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ISSUES OF UNEMPLOYMENT IN NIGERIA: EFFECT OF REAL EXCHANGE RATE AND INFLATION INTERACTION

Raji, Rahman Olanrewaju

Canterbury International High School, Lekki-Ajah, Lagos, Nigeria.
Email: rahman.raji@rocketmail.com Tel: +234 8023097110

ABSTRACT

The paper examines the issues regarding the effects of inflation and real exchange rate on unemployment: if change in real exchange rate and inflation reduce the level of unemployment and that inflation moderates the effect of real exchange rate on unemployment in Nigeria The author employs the Generalized Method of Moments (GMM) technique which is able to control endogeneity of variables in the study. The findings show that real exchange rate depreciation and inflation have positive impact on unemployment which in turn erodes the economic growth. Besides, the positive effect of real exchange rate depreciation on unemployment was contributed by high inflation level; the marginal effect of real exchange rate depreciation on unemployment increase with the level of inflation. This signifies that the higher the rate of inflation, the more real exchange rate depreciation spurs unemployment. Based on the findings, there is a need by the economic policy makers and authorities to establish drastic measures towards curbing high inflation level to a moderate and stable level which can stimulate a certain level of real exchange rate which in turn can urge economic growth through increase in employment opportunity.

Contribution/Originality: This study contributes to the existing studies by distinguishing itself identifying the simultaneous impact of these two fluctuating variables (inflation rate and real exchange rate) on unemployment, unlike existing literatures which addressed these impacts on unemployment separately and assessing how inflation influences the impact of real exchange rate on unemployment in Nigeria. The study adopts descriptive analysis and generalized method of moment.

1. INTRODUCTION

Inflation, real exchange rate and unemployment are three of key indicators of a small and open economy. An economy encountering stagflation (simultaneous high unemployment and inflation rates) has tendency of facing real exchange rate problem, if it is a highly import-consuming nation. These challenges have serious impacts towards attaining macroeconomic objectives because there is an absence of friendly macroeconomic conditions which inhibits economic progress and stability.

Philip curve hypothesis suggests an inverse relationship or trade-off between inflation and unemployment. There are arguments that trade-off curve between two variables exists in the short run and that in the long run, the trade-off does not exits but the Philip curve become vertical (Phelps, 1967; Friedman, 1968; Lucas and Rapping, 1969). Another argument is that trade-off between inflation and unemployment exist in long run because of money supply and productivity growth leads to decrease in unemployment, while supply shock like oil prices leads to

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increase in unemployment and that increase in productivity growth causes decrease in inflation and also fall in unemployment (Tang and Lean, 2009; Karanassou and Sala, 2010).

The relationship between exchange rate and unemployment is controversial, if positive or negative relationship exists between the two variables. Literature establishes that changes in real exchange rates have tendency of impacting the reallocation of resources between sectors of the economy as they reflect changes in relative prices of domestic and foreign goods which influence employment in an economy. Trade theory suggest that a depreciation of real exchange rate increases the competitiveness of the country's exports and hence the demand for labour increases. On the other hand, a depreciation of real exchange rate increases the cost of intermediate inputs which might offset the first effect such affect production level adversely which tends to reduce competitiveness of the country export and hence, demand for labour decreases (Demir, 2010; Feldmann, 2011).

In Nigeria, statistics revealed that between 2013 and 2014, the unemployment rate increased from 16.7 to 17.1, despite an increase in annual real GDP from 5.4% to 6.3% with a decrease in the annual inflation from 8.5% to 8% whereby an improvement of real effective exchange rate occurred from 74.20 and 69. 51. Subsequently, unemployment further reveled 17.6 %, 18 % and 18.5% in 2015, 2016 and 2017 respectively. The corresponding real GDP were 2.7%, -1.6% and 0.8% in 2015, 2016 and 2017 respectively. The purchasing power of households further declined as a result of a continuous increase in the annual inflation with 9% in 2015, 15.7% in 2016 and 16.5% in 2017 while the depreciated real effective exchange rates in 2015 was 70.83, when 80.35 and 85.62 were recorded in 2016 and 2017 respectively. This trend contradicted economic postulations that predicted inverse relationship between inflation and unemployment; a depreciated real depreciation was expected to improve and boost real GDP which in turn expected to have a drastically decline in the rate of unemployment via increase in export.

