

Employment and International Trade Flows In Nigeria: VECM ANALYSIS

David UMORU

Department of Economics, Banking & Finance, Faculty of Social & Management Sciences,
Benson Idahosa University, Benin City, Nigeria

Email: udavidson2000@yahoo.com, Mobile: +2348033888414

Abstract

The study attempts to rationalize the impact of international trade flows on employment generation in Nigeria within the framework of the vector error correction model. The study found that the volume of international trade has no significant positive impact on employment generation in Nigeria. Indeed, the recent empirical evidence is that of a significant negative employment effect of total trade volume in Nigeria. This could be as a result of the SAP-induced trade liberalization forced on the country by the IMF and World Bank as a pre-condition for loan procurement and possible debt cancellation. Besides, the employment effect of trade liberalization is insignificant and negative as well in this study. It is therefore imperative for Nigeria to make her export competitive by broadening the horizons of production and reduce her volume of importation in order to make the negative trade balance positive.

Key words: Employment, unemployment, VECM, trade theories, Nigeria

1. INTRODUCTION

The desire to expand productive employment is the core of any nations' macroeconomic policies geared towards poverty reduction. This is because in many developing nations, unemployment¹ and underemployment have been found to be major causes and consequence of widespread poverty. In spite of its role of employment, the implementation of policies on employment creation in many developing countries has not yielded much impact as there is a wide gap between the jobs available and the number of job seekers actively seeking work in most poor nations [Adebayo and Ogunrinola (2006), Hill et al. (2008)]. The challenges of globalization and economic liberalization have brought about new realities having uncertain implications for employment creation in many developing nations like Nigeria [Lall (2004), Lee and Vivarelli (2004), Kareem (2010), Ogunrinola and Osabuohien (2010)]. Nigeria has experimented two distinct trade regimes, namely, restricted trade and the open that is liberalized trade regimes. According to Kareem (2010), the philosophy of controlled trade regime embodied a regime of regulation that has both direct and indirect instruments of control in the conduct of foreign trade and payments. This is to achieve efficiency in the face of market failure [Messerlin (1995), Olomola (1995), Jenkins and Sen (2006)], as the condition for competitive equilibrium is not satisfied. The proponents of the open regime often

¹ High rate of unemployment, slow growth rates and widespread poverty among other miseries are the order of the day in most developing countries of the world including Nigeria.

argue that openness enhance the growth prospect of the participating countries [Krugman, (1986)]. In recent years, the negative pressure which the volatile capital market of the advanced capitalist economies exerts on the developing countries has given rise to counter opinion which supports the negative aspects of openness and questions are being asked as to whether developing countries actually share in its benefits. Thus, it becomes an issue of great relevance to investigate whether increased international trade in Nigeria has had any significant impact on employment growth in Nigeria.

The research problem can be stated thus: rising imports may generate a decline in employment if it leads to a decrease in the demand for the country's domestic output. In addition, employment will fall if rising import rate eliminates low productivity firms through import competition. However, one can expect a positive employment effect if a significant portion of the imports constitute labour-intensive inputs. Conversely, it is also expected that countries which have rising export rate might witness a rapid increase in employment implying that there may be a positive correlation between employment and export rate. A negative relationship can as well be obtained under the following conditions. First, Nigerian is an oil rich country and might be affected by the *resource curse or Dutch disease* phenomenon [OECD (1992), Olomola (1995), Hausman and Rigobon (2002)], which might make the relationship between exports and employment to be negative. Intensive exportation of her oil resources might make the real exchange to appreciate strongly, which in turn might make exports to be expensive, unprofitable and therefore globally uncompetitive. This might lead to decline in traditional exports which consequently lead to declining employment in these sectors. Also, one can obtain a negative relationship if the increase in exports is due to increased out of the country border's reprocessing which leads to a declining domestic production.

In Nigeria, despite the implementation of trade liberalization measures and despite the persistent signs of economic recovery as seen from reduction in external debt and debt service payment, some macroeconomic indicators show poor performances of the overall economy. For instance, the economy has been characterized by low degree of savings accompanied by liquidity trap, capacity underutilization and low rate of capital formation [Mussa (1978), Milner and Wright (1998), Kareem (2010) and Yusuf (2000)]. This poor situation reflects more the rate of unemployment in the country. The conventional arguments in support of and against international trade are no doubt convincing, but the empirical evidence is yet to be typical especially in Nigeria. Indeed, several empirical studies have been done to examine the relationship between employment and trade in developed than in the developing countries. Rather, what is most commonly embarked upon in the developing world is the impact of unemployment on macroeconomic variables. This provided the motivation for this study. Apart from bridging the observed lacuna, this study was also spurred by the need to provide definitive recommendations for policy as the Nigerian government despite interludes of protectionism has remained committed to trade liberalization as evidenced by the recent announcement of new incentives for export. Unemployment exists in the absence of trade, but trade reform may smooth or exacerbate the unemployment problem depending on its effect on

