THE EFFECT OF TRADE OPENNESS ON POVERTY IN NIGERIA

By

Benedict Azu Phd
benedict.azu@unidel.edu.ng
Department of Economics
University of Delta Agbor
Delta State

And

Onyemaechi Ugboh Phd
Department of Agriculture
University of Delta Agbor
Delta State

ABSTRACT

This study examines the effect of trade openness on poverty in Nigeria. The study adopts autoregressive distributed lag (ARDL) model to study the relationship between poverty and trade openness and other explanatory variables. Measures of poverty used for this study were per capita income and human development index. Consequently, two autoregressive models were specified and estimated in order to examine the effect of trade openness on these two measures of poverty. In the two models, trade related variables (exchange rate and foreign direct investment) were included in the model as explanatory variables along with trade openness which is the key explanatory variable in the two models. The result of the analysis shows that in the first model trade openness has significant positive effect on per capita income only in the long run, foreign direct investment has a positive effect on per capita income both in the long run and in the short run while exchange rate has a negative effect on per capita income in the short run. In the second model, trade openness does not have a significant effect on human development, foreign direct investment has a significant and positive effect on human development while exchange rate has a significant negative effect on human development. It is recommended that the government should ensure that trade policies are mutually beneficial to Nigeria and the trading partner and that some specific bilateral trade relations are well negotiated. It is also recommended that the government should create the enabling environment to attract foreign direct investment into the Nigerian economy because of the positive gains on poverty reduction as shown in the findings.

INTRODUCTION

African countries have been listed predominantly among the less developed category of countries as measured by the Human Development Index (HDI) values based on the computation by UNESCO Institute of Statistics (2019). The HDI, not economic growth, was created to emphasize that people and their capabilities should be the ultimate criteria for assessing the development of a country. Poverty in very broad terms is the inability to meet basic needs and it

encompasses general scarcity (World Bank, 1996). Indeed, the reduction of poverty levels has been at the heart of virtually every agenda of the various African governments since their political independence and it is also cited as the reason for trade openness by some African leaders.

Trade openness, as defined by Quartey, Aidam and Obeng (2007), is the extent to which foreigners and the citizens of a nation can trade without artificial barriers, including government-imposed costs, which may arise through delays and uncertainty. Jhingan (2005) recommends the opening up of the economy to international trade in order to tackle the issue of poverty as more capital is therefore injected. Indeed, the foundation of the neoclassical free-market assertion is that opening up of national markets attracts additional domestic and foreign investment which increases the rate of capital accumulation and enhances efficiency in resource allocation across industries. This is in line with the position taken by Solow (1956) and Swan (1956). They equate the injection of capital to an increase in domestic savings rates, which raises the capital–labour ratio and enhances GDP growth, especially in the capital-challenged developing countries.

The argument that trade openness has beneficial effects on growth and poverty reduction goes back to the emergence of the Washington Consensus in the early 1980s. The consensus emerged in response to the economic crisis affecting most developing countries at that time, triggered by the debt crisis. Nonetheless, economic growth is also seen as being dependent on openness of trade. But literature on trade theory and policy has since the time of Adam Smith debated whether openness and trade liberalization provide the necessary ingredients for poverty reduction (Miller and Upadhya,2000). They observed that although, growth can be un-equalizing, it has to be significant enough to decrease absolute poverty. This appears not to be the case either in general or for growth associated with free trade. The link that has seen the most sustained debate among economists, however, is the link between greater openness and growth. While there is good deal of empirical support for the argument that trade

liberalization stimulates long-run growth and income, the case has certainly not yet been completely settled.

Nigeria had one of the world's highest economic growth rates. According to the Nigeria Economic Report released in July 2014 by the World Bank, economic growth averaged 7.4% between 2001 to 2013. Following the oil price collapse in 2014-2016, combined with negative production shocks, the Gross Domestic Product (GDP) growth rate dropped to 2.7% in 2015. In 2016 during its first recession in 25 years, the Nigerian economy contracted by 1.6%. (World Bank, 2016). Poverty remains significant at 33.1% in Africa's biggest economy. For a country with a huge population to support commerce, and plenty of natural resources such as oil, the level of poverty remains too high and unacceptable (World Bank, 2011). Furthermore, the stated poverty rate may have been overestimated due to the lack of information on the extremely huge informal sector of the economy. For instant, Yusuf (2014) estimated about 60% poverty level. As of 2018, population growth rate was higher than economic growth rate, pointing to the fact that poverty level may have increased.

According to a 2018 report by the World Bank, almost half of the population is living below the international poverty line ($2 per day), and unemployment peaked at 23.1% (World Bank, 2018). According to the report, the number of Nigerians in extreme poverty increases by six people every minute. According to the report projections, Nigeria has already overtaken India as the country with the largest number of extremely poor in early 2018. At the end of May 2018, the trajectories suggest that Nigeria had about 87 million people in extreme poverty, compared with India’s 73 million.

