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FOREIGN CAPITAL INFLOWS AND UNEMPLOYMENT IN NIGERIA: A NEW EVIDENCE FROM ARDL-BOUNDS TESTING APPROACH

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ABSTRACT

Using a novel approach, this study disaggregates and estimates the impact of foreign capital inflows on unemployment in Nigeria by adopting the Auto-Regressive Distributed Lag- Unrestricted Error Correction Methodology (ARDL-UECM). The ARDL-bounds test co-integration results show evidence of co-integration between disaggregated Foreign Capital Inflow variables (such as Foreign Direct Investment, Foreign Portfolio Investment and Remittances) and unemployment rate in Nigeria within the period from 1977Q1 – 2013Q4. The empirical results also show that foreign direct investment, foreign private investment and trade openness have negative impact on unemployment rate. On the other hand and interestingly, remittances and real exchange rate show a positive impact. The study therefore recommends the routing of remittances through the banking channels which would help in allocating remittances and other financial flows to productive uses. Again, government should enact investor-friendly policies and build conducive business environment in order to attract more Foreign Capital Inflows which will support job creation for the teeming population and thereby reduce biting unemployment.

Contribution/Originality: This study contributes to the existing literature by adopting the Auto-Regressive Distributed Lag- Unrestricted Error Correction Methodology (ARDL-UECM) in estimating the impact of disaggregated foreign capital inflows on unemployment in Nigeria.

1. INTRODUCTION

Theoretically and empirically, it is a well-established argument that capital inflows play very important but divergent roles in every economy. In line with the proposition of the Classical Economists, governments of different nations have been actively involved in planning and executing economic ideas in order to stimulate inflow of foreign resources. This is with the expectation that such inflows will augment domestic resources and contribute to improved balance of payment, creation of employment opportunities and stimulation of the overall development of the economy. Essentially, it was the economic situation of the early 1980s that sparked off the debate on the desirability of foreign capital inflow into the Country. However, while some scholars express positive views on the relevance of foreign capital inflows, others argue against it Orji *et al.* (2014); Edu *et al.* (2015) and Oluwaseyi *et al.* (2017).

176

For example, Lucas (1990) argues that not all developing or poor countries exhibit a high marginal productivity of capital. Lack of supporting infrastructure, skills, and policies lower the productive potentials of the recipient economy and hence, limit the positive impact of capital inflows. Thus, the growth experience of many of these countries has not been very satisfactory and, as a result, they accumulated large external debt and are now facing serious debt servicing problems, foreign exchange issues and also walloping in abject poverty, Waheed (2004); Nkoro and Uko (2012). Again, it is also not very clear in the literature if the level of unemployment increases with the inflow of foreign capital or not (Manash, 1999). However, studies by OECD (2011) show that the increase in capital flows since the mid-1980s till the 2000s has contributed to an amplification of the impulse response of unemployment to country-specific shocks and to a fall in the persistence of unemployment in response to the same shocks. Further evidence from the OECD countries show that increased international capital mobility has contributed to higher variance in the unemployment rate.

This confirms that unemployment in countries characterized by larger penetration of international capital is more responsive to idiosyncratic shocks and consequently these countries experience amplified fluctuations in employment. The time it takes for equilibrium to be restored, however, is shorter with international capital mobility (Giovanna, 2007). In Nigeria, capital inflows have been rather unstable in magnitude and trend (Iloh, 2012). The aggregate values of foreign capital inflows to Nigeria and the corresponding unemployment rates are shown in figures 1 and 2 below.
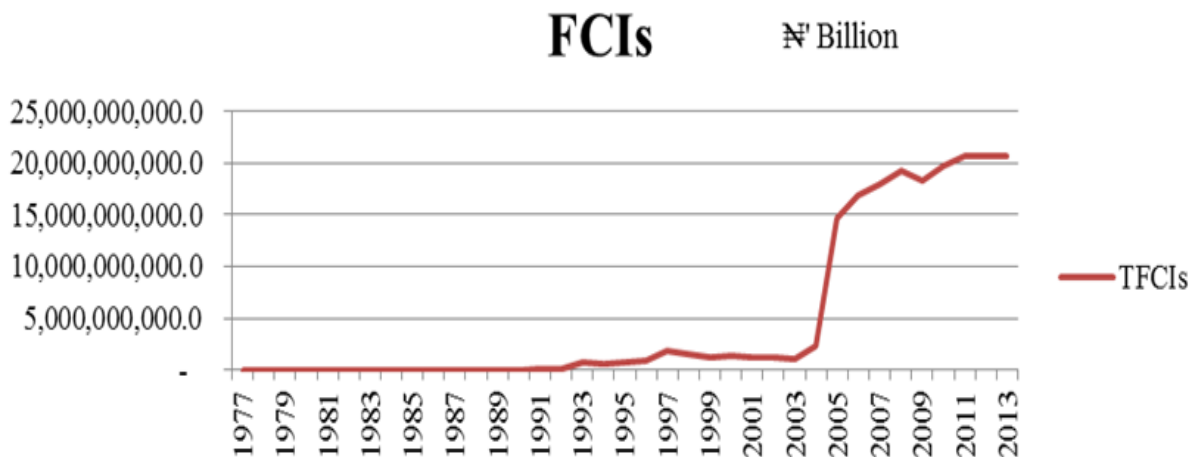
Figure-1. The Trends of Aggregate Foreign Capital Inflows (FCIs) and Unemployment Rate (UNEMP) in Nigeria from 1977 - 2013
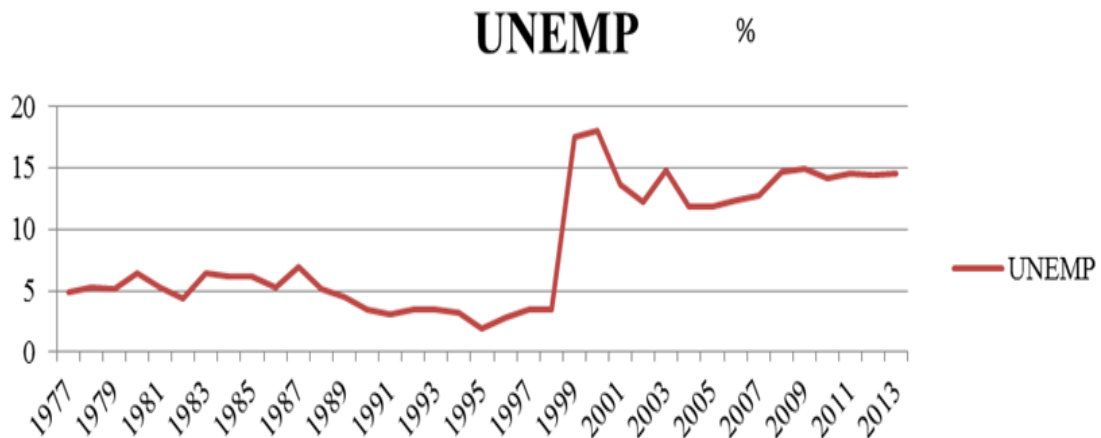**Source:** World Bank (2015)