the relative demand for different types of workers [Kareem (2010)]. From the above, we noticed that the effect of each of the explanatory variable cannot be predicted a priori because they have taxonomic effect on employment. In effect, the relationship between employment and trade flows would be an empirical one. The objective therefore is to empirically examine the impact of total international trade volume on employment generation in Nigeria. The paper is organized into eight sections. Following the introduction is a trend analysis of employment and trade in Nigeria. Subsequent to the literature reviewed are the theoretical framework, empirical model and methodology. Results and conclusion are reported respectively in the last sections.

2. EMPLOYMENT AND TRADE IN NIGERIA: A TREND ANALYSIS

Nigeria has a huge employment problem. Available statistics show that from 1981 to 1985, average growth rate of unemployment was as high as 5.3% while the labour force is given as 28.6 million, out of an active population aged 15 to 64 of about 40 million which amounts to an average participation rate of 68.6% [Ogunrinola (1991)]. The rate of unemployment was 12% in 2005; it rose to 19.7% in 2009 while the rate of underemployment hovered around 19% in 1998 [Adebayo and Ogunrinola (2006)]. Among the youths in the 15-24 age cohorts, the rate of unemployment is over 40% [National Bureau of Statistics (2010)]. Thus, the issue of real output and employment growth in Nigeria is a sine qua non for poverty reduction and a more equitable income distribution [Fofana (2001)].

The share of employed in total labour force is given as 71.7%, which indicates that about 28.3% of the active population are unemployed in this period. These are indication of employment problem. In 1986 to 1990, there was a rise in both labour force and active population to an average value of 32.4 million and 45.5 million respectively. In addition, labour force participation rate in this period was as high as that of the period between 1981 and 1985 recording an average value of 68.3% compared to 68.6% in 1981 to 1985. However, employment growth rate did not commensurate with both the increase in labour force and active population as average employment growth rate fell from 2.2% in 1981 to 1985 to 1.3% in 1986 to 1990 [WTO (2006)]. Also, the share of employment in labour force rate fell from 71.7% in 1981 to 1985 to 66.9% in 1986 to 1990 despite the rise in both labour force and active population in this period. All of these are indicative that the economy could not absorb the high surplus labour recorded in the period. Appendices A1 and A2 further provide a quick snap at the labour market characteristics and trade statistics of the country.

However, the encouragement of greater employment opportunities in the private sector was implemented with organizational downsizing via the introduction of *Structural Adjustment Programme (SAP)* which led to the continual retrenchment of staff and placement of embargo on employment in the public sector. This generated short-run frictional and structural unemployment problems. The net effect from these two scenarios is negative and significant decrease in the average growth rate of employment from 2.2% in 1981 to 1985 to 1.3% in 1986 to 1990 [Okuneye et al (2001)]. The *SAP* adopted in 1986 and its emphasis on privatization led to the establishment of the *National Directorate of Employment [NDE]* whose primary role is to generate employment

opportunities, *National Poverty Alleviation Programme [NAPEP]* (which has as one of its objectives, youth empowerment and employment) and *National Economic Empowerment and Development Strategy [NEEDs]* which focuses on employment generation. In spite of these developments, there was an increase in both labour force and active population but a decrease in share of employment in labour force from an average value of 66.9% in 1986 to 41.1% in 1991 indicating that about 25.8% of the labour force is unemployed in the period. Between 1996 and 2000, employment increased to an average value of 26.5 million, but average employment growth rate again fell drastically to 2.0%. This implies that employment in nominal terms is increasing at a decreasing rate. The huge employment problem is however evident as the country's average unemployment growth rate remains as high as 4.0% and the country's share of employment in labour force fell to 62% from the previous period, implying that about 38% of the labour force is unemployed in the period. The period 2001 to 2006 witnessed an increase in average both labour force and active population to 49.3 million and 71.5 million respectively but a decline in the participation rate to 66.4% [Kareem (2010)]. However, the capacity of the country to absorb the increased labour force was still weak as the period also recorded a rise in the average unemployment growth rate of 4.9%.

