# Trade Liberalisation, Economic Growth and Human Resource Development in Nigeria: Causal Implications (1980-2009)

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**Abstract:** The study examined the causal links among trade liberalisation, economic growth and human resource development in Nigeria with a view to identifying the nexus connecting these three variables. Inferences of causality were drawn within the framework of Vector Auto-regression model employing techniques of analysis involving unit root test, cointegration and Granger causality tests. The findings that emerged from the analysis show that economic growth granger-caused both poverty level and trade liberalization in Nigeria. Besides, trade liberalization equally predicted poverty level. The study therefore concluded that it is desirable for government to initiate strategies that would further boost economic growth in Nigeria in order to alleviate poverty and to derive maximum benefits from trade liberalization. In addition, government should further diversify the productive base of the economy, and ensure proper integration of the key sectors of the economy to enhance output growth. In order to reduce poverty level, trade liberalization needs to be further embraced using multi-dimensional approaches such as more tariff reduction, and systematic reduction or removal of other forms of quantitative and qualitative restrictions on goods and services.

Keywords: Trade Liberalization, Economic Growth, Human Resource Development

# 1. Introduction

Poverty has posed a great challenge to the survival of the developing nations of the world in their bid to attain convergence with the rich nations of the world. The severity of poverty has however been linked to the poor state of human resource development in the less developed countries which has greatly hampered the full realisation of the potentials of the existing labour force to optimally contribute to the output growth of the economy. The importance of human resource development has long been recognised as a crucial factor and strategy for alleviating poverty and also capable of inducing rapid economic growth of less developed countries (Ranis and Stewart, 2001). Poverty alleviation strategy by way of human resource development has the potentials to increase the quality of labour force productivity which further improves the volume and quality of exports and economic growth (Chuang, 2000). Empirical studies for different countries and time periods suggest that trade positively impacts on poverty alleviation strategy of human resource development and vice versa (Gould and Ruffin, 1995; Hanson and Hanson, 1995; Stokey, 1991). Put differently, there is the possibility of direct and feedback effects among trade liberalisation, economic growth and human resource development. Thus, it is essential to establish the interactions among trade liberalisation, economic growth and poverty alleviation. The importance of addressing the causal links among trade liberalisation, economic growth and human resource development is derived from the possibility that trade liberalisation could augment and enhance the quality of the extant supply of human resource in less developed economies<sup>1</sup>. Also, it has been recognised that the success of trade liberalisation which is crucial for the economic growth of LDCs is dependent on the existing quality of human resource base in the host economy. Consequently, the need to examine the causal relations between human resource development and trade liberalisation becomes pertinent.

In addition, Nigeria represents a classical case of a nation with enormous human resource potentials that are not fully absorbed into the labour market. The deficiency in the absorption into the labour market could perhaps largely derive from faulty training received by some human resource agents which creates unwarranted mismatch between available jobs and the skills possessed by the human resource agents. At the same time, the level of economic growth has been steadily improving and the economy has been

<sup>&</sup>lt;sup>1</sup> See the work of Long, Rezman and Soubeyran (2003) for a comprehensive literature on the relations between trade and specific human capital accumulation.

gradually liberalised. An examination of the causal implications of trade liberalisation will enable policy makers to assess the motivating roles of trade liberalisation towards inducing human resource development and enhancing further growth of the economy. The paper is divided into five sections as follows: Apart from the introduction, section two examines the theoretical and empirical issues. Section three presents the methodology, while section four presents the empirical results. Finally, section five concludes the study.

# 2. Theoretical and Empirical Issues

Stolper-Samuelson (S-S) model explains the long run implications of trade liberalisation on income distribution based on neo-classical Hecksher-Ohlin trade model. According to S-S argument, a country with a comparatively low supply of labour could increase its real wage by means of protection, even given a diminished national income. This suggests that the negative effects of tariff imposition will be shifted upon the country's abundant factors of production. Put differently, Stolper-Samuelson predicts that opening or liberalizing trade in an unskilled labor abundant economy will expand production in unskilled labor intensive export sectors and contract skilled labor intensive import-competing production, as a result of relative price changes. With accompanying changes in factor demand, the nominal wage of unskilled relative to skilled workers rises. Thus, trade liberalization will benefit a country relatively abundant factor by reallocating resources in a more efficient manner. The logic of S-S model is better explicated by the following illustrations according to Naranpanawa (2005). Given that there are only two sectors in the economy: the export sector which produces exportable commodities and the import competing sector which produces import competing commodities. Let us also assume that the import competing sector is more labour intensive than export sector, the sustained increase in import tariffs or any other shocks capable of increasing the relative prices of import competing sector will generate an expansion of import competing sector. This expansion is however at the expense of the export sector given that both labour and capital factors are at full employment or close to it. The phenomenon generates an expansion of the relatively labour intensive sector and a contraction of the relatively capital intensive sector. This trend leads to an increase in wages as labour demand generally rises relative to capital demand. Given the assumption of constant price of exports, higher wages imply an absolute decline in the returns to capital.

