmission among entrepreneurship, human capital development and financial deepening in selected African economies between 1995 and 2014 but did not show evidence of causality between financial development and entrepreneurship.

Akande (2019) investigated the extent to which financial development affects unemployment in Nigeria using the ARDL method. The study reveals that while financial system deposit to GDP substantially reduced unemployment in both short and long-run periods, credit to the private sector, financial liquidity, financial efficiency and financial stability only mitigate unemployment in the short-run. Using the framework of vector autoregressive (VAR), Essien et al. (2016) observe that positive shock to policy rate contributes significantly to unemployment in Nigeria based on quarterly data between 1983 (Q1) and 2014 (Q1). This outcome suggests that an increase in interest rates promotes unemployment.

Unemployment and Gross Fixed Capital

Infrastructure deficit is a major challenge to entrepreneurial activities due to its impact on the efficiency and productivity of labour. Lack of public infrastructure implies that entrepreneurs provide their infrastructure thereby raising the cost of doing business with adverse implications for capacity utilization and output competitiveness (Uche, 2000). This often leads to the cessation of operations and loss of employment. On the other hand, a high savings rate promotes capital accumulation through increased investment in physical and human capital development, thereby raising the level of economic activity and reducing unemployment. Studies by Uneze (2013) and Ongo and Vukenkeng (2014) reveal a strong positive impact of gross fixed capital formation on economic growth, an indication that increased investment capital may contribute to employment generation and thereby raise growth. Using gross fixed capital formation as a proxy for domestic investment, Bayar (2016) observes a decline in the unemployment rate as the investment is ramped up. In a research work on entrepreneurship, human capital development and financial

deepening, Eke et al. (2018) report a one-directional causal flow from entrepreneurship to human capital development.

Unemployment and Inflation

The work of Phillips (1958) aptly described the relationship between inflation and unemployment. Phillips presents a negative correlation between inflation and unemployment by deploying a single equation model in analysing United Kingdom data over the period 1862–1957. According to Phillips, the expansion of economic activities generates inflation, which stimulates job creation and reduces unemployment. On the other hand, Okoye et al. (2019a) argue that inflation erodes the purchasing power and economic well-being of citizens, perpetuates poverty and retards economic growth. This implies that inflation can substantially contribute to unemployment by contracting the scale of economic activities.

Research by Manu et al. (2018) examined the extent to which the Phillips curve hypothesis applies in Nigeria during the period 1961–2015 using the ARDL bound testing method but did not establish that inflation is a major determinant of unemployment in Nigeria. Kasseh (2018) explored the link between inflation and unemployment in the Gambia based on annual data for 1991–2015. Using the new Keynesian curve model, the study shows strong evidence that inflation contributes significantly to unemployment. Esu and Atang (2017) used data from twenty-nine sub-Saharan African (SSA) countries to examine the validity of the Phillips curve hypothesis in the SSA region based on annual data from 1991 to 2015 and observe no panel support for the hypothesis.

Vermeulen (2017) investigated the connection between inflation and unemployment to ascertain the validity of the Phillips curve hypothesis in South Africa based on data for the period 2000–2015. The result indicates no empirical support for a robust short-run relationship between inflation and unemployment but reveals that inflation impairs the capacity to create employment in the long-run. However, estimating the link between employment and inflation, the study shows robust positive short-run relation between inflation and employment. Applying the Granger causality test, the study shows a bi-directional causal flow between the variables. The work of Yuksel and Adah (2017) reveals that inflation adversely affects the rate of unemployment.

Nurudeen (2019) examined the inflation-unemployment trade-off in Nigeria during the 1980–2016 period using the ARDL method and affirm the validity of the Phillips curve, which hypothesizes a negative association between inflation and the unemployment rate. The study further reveals causation from inflation to unemployment based on Granger causality and Toda Yamamoto estimates.

Unemployment and Economic Growth

Growth of real activities implies an increase in the output of the agricultural, industrial, commercial and services sectors (Adegbite, 2015). Following the landmark study of Phillips (1958), economic growth drives inflation, spurs employment generation and reduces unemployment. Growth-induced inflation may also create demand shocks and thereby contract economic activities leading to redundancy and loss of employment (Okoye et al., 2019a).

