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Monetary Policy Pass-Through to Unemployment Reduction in Nigeria

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Abstract
The Nigerian economy has witnessed several structural changes with varying impacts on the level of unemployment which is one of the major threats to macroeconomic stability in the economy. This paper examined the impact of monetary policy mechanisms and unemployment reduction in Nigeria from 1986 to 2022. The theoretical framework of this paper was anchored on the job search and Keynesian theories of unemployment, and the data used in this paper are unemployment, broad money supply, prime lending rate, foreign direct investment, private sector credit, and population growth and inflation rate. The analytical techniques of this paper included the dynamic autoregressive distributed lag and the Granger causality approaches. The data for these variables were sourced from the Statistical Bulletin of the Central Bank of Nigeria and the National Bureau of Statistics. The result showed that the prime lending rate was positive and significant at the 5 percent level of significance, while broad money supply was negative and significantly correlated with unemployment. The lagged value of inflation rate were positively and significantly correlated with unemployment. Furthermore, the Granger causality test showed that there is no causality between broad money supply and unemployment rate, while unidirectional causality existed between unemployment and private sector credit. This paper recommended among others that macroeconomic stability is necessary through employment generation by enhancing the productivity of the Nigerian economy through accessibility of credit by the private sector.

Keywords: *ARDL, broad money supply, monetary policy, pass-through, prime lending rate, unemployment*
JEL CODES: E51, E58, E24

1. Introduction

The Central Bank of Nigeria (CBN) defined monetary policy as specific actions taken by the apex bank to regulate the value, supply and cost of money in the economy with a view to achieving government's macroeconomic objectives. The objectives of monetary policy may vary from country to country but there are two main views. The first view calls for monetary policy to achieve price stability, while the second view seeks to achieve price stability and other macroeconomic objectives including unemployment reduction which is the focus of this paper. The major instrument of monetary policy in Nigeria is the monetary policy rate (MPR). The policy rate was adjusted four times in the last six months of 2023 from 16.50 percent in December, 2023 to 17.75 percent in July, 2023. The other policy parameters, such as the Cash Reserve Ratio (CRR) and Liquidity Ratio) were retained at 32.5 percent and 30.0 percent respectively (NESG, 2023). Similarly, credit to the private sector to gross domestic product (GDP) also increased during the period under review while the velocity of money, which measures the rate at which money is exchanged in an economy peaked at 8.77% in 2005 but declined to 4.49 percent in 2009. However, the rate has been relatively stable, averaging 4.41 percent between 2010 and 2023. Inflation rate

has exceeded the Central Bank of Nigeria's target range of 6 percent to 9 percent (Olowookere & Eragha, 2023)

Unemployment is a key indicator of the health of the economy and probably the most widely reported measure of the nation's performance. The World Bank has defined unemployment as the share of the labour force that is without work but available for and seeking employment. An unemployment as defined by the International Labour Organization (ILO) is a person aged 15 or over who simultaneously meets three conditions: being unemployed for a given week; being available to take a job within two weeks; having actively sought a job in the last four weeks or having found one starting in less than three months. According to the NBS definition, unemployment is defined as the proposition of those in the labour force neither in the entire economic active population, nor the entire Nigerian population) who were actively looking for work but could not find work.

In the first three quarters of 2017, over 4 million jobs were lost as unemployment and underemployment rate climbed to 40 percent (Nigerian Economic Summit Group, (NESG) 2018). Similarly, KPMG (2023) posited that unemployment will continue to be a challenge due to the slower than-required economic growth and the inability of the Nigerian economy to absorb the 4-5 million new entrants into the Nigerian job market every year. The National Bureau of Statistics (NBS, 2023) recorded an increase in the national unemployment rate from 23.1 percent in 2018 to 33.3 percent in 2020. It increased to 33.7 percent in 2022 and has risen to 40.6 percent in 2023. In this study, unemployment was measured as a percentage of the unemployed in the total labour force as a percentage of the gross domestic product. The extent to which changes in monetary policy rates leads to changes in loan and deposit rates for households and firms are refereed to monetary policy pass through. In the context of this paper, it refers to the mechanisms through which monetary policy impacts on unemployment reduction. In this paper, the prime lending rate, private sector credit and money supply, which basically formed the three major transmission mechanisms for monetary policy (Zhou, 2021) were used. The relationship between prime lending rate, private sector credit and broad money supply are espoused in the literature. The overall objective of this paper is to examine monetary policy pass through to unemployment reduction in Nigeria. Specifically, this paper:

- To investigate the impact of broad money supply, prime lending rate, money supply and inflation rate on unemployment rate in Nigeria.
- To determine the Granger causality between broad money supply, prime lending rate, money supply and inflation rate in Nigeria.
- To analyze the short-run and adjustment dynamics between broad money supply, prime lending rate, inflation rate and unemployment rate in Nigeria.

The relevance of this paper includes the gap identified in the literature in relation to theoretical, empirical/ methodological and economic policy relevance. The hallmark of policy research is that it emanates from a policy problem (ineffective monetary policy and high unemployment rate) and its results are relevant to development policy objectives. The scope of this paper is limited to the monetary policy pass through to unemployment reduction in Nigeria between 1986 and 2022. The choice of this period is to achieve the three-fold objectives of this study. The variables of this paper are unemployment rate (dependent variable) and covariates of broad money supply, prime lending rate, inflation rate, foreign direct investment and credit to the private sector. These variables were

selected based on empirical/theoretical evidence. The data for the variables were sourced from Central Bank of Nigeria and National Bureau of Statistics of various years. The data were estimated using EView 12 version of econometric software. The analytical techniques employed are the Granger causality test and the autoregressive distributed lag model. These techniques are in relation to the objectives of this paper.

This paper is structured as follows: Following this background information is the empirical literature review presented in section two. Section three presents the methodology, while section four is on the results and analysis. Section five presents the conclusion, policy implication and agenda for further studies.

2. Empirical Literature Review

Few of the reviewed studies are presented to showcase previous and related empirical studies to the current attempt. Okeke and Chukwu (2021) examined the effect of monetary policy on the rate of unemployment in Nigeria (1986-2018) using secondary data from Statistical Bulletin of Central Bank of Nigeria. The variables of the study include exchange rate, liquidity ratio, and cash reserve ratio and unemployment rate. The paper adopted an autoregressive distributed lag technique and also conducted the unit root and co-integration tests. The result showed that cash reserve ratio and monetary policy rate had positive and significant effect on the employment rate in Nigeria, exchange rate and liquidity ratio had negative and significant effect on the rate of unemployment. Based on the findings made, the paper recommended that the monetary policy authorities should create a favorable investment climate by facilitating the emergence of market based interest rate and exchange rate administration that will attract both domestic and foreign investments and create job.

Onwuka (2022) examined the impact of fiscal and monetary policy on unemployment rate in Nigeria using data between the periods 1981 to 2020 and using the vector autoregressive (VAR) as the major statistical technique of analysis. The paper used annual time series data sourced from Central Bank of Nigeria Statistical Bulletin (CBN) and National Bureau of Statistics (NBS). The result showed that government expenditure and interest rate have negative and significant effect on unemployment rate at lag period 2. From the forecast error variance decomposition (FEVD), the highest innovation was due to government tax and money supply, while the shock of government expenditure and interest rate in Nigeria were the lowest over the periods. The paper concluded that there is need for diverse strategies that will be targeted towards employment creation in Nigeria. Thus, an expansionary fiscal and monetary policy should be encouraged to support employment generation in the country.

