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**Working Paper**

## The determinants of unemployment rate in developing economies: Does banking system credit matter?

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# A G D I Working Paper

WP/22/044

## **The Determinants of Unemployment Rate in Developing Economies: Does Banking System Credit Matter?**

Forthcoming: Journal of Economic and Administrative Sciences

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Research Department

**The Determinants of Unemployment Rate in Developing Economies: Does Banking System Credit Matter?****Chukwuebuka Bernard Azolibe, Stephen Kelechi Dimnwobi & Chidiebube Peace Uzochukwu-Obi****Abstract**

In developing countries, banks play a major role by acting as a conduit for the effective mobilization of funds from the surplus sectors of an economy for onward lending to the deficit sectors for productive investments that will in turn increase the level of employment and economic growth. There has been a rising trend in unemployment rate in Nigeria and South Africa and hence, the need for the study to assess the effectiveness of banking system credit in curbing unemployment rate by making a comparative analysis of Nigeria and South Africa covering period of 1991 to 2018. The study employed the unit root test, Johansen cointegration test, vector error correction model and VAR impulse response function in determining the relationship between the variables. The major findings revealed that banking system credit matters in curbing unemployment rate in South Africa than in Nigeria. Also, other macroeconomic factors such as lending rate, inflation rate, Government expenditure and population growth were significant enough in influencing unemployment rate in South Africa than in Nigeria. While foreign direct investment was a significant factor in reducing unemployment rate in Nigeria than in South Africa. The cointegration test showed a long-run relationship between the variables in both countries while the speed of adjustment coefficient of the vector error correction model is faster in South Africa than in Nigeria. Previous empirical studies on the relationship between banking system credit and unemployment rate have focused much on other regions such as Asia and Europe. Thus, the study is unique as it focused on the African region and also made a comparative analysis by testing the Keynesian theory of employment, interest and money on two emerging African economies which are Nigeria and South Africa.

*Keywords:* Banking system credit, unemployment rate, macroeconomic factors, comparative analysis

*JEL Classification:* E51, E24, E6

## **1. Introduction**

In developing countries, banks play a major role by acting as a conduit for the effective mobilization of funds from the surplus sectors of an economy for onward lending to the deficit sectors for productive investments that will lead to economic growth of a nation (Azolibe, 2021). Such productive investments are bound to create jobs that will invariably increase the level of employment in an economy. Mishkin (1996) asserted that increased loan supply results in enhancing investment and consumption expenditures of firms and thus total production level of firms increases and new employment opportunities are created. An efficient banking system that is highly competitive provides loans to business firms and entrepreneurs and at reduced cost, which increases investment by easing the availability of capital. This increase in investment increases the demand for labor, which in turn decreases the unemployment rate (Dromel, Kolakez and Lehmann, 2010; Strahan, 2003).

Unemployment has been a major problem in most developing countries of the world due to lack of absorption capacity. The high unemployment rate in Nigeria and South Africa is one of the most important issues that distinguish them from those of the developed countries. According to Doğrul and Soytaş (2010), unemployment is an important macroeconomic problem due to its social and economic consequences and therefore essential for policy makers to identify the factors that are affecting it the most.

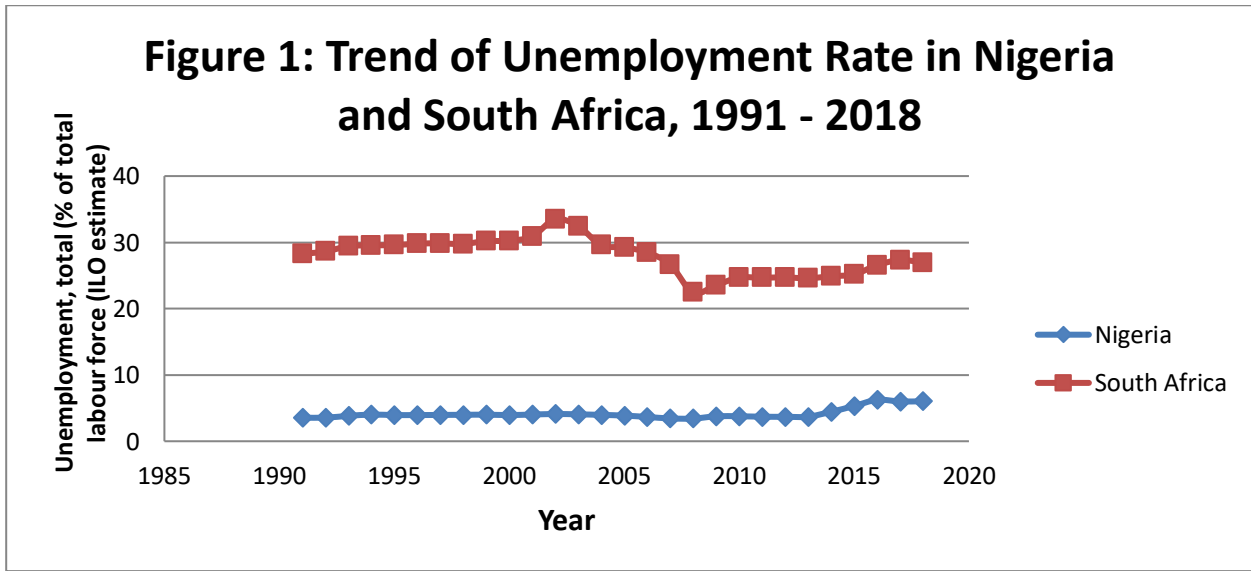
The banking sector is seen as an engine of economic growth and thus expected to transform savings into investment that will boost employment in an economy. One major problem in most African countries is that bank credit has been on the increase but this has not translated into increased investment that will boost the level of employment. Most investors that are opportune to obtain credit from banks tend to divert it to unproductive venture rather than investing it in projects that are employment driven. This tends to reduce the level of investment and employment.

There has been a plethora of studies on the relationship between bank credit and economic growth in developing and developed countries of the world. Although substantial empirical studies have been conducted on the relationship between banking system credit and unemployment but specific emphasis has been on the Asian and European region. For instance, Göçer (2013) analysed the relationship between bank loans and unemployment in the European Countries, Bernanke and Blinder (1992) tested the relationship between bank credits and unemployment in USA, Ordine and Rose (2008) tested the relationship between bank loans efficiency and employment in Italy, while Shabbir, Anwar, Hussain

and Imran (2012) analyzed the relationship between credit volume and employment in Pakistan. However, limited evidence exists in the African region. It is based on this premise that the study examines whether banking system credit matters in reducing unemployment rate in Nigeria and South Africa. The choice of these two countries is that they are among the countries with the highest rate of unemployment in Africa and they also share two things in common by having the largest economy in Africa. The study is a comparative analysis and attempt is also be made to determine the effect of other macroeconomic factors such as lending rate, inflation rate, Government expenditure, population growth and foreign direct investment inflows on unemployment rate in the two countries.