Figure-2. Unemployment Rate
Source: World Bank 2015

A clear comparison of the graphical trends of FCIs' and unemployment rate in Nigeria from $1977 - 2013$ shows that as FCIs' increase unemployment rate increases also, which depicts the existence of a positive relationship

between FCIs' and unemployment rate in Nigeria. This opposes existing economic theory and the expected advantage of FCIs' on unemployment rate reduction. Hence, an inflow of foreign capital in the presence of protectionist policy could be welfare deteriorating as well as unemployment accentuating. However, we shall not draw all conclusion yet because the FCIs here are aggregated. This study shall disaggregate the various components of FCI and unravel their impact individually. As it were, the developing countries have chosen liberalized investment and trade policies as their development strategies and have been able to attract a considerable amount of foreign capital through their international economic activities. A relevant question is why these countries are yearning for foreign capital given that it can have supportive or detrimental effects as predicted by the conventional theoretical literature on trade and development.

Hence, there is need to really ascertain if FCI might be a panacea for unemployment rate reduction. The nature of the relationship existing between the variables of interest in the study as evident from the graph above is quite puzzling and therefore calls for an empirical investigation to unravel the real impact of disaggregated foreign capital inflows on unemployment in Nigeria. That is the objective of this paper.

Other sections are organized as follows; section 2 looks at the review of literature, while section 3 is on the methodology. Section 3 focuses on results and analysis, while section 5 concludes the paper.

2. REVIEW OF LITERATURE

Empirical studies on the capital inflows and unemployment rate nexus are quite scanty and some of the studies have been shown to have rather mixed results. For example, Chaudhuri (2001) analyzed the implications of foreign capital inflows in a small open economy with a non-traded intermediary for the welfare and urban unemployment in a Harris and Todaro (1970) framework. The study found that an inflow of foreign capital reduces the welfare and raises the urban unemployment of labour if the non-traded intermediate good is only used by the protected urban import-competing sector. On the contrary, when the export sector too uses the non-traded intermediary, the result on urban unemployment may be the reverse, and the economy may experience an improvement in its welfare under a reasonable necessary and sufficient condition.

Thus, the welfare effect of an inflow of foreign capital in the presence of a non-traded intermediary crucially hinges on which sector uses this input and to what extent. That is, the protected import-competing sector produces an essential input for the rural sector. The non-traded intermediary maybe of use in either or both of the other two sectors. Here, an inflow of foreign capital with full repatriation foreign capital income unambiguously lowers the welfare of the economy and raises the level of urban unemployment of labour if the non-traded intermediary is entirely used in the protected import-competing sector. However, the paper shows that the economy may experience an improvement in its welfare and a reduction in the urban employment due to a foreign capital inflow. That is when the sector producing the non-traded intermediary is sufficiently capital-intensive relative to the import-competing sector and a sufficiently large amount of the output of the former is used in the export sector of the economy.