In March 2018, the International Monetary Fund (IMF) had said that Nigerians are getting poorer pointing to the need for coherent and comprehensive economic reforms. Given the rising poverty level in Nigeria, the current government has set a target to take at least 100 million people out of poverty within the shortest possible time period through some policies and reforms which include policies related to

trade with other countries. The position of the Nigerian policy makers with regards to trade should depend on the expected impact of trade on the economy.

It is against this backdrop that this study investigates the relationship between trade openness and poverty in Nigeria. The broad aim of this study is to evaluate the relationship between trade openness and poverty reduction in Nigeria. The specific objectives are to:

i) Examine the impact of trade openness on the Per Capita Income in Nigeria.

ii) Investigate the impact of trade openness on human development index (HDI) in Nigeria.

iii) To trace the effect of trade related variables, namely, exchange rate and foreign direct investment (FDI) on poverty in Nigeria.

This article is divided into five sections. The remaining sections are the review related literature; research methodology; empirical result and analysis; and the summary of findings, conclusion, and recommendations.

REVIEW OF RELATED LITERATURE

This section contains a general review of conceptual, theoretical, and empirical literature closely related to the study. This is necessary to bring to the fore the relevant economic theories that underlies this study. More so, it is through the various empirical studies reviewed that the gaps in literature can be filled, the appropriate theory can be adopted, the appropriate method can be chosen, and the appropriate model can be formulated. The first part of this section deals with the definition of key concepts. The second part of this section presents the theoretical framework of this study, and the last part of this section reports the series of empirical literature reviewed in this study.

2.1 Conceptual Review

2.1.1 Concept of Trade Openness

Trade openness is the degree of business dealing of a country with the rest of the world. Trade openness can be expressed as a ratio of imports plus exports as a fraction of the gross domestic product (GDP). The degree of openness is also measured by the Pitched Index which is obtained by regressing the trade intensity (ratio of imports and exports) to a combination of total area, population, GDP, GDP per capita, GDP per capita squared. Two types of trade openness measurement have been identified by Bhatti et al. (2011). These are the incidence-based measure of individual indicators and outcome-based measures which cover all the avenues of trade distortion. The former is predicated on tariff rate, quantitative restrictions, export taxes, and foreign exchange restrictions which are direct indicators of trade policy. The hitch with the incidence-based measure is that variations in one indicator are not easily weighted against the fluctuations in another. An empirical measure of trade openness, defined as the ratio of exports plus imports to GDP, is a measure routinely used in a variety of international macroeconomic studies.

The measure of trade openness use in the literature seems to be partly a result of data availability. Because data on total trade as a percentage of GDP are available for many countries in standard international databases, researchers may find them useful in conducting analyses. However, despite this pervasiveness, the effects that the trade openness variable actually captures remain ambiguous. Although it may well be an intended proxy measure, the question is what variable is exactly a good proxy. For instance, what effects are we effectively controlling for by including the trade-to-GDP ratios on the right-hand side of regression equations for cross-country differences in growth, real exchange rate dynamics, and so on? One exemplary macroeconomic interpretation of the trade openness variable is that it measures the degree to which a domestic economy is exposed to external shocks. To the extent that an economy relies on export demand and imported inputs/products, it is subject to potential transmission of disturbances

from abroad. However, the trade-to-GDP ratio varies across countries because of differences in trade policies, factor endowments, and geographical locations irrespective of realizations of external shocks (Pritchett 1996).

Thus, using variations in trade-to-GDP ratios seems ill-suited for measuring the extent to which external shocks affect domestic economies. Conceptually, trade openness may be defined as the degree to which an economy maintains its outward orientation in trade. However, empirically, adopting this definition is challenging because it requires detailed and consistent data for many countries on the extent of explicit and implicit trade impediments in various forms that are product, destination, and origin-specific and time-variant. Even if such data are available, an additional hurdle exists. Aggregating the detailed data into an overall index that qualifies as a universal measure of trade openness is difficult (Harrison, 1996). In fact, although various indicators are invented, Pritchett, (1996) showed that they are virtually uncorrelated with each other, casting doubt on their consistency and reliability.

Although the aforementioned issues may tempt researchers to seek a more practical alternative, using trade-to-GDP ratios as a measure of trade openness introduces significant ambiguity to the interpretation of its effects. The size of trade in relative terms to GDP depends on a variety of factors. In addition to the extent of the outward orientation of trade policy, they include the sizes of the domestic and external markets, the distances to consumers and from producers outside one's own territory, factor endowments that induce specialization in production, and households' preferences for a variety in consumption. As a composite of the numerous factors, the empirical measure of trade openness, as convenient as it may be, inflicts difficulty on the interpretation of its effects as documented in various contexts.

