Trade Openness, Financial Development, and the Nigerian Economy

Barisua Fortune Nwinee
Omiete Victoria Olulu-Briggs
Department of Finance and Banking
University of Port Harcourt
Nigeria.

Abstract

This study investigates the relationship between changes in different variables of trade openness and financial development; and its impact on the growth rate of the Nigerian economy. Annual time series data for the period 1981-2013 by the Central Bank of Nigeria was used to estimate both long and short-run relationship as well as causal effects. The Unit root test shows that the variables were stationary at level and after being first differenced; at the 5% significance level. The Johansen Co integration test gave evidence of four co-integrating equations which explains that a long-run equilibrium relationship exist among the variables. The Vector Error Correction Model was used to analyze short-run adjustment dynamics and showed 96.7% speed of adjustment of prior deviations from equilibrium. The Granger Causality test demonstrated both bi-directional causality between real effective exchange rate and total trade; and uni-directional causality from gross domestic product to total trade, gross domestic product to credit to the private sector, total trade to foreign direct investment, total trade to credit to the private sector and real effective exchange rate to foreign direct investment. Furthermore, the Impulse Response and Variance Decomposition test indicate both positive and negative shocks which are consistent with our findings from the vector error correction model and Granger causality analysis. Overall, all the results obtained are in line with apriori expectations. Key policy directions are: flexibility in loans policies and interest rates by financial institutions to encourage lending to the real sector; more reforms in our foreign policies in order to attract more foreign direct investments; more regulations in the financial sector to forestall bankruptcy and corruption and the practice of all-inclusive democratic principles.

Keywords: Terms of Trade, Foreign Direct Investment, Real Effective Exchange Rate, Credit to the Private Sector, Growth Rate**.**

Introduction

International Trade is known to encourage the economy of a nation and a key component of globalization. Developing countries needs technical expertise, innovation in capital goods, and other basic raw materials to facilitate the production of goods and services which in most cases is achievable through international trade. Thus, it helps to tackle problems of high unemployment and increasing poverty levels; trigger commerce, industry and multicultural tastes and lifestyles; and promote world peace and integration. The Economy watch (2010) argues that when international trade is practiced properly, it opens up opportunities of global markets to the entrepreneur of the developing nation, makes latest technology readily available to the businesses operating in these countries; hence increasing the level of competition both in the domestic and global fronts. Samuelson and

Nordhaus (2010) stressed on the various significance of international trade. First, it expands trading opportunities as it gives room for countries to enjoy different products produced around the world. Second, it regulates the flow of people, goods and finance across borders hence building on foreign exchange; and third, it encourages international finance and ensures a smooth flow of the exchange of dollars, pounds, yen, etc. Nwinee (1999) defined international trade as the actual trade relations and exchange of products and services between two or more economies. It involves the exchange of ideas which results to international distribution and allocation of resources to enhance the living standards and preferences of nations. It introduces worldwide competitiveness and so the domestic industry veer to grow to be very efficient being exposed to international competition.

Owing to integration with world economies, entrepreneurs obtain easy entrance to high-tech innovations in order to improve their productivity. Though, international trade is highly beneficial for those countries involved in trade; others are of the opinion that it has brought about adverse modifications in the economic and financial settings of emerging economies.

The concept of international trade is largely dependent on the notion of Comparative Advantage and Trade Liberalization. The principle of Comparative Advantage holds that each country will benefit if it specializes in the production and export of those goods that it can produce at relatively low cost (Samuelson and Nordhaus, 2010). In addition, the English economist, David Ricardo in 1817 opines that international specialization benefits a nation. He said, regions will benefit if they specialize in their areas of comparative advantage by trading their own production for goods in which they have no unique qualification. On the other hand, trade liberalization means when tariffs and non-tariff barriers like quotas, licenses and technical specifications are at low levels; thus increasing the flow of trade.