Nwamuo (2022) investigated the impact of monetary policy on unemployment rate in Nigeria. Time series data spanning from 1981 to 2020 was sourced from the Central Bank of Nigeria Statistical Bulletin and National Bureau of Statistics (various editions). The ARDL bounds testing approach to co-integration was used to analyze the data. The paper showed a positive and insignificant impact between exchange rate and unemployment rate in Nigeria. Based on these findings, the paper recommended that the monetary authorities should come up with policies that will reduce minimum rediscount rate as these will encouraging borrowing of funds for investment purposes as this will reduce unemployment rate.

Babalola, Yelwa and Olaniyi (2023) analyzed the impact of monetary policy on the unemployment rate in Nigeria using quarterly time-series data from 1990(1) to 2019(3). The monetary instruments used were the monetary policy rate (MPR), cash reserve ratio, inflation and liquidity ratio. The autoregressive distributed lag technique was employed in the analysis. The result showed that monetary policy rate and cash ratio did not have a significant effect on the unemployment rate in Nigeria. Furthermore, it was discovered that monetary policy has a low speed of adjusting the economy back to full employment equilibrium. The prime lending rate, broad money supply and credit to the private sector were ignored by the study. These variables were considered in the present study as major transmission mechanisms for monetary policy pass through to unemployment reduction in Nigeria.

2.1 Gap in empirical literature

From the reviewed studies, the following conclusions are made: some previous studies focused on monetary policy and economic growth (Fasanya *et al.,* 2013; Okafor *et al.*, 2015; Udude, 2014; Ufoeze *et al.,* 2018). Others focused on unemployment and monetary policy: (Okegwo & Ogbuehi, 2016; Okeke & Chukwu, 2021; Amasonma, 2015; Ekwe, 2018; Attan *et al,* 2019; Nwamuo, 2022). These studies concluded on the positive relationship between monetary policy of different indicators and unemployment. These studies focused on monetary policy and economic growth on the premise of the linkage between economic growth and unemployment) Fasanya *et al.*, 2013; Okafor *et al.,* 2015; Udude, 2014; Ufoeze *et al.,* 2018), while (Nwosa, 2016; Onwuka, 2022) focused on monetary and fiscal policy and unemployment on the premise of the potency of economic policy mixture (Nwosa, 2016; Onwuka, 2022). In terms of methodology and analytic applications, the following is the most commonly used in these studies: Error correction mechanism, vector autoregressive (VAR); vector error correction (VECM); Ordinary least square; non-linear autoregressive distributed lag(NARDL) and data envelope analysis(DEA), few studies used autoregressive distributed lag model and Granger causality tests. In term of the variables used, the following have been used in studying the relationship between monetary policy and unemployment: monetary policy rate, output growth, money supply and exchange rate; economic growth, fiscal policy, macroeconomic policy; cash reserve, interest rate, unemployment rate, consumer price index, Treasury bill rate, credit to the private sector, government tax, lending rate and deposit interest rate. Few studies used the prime lending rate, population growth rate and foreign direct investment which is the value addition of this paper.

3 Methodology

3.1 Theoretical Framework

The theoretical frameworks of this paper are the job search and the Keynesian models of unemployment. The job search theory became popular in the 1970s as an alternative to the standard neoclassical labour supply theory. The origin of job search theory is normally attributed to the two seminal articles-McCall (1970) and Mortensen (1970). The adoption of these two theories follows the fact that previous studies(for example, Goshit & Iorember, 2020) used only the Keynesian approach without considering the job search approach in explaining the relationship between monetary policy transmission mechanism and unemployment reduction.

In the basic search model, the individual has more than one earning opportunities available and has to select the best one. In Stigler (1961) model of the search model, the main decision an individual has to make is how many jobs to sample before deciding which one is the best. Sampling an extra job has an associated marginal cost over a given time period, and the decision variable is the sample size n representing the number of firms a job seeker will consider in their search. In job search models, the decision process is sequential. There is no optimal sample size because the jobs are randomly sampled one at a time and the individual stops when an acceptable job becomes available. Hence, the number of jobs sampled depends on their sequence and the sample size itself is a random variable (Mortensen, 1986). The basic job search model is simply on optimal stopping rule problem which can be described as follows:

$$W = \max \{W_1, W_2 \ldots, W_a\} \qquad 3.1$$

As such wages associated with future job offers are distributed according to a probability distribution F(W). The job seekers' aim is to maximize net benefits (future stream of income minus search costs). Equation (3.1) would be re-specified in this study to reflect the objective of this study which is to examine the impact of monetary policy on unemployment in Nigeria.

3.2 Empirical Model Specification

Monetary policy is introduced into the standard labour-matching model following Mortensen and Pissarides (1999), Pissarides (2000) and Lehmann (2006). In the long-run, a rise in money growth leaders to higher inflation and higher unemployment, so the long-run Philips curve is not vertical. The optimal monetary growth rate decreases with the workers' bargaining power, the level of unemployment benefits and the tax rate. The relations this paper investigated would be specified as:

$$\text{UNEMR} = f \ (\text{M2/GDP, PLNDR, FDI, PSC, POPGR, INF}) \qquad 3.2$$

Where UNEMR is the unemployment rate, M2/GDP is the broad money supply, PLNDR is the prime lending rate, FDI is the foreign direct investment, PSC is the private sector credit, and POPGR is the population growth rate while INF is the inflation rate.Thus, $\text{UNEMR} = \beta_0 + \beta_1 \text{M2/GDP} + \beta_2 \text{ PLNDR} + \beta_3 \text{ FDI} + \beta_4 \text{PSC} + \beta_5 \text{POPGR} + \beta_6 \text{INF} + \mu$

$$3.3$$

Taking the proportionality of these included variables and expressing equation (3.3) in its elastic form, we have: $\text{UNEM} = \beta_0 + \beta_1 \text{LnM2/GDP} + \beta_2 \text{PLNDR} + \beta_3 \text{Ln FDI} + \beta_{4\text{Ln}} \text{PSC} + \beta_5 \text{POPGR} + \beta_6 \text{INF} + \mu$ $\qquad 3.4$

Where the included variable have being previously defined, L_n = natural logarithm of the variables and μ is the stochastic error term in line with the assumptions of the Ordinary Least Square.The theoretical postulations are as follows: $\beta_1 > 0; \beta_2 > 0; \beta_3 > 0 ; \beta_4 > 0; \beta_5 < 0; \beta_6 < 0$

3.3 Description of Variables and Justification
The variables included in the model are described and its inclusion justified as follows:

Unemployment rate (UNEMR)

The unemployment is a condition where one is capable of working, actively seeking work, but unable to find any work. It is important to note that unemployed persons must be active member of the labour force and in search of remunerative work. Several empirical studies have examined unemployment especially in relation to monetary policy (Essien *et al,* 2016; Zhou, 2021 and Campolmi, 2016). In this paper, unemployment is the dependent variable. The explanatory variables are presented thus:

Broad money supply (M²/GDP)

This includes narrow money along with other assets that can be easily converted into cash to buy goods and services. This includes savings and time deposits with banks including foreign denominated assets. The real effect of monetary policy shock including the broad money supply are likely to vary with policy variability which is dependent on three factors: (i) the elasticity of money supply with respect to a change in the interest rate, (ii) the elasticity of money supply with respect to a change in interest rate, and (iii) the elasticity of aggregate investment with respect to a change in the interest rate (Essien *et al.*, 2016).