3. LITERATURE REVIEW

Numerous authors have examined the relationship between trade flows and productivity, growth and employment. These include, Krugman (1986), OECD (1992), Messerlin (1995), Rodrik (1997), Bernard et al. (2006), Rattso and Torvik (1998), Morawczynski and Wach (2004), Christev et al. (2005) etc. Krugman (1986) empirically ascertained that the elasticity of demand for labour is higher with greater openness when there is imperfect competition. An OECD (1992) study used the growth accounting methodology to investigate the link between trade and employment and concluded that between 1970 and 1985 trade was a net source of employment gains. Messerlin (1995) found that the estimated net impact of trade on total employment is very small and positive for most of the period examined, though the effect was negative during the economic expansion of 1988 to 1999 and that French unemployment is more related to macroeconomic factors, policies, poorly functioning labour and product markets than to foreign trade. Rodrik (1997) ascertained that international trade generates increased output demand or productivity growth which in turn makes the demand for labour more elastic. This induces employment and wage shocks. Rattso and Torvik (1998) analyzed the employment effect following the liberalization of trade in Zimbabwe in the early 1990s and capture the economy-wide interaction using a *computable general equilibrium (CGE)* model. He found that opening up of trade led to a contraction in output and employment, an accompanying sharp increase in imports and a rising trade deficit. Morawczynski and Wach (2004) found empirical evidence import growth negatively affect employment changes in the 28 sectors of Poland economy between 1993 and 1999. This is in addition to an insignificant positive link between export growth and employment. Bernard et al. (2006) argued that trade reforms will lead to both job creation and job destruction in all sectors when there is imperfect competition because both net exporting and net importing sectors would be characterized by expanding high productivity firms and low productivity firms that shrink or close down. The bulk of empirics on employment and trade flows have generally found that trade have

little links with employment generation [Hill et al. (2008)].

Recently, a number of empirical studies have investigated the effects of trade flows on labour demand elasticities [Bruno et al. (2001), Slaughter (2001), Krishna et al. (2001)]. Slaughter (2001) found that both elasticity of labour demand and trade has increased over time. He however ascertained no robust linkage between them. Onwioduokit (2006) examined the link between unemployment and several macroeconomic variables in Nigeria and found that ‘the shift in the composition of unemployment in Nigeria since 2000 is very instructive as it has brought to the fore the inadequacies of the received theory towards explaining the unemployment phenomenon in the country. Oladeji (1987) investigated the issue of graduate unemployment in Nigeria while Borisade (2001) examined the structure of educational system and employment relationship in Nigeria. Both conclude that a re-orientation of the educational system towards the employment needs of the economy would go a long way towards promoting productive employment in Nigeria. Swane and Vistrand (2006) examined the *GDP*-employment growth relationship in Sweden. Using the employment-population ratio as a measure of employment generation, the study found a significant and positive relationship between *GDP* and employment growth.

Jenkins and Sen (2006) examined the impact of trade flows and foreign investment on employment in four developing countries. Their empirical evidence has it that the economic integration of Bangladesh and Vietnam has brought about significant increase in the number of unskilled jobs, job creation in response to greater openness has been minimal in Kenya and South Africa with job creation biased towards more skilled workers and that for a given level of output, trade appears to have led to a significant fall in employment in South Africa and Kenya. Christev et al. (2005) found that trade is a factor of some but of minor importance in the determination of aggregate job flows. Over time, industries reallocate jobs faster as they become more exposed to trade and competition in *EU* markets. In addition, while sectors which engage in more trade with the rest of the world show increased job destruction rates, trade with Commonwealth of Independent States (CIS) decreases job destruction with net employment growth occurring only in sectors that maintain strong trade ties in the CIS. Sen (2008) analyzed the effect of international trade on manufacturing employment in India for the period 1975 to 1999 and found that the overall effect of international trade on manufacturing employment has been minimal. Kareem (2009) found no significant link between trade flows and employment in Nigeria both in the short-run and long run.

4. THEORETICAL FRAMEWORK

Trade-employment nexus is what has been theorized in the vent for surplus theory [Myint (1958), new trade theories (*NTTs*) [Fitzgarald and Perosino (1995), Krishna et al. (2001), Lall (2004)] and surplus labour theory [Lewis (1954)]. Earlier debate on the role of trade in labour market outcomes is based in the Heckscher-Ohlin theorem which holds that there is always full employment. Hence, international trade will only lead to a reallocation of labour across sectors of the economy. In view of the Walrasian general equilibrium framework, price flexibility is the key factor in the correction

of any labour market disequilibrium. Indeed, the flexible ruling market price plays a role in the system-wide market clearing equilibrium. No wonder in the classical labour market, shortages or surplus of labour is dealt with by wage movement. Theoretically, the incidence of involuntary unemployment in the Keynesian framework of labour market unemployment is removed from the classical labour market. However, at the ruling market clearing wage, unemployment that exist is the voluntary and frictional types [Brecher (1974)]. Given this assumption, the issue of trade-employment nexus remains an empirical puzzle. However, some developing countries such as Nigeria are characterized by the Lewis methodological framework of surplus labour. To this extent, trade might have some implications for aggregate employment. Also, new trade theories (*NTTs*) do not assume full employment and hence, trade might have impact for aggregate employment.