### 1.1 Trend of Unemployment Rate in Nigeria and South Africa

Figure 1 depicts the trend of unemployment rate in Nigeria and South Africa between 1991 until 2018 and the trend seems to be high in South Africa than in Nigeria. According to the data retrieved from World Development Indicators (Figure 1), unemployment as a percentage of total labour force in Nigeria is less than 5 percent within the period of 1991 to 2014 and is 5 percent and above within the period of 2015 to 2018. The highest rate occurred in 2016 with a rate of 6.24 percent. In South Africa, unemployment as a percentage of total labour force is higher within the period of 1991 to 2007 but slightly decreased within the period of 2008 to 2018. Also, the highest rate occurred in the year 2002 with a rate of 33.47 percent.



Source: World Bank, World Development Indicators 2018

**Table 1: Unemployment rate in Nigeria and South Africa**

	Unemployment, male (% of male labor force) (modeled ILO estimate)		Unemployment, female (% of female labor force) (modeled ILO estimate)		Unemployment, youth male (% of male labor force ages 15-24) (modeled ILO estimate)		Unemployment, youth female (% of female labor force ages 15-24) (modeled ILO estimate)		Unemployment with basic education (% of total labor force with basic education)	Unemployment with intermediate education (% of total labor force with intermediate education)	Unemployment with advanced education (% of total labor force with advanced education)
	2000	2017	2000	2017	2000	2017	2000	2017	2014-2017	2014-2017	2014-2017
Nigeria	4.2	5.8	3.6	6.3	10.1	20.5	7.7	19.3	6.3	11.5	13.7
South Africa	25.6	25.5	35.9	29.5	50.0	49.3	59.6	58.7	33.3	29.9	12.9

**Source:** World Bank, World Development Indicators 2018

Also, the report of the World development indicators (2018) on unemployment rate in various countries of the world showed that unemployment, male (% of male labor force) in Nigeria increased from 4.2 percent in 2000 to 5.8 in 2017 while that of South Africa showed a slight decline from 25.6 percent in 2000 to 25.5 percent in 2017. In same vein, that of female unemployment as a percentage of female labour force in Nigeria increased from 3.6 percent in 2000 to 6.3 percent in 2017 while in South Africa, there was a decline from 35.9 percent in 2000 to 29.5 percent in 2017.

Furthermore, youth male unemployment as a percentage of male labour force from aged 15 to 34 increased tremendously in Nigeria from 10.1 percent in 2000 to 20.5 percent in 2017 and that of youth female was 7.7 percent in 2000 and 19.3 percent in 2017 while that of South Africa recorded a slight decline from 50.0 percent in 2000 to 49.3 percent in 2017 for youth male unemployment and 59.6 percent in 2000 to 58.7 for youth female.

Finally in Nigeria, unemployment with basic education (% of total labor force with basic education), unemployment with intermediate education (% of total labor force with intermediate education) and unemployment with advanced education (% of total labor force with advanced education) averaged 6.3 percent, 11.5 percent and 13.7 percent respectively within the period of 2014 to 2017. While in South Africa, it averaged 33.3 percent, 29.9 percent and 12.9 percent respectively within the period of 2014 to 2017.

In the above table, unemployment is higher in South Africa when compared to Nigeria. But in terms of increasing trend, it is higher in Nigeria than in South Africa. The South African economy showed a decreasing trend as against the Nigerian economy.

## **2. Banking System Credit and Unemployment Rate: Theoretical and Empirical Arguments**

The main underpinning theory of this study is the Keynesian theory of employment, interest and money. According to Keynes (1936) the rate of interest determines the level of employment. Money supply is affected by this mechanism which in turn influences the investment processes in the economy. In a system in which the rate of interest is shaped by a central monetary institution, it appears as a powerful tool to influence the allocation of resources, including production. Keynes maintained that as the quantity of money is increased (other things remaining the same), the rate of interest is lowered because the quantity of money available to satisfy speculative motive increases. The lowering of the rate of interest (marginal efficiency of capital remaining the same) will raise investment, which in turn, will result in an increase of income, output, employment and prices. In this case, the quantity of money is seen as bank credit as banks create money through the credit facilities they extend to various sectors of the economy. He argued that when the quantity of money is increased, its first impact is on the rate of interest which tends to fall. A fall in the rate of interest increases the volume of investment. Through the multiplier effect, effective demand will be raised as a result of the increased investment thereby increasing employment, output and income. This theory forms the basis of our hypothesis which the author proposes that banking system credit matters in curbing unemployment rate in Nigeria and South Africa and will provide answer to the research question which is: Does Banking system credit matter in curbing unemployment rate in Nigeria and South Africa?

The Keynesian economists often debate that unemployment is a natural consequence that can be reduced through some combination of two approaches: “a reduction in interest rates (monetary policy), and Government investment in infrastructure (fiscal policy)”. On the other hand, the Hayek economists argued that this Keynesian policy of reducing unemployment would result in inflation and that money supply would have to be increased by the central bank to keep levels of unemployment low, which would in turn keep increasing inflation (Blinder, 2008; Sanz-Bas, 2011; Arevuo 2012). Bencivenga and Smith (1991) posited that consumption goods in the economy are produced from capital and labour. An entrepreneur who obtains credit from the bank purposely for the commencement of a business, uses it to hire labour so as to produce goods and services which in turn leads to economic growth. Acemoglu (2001) developed a theoretical underpinning on how credit constraints can affect the dynamics of

unemployment, and concluded that credit market imperfections increase the level and persistence of unemployment.

The nexus between unemployment rate and banking system credit have been widely investigated in the extant literature. To start with, finance directly affects employment through its impact on the establishment of new firms. According to Acemoglu (2001), job creation mainly occurs in firms that are innovative. Reducing credit access for entrepreneurs discourages new firms from coming into the market and hence fuels unemployment.

Lipsey et al. (1994) argued that rising credit volume of banking sector will increase investment and consumption expenditures and hence employment ratio will increase. While Pagano and Pica (2012) conclude that consumer loans provided by the banking sector increase household consumption expenditures and encourage the firms for further production, investment and employment. On the other hand, Armendariz and Jonathan (2005), and Robinson, (2001) conclude that increases in microcredit used for the financing of small-scale enterprises reduce unemployment and enhances the volume and efficiency of small business enterprises.

Wasmer and Weil (2004) discovered that disruptions in the credit market have a negative impact on total economic activities and employment. Bentolila et al. (2017) used firm-level employment data for Spain to analyze the credit supply shock as banks were forced to restructure, and reported that around 24% of job losses were due to firms being attached to weak banks. In a more recent study, Ernst (2019) explored the relationship between financial sector development and reforms and their impact on unemployment dynamics. Using scenario analysis, the study demonstrated the importance of broad financial sector re-regulation to stabilize unemployment inflows and to promote faster employment growth. In particular, it was found that encompassing financial sector regulation prior to the global financial crisis in 2008 would have helped a faster recovery in jobs.