Prime lending rate (PLR)

The Prime Lending rate is the rate of interest that the deposit money bank will charge their clients when issuing a loan. Higher interest rates tend to lower consumer spending and business investments, leading to a reduction in hiring and increase in unemployment. When interest rates go up, it can have a negative impact on employment. Increased borrowing costs will likely lead to higher unemployment rates. This paper hypothesized a negative relationship between prime lending rate and unemployment ($b_3 < 0$).

Foreign direct investment (FDI)

FDI is the principal mechanism for economic globalization. Simionescu and Simionescu(2017) showed that there is no any short-run relationship between FDI and variation in unemployment rate influencing FDI. This paper hypothesized a positive relationship between FDI and unemployment reduction within the review period. Hence, $\beta_4 > 0$

Private sector credit (PSC)

Private sector credit refers to financial resources provided to the private sector, such as through loans, purchases of non-equity securities, trade credits and other receivables, which establish a claim for repayment. Effiong, Ekpe and Udofia(2022) showed that private sector credit has a positive but insignificant relationship with unemployment, while its one-period lag showed a positive and significant impact on unemployment.

Population growth (POPGR)

There is the tendency for population growth to outrun the means of subsistence, if nothing is done to check population growth rate, job opportunities will decline while unemployment will rise (Todaro & Smith, 2006). Amana, Akpan, Okon and Aigbedion (2018) showed a strong positive relationship between unemployment and population growth rate.

Inflation rate (INF)

The relationship between monetary condition such as the interest rate or money supply and real economic variables such as output and employment has long been a source of contention among academics and policymakers alike. Changes in monetary conditions are often believed to transmit to the real economic through the classical Philips curve relationship as a trade-off between inflation and real output or employment. The relationship to be positive or negative (ambiguous) in the case of Nigeria.

3.4   Estimation Techniques and Procedures

The technique of estimation follows the autoregressive distributed lag model (ARDL) developed by Pesaran, Shin and Smith (2001). With this technique, both the short-run and long-run effects of the explanatory variables (M2/GDP, PLNDR, FDI, PSC, POPGR and INF) on the dependent variable was estimated. The error correction model is specified thus:

$$\Delta UNEMRt = \alpha 0 + \rho i Xi + n\sum Qi \Delta UNEMRt - 1 + m\sum pi \Delta X_{t-1} + \partial ECM_{t-1} + \varepsilon t \qquad 3.5$$

Here, Xt represents all the explanatory variables in the model , n represents the lag length of the dependent variables while m captures that of the explanatory variables, the parameter α0 denotes the long-run estimates of the model parameter , Qi and pi represents the short-run parameters, ∂ measures the speed of adjustment of the short $-$ run disequilibrium to attain long $-$ run equilibrium , and ECM is the error correction mechanism expressed as the one $-$ period lag of the residual

3.4.1   Unit Root Test

In any time series analysis, identification of the order of integration of the variables has always been the first step taken to avoid spurious regression problem. Since the testing of the unit roots of a series is a precondition to the existence of co-integration relationship, this study will employ the Augmented Dickey-Fuller (ADF) and Philip-Peron (PP) unit roof tests to investigate the stationarity of all the variables used. According to Glynn, Perera and Verma (2007), incorporating non-stationary or unit roof variables in estimating the regression equations using the Ordinary Least Square (OLS) method always give misleading inferences but if variables are non-stationary, the estimation of long-run relationship between those variables should be based on the co-integration method. Peron (2005) posited that there is an intricate interplay between unit root and structural changes that creates challenges in empirical studies, given that both are definite practical importance in economic applications. Given the possible reflection of structural changes in the given data, this study will employ the Zivot-Andres unit roof to determine the existence of breakpoint endogenously from the data, following, Zivot and Andrews (1992)- Peron (1989) also emphasized the importance of structural breaks when testing for unit root processes, arguing that failure to allow for an existing break leads to a bias that reduces the ability to reject a false unit root null hypothesis.
The ADF test is an extension of the Dickey-Fuller test by allowing a higher order of autoregressive process, such that:

$$\Delta X_t = \alpha_0 + \alpha_1 X_{t-1} + \alpha_{2t} + \sum_{i=2}^{P} b_i \Delta X_{t-I} + 1 + \mu \qquad (3.5)$$

Where P = the number of lagged changes in X_t necessary to make μ_t serially uncorrelated. Testing the null H_o: $\alpha_1 = 0$ against the H_α: $\alpha_1 < 0$, the null of unit root is rejected if the observed t-statistic is sufficiently negative compared to the critical value at the accepted level of significance.

3.4.2 Testing for Co-integration

The second preliminary test after the unit root test is the co-integration test. Following Grangers (1981) seminal paper on co-integration, this subject has received considerable attention both in empirical and theoretical research (Johnsen & Juselius, 1990, 1992). The several concept of co-integration is that there exists equilibrium or a long-run relationship between a set of time-series variables, provided that the series are integrated to the same order. Two most widely used tests namely, the Engle-Granger (1987) (EG) two-step estimator and the Johansen-Juselius (1990) maximum likelihood (JJ). The JJ estimator will be adopted for this study since it is in line within a multivariate context (Banerjee, Dolado, Galbraith & Hendry, 1993). Generally, this approach is applied to I(1) variable. This method is an extended work of Johansen (1988) and it provides a likelihood-ratio statistic to test for the maximum number of independent equilibrium vectors in the co-integrating matrix. Consider the following co-integrating vectors of the system:

$$\beta'X_t = Z_t \tag{3.6}$$

The matrix β is called the co-integrating matrix. For N jointly determined variables it will be of the dimension N X N, but of the rank $r \leq N-1$, where r is the number of linearly independent co-integrating vectors.

3.4.3 Diagnostic/Stability Test

Conducting various diagnostic checks (reliability/stability) is a further post-analysis in econometrics research to make the model more reliable and efficient for policy inference. It supports the pre-tests (unit roots and co-integration) explained in the previous section and is also an important step in time series modeling. It is estimated to serve as model adequacy test. Diagnostic tests usually conducted include the normality test, serial correlation, autoregressive conditional heterroskedasticity (ARCH), heteroskedasticity and specification error tests. In addition, this study will conduct the stability test of the properties of the short-run dynamic model. Usually, the Bahmani-Oskooee and Shin (2002) cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares (CUSUM SQ) are used. The necessary and sufficient conditions for the test are that, it is important that the recursive residuals (CUSUM) and (CUSUM SQ) of squares stay with the 5% critical boundary (represented by two straight lines whose equations are detailed in (Brown, Durbin and Evans, 1975).