Poverty

The Central Bank of Nigeria (2010) views poverty as a situation where an individualis unable to cater adequately for his or her basic needs of

food, clothing and shelter. This is in addition to his inability to meet social and economic obligations given the lack of gainful employment, skills, assets and self-esteem; and his limited access to social and economic infrastructure (education, health, portable water, sanitation). Poverty is a noticeable deficiency in well-being, comprising many dimensions, including low incomes, resulting in the inability to acquire the basic goods and services necessary for survival with dignity. This broader definition high lights both the relative and absolute definitions of poverty. It brings to the fore the fact that poverty is not just a lack of physical essentials but includes social needs as well, CBN (2010).

Measuring Poverty

Part of the process of conceptualizing poverty involves measuring poverty. Generally, poverty is a measure of the wellbeing of individuals in the economy. However, the issue in the measurement of poverty that is a matter of concern among development economists is the variables to use in measuring poverty. One of the popular proxies for poverty is income. According to the World Bank, individuals are said to be poor if they live with less than $2 a day. Perhaps the argument in support of the use income as a measure of poverty is that individual's income is a major determinant of the standard of living of individuals. Income determines individual's ability to provide for his basic necessities of life. However, the use of income as a measure of poverty has been criticized as being a narrow measure of poverty because poverty is seen to be multi-dimensional. Nevertheless, income level is an important component that is part of any broader measure of poverty.

This approach is a broader approach to measuring poverty which takes into consideration a wide range of factors. This approach considers individual's ability to meet nutritional needs, health care, education and a host of other factors. The capability approach to measuring poverty led to the development of the Human Development Index (HDI). The HDI is a geometric mean of life expectancy index, education index and income index. Life expectancy index captures individual's ability to take care of his health and nutritional needs, while education index reflects one's capability to cater for his/her educational needs. In this

study, both income level and HDI is used as a measure of poverty. From the capability approach to measuring poverty, one could deduce the causes of poverty because the various factors taken into consideration are driven by the fact that these factors are important determinants of poverty. Furthermore, since these factors are also significantly influenced by government policies which include trade policy, trade openness is also rightly considered to be an important determinant of poverty. One of the bases for drawing the linkage between trade openness and poverty is because trade policy affects the determinants of poverty which includes income and a wide range of other factors.

Theoretical Literature

For the purpose of this study relevant theories were reviewed which are: the theory of comparative advantage, and the Heckscher-Ohlin Theory of Trade**.**

Theory of Comparative Advantage

Early economic thinkers such as Adam Smith spoke about the gains from trade with other countries.

Heckscher-Ohlin(H-O) Theory of Trade

The H-O theory emphasized the need for trade between two countries based on the ground that there is a relative abundance of resources among the countries. Moreover, the Heckscher-Ohlin model encourages specialization between countries, that is, a country should focus on the production of those commodities it has abundant resources and imports those commodities it has limited resources to produce. For instance, a country with vast land should specialize in agriculture since it is territory-intensive.

The Theories of Poverty

Theories of poverty can be broadly classified into two types: cultural and structural. **Cultural theories** find the explanation for poverty in the traits of the poor themselves. These theories assert that it is the valuation, attitudinal, and behavioral patterns of the poor which prevent

them from being socially mobile. In contrast, structural theories explain poverty in terms of the conditions under which the poor live unemployment, underemployment, poor education, and poor health. The distinctive traits of the poor so central to the explanation of the cultural theorists are, for the structural theorists, responses or adaptations to the hostility of the structural conditions the poor face.

Structural theorists fully accept the cultural theorists' characterization of the poor; they merely place another interpretation on it. The extent of agreement between the two types of theorists in terms of the following ten traits, which may be said to form a kind of poverty syndrome and which are repeatedly reported in the literature: A community with little social organization beyond the extended family, a mother-centered family organization, little class consciousness, general feelings of helplessness, fatalism, dependency, and inferiority, a strong present-time orientation, including a desire for excitement, little historical knowledge, an alienation from political institutions, an early initiation into sex, an emphasis on masculinity and middle-class aspirations and values which are not translated into behavior.

Thus the extent of agreement observed is all the more impressive. Both types of theorists also believe that poverty is often cyclic, that successive generations of the same family remain poor. For the cultural theorists, the poverty syndrome is the explanation for the poverty cycles. Thus the multifocal family isolated from the larger society, imbued with feelings of inferiority, dependence, alienation, present-time orientation, and the remaining attributes is thought by cultural theorists to socialize its young to the same poverty syndrome and thereby to transmit its status in poverty to the next generation.