The implication of the above illustration is that there will be an increase in the wages of workers, thus enhancing their standards of living. However, the capital factor will face a decline in their returns, suggesting that in a situation of no trade liberalisation, wage earners will benefit than the capital owners (Neary, 2004). The theory therefore suggests that trade restrictions in form of import tariffs would bring about more than proportionate increase in wages that would benefit wage earners in any economy. Thus the reverse would appear to be the case in an atmosphere of trade liberalization, causing wages of import competing labour intensive industries to depress while the capital intensive industries receive a boost capable of enhancing the returns to capital owners. The S-S model is based on the following fundamental assumptions: The first assumption is that the economy consists of two broad sectors i.e. Industries and two factors (labour and capital); and two commodities. Subsequent authors have however extended this restrictive assumption (Jones and Scheinkman, 1977). Second, all factors are assumed mobile between sectors particularly in the long run. The third assumption is that goods are homogeneous across foreign and domestic suppliers. The fourth assumption is that goods and factor markets are perfect. In addition, the fifth assumption of the model implies that there are constant returns to scale.

The S-S model has been critically reviewed by Metzler (1949) in what later became known as Metzler Paradox. He pointed out that S-S model outcome could present an exact opposite in some situations. For instance, an ad valorem import tariff could have two effects: first, it could show itself as a direct increase in import prices; second, this ensuing reduction in the demand for imports could depress foreign prices of these goods vis-a-vis the prices for export goods. Consequently, whether a tariff increases or reduces the price of the intensive factor of the import industry depends largely on which of these factors is stronger. However, on empirical grounds, Winters (2000) noted that the S-S model might not be supported by empirical evidence. He argued that whenever the restricted assumption is tampered with, the model outcome might be inconclusive. The S-S theoretical formulation is of relevance to this present study as it shows that trade liberalisation could have ambivalent consequences on the economy just as imposition of tariffs. It is also likely to benefit some economic agents than others. Besides, such trade practice might not result in a linear positive effect on poverty reduction and economic growth. The aftermath will however depend on the nature of trade liberalisation practices.

**Empirical Issues:** The issue of causality between the variables of openness to international trade, human capital development and economic growth in China was examined by Tsen (2006). Using time series with the methodology of Granger causality, Tsen found out that economic growth and openness to international trade, economic growth and human capital accumulation, and human capital accumulation and openness to international trade were found to have bi-directional causalities. There existed a causal link between trade liberalisation, economic growth and human capital development. The findings of a similar theoretic study by Blanchard and Willmann (2008) supported the causality relation between human capital (poverty reduction) and trade. In their study, Blanchard and Willmann postulated on how the interaction between trade and educational institutions determined the distribution of human capital and income, both within and across countries using a general equilibrium model of two-country model addressed within a geometric analytical framework. The study showed that government subsidies to education, or similar institutional improvement that decreased the cost of skill acquisition over certain ranges of sectors or for certain agents could impact the distribution of human capital decisions and hence the pattern of trade and comparative advantage, aggregate social welfare and international income distribution. The study thus provides good empirical evidence showing that human capital structuring and sequencing are a fundamental pre-requisite for trade. This in a way points to the fact that human capital must necessarily be modelled as an explicit endogenous model.

A similar study in Thailand by Tanna and Topaiboul (2006) showed a different causality view from that of Blanchard and Willmann suggesting that causality runs from trade to growth–inducing factors like human capital. They examined the causal links between human capital, openness through trade and foreign direct investment and economic growth in Thailand over the period 1973 and 2004 applying the econometric methodology of multivariate causality test within the framework of vector error correction model. The emerging findings showed that domestic investment and trade openness played a significant role in influencing growth but direct support for FDI-led growth as well as growth-led FDI was relatively weak; thus confirming that trade liberalisation had played a more significant role than FDI in influencing Thailand growth process. In addition, a subtle role was revealed for technology transfers through the complementary effect of trade on FDI and FDI on government expenditure which thereby influenced human capital development with a spill-over effect into domestic investment and growth. This reinforced the position that there is a potential role for FDI interacting with human capital to impact on the future development of the Thailand economy considering its recent active FDI policy.