Most existing studies have addressed the effect of inflation and real exchange rates on unemployment separately. There is less empirical study on the simultaneous impact of these two fluctuating variables on unemployment. Several papers studied inflation-unemployment relationship in Nigeria like Orji *et al.* (2015); Ogujiuba and Abraham (2013); Umoru and Anyiwe (2013); Ojapinwa and Esan (2013) and it is hard to find a study on real exchange rate-unemployment relationship in Nigeria except Raifu (2017); Amassoma and Nwosa (2015) and Akpan (2008) who included exchange rate and inflation as control variables in their empirical study of unemployment in Nigeria. Specifically, the two- fold objectives of the study include: to determine the impact of real exchange rate and inflation rate on unemployment and assess if the inflation rate moderates the impact of real exchange rate on unemployment in Nigeria.

2. LITERATUREREVIEW
2.1. Theoretical Framework
2.1.1. Inflation-Unemployment Relationship Theory

Phillips curve refers to the trade-off between inflation and unemployment; it demonstrates the inverse relationship between inflation rate and unemployment rate. It shows that in the short-run, low unemployment rate results in high inflation and vice versa. According to the preposition, when the demand for labour is high and there are few unemployed, it is expected that the employers would offer wage rates up in order to make the work attractive to the worker while in the period of falling business activities, the demand for labour is decreasing and unemployment is increasing, employers would be reluctant to grant wage increase. Reduction in wage rate makes workers and union to be reluctant to accept wage cut. Consequently high rate of unemployment will occur when employers are forced to dismiss workers as a result of union being reluctant to accept wage cut, Ugwuanyi (2004) argued. After Phillips' work, economists studied the Phillips curve; some validated it while others refuted it as earlier mentioned. Thus, Friedman (1968) submitted that there is no trade-off between inflation and unemployment in the long run and the curve becomes vertical and that any attempt to hold the unemployment rate at an artificially low level would cause inflation to accelerate indefinitely.

Due to weakness of original Phillips Curve arises from most economy suffering from stagnation, a combination of high unemployment and high inflation rate. This led economists to conclude that there are other factors which also affect the Phillips curve relationship such as supply shocks and expected inflation and resulted to in the new or modified Phillips curve. Modified Phillips curve is based on the concept that actual inflation rate depends on what people expect inflation rate to be in future adjusted for the effect of any cyclical unemployment or supply shocks i.e. any adverse movement in factor costs such as steep changes in global oil price, etc. Expected inflation matters because when current or past prices are high, people expect prices to be high in future and build-in this expectation in their economic transactions. Such expectation is self-fulfilling because when all people expect prices to increase, they do increase.

2.1.2. Real Exchange Rate-Unemployment Relationship Theory

The literature established two views exist as regard the transmission mechanism of the real exchange rate on unemployment via economic activities. From the traditional view, the real exchange rate operates through aggregate demand channel which argued that the depreciation of the real exchange rate enhances unemployment via the international price competitiveness of domestic goods. With the improvement of international competitiveness of domestic goods, the net export increases as a result of improvement in locally domestic goods and a fall in demand of foreign goods. Hence, demand for labour improved in the economy which in turn, helps increase aggregate in the economy. In contrast to this, another argument is that a real depreciation can generate adverse effects resulting in overall economic contraction; a nominal depreciation of the currency leads to a rise in general price level. This lowers aggregate demand which has negative effect on employment which in turn causes economic contraction.

In addition, Frenkel (2004) argued that the real exchange rate affects employment via three channels: the macroeconomic channel signifies the role of the real exchange rate on the determination of output activity level; the development channel implies the effect of the real exchange rate on economic growth rate in the long run. These two channels emphasized on the effect of changes of real exchange rate to the unemployment rate through change in production volume, and the labor intensity channel suggests the effect of the real exchange rate by changing the proportions of factors in the production of output i.e. effect of changes of real exchange rate on unemployment through changes in a combination of production factors used in the production process. He hypothesized that depreciation in the real exchange rate in the net effect of the macroeconomic and development channel is positive, meaning that the real exchange rate increases the level and growth rate of output, and hence unemployment decreases. In addition, via the labor intensity channel, depreciation means the switching of capital to labor in the production of output which in turn reduces unemployment level.