The research study by Mucuk et al. (2017) reveals a negative association between economic growth and unemployment in Turkey based on the method of the vector error correction model (VECM). The result indicates that a high economic growth rate reduces the unemployment rate, implying that expansion of economic activities engages idle hands thereby reducing unemployment. Zagler (2003) also used VECM to examine the relationship between economic growth and unemployment in France, Germany, Italy and the United Kingdom and observes also that unemployment correlates negatively with economic growth. Yuksel and Adah (2017) present further the negative impact of economic activities on unemployment rate.

Chowdhury and Hussain (2014) also report that economic growth substantially reduces unemployment in Bangladesh. In addition, Şentürk and Akbas (2014) observe that economic growth significantly lowers the rate of unemployment in Turkey using the Toda Yamamoto causality analysis. In another research study on Turkey, Aydiner-Avsar and Onaran (2010) also report that a high economic growth rate lowers the unemployment rate. Arslan and Zaman (2014) also observe the negative impact of foreign direct investment (FDI) and GDP growth on the unemployment rate in Pakistan while Irpan et al. (2016) reveal that a high output growth rate reduces unemployment in Malaysia. However, Kyei and Gyekye (2011) report a non-significant effect of economic growth on unemployment in South Africa. With regard to causality, Alhdiy et al. (2015) report that GDP growth has no causal effect on unemployment in Egypt.

Unemployment and Fiscal Deficits

Governments employ deficit financing when they plan to spend more than they receive in revenue. This budgetary practice aims at increasing the level of economic activity, thereby creating more jobs and raising the national output (Okoye et al., 2019b). Governments engage in expansionary fiscal policies in the development of social and critical infrastructure needed to boost productivity.

Evaluating the relationship between deficit financing and fiscal operation in Nigeria between 1980 and 1994, Eyiuche (2000) observes a substantial negative relationship between unemployment and deficit budgetary practice, an

indication that policies that target reduction in unemployment raise the level of fiscal deficits.

Unemployment and Entrepreneurship

Given the increased socioeconomic crises and the imperative to achieve broad-based or inclusive growth, policymakers across the globe, particularly in developing economies, now emphasize entrepreneurship as the pathway to rapid growth and development (Eke et al., 2018). The authors sustain the argument that entrepreneurship development can create and deepen financial markets, creativity and innovativeness, enhance output growth, and in the process reduce unemployment. Akinyemi et al. (2018) lend credence to the growth-propelling capacity of entrepreneurship in Nigeria based on data for the period 1981–2011.

Makinde (2013) provides a strong positive correlation between unemployment and entrepreneurial development based on a survey of 220 respondents drawn from Kogi State, Nigeria. Ezeanokwasa and Nwachukwu (2014) also report that the acquisition of entrepreneurship skills is critical to the reduction of unemployment in Nigeria based on a study sample of 810 respondents selected from Onitsha, Anambra State.

Omonijo et al. (2018) conducted a study on the business mentoring practice (Nwa Boy) among the Igbo-speaking people of South-Eastern Nigeria to ascertain its contribution to the reduction of youth unemployment. From extant literature, the authors argue that the practice effectively promotes self-employment among youths in the region and has substantially contributed to the development of entrepreneurial activities not just in the region but across Nigeria. They assert that this unique business mentoring practice can significantly mitigate youth unemployment in the country if supported by the government at all levels.

Based on a panel study of 23 OECD countries, Audretsch et al. (2002) show support for both positive and negative interactions between unemployment and entrepreneurship. They observe that a high rate of unemployment leads to an increase in entrepreneurship (refugee effect) and that a high level of entrepreneurial activities reduces unemployment (Schumpeter effect).

By conducting a panel analysis of data obtained from 4 Visegrad countries (Czech Republic, Poland, Hungary and Slovakia) from 1998 to 2014, Dvoulety and Mares (2016) observe that a high unemployment rate leads to an increased level of entrepreneurial activity. They also discover the negative association between entrepreneurship and unemployment. The study, therefore, confirms both the Refugee and Schumpeter effects.