Rao, Cheng and Narain (2003) examined how state educational policy and other socio-economic factors influenced primary school enrolment in two large developing countries of Republics of China and India. A descriptive methodology was applied in the study. The findings that emerged from the study suggested that China and India had applied different timing strategies in ensuring a boost in their primary school enrolment. China gave much priority to achieving universal primary education during the first decades of its existence and thus achieved tremendous benefits. Conversely, the Indian state failed to exert considerable efforts for a long time after independence, particularly before 1980s. This trend contributed largely to moderation of the effectiveness of educational policy in India. This study provides an evidence of the need for a concerted effort on the part of policy makers to be committed to policies aimed at boosting school enrolment in less developed countries. This conclusion is similar to the submission of the 'year 2000' assessment report in India. Government of India (GOI) (2000) argued that education was only considered relevant if it could create jobs. If otherwise, the high cost of education would result in high resistance to sending children to schools. The sure alternative being that the children would be used to contribute to family income. Studies in some transitional economies showed that in the event of financial crises, households tend to adjust their expenditures in favour of education and health (World Bank, 2000). In a study conducted by the World Bank on Thailand, it was shown that families and government programs acted to cushion the impact of the crisis on education and health (World Bank, 1999).

The opinions of Balasubramanyan, Salisu and Saps ford (1996) and Borensztein, De Gregoria and Lee (1998) supported the view of a positive relation between investment flows and human capital development. Borensztein however observed that the differences in the technological absorptive capacity could possibly explain the variation in growth effects of investment flows on human capital development. Borensztein equally held the view that for any nation to derive positive impact of investment flows; such a nation needs to accumulate some minimum threshold stock of human capital. Tikly (2001) examined the relevance of existing accounts of globalisation and education for low income, post colonial countries with special reference to the education system of sub-Saharan African. The study employed an

exploratory approach to arrive at its findings. It was found that educational change in Africa had been profoundly influenced and shaped by global forces both in the contemporary and modern periods. It was also argued that education is potent to play a crucial role in Africa's renewal because of its central importance in economic, political and cultural development. Tikly however argued that for education to effectively play a crucial role in economic development, it must be adequately funded. In addition, education is expected to reflect global skills requirements and must necessarily articulate with broader processes and struggles for change at the global, regional, national and local levels. According to Miyamoto (2003), Multinational Enterprises (MNEs) could contribute to human resource development in the host developing countries by providing training and supporting formal education to the host countries. It was equally observed that the MNEs could contribute to technological transfers through numerous channels of training spillovers, involving vertical and horizontal linkages, labour turnovers and spin-offs. Host countries by consolidating their human capital development base.

Domeland (2007) examined the effect of home country's openness on estimated returns to home country's experience of US immigrants. He provided empirical evidence that trade buttressed on-the-job human capital accumulation. The findings suggested that the positive effect of trade on on-the-job human capital accumulation was significant when controlling for GDP, educational attainment and institutional quality. Goulder and Eichengreen (1992) investigated the inter-temporal and inter-industry effects of trade liberalisation in the United States of America. The method of analysis was based on simulation achieved within the framework of general equilibrium. The findings that emerged showed that elimination of quantitative restrictions had a considerably larger impact on welfare than the removal of USA tariffs. Specifically, unilateral elimination of tariffs reduced the welfare of domestic household by 0.4 per cent while the elimination of quantitative restrictions increased US welfare by 1.1 per cent. This indicates that trade liberalisation effects depend crucially on the nature of trade liberalisation. Agrawal (2008) examined the relation between economic growth and poverty alleviation in Kazakhstan using province-led data based on the methods of Generalised Least Squares, Panel fixed effects and descriptive analysis. It was found that the provinces with higher growth rates achieved faster decline in poverty. This occurred largely through growth which induced increased employment and higher real wages leading to a significant reduction in poverty. Similar studies have equally emphasised the role of higher economic growth in tackling the problem of poverty. Examples of those studies include: Deaton and Dreze (2002), Bhagwati (2000), and Datt and Ravallion (2002). The study by Dollar and Kray (2002) involving 75 countries revealed similar result that higher growth rates of real gross domestic product (GDP) per capita is associated with a more rapid reduction in poverty.