3.5 Data Source(s)

The data sources for this paper is presented in Table 3.1

Variables	Description	Measurement ($' billion or %)	Source(s)
UNEMR	Unemployment	Measured in rate (%)	National Bureau of Statistic (NBS)
M_2/GDP	Broad Money Supply	Percentage of GDP	CBN
PLNDR	Prime Lending Rate	Measured is rates	CBN
FDI	Foreign direct investment	Measured in US Dollar	Measured in rate (%)
PSC	Private sector credit	Measured in Millions of Nair	CBN
INFL	Inflation	Measured in rates (%)	CBN

4. Results presentation and analysis

This section presents the results of the estimated data. This includes the descriptive statistics, correlation matrix, the unit root test, regression estimation results- long run and short-run and the granger causality. Table 4.1 presents the results of the descriptive statistics results.

Table 4.1: Descriptive Statistics Results

	UNEMR	M2/GDP	PLNDR	FDI	PSC	POPGR	INF
Mean	51.11	2.73E+10	18.36529	128.4536	1.00E+08	2.59758	19.32319
Std. Dv.	1.61	2.26E+10	4.127766	112.4074	1.33E+08	0.10079	17.39970
Skewness	-1.07	1.045218	0.789085	0.7433	1.173084	-0.18460	1.756034
Kurtosis	2.64	8.148	4.657989	2.578	3.252135	2.206849	4.810383
Jarque Bera	7.27	0.017	8.077640	3.680897	8.584115	1.179988	24.06867
Prob.	0.02	1.01E+12	0.017618	0.158746	0.013677	1.554331	0.000006
Obs.	37	37	37	37	37	37	37

Source: Researchers' Computation using EView 12.

Note: UNEMR = Unemployment Rate; M2/GDP = Broad Money Supply; PLNDR = Prime Lending Rate; FDI = Foreign Direct Investment; PSC = Private Sector Credit; POPGR = Population Growth. The results presented in Table 4.1 show the results of the descriptive statistics – the measures of central tendency and measures of dispersion. The measures of Central tendency are often called averages. The main measures are the mean, median, mode and the midrange, while the measures of dispersion include – standard deviation, skewness and kurtosis. From the results presented in Table 4.1, it showed that the average value of unemployment stood at 57.1 for unemployment; 18.37 for prime lending rate, foreign direct inflow of USD 128m over the Quarter 4 of 2023 while stood (US $86.03 million). The average inflation rate within the reviewing period stood at 19.3 percent rate while the population growth over 250 million Nigerians. The standard deviation which measures how dispersed the data is in relation to the mean showed that unemployment rate has a positive standard deviation at 1.62, with prime lending rate with 4.12, foreign direct investment with 112, which is close to the average value. Inflation has positive standard deviation and the same for population growth. The positive standard deviation of these included variables means that the variable (unemployment rate, prime lending rate, and inflation and population growth represents above-average variables. The skewness results showed that unemployment and population growth manifested a negative value. The negative correlation showed the relationship between unemployment and population growth. Unemployment occurs as a result of the insufficiency of jobs to commensurate with the growing population.

From the kurtosis result, unemployment rate, foreign direct investment and population are less the standard value of 3, while, broad money supply and private sector are with the standard value of 3 and prime lending rate and inflation are platykurtic in nature. The Jarque-Bera showed the normal distribution of the data distribution. A large Jarque-Bera value indicates that errors are not normally distributed. From all the variables (UNEMR, M2/GDP, PLNDR, IND, PSC) were all greater than 5.99, this implies that H_O was rejected and there is no normality, whereas FDI and

POPGR were less than 5.99 (J – B < 5.99), the H$_O$ was not rejected, hence there is normality. For the probability value, 5% 90.05), the standard level of significance showed that FDI and POPGR, majority of the variables were significant at the 5% level of significance. Table 4.2 presents the correlation matrix, which is a further attempt to valid the data presented for this study for policy inference.

Table 4.2: Correlation Matrix

Correlation	UNEMR	M2/GDP	PLNDR	FDI	INF	PSC	POPGR
UNEM	1.00000						
M$_2$/GDP	0.107732	1.00000					
PLNDR	0.445544	-2.292963	1.00000				
FDI	-0.728051	-0.076461	-0.471402	1.00000			
INF	0.282539	0.040290	0.406996	-0.348665	1.00000		
PSC	-0.816550	0.024106	-0.550071	0.928593	-0.257154	1.00000	
POPGR	0.348325	-0.075851	0.171151	-0.350958	-0.163697	-0.477141	1.00000

Note: Included variables previously defined
Source: Researchers' computation using EView 12

From the result of the correlation matrix presented in Table 4.2, it showed that with the exception of foreign direct investment and private sector, the other variables are positively correlated with unemployment reduction in Nigeria. Prime lending in particular was positive, implying that the lending rate has the potentially of reducing unemployment judiciously used efficiently. The results which showed that majority of the variables are positively correlates ted to the unit roof test as presented in Table 4.3

Table 4.3: Unit Root Test

Variables	Critical Values	Prob.	ADF Statistics	PP Statistics	Remarks
UNEMR	1% = -3.639407	0.0016	-4.335789	-4.372065	I(1)
M2/GDP	5% = -2.951125	0.0016	-3.316788	-3.271610	I(0)
PLNDR	1% = -2.614300	0.0000	-6.711402	-6.807509	I(1)
FDI	19 = -2.689194	0.006	-3.685855	-4.694000	I(0)
INF	5% = -2.971853	0.0013	-4.524505	-6.954890	I(1)
	10% = - 2.625121				
PSC	1% = -3.626782	1.0000	-3.728282	7.112835	I(0)
POPGR	5% = -2.945842	0.0305	-3.169845	-3.115386	I(1)
	10% = -2.611531				

Note: ADF – Augmented Dickey Fuller; PP – Phillip Perron
Source: Researcher' Computation using EView 12.

Table 4.3 showed the result of the unit root test of the included variables. The standard rule for decision rule is that, the value of t-statistics must be greater than a specified significant level pre-selected in absolute term and the probability must be significant be very close to zero. From the result presented in Table 4.3, the probability of UNEMR, M$_2$/GDP, PLNDR, FDI, INF and POPGR were all significant at 0.05 percent significance level except Private Sector Credit (PSC) that

insignificant (1.0000) at the 5 percent significant level. This paper therefore concluded that the variables and values of the ADF values are greater than the critical values and the probability value hence stationary at significant 1st difference while private sector credit insignificant and hence stationary at levels. These results permits the use of the autoregressive distributed lag model (ARDL) approach. Having ascertained that the included variables are in order zero or levels and first difference (ICI) as showed in Table 4.3, Table 4.4 proceeded with the co-integration test as shown in Table 4.4.

Table 4.4: Autoregressive Distributed Lag Model Bound Test

Test Statistic	Value	Significance	1(0) Asymmetric = 10	I(1)
F-statistic	10.04590	10%	1.99	2.94
	6	5%	2.27	3.28
		2.5%	2.55	3.61
		1%	2.88	3.99

Source: Researchers' Computation using EView 12
Note: Asymptotic critical bound values are obtained from Pesaran et al (2001), Table CI (iii)
From the results obtained in Table 4.4, the f-statistics value calculated of 10.04590 lies above the upper and lower bound critical values (2.94, 3.28, 3.61 and 3.99) at both 10%, 5%, 2.5% and 1% levels respectively. Since the f-statistics value lies ahead of the upper and the lower bound critical values, the null hypothesis of no co-integration was rejected and the alternative hypothesis selected, implying the presence of co-integration relationship among the variables. Having established the long-run relationship between lending and unemployment reduction in Nigeria. The long-run estimate based on the ARDL approach reported in Table 4.5.