By testing the relationship between bank credits and unemployment ratio from 1959-1989, Bernanke and Blinder (1992) concluded that the narrowing in credit volume increases unemployment ratio at the same time in the USA. Ordine and Rose (2008) tested the relationship between bank loans efficiency and employment for Italia and reported that a 10% increase in banking sector credit volume increased employment by 5%. They concluded that unemployment increases when banking sector fails to operate efficiently. Han (2009) analyzed the effect of financial difficulties on unemployment for the USA and showed that employment losses in the economy were as a result of the difficulties that were



encountered by firms in the access to finance. Similar study conducted by Benmelech, Bergman and Seru (2010) found that a positive correlation exists between unemployment and the difficulties in financial access during the period of 1993 to 2009 in the metropolitan cities in the United States.

Pagano and Pica (2012) analyzed the relationship between employment and wages for 63 countries using the data of 1970-2003 periods and found that the increase in credit volume positively affected employment, but however didn't have a significant impact on wages. Shabbir et al. (2012) analyzed the relationship between credit volume and employment for Pakistan using the data of 1973-2007 periods with bounds testing approach and reported that 1% increase in credit volume reduced unemployment by 2.3%. Feldman (2012) analyzed the effects of bank loans in 53 countries for 1977-2005 period using two-stage generalized least squares method and found that a 1% increase in banking sector credit volume reduced unemployment in these countries by 2.94%.

Göçer (2013) assessed the relationship between bank loans and unemployment in fourteen selected European Union countries between 1980-2012 periods by means of panel data analysis method that takes into consideration structural breaks and cross-section dependence. The estimated result revealed that rising credit has a negative effect on the unemployment rate in these countries. Using panel data for the period of 1991 to 2005 in South Asian countries, Muhammad, Rida and Bashir (2015) empirically assessed the influence of banking deregulations on overall and youth unemployment rates. The results revealed that bank crisis and high wage rate have contributed to the rising unemployment rate in the South Asian region while high per capita income, bank credit and consumption level have lowered their unemployment rate.

Dromel, Kolakez and Lehmann (2010) investigated the impact of the credit market development on the level and persistence of unemployment using a panel data of 19 OECD countries over the period 1982 to 2003. The result of the Generalized Least Square reported a negative relationship between unemployment rate and financial development.

### **3. Research Methodology**

Secondary data of World Bank, World Development Indicators and United Nations Conference on Trade and Development (UNCTAD) investments reports were used to achieve the objectives of this paper. The data set has been collected from the databank of World Bank and has been matched up against the data available on the site of UNCTAD to ensure its authenticity. The data were extracted as

it is without any modifications and ranges from 1991 to 2018. The regression estimates cover this particular period. These two data sources have been chosen because they are the most reliable sources of data and are used by almost every researcher. This will enhance the robustness of our research findings.

### **3.1 Model Building**

The model building involves the determination of the dependent and independent variables included in a model. It expresses the mathematical relationship that exists between the dependent and the independent or explanatory variables. The dependent variable is the unemployment rate while the independent or explanatory variables are the macroeconomic factors which are banking system credit, lending rate, inflation rate, Government expenditure, population growth and foreign direct investment. The main explanatory variable is banking system credit while other variables are examined in the context of control variables.

The model equations are expressed below:

$$\text{UNER} = f [\text{BSC}, \text{LR}, \text{INFR}, \text{GOVEXP}, \text{POP}, \text{FDI}].$$

The model in the above equation can econometrically be rewritten as follows:

$$\text{UNER} = \beta_0 + \beta_1 \text{BSC} + \beta_2 \text{LR} + \beta_3 \text{INFR} + \beta_4 \text{GOVEXP} + \beta_5 \text{POP} + \beta_6 \text{FDI}$$

Where,

UNER = Unemployment rate [Unemployment, total (% of total labour force) (ILO estimate)]

BSC = Banking system credit [Domestic credit provided by banks (% of GDP)]

LR = Lending rate

INFR = Inflation rate

GOVEXP = Government expenditure [General Government final consumption expenditure (% of GDP)]

POP = Population growth rate (annual %)

FDI = Foreign direct investment, net inflows (% of GDP)

### **3.2 Description of Research Variables**

The variables used in this study are made up of dependent and independent variables. They are discussed as follows:

## **Dependent Variable**

### **Unemployment Rate**

The Organization for Economic Co-operation and Development (OECD) defined unemployment as a situation when persons above a specified age (usually above 15) are not in paid employment or self-employment and are currently available for work during the reference period. Unemployment is measured by the unemployment rate as the number of persons who are unemployed as a percentage of the labour force (the total number of people employed plus the unemployed).

### **Explanatory Variables**

Seven explanatory variables were used in this study and they are banking system credit, lending rate, inflation rate, Government expenditure, population growth and foreign direct investment. They are discussed as follows in relation to how they influence unemployment rate;

#### **Banking System Credit**

Adequate credit to the productive sectors of the economy such as agricultural and manufacturing sector will increase the level of investment and employment. The agricultural and manufacturing sectors are seen as the largest employer of labour in an economy and thus, increased bank loan will encourage people to go into production that will absorb a good number of unemployed persons in the country. Hence, it is expected that a negative relationship will exist between banking system credit and unemployment rate. Muhammad, Rida and Bashir (2015), Göçer (2013), Feldman (2012), Shabbir et al. (2012), Ordine and Rose (2008) and Bernanke and Blinder (1992) have all confirmed the economic theory that banking system credit has a negative relationship with unemployment rate. For the purpose of this study, the domestic credit provided by banks as a percentage of GDP is used as a measure of banking system credit.

#### **Lending Rate**

The lending rate refers to the rate at which Commercial banks grant loans to the productive sector of the economy. Higher bank lending rate discourages people from borrowing for investment purposes and will in turn reduce the level of investment and raise unemployment rate. In the Keynesian Analysis, interest rate plays a crucial role in affecting unemployment rate. Keynes (1936) argued that when the supply of money is increased, its first effect is on the rate of interest which tends to fall. Through the

multiplier effect, effective demand will be raised as a result of the increased investment thereby increasing employment, output and income. Thus, a positive relationship is expected between lending rate and unemployment rate.

### **Inflation Rate**

The relationship between inflation rate and unemployment has traditionally been an inverse correlation. Phillips was one of the first economists to present compelling evidence of the inverse relationship between unemployment and inflation rate through what is known as the Phillips curve. Phillips curve showed a tradeoff relationship between unemployment and inflation. It relies on demand and supply of labour. When there is a higher demand in labour than supply, the wages will increase which will lead to an increase in inflation and occur lowered unemployment. Thus, based on the Phillip curve, it is expected that a negative relationship should exist between inflation rate and unemployment rate. The study of Furuoka and Munir (2014), Li and Liu (2012), Vermeulen (2015) and Yelwa, David, and Awe (2015), Eita and Ashipala (2010), Aminu and Anono (2012), Afzal and Awais (2012) and Haug and King (2011) were in support of the Phillip curve.