2.2. Empirical Literature

2.2.1. Empirical Review on Real Exchange Rate and Unemployment

Frenkel (2004) investigated the relationship between the real exchange rate and employment for 4 Latin American countries. The study found that GDP is negatively related to unemployment and the real exchange rate is negatively related to unemployment, a 10% appreciation of the real exchange rate is associated with a 5.6% increase in the unemployment rate with a 2-year lag. In a similar finding by Frenkel and Ros (2006) who further examined the relationship between unemployment rate and real effective exchange rate in several countries between 1994 and 2009, the analysis showed further that most of the countries demonstrated a negative relationship between two variables; increase of real exchange rate could improve employment rate in an economy.

Edwards (1986) opined that developing countries with external debt and in need of substantial import of intermediate inputs, currency depreciation negatively influences employment. According to Galindo *et al.* (2006) their finding uncovers that currency devaluation is beneficial to the growth of total employment, but, in the

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industries with high dollar-debt, the effects of currency devaluation shows the reverse when study on nine Latino countries with large amounts of dollar-denominated debt was conducted. Campa and Goldberg (2001) point out that export reduction or import increase, currency appreciation lowers costs of import of intermediate goods, which then affects employment, when studying the industry-level data of US between 1972-1996. The finding established that exchange-rate appreciation has a negative impact on employment. This study supported Filiztekin (2004) who examined the impact of exchange rate fluctuations on Turkish manufacturing employment and wages using data for a panel of manufacturing industries over the period 1981 – 1999. The outcome revealed a depreciation has a net negative effect on both employment and wage and concluded that Turkish manufacturing industries depend heavily on foreign inputs which outweighs the positive effect a depreciation has on competitiveness

Chimanani et al. (2012) investigate the relationship between exchange rate volatility and unemployment in ten Asian countries from 1995-2005. Their studies disclose absence of a link between GDP/capita and unemployment, but find a positive effect of RER and unemployment. An increase of RER by 10% increases unemployment by 5.5%, at a percent significance level and real exchange rate depreciation increases unemployment rate in ten Asian countries. This study has contrary outcome with Bakhshi and Ebrahimi (2016) where the relationship between real exchange rate and unemployment in Iran using the annual data of 30 years (from 1981 to 2012) demonstrated that there was a negative relationship between unemployment and exchange rate and economic growth had a significant and positive effect on unemployment. This finding agreed with Atya (2017) who estimated the effect of real exchange rate on unemployment in the Egyptian economy during the period 1985-2015 using three methods to estimation such ARDL, FMOLS and DOLS. All the results reveal that real exchange has a positive and significant effect on unemployment. This implies that the depreciation the real exchange rate in Egypt will decrease the unemployment

Edmira (2015) reveals how real exchange rate can affect the level of employment in Albania, the study demonstrates absence of statistically significant impact of real exchange rate on level of employment, suggesting that the increase of competition of the country through the real exchange rate increases the employment rate but doesn't improve the condition of the employment of the economy. In a similar study, Ku (2018) focuses on 12 countries of the EU between 1994 and 2017. The data show that there is a significant relationship between RER and unemployment. An appreciation (depreciation) of the RER increases (decreases) unemployment. This is in accordance with Usman and Elsalih (2018) who conducted the pass-through of the real exchange rate (RERT) to unemployment in Brazil over the period 1981/ January–2015/November using linear and nonlinear Autoregressive Distributed Lag (ARDL) models. The result of the linearity test suggests that the relationship between two variables is linear in the short-run and nonlinear in the long-run. In the short-run analysis, an increase in the RERT decreases the unemployment rate while the long-run analysis shows that the unemployment rate reacts to the RERT appreciations and depreciations differently with depreciations having a strong effect.

2.2.2. Empirical Review on Inflation and Unemployment

Ogujiuba and Abraham (2013) examined the existence of the Philips curve hypothesis in Nigeria over the 1970-2010 periods by employing the generalized error correction model. The results illustrate that there is a negative but insignificant relationship between unemployment and inflation in the short-run. On the other hand, the results suggest that in the long-run, inflation and unemployment are positively related. Orji et al. (2015) agreed with Ogujiuba and Abraham (2013) when investigation was conducted on inflation and unemployment nexus in Nigeria to test the validity of Original Phillips curve proposition covering the period 1970-2011. The result reveals that unemployment is a significant determinant of inflation and that there is a positive relationship between inflation and unemployment rate which invalidates Philip curve proposition in Nigeria.