Table 4.5: Estimated Long-Run Coefficients using the ARDL Approach

Dependent Variables LNUNEMR

C	48.35602	7.965106	6.070982	0.0000
UNEMR(-1)*	-0.569286	0.121615	-4.681048	0.0004
M2/GDP(-1)	3.56E-11	7.54E-12	4.720124	0.0004
PLNDR(-1)	-0.068087	0.0444.18	-1.532861	0.1493
FDI(-1)	0.019996	0.003280	6.095665	0.0000
INFL(-1)	0.007086	0.012950	0.547187	0.5935
PSC(-1)	-2.59E-08	3.92E-09	-6.624017	0.0000
POPGR**	-6.113324	1.802117	-3.392301	0.0048
D(M2/GDP)	6.88E-13	4.49E-12	0.153392	0.8804
D(M2/GDP(-1))	-2.78E-11	6.62E-12	-4.195058	0.0010
D(M2/GDP(-2))	-2.57E-11	5.71E-12	-4.511020	0.0006
D(PLNDR)	0.075130	0.045451	1.653001	0.1223
D(FDI)	0.008409	0.005042	1.667763	0.1193
D(FDI(-1))	2.57E-05	0.005001	0.005135	0.9960
D(FDI(-2))	-0.012744	0.006486	-1.964806	0.0712
D(INFL)	0.009856	0.006552	1.504263	0.1564

| D(INFL(-1)) | 0.017185 | 0.009226 | 1.862694 | 0.0853 |
| D(PSC(-2)) | 2.866E-08 | 1.01E-08 | 2.641478 | 0.0203 |

Source: Researchers' Computation using EView 12.

From the results presented in Table 4.5, it showed that the constant term (c) which showed the level of drift form the trend equation is positive and significant at the 0.05 level of significance. This implies that the monetary policy on the lending rate is effective in taming unemployment rate in Nigeria. However, the unemployment coefficient is negative however significant, which implies that the lending rate policy of the monetary policy in Nigeria has the potential of reducing inflation if efficiently implemented by the deposit money under the control and monitor of the Central bank of Nigeria. The coefficient of broad money supply is positive and significant. An increase in the supply of money works both through lowering interest rates, which spurs investments, which promotes employment and reduces unemployment, and through putting more money in the hands of the consumers, and thus stimulating spending. The coefficient of broad money supply at lag one is in line with the theoretical relationship between broad money supply and unemployment. The coefficient of the prime lending rate is negative and insignificant at the 0.05 level of significance, such that 1% increase in the lending rate reduces employment by 0.6 percent. Higher interest rate tends to lower consumer spending and business investment, leading to a reduction in hiring and an increase in unemployment. When interest rates spikes, it normally have a negative impact on employment, as increased borrowing costs will likely lead to higher unemployment rate. Explicitly, the role of interest rates on bank's lending habit has been extensively discussed in the development literature.

In extension, Babalola (2013) explained that a rise in interest rates would benefit savers at the expense of borrowers. Expectedly in the long-run, the relationship between interest rates and unemployment would tend to be negative. From the result, the coefficient of inflation is positive but insignificant. This result is in variance with the basic Phillip curve hypothesis that posits the negative relationship between inflation and unemployment. The result is line with the suggestion that interest rate is the strongest exogenous variables, followed by the inflation rate, in determining unemployment.

The coefficient of private sector credit has a negative value, however significant at the 0.05 level. This implies that the private sector credit has the potential of reducing unemployment if the Central Bank private sector credit is well implemented. In developing economics, private sector needs more funds to increase their investment prospects and reduce unemployment and poverty. Private sector credit has improved economic conditions through increased competitiveness efficiency within financial markets thereby indirectly benefiting non-financial sectors of the economy. Private sector credit attracts the reservoir of savings and idle funds and allocates same to entrepreneurs, business, households and government for investment projects and other purposes with a view of returns which forms the basis of economic development and unemployment's reduction (Osakwe & Akunna, 2022). The coefficient of population growth is negative although significant, as such, 1% change in population growth reduces unemployment by 6 percent. In a related study, it was showed that a 1% increase in population is associated with 4.74% increase in unemployment. The marginal effect is very large at 4.74%. This implies that the high rate of unemployment rate in Nigeria has much to do with the high rate of population growth in the country. A rapid population growth leads to low standard of living of the people. If a country's population increases as fast as national income, then per capita income will not increase (Afolabi

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& Babalola, 2020). The short-run dynamic estimates are reported in Table 4.6 using the parsimonious error correlation model of this study.

Table 4.6: Estimated coefficients of the short-run Dynamic Error Correction Model
Dependent Variable: D(UNEMR)

Variables	Coefficients	Std. Error	t-statistic	Prob.
D(M2/GDP)	6.88E-13	2.63E-12	0.262204	0.7973
D(M2/GDP(-1))	-2.78E-11	4.10E-12	-6.767236	0.0000
D(M2/GDP(-2))	-2.57E-11	4.25E-12	-6.057022	0.0000
D(FDI)	0.008409	0.024845	3.023998	0.0098
D(FDI(-1))	2.57E-05	0.003259	2.580632	0.0228
D(FDI(-2))	-0.012744	0.003716	0.006911	0.9946
D(PLNDR)	0.075130	0.003906	-3.262564	0.0062
D(INFL)	0.009856	0.003822	2.578529	0.0229
D(INFL(-1)	0.017185	0.0003464	4.961258	0.003
D(INFL(-2)	0.019117	0.005165	3.701363	0.0027
D(PSC(1))	-2.27E-09	5.41E-09	-2.200812	0.0464
D(PSC(2))	2.68E-08	5.33E-09	5.021547	0.0002
CointEq(-1)*	-0.569286	0.051197	-11.11943	0.0000

R-squared	0.905145	F-statistics 12.02	Mean dependent var -0.081	
Adjusted R-squared	0.843490		S.D dependent var	0.697712
S.E. of regression	0.276056		Akaike info criterion	0.556475
Sum squared resid	1.524137		Schwarx criterion	1.184976
Durbin Watson	2.598552		Hananan-Quinn	0.770812

Source: Researchers' Computation using EView 12

The short-run dynamic estimates are reported in Table 5.4 using the parsimonious error correction model based on this study's model. The results of the short-run dynamic show that the error correction factor is correctly signed and statistically significant as expected. This shows a rapid rate of adjustment from the short-run disequilibrium to the long-run equilibrium. As can be seen from the result, about 57 percent of the deviation from equilibrium was corrected within one year. Adjusted R-squared (0.84) showed that the explanatory variables have explained about 84 percent of the total variations in unemployment in Nigeria. This indicates a high explanatory power of the short-run dynamic model. The F-statistics (12.02) also showed that the explanatory variables collectively were significant in explaining short-run changes in unemployment in Nigeria. The Durbin-Watson of (2.59∼ 2.6) value showed that there is no first order autocorrelation in the model. The analysis of the short-run estimates show that changes in the previous (one lagged) period of inflation rate, foreign direct investment have positive short-run impact on unemployment while one lagged period of broad money supply, interest rate and private sector credit have negative short-run impact on unemployment rate. This implies that a 1 percent increase in the previous period of prime lending rate, foreign direct investment, and inflation rate control would lead to 0.8, 8 percent, 2.5 percent reduction in unemployment in Nigeria. Conversely, a 1 percent decrease in private sector credit would lead to 1.19 percent increase in unemployment rate in Nigeria. Table 4.7 presents the Granger causality result.