The work of Kum and Karacaoglu (2012) which used fully modified OLS (FMOLS) and dynamic OLS (DOLS) methods to analyze the link between entrepreneurship (proxied as self-employment)

and unemployment in Turkey between 1985 and 2009 also reports a negative relationship between unemployment rate and entrepreneurial activities. Using a bivariate model, Dilanchiev (2014) examined the connection between entrepreneurship and unemployment in Georgia over the period 2003–2013. The result further confirms the existence of the Schumpeter effect. However, it did not support the significant effect of unemployment on entrepreneurship. The research study by Apaydin (2018) reports a robust negative relationship between unemployment and entrepreneurship, and a further flow of causality from entrepreneurship to unemployment (Schumpeter effect).

Ndem et al. (2018) examined the extent to which entrepreneurial development schemes in Nigeria have contributed to employment generation in Cross River State, Nigeria. The study which focused on the activities of the National Directorate of Employment reveals that the scheme has not significantly contributed to employment generation. Using the survey research design, Okafor (2019) investigated the link between entrepreneurship development and unemployment reduction in Anambra State, Nigeria, with a study sample drawn from Awka, Onitsha and Nnewi. The study reveals that the cost of doing business adversely affects entrepreneurship development in Nigeria. This suggests the inability of small businesses to reduce unemployment. Ayoade and Agwu (2016) examined the effectiveness of interventionist programmes of the government in mitigating the incidence of unemployment in Nigeria and observed that the programmes did not stimulate employment generation due to issues of corruption, bureaucracy, policy inconsistency, political instability and absence of entrepreneurial skills.

The review of preceding studies reveals that empirical dependence of unemployment reduction on entrepreneurship financing is varied and imprecise, especially for Nigeria. The divergence of these findings could be due to different sample periods and the diverse sets of econometric methodologies used such as single equation (OLS), vector autoregressive (VAR) model and many others. As good as these methodologies appear to be, they are not without their shortcomings. It is therefore needful to re-examine the interaction between unemployment and entrepreneurship financing within a different analytical framework.

METHODOLOGY

This study examines the effect of entrepreneurship financing on unemployment reduction in Nigeria. The study employs secondary data sourced from the Central Bank of Nigeria (CBN, 2017) Statistical Bulletin and World Development Indicators (WDI) as published by the World Bank (2017), for the period 1992 to 2017. To avoid issues of variable bias and minimize errors of mis-specification, the study adopts a multivariate

framework. The variables of interest are unemployment rate (UNEM), which is the dependent variable, and small-scale credit to total credit (SSCT), micro-finance loans and advances to total deposits (MFLA), government budgetary practice (BGPR), investment in infrastructure (INFR) and inflation rate (INFL) as independent variables. Using a time series dataset, the study applies a unit root test to ascertain the stationarity status. This satisfies the condition that the series has a predictable trend and thereby reduces the possibility of spurious estimates. The outcome of the unit root test informs the choice of the appropriate technique of estimation used in the study.

Model Specification

The functional form of the relationship between the dependent and independent variables is stated as

$$UNEM = F(SSCT, MFLA, BGPR, INFR, INFL) \quad (1)$$

where:

UNEM = Unemployment Rate; SSCT = Small-scale credit to total credit; MFLA = Microfinance loans and advances to total deposits; BGPR = Budgetary practices; INFR = Investment in infrastructure; INFL = Inflation rate.

The explicit form of the above relationship is specified in the following equation:

$$UNEM_t = \alpha_0 + \alpha_1 SSCT_t + \alpha_2 MFLA_t + \alpha_3 BGPR_t + \alpha_4 INFR_t + \alpha_5 INFL_t + \mu_t, \quad (2)$$

where:

α_0 = Intercept Term; $\alpha_1 - \alpha_5$ = parameters to be estimated; μ_t = stochastic error term. This represents other variables affecting the dependent variable but not taken into account by the above model.