Giovanna (2007) worked on capital mobility and unemployment dynamics. He used a panel of 20 Organization for Economic Cooperation and Development (OECD) Countries from 1970 - 2001 to estimate the implications of international capital mobility for unemployment. He found that increased international capital mobility has contributed to higher variance in the unemployment rate. His findings confirmed that unemployment in countries characterized by larger penetration of international capital is more responsive to idiosyncratic shocks and consequently these countries experience amplified fluctuations in employment. The time it takes for equilibrium to be restored, however, is shorter with international capital mobility. The increase in capital flows since the mid-1980s has contributed to an amplification of the impulse response of unemployment to country-specific shocks and to a fall in the persistence of unemployment in response to the same shocks.

Another study that focused on demography, capital flows and unemployment was done by Marchiori *et al.* (2011). The study developed a two-region general equilibrium model featuring overlapping-generations (OLG) dynamics and calibrated to real data. Capital markets are integrated between the two regions, the EU15 and the US. Their analysis focused on the sub period from 1950 to 2100 within the transitional dynamics. The model started from an initial steady state in 1900 and is calibrated to reflect the economic conditions of both regions in 2005. In the analysis, labour market imperfections were found to significantly increase the volume of capital flows, because of stronger employment adjustments in comparison with a competitive economy. On how demographic asymmetries may have contributed to unemployment and welfare changes in the recent past (1950-2010), they showed that a policy reform in one country also has an impact on labour markets in other countries when capital is mobile.

Chaudhuri (2005) examined foreign capital, welfare, and urban unemployment in the presence of agricultural dualism and found that an inflow of foreign capital lowers the level of urban unemployment. Here, the urban sector expands, as capital is specific to this sector. Owing to foreign capital inflows, the price of the non-traded commodity rises and leads to an increase in the competitive rural wage. Hence, an inflow of foreign capital is likely to be welfare improving and may not aggravate the problem of urban unemployment in the developing countries that have adopted liberalized trade and investment policies as their development strategies and have been able to attract a substantial amount of foreign capital during the last two decades. In the presence of agricultural dualism and a non-traded final agricultural commodity, the aggregate factor income and the demand for importables increase. From the analysis, it also follows that the level of urban unemployment does not necessarily increase due to foreign capital. Udoidem and Udofot (2014) examined the role of foreign capital inflows (FCIs) on entrepreneurial development in Nigeria. They outlined FCIs', as Unremitted Profits (UP); Changes in Foreign Share Capital (CFSC); Trade and Suppliers' Credit (TSC); Liabilities to Head Office (LHO) and Other Foreign Liabilities (OFL) such as external borrowing. The trend of these components was presented from $1980 - 2010$. Correlation coefficient 'r' was used to determine the nature and degree of correlation between the dependent and independent variables, while the square of the correlation 'r²' was used for judging the explanatory power of the independent variables. The study found that capital inflows contribute positively to entrepreneurial development and economic growth throughout the period reviewed.

Ajide and Raheem (2015) empirically employed a tractable structural vector autoregressive model to unravel the determinants of foreign capital flows into Nigeria. Particularly, both variance decomposition and impulse response analyses were used to investigate the temporal dynamic effects of shocks to both pull and push factors on different components of foreign capital flows namely: overseas development assistance (ODA), foreign direct investment (FDI), and remittance (REM) flows. Summarily, juxtaposing variance decomposition results, with that of impulse response functions revealed the useful roles of domestic productivity and foreign interest rate in encouraging ODA, FDI and REM flows respectively. This appears to be true both in the short and long run.

3. METHODOLOGY

3.1. The Model Specification

Model 3.1 below is specified to address the key objective of this study;

$$UNEMP_t = \alpha_0 + \alpha_1 FDI_t + \alpha_2 FPI_t + \alpha_3 REM_t + \alpha_4 TO_t + \alpha_5 REXCH_t + \mu_t - - - - - (3.1)$$

Where: α_i = Parameters to be estimated; μ_t = Error Term; $UNEMP_t$ = Unemployment; FDI = Foreign Direct Investment; FPI = Foreign Portfolio Investment; REM = Remittances; TO = Trade Openness; REXCH = Real Exchange Rate; t = trend variable

To address the main objective, the paper utilises the Auto-Regressive Distributed Lag (ARDL) bounds test approach developed by Pesaran *et al.* (2001) to investigate the impact of foreign capital inflows on unemployment in Nigeria. The procedure for the ARDL bounds testing approach has two steps. The first step is testing for long-run

179

relationship using OLS and the next step is the estimation of short-run parameters by using the unrestricted error correction model (UECM). A dynamic unrestricted error correction model (UECM) can be derived from the ARDL bounds testing by way of a simple linear transformation. The UECM integrates the short-run dynamics with the long-run equilibrium without losing any long-run information. Therefore, equation 3.2 is the ARDL-UECM specification.

$$\Delta UNEMP_t = \alpha_1 + \pi_1 UNEMP_{t-1} + \pi_2 FDI_{t-1} + \pi_3 FPI_{t-1} + \pi_4 REM_{t-1} + \pi_5 TO_{t-1} + \pi_6 REXCH_{t-1} +$$

$$\sum_{i=1}^{k} \beta_{1j} \Delta UNEMP_{t-j} + \sum_{j=0}^{k} \beta_{2j} \Delta FDI_{t-j} + \sum_{j=0}^{k} \beta_{3J} \Delta FPI_{t-j} + \sum_{j=0}^{k} \beta_{4j} \Delta REM_{t-j} + \sum_{j=0}^{k}$$

$$\beta_{5j} \Delta TO_{t-j} + \sum_{j=0}^{k} \beta_{6j} \Delta REXCH_{t-j} + e_{1t} - - - - - (3.2)$$

Where: β_{1j} to β_{6j} = coefficients of the short-run parameters (where j= 1,2,3....n)

π_1 to π_6 = coefficients of the long-run parameters

Δ = first difference operator

K = lag order selected by Akaike's Information Criterion (AIC)

e_{it} = white noise assumed to be normally distributed.