The problem therefore lies within the poor family and the attributes of the individuals comprising it. On the other hand, the structural theorists explain the poverty cycle in terms of the persistence of inimical structural conditions over time.

Trade openness and Poverty: The Linkages

The economic argument for free trade is based on the believe that trade liberalization will enhance economic growth and welfare of countries. Trade liberalization is seen to be important components of policy packages meant to enhance economic prosperity. Trade liberalization is believed to enhance free movement of goods, lead to increase in production of commodities which a country has comparative advantage, increase domestic output and incomes to the benefit of all consumers in the economy. This forms the basis for linking trade and poverty. Aggregate economic analysis of poverty is based mainly on aggregate measures of consumption and income and since trade openness is thought to lead to increase in aggregate income, the link between trade and poverty in this perspective becomes apparent.

The impact of trade openness through these channels could be seen through its impact on the prices of liberalized goods, through its impact on profits and hence on employment and wages, and through its impact on the government's fiscal position. Therefore, whether or not trade liberalization benefits the poor depends on whether the poor are net consumers or producers of liberalized goods, what types of labour they supply, and where their wages lie relative to the poverty line. This has often been the basis for debate among economist concerning cost and benefit of trade openness and whether trade liberalization actually benefits the poor (Bannister and Thugge, 2001). However, given that the positive impact of trade openness on poverty is conditional the argument for any economy should not be whether trade openness is advantageous or not but whether the conditions through which trade can benefit the poor are fulfilled in the economy of interest. This indeed will determine whether trade openness is beneficial for a particular economy or not, thus justifying trade openness or trade restrictions as the case may be.

Empirical Studies

Scholars have shown an appreciable level of interest studying the relationship between trade openness and poverty across different economies

The review of the existing literature indicates different trends of results. Some studies found a positive significant relationship between trade openness and poverty while others found a negative relationship. Therefore, the general observation from these studies is that the results have been mixed depending on many factors which include sample periods, methodology adopted, estimation techniques and variables used as a proxy for trade openness. The mix result observed which likely dependent the methodological process of conducting the studies indicates that more studies is needed with good methodological justification. In this study, two models that explain the narrow measure of poverty(per capita income) and the broader measure of poverty(HDI) are used to analyze the impact of trade openness on poverty in Nigeria.

Methodology

Model Specification

The theoretical basis for the model of this study is the Heckscher-Ohlin theorem, which hypothesize that when countries increase their engagement in international trade, the productivity of the abundant resource in the economy, labour in the case of developing countries, increases and hence real wages increase. This increase in income helps the poor and unskilled labour escape out of poverty. Consequently, two econometric models are specified using per capita income and human development index respectively as dependent variables (proxy for poverty level) while trade openness and trade related variables are used as explanatory variables in each of the models. The mathematical representation of the model for this study is as follows:

Model 1

RPCI = f (TOP, FDI, EXR, INF, RGEX) ……1

The model is expressed as econometric equation as follows;

$RPCI = \beta o + \beta 1\ TOP + \beta 2\ FDI + \beta 3\ EXR + \beta 4\ INF + \beta 5 RGEX + \mu t$……..…2

Where; βo = the parameter which represents the intercept

β1 – β4 = Coefficient or the regression parameters

RPCI= Real Per Capita Income in Nigeria (proxy for poverty level)

TOP = Trade Openness

FDI = Foreign Direct Invest as a percentage of GDP

EXR= Exchange Rate

INF= Inflation Rate

RGEX= Real government expenditure

μt = Error term.

Apriori Expectation of the Model: The expected signs of the coefficients of the explanatory variables are: $\beta1>0$, $\beta2>0$, $\beta3<0$, $\beta4<0$. PCI is used as a measure of predictive variable.

Model 2

HDI= F(TOP, FDI, EXR, INF, RGEX)……3

Model 2 is also expressed in econometric form as follows;

$HDI = \beta o + \beta 1\ TOP + \beta 2\ FDI + \beta 3\ EXR + \beta 4\ INF + \beta 5 RGEX + \mu t$

Where; βo = the parameter which represents the intercept

β1 – β4 = Coefficient or the regression parameters

HDI= Human Development Index(proxy for poverty level)

TOP = Trade Openness

FDI = Foreign Direct Investment as a percentage of GDP

EXR= Exchange Rate

INF= Inflation Rate (%)

RGEX= Real government expenditure measured in billions (Naira)

μt = Error term.

Analytical Techniques

The analytical technique employed for the purpose of this study is the autoregressive distributed lag (ARDL) model.