Technique of Estimation

Following the outcome of the unit root test, this study adopts the method of the autoregressive distributed lag (ARDL) model. The ARDL model framework developed by Pesaran and Shin (1998) and further amplified by Pesaran et al. (2001) is considered suitable for this research given its unique advantages over other estimation techniques which, among others, include its suitability for small and finite samples, ability to produce unbiased long-run estimates of the model's parameters. ARDL modelling also applies regardless of whether the variables are integrated of order zero, one, or mixed but not at two (Okoye et al., 2022; 2019a; Adeleye et al., 2020). The ARDL representation of the relationship between entrepreneurship financing and unemployment reduction is presented in Equation (3) as follows:

$$\Delta UNEM_t = \beta_0 + \sum_{i=1}^{p} \beta_1 \Delta UNEM_{t-1} + \sum_{i=1}^{q} \beta_2 \Delta SSCT_{t-1} + \sum_{i=1}^{r} \beta_3 \Delta MFLA_{t-1} + \sum_{i=1}^{s} \beta_4 \Delta BGPR_{t-1} + \sum_{i=1}^{t} \beta_5 \Delta INFR_{t-1} + \sum_{i=1}^{u} \beta_6 \Delta INF_{t-1} + \beta_7 UNEM_{t-1} + \beta_8 SSCT_{t-1} + \beta_9 MFLA_{t-1} + \beta_{10} BGPR_{t-1} + \beta_{11} INFR_{t-1} + \beta_{12} INF_{t-1} + \mu_t \quad . \quad (3)$$

In Equation (3), Δ is the first-difference operator; the parameters $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ are the long run coefficients, while are the short run coefficients and the error term is represented with μ_t.

Wald F-Test

To establish the long run relationship amongst the variables of interest, the Wald test is applied on Equation (3), where:

H_0: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = \beta_9 = \beta_{10} = \beta_{11} = \beta_{12} = 0$;

H_1: $\beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq \beta_7 \neq \beta_8 \neq \beta_9 \neq \beta_{10} \neq \beta_{11} \neq \beta_{12} \neq 0$.

The null (H_0) hypothesis argues that there is no co-integration among the variables, while the alternative (H_1) represents the hypothesis of co-integration. If the calculated F-statistic exceeds the upper critical bounds value, then the H_0 is rejected. If the F-statistic falls within the bounds then the test is inconclusive. Lastly, if the F-statistic falls below the lower critical bounds value; it implies that there is no co-integration.

Error Correction Term

The short-run error correction coefficient measures the discrepancy between the actual values and the estimated values. It additionally shows the speed of adjustment from the short-run dynamics to the long-run equilibrium value. For the coefficient of the error correction term to be significant and reliable, it must be negatively signed and within the magnitude of zero and 1. Therefore, the error correction of the ARDL model is specified as follows:

$$\Delta UNEM_t = \beta_0 + \sum_{i=1}^{p} \beta_1 \Delta UNEM_{t-1} + \sum_{i=1}^{q} \beta_2 \Delta SSCT_{t-1} + \sum_{i=1}^{r} \beta_3 \Delta MFLA_{t-1} + \sum_{i=1}^{s} \beta_4 \Delta BGPR_{t-1} + \sum_{i=1}^{t} \beta_5 \Delta INFR_{t-1} + \sum_{i=1}^{u} \beta_6 \Delta INF_{t-1} + \alpha ECM_{t-1} + \mu_t \quad , \quad (4)$$

where Δ is the difference operator, ECM_{t-1} represents the lagged error correction term derived from the long-run co-integrating relationship from the specified ARDL model (Equation (3)). In Equation (4), α is the estimated value of the adjustment speed of ECM. And, it is expected to exhibit a negative and significant sign for co-integrating relation to exist in the long run.

RESULTS AND DISCUSSIONS

Test for Stationarity

The Augmented Dickey-Fuller (ADF) test was conducted to investigate the existence of unit roots in the series, a condition that may determine the reliability of the research outcome. A stationary or integrated series is time-invariant (a change in time does not distort the shape of the distribution).

The result of the ADF stationary test which is a necessary condition for adopting a suitable estimation technique is presented in Table 1. It shows that only one of the variables (UNEM) is stationary at level, while the remaining variables: SSCT, MFLA, BGPR, INFR and INFL are differenced once to achieve the stationary status of the series at intercept and trend specification. This justifies the application of the Autoregressive Distributive Lag (ARDL) as advanced by Pesaran et al. (2001) in estimating the parameters of the model. This method is more appropriate for models composed of I(0) and I(1) variables, as opposed to Johansen (1988) which typically applies to models with I(1) variables.