### **Government Expenditure**

When government spends more on various capital projects such as establishment of hospitals, ministries, schools, road constructions, power projects, sea ports, airports etc, it will create more jobs that will invariably increase the level of employment in an economy. Also, Government recurrent expenditure such as payment of wages and salaries will inject more money into the hands of the public and will increase the level of aggregate demand and employment. Keynesian theory of employment suggests that an expansionary fiscal policy framework stimulates aggregate demand leading to an increase in employment. He argued that a government jobs program, increased government spending and an increase in budget deficit would decrease high unemployment rates. Thus, a negative relationship is expected between Government expenditure and unemployment rate. The works Fatas and Mihov (1998), Fedderke, Perkins, and Luiz, (2006), Steinar and Sparrman (2012), and Genius, Choga, Maredza and Mavetera (2013) showed a negative relationship between Government expenditure and unemployment rate. For the purpose of this study, General Government final consumption expenditure as a percentage of GDP is used as a proxy for Government expenditure.

### **Population Growth**

Arslan and Zaman (2014) argued that the population growth is an important factor affecting unemployment rate. An increase in population will increase the number of people competing for jobs and hence unemployment sets in. According to Malthus (1798) in his theory of population, an uncontrolled population growth will cause higher unemployment. Thus, this summarizes to a positive relationship between population growth and unemployment rate. The study of Folawewo and Adeboje (2017), Maqbool, Mahmood, Sattar and Bhalli (2013), Asif (2013), Mahmood, Akhtar, Amin, and Idrees (2011), and Bakare (2011) have proven that population growth has positive relationship with unemployment rate.

On the contrary, an increase in population could have a negative relationship with unemployment rate if a significant proportion of the population is made up of people with creativity and entrepreneurial skill that can acquire skills and become self employed and hence job creators rather than being job seekers who rely heavily on the Government to create more jobs for them. Thus, an increase in population will lead to the emergence of job creators that will in turn reduce the rate of unemployment. The study conducted by Aqil, Qureshi, Ahmed and Qadeer (2014) and Loku and Deda (2013) confirmed a negative relationship between population growth and unemployment rate.

### **Foreign Direct Investment**

Foreign Direct Investment (FDI) known is an investment made by the individuals or citizens of a particular country in another country. An increase in FDI would increase the GDP of an economy and at the same time decrease unemployment (Eldeeb, 2015). Higher inflows of FDI will help complement domestic investment that will create more jobs in the country. Thus, FDI will have a negative relationship with unemployment rate. Previous empirical studies such as Folawewo and Adeboje (2017), Matthew and Johnson (2014), Shaari, Hussain, and Ab. Halim (2012), Stamatiou and Dritsakis (2014), Mayom (2015), Balcerzak and Zurek (2011) and Kurtovic, Siljickovic, and Milanovic (2015) have shown a negative relationship between FDI and unemployment rate.

FDI could also have a positive relationship with unemployment rate such that an increase in FDI brings about a rise in unemployment. This situation occurs when there is mergers and acquisition between a foreign company and a domestic company that will lead a reduction in work force. Also, the foreign company could pose stiff competition to most domestic companies by offering higher quality products or services than the domestic company and may be forced to shut down and hence, leading to loss of jobs in the host country. The study conducted by Trimurti, Sukarsa, Budhi, and Yasa (2015) and Bayar

(2014) revealed a positive relationship between FDI and unemployment rate. In this study, foreign direct investment inflow as percentage of GDP is used as a measure of FDI.

### 3.3 Estimation Procedure

The estimations in this study are done in four steps. The first step involves investigation to determine whether the time series data on all variables are stationary. This is to avoid a situation where regression of a non-stationary variable on another yields spurious results. According to Engle and Granger (1987), parameter estimates from such regression may be highly biased and inconsistent. The study therefore, employed the Augmented Dickey–Fuller (ADF) unit root test proposed by Dickey and Fuller (1981) and is considered the well-known method of testing the stationary status of variables. The second step is to perform a cointegration test to determine the long-run relationship between the variables. The third and final step is to perform the vector error correction model and VAR impulse response function.

**Table 2: Summary of Descriptive Statistics of the Variables of the Study**

	UNER	BSC	LR	INFR	GOVEXP	POP	FDI
<b>Nigeria</b>							
Mean	4.143571	10.83714	18.62036	18.85607	4.407500	2.576786	2.080714
Median	3.950000	8.675000	17.96500	12.55000	4.580000	2.575000	1.895000
Maximum	6.240000	22.27000	29.80000	72.84000	9.450000	2.680000	5.790000
Minimum	3.420000	4.990000	13.54000	5.380000	0.910000	2.490000	0.630000
Std. Dev.	0.772577	4.348038	3.104473	17.33589	3.075727	0.072982	1.123483
Skewness	1.827373	1.013055	1.828635	1.972037	0.321556	0.125618	1.729663
Kurtosis	5.062645	3.396085	7.519926	5.689882	1.588268	1.416764	6.314600
Jarque-Bera	20.54695	4.972335	39.43959	26.58972	2.807675	2.998051	26.77909
Probability	0.325752	0.083228	0.131652	0.223162	0.245652	0.223348	0.835432
Sum	116.0200	303.4400	521.3700	527.9700	123.4100	72.15000	58.26000
Sum Sq. Dev.	16.11564	510.4468	260.2193	8114.396	255.4225	0.143811	34.07979
Observations	28	28	28	28	28	28	28
<b>South Africa</b>							
Mean	27.91429	65.19357	13.77857	6.655714	19.44071	1.610714	1.259714
Median	28.55000	66.36000	13.47000	5.960000	19.22500	1.475000	0.825000
Maximum	33.47000	78.29000	21.79000	15.33000	21.39000	2.500000	5.980000
Minimum	22.43000	50.80000	8.500000	-0.690000	17.81000	1.220000	0.002000
Std. Dev.	2.774724	7.078311	4.092368	3.253125	0.963508	0.400823	1.294705
Skewness	-0.148054	-0.164845	0.388927	0.613186	0.279405	1.213543	1.963409
Kurtosis	2.236689	2.408821	1.853932	4.225021	2.064344	3.172220	7.386006
Jarque-Bera	0.782045	0.534552	2.238285	3.505439	1.385674	6.907136	40.43310
Probability	0.676365	0.765462	0.326560	0.173302	0.500155	0.131633	0.410155
Sum	781.6000	1825.420	385.8000	186.3600	544.3400	45.10000	35.27200
Sum Sq. Dev.	207.8755	1352.767	452.1817	285.7363	25.06539	4.337786	45.25906
Observations	28	28	28	28	28	28	28