The driving force of the *NTTs* is that economies of scale lowers firm's marginal costs and increases firm's sales in both domestic and foreign market and hence increases each firm's demand elasticity of goods leading to increased demand for labour [Krugman (1986), Naylor (1997) and Slaughter (2001)]. The vent for surplus theory [see Myint (1958)] posits that developing countries are characterized by *unproductive surplus labour, surplus land and natural resources which are idle and thus unproductive* and they can be brought into productive uses by opening up to trade or intensifying trade relations. In effect, international trade can serve as a vent for surplus as it creates new effective demand for the output of surplus resources which would otherwise remain unused. Hence, given Nigeria's surplus resources, increased trade can serve as a vent for generating more demand for labour. The relationship between trade and employment in each economy can also be explained by the economy's capability measured in terms of national endowments and institutional policies [Lall (2004)]. Corden and Neary (1984) segregated the impact of *natural resource revenue* often referred to as the *Dutch disease effect* into the *resource movement effect* and the *spending effect*. Thus, subsequent to the increase in natural resource revenue, part of the increased income will be spent on non-tradable good. The increase in the demand for non-tradables will lead to a corresponding increase in the price of non-tradable sector output relative to the tradable sector output, whose price remains fixed exogenously [Hausman and Rigobon (2002)]. According to Fofana (2001) and Slaughter (2001), the convention theory is that the relative prices increase of non-tradable goods is equivalent to an appreciation of a nation's exchange rate; the appreciation of the exchange rate coupled with the increase in tradable sector prices renders non-boom export products less competitive in the world market [Hill et al. (2008)]. This in effect leads to movement of labour away from both non booming tradable exports sectors and booming tradable sector to the non-tradable sector if labour is mobile, thus forcing manufacturing and booming sectors to raise their wages as well [Sachs and Warner (2001)]. Once these manufacturing sectors cannot compensate by raising their prices, the net effect is that their profits will collapse and will have no option other than to downsize. This phenomenon has been termed *spending effect* [Corden and Neary (1984) and Baland and Francois (2000)].

5. EMPIRICAL MODEL

The empirical trade-employment model has its root in the Lewis model of surplus labour, vent for surplus labour and the new trade theories of absence of full employment [Lewis (1954), Myint (1958) and Lall (2004)]. Given that the study objective is to estimate the impact of the total volume of international trade flows on employment generation in Nigeria, we therefore specify the error correction model to capture the lag effect involved in international trade transactions between Nigeria and her major trading partners. Thus, the *ECM* is specified as follows:

$$\Delta \text{Log}F_t = \gamma + \sum_{i=1}^S \delta_i \Delta \text{Log}F_{t-i} + \sum_{j=1}^F \alpha_j \Delta \text{Log}Z_{t-j} + \theta ECT_{(t-1)} + \zeta_t \quad (3.1)$$

$ECT_{(t-1)}$ are the lagged stationary residuals from the co-integration equations, F_t is the dependent variable, Z is a vector of explanatory variables, γ is the regression intercept, δ_i , and α_j are the coefficients of variables and θ is the coefficient of the error correction term. Include in the model for estimation, is a vector of control variables that determine aggregate employment as proxied by labour force participation (*LFP*) in Nigeria. These are total international trade volume (*TTV*), foreign direct investment (*FDI*), real wage rate (*RWR*) as proxied by wages of the manufacturing industries and trade liberalization (*TLZ*) which captures the impact of *SAP* that was implemented in Nigeria in 1986. The impact of trade liberalization on employment is measured by a dummy variable which takes the value of one in 1986 till date and zero otherwise.

6. EMPIRICAL METHODOLOGY

The paper utilized the unit root, co-integration and error correction modeling. This is to ascertain the order of integration of the variables in the study in order to avoid spurious empirical results. Methodologically, the co-integration procedure demands that we conduct unit root test before co-integration and *ECM* estimation. We utilize the *Dickey Fuller* and hence the *Augmented Dickey Fuller* tests [see Dickey and Fuller (1979), Dickey et al (2006)]. The unit root test entails regressing the following type of equation:

$$F_t = \phi F_{t-1} + v_t \quad (3.2)$$

With the restriction that $[-1 \leq \phi \leq 1]$. Note that is the employment variable. A time series is non-stationary if mean and variance of the time series is depend over time. On the other hand, a time series is stated as stationary if the mean and variance is constant over time. Empirically, most economic time series are non-stationary and only achieved stationary at the first difference level or at a higher level. In the main, unit root test involves the test of *stationarity* for variables used in regression analysis. The importance of *stationarity* of time series used in regression borders on the fact