Where: variables and terms remain as defined above.

Description and Justification of Variables

UNEMP = Unemployment rate. The percentage of the people in the labour force who are unemployed. The number of unemployed people expressed as a percentage of all the people who have jobs or are looking for one. Unemployment is the macroeconomic problem that affects people most directly and severely. The unemployment rate is the best available measure of underused labour resources (Marchiori *et al.*, 2011).

FDI = Foreign direct investment. FDI is the acquisition by the residents of a country of assets abroad. This may be done by sending money abroad to be spent on acquiring land, constructing buildings, mines, or machinery, or buying existing foreign businesses. Inward foreign direct investment similarly is acquisition by non-residents of real assets within a country. Once a country has real assets abroad, if these make profits, which are ploughed back into expanding enterprises, this should ideally be shown in the balance of payments as receipts on current account balanced by an outflow on capital account. With its orientation to developing enterprises directly, foreign direct investment helps to strengthen economic potential. Its activities will add a new and healthy element of increased competition to an economy, which is itself a powerful force for economic development. We expect a negative relation between FDI and UNEMP (Chigbu *et al.*, 2015).

FPI = Foreign portfolio investment. Foreign portfolio investment increases the liquidity of domestic capital markets, and can help develop market efficiency as well. As markets become more liquid, as they become deeper and broader, a wider range of investments can be financed. FPI can also help to promote development of equity markets and the shareholders' voice in corporate governance. FPI can help to strengthen domestic capital markets and improve their functioning. This will lead to a better allocation of capital and resources in the domestic economy, and thus a healthier economy. Open capital markets also contribute to worldwide economic development by improving the worldwide allocation of savings and resources. The anticipation is positive (Olotu and Jegbefume, 2011).

REM = Remittances. This can be defined as the money been transfer from a migrant worker to their families or individuals in their home countries. In many countries, remittance constitutes a significant portion of the GDP (up

to a third in some cases). It has implications that extend beyond individual finance because it is widespread. The anticipation is positive (Nkoro and Uko, 2012).

TOP = Trade openness is a measure of openness to international trade. TOP_t enters the model in accordance with the modern growth theory, which proposes that openness facilitates economic growth by enlarging markets of domestic firms; provide access to modern technology; and modern skills of management, when put together, enhance production and reduce unit costs of production. The openness variable (TOP_t) is defined as the ratio of the sum of imports to exports to GDP. The *trade-to-GDP ratio* is frequently used to measure the importance of international transactions relative to domestic transactions. The expectation is positive (Iloh, 2012).

REXCH = This is the real exchange rate. The rate at which the domestic currency is been exchanged for the foreign currency. The rate at which one country's real goods and services can be changed into those of another. If the home price level is p_h, the foreign price level is p_f, and the nominal exchange rate, measured as the home price of a unit of foreign currency, is e, the real exchange rate, r,is defined as $r = ep_f / p_h$. The anticipation is positive (Ifeakachukwu and Ditimi, 2014).

3.2. Justification of the Model

There are a number of co-integration approaches that can be applied to test for co-integration among time series variables (Gujarati, 2004). Some principal techniques to co-integration are Engle and Granger (1987) two-step residual base procedures and Johansen and Juselius (1990) Maximum likelihood reduced rank procedure. However, these two techniques require a certain degree of pre-testing to ensure that all the regressors are I(1). In addition, Engle and Granger (1987) and Johansen and Juselius (1990) techniques do not provide robust results in finite samples (Narayan, 2005).

This empirical research employs the ARDL / Bounds Testing methodology of Pesaran and Shin (1999) and Pesaran *et al.* (2001) which has a number of features that many researchers feel give it some advantages over conventional co-integration testing. For instance:

• It can be used with a mixture of order of integration of I(0) and I(1) data but cannot be used if any is I(2).

• It involves just a single-equation set-up, making it simple to implement and interpret.

• Different variables can be assigned different lag-lengths as they enter the model.

• It is best fitted in a small sample (Giles, 2013).

In other words, this procedure allows testing for the existence of a level relationship between a dependent variable and a set of regressors regardless of whether the underlying regressors are I(0), I(1) or mutually co-integrated. In addition, the ARDL approach of co-integration is unbiased and efficient. This is because it performs well even in small sample size. Furthermore, it estimates the long run and short-run components of the model simultaneously, removing problems associated with omitted variables and auto correlation (Narayan, 2005).