Table 1. Unit root test (source: authors' computation, 2020)

Variables	ADF @ levels	5% critical value	ADF @ 1st diff	5% critical value	Remarks
UNEM	–2.101065	–3.004861	2 .525276	–1.958088	*I*(1)
SSCT	–4.046304	–2.986225	N/A	N/A	*I*(0)
MFLA	–6.178791	–2.991878	N/A	N/A	*I*(0)
BGPR	–3.133388	–2.986225	N/A	N/A	*I*(0)
INFR	–4.925213	–2.991878	N/A	N/A	*I*(0)
INFL	–4.792386	–2.991878	N/A	N/A	*I*(0)

Note: N/A = Not Applicable.

ARDL Bounds Cointegration Test

The F-bounds test shown in Table 2 indicates evidence of a co-integrating relationship among the variables captured in the model which suggests that they do not tend to drift over the long-run. This is evidenced by the observed F-value (8.569929) being greater than the lower (2.39) and upper (3.38) critical bounds at a 5 percent level of significance.

Table 2. Bound test result (source: authors' computation, 2020)

F-bounds test		Null hypothesis: No levels of relationship		
Test statistic	Value	Significance level	I(0)	I(1)

F-statistic	8.569929	10%	2.08	3.00
K	5	5%	2.39	3.38
		2.5%	2.70	3.73
		1%	3.06	4.15

Long-run Result and Implication of Findings

Having established the co-integrating relationship among the variables, from the dynamic long-run ARDL estimation presented in Table 3, it is observed that the present rate of unemployment is greatly determined by its previous or lagged values (delayed effect). The result indicates that

the condition of unemployment in the past two periods (lag 2) sustains an increase in the current state of unemployment. The study further reveals the positive effect of commercial bank credit to the private sector on unemployment, though this is only significant at 10 percent. This is an indication of possible misapplication or diversion of credit away from employment-generating activities. It is also observed that previous credit facilities granted to small-scale business firms reduce the unemployment rate, but not to a significant extent. This result suggests that the use of these facilities has the potential to enable the engagement of idle resources and expansion of existing business facilities if properly channeled, thereby creating additional jobs.

Similarly, concerning micro-finance loans and advances to small businesses, the result shows a robust positive effect of present and past credit facilities on the real economy. This result implies that an increase in micro-finance lending to small business firms does not lead to job creation, and therefore rather than mitigate the level of unemployment, it exacerbates it. The observed positive effect of financial sector development on unemployment is consistent with the findings of Yuksel and Adah (2017), Baccaro and Rei (2007), Gatti and Voubourg (2009), Shabbir et al. (2012), Essien et al. (2016), Ogbeide et al. (2015), among others. However, it counters the negative result reported by Gatti and Voubourg (2009), Hassan et al. (2011), Caporale et al. (2015), Cojocaru et al. (2016), Akande (2019), Kanberoğlu (2014), etc.

Evidence from the study further demonstrates that the dominant practice of deficit budgeting does not support government policy on unemployment reduction. Though a major policy objective of deficit financing is the imperative of broadening the productive capacity of the economy through the expansion of human and physical capital, our finding suggests otherwise. Not many studies are available on the relationship between fiscal deficit and unemployment against which this result can

be bench-marked, but it contradicts the observed negative outcome in Eyiuche (2000).

The study also reveals the negative effect of government investment in domestic infrastructure. The implication is that an increase in infrastructural spending reduces the unemployment rate. This aligns with the finding of Bayar (2016). It tends to agree also with the result of Uneze (2013) and Ongo and Vukenkeng (2014) which indicates that investment in domestic capital leads to the expansion of economic activities. Studies by Mucuk et al. (2017), Yuksel and Adah (2017), Chowdhury and Hussain (2014), Zagler (2003), Şentürk and Akbas (2014), Arslan and Zaman (2014), Irpan et al. (2016), Aydiner-Avsar and Onaran (2010) produce evidence that GDP growth curbs unemployment. Finally, it is observed that inflation did not substantially affect unemployment during the study period. This confirms the findings of Manu et al. (2018) but contradicts the negative relationship in Phillips (1958), Vermeulen (2017), Yuksel and Adah (2017), etc. as well as the positive effect reported by Kasseh (2018), Esu and Atang (2017).