**Table 3: Correlation Matrix Result and Test of Multicollinearity**

Correlation	UNER	CPS	LR	INFR	GOVEXP	POP	FDI
<b>Nigeria</b>							
UNER	1.000000						
CPS	0.179563	1.000000					
LR	-0.180889	-0.369977	1.000000				
INFR	-0.096785	-0.366789	0.421848	1.000000			
GOVEXP	0.021586	0.530308	-0.484226	-0.411815	1.000000		
POP	0.119959	0.773351	-0.455173	-0.479980	0.626270	1.000000	
FDI	-0.359613	-0.237522	0.122375	0.623401	-0.269554	-0.434874	1.000000
<b>South Africa</b>							
UNER	1.000000						
CPS	-0.539325	1.000000					
LR	0.571117	-0.511392	1.000000				
INFR	0.067230	-0.513537	0.629294	1.000000			
GOVEXP	-0.478862	0.008394	-0.606199	-0.225994	1.000000		
POP	0.101001	-0.721845	0.528664	0.741589	-0.059211	1.000000	
FDI	-0.158599	0.566226	-0.138732	-0.087434	-0.133309	-0.388922	1.000000

Table 2 explains the descriptive statistics of the variables of the study. Jarque–Bera shows that the data series are normally distributed, holding zero mean and constant variance. Table 3 shows the correlation matrix for all variables used in the model. The existence of high correlation between certain variables may lead to the issue of multicollinearity. The result indicates that the correlations among explanatory variables are moderate and weak. Gujarati, Porter and Gunasekar (2012) state that multicollinearity occurs if two variables have a correlation coefficient that exceeds 0.8 benchmark. Multicollinearity occurs when within a particular model, two or more explanatory variables have a very high correlation and this makes a variable that is supposed to be significant to exhibit an insignificant effect on a dependent variable. The problem of multicollinearity can be resolved by excluding variables that have a very high correlation in a model.

However, no evidence of multicollinearity was found in the study as all the correlation coefficient of the explanatory variables of the model in both countries did not exceed the threshold of 0.8. Therefore, all variables can be included in the empirical model.

**Table 4: Unit root test results (Augmented Dickey-Fuller) for Nigeria and South Africa**

Variables	ADF T-Stat	Test at 5%	Order of Integration	Remark
<b>Nigeria</b>				
UNER	-5.225814(0.0003)	-2.998064	1(1)	Stationary at first difference
BSC	-4.384240(0.0022)	-2.991878	1(1)	Stationary at first difference
LR	-3.873936(0.0087)	-3.020686	1(1)	Stationary at first difference
INFR	-5.030166(0.0004)	-2.981038	1(1)	Stationary at first difference
GOVEXP	-8.291870(0.0000)	-2.991878	1(1)	Stationary at first difference
POP	-3.842663(0.0076)	-2.986225	1(1)	Stationary at first difference
FDI	-5.679367(0.0001)	-2.981038	1(1)	Stationary at first difference
<b>South Africa</b>				
UNER	-3.870091(0.0069)	-2.981038	1(1)	Stationary at first difference
BSC	-6.073142(0.0000)	-2.981038	1(1)	Stationary at first difference
LR	-3.936907(0.0063)	-2.991878	1(1)	Stationary at first difference
INFR	-3.774810(0.0086)	-2.981038	1(1)	Stationary at first difference
GOVEXP	-4.175524(0.0037)	-2.991878	1(1)	Stationary at first difference
POP	-3.839384(0.0082)	-2.998064	1(1)	Stationary at first difference
FDI	-4.662910(0.0010)	-2.976263	1(1)	Stationary at first difference

**Note:** P-values are in parentheses. The optimal lag length for the variables is selected based on Akaike info criterion (AIC).

Unit root property requires all variables to be stationary in levels or first differences, that is, integrated of order I(0) or order I(1). In Table 4, the unit root test results for all variables in both countries are stationary at first difference as the corresponding t-statistics shows the coefficient is significant at the critical 5 per cent level.

### 3.4 Cointegration Test

**Table 5: Johansen cointegration test results for Nigeria and South Africa**

<b>Nigeria</b>						
Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value	Prob.**
0.971120	280.0445	125.6154	0.0000	92.15978	46.23142	0.0000
0.899421	187.8847	95.75366	0.0000	59.71721	40.07757	0.0001
0.885997	128.1675	69.81889	0.0000	56.45984	33.87687	0.0000
0.777149	71.70765	47.85613	0.0001	39.03259	27.58434	0.0011
0.448582	32.67506	29.79707	0.0227	15.47681	21.13162	0.2569
0.310223	17.19825	15.49471	0.0274	9.656047	14.26460	0.2355
0.251800	7.542201	3.841466	0.0060	7.542201	3.841466	0.0060
<b>South Africa</b>						
Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value	Prob.**
0.990450	316.1867	125.6154	0.0000	120.9313	46.23142	0.0000
0.952956	195.2554	95.75366	0.0000	79.47327	40.07757	0.0000
0.858738	115.7821	69.81889	0.0000	50.88570	33.87687	0.0002
0.709090	64.89641	47.85613	0.0006	32.10324	27.58434	0.0122
0.528618	32.79317	29.79707	0.0219	19.55425	21.13162	0.0819
0.268749	13.23892	15.49471	0.1063	8.137955	14.26460	0.3649



Cointegration of variables is an indication that they move together in harmony and are most likely to converge in the long run, which augurs well for policy making. Cointegration results are reported in Table 5 and indicate that maximum Eigen-statistic and trace-statistic reject the null hypothesis of no cointegrating relation among variables at the 5 per cent level of significance for both countries. The trace statistics and max-eigen statistics shows at most 7 and 4 cointegrating equations respectively for Nigeria while that of South Africa shows at most 5 and 4 cointegrating equations for the trace and max-eigen statistics respectively. This result shows that unemployment rate is dependent on banking system credit, lending rate, inflation rate, Government expenditure, population growth and foreign direct investment inflows in both countries.

#### 4. Regression Estimation

Having established the long run equilibrium relationship between the dependent and independent variables in both countries, the study now switches over to establish short run relationships between the dependent and independent variables using the error correction mechanism. Since the variables were found to be stationary at first difference, the error correction mechanism is tested using first differenced series. The results are presented below.