3.3. Estimation Procedure

All the equations shall be estimated by Ordinary Least Square (OLS), and autoregressive distributed lag (ARDL) model. However, the models cannot be estimated without first conducting unit root test to determine the order of integration of the variables. The order of integration will determine whether an ARDL technique will be appropriate. The reason is because the application of ARDL is only possible when the variables are either I(0), I(1) or mixture of I(0) and I(1).

We shall first conduct a co-integration test to ascertain the long-run relationship among the variables to achieve our objective. Testing for co-integration involves comparing the computed F-statistic with the critical bounds generated by Pesaran *et al.* (2001) - the upper critical bound $I(1)$ and lower critical bound $I(0)$. The null hypothesis H_o: $\pi_1 = \pi_2 = \pi_3 = \pi_4 = \pi_5 = 0$ of no co-integration is tested against the alternative H_o: $\pi_{1\neq} \pi_{2\neq} \pi_{3\neq} \pi_{4 \neq} \pi_5 = 0$ of co-integration. The series are co-integrated if the computed F-statistic exceeds the upper critical bound

(UCB); and not co-integrated if the computed F-statistic lies below the lower critical bound (LCB). If the computed F-statistic falls between the UCB and LCB, the test is uncertain. For co-integration to be established under ARDL the series should be either I(1) or I(0) and in the absence of this, we shall use a different co-integration approach. In the second step, once co-integration is established, the ARDL long-run models can be estimated.

$$UNEMP_t = \alpha_0 + \sum_{i=1}^{n} \Omega_i UNEMP_{t-i} + \sum_{i=0}^{m} \Psi_i InFDI_{t-i} + \sum_{i=0}^{p} \delta_i InFPI_{t-i} + \sum_{i=0}^{q} \varphi_i InREM_{t-i} +$$

$$\sum_{i=0}^{r} \vartheta_i InTO_{t-i} + \sum_{i=0}^{x} \partial_i InREXCH_{t-i} + \omega_t ----- (3.3)$$

Where all variables are as previously defined. The orders of the lags in the ARDL model are selected by Schwartz Bayesian criterion (SBC) that uses the smallest possible lag. For annual data, Pesaran and Shin (1999) recommend choosing a maximum of two lags. From this, the lag length that minimizes SBC is selected.

In the third and final step, this study obtains the short-run dynamic parameters by estimating an error correction model associated with the long-run estimates. This is specified as follows;

$$\Delta UNEMP_t = \beta_0 + \sum_{i=1}^{n} \beta_1 \Delta UNEMP_{t-i} + \sum_{i=0}^{n} \beta_2 \Delta InFDI_{t-i} + \sum_{i=0}^{n} \beta_3 \Delta InFPI_{t-i} + \sum_{i=0}^{n} \beta_4 \Delta InREM_{t-i} +$$

$$\sum_{i=0}^{n} \beta_5 \Delta InTO_{t-i} + \sum_{i=0}^{n} \beta_6 \Delta REXCH_{t-i} + \lambda ECM_{t-i} + \mu_t ----- (3.4)$$

Where: $\beta_1, \beta_2, \beta_3, \beta_4 \beta_5, and \beta_6$ are the short-run dynamic coefficients of the model's convergence to equilibrium. ECM_{t-i} is the error correction term resulting from the verified long-run equilibrium relationship and λ is a parameter indicating the speed of adjustment to the equilibrium level after a shock.

The optimal lag length of the model shall be determined by the Schwarz Information Criteria (SIC). This is because of its superior performance in small sample (Lutkepohl, 2005). After estimating the models, they shall be subjected to some series of diagnostic tests.

3.4. Diagnostic Tests

To ensure that the correct statistical methods are applied to the models, the pre-requisite test of Augumented Dickey Fuller (ADF) unit root tests shall be applied to determine the order of integration for each series. We shall also conduct normality test, stability test, serial correlation test and specification error test. The jarque – Bera statistic, cumulative sum (CUSUM) and cumulative sum of squares (CUSUMQ) tests, Breush – Godfery LM test Statistic and Ramsey's Reset test Statistic shall be applied to conduct these tests respectively.

3.5. Data and Source

The paper uses secondary data from 1977 – 2013. The data were obtained from the Central Bank of Nigeria Statistical Bulletins 2014, the National Bureau of Statistics publications and World Bank Development Indicators. The econometric software used for the analysis of this work is Eviews. 9 version.

4. PRESENTATION AND ANALYSIS OF RESULTS

4.1. Pre-Estimation Results

4.1.1. Unit Root Test Result

It is pertinent to verify the stationarity property of the variables before employing the use of ARDL bounds test approach in order to ward-off the generation of spurious regression. The test is carried out to know whether

the mean value and variances of the variables are time invariant that is constant over time, in other words fixed over time. The unit root test for stationarity is applied using the Augmented Dickey Fuller (ADF) test at 5% critical value and the null hypothesis being that the series has a unit root if the t-statistics is less than the critical value at 5%, otherwise the study reject it. Following Lutkepohl (2005) the Schwarz Bayesian Criterion (SBC) performs better than other information criteria because it uses the small lag length and is hence qualified as the most parsimonious model. Therefore, in order to determine the maximum lag length of this study, SBC will be used at 5% level of significance. The summary of the ADF unit roots result, using SBC for the variables are reported in table 4.1.