Autoregressive Distributed Lag Model (ARDL): In an ARDL model, the dependent variable is expressed as a function of the lag value of the dependent variable and the current and lag values of the explanatory variables and the error correction term.This technique allows researchers to study the effect of the current and lag values of the explanatory variables on the dependent variable as well as the long run and short run relationship between variables. The choice of the ARDL technique is also informed by the result of unit root test for all the variables in the model.

The general form of the ARDL modelis expressed as follows;

Wt = βo + β1iWt-i + β2i Zti + β3i Zt-i +Ut…….4

Where

βo= constant term

Wt =the dependent variable

Wt-i= lags of the dependent variable

Zti= the explanatory variables

Zt-i= lags of the explanatory variables

β1i, β2i, β3i = the model coefficients

Ut= error term

The specification of the ARDL model that captures the variables of this study is as follows;

MODEL 1

$$RPCIt = \beta 0 + \sum_{n=i}^{n} \beta 1 RPCIt - i + \beta 2 TOP + \sum_{n=i}^{n} \beta 4 TOPt - i + \beta 5 FDI + \sum_{n=i}^{n} \beta 6 FDIt - i + \beta 7 EXR + \sum_{n=i}^{n} \beta 8 EXRt - i + \beta 9 GEX + \sum_{n=i}^{n} \beta 10 GEXt - i + \beta 11 INF + \sum_{n=i}^{n} \beta 12 INFt - i + Ut$$

MODEL 2

$$HDIt = \beta 0 + \sum_{n=i}^{n} \beta 1 HDIt - i + \beta 2 TOP + \sum_{n=i}^{n} \beta 4 TOPt - i + \beta 5 FDI + \sum_{n=i}^{n} \beta 6 FDIt - i + \beta 7 EXR + \sum_{n=i}^{n} \beta 8 EXRt - i + \beta 9 GEX + \sum_{n=i}^{n} \beta 10 GEXt - i + \beta 11 INF + \sum_{n=i}^{n} \beta 12 INFt - i + Ut$$

Where; βo = the parameter which represents the intercept

β1 – β12 = Coefficient or the regression parameters

RPCI= Real Per Capita Income in Nigeria (proxy for poverty level)

RPCIt-i =Lags of RPCI

HDI= Human Development Index (proxy for poverty level)

HDIt-i= Lags HDI

TOP = Trade Openness

TOPt-i= Lags of TOP

FDI = Foreign Direct Investment as a percentage of GDP

FDIt-i= Lags of FDI

EXR= Exchange Rate

EXRt-i= Lags of EXR

INF= Inflation Rate (%)

INFt-i= Lags of INF

RGEX= Real government expenditure measured in billions (Naira)

RGEXt-i= Lags of RGEX

μt = Error term.

Sources and Scope of Data

Data for this study was sourced from the World Development Indicators (WDI, 2020), Central Bank of Nigeria (CBN, 2019) Statistical Bulletin and UNDP Human Development Reports. Data for model one spans from 1981 to 2019 while data for model two spans

from 1990 to 2019. This is because HDI data used in the model was developed from 1990.

Estimation Procedures

Pre-Estimation Diagnostic Test: We use Augmented Dickey Fuller (ADF) test as pre-estimation diagnostic test to check for stationarity of all variables.

ARDL Bond Testing: Following the result of the ADF test, ARDL Bond test was done to examine the possible existence of a long run relationship among variables. Two set of data are used for the two models. In the model one, data used spans from 1981 to 2019. In model two, the data set used span from 1990 to 2019. This is because HDI data which is the dependent variable for model two is available from 1990, the year HDI was developed.

ARDL Estimates: Following the result of the Bond Test procedure, an estimated of the ARDL model coefficient are presented, analyzed and interpreted. If the bond test result shows the existence of a long run relationship among variables, the short run dynamic model coefficients and long run static model coefficients are estimated. If the result shows that that there is no strong statistical evidence support that a long run relationship exists, only the short run static model coefficients are estimated.

Post Estimation Diagnostic Test: Heteroscedasticity test, JB normality and LM test are used as post estimation test for heteroscedasticity test, test for normality of the error term of the estimated model, and autocorrelation test respectively. These post estimation tests are done to ensure that important assumptions of regression analysis such as absence of autocorrelation, absence of heteroscedasticity and normal distribution of the error terms are fulfilled. The results indicate whether or not the estimated coefficients of the model are reliable.

Data Presentation, Analysis and Discussion Of Findings

This section presents and analyses all the empirical results of this study. However, it is necessary to present the stylized facts of the study before presenting the empirical results.