Umoru and Anyiwe (2013) used the vector error correction technique to investigate the dynamics of inflation and unemployment in Nigeria from 1986 to 2012. The results indicate the presence of high inflation and

unemployment rates (stagflation) in Nigeria, thus refuting the proposition of the short-run Phillips curve. In a similar study, Ojapinwa and Esan (2013) the outcome of their findings show that the inflation rate and unemployment rate are negatively related in the short-run. In the long-run, the inflation rate and unemployment rate are positively related, thereby indicating stagflation in the Nigerian economy. These studies are in consonance with Furuoka and Munir (2014) that focused on Malaysia to empirically analyze the relationship between unemployment rate and inflation rate and the main inquiry revealed that there existed an equilibrium relationship between unemployment rate and inflation rate in Malaysia which support the validity of the Phillips Curve hypothesis.

Aminu and Anono (2012) revealed that there is no causation between unemployment and inflation and that a long-term relationship exists between the two but the finding uncovered a negative relationship between unemployment and inflation in India. This is consistence with Singh and Verma (2016) who validated Aminu and Anono (2012) that in India, between the period of 2009 and 2015, there is a tradeoff between inflation and unemployment in short run where an increase in inflation leads to decrease in unemployment.

Elliot (2015) explore the relationship between inflation and unemployment in Ghana in order to appreciate the existence of the Philips curve using on annual time series data by dividing the sample period into two subsamples -from 1970 to 1982 and 1983 to 2013. This study reveals that changes in unemployment does not brings about changes in inflation both subsample periods and the study rejects evidence of the Philips curve; absence of trade-off between inflation and unemployment. Al-Zeaud (2014) studied the existence of trade-off relationship between unemployment and inflation in the Jordanian economy between 1984 and 2011. The study indicated no causal relationship between unemployment and inflation in Jordan during the study period which means there is no trade-off relationship between the two variables. Contrary to Elliot (2015) and Al-Zeaud (2014); Abu (2017) reinvestigated Inflation and Unemployment Trade-off in Nigeria. The results of the ARDL bounds testing, FMOLS, DOLS, static OLS and CCR estimations indicate that there is a trade-off relationship between the variables, and higher unemployment leads to lower inflation in the long-run and that there is unidirectional causality from inflation to unemployment

In conclusion, most existing studies concluded that depreciation of real exchange rate has tendency of reducing of unemployment but inconclusiveness of inflation having negative and significant relationship with unemployment rate and hardly to come across studies conducted to find how inflation rate influences the impact of real exchange rate on unemployment in Nigeria and somewhere else.

3. RESEARCH METHODOLOGY

3.1. Model Specification and Estimation Technique

This paper draws on a similar model by taking cue from previous studies Frenkel and Ros (2006); Fernando *et al.* (2009) among others) estimating baseline model using a dynamic time series data model to determine the impact of inflation and real exchange rate on unemployment:

$$\text{unemp}_t = \emptyset + \beta_1 \text{inf}_t + \beta_2 \text{rex}_t + \beta_3 \text{lgdp} + + \alpha_1 \text{open}_t + \alpha_2 \text{productivity}_t \quad \text{............(1)}$$

The interaction term between inflation and real exchange rate is included to ascertain the moderating role of inflation rate on the impact of real exchange rate on unemployment:

$$\text{unemp}_t = \emptyset + \beta_1 \text{inf}_t + \beta_2 \text{rex}_t + \beta_3 \text{gdp} + \alpha_1 \text{open}_t + \alpha_2 \text{productivity}_t + \alpha_4 interIR + \mu_t \quad \text{......................(2)}$$

Where $interIR$ = interaction term between inflation rate and real exchange rate. Hence, the interaction term enables us to ascertain whether the impact of real exchange rate on unemployment rate varies with the levels of inflation rates. Through the interaction term, we capture the marginal effect of real exchange rate on unemployment by taking the partial derivatives of Equation 2 with respect to real exchange rate as follows:

$$\frac{\partial unemp}{\partial rex}_t = \emptyset + \beta_1 \inf_t + \mu_t$$

………………………………………….(3)

The signs of the coefficients of $\emptyset$ and β_1 are important. If $\emptyset > 0$ and $\beta_1 < 0$, it suggests that real exchange rate has positive impact on unemployment, and inflation rate adversely influences that positive impact. If $\emptyset < 0$ and $\beta_1 > 0$, it denotes that real exchange rate has negative impact on unemployment, and inflation rate mitigates that negative impact. If $\emptyset < 0$ and $\beta_1 < 0$, it implies that real exchange rate has negative impact on unemployment, and inflation rate aggravates that negative impact. However, a positive marginal effect ($\emptyset + \beta_1$ inf) implies that more real exchange rate and inflation enhance unemployment, but the opposite holds if the marginal effect is negative. All the variables were in their logarithm form to avoid measurement error and to provide reliable estimates.