Table-4.1. Unit Root Test Result summary

Variables	ADF stat at level	crit.value at 5%	ADF stat at first difference	crit.value at 5%	Order of Integration
LGFDI	–0.882176	–3.443450	–6.634349	–3.443450	I(1)
UNEMP	–2.480028	–3.540328	–5.802247	–3.544284	I(1)
LFPI	–5.038773	–3.441111	–	–	I(0)
LGREM	–2.898426	–3.441330	–12.09447	–3.441777	I(1)
LGTO	–1.338649	–3.442712	–7.269080	–3.440894	I(1)
REXCH	–2.293807	–3.442712	–8.004617	–3.441552	I(1)

Source: Authors' Compilation from Eviews' Output

From table 4.1, it can be observed that LGRGDP, UNEMP, LGFDI, LGREM, LGTO and REXCH were stationary at first difference while FPI was integrated at level. This means that these variables were integrated of order zero and order one; I(0) and I(1). None of the variables is I(2). The variables were tested basically at 5% critical value but all the variables were stationary at the three critical values of 1%, 5% and 10%. The results obtained from ADF test fulfilled the underlying conditions required for ARDL bound testing proposed by Pesaran *et al.* (2001) instead of the conventional Johansen and Juselius (1990) co-integration method. To this effect, the co-integration estimation will be done under ARDL bound framework to test the sufficient condition for the error correction model after satisfying the stationary requirements.

4.1.2. Co-integration Test

Co-integration refers to the existence of a long-run equilibrium between two or more times series variables, which are individually non-stationary at their form (Gujarati *et al.*, 2012). In order to confirm if the adopted models have empirically meaningful relationships, the co-integration check becomes indispensable. This is evident in our variables above which have been integrated of order zero [I(0)] and order one [I(1)], confirming to the sufficient condition for ARDL-Unrestricted Error Correction Model (UECM).

Table-4.2. ARDL-bound Co-integration Test Result Summary for UNEMP

Test statistic	Value	K	Level of Significance	Bound critical values I(0)	I(1)
F-statistic	6.190984	5	1%	3.41	4.68
			5%	2.62	3.79
			10%	2.26	3.35

Source: Researchers' computation from Eviews' results

From table 4.2 above, the calculated F-test statistic is compared with the lower bound [I(0)] and upper [I(1)] bounds values of Pesaran *et al.* (2001) at 5% level of significance. It is deduced that, the F-statistic is greater than its corresponding bound critical values, (that is /6.190984/ > /2.62 and 3.79/) at 5% critical level. Hence, this implies rejecting the null hypothesis of no co-integration to conclude that there exists a long run relationship between unemployment and foreign capital inflows in Nigeria. Furthermore, the variables that is FDI, FPI, REM, TO and REXCH have long run association, this means that all the variables move together in the long run.

4.1.3. Serial Correlation Test

Table-4.3. Breush – Godfery LM test Statistic

Model	*F*-Statistic	Prob. Value	Percentage (%)
UNEMP	0.122362	0.8726	87.26

Source: Researchers' computation from Eviews' results

UNEMP: The p-value of the *F*-statistic (0.8726) is greater than the significance level that we are testing, (i.e. 5%). Hence, we accept the null hypothesis and conclude that there exists no serial correlation of the error terms in this model with a significant probability values of 87.26%.

4.1.4. Stability Test Summary

The stability of the model was tested using the cumulative sum (CUSUM) test and cumulative sum (CUSUM) of squares test. The tests (as shown in figures 3 and 4) confirmed the model to be stable as their blue lines were within the two red lines of the CUSUM and CUSUM of squares stability test.
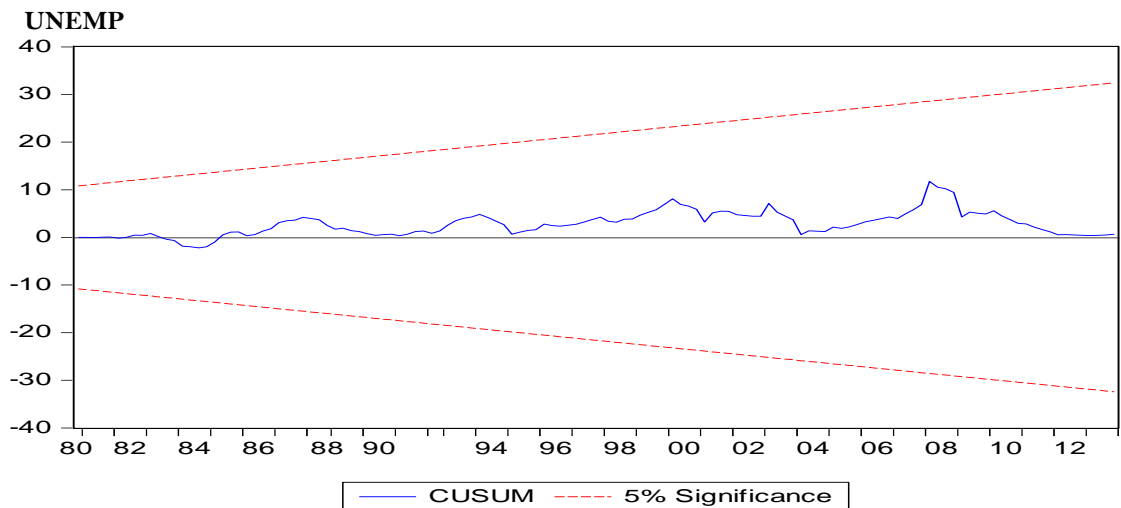