According to the studies by World Bank (2000), Bourguignon (2003), Klasen (2003), it has been established that the pace of poverty reduction would depend crucially on the rate of average income growth, the initial level of inequality and changes in the level of inequality. In a similar study by World Bank (2000), poverty reduction would be lowest in countries where the initial inequality is lowest. Studies have also been initiated to investigate the growth elasticity of per capita income of individuals in the first quintile of the income share of the poorest 20 per cent. Gallup, Radelet and Warner (1999), and Dollar and Kraay (2000) were of the view that the elasticity was one from all indications. However, the study by Timmer (1997) using the same data and similar econometric techniques revealed that the growth elasticity of per capita income was low. Thus, mixed results emerged related to whether economic growth in average income led to a one-to-one increase in the incomes of the poor; or at best led to considerable lower gains for the poor. The gap in the literature is that there is still dearth of empirical studies in the area of causal interactions among trade liberalisation, economic growth and human resource development in Nigeria. Most of the existing studies examined either the relation between trade liberalisation and economic growth or trade liberalisation and human resource development and the studies are mainly based in developed economies.

# 3. Methodology

**Sources of data:** The data on real gross domestic product, exchange rate, consumer price index, degree of openness, money supply, industrial production and public expenditures were sourced from the International Financial Statistics (IFS) published by the International Monetary Fund (IMF), Central Bank of Nigeria Statistical Bulletin, The period of analysis spans between 1980 and 2009.

**Techniques of data Analysis:** The approach adopted was to test for the existence of granger-causality among the trade liberalisation, economic growth and poverty variables within the context of structurally formulated vector autoregression models. The approach adopted was to first examine the data series for the presence of unit root problem and test them for the presence of cointegration relations. The lag length order was also determined. Then the structure of the model was specified and the theoretically conditioned zero restrictions were imposed on the structural model to achieved a reduced form model that are amenable to estimation and that would enable the recovery of the parameters of the structural equations. From the reduced form model, derived from the structural model, the granger causality is estimated to generate the causal links among trade liberalisation, economic growth and poverty level.

**Model:** The model is specified in the form of Vector Autoregression (VAR) model that treats each variable as endogenous and as a function of the lags of itself and the lags of each of the remaining variables that equally fit to be expressed as endogenous dependent variables. Since the focus of the study is on three variables, three equations were specified to capture the interaction behaviours of the variables i.e. trade liberalisation, human resource development and economic growth equations<sup>2</sup>.

Four (4) model versions, each comprising equations 1, 2, and 3, as specified above, were formed. These model versions are hereafter referred to as versions A, B, C and D. In model version A, log of openness (LOPN) was proxied as trade liberalization (TL) and log of real per capita consumption expenditure (LRPCEC) proxied as human resource development (HRD). In model version B, log of openness (LOPN) proxied as trade liberalization (TL) while labor force participation rate (LABFPR) proxied as human resource development (HRD). In model version index (TLIND) proxied trade liberalization (TL), while labor force participation rate proxied human resource development (HRD). In model version D, trade liberalization index (TLIND) proxied trade liberalization (TL) while real per capita consumption expenditure proxied human resource development (HRD).

**Measurements of Variables:** The variables employed in this study are mainly macroeconomic variables. They include: Real Gross Domestic Product (RGDP) which is defined as the nominal GDP deflated by the composite consumer price index. The quarterly data for real GDP which is one of the key variables in the model is derived from Central Bank of Nigeria (CBN) publication, and IMF's International Financial Statistics. Exchange Rate Variable is captured by the Nigeria's nominal effective exchange rate and is measured by Naira to Dollar rate. Also, Money Supply is measured by broad money supply. There is however **a** scanty theoretical basis for selection of a monetary variable between narrow and broad money (Nwaobi, 1999). Some empirical studies have however confirmed the superiority of broad money (M2) over narrow money definition (M1) as a good monetary policy indicator in Nigeria (Sanusi, 2002; and Oyejide, 2002).