that a non-stationary time series is not possible to generalize to other time periods apart from the present. This makes forecasting based on such time series to be of little practical value. Moreover, regression of a non-stationary time series on another non-stationary time series may produce spurious result. The unit root test is thus conducted under the null hypothesis that:

$$H_0 : \rho = 1$$

$$H_1 : \rho < 1$$

The test procedure is that employment has a unit root or at best is non-stationary when $\zeta = 1$. However, if employment should become stationary after differencing, then it is integrated of order D , where D is the number of times it was differenced before becoming stationary. Equation (3.1) can be further modified, that is augmented with s -lagged changes in employment as an additional regressor if the error desecrates the zero mean and unit variance conjecture. The modified, that is, *ADF* equation is given as:

$$\Delta F_t = \omega + \beta t + \rho F_{t-1} + \sum_{j=1}^s \lambda \Delta F_{t-j} + v_t \quad (3.3)$$

Where Δ is the mathematical difference operator; we utilize the *Schwarz Bayesian Criterion (SBC)* information criteria for ascertaining the optimal specification of equation (3.3). The appropriate order of the Augmented Dickey Fuller model was determined by estimating the *ADF* model over a selected grid of values of the number of lags k and thereafter finding that value of s at which the *SBC* attains its minimum. In what follows, we adopt the McKinnon (1991) critical values for the *ADF* test given that it statistic is non-standard. Supposing employment and trade are non-stationary in levels, both variables can be integrated given that their differences are stationary. By econometric intuition, employment and trade can be co-integrated once their linear combination is stationary and this indeed portrays long-run linear correlation. Thus, the co-integration test examines the long-run equilibrium relationships between variables of interest. The paper utilizes the Johansen Maximum Likelihood (*JML*) technique in testing the co-integration between employment and trade. The rationale for choosing the *JML* is that it has the capability of ascertaining and estimating more than one co-integration relationships simultaneously. The *JML* methodology uses the trace statistic and the maximum eigenvalue statistic. To estimate the trace and maximum eigenvalues, we estimated a vector error correction model:

$$\Delta F_t = A_0 + A_1 + \Pi F_{t-s} + \sum_{i=1}^s A \Delta F_{t-i} + \mu_t \quad (3.4)$$

Given that the long-run equilibrium correlation between employment and trade is determined by the rank of Π denoted by r , it thus follows that if $r = 0$, equation (3.4) collapses to a *VAR* model with the implication that employment and trade have no co-integrating relationship. Thus, if $0 \leq r \leq N$, the rank of Π will be given by:

$$\Pi = \omega \phi' \quad (3.5)$$

Where ϖ measure the strength of co-integrating relationship and φ is the co-integrating vector. In essence, the presumption is that both variables of employment and international trade flows are integrated of order one. Under this methodological framework, the maximum likelihood was used to estimate the parameters $[A_0, A_1, A_2, \dots, A_{S-1}, \Pi]$. The estimation procedure entails regressing ΔF_t on $\Delta F_{t-1}, \Delta F_{t-2}, \Delta F_{t-3}, \dots, \Delta F_{t-S+1}$ and obtain the regression residuals denoted by $\hat{\mu}$. Adopting the same method, we obtain the regression of the residuals, \hat{v}_t . Given the estimated residuals, the variance-covariance matrices are computed as in the following equations:

$$\sum_{\hat{\mu}\hat{\mu}_t} = \left(\frac{1}{N}\right) \sum_{t=1}^N \hat{\mu}_t \hat{\mu}_t' \quad (3.6)$$

$$\sum_{\hat{v}\hat{v}_t} = \left(\frac{1}{N}\right) \sum_{t=1}^N \hat{v}_t \hat{v}_t' \quad (3.7)$$

The ma-eigenvalue statistic and the trace statistic can now be respectively estimated as:

$$\lambda_{\text{max-eigenvalue statistic}}(r) = -N \text{Log}(1 - \hat{\lambda}_{r+1}) \quad (3.8)$$

$$\lambda_{\text{trace statistic}} = -\left(\frac{Nn}{2}\right) \text{Log}(2\Pi) - \left|\frac{Nn}{2}\right| - \left(\frac{Nn}{2}\right) \text{Log} \left| \sum_{\hat{\mu}_t \hat{\mu}_t'} \right| - \left(\frac{Nn}{2}\right) \sum_{i=1}^n \text{Log}(1 - \hat{\lambda}_i) \\ - \left(\frac{Nn}{2}\right) \text{Log}(2\Pi) - \left|\frac{Nn}{2}\right| - \left(\frac{Nn}{2}\right) \text{Log} \left| \sum_{\hat{v}_t \hat{v}_t'} \right| - \left(\frac{Nn}{2}\right) \sum_{i=1}^p \text{Log}(1 - \hat{\lambda}_i) \quad (3.9)$$