Unit Root Test

The time series property of the data used for analysis was examined using Augmented Dickey Fuller (ADF) unit root test and the result is presented as follows;

Table 1: Result of Augmented Dickey Fuller (ADF) Unit Root Test for Model 1

Variables	ADF stat	Critical Values			P Value	Remarks
		10%	5%	1%		
RPCI	-3.633609	-2.610263	-2.943427	-3.621023	0.0097	I(1)
TOP	-4.138527	-2.609066	-2.941145	-3.615588	0.0025	I(0)
FDI	-3.933114	-2.609066	-2.941145	-3.615588	0.0044	I(0)
EXR	-4.257603	-2.610263	-2.943427	-3.621023	0.0018	I(1)
INF	-3.520608	-2.610263	-2.943427	-3.621023	0.0129	I(0)
RGEX	-5.262846	-2.612874	-2.948404	-3.632900	0.0001	I(1)

Source: Authors' computation using E-View 9

The result of the ADF unit root test for data (1981-2019) used in estimating model 1as presented in table 1 above shows that TOP, FDI and INF were stationary at levels while RPCI, EXR and RGEX are stationary at first difference.

Table 2: Result of Augmented Dickey Fuller (ADF) Unit Root Test for Model 2

Variables	ADF stat	Critical Values			P Value	Remarks
		10%	5%	1%		
HDI	-8.457445	-2.625121	-2.971853	-3.689194	0.0000	I(1)
TOP	-6.204180	-2.625121	-2.971853	-3.689194	0.0000	I(1)
FDI	-3.148989	-2.622989	-2.967767	-3.679322	0.0339	I(0)
EXR	-3.826558	-2.625121	-2.971853	-3.689194	0.0072	I(1)
INF	-4.358753	-2.625121	-2.971853	-3.689194	0.0129	I(1)
RGEX	-4.755614	-2.629906	-2.981038	-3.711457	0.0008	I(1)

Source: Authors' computation using E-View 9

Table 2 shows the result of ADF unit root test for the data (1990-2019) used in estimating model 2. The result shows that FDI is stationary at levels while HDI, TOP, EXR, INF and RGEX were stationary at first difference.

Model Estimation and Interpretation

Following the result of unit root test which shows that variables were integrated at order I(0) and I(1) which means that time series data for the variables of the study followed both stationary and non-stationary

processes, there is statistical justification to estimate an autoregressive model. Consequently, the ARDL models specified for this study was estimated and the result is presented as follows;

Model 1

The ARDL bond test for the existence of a long run relationship among variables in model 1 is presented as follows;

Table 3:ARDL Bounds Test Result

ARDL Bounds Test		
Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	k
F-statistic	7.034540	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

The result of the ARDL bond test process shows that the F statistic of 7.03 is greater than the lower and upper bound critical values of the bond test process. Therefore, the null hypotheses which states that "no long run relationship exist" among variables as shown in Table 3 is rejected, indicating that there is a strong statistical evidence to support the existence of a long run relationship among variables. Following the result of the bond test, the short run and long run coefficients for model 1 was estimated and the result is presented in table 4 below

Table 4: Result of ARDL Estimates

ARDL Cointegrating And Long Run Form				
Dependent Variable: LOG(PCI)				
Selected Model: ARDL(1, 2, 2, 1, 2, 1)				
Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Δ(TOP)	-0.080708	0.083246	-0.969514	0.3428
Δ(TOP(-1))	0.112928	0.066891	1.688255	0.1055
Δ(FDI)	0.003196	0.005444	0.587016	0.5632
Δ(FDI(-1))	-0.009300	0.005953	-1.562174	0.1325
Δ(EXR)	-0.001103	0.000351	-3.142677	0.0047
ΔLOG(RGEX)	0.008218	0.015499	0.530220	0.6013
ΔLOG(RGEX(-1))	0.040523	0.009828	4.123295	0.0004
Δ(INF)	-0.001815	0.000829	-2.188301	0.0396
ECM(-1)	-0.102970	0.043745	-2.353888	0.0279

Cointeq = LOG(PCI) - (-2.0277*TOP + 0.2494*FDI -0.0007*EXR + 0.0605
*LOG(RGEX) -0.0296*INF + 13.6895)

Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
TOP	-2.027712	1.077151	-1.882478	0.0731
FDI	0.249362	0.137323	1.815879	0.0846
EXR	-0.000687	0.001728	-0.397866	0.6946
LOG(RGEX)	0.060505	0.067095	0.901775	0.3769
INF	-0.029646	0.015549	-1.906577	0.0697
C	13.689486	0.791320	17.299562	0.0000

The results of model 1 shows that trade openness is not statistically significant in explaining per capita income in the short run but has a negative and significant in explaining per capita income in the long run. The result shows that a 1% increase in trade openness leads to a 2.02 decrease in per capita income in the long run. Foreign direct investment also has similar effect on per capita income but however indicates a positive relationship in the long run. The result shows that a 1% increase in foreign direct investment leads to 0.25% increase in the long run. Exchange rate has a significant negative effect on per capita income in the short run while the relationship is not significant in the long run. The result shows that a 1% increase in exchange rate (naira depreciation) leads to a 0.0011% decrease in per capita income in the short run. Government expenditure has a significant positive effect on per capita income in the short run at lag one while the relationship is not significant in the long run. The result shows that a 1% increase in government expenditure leads to 0.04% increase in per capita income. Inflation has a significant effect on per capita income both in the short run and the long run. The result shows that 1% increase in inflation leads to 0.002 % fall in per capita income in the short run and a 1% increase in inflation leads to 0.03% fall in per capita income in the long run.