**Table 6: Vector Error Correction Model for Nigeria and South Africa**

**Dependent Variable: UNER**

Variable	Nigeria				South Africa			
	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.201445	14.75895	-0.013649	0.9892	74.45801***	10.94377	6.803690	0.0000
D(BSC)	0.099374	0.057241	1.736068	0.1972	-0.387230***	0.065201	-5.938987	0.0000
D(LR)	-0.088140	0.054499	-1.617274	0.1207	0.268368**	0.119066	2.253943	0.0350
D(INFR)	0.016022	0.011524	1.390333	0.1790	-0.337009**	0.141561	-2.380661	0.0268
D(GOVEXP)	-0.206448	0.147527	-1.399388	0.1763	-0.926967**	0.392244	-2.363241	0.0278
D(POP)	2.434855	5.840200	0.416913	0.6810	-3.264679**	1.254813	-2.601726	0.0167
D(FDI)	-0.363823*	0.179317	-2.028937	0.0553	0.417420	0.265640	1.571376	0.1310
ECM(-1)	-0.200966*	0.115513	-1.739763	0.0981	-0.498372*	0.244197	-2.040863	0.0554
R2	0.329807			0.807862				
Adjusted R2	0.138323			0.752965				
Durbin.Watson statistics	0.855946			1.503176				
F.Statistics	1.722376			14.71603				
No. of Observations	27			27				

**Note:** \*\*\*, \*\* and \* denotes significant at 1%, 5% and 10% level respectively.

#### **4.1 Comparison of Nigeria and South Africa Empirical Results**

The results of the model via error correction estimates are presented in table 6. The yardstick for interpretation is based on coefficient of individual variables, adjusted R-square, p-value, Durbin Watson statistics and the speed of adjustment. From the above table, banking system credit has positive and insignificant relationship with unemployment rate in Nigeria but has a negative and significant relationship with unemployment rate in South Africa. The value of 0.099374 implies that a one percent increase in bank credit led to an increase in unemployment rate by 9.9 percentage point, holding other variables constant. The insignificant relationship shows that banking system credit does not influence unemployment rate in Nigeria. These findings shows that most individuals in Nigeria who are opportune to obtain credit from banks tend to divert the loans to unproductive ventures such as acquiring expensive cars, private apartment and other luxuries rather than investing it in employment driven projects. Also, it could be attributed to inefficiency of the Nigerian banking sector and the poor quality of bank's risk selection policy. Given the situation, it is possible that increase in banking system credit will only exacerbate the unemployment situation Nigeria is facing. Also, The value of -0.387230 implies that a 1 percentage point increase in banking system credit in South Africa led to a reduction in unemployment rate by 39 percentage point, holding other variables constant. This conforms to the theoretical arguments that a negative relationship exist between banking system credit and unemployment rate in South Africa. This shows that the South African monetary authorities are more stringent in ensuring that credit giving out by banks are monitored and utilized for the purpose for which they are meant for and thus raising investment that are employment driven. Also, the banks are very efficient in their risk selection policy. The Keynesian theory of employment, interest and money holds true in South African economy but on the other hand, it does not hold true in Nigerian economy. Empirical studies such as Bernanke and Blinder (1992), Ordine and Rose (2008), Han (2009), Pagano and Pica (2012), Shabbir et al. (2012), Feldman (2012), Göçer (2013) confirmed the negative relationship between banking system credit and unemployment rate.

Second, lending rate has a negative and insignificant relationship with unemployment rate in Nigeria but has a positive and significant relationship with that of South African economy. A unit increase in lending rate led to a reduction of unemployment rate in Nigeria by 8.8 percent while it increased the unemployment rate in South Africa by 27 percent. This shows that the lending rate in South Africa is high and supports the suggestion that higher bank lending rate discourages people from borrowing for

investment purposes that are bound to create more jobs. Lending rate does not influence unemployment rate in Nigeria but a major factor in curbing unemployment rate in that of South African economy.

Third, Inflation rate has positive and insignificant relationship with unemployment in Nigeria but exhibited a negative relationship in South Africa. The coefficient shows that unemployment rate in Nigeria increased by 1.6 percent but decreased by 34 percent in South Africa with a one percentage point increase in inflation rate. That of South Africa is in support of the Phillip curve and agrees with the findings of Furuoka and Munir (2014), Li and Liu (2012), Vermeulen (2015), Yelwa, David, and Awe (2015), Eita and Ashipala (2010), Aminu & Anono (2012), Afzal & Awais (2012) and Haug and King (2011) that were also in support of the Phillip curve. While, the Phillip curve does not hold true in Nigeria.

Fourth, Government expenditure has negative relationship with unemployment rate in both countries. However, it shows an insignificant relationship in Nigeria but exhibited a significant relationship in South Africa. A one percent increase in Government expenditure led to 21 percent and 93 percent reduction in unemployment rate in Nigeria and South Africa respectively. However, the level of Government expenditure is higher in South Africa than in Nigeria as the coefficient shows a very high positive sign of 93 percent as against the latter that shows a weak positive sign of 21 percent. This confirms the Keynesian theory of employment that Government expenditure increases investment in capital projects that are employment driven and also puts more money into the hands of the public that will invariably increase aggregate demand and employment. This finding is consistent with the claims made by Fatas and Mihov (1998), Fedderke, Perkins, and Luiz, (2006), Steinar and Sparrman (2012), and Genius, Choga, Maredza and Mavetera (2013) which reported a negative relationship between Government expenditure and unemployment rate. Also, Government expenditure is significant enough in influencing unemployment rate in South Africa than in Nigeria.

Fifth, in terms of the relationship between population growth and unemployment rate, the Nigerian economy shows a positive sign as a one percent increase in population led to a rise in unemployment rate by 2.43 percent. This authenticates the Malthusian theory of population that an uncontrolled population growth will cause higher unemployment. The works of Folawewo and Adeboje (2017), Maqbool, Mahmood, Sattar and Bhalli (2013), Asif (2013), Mahmood, Akhtar, Amin, and Idrees (2011), and Bakare (2011) has proven that population growth has positive relationship with unemployment rate. In South Africa, the result shows a negative relationship as a one percent increase

in population led to a decrease in unemployment rate by 3.26 percent. This supports the suggestion that unemployment rate will be low in an economy that is heavily populated if a significant proportion of the population is made of people with creativity and entrepreneurial skill that can acquire skills and become self employed and hence job creators rather than being job seekers who rely heavily on the Government to create more jobs for them. It disagreed with the Malthusian theory of population and also, other studies such as Aqil, Qureshi, Ahmed and Qadeer (2014) and Loku and Deda (2013) confirmed a negative relationship between population growth and unemployment rate.

Finally, foreign direct investment exhibits a negative and significant relationship with unemployment rate in Nigeria as the coefficient shows that a one percent increase in FDI led to 36 percent decline in unemployment rate. This confirms the argument that higher inflows of FDI will help supplement domestic investment that will create more jobs in the country. The above view is supported by Folawewo and Adeboje (2017), Matthew and Johnson (2014), Shaari, Hussain, and Ab. Halim (2012), Stamatiou and Dritsakis (2014), Mayom (2015), Balcerzak and Zurek (2011) and Kurtovic, Siljivic, and Milanovic (2015) that FDI has an inverse relationship with unemployment rate. In South Africa, FDI shows a positive and insignificant association with unemployment rate as it increased by 42 percent with a one percent rise in FDI. The logical reason behind this positive relationship between FDI and unemployment in South Africa stems from the fact that mergers and acquisition between a foreign company and a domestic company could lead a reduction in work force. Also, the foreign company could pose stiff competition to most domestic companies by offering higher quality products or services than the domestic company and may be forced to go out of business and hence leading to loss of jobs in the host country. This finding is consistent with other studies too (Trimurti, Sukarsa, Budhi, and Yasa ,2015; Bayar, 2014). But in terms of significant relationship, FDI is not significant enough in curbing unemployment rate in both countries.