Table 4.7: Pairwise Granger Causality Test

Null Hypothesis	Obs	F-Statistic	Prob	Remarks
M2/GDP does not Granger cause UNEMR	35	0.65364	0.5274	No causality
UNEMR does not Granger cause M2/GDP		0.43907	0.6487	No causality
PLNDR does not Granger cause UNEMR	35	0.37616	0.6897	No causality
UNEMR does not Granger cause PLNDR		1.62588	0.2136	No causality
FDI does not Granger cause UNEMR	35	1.01177	0.3756	No causality
UNEMR does not Granger cause FDI		5.01958	0.0132	Unidirectional causality
INFL does not Granger cause UNEMR	35	0.38660	0.6827	No causality
UNEMR does not Granger cause INFL		0.82907	0.4462	No casualty
PSC does not Granger cause UNEMR	35	2.33535	0.1141	No causality
UNEMR does not Granger cause PSC		3.22407	0.0539	Unidirectional causality
POPGR does not Granger cause UNEMR	35	0.85172	0.4367	No causality
UNEMR does not Granger cause POPGR		3.07777	0.0608	No causality

Source: Researchers' Computation using EView 12

This test is undertaken to investigate whether the degree of causation of one variable on the other. In this paper, it was conducted to show whether prime lending rate contains useful information for predicting unemployment rate reduction in Nigeria or whether it is unemployment rate reduction that contains any useful information from predicting prime lending rate levels in Nigeria. The decision rule is based on the F-probability value. If the F-probability value is significant, the null hypothesis is rejected and the reverse is the case.

From the results presented in Table 4.7, only UNEMR and FDI have a unidirectional causality. This implies that there is a unidirectional causality between unemployment rate reduction and foreign direct investment, this study therefore rejected the null hypothesis that UNEMR does not Granger cause FDI. Similarly, there is a unidirectional causality between unemployment rate reduction and private sector credit. It can be inferred from the results that foreign direct investment and private sector credit can promote a reduction in unemployment rate in Nigeria and therefore, any government policy to promote investment inflow (FDI) and private sector credit would promote unemployment in the immediate to the long-term. Table 4.8 presents the model diagnostic tests.

Table 4.8: Residual Diagnostic Test Results

S/N	Types of Test	Probability
1.	Normality Test (Jarque-Bera)	0.026395 <7.269178>
2.	Autocorrelation (Serial LM Test)	0.1326
3.	Heteroskedasticity Test	0.7283

Source: Researchers' Computation using EView12.

Normality Test
This test is carried out to test if the error term follows the normal distribution. If the value of the Jarque-Bera calculated is less than 5.99, then the error term is normally distributed. The results show a calculated value of 7.26 greater than the 5.99, this implies that the error term is not normally distributed. The null hypothesis is rejected since the calculated Jarque-Bera value is greater than its table value (as is obtained from the chi-square distribution table at 2 degrees of freedom).

Autocorrelation
This is to test whether errors corresponding to different observations are uncorrelated. The probability of 0.1326 is greater than 0.05, indicating that, the residuals of the variables are not

serially correlated. It implies that there is no correlation between consecutive residuals or error term. Thus, the null hypothesis of no serial correlation is not rejected, which satisfies the assumption of no serial correlation. Consequently, the model shows a good precision and therefore could be used for forecasting.
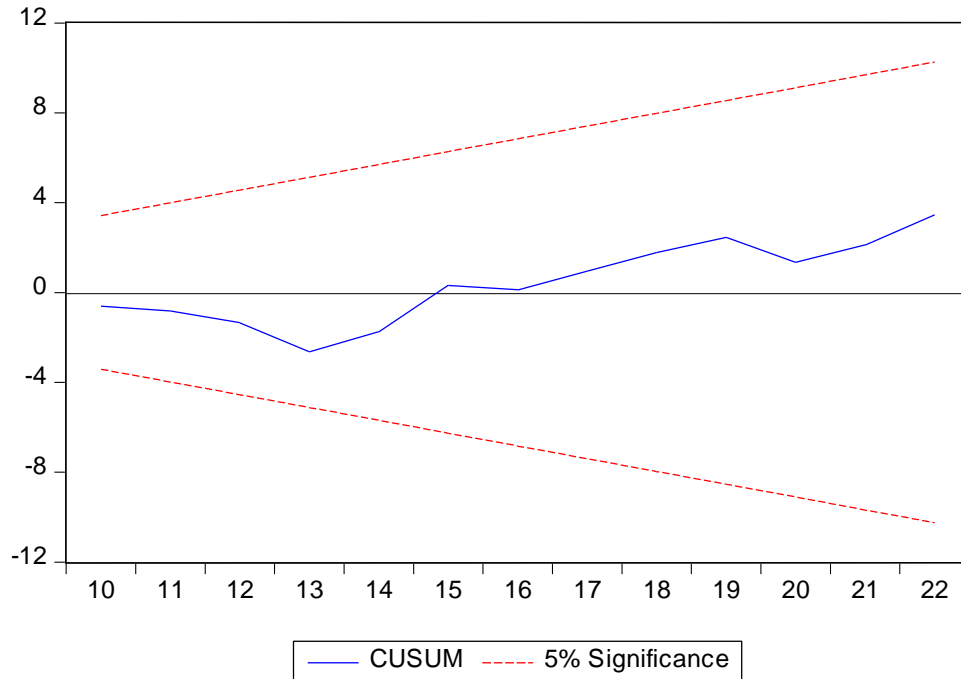
Heteroscedasticity
This test is usually done to ascertain whether the errors in the regression have a constant variance or not. If the error terms do not have a constant variance, it means that there is a violation of the classical regression linear model.