Thus, $\hat{\lambda}_i = \hat{\lambda}_1, \hat{\lambda}_2, \hat{\lambda}_3, \dots, \hat{\lambda}_n$ and $\hat{\lambda}_1 > \hat{\lambda}_2 > \hat{\lambda}_3 > \dots > \hat{\lambda}_n$ so that $\hat{\lambda}_{r+1}, \hat{\lambda}_{r+2}, \hat{\lambda}_3, \dots, \hat{\lambda}_s$ are the estimated $S - r$ eigenvalues of the *JML*. The null hypothesis of r co-integrating vectors is thus tested against the alternative hypothesis of $r + 1$ co-integrating vectors. As it were, the null hypothesis of $r = 0$ is tested against the alternative of $r = 1$, $r = 1$ against $r = 2$, $r = 2$ against $r = 3$ etc. The normalized co-integrating vectors are then given as:

$$\hat{\varphi} = [\hat{\varphi}_1 \quad \hat{\varphi}_2 \quad \hat{\varphi}_3 \quad \dots \quad \hat{\varphi}_n] \quad (3.10)$$

Where $\hat{\varphi}' \sum_{\hat{\mu}_t \hat{\mu}_t'} \hat{\varphi} = \hat{\varphi}' \sum_{\hat{v}_t \hat{v}_t'} \hat{\varphi} = I$. Following Granger (1988), co-integration between employment and trade suggest possible causality at in one direction. In the Granger Representation

Theorem, co-integrated variables can be represented via an error correction model (*ECM*) which combines the long-run relationship with the short-run dynamics of the model. This is against the backdrop of the fact that the co-integrating relationship could be perturbed by the short-run dynamics from equilibrium. So that the error correction framework becomes an extension of the Granger causality test with the error correction term (*ECT*) making the appropriate adjustment.

7. RESULTS

The unit root results are as reported in Appendix A1. The results indicate that the first differenced series of all the variables are stationary under the *ADF and PP* critical levels. Appendix B1 shows detailed results on the *ADF and PP* tests results. The Johansen co-integration test results and the co-integrating graph as are shown in Appendices B2 and B3. The results of the Johansen test for co-integration shows one co-integrating relation between employment and trade flows. This clearly indicates that the residuals from the regression employment and the trade variable are stationary. Indeed, there is co-integration between employment, total trade volume, foreign direct investment, real wage rate and trade liberalization. Thus, a long run relationship exists between the aforementioned variables.

The long-run and short-run relation between employment and trade flows are analyzed within the context of an error correction model (*ECM*). The results that ensue from the estimation are as presented in Appendices B3 and B4. While the long-run coefficients of total trade volume and trade liberalization are negative, the long-run coefficients of real wages, labour market regulation policy and foreign direct investment are positive, reflecting positive long-run effects on employment generation in Nigeria. The coefficient of the error correction term is -0.939. This indeed indicates that over 93 percent of adjustment is covered within one year should there be any employment deviation from equilibrium. By intuition, adjustment in the model is rapid. The coefficients of the one-year lagged employment and *FDI* inflows are significant at the five percent and one percent levels with positive signs in accordance with the long-run coefficients. In effect, it shows that the aforementioned variables have exceptionally strong positive effects on employment generation in Nigeria. The results shows that total trade volume affect employment significantly but negatively in Nigeria. Indeed, rising total trade volume tends to discourage employment given its negative coefficient. By inference, total trade volume hampers domestic production and renders absorptive capacity of the productive base of the economy weak. This could be pointing to the fact that the country's trade balance is negative implying that importation outweighs exportation in the Nigerian trade flow. This is more when domestic production is uncompetitive compared with the imported foreign goods and services. So to speak, a trade composition that is exportation biased stimulates employment growth; while on the other hand, a trade composition that is importation biased impact negatively on employment. Imports depress the productive base of the economy and deteriorate employment of the domestic economy. As it were, when the productive base of the economy is neglected, it invariably leads to deterioration of earnings and the unavoidable option of laying off workers in the short run and massive unemployment in the long run becomes the

guidelines.

The coefficient of *FDI* is positive and significant. By intuition, *FDI* inflows stimulate employment in Nigeria. This could as a result of the fact that *FDI* inflows tend to create useful value added for the labour force especially when there are flow of advantages from the internationalization of productive base of the domestic economy. The outcome of such internationalization is to create additional prospects for labour to be employed. In effect, *FDI* inflows stimulate domestic productions which in turn rekindle massive employment creation as well as efficient use of resources. Apart from the coefficients of total trade volume and *FDI*, no other coefficient passed the significance test. Trade liberalization failed the test of statistical significance at the five percent and one percent levels, implying that trade liberalization has contributed insignificantly in employment generation in Nigeria. This is however not surprising given that trade liberalization in Nigeria actually created additional opportunity for amplified importation rather than stimulating exportation. At the implementation of trade liberalization in Nigeria, imports of finished industrial and consumer goods increased and because Nigeria is a mono cultural export product, export could not gain improvement contemporaneously. Hence, the net effect of trade liberalization was not a stimulant but a restraint to employment generation in Nigeria. Moreover, the *F-statistic* is 155.5, easily passes the significance test at the five percent level. This is indication of overall statistical significance of the estimated equation, thereby validating a significant relationship between employment and trade flows in Nigeria.