It has been observed in time past that unlocking the economy and liberalization of trade limits has made developing countries like China and India to experience development. The liberalization of trade has led to a massive expansion in the growth of world trade relative to world output. Sukar and Ramakrishna (2002) maintain that external sector openness reduces the hindrances to international trade and such countries can experience competitively higher GDP growth rate. Thirlwall (2000) argue that experts have tended to grow fastest in countries with more liberal trade regimes, and these countries have experienced the fastest growth of GDP.

Trade liberalization accelerates productivity and expansion by granting domestic manufacturers the opportunity to exploit areas in which they have a comparative advantage over external manufacturers and by lowering their actual costs.

The link that exist between liberalization and economic growth is documented in most studies: Dollar (1992), Ben-David (1993), Sachs and Warner (1995), Kruger (1997), Edwards (1998), Frankel and Romer (1999), and Rodriguez and Rodrik (2000). Though, reduced tariffs, controls and checks allows an economy to improve on its scarce resources but has also affected the growth of infant industries and led to unemployment. It does not certainly contribute to a much higher growth rate rather its core advantage is on output level rather than long-term growth rate. In this light, Birdsall and Hamoudi (2002) are of the opinion that a reduction in tariffs and the removal of non-tariff barriers to trade may not necessarily lead to growth. Also, Rodrik and Rodriguez (2001) and Rodriguez (2007) have critiqued the facts supporting a positive link existing between trade openness and growth. Trade liberalization can be an ultimate goal, but the speed and manner of liberalization needs careful consideration on a country by country basis (Thirlwall, 2000). Hence, each country should know when to adopt its own trade policy and strategize on when and how to open its markets taking into consideration changing macroeconomic variables.

In furtherance, a financially developed economy is a prerequisite for a successful international trade. When financial institutions perform intermediary functions between surplus and deficit units, this can actually stimulate investment activities thereby improving the economy. Roubini and Sala-I Martin (1991) growth model find that both the financial development and trade openness variables may perhaps be significant in the growth of an economy. Previous research by Levine (2004); De Gregorio and Guidotti (1995); and Bencivenga and Smith (1991) propose that financial deepening efficiently directs savings to valuable investment opportunities, enhances corporate governance principles, eases transaction and information costs, and boosts specialization.

This paper contributes to the active debate on trade liberalization, financial development, and economic growth link using an up-to-date data; exploiting new measures of liberalization instead of being limited to a particular measure; and with particular emphasis on the Nigerian economy in order to make quality policy suggestions. Most studies on trade liberalization and economic growth have been seen to be overwhelmingly contradictory and inconclusive as a result of data quality, estimation techniques, measure of openness, and heterogeneous samples used for the analysis. Tahir and Omar (2014) opine that the inclusion of countries into sample that differs significantly in terms of economic parameters and the poor quality of data can lead to the problem of generalizability.

In another development, the measures of trade openness used in the earlier studies and the methodologies used to estimate models that link openness to growth are still open to doubt (Huchet-Bourdon et al., 2011).The main objective of this study is to investigate the rate at which changes in various measures of trade openness and financial development has jointly influenced the growth rate in the Nigerian economy.

In this study, we will employ innovative measures used in much of the new growth theory of the ratio of total trade, that is exports + imports to GDP (Javed *et al*, 2012; Brueckner and Lederman, 2012; Khandu, 2014; and Hamad *et al*, 2014); the ratio of foreign direct investment to GDP (Yimer, 2011; and Javed *et al*, 2012) ;the ratio of Private sector credit to GDP as a proxy for financial development (Baliamoune –lutzand Ndikumana, 2007; Yimer, 2011; Awojobi, 2013); and the ratio of real effective exchange rate to the GDP (Tahir and Omar, 2014). They argue that real effective exchange rate is closely related with openness and hence should be considered while studying the relationship between trade openness and economic growth.