Given the probability value of 0.72, which is greater than 0.05, this implies that the residuals of the variables are homoscedastic. It implies that the error term is the same across all variables of the independent variable. Therefore, the coefficient of the variables is unbiased and could be used for forecasting.
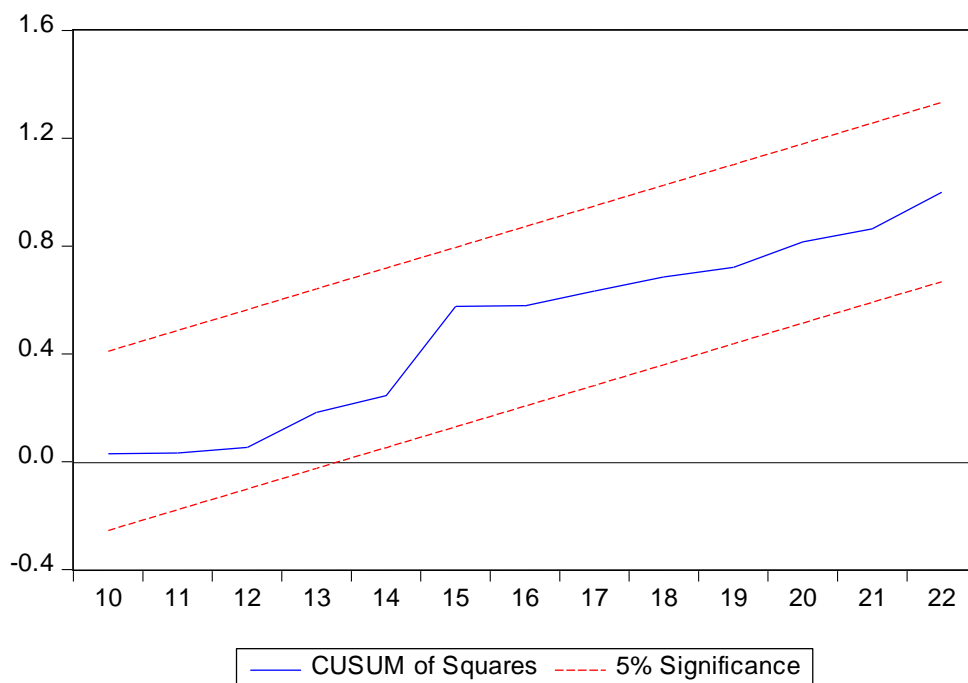
Stability Test Results
The stability test graphs presented in Figure 4.1 was used to examine the stability properties of the variables.

CUSUM OF SQUARES

From the graph above using CUSUM of squares, it shows that the variables are stable. That means the model exhibits stability over time and can be used for forecasting.

Heteroscedasticity Test Result

Given the probability of 0.1892, which is greater than 0.05, this implies that the residuals of the variables are homoscedastic. It implies that the error term is the same across all variables of the independent variable. Therefore, the coefficients of the variables are unbiased and could be used for forecasting.

4.3   Discussion of Findings

The major findings of this paper were discussed in line with the objectives and with references to the development of the Nigerian economy.

Objective 1: To investigate the impact of broad money supply, lending rate and foreign direct investment on unemployment rate in Nigeria. From the result presented in Table 4.5 of the estimated long-run coefficients using the ARDL approach, it showed that the coefficient of broad money supply is positive and significant at the 5% level of significance. Hence, an increase in broad money supply would reduce unemployment by approximately 4%. Broad money supply as earlier defined includes currency in circulation, demand deposit, savings and fixed deposits as well as other assets that is in spendable form. Economic theory posits that an increase in money supply will raise the domestic price level to a larger degree in the long-run, thus lowering the unemployment rate of labour and capital. The result of this study is in sharp contrast with the findings of Bassey (2017) that showed that the relationship between broad money supply and unemployment rate is positive and negative money supply growth shocks. However, the results show that money supply plays a vital role and showed that there is a significant pass-through effect of the money supply growth to unemployment rate in the long-run, this is in collaboration with the

submissions of Sanz-Bas (2011). Impliedly, once the amount of money supply in circulation is higher than the level of total output of the economy, it is seen as excess money supply, it does so through the control of the base money made up of currency and coins outside the banking system and deposits of banks with the Central Bank of Nigeria. In addition, the Central Bank of Nigeria regulates money supply based on the knowledge that there is a stable relationship between the quantity of money supply and economic activity.

From the result, the lagged values of broad money supply showed negative and significant relationship between broad money supply and unemployment thus collaborating the above presented results. The coefficient of lending rate, the leading variable was negative and insignificant; hence, a percentage decrease in lending rate promotes the reduction of unemployment rate by 6%. The interest rate charged on the loan amount offered to borrowers depends on the credit-worthiness of borrowers and projects financed. Well lending rate, while maximum lending rate is for customers with high risk (CBN, 2016). An increase in interest rate (lending rate) is most likely to cause new unemployment. It is also known that a rise in interest rate will benefit savers at the expense of borrowers. This implies the crowding-out of investment, which creates employment in the long-run (Babalola, 2013). From the estimated long-run coefficients using the ARDL approach, the coefficient of foreign direct investment is positive and significant at the 5% level of significance. Foreign direct investment is a long term capital investment in a target country either by buying a company or by expanding operations of an existing business (CBN, 2016). From the result, a percentage increase in foreign direct investment reduces unemployment by 1.9% in the long-run. The obtained result is in contradiction with the findings of Nelson, Ekokeme, Okoyan and Dumani (2018) that showed a negative and insignificant relationship between foreign direct investment and unemployment rate.

Meanwhile, the lagged values of foreign direct investment are in compliance with the findings of Nelson et al (2018). The coefficients of the lagged values of foreign direct investment were negative and insignificant. The coefficients of inflation including the lagged inflation were negative and insignificant in line with the theoretical postulation. The Philips curve shows the inverse trade-off between inflation rate and unemployment. If unemployment is high, inflation will be low. If unemployment is low, inflation will be high. The derived results show that the Philips curve does not hold in Nigeria. Population growth rate showed a negative and significant relationship with unemployment under the reviewing period. The result obtained is in contrast with the results of Babatunde and Babalola (2020). This implies that population growth plays a major role in the increased level of unemployment in Nigeria. This also means that a rise in population growth leads to a rise in unemployment all things being equal (ceteris paribus).

The coefficient of private sector credit at lag 1 was negative although significant. This means that private sector credit has the potential to reduce unemployment. This result was corroborated by the coefficient of private sector credit at lag 2 which sowed a positive and significant relationship with unemployment. The autoregressive distributed lag result of Effiong, Ekpe and Udofia showed a positive and insignificant relationship between private sector credit and unemployment in Nigeria between the period 1990 through 2020. The importance of the private sector has earlier been stressed in the economic development literature (Ede, Ndubuisi & Anyochukwu, 2013) in terms of its capacity to generate more jobs at a rate greater than 90 percent.

The establishment of effective microcredit programs can help small and medium enterprises (SMEs) create jobs by meeting credit needs as they are typically turned down by regular banks

due to their high credit risk reputations. SMEs require capital in order to generate jobs and reduce jobs. Deposit money banks, microfinance institutions, governments, and organizations in Nigeria all provide capital for SMEs through programs and soft loans. Such provisions of credit is premised on the capacity of the private sector to boost economic growth, employment generations, and poverty reduction in a nation (George-Anokwuru & Okowa, 2021).

The role of financial sector in providing investment finance is crucial for development as earlier argued by the Schumpter (1911) who supported the concept of financed growth (Olowefeso, Adeleke & Udoji, 2015). The financial sector is critical to a country's economic prosperity. A regulated banking system is seen to have a key role in boosting equilibrium unemployment by imposing credit limits and limiting company entrance (Acemoglu, 2001; Wasmer & Weil, 2004). A highly competitive and efficient banking system makes low-cost loans to entrepreneurs and business, increasing investment through improving capital availability (Zakaria, Risalat & Fida, 2015). The rise in investment raises the demand for labour, lowering the unemployment rate (Strahan, 2003; Dromel, Kolakez, & Lehmann, 2010).