8. CONCLUSION

The thrust of this study has been to ascertain empirically the impact of total international trade volume on employment generation in Nigeria using the vector error correction model. The major finding obtained in the study is that employment effect of total international trade volume is significant but negative in Nigeria. Our empirical findings do not corroborate those of Kareem (2010) who found insignificant relationship between trade flows and employment in Nigeria. Indeed, the recent empirical evidence is that of a significant negative employment effect of total volume of trade in Nigeria. The finding could be traced to the SAP-induced trade liberalization of 1986 forced on the country by the IMF and World Bank as condition for loan procurement and possible debt forgiveness. What is more, the employment effect of trade liberalization is insignificant and negative in this study. In effect therefore, Nigeria should make her export competitive by broadening the horizons of production and reduce her volume of importation in order to make the negative trade balance positive.

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BIOGRAPHY

David UMORU (PhD): Dr D. Umoru is an academic. He bagged his *B. Sc, M. Sc and Ph. D* degrees in economics from the *University of Benin, Nigeria* having obtained a *National Diploma Certificate in Statistics from Auchi Polytechnic, Auchi, Nigeria*. He owns various publications in *National and International Journals in Social & Management Sciences*. He is a specialist in *Econometrics: Theory, Methods & Applications, Monetary and Health Economics* with special interest in *Applied Statistics*. He lectures both undergraduate and postgraduate students in the Department of Economics, Banking & Finance, Benson Idahosa University, Nigeria.

APPENDICES

Appendix A1: The Nigerian Labour Market Characteristics [1981-2006]

<i>Employment Indicators</i>	<i>1981-1985</i>	<i>1986-1990</i>	<i>1991-1995</i>	<i>1996-2000</i>	<i>2001-2006</i>
<i>Employment</i>	20.2	21.6	23.7	26.5	30.9
<i>Employment Growth Rate (%)</i>	2.2	1.3	2.4	2.0	3.8
<i>Unemployment Growth Rate (%)</i>	5.3	4.9	4.0	4.0	4.9
<i>Labour Force (Million)</i>	28.6	32.4	36.9	42.7	49.3
<i>Active Population (15-64) Million</i>	40.0	45.5	52.4	60.9	71.5
<i>Labour Force Participation Rate (%)</i>	68.6	68.3	67.7	67.5	66.4
<i>Share of Employed in Labour Force (Million)</i>	71.7	66.9	64.1	62.0	63.2

Source: World Bank World Development Indicator, 2008

Appendix A: Nigeria's Trade Statistics, 2008 - 2012

<i>Trade</i>	<i>Statistics</i>	<i>Year</i>
<i>Exports</i>	<i>US\$45.43 billion</i>	<i>2009</i>
<i>Goods</i>		
• <i>petroleum products</i>	<i>65%</i>	<i>2012</i>
• <i>cocoa and rubber</i>	<i>15%</i>	<i>2012</i>
• <i>machinery</i>	<i>10%</i>	<i>2012</i>
• <i>processed foods</i>	<i>8%</i>	<i>2010</i>
• <i>entertainment</i>	<i>2%</i>	<i>2012</i>
<i>Main Export Partners</i>		
• <i>Brazil</i>	<i>9.5%</i>	<i>2008</i>
• <i>Spain</i>	<i>7.3%</i>	<i>2008</i>
• <i>France</i>	<i>5.1%</i>	<i>2012</i>
• <i>India</i>	<i>9%</i>	<i>2012</i>
• <i>United States</i>	<i>42%</i>	<i>2012</i>
<i>Imports</i>	<i>US\$42.1 billion</i>	<i>2012</i>
<i>Goods</i>		
• <i>machinery</i>	<i>35%</i>	<i>2012</i>
• <i>chemicals</i>	<i>05%</i>	<i>2012</i>
• <i>manufactured goods</i>	<i>25%</i>	<i>2012</i>
• <i>food and live animals</i>	<i>15%</i>	<i>2009</i>
• <i>transport equipments</i>	<i>20%</i>	<i>2009</i>
<i>Main Import Partners</i>		
• <i>China</i>	<i>16.1%</i>	<i>2012</i>