Openness (a proxy for trade liberalisation in this study) will be estimated from the output perspective for two reasons: first, there is no continuous long time series data on most of policy measures such as effective tariff rates on imports and exports. Second, a critical weakness of any measure based on tariffs is

<sup>&</sup>lt;sup>2</sup> These three equations are specified as equations 1, 2, and 3 representing equations for trade liberalization (TL), economic growth (EG) and human resource development (HRD) respectively

that the typical trade regime of developing countries restricts imports with other barriers. For many products, the tariffs are considerably redundant, thus they do not provide any additional protection for domestic producers. It becomes obvious therefore that unavailability of time series data on tariffs might not provide a valid indicator for trade liberalization hence the choice of openness variable which proxies trade liberalisation. Another proxy for trade liberalization is the trade liberalization index which is represented as a dummy variable that takes the value of one for every year or quarter when there was trade liberalization and zero elsewhere when there was no trade liberalization in Nigeria. The human resource development proxies are two. First, it is proxied as the level of employment which is defined as the labour force participation rate. The use of this proxy is informed by paucity of official employment data in Nigeria. The second proxy is real consumption expenditure per capita following previous studies by Ogun (2010) and Okojie (2002). The two studies employed real consumption expenditure as an alternative to per capita income on the basis of consensus in the literature that an expenditure measure of poverty is superior to income measures.

#### 4. Empirical Results

	INFLRT	LABFPR	LEXCHR	LLABFPR	LMS	LOPN	LRGDP	LRPCEC
Mean	22.147	14.019	2.739	2.64	12.333	0.184	11.196	7.897
Median	14.15	14	3.086	2.639	12.471	0.76	11.158	7.868
Maximum	89.6	14.279	5.026	2.659	16.192	3.295	12.256	8.834
Minimum	-5	13.871	-0.628	2.63	8.903	-3.404	8.907	5.978
Std. Dev.	20.533	0.115	1.962	0.008	2.196	2.125	0.582	0.415
Skewness	1.265	0.822	-0.44	0.808	0.069	-0.262	-1.458	-2.57
Kurtosis	3.707	2.832	1.831	2.812	1.731	1.671	8.015	14.085
Jarque-Bera	34.525	13.66	10.692	13.234	8.142*	10.206	168.25	747.061
Probability	0	0.001	0.005	0.001	0.017	0.006	0	0
Sum	2657.6	1682.3	328.705	316.847	1479.941	22.028	1343.526	947.622
Sum Sq. Dev.	50173.06	1.583	457.878	0.008	574.014	537.403	40.298	20.523
Observations	120	120	120	120	120	120	120	120

**Table 1: Descriptive Analysis of the variables** 

Table 1 presents the descriptive statistics of the quarterly data series employed in the study. For virtually all the data series, it is observed that the values of the means and median are very close. This is in line with the position of Karmel and Polasek (1980) that when a distribution is perfectly symmetrical, the mean, median and mode must converge; and in cases of near symmetry, the three measures are necessarily very close. It could rightly be deduced that the distributions of the series in table 2 are in the main, nearly symmetrical. Skewness and Kurtosis provide useful information about the symmetrical nature of the probability distribution of various data series as well as the thickness of the tails of these distributions respectively. These two statistics are particularly important as they are used in computing Jarque-Bera statistic, and also for testing the normality or asymptotic properties of a particular series.

#### **Stationarity Test**

#### Table 2: Unit Root Test

	Unit root tests ADF	;		PF	•		Degree of Integration
Variable	Levels	1st Diff.	2nd.Diff.	Levels	1st Diff.	2nd Diff.	(PP and ADF)
With Intercept only							
LEXCHR	-1.456	-4.872**	-7.970**	-1.256	-12.066**	-30.231**	I(1)
LLABFPR	-2.33	-3.601**	-8.094**	-1.102	-4.480**	-15.475**	I(1)
LMS	0.05	-4.787**	-7.900**	0.211	-10.010**	-23.197**	I(1)
LOPN	-1.161	-5.259**	-6.865**	-0.436	-8.735**	-20.459**	I(1)
LRGDP	0.252	-8.618**	-6.895**	-3.588	-10.693**	-23.536**	I(1)
IDDCCC	0.074	0 01/**		1 201**	10 0/0**	<b>11 (10**</b>	1(1)