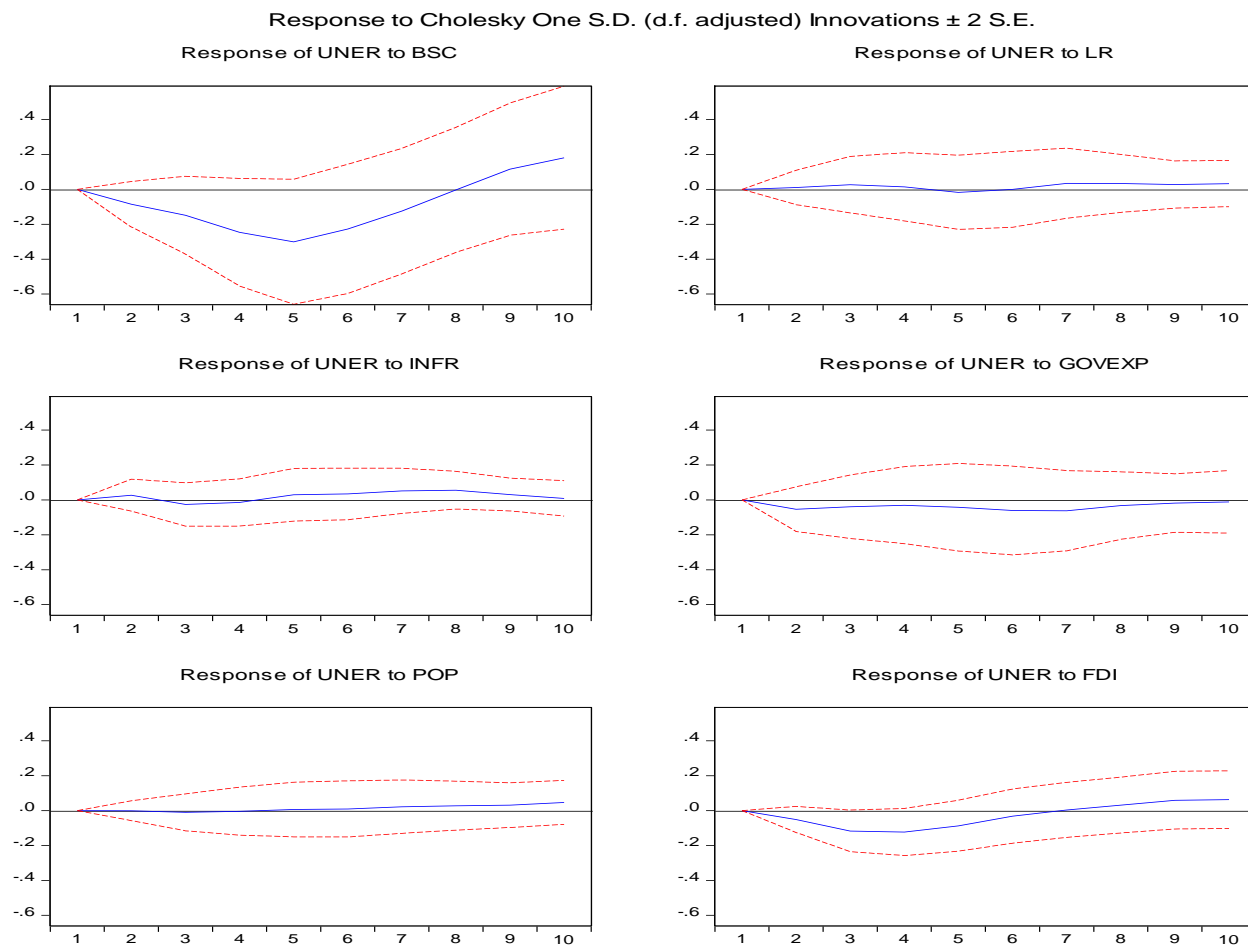
The adjusted R<sup>2</sup> shows that the explanatory variables explain 14% of the variations in unemployment rate in Nigeria for the period under study while it explained 75% in South Africa. This shows that the explanatory variables have to a very good degree contributed in curbing unemployment rate in South Africa than in Nigeria. The Durbin-watson statistics for both countries are greater than the adjusted R<sup>2</sup> depicting that our model is free from stationarity defects and hence, our regression result is not spurious.

The error correction model shows the speed of adjustment of unemployment rate towards equilibrium when a systemic change occurs as indicated by the coefficients of ECM (-1) in the table and it is significant for both countries. The adjustment coefficient of -0.201 for Nigeria indicates that unemployment rate adjusts by 20.1 percent per year. This implies that full adjustment to a steady state takes about five years. In the case of South Africa, the adjustment coefficient of -0.498 indicates a speed of 50 per cent per year, which suggests that it takes unemployment rate about two years to fully adjust. Both countries therefore exhibit slow adjustment in their unemployment. However, the speed of adjustment is faster in South Africa than in Nigeria due to increasing investment in her economy.

#### **4.2 Impulse Response Functions**

The impulse response functions show how responsive a dependent variable is to a shock in an independent variable. IFRs are useful for being able to explain the sign of the relationship as well as how long these effects require to take place. The major interest of this study is on the responses of unemployment rate on the shocks emanating from banking system credit, lending rate, inflation rate, Government expenditure, population growth and FDI. The results are shown in figure 2 and 3.