- *France* 5.1% 2012
- *Germany* 4.4% 2012
- *South Korea* 6.1% 2012
- *United States* 9.8% 2012
- *Netherlands* 11.3% 2012
- *United Kingdom* 6.2% 2012

Trade Organization (OPEC)

Source: Central Intelligence Agency (CIA) World Fact Book

Appendix B1: Stationarity Test Results

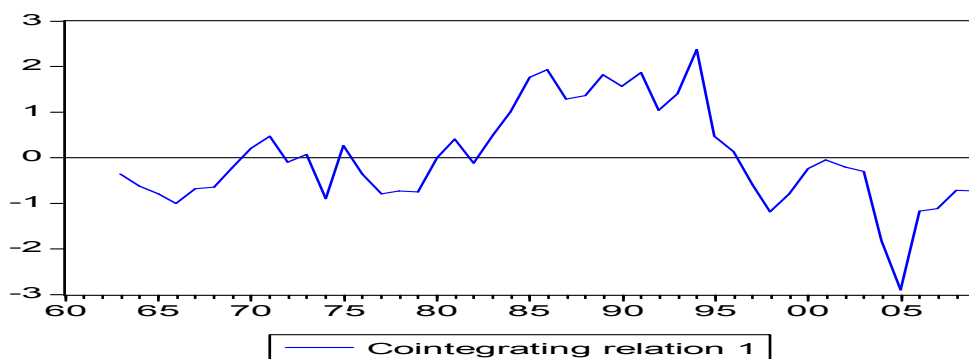
<i>Variables</i>	<i>ADF (PP) Test statistics</i>	<i>ADF(PP) Critical Values*</i>	<i>Remarks</i>
<i>TTV</i>	-3.945(-5.345)	-3.529(-5.355)	<i>I(1)</i>
<i>LFP</i>	-4.923(-9.257)	-3.529(-5.355)	<i>I(1)</i>
<i>FDI</i>	-5.357(-6.356)	-3.529(-5.355)	<i>I(1)</i>
<i>TLZ</i>	-3.659(-8.487)	-3.529(-5.355)	<i>I(1)</i>
<i>RWR</i>	-6.675(-9.692)	-3.529(-5.355)	<i>I(1)</i>

NOTE: * indicates critical values @ 1 percent level

Appendix B2: Johansen Co-integration Test and Lag Length Selection Results

<i>Co-integrating Equation</i>	<i>No. of Co-integrating Vectors</i>		<i>Lag Length</i>
	<i>Trace @ 5%</i>	<i>Max Eigenvalue @ 5%</i>	
<i>VECM Equation</i>	1	1	1

Appendix B3: Co-integration Graph for Employment Equation



Appendix B3: Long-Run Vector Error Correction Results of Employment Effect of International

Trade Flows in Nigeria

<i>Variables</i>	<i>Co-integrating Equation</i>
<i>LFP</i>	1.0000
<i>TTV</i>	-0.865 [-8.525]***
<i>TTV₍₋₁₎</i>	-1.347 [-10.959]***
<i>FDI₍₋₁₎</i>	1.039 [11.857]***
<i>TLZ₍₋₁₎</i>	-1.522 [-0.462]
<i>RWR₍₋₁₎</i>	1.329 [5.957]***

Appendix B4: Short-Run Vector Error Correction Employment Effects of International Trade

Flows in Nigeria

<i>Variables</i>	<i>DLFP</i>
$D(LFP)_{(-1)}$	2.285 [3.075]
$D(TTV)$	-1.039 [-6.722]***
$D(TTV)_{(-1)}$	-1.273 [-5.892]***
$D(FDI)_{(-1)}$	1.325 [3.635]***
$D(TLZ)$	-1.082 [-1.235]
$D(TLZ)_{(-1)}$	-0.323 [-1.035]
$D(RWR)_{(-1)}$	1.833[1.235]***
<i>C</i>	-7.323 [-5.288]***
$ECM_{(-1)}$	-0.939[-6.329]***
<i>Goodness-of-Fit Measures</i>	
R^2 , <i>Adjusted R²</i> , <i>F-statistic</i>	0.985, 0.965, 155.5
<i>Sum of Squared Residuals</i>	0.0066
<i>Standard Error of Regression</i>	1.0222
<i>Statistical Diagnosis</i>	
<i>Jacque-Berra</i>	0.5232 [0.0028]
<i>Ramsey-Reset</i>	0.0235 [0.155]
$LM_{(SC)}$ <i>Breusch Godfrey</i>	0.0362 [0.2202]
<i>ARCH Test Statistic</i>	0.2262 [0.3266]
<i>White Test Statistic</i>	0.2946 [0.2508]
Note: ***, ** denotes statistical significance at the 1% and 5% levels. Figures in square parentheses [] are the t values of significance respectively	

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