Table 5: Post Estimation Diagnostic Tests Result for Model 1

Diagnostic Tests			
Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.045838	*P Value*	0.9553
Obs*R-squared	0.168828	*P Value*	0.9191
Heteroskedasticity Test			
F-statistic	1.346231	*P Value*	0.2585
Obs*R-squared	17.07209	*P Value*	0.2524
Normality Test			
Jarque-Bera(JB) Stat.	0.967507	*P Value*	0.616465

Source: Author's computation using Summary of Diagnostic Tests (E-Views 9)

The LM test for autocorrelation, test for heteroscedasticity, and JB normality test for model 1 presented in **Table 5** indicates that there is absence of autocorrelation, that there is absence of heteroscedasticity and that the error term of the estimated model is normally distributed. This is because the P values are higher than the acceptable levels of

statistical significance of 5%, hence the null hypothesis of the respective test which states that there is no autocorrelation, no heteroscedasticity, and that the error term is normally distributed cannot be rejected.

Model 2

The ARDL bond test for the existence of a long run relationship among variables in model 2 is presented as follows;

Table 6: ARDL Bond Test Result for Model 2

ARDL Bounds Test		
Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	k
F-statistic	2.465687	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

The result of the ARDL bond test process shows that the F statistic of 2.47 is greater than the lower and upper bound critical values of the bond test process. Therefore, the null hypotheses which states that "no long run relationship exist" among variables as shown in Table 6 is accepted, indicating that there is no strong statistical evidence to support the existence of a long run relationship among variables.Following the result of the bond test, the short run coefficients for model 2 was estimated and the result is presented in table 4 below;

Table 7: ARDL Estimate for Model 2

Dependent Variable: HDI				
Method: ARDL				
Maximum dependent lags: 1 (Automatic selection)				
Model selection method: Akaike info criterion (AIC)				
Dynamic regressors (2 lags, automatic): TOP FDI EXR LOG(RGEX) INF				
Fixed regressors: C				
Selected Model: ARDL(1, 0, 2, 1, 2, 1)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
HDI(-1)	0.530959	0.162504	3.267368	0.0052
TOP	0.011516	0.023192	0.496536	0.6267
FDI	4.18E-05	0.002054	0.020364	0.9840
FDI(-1)	0.004815	0.002127	2.263347	0.0389
FDI(-2)	0.007665	0.002762	2.775011	0.0142
EXR	-0.000270	0.000107	-2.510053	0.0240
EXR(-1)	-0.000207	9.08E-05	-2.283388	0.0374
LOG(RGEX)	0.007536	0.005302	1.421331	0.1757
LOG(RGEX(-1))	0.011132	0.006028	1.846839	0.0846
LOG(RGEX(-2))	0.006034	0.004352	1.386516	0.1859
INF	0.000443	0.000358	1.236568	0.2353
INF(-1)	-0.001268	0.000350	-3.622065	0.0025
C	0.105532	0.047204	2.235669	0.0410
R-squared	0.889134			
Adjusted R-squared	0.878640			
F-statistic	104.0893			
Prob(F-statistic)	0.000000			

The ARDL estimate for model 2 shows that trade openness has no significant effect on human development index. Foreign direct investment has a significant effect on trade openness at lag one and lag two. The result shows that a 1% increase in foreign direct investment at lag one leads to 0.005% increase in human development and a 1% increase in foreign direct investment at lag two leads to a 0.008% increase in human development at lag two.

Exchange rate has a significant negative effect on human development at zero lag and lag one. The result shows that a 1% increase in exchange rate(naira depreciation) leads to a 0.0003% decrease in human development at zero lag and a 1% increase in exchange rate(naira depreciation) leads to a 0.0002% decrease in human development. Government expenditure has a significant effect on human development at lag one. The result shows that 1% increase in government expenditure leads to 0.011% increase in human development. Inflation has a significant effect on human development at lag one. The result shows that 1% increase in inflation leads to 0.0013% fall in human development.