The Generalized Method of Moment (GMM) was adopted in order to avoid the problem of endogeneity in explanatory variables. Using this technique, it ensures that the estimators are extremely strong and robust. It allows formulating models and specific estimators without the need for strong distribution assumption. In addition, it provides a unifying framework for the analysis of many familiar estimators which include ordinary least squares (OLS) and instrumental variables (IV).

3.2. Data Definition and Sources

The study is carried out using quarterly data over 2003/first quarter to 2018/fourth quarter period. The data used are unemployment rate (World Bank Group); inflation rate and labour productivity (World Bank Indicators); real exchange rate, trade openness, gross domestic product (Central Bank of Nigeria website). The data were converted into quarterly data using e-view package.

4. RESULTS AND ANALYSIS

Table 1 presents the summary statistics of the sample data on the variables used for the analysis. Most variables suggest that all the series displayed a high level of consistency as their mean and median values are within the maximum and minimum values of the series implying that the variables had high tendency to be normally distributed. From standard deviation statistics, the deviation of most data in the series is not really different from their mean value. With regard to the skewness of the variable, the statistics of skewness which is a measure of asymmetry of the distribution of the series around its mean. Its outcome indicated that all the variables except RER and RER*inflation are negatively skewed, implying that these distributions have long left tails. Kurtosis statistic measures the peakedness or flatness of the distribution of the series. A Gaussian distribution is expected to have kurtosis of 3.0; since all the variables lie within the range of 3 except RER and trade (openness), it implies that most variables had high tendency to be normally distributed.

Table-1. Descriptive statistics.

	Unemployed	RER	Inflation	RER*Inf	GDP	Trade	Productive
Mean	2.58	4.562	2.419	11.034	30.508	14.09	9.71
Median	2.612	4.567	2.426	11.032	31.252	14.306	9.972
Maximum	3.263	5.683	3.265	16.43	32.375	14.919	9.878
Minimum	1.437	4.173	1.466	7.37	18.667	12.896	9.069
Std.dev.	0.375	0.267	0.368	1.83	3.191	0.545	0.162
Skewness	-0.677	0.587	-0.329	0.457	-3.208	-0.699	-1.632
Kurtosis	3.875	2.099	3.397	3.332	12.253	2.374	6.174
Jarque-Beta	6.983	5.846	1.582	1.582	338.167	6.258	55.303
Prob.	0.031	0.053	0.453	0.453	0	0.043	0
observation	64	64	64	64	64	64	64

Finally, Jarque-Bera test revealed that all the variables are not normally distributed except inflation and RER*inflation with p-value of 0.0.453 and 0.282 respectively. Importantly, JB value of unemployment is 0.031 which is significant at 10 percent indicating that we reject H_0 indicating that the hypothesis of normality in the distribution cannot be accepted. This implies that the data series may have endogeneity issues. This therefore necessitates adoption of a GMM estimator which is capable of controlling the joint endogeneity effect of most of the explanatory variables with unemployment and to control for the biases resulting from simultaneous or reverse causation.

4.1. Empirical Result

In this stage, three different models are estimated by GMM. The results derived from GMM analysis are reported in Table 2. The instrumental variables in the models are the lagged values of the variables. In the first model which is associated with the baseline, the impact of inflation and real exchange rate with a cue taken from previous studies (Frenkel and Ros, 2006); (Fernando *et al.*, 2009) among others without control variables, all the coefficients are significant. It implies that all the variables do seem to have an impact on unemployment rate. The coefficients of inflation, real exchange rate and trade openness are found to be positive and highly significant. A percent increase in inflation, real effective exchange rate and trade openness would, other things being equal, result to 0.15%, 0.46% and 0.40% increases in unemployment rate respectively. The implication of this result is that an increase in each of these regressors triggers unemployment rate to increase at the detriment of the economy. Moreover, with the values of the t-statistic and probabilities, inflation, real effective exchange rate and trade openness were the variables that were statistically significant in determining unemployment rate. While the variables like gross domestic product and labour productivity were negatively related to unemployment. It suggests that a percent increase in aforementioned variables will reduce unemployment rate by 0.03%, and 1.25% respectively. With regard to values of t-statistic and probabilities, gross domestic product and labour productivity were statistically significant in the determination of unemployment.