According to them, an increase in real effective exchange rate is an indication that local currencies are depreciating relative to foreign currencies; which stimulates export and influences growth rate significantly. Even if import volume decreases, the value of imports increases in domestic currency terms because the currency has depreciated. Only rarely will the volume effect be greater than the currency effect. In a sense, real effective exchange rate indirectly measures trade openness. Higher real effective exchange rate is associated with higher openness and vice versa. They emphasized that real effective exchange rate have not been used in the literature for measuring the degree of trade openness, which can be quite useful and interesting. In this study, we have adopted real effective exchange rate as one of the measures of trade openness. Baliamoune–lutz and Ndikumana(2007) included financial development in their growth regression model. They argue that an underdeveloped financial system will be incapable of attracting substantial foreign exchange inflows. Foreign Direct Investment increases foreign technology transfer which impacts on export competitiveness. Yimer (2011) argue that higher investment return and higher price for some investment good can initiate further innovation in research and development provided that there is well developed patent right.

Precisely, we intend to examine short run and long run relationship as well as the causal effects of measures of trade openness and financial development on the growth rate of the Nigerian economy. We will employ a multiple linear regression model with annual time series data covering the period 1981-2013; sourced from the CBN statistical database. In addition, more robust test will be carried out to enable generalizations to be made for the benefit of researchers, government policy makers, private and foreign investors, and corporate bodies. The remaining parts of this paper are as follows: section 2 expound on empirical literatures. Section 3 provides details on sources of data and techniques used. Section 4 explains the empirical results and evaluates them and section 5 concludes with summary and recommendations.

1. *Trade Openness, Financial Development and Economic Growth*

The debate on trade openness and its impact on the economy of any nation have been quite mixed and contradictory. This is documented in a number of studies: Sachs and Warner (1995) studied the relationship between Openness and Growth-combined multiple-policy criteria (namely Tariff and non-tariff measures, state export monopolies, black market exchange rate premium and the monopolization of exports) into a single dummy variable, classifying countries either as open or closed. They found a positive and strong relationship between growth and the openness index. This is because variations in the index accounted for up to 2% annual growth over the period 1970-89. Greenway *et al* (1998) applied the Sachs and Warner openness index and two other measures of trade protection in order to ascertain when liberalization actually occurred. They found out that, in the long run, liberalization increased growth by 2% and then open economies were about 50% richer in terms of GDP per capita than closed economies. While in the short run, liberalization affects growth negatively in the first year before having a positive impact. Ahmed and Anoruo (2000) investigated long run relationship between GDP growth and openness for five South East Asian countries, The Philippines, Indonesia, Malaysia, Singapore, and Thailand, for the period 1960 to 1997. They used export plus import growth rate as proxy of openness. The Granger causality estimates showed bi-directional influence. Santos and Amelia (2002) examined the impact of trade liberalization on export growth for a sample of 22 developing economies from1972-1998. He used typical export growth functions, which postulate that exports volume depends upon real exchange rate and world income. Trade openness is measured in two ways: first, by the ratio of export duties to total export (as indicator of the degree of anti-export bias) and second, by a dummy variable of timing of the introduction of trade liberalization measures. The results of OLS estimate show that export duty is significant with a negative sign and the dummy variable is also significant with a positive sign. Therefore, the study concludes that exports grow faster in open economies. Wacziarg and Vamvakidis (2002) found no support for a positive growth-openness connection before 1970. Nevertheless, cross-country growth regressions estimated for the period 1920-1990 suggest that the positive correlation between openness and growth is only a recent phenomenon.

Welch (2003) also applied the work of Sachs and Warner with an up-to-date database and found that liberalization had strong and robust impact on growth. However, this positive relationship appeared to be interrupted in the 1990s. This was as a result of the changing nature of protectionist measures. Yasmin *et al* (2006) empirically analyzed how trade liberalization has affected economic development in Pakistan using four measures of economic development: per capita GDP, income inequality, poverty, and employment over the period from 1960-2003. Employing the 2SLS technique of regression analysis, the study found that trade liberalization has not affected all the chosen indicators of development uniformly. It has affected employment positively but per capita GDP and income distribution negatively. However, it has not affected poverty in any way.