Table 8: Post Estimation Diagnostic Tests Result for Model 1

Diagnostic Tests			
Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.365024	*P Value*	0.2897
Obs*R-squared	4.859574	*P Value*	0.0881
Heteroskedasticity Test			
F-statistic	0.624031	*P Value*	0.7921
Obs*R-squared	9.323683	*P Value*	0.6751
Normality Test			
Jarque-Bera(JB) Stat.	1.357532	*P Value*	0.502647

The LM test for autocorrelation, test for heteroscedasticity, and JB normality test for model 1 presented in **Table 8** indicates that there is absence of autocorrelation, that there is absence of heteroscedasticity and that the error term of the estimated model is normally distributed. This is because the P values are higher than the acceptable levels of statistical significance of 5%, hence the null hypothesis of the respective test which states that there is no autocorrelation, no

heteroscedasticity, and that the error term is normally distributed cannot be rejected.

Discussion of Findings

From the findings of this study, trade openness has significant positive effect on per capita income only in the long run. This indicates that the impact of trade openness on incomes is manifested overa long period of time. This also means that as the economy opens for international trade, it leads to increase in per capita income in the long run. Since income is one of the components of poverty measure, it can be said from this result that trade openness leads to poverty reduction in the long run in Nigeria.

Foreign direct investment also has a positive effect on per capita income both in the long run and in the short run. This means that the presence of foreign direct investment has leads to increase in aggregate income. Foreign direct investment often involves expansion of production activities within the domestic economy. This usually leads to employment of domestic factors of production, leading to a rise in aggregate income.

Increase in exchange rate has a negative effect on per capita income. This could be explained in terms of the effect of naira depreciation on the Nigerian economy. In economic reasoning, currency depreciation leads to increase in demand for domestic goods and hence increase in export. However, the Nigerian economy is largely import dependent especially on producer goods and durable consumer goods such as cars and electronics. There is also a significant supply gap in some domestically produced goods and this gap is usually filled through imports. These and other structural and institutional constraints which constrain domestic production have made the increase in exchange rate (naira depreciation) not to favor the Nigerian economy in terms of trade in merchandise. Overall, this has a reducing effect on aggregate income as reflected in the findings of this study.

Government expenditure has a significant effect per capita income. This is expected because, over the years the Nigerian economy has

been largely public sector driven with the government being the highest employer of labour. Hence increase in government expenditure leads to increase in aggregate income. Inflation has a negative effect on income in both the long run and the short run. This is also expected because inflation usually has a reducing effect on real aggregate income.

In the second model, trade openness does not have a significant effect on human development. Human development is a broader measure of poverty which take into consideration, life expectancy, education and income. Thus, a collection of these factors which are the determinants of human development are likely largely determined by other factors order than trade openness. Foreign direct investment has a significant effect of human development. This indicates that foreign direct investment may have had significant effect on all components of human development (life expectancy, education and income). Foreign direct investments involve expansion of production activities in the domestic economy and usually produce linkages that have significant effect on the wellbeing of the citizens.

Exchange rate has a significant negative effect on human development. As explained in the case of model 1, the Nigerian economy is largely import dependent, resulting in a reducing effect on income. Also, income level is a component of human development. Therefore, this result indicates that increase in exchange rate(naira depreciation) has very pervasive impact on the economy, affecting the overall wellbeing of citizens. Government expenditure has a significant positive effect on human development in Nigeria while inflation has a negative effect. This could also be explained in terms of the same reasons given in model 1.

Conclusions

Trade openness increase the flow of economic activities between countries and it is believed in mainstream economic analysis that each country can benefit from trade. Some studies reviewed in this study have supported this view. It is explained that international tradeleads to gains in welfare in various ways. These include specialization in production and exchange of goods and services, availability of a wide

range of intermediate goods and final goods, and innovation through the international exchange of technical information. It is also explained that increased foreign competition introduced through trade strengthens the incentives of domestic producers to innovate.These identified gains from trade are expected to trigger down to improve the overall wellbeing of people and thus reduce poverty.On the opposing view, it is explained that greater import penetration reduces the market share of some domestic firms. It is also explained that trade have adverse effect on countries that have comparative advantage in industries that are technically stagnated.

The findings of this study shows that trade openness has positive effect on incomes which is one of the measures of poverty but does not have a significant effect on human development which is a more comprehensive measure of poverty. Generally, countries can benefit from trade if trade is conducted with mutually beneficial considerations. Therefore, the findings of this study points to the fact that Trade openness can lead to poverty reduction in Nigeria if trade is conducted with mutually beneficial considerations.

Recommendations

From the findings of this study, the following are the recommendations

i) Since trade openness has a significant effect on income in the long run, the government should ensure that trade policies are mutually beneficial to Nigeria and the trading partner and that some specific bilateral trade relations are well negotiated.

ii) The government should create the enabling environment to attract foreign direct investment into the Nigerian economy because as shown in the study foreign direct investment has a significant effect on income and human development.

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