In the second model of Table 2, in column 2, the interaction term between inflation and real exchange rate is included in the model, and we find that the interaction term enters with a negative coefficient while the coefficient of real exchange rate remains positive. In essence, the positive sign of the coefficient of real effective exchange rate and the negative sign of the coefficient of interaction term suggest that the positive impact of real effective exchange rate on unemployment has been mitigated by inflation implying that as the depreciation of real effective exchange rate increases, unemployment increases but inflation level tries to weaken the positive impact of real effective exchange rate depreciation on unemployment.

To determine the impact of real effective exchange rate on unemployment at various levels of inflation, we compute the marginal effects using Equation 3 in order to estimate its coefficient. Regarding $\beta_1 + \beta_2 rer$, the entire marginal effect ($\beta_1 + \beta_2 rer$) is positive; it implies that more real exchange rate depreciation and inflation escalate unemployment growth in Nigerian economy.

Table-2. GMM results.

Independent variables	1	2	3
Constant	7.30 (3.07) [0.003]*	3.77 (0.61) [0.539]	–6.38 (–2.01) [0.048]**
Inflation	0.15 (1.39) [0.169]***	4.18 (1.45) [0.152]***	1.85 (2.29) [0.025]**
RER	0.46 (3.19) [0.032]**	2.17 (1.79) [0.078]**	0.87 (2.26) [0.027]**
RER*inflation	-	–0.82 (–1.37) [0.174]***	–0.37 (–2.27) [0.027]**
Trade	0.40 (1.82) [0.072]**	0.69 (2.02) [0.048]**	–0.14 (–0.65) [0.514]
GDP	–0.03 (–2.72) [0.008]*	–0.01 (–0.68) [0.494]	–0.01 (–1.55) [0.126]***
Productivity	–1.25 (–2.46) [0.016]***	–2.21 (–2.55) [0.013]**	0.49 (0.76) [0.447]
Unemplo(-1)	-	-	0.88 (7.84} [0.000]*
Observation	64	64	64
instrument rank	6	8	11
J-statistic	4.36	3.39	5.95

As for the other explanatory variables in this model, all the coefficients are significant except GDP; labour productivity is found to be negative and statistically significant showing that a percent increase in labour productivity would result to 2.21% decrease in unemployment rate. Furthermore, coefficients of inflation, real effective exchange rate and trade openness are established to be positive and statistically significant. A percent change in inflation, real effective exchange rate and trade openness would result to 4.18%, 2.17% and 0.69% increase in unemployment rate respectively. Last model incorporates the baseline with additional two control variables which include first lagged value of unemployment rate and interaction of inflation and real exchange rate. The outcome of the result reveals that all coefficients are statistically significant except trade openness and labour productivity. This indicates that trade openness and labour productivity are no longer significant in favour of certain control variables because the variables are highly correlated with other control variable in the model while gross domestic product is negative and significant as a result of certain control variables are not too correlated with gross domestic product in this model while lagged value of unemployment is negative and highly significant. In a nutshell, the effects of inflation, real effective exchange rate and interaction of inflation and real effective exchange rate variables do have consistent outcomes in all specifications from Table 2 after additional variables were introduced.

4.2. Discussion

The estimated coefficient of inflation bore positive sign indicating a positive relationship with unemployment. The result failed to confirm the theory of Philip curve that there exists an inverse correlation among the two variables. It implies that as inflation increases, level of unemployment rate also increases which in turn depresses level of economic growth (stagflation) in Nigeria. This study confirmed the work conducted by Orji et al. (2015) and Odo et al. (2017). It indicates that persistent instability in inflation rate triggered a continuous rise in the unemployment in Nigeria. Uncertainty around price level will mean a higher cost of investing in the country which

heighten unemployment rate and endanger economic growth in Nigeria. Real exchange rate depreciation has positive and significant relationship with unemployment. The evidence presented in this article verified the findings of Nyahokwe and Ncwadi (2013); Feldmann (2011) who stated that it was likely to reject the negative effect of real exchange rate depreciation on unemployment. This is contrary to findings of Frenkel (2004); Behnamian (2012); Atya (2017) where their findings indicated that depreciation of real exchange rate will reduce the unemployment and that real exchange rate appreciation will increase unemployment. It implies that real exchange depreciation further compounded the level of unemployment in Nigeria. Continuous distortion of exchange rate result in the fall of the value of assets invested or profit expected to be generated. This perceived reduction in the asset value or profit may encourage investors rather shift their resources abroad.