The R-squared (0.914632) and Adjusted R-squared (0.859752) show that the explanatory variables jointly explain about 92 percent and 86 percent, respectively, of variations in the rate of unemployment in Nigeria and the Prob. (F-statistic) of 0.000005 indicates a high level of significance. The Durbin-Watson statistic (2.142776) suggests the absence of serial auto-correlation of errors in the model.

Table 3. Long-run results (source: authors' computation, 2020)

Variable	Coefficient	Std. error	*t*-statistic	Prob.*
UNEM(–1)	0.139531	0.170817	0.816844	0.4277
*UNEM(–2)**	1.652530	0.362109	4.563629	0.0004
*SSCT****	0.108572	0.060049	1.808052	0.0921
SSCT(–1)	–0.080457	0.056172	–1.432337	0.1740
*MFLA****	0.023277	0.005163	4.508037	0.0005
*MFLA(–1)****	0.023236	0.007371	3.152478	0.0071
*BGPR***	0.108086	0.045444	2.378466	0.0322
*INFR****	–0.042269	0.019957	–2.117963	0.0526
INFL	0.000223	0.006273	0.035542	0.9721
C	–5.545703	1.431403	–3.874313	0.0017
R-squared	0.914632			
Adjusted *R*-squared	0.859752			
F-statistic	16.66612	Durbin-Watson stat		2.142776
Prob(*F*-statistic)	0.000005			

Note: *, **, *** 1%, 5%, 10% significance level.

Error Correction Model (ECM) Results

The short-run results presented in Table 4 show a strong negative effect of lagged values of unemployment rate on its current values. The negative outcome implies that the high rate of employment in the previous period may have prompted increased participation in entrepreneurial activities (refugee effect) and the resultant increase in entrepreneurship reduces the current level of unemployment (Schumpeter effect).

The result reveals a robust positive effect of entrepreneurship financing on unemployment in Nigeria. This implies that an increase in funding of small scale businesses by commercial and micro-finance banks does not support the expected increase in job creation, an indication of sub-optimal deployment of facilities supplied by the financial institutions.

The adjustment or error correction mechanism, with a coefficient of 0.792061, indicates that about 79.2 percent of past errors are corrected in the current period. This implies a high speed of convergence from short-run to long-run equilibrium condition.

Table 4. Short-run estimates (source: authors' computation, 2020)

Variable	Coefficient	Std. error	*t*-statistic	Prob.
D(UNEM(-1))	–1.652530	0.199119	–8.299188	0.0000
D(SSCT)	0.108572	0.034917	3.109412	0.0077
D(MFLA)	0.023277	0.003829	6.078624	0.0000
CointEq(-1)*	0.792061	0.085560	9.257391	0.0000
R-squared	0.840894			
Adjusted *R*-squared	0.817029			
Durbin-Watson stat	2.142776			

Note: *, **, *** 1%, 5%, 10% significance level.

Granger Causality Estimates

Having established the extent to which entrepreneurial finance provided by commercial and micro-finance banks in Nigeria contributes to unemployment reduction in Nigeria using ARDL, the study goes further to access the causal between entrepreneurial financing and unemployment. This is necessary because ARDL is deficient to achieve this objective. Table 5 shows evidence of causality between entrepreneurial financing and unemployment in Nigeria. In terms of specifics, the result shows a unidirectional causal flow from commercial bank credits (to small private businesses), represented as SSCT, to unemployment, and from micro-finance bank loans and advances (MFLA) to unemployment.

These results indicate that a change in the financing pattern from these sources induces a change in unemployment rate. This finding aligns with the finance-led hypothesis that finance stimulates the expansion of economic activities. The observed transmission of causality from financial sector development to unemployment aligns with the finding of Bayar (2016), Shabbir et al. (2012) but does not support the outcome of Eke et al. (2018) which did not establish causation between financial development and unemployment

Table 5. Granger causality test (source: authors' computation, 2020)

Null Hypothesis	Observations	F-Statistics	Probability
SSCT does not Granger Cause UNEM**	24	3.84352	0.0397
UNEM does not Granger Cause SSCT	24	0.33475	0.7197
MFLA does not Granger Cause UNEM*	24	8.06143	0.0029
UNEM does not Granger Cause MFLA	24	0.39900	0.6765
BGPR does not Granger Cause UNEM	24	0.42253	0.6614
UNEM does not Granger Cause BGPR	24	1.23847	0.3122
INFR does not Granger Cause UNEM	24	0.66600	0.5254
UNEM does not Granger Cause INFR	24	0.86564	0.4367
INFL does not Granger Cause UNEM	24	0.52674	0.5989
UNEM does not Granger Cause INFL	24	0.68654	0.5154

Note: *, **, *** 1%, 5%, 10% significance level.