			-7.257**				
TDLIND	-2.169	-4.775**	-8.013**	2.012	-10.863**	-26.763**	I(1)
INFLRT	-2.716	-4.800**	-7.517**	-2.648**	-6.914**	-17.685**	I(1)
With Intercept and Trend							
LEXCHR	-1.493	-5.022**	-7.932**	-1.544	-12.112**	-30.085**	I(1)
LLABFPR	-1.287	-4.224**	-8.230**	-1.102	-4.478**	-15.557**	I(1)
LMS	-3.167	-4.822**	-7.865**	-2.84	-10.005**	-23.070**	I(1)
LOPN	-1.864	-5.121**	-6.947**	-3.702**	-8.742**	-20.405**	I(1)
LRGDP	-3.145**	-8.506**	-7.083**	-5.392**	-10.760**	-23.405	I(0)
LRPCEC	-3.528	-7.803**	-7.547**	-5.216**	-10.886**	-23.577**	I(1)
TDLIND	-1.839	-4.941**	-7.976**	-1.782	-10.930**	-26.625**	I(1)
INFLRT	-2.839	-4.775**	-7.481**	-3.071	-7.364**	-17.604**	I(1)

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Critical Values: 1.00 Per cent: -3.593; 5.00 per cent:-2.932.

Note: LEXCHR, LLABFPR, LMS, LOPN, LRGDP, LRPCEC, TLINDEX and INFLRT are log of exchange rate, log of labor force participation rate, log of money supply, log of openness, log of real gross domestic product, log of real per capita expenditure on consumption, trade liberalization index and inflation rate respectively. ADF stands for augmented dickey fuller test, while PP stands for Philip and Perron test. The null hypothesis (Ho) is that there is a unit root process.

It could be inferred from the results presented in table 7 that all the variables are stationary at first difference; that is, they are integrated of order one (I(1)). The only variable that showed sign of being integrated in level is LRGDP which appeared to be counter-intuitive. This occurred when we experimented with intercept and trend. Reliance was therefore placed on the experiment with intercept only that came out as I(1).

**Cointegration Test:** The results of unrestricted cointegrated rank tests for quarterly time series used were presented in table 8. The need to verify the existence of at least one linear long run relationship among the variables of interest that are integrated of the same order, in this case order one, becomes imperative. The test was done for each of the model variables. The results are presented below:

Hypothesized	Eigen value	Trace	0.05 Critical	Prob**
No of Ces		Statistic	Value	
None *	0.447	166.663	95.754	0.000
At most 1 *	0.329	97.426	69.819	0.000
At most 2 *	0.182	50.840	47.856	0.026
At most 3	0.141	27.369	29.797	0.093
at most 4	0.070	9.648	15.495	0.309
t most 5	0.010	1.118	3.842	0.290
race test indicates 3	cointegrating eq	n(s) at the 0.0	5 level	
<sup>*</sup> denotes rejection o	f the hypothesis a	t the 0.05 lev	el	
**MacKinnon-Haug-N	/lichelis (1999) p-	values		

#### Table 3: Unrestricted Cointegration Rank (Trace) Test for Quarterly Data.

From table 3, the results of the cointegration test for the variables contained in model A i.e. LEXCHR LOPN LMS INFLRT LRGDP LRPCEC shows that there existed at least 3 cointegrated relations among the variables.

**Result of Granger Causality in VAR Model:** To provide the desired empirical grounds for investigating the causal relationship existing among trade liberalization, economic growth and poverty, Vector Auto-

<sup>&</sup>lt;sup>3</sup> The results of cointegration tests for model versions B, C, and D show the presence of cointegration among model variables (not reported)

regression causality/ Block exogeneity tests were carried out. This is achieved in line with the model formulations of versions A to D to capture the variants of variables acting as proxies for trade liberalization, economic growth and poverty level in the models. Table 4 shows the Granger causality test for model version A.

VAR Granger Causality / Block Exogeneity Wald Test Model Version A:								
		Regresso	rs					
Dependent Variable	LEXCHR	LMS	INFLIRT	LRGDP	LRPCEC	LOPN	ALL	
LOPN	0.048**	0.215	0.638	0.684	0.392	-	0.001**	
(TRADE LIBERALISATION)								
LRGDP	0.398	0.408	0.719	-	0.021**	0.594	0.001**	
(ECONOMIC GROWTH)								
LRPCEC (HUMAN RESORCE DEVELOPMENT).	0.099	0.354	0.464	0.001**	-	0.246	0.001**	