The result also shows interaction term (inflation and real exchange rate) enters with negative coefficient while the coefficients of real exchange rate and inflation indicated positive effects and significant impacts on unemployment. Unlike previous studies, this present study shows that the impact of real exchange rate on unemployment varies with the level of the inflation. The study examines effect of real exchange rate on unemployment through inflation distortion in the economy. this study represents a novel idea by showing the marginal effects of real exchange rate on unemployment at level of inflation rate which has been explored in the previous studies. The marginal effect enables the study to determine the changes in unemployment rate caused by simultaneous changes in both inflation and real exchange rate, which is essential for policy formulation. The implication of this study is that high inflation rate adversely affects the real exchange rate –unemployment growth nexus in the Nigeria. Hence, a reduction or moderate level of inflation rate mitigates real exchange rate uncertainty which can de-escalate the unemployment level which in turn can fuel economic growth in this economy. This calls for formulation of necessary fiscal and monetary policies towards ensuring drastic fall and stability of inflation.

With regards to the correlation between gross domestic production and unemployment, there is a negative and significant relation in most of the specifications between gross domestic product and unemployment which validated Okun's law in Nigeria. This current study is consistent with Asaleye et al. (2017); Akeju and Olanipekun (2014); Bankole and Fatai (2013) with regard to Nigeria whereas in similar studies such Raifu (2017); Ojapinwa and Lawanson (2016) suggest that economic growth in Nigeria is not pro-employment generation which is contrary to the validity of Okun's Law. For the relationship between labour productivity and unemployment, there is a negative effect and significant impact relationship between labour productivity and unemployment in the first two specifications. The implication of this is that the productivity growth in the economy is sensitive to the unemployment condition in the economy. The evidence presented in this study verified the findings of Obadan and Odusola (2000) and Karaalp-Orhan (2017) who stated that it was likely to reject the positive effect of labour productivity on unemployment. This is contrary to findings of Amassoma and Nwosa (2015) who argued that labour productivity is insensitive to the unemployment condition in Nigeria due to insignificant relationship unemployment rate and labour productivity.

For the relation between trade openness and unemployment, there is a positive and significant relation in most of the specifications. These results are not aligned with H-O theory that unemployment is inversely affected due to increase in international trade in labour abundant countries as is expected to dampen unemployment. This contracted Osigwe and Ahamba (2016) who established negative correlation between trade openness and unemployment in their findings whereas this current study is consistent with Raifu (2017); Nwaka et al. (2015). Such positive relationship between the variables could be associated with in a frictional labour market conditions with prevalent of informal labour market or increase in the use of capital intensive method of production or both.

5. CONCLUSION

The study reveals that real exchange rate depreciation has a deleterious impact on unemployment, but the harmful impact is promoted by the inflation in the economy. The implication of this study is that absence of

moderate level of inflation adversely affects the real exchange rate-unemployment nexus in Nigeria. Hence, a reduction or moderate stability in inflation level is key for real exchange rate depreciation to de-fuel unemployment level in Nigeria. It becomes imperative for fiscal and monetary authorities to ensure growth and development of the rural small-scale, small and medium-scale urban sectors in order to encourage people to establish more labour-intensive small and medium scale enterprises which have the propensity to create more jobs which in turn improve economic growth of the country using prudential macroeconomic policies It becomes a must for government particularly, monetary authority to design specific and appropriate measures to serve as checks and balances in case of fluctuations in macroeconomic parameters like inflation, interest rate and foreign exchange rate which can affect adversely the productive sectors of the economy in order to avoid inhibitive effect on employment.

Policy implication is that since unemployment reduction tends to increase gross domestic product which implies more income for the nation, which in turn promotes a greater demand for locally produced basic consumption goods. To achieve this goal, there is need to ensure a moderate and stable inflation rate and also establish an appropriate policy which can promote labour-intensive technologies of production. Appropriate fiscal policies towards public investment are a must which have tendency to improve productivity and supporting job creation. Such programmes must raise workers' skills and investment to improve infrastructure as well as create the enabling environment for enterprises to strive.

Therefore, future study may complement this study by examining the threshold levels of the inflation beyond which the marginal effects of real exchange rate on unemployment turn positive or future research could also investigate the influence of the inflation on the unemployment-economic-growth nexus or both.

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