The estimated coefficients of the short-run dynamic error correction showed that eh lagged (1) and lagged (2) values of broad money supply as percentage of GDP was significant and negative. Foreign direct investment showed appositive relationship with unemployment while the lagged values of FDI was both positive (lag 1) and negative (lag 2) although both were significant. The short-run dynamic estimate of prime lending rate was positive and significant. Inflation and the lagged values were positive and significant. The estimated coefficient of the short-run showed that the lagged values of private sector were negative and significant.

Objective 2: To evaluate the causal relationship between broad money supply, lending rate and foreign direct investment on unemployment in Nigeria. From the causality result presented, there is no casualty between lending rate and unemployment rate and again, there is no relationship between inflation and inflation. In the cause of Est Java, Nanang (2015) showed unidirectional causality between inflation and unemployment. Accordingly, unemployment rate impacted on the inflation rate in Est Java, while the inflation rate does not impact unemployment rate in East Java. In a related study, Shrikant, Noor, Shabryar and Prabha (2020) through a causality result indicated that interest, unemployment and inflation are related. Furthermore, the causality result showed a unidirectional causality between unemployment and private sector credit. This result is in line with the findings of Musa and Rabiu (2020) that equally demonstrated a unidirectional causality between private sector credit and unemployment in Nigeria.

Objective 3: To determine the short-run evolution and adjustment dynamics between broad money supply, lending rate and foreign direct investment on unemployment rate in Nigeria. The result show that about 57% of the short-run inconsistencies are being corrected and incorporated into the long-run equilibrium relationship in each period. In other word, it can be said that the level at which unemployment adjust to equilibrium was 57% of the discrepancy between long-run and short-run level of unemployment in Nigeria was corrected and incorporated on yearly basis. From the ECM result, lending rate has a positive and significant impact on unemployment rate, meanwhile, Nwamuo (2022) reported that prime lending rate has a positive and insignificant impact on unemployment rate. From the above author, the speed of adjustment for correcting disequilibrium from the previous year to equilibrium in current year is 81.9 percent.

5. Conclusion and policy implication
5.1 Conclusion

This paper examined the monetary policy-pass through unemployment reduction in Nigeria from 1986 to 2022. Basically, there are three major specific objectives to shape the discussion of the findings of this study- (i) to investigate the impact of broad money supply, prime lending rate and foreign direct investment on unemployment rate in Nigeria. From the tested hypothesis, the null hypothesis was rejected [P (0.0001) <0.05]. It was concluded that there is a significant impact of broad money supply, prime lending rate and foreign direct investment on unemployment rate in Nigeria. This implies policy measures that would promote and sustain the monetary aggregate that will help to reduce unemployment in Nigeria. This calls for sound monetary policy to promote macroeconomic stability, manage inflation and promote sustainable growth. This would involve designing policies to help control the fluctuations in employment levels, prices and production.

In conclusion to objective 2 – to estimate/evaluate a causal relationship between monetary policy and unemployment, it was shown from the result that there is no causality between broad money supply and unemployment; no causality between inflate rate and unemployment, although there is a unidirectional causality between unemployment and private sector credit. It can be generally concluded that there is no causality between monetary policy and unemployment rate. This outcome could be as a result of the dichotomy between the real sector and monetary sector. This implies policy measures that can create and sustain enabling environment for entrepreneurs and innovation that can unlock the full potentials of Nigerians by empowering individuals to build and grow their business through a concessional credit system.

In line with objective 3, it can safely be concluded that the level at which unemployment adjusted to equilibrium was 57%. This implies that the disequilibrium between monetary policy and unemployment reduction is feasible in Nigeria. Notably, inflationary pressures have been overtime fueled by factors including heightened insecurity, foreign exchange scarcity and exchange rate depreciation, supply chain bottlenecks and increase in Value Added Tax (VAT) (NESG, 2023). Tough economic environment limits the effectiveness of monetary policy. Monetary aggregates and tools became constrained in the face of rising liquidity; and inflationary pressure and economic fallout of COVID-19 which led the economy into a recession.

5.2 Policy Implication of Findings
From the findings of the empirical estimate, the following economic policy orientations were deduced:

i)   The coefficient of money supply is positive and significant. This implies that an increase in broad money supply would reduce unemployment.
ii) Foreign direct investment has positive and significant relationship with unemployment. This implies that foreign direct investment has the structural potential to reduce inflation if attracted and retained.
iii) The coefficient of inflation and lagged values were negative and significant in relation to unemployment in contrast with the Philips curve of the inverse-trade-of between inflation and unemployment. This has some policy implications for the Nigerian economy.

iv) Private sector credit has a negative but significant impact on unemployment. This implies that private sector credit has the structural potential to reduce unemployment in Nigeria.

v) The result showed that about 57% of the short-run inconsistencies are being corrected and incorporated into the long-run equilibrium relationship in each period. This implies that prime lending rate has the structural potential to reduce unemployment if properly and efficiently accessed by the private sector and small and medium scale enterprises.

5.3   Contribution to knowledge

This paper on monetary policy pass-through to unemployment reduction has contribution to theoretical, empirical and policy knowledge on the subject matter.

i)   **Theoretical Contribution:** The job search theory as propounded by Shgler (1961) and Mortensen (1986) and the Keynesian theory formed the anchors of this paper. Unlike most related studies that used either the classical or Keynesian theories.

ii)   **Empirical/Methodological Contribution**

The scope of this paper is from 1986 to 2022. The variables of this paper include broad money supply, prime lending rate, and inflation rate, private sector credit (monetary policy instrument or transmission mechanisms). These variables are selected based on theoretical postulation and Nigerian economy experience. Most significantly, this study used the prime lending rate unlike the general interest rate. It considers the two most important channels of monetary policy transmission mechanism (interest rate and credit channel) that has direct impact on unemployment reduction in Nigeria (Effiong *et al.,* 2022; Blair, 2023). The analytical technique adopted for this study is the autoregressive distributed lag approach. ARDLs are standard least squares regressions that include lags of both the dependent variable and explanatory variables as regressors (Greene, 2008). ARDL models are linear time series models in which both the dependent and independent variables are related not only contemporaneously, but across historical (lagged) values as well. This property informed the choice of the ARDL. Furthermore, since unemployment in Nigeria is majorly caused by internal factors, the vector error correction approaches would have been the most appropriate.

iii) **Policy Contribution:** The policy recommendation are very important source of input to reducing unemployment through monetary policy transmission mechanisms. The policy recommendations are value additions to technical knowledge. The rationale for policy-oriented research is to make technical knowledge available to policy makers and other actors in specific economic policy formulation and intervention (Titilola, 2003).

5.4   Suggestions for Further Studies

This paper is constrained by reliability of data used. However, since the data used was subjected to reliability test, it was safe to make the policy recommendations. The following suggestions are offered to extend the body of knowledge which this study has contributed to:

i)   The inclusion of asset price and exchange rate as other monetary policy transmission mechanisms.

ii)   Conducting an evaluative research on the Central Bank of Nigeria intervention programs on unemployment in Nigeria.

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