# Table 4: Result of VAR Granger Causality (Model Version A).

The results of VAR granger causality tests presented in table 4 show that exchange rate grangercaused openness with a chi-squared value of 6.08 and a probability value of approximately 0.048. These points to the significant role of exchange rate in regulating the level and volume of exports and imports in the Nigerian economy. However the other exogenous variables of money supply (LMS), inflation rate (INFLIRT), real gross domestic product (LRGDP) and real per capita consumption expenditure (LRPCEC) show evidence that the variables did not granger-cause openness. Their probabilities varied from 0.22 for money supply to 0.68 for real gross domestic product (LRGDP). Table 4 also shows real per capita expenditure (LRPCEC) as the only variable that granger-caused the real gross domestic product with a probability level of 0.02. This perhaps suggests the sensitivity of the output level in the economy to the income level and the level of expenditure of Nigerians. This strengthens the need to boost the income and expenditures of Nigerians to achieve an improvement in general output level. All other variables however did not give evidence that they granger-caused real GDP. Their probabilities varied from approximately 0.40 to 0.72. The third row depicts that real GDP granger-caused the log of real per capita consumption expenditure with a very low probability value of 0.001. The other variables in the model i.e. Log of exchange rate, log of openness, log of money supply and inflation variables did not granger-cause real per capita consumption expenditure. The range of their probabilities is between 0.09 and 0.46.

Model 2	0	5					
		Regress					
Dependent Variable	LEXCHR	LOPN	LMS	INFLIRT	LRGDP	LLAB -FPR	ALL
LOPN	0.345	-	0.348	0.813	0.005**	0.375	0.001**
(TRADE LIBERALISATION)							
LRGDP	0.984	0.857	0.441	0.915	-	0.438	0.003**
(ECONOMIC GROWTH)							
LLABFPR	0.923	0.964	0.311	0.388	0.001**	-	0.006**
(HUMAN RESOURCE DEVELOPMENT)							

#### Table 5: Result of VAR Granger Causality (Model Version B)

VAR Granger Causality / Block Exogeneity Wald Test

Table 5 gives an indication that the only variable that granger-caused openness was real GDP with a probability value of 0.005. The other variables, i.e. exchange rate (LEXCHR), money supply, inflation rate, and labor force participation rate (LLABPR), had probabilities ranging between 0.34 and 0.81 indicating their weaknesses in granger-causing openness. This trend suggests that openness success was substantially motivated by what was happening in the domestic economy particularly what happened to the real sector of the economy. It is observed from the table that none of the variables of

LEXHR, LOPN, LMS, INFLRT and LLABFPR could granger-cause the real gross domestic product (LRGDP). None of the probabilities of the coefficients was low enough at 5 per cent to reject the maintained hypothesis of absence of causality among the variables. The only variable that granger-caused the labor participation rate was real gross domestic product (LRGDP) with a very low probability value of 0.001. This finding is consistent with the positions of Agrawal (2008) and Deaton and Draze (2001), and Dollar and Kray (2002). This again confirms the significant role of real output growth in determining the level of labor force development in the economy. The importance of this is derived from the fact that for there to be improvement in the quality of labor and for their efficiency to be enhanced, such labor must necessarily have access to quality food items, clothing and shelter and an enhanced real income which could largely be derived from an improved real gross domestic product.

The results of the Granger-causality test of Model version C indicate that the trade liberalization index (TLINDEX) was Granger-caused by labor participation rate (LLABFPR) and inflation rate (INFLRT). They both had probabilities of 0.001 and 0.025 respectively. This confirmed the role of quality labor force i.e. human capital development in providing a veritable ground and pre-condition for trade liberalization to thrive in the Nigerian economy. Furthermore, the results suggest the need to have a good control over inflationary growth as a pre-condition for a virile trade liberalization policy. The finding however suggests that all the variables put together might not granger-cause trade liberalization. The probability of 0.1 gave this indication. In determining the factors that Granger-caused LRGDP, the findings show that money supply (LMS) played a vital role. This LMS variable coefficient was 0.0048. It is surprising that labor participation rate variable did not Grangercause the LRGDP variable when trade liberalization policy proxy of trade liberalization index was included as part of the model. This could probably be an indication that the trade policy implemented within the study period might not have taken adequate care of human capital development as a serious pre-condition for generating real output growth in the Nigerian economy. The third row shows the result of the factors that could Granger-cause the labor participation rate (LLABFPR) when trade liberalization index (TRDLIND) was part of the model. The results revealed that the real gross domestic product could Granger-Cause the labor participation rate (LLABFPR) while all other variables could not. Of particular interest is that the trade liberalization index could not Granger-cause labor participation rate. This again attests to the possibility of not adequately taking into consideration the human capital development in the economy.