**Figure 2: VAR Impulse-Responses: (Nigeria)**



**Figure 3: VAR Impulse-Responses: (South Africa)**

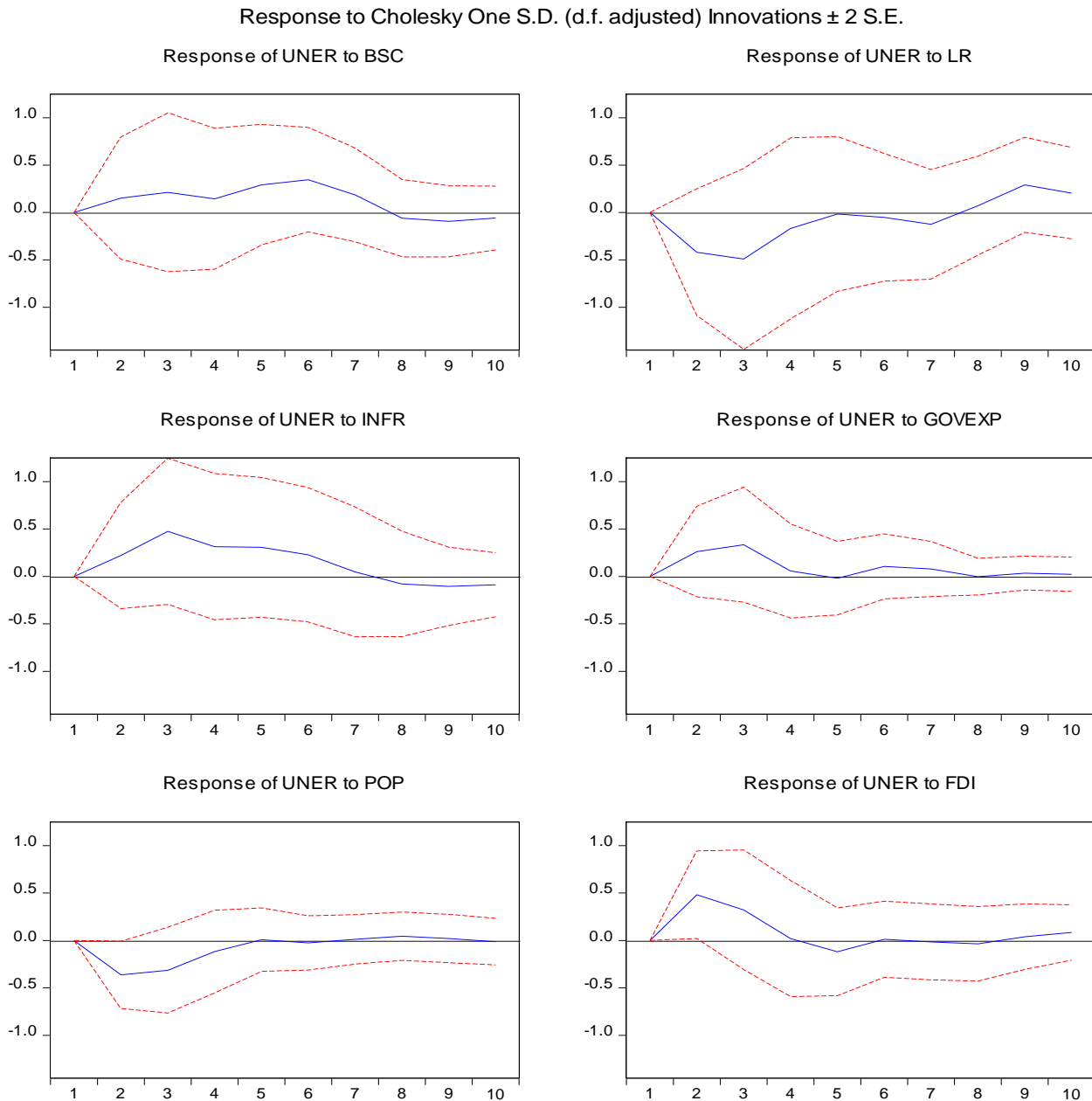


Figure 2 and 3 show the dynamic impulse-responses of the VAR systems for Nigeria and South Africa using the orthogonal Cholesky decomposition to identify the shocks. A one standard deviation shock given to banking system credit will result to a reduction in unemployment rate in Nigeria from period 1 to 8 and will result to an increase in unemployment rate from period 8 to 10. The case is in reverse in South Africa as it will increase unemployment from period 1 to 8 but will decrease from period 8 to 10. This shows that unemployment rate is mostly driven by banking system credit in Nigeria than it is in South Africa.

The responses of unemployment rate to lending rate is positive from period 1 to 4 in Nigeria, but negative from period 4 to 6 and became positive for the rest of the periods. The shock was negative in South Africa from period 1 to 8 but became positive from period 8 to 10. In response to a one standard deviation shock from inflation rate in Nigeria, unemployment rate is positive from period 1 to 2 and negative from period 2 to 4 but maintained a steady increase from period 4 to 10. That of South Africa increased steadily from period 1 to 8 but declined from period 8 to 10. This shows that inflation rate has a positive shock in both countries in the long run.

Furthermore, Government expenditure has a negative shock to unemployment rate in Nigeria than in South Africa. This shows that an increase in Government expenditure will serve as a useful tool in curbing unemployment in Nigeria. Again, population growth has a negative shock to unemployment rate in South Africa than in Nigeria showing that an increase in population will lead to the emergence of job creators that will increase the level of employment in South Africa. Finally, responses of unemployment rate to shocks emanating from FDI are negative in Nigeria as against the positive shock it has in South Africa. This points to the fact that more inflows of FDI will curb unemployment in Nigeria than in South Africa.

## **5. Conclusions and Policy Recommendations**

It has been examined in this study that a positive and insignificant relationship exists between banking system credit and unemployment rate in Nigeria. The study contributes to empirical literature by testing the Keynesian theory of employment, interest and money on two emerging African economies which are Nigeria and South Africa. Using sample data covering period of 1991 to 2018 obtained from World Bank World Development Indicators, the results show that banking system credit matters in curbing unemployment in South Africa than in Nigeria. The study confirmed the Keynesian theory of employment, interest and money in South African economy which states that increase in the quantity of money (in this case bank credit) will lower the interest rate and will in turn increase investment and employment. But however, it does not hold true in the Nigerian economy. A decrease in unemployment rate in South Africa is statistically and significantly associated with increases in banking system credit and as such, policy makers in South Africa should concentrate more on making appropriate policies that will enable banks to increase credit to the productive sectors of the economy as it has the capacity to boost the level of employment. This also calls on the central monetary authorities in Nigeria to devise ways to ensure that credit given out by banks for productive investment are not diverted to unproductive projects. A major way to achieve this is through restructuring of the requirements for loan



application by transferring funds directly to the borrower's supplier for the settlement of all expenses to be embarked upon to avoid loan diversion to unproductive ventures. This strategy will ensure effective utilization of borrowed funds for productive investment that would in turn increase the level of investment and employment in the country.

Also, in terms of other macroeconomic factors that affects unemployment rate, lending rate is higher in South Africa and hence increased unemployment rate as against the Nigerian economy. Thus, banks should reduce their lending rate to the productive sectors in order to enable people obtain loans for investment purposes that will create more jobs. Inflation rate has a positive relationship with unemployment rate in Nigeria but was negative in South Africa and hence the Phillip curve holds in the economy of South Africa. Government expenditure has a negative relationship with unemployment rate in both countries and should be sustained for enhanced employment generation.

In line with the theoretical expectation, population increase led to a rise in unemployment rate in Nigeria but contrary to expectation, it reduced the unemployment rate in South Africa. Thus, the Nigerian Government should promote entrepreneurship and skill acquisition training programme so as to encourage people to be job creators rather than job seekers. Finally, FDI inflows have a reducing and significant effect on unemployment rate in Nigeria as against the South African economy that has an increasing and insignificant effect. Hence, the Government of Nigeria should create an enabling environment by increasing the ease of doing business so as to attract more inflows of FDI as it will help complement domestic investment for more employment generation.

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