Braun and Raddatz (2007) investigated on trade liberalization, capital account liberalization and the real effects of financial development of 108 countries from 1970-2003. They found that financial development had smaller effect on growth in countries which were open in trade and capital flow. Baltagi (2007) researched on the impact of liberalization, financial development and Institutions for 108 countries from 1980-2000 by means of a panel data. The results indicate that financial and trade liberalization as well as economic institutions is judged statistically significant determinants of financial instability in countries after 1980. KalinaManova (2008) examines the impact of equity market liberalizations on the export behavior of 91 countries in the 1980–1997 periods and show that liberalizations increase exports disproportionately more in financially vulnerable sectors that require more outside finance or employ fewer collateralized assets. In addition, the effects of liberalizations are more pronounced in economies with initially less active stock markets, indicating that foreign equity flows may substitute for an underdeveloped domestic financial system.

Likewise, opening equity markets has a greater impact in the presence of higher trade costs caused by restrictive trade policies. Kazungu (2009) examined the impact of trade liberalization on the economic growth of Tanzania. He employed both parametric and non-parametric tests to estimate the effect of liberalization policies on the growth rate of exports, land productivity and economic growth; as well as OLS and instrumental variable to test the "inverse relationship hypothesis". The study finds a weak impact of trade liberalization in fostering export growth and no indication of improved growth overtime. Empirically, there exist diminishing returns to land in the agricultural sector. More so, the impact of trade liberalization on land productivity was mixed; while that of exports is negative and significant. Herath (2010) examined the impact of trade liberalization on economic growth and trade balance in Sri Lanka. Data were collected before and after the trade liberalization from 1960 to 2007. Using regression analysis and Chow test, the study shows a significant positive relationship between trade liberalization and economic growth of Sri Lanka. Sun and Heshmati (2010) applied both qualitative and quantitative approaches to discuss the relationship between international trade and China's economic growth. Both econometric and non-parametric approaches are applied based on a 6-year balanced panel data of 31 provinces of China from 2002 to 2007. For the econometric approach, a stochastic frontier production function is estimated and province specific determinants of inefficiency in trade identified. For the non-parametric approach, the Divisia index of each province/region is calculated to be used as the benchmark. The study demonstrates that increasing participation in the global trade helps China reap the static and dynamic benefits, stimulating rapid national economic growth. Both international trade volume and trade structure towards high-tech exports result in positive effects on China's regional productivity.

Most recently, Amiti and Weinstein (2011) examined whether deteriorations in bank health can help explain the large drops in exports relative to output and find that the health of financial institutions is an important determinant of firm-level exports during crises. Khan (2011) investigated the impact of trade liberalization on economic growth in Pakistan. His study revealed that trade liberalization can have a positive and beneficial effect on economic growth if supported by appropriate sequencing of prudent macroeconomic policies including good management, integrated and strengthened efforts made by domestic institutions, focused and targeted flow of foreign direct investment (FDI's) towards export-oriented industries and services, and improved market access. Yimer (2011) used dynamic panel data and three indicators of trade liberalization to examine the relationship between trade liberalization and real per-capita income for Sub-Saharan African countries. The study finds that trade share has positive impact on per-capita income while tariff rates are negatively associated with per-capita income. Even if these openness indicators maintained the expected sign, they have insignificant effect on per-capita income. However, the liberalization dummy variable has positive and significant effect on per-capita income and the result is consistent and robust to changes in specifications and sample sizes. Zakaria and Ghauri (2011) examined the effect of trade openness on real exchange rate in Pakistan using quarterly data for the period 1972Q1 to 2010Q2.