Diagnostics

The goodness of fit characteristic of the ARDL model was examined using the Breusch-Godfrey LM test, Breusch-Pagan-Godfrey, and the Jarque-Bera test (see Table 6). The results indicate that there is no higher order autocorrelation, no heteroskedasticity, and evidence of normality. The results suggest the estimates obtained from the analysis are suitable for policy decisions.

Table 6. Diagnostic tests (source: authors' computation, 2020)

Test	*F*-statistic	*P*-value	Chi(X^2)/*T*-statistic	*P*-value
Serial correlation test: Breusch-Godfrey LM test	0.163661	0.6924	0.298387	0.5849
Heteroskedasticity test: Breusch-Pagan-Godfrey	1.263410	0.3352	10.75637	0.2928
Normality: Jarque-Bera test	–	–	1.716654	0.423871

CONCLUSIONS

Unemployment constitutes a major social and economic challenge to individual and national well-being and has received the attention of various stakeholders, including the government and researchers across the globe. However, in spite of the considerable attention, it has received over the years, unemployment remains a major societal problem which could alter smooth economic progress and increase poverty in an economy. This is not in tandem with the global focus of SDG-1 which is centered on 'end poverty in all its form everywhere'. This study extends knowledge frontiers by investigating the extent to which entrepreneurial finance from commercial and micro-finance banks contributes to unemployment reduction in Nigeria. The ARDL result shows previous values of unemployment as significant predictors of its current value (lag effect). In addition, against *a priori* expectation, the study reveals a robust positive effect of credit from

commercial and micro-finance banks on unemployment. The observed positive effect of bank financing on unemployment suggests that borrowed funds are either diverted away from real sector development (moral hazard problem) or sourced at an exorbitant cost which makes entrepreneurial engagement unprofitable. This may further worsen the unemployment situation as it encourages divestments from employment-generating activities.

Finally, it is observed that investment in domestic infrastructure reduced unemployment during the period. This further justifies the critical role played by domestic infrastructural development in boosting economic activities through investments by all other sectors in Nigeria. Although there is an improved effort by the government in recent times to address this, the huge deficit over time in that sector shows that all stakeholders must now prioritise infrastructural development if we are to achieve SDG 1 by 2030. With regard to causality, the study demonstrates causal transmission from finance to unemployment and thereby aligns with the finance-led hypothesis. This aligns with the finding of Bayar (2016). It tends to agree also with the result of Uneze (2013) and Ongo and Vukenkeng (2014) which indicates that investment in domestic capital leads to the expansion of economic activities. Studies by Mucuk et al. (2017), Yuksel and Adah (2017), Chowdhury and Hussain (2014), Zagler (2003), Şentürk and Akbas (2014), Arslan and Zaman (2014), Irpan et al. (2016), Aydiner-Avsar and Onaran (2010) produce evidence that GDP growth curbs unemployment. This finding further explains that finance stimulates the expansion of economic activities which leads to a reduction in unemployment. Therefore, consistent policy review by the government to support the good performance of entrepreneurs would reduce unemployment and ultimately reduce poverty in Nigeria.

Given the results of this study, it is recommended that the government should consciously target the attainment of an investor-friendly business environment through the formulation of policies that lower the cost of doing business and raise profitability. For the fund providers, it is imperative to mitigate the moral hazard problem through the strengthening of monitoring of loan utilization to ensure effective and profitable deployment of credit facilities. Business profitability is both a condition for expansion and an inducement for others to engage in entrepreneurial activities, leading to job creation and by extension unemployment reduction. Government should further intensify infrastructural investment as a conscious strategy to deepen entrepreneurship to achieve private-sector-driven job-creation initiatives.

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