Model 3	,	0					
		Regresso	rs				
Dependent Variable	LEXCHR	TRD- LIND	LMS	INFL IRT	LRGDP	LLA- BFPR	ALL
TRDLIND	0.647	-	0.399	0.025**	0.704	0.001**	0.100
(TRADE LIBERALISATION)							
LRGDP	0.591	0.178	0.001**	0.672	-	0.136	001**
(ECONOMIC GROWTH)							
LLABFPR	0.787	0.711	0.094	0.419	0.001**	-	.005**
(HUMAN RESOURCE DEVELOPMENT)							

# Table 6: Result of VAR Granger-causality (Model Version C) VAR Granger Causality / Block Exogeneity Wald Test

Overall, there appears to be a one-way causality between trade liberalization index and labor participation rate running from labor participation rate to trade liberalization index. However, Tsen (2006) found a bi-directional impact between economic growth and trade liberalization. Real GDP came out as an important determinant of labor force participation rate. Similar studies have equally confirmed the significant impact of economic growth proxied as real GDP.(see Dollar and Kray, 2002; Datts and Ravallion, 2002, among others).

VAR Granger Causality / Block Exogeneity Wald Test Model 4								
Dependent Variable	LEX- CHR	TRD- LIND	LMS	INFL- IRT	LRP- CEC	LRG- DP	ALL	
LRGDP	0.664	0.334	0.306	0.606	0.097	-	0.001**	
(ECONOMIC GROWTH)								
LRPCEC	0.886	0.021**	0.019**	0.334	-	0.003	0.001**	
(HUMAN RESOURCE DEVELOPMENT)								
TRDLID	0.471	-	0.761	0.403	0.651	0.604	0.934	
(TRADE LIBERALISATION)								

### Table 7: Result of VAR Granger Causality (Model Version D)

The results of the Granger-Causality when trade liberalization index (TDLIND) and real per capita expenditure on consumption (LRPCEC) was incorporated as part of the model are presented in table 7. The result shows that none of the factors considered granger-caused the LRGDP. In fact, TRDLIND and the real per capita Expenditure (LRPCEC) could not granger-cause LRGDP. However, all the variables taken together could granger-cause LRGDP. The following factors were found to granger-cause real per capita expenditures on consumption (LRPCEC), trade liberalization index (TDLIND), money supply (LMS) and real GDP. There appears to be one way causation running from TDLIND to LRPCEC; and from LRGDP to LRPCEC. The third panel shows that none of the variables in the model granger-caused trade liberalization index (TDLIND). Of particular interest is that both LRGDP and LRPCEC representing the growth and human resource development proxies respectively did not granger-cause trade liberalization policy. This indicates that the basis for formulating trade policy in Nigeria probably might not have been motivated initially by the consideration of real output growth and the need to enhance the welfare of the people. This finding is however inconsistent with the empirical evidence by Blanchard and Willmann (2008).

# 5. Conclusion and Policy Implications

The results of granger-causality tests carried out informed the conclusion and policy implications that follow. Economic growth granger-caused trade liberalization, but trade liberalization did not grangercause economic growth in Nigeria. Generally, it thus appears that a well-planned economic growth will predict trade liberalization but trade liberalization will not predict economic growth. Trade liberalization granger-caused human resource development (HRD) in the Nigerian economy. On the other hand, HRD did not granger-cause trade liberalization within the study period. HDR did not granger-cause economic growth but economic growth granger-caused poverty. Conclusively, causal chains that could validly be established in this study mainly run from economic growth to HDR and trade liberalization; and from trade liberalization to human resource development (HDR). Based on the above, it is desirable for government to initiate strategies that would further boost economic growth in Nigeria in order to alleviate human resource development problem, so as to derive maximum benefits from trade liberalization. Government should also engage in further diversification of the productive base of the economy, and also ensure proper integration of the key sectors of the economy for output growth. To achieve sound trade policies, multi-dimensional approaches such as further effective tariffs reduction, systematic reduction or removal of other forms of quantitative and qualitative restrictions on goods and services are recommended. This approach will help to augment the expenditure pattern of the poor and also improve their consumption pattern. A way to enhance human resource capacity is through human capital development, i.e. quality education. Education has the potentials to increase labor participation rate, increase income level, and the expenditure status that invariably reduce the poverty level. The emphasis however should be on qualitative education selectively subsidized by the government to favor the poor. Also, the school curricula should be well structured to accommodate technical education, and other vocational studies. In addition, government should ensure that jobs are created for graduates from these schools.

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