Figure-3. Graphical result of CUSUM test for UNEMP
Source: Authors' Compilation from Eviews' Output
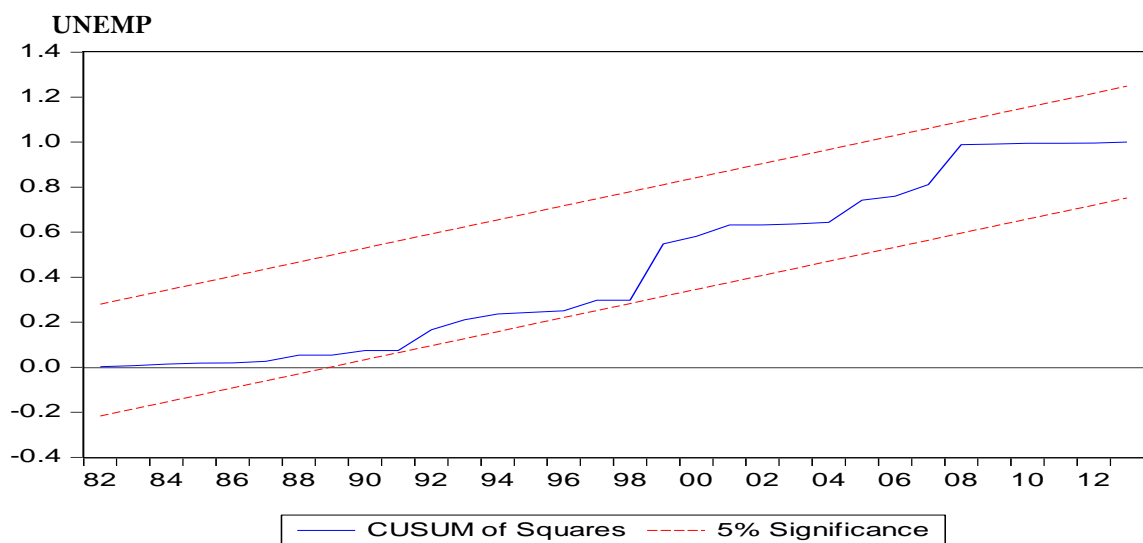

Figure-4. Graphical result of CUSUM of squares test for UNEMP and RGDP
Source: Authors' Compilation from Eviews' Output

4.2. Presentation of Regression Results and Interpretation

4.2.1. Model Estimation and Interpretation

Table-4.4. Results of ARDL (3, 1, 2, 0, 2, 1) Long run model selected on AIC.

Dependent variable = UNEMP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.295748	0.779052	0.379625	0.7048
LGFDI	-0.947969	0.338328	-2.801921	0.0059
LFPI	-0.210992	0.101945	-2.069662	0.0405
LGREM	0.049435	0.047775	1.034745	0.3027
LGTO	-0.934936	0.926272	-1.009354	0.3147
REXCH	0.097774	0.012324	7.933574	0.0000
R-squared = 0.858830			*F*-Statistic = 169.1263	

Source: Researchers' computation from Eviews' results

From the result in table 4.4, the R^2 is 0.858830, implying that the model explains about 86% of the total variation in unemployment (unemp). The coefficient (C) is estimated to be 0.295748, which implies a positive relationship between unemployment and foreign capital inflows (FDI, FPI, REM, TO, REXCH), meaning that without the influence of the independent variables, on the average, unemployment will increase by about 0.29%, with a positive and statistically insignificant t-statistic value of 0.379625. The coefficient of LGFDI is about -0.947969, meaning that holding other variables constant, a percentage increase in foreign direct investment (FDI) inflows reduces unemployment by about 0.95%. Its t-statistic is -2.801921 showing that it is statistically significant. This is justified by the presence of technology transfers and technological advancements, mechanized system of operation and industrial upgrading (that originates from multinational companies) in Nigeria. These technological advancements can support job creation if well managed. It is also shows that technology has encouraged and increased the international inflow of investment, modern management, and an expanded access to global markets. Hence, leading to reduction in unemployment rate in Nigeria. This findings partially support the results of Chaudhuri (2001); Manash (1999) and Giovanna (2007).

In the same vein, the coefficient of LFPI is -0.210992, meaning that, on average, a percentage increase in foreign private investment (FPI) reduces unemployment by about 0.21%. Its t-statistic is -2.069662 meaning that it is statistically significant. Essentially, this reveals that when foreign portfolio investment are allowed into the country, it creates opportunities for local business expansion since more firms can easily access foreign finances that will lead to more business expansion and employment generation. This is also in agreement with a priori expectation.

The coefficient of LGREM is 0.049435, which entails that over the period of study, a percentage increase in remittance inflows (REM), on average, is associated with about 0.04% rise in unemployment. However, its t-value is statistically insignificant at 1.034745. As it were, this positive relationship could be attributed to the fact that developing countries continue to face major challenges owing to the high shares of workers that are underemployed, poorly paid, have vulnerable job conditions and lack access to any form of social security. A large and sustained remittance inflow may have an adverse impact on unemployment rate due to reduction in labour force participation which results in total dependence on consumption remittances.

Furthermore, the coefficient of LGTO is -0.934936. This reveals that a percentage increase in trade openness (TO) reduces unemployment by about 0.93%. However, the t-statistic value of -1.019632 shows that the impact is not statistically significant. Fundamentally, this result shows that global interaction has promoted a competitive environment in Nigeria. This also encourages innovation by corporations and more absorption of the labour force in such organizations, thereby reducing unemployment in Nigeria. Finally, REXCH coefficient is 0.097774. It shows that a unit increase in REXCH brings about a 0.10% statistically significant increase in unemployment in Nigeria.

This clearly shows that when foreign exchange transactions moves against the naira, businesses find it difficult to import relevant raw materials for productive activities. Subsequently, this can lead to loss of jobs in the country.

4.3.3. Error Correction Mechanism for the Chosen ARDL Models

Table-4.5. Results of ARDL (3, 1, 2, 0, 2, 1) ECM model selected on AIC.

Dependent variable = UNEMP

Variables	Coefficients	Std. Error	t-Stat	P-value
D(UNEMP(-1))	0.494688	0.074122	6.673929	0.0000
D(UNEMP(-2))	0.117130	0.055157	2.123569	0.0356
D(LGFDI)	–0.124729	–0.048383	-2.577935	0.0111
D(LFPI)	–0.071966	0.050069	-1.437350	0.1530
D(LGREM)	0.049435	0.038419	1.286716	0.2005
D(LGTO)	0.753919	0.538959	1.398844	0.1642
D(REXCH)	0.144499	0.011492	12.573544	0.0000
D(REXCH(-1))	–0.060141	0.015332	-3.922539	0.0001
ECM (-1)	-0.118871	0.024951	-4.764159	0.0000
R-squared 0.992532	Durbin-Watson stat 2.034711	Prob(F-statistic) 0.000		

Source: Authors' Compilation from Eviews' Output

The error correction model ECM (-1) measures the speed of adjustment of the model towards equilibrium from the short run shocks. The lagged coefficient of the ECM is negative (-0.118871) and t-statistic value (-4.764159) is also statistically significant (with p-value of (0.0000) less than 5%). This also confirms the existence of long run relationship among the variables. This means that if unemployment is at disequilibrium, it converges back to equilibrium at an average speed of about 12% (-0.118871*100) every quarter in Nigeria. We can also say that about 12% of disequilibrium from shocks of previous years in unemployment converges back to long run equilibrium every quarter in Nigeria. Hence, the whole system will get back to equilibrium, long run equilibrium at the speed of about 12% quarterly.

5. CONCLUSION AND POLICY RECOMMENDATIONS

This study has investigated and elaborated on the empirical issues pertaining to the impact of foreign capital inflows on unemployment in Nigeria using quarterly data from 1977 to 2013. Thus, the study modeled unemployment against foreign capital inflow variables with trade openness and real exchange rate as control variables; It further used ARDL / Bounds Testing methodology of Pesaran and Shin (1999) and Pesaran *et al.* (2001) approach to determine the long run relationship between foreign capital inflows (FDI, FPI and REM), and unemployment in Nigeria. The results show that, there exists a long run relationship between foreign capital inflows and unemployment in Nigeria over the sample period. Also, foreign capital inflow variables such as foreign direct investment (FDI) and foreign private investment (FPI) have negative and statistically significant impact on unemployment in Nigeria, while remittances (REM) has positive but statistically insignificant impact on unemployment in Nigeria. Trade openness (TO) was found to have negative and statistically insignificant impact on unemployment, while REXCH has a positive and statistically significant impact on unemployment in Nigeria.

In view of the findings above, this study recommends that the federal government should create an enabling environment in Nigeria to encourage more inflow of foreign investments such as foreign direct investment and foreign portfolio investment. This will support job creation and reduction of unemployment in the local economy. Also, remittance inflows should be handled in proactive measures that can be helpful towards investment/ business creation rather than mere consumption purposes. When citizens are only interested in consuming their remittances, that desire to engage in meaningful productive activities will not be there and people will not also be interested in using their funds to establish businesses that will employ others. Furthermore, the routing of remittances through

the banking channels would help in allocating remittances and other financial flows to productive uses. Finally, the government should enact investor-friendly policies and also favourable incentives should be given to more foreign investors to come in and support the government in her job creation efforts. Generally, local economic policies should make the economy investment-friendly since foreign investments have tendency of reducing unemployment and ultimately growing the economy.

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