They estimated a dynamic model of real exchange rate determination by using GMM estimation technique. The results showed that trade openness has a statistically significant positive effect on real exchange in Pakistan, which indicates that trade openness has depreciated Pak-rupee in real terms. Brüeckner and Lederman (2012) analyzed the effect of openness to international trade on economic growth with panel data; using rainfall, political institutions, ethnic polarization and fractionalization as variables. Employing instrumental variables techniques that correct for endogeneity bias, the empirical evidence suggests that within-country variations in trade openness cause economic growth: a 1 percentage point increase in the ratio of trade over gross domestic product is associated with a short-run increase in growth of approximately 0.5 percent per year; the long-run effect is larger, reaching about 0.8 percent after ten years. These results are robust to controlling for country and time fixed effects as well as political institutions. Javed *et al* (2012) investigated the impact of total exports to GDP ratio, imports to GDP, terms of trade, investment to GDP ratio, and inflation on the economic growth of Pakistan. The empirical analysis was conducted using time series data from 1973-2010. Chow test was used to test the structural break and model fitness. The OLS technique was used to detect the relationship between exogenous variables and endogenous variable and reveal that explanatory variables have positive and significant impact on the economy of Pakistan. The results also demonstrate that an increase in the import of raw materials, production, employment, and output of the country is boosted up. It concludes that international trade may play an important role to enrich the economy of Pakistan. Manni and Afzal (2012) used Ordinary Least Square (OLS) technique to study the effects of trade liberalization on the economic growth of Bangladesh between 1980 and 2010 through analyzing important variables namely exports, imports, growth and inflation. The study show that both real exports and imports had increased with greater openness, which led to the growth of the Bangladesh economy after 1990s; while growth and inflation only increased following liberalization. Tash and Sheidaei (2012) empirically investigate the relationship between trade liberalization and financial development and their joint impact on the economic growth in Iran. Using endogenous growth theory during the period 1966-2010, the result obtained indicated that trade liberalization and financial development positively contribute to the economic growth, although their impacts are negligible. Furthermore, the joint impact of trade liberalization and financial development in terms of economic liberalization is positive on growth, while the human and the physical capital have had significant impacts. Zulfiqar and Kausar (2012) examined the impact of trade liberalization and effective exchange rate on export growth for Pakistan, using Vector Error Correction Model (VECM). The study is based on annual time series data for the period 1981-2010 and the results suggest that, openness has a significant and positive impact on export growth in the long run. Real effective exchange rate and world GDP also have positive and significant impact on export but only if trade is more liberalized.

Awojobi (2013) examined trade openness and financial liberalization on the Greek economy. Using time series data covering the period 1960-2009, he estimates a vector error correction model (VECM) in order to analyze the long-run equilibrium features of proxies for openness and growth; and the relationship between financial development and economic growth using the Granger causality test. Results from the regression estimates find the error correction term (ECT) to be -0.20 for the sampled data. This suggests that there is long-run convergence among financial development, trade openness, and domestic output in Greece. This convergence is expected within an average of five cumulative years. In addition, the Granger causality test shows that there is a causal relationship between financial development and economic growth, but that financial development has no causal impact on trade in the case of Greece, which is theoretically unexpected. Hamad *et al* (2014) analyzed the effect of trade liberalization on economic growth in Tanzania. The study adopted a simple linear regression model where real GDP was the dependent variable while trade openness was the independent variable. Annual time series data was used covering the period 1970-2010. This overall period was then subdivided into a closed economy period (1970-1985) and an open economy period (1986-2010). OLS technique was used to estimate the regression model twice, regarding the two sub-periods. The empirical findings indicated that trade openness had a positive and significant effect on economic growth in Tanzania. However, this effect was relatively greater during the closed economy compared to the open economy period. Khandu (2014) examined the relationship between trade liberalization and economic growth in small developing economies. The study used a cross-country growth regression analysis under a fixed-effects model using dynamic panel data. Samples of 20 homogenous countries from different regions were selected for the analysis based on land size, population, economy, geography, and resource dependence. Given the complexity of constructing a trade openness index in the absence of adequate data, the study used the ratio of total trade (exports + imports) to real GDP as a proxy for trade liberalization.

The regression results show that trade liberalization has a positive and significant effect on growth, which is consistent with much of the earlier theoretical and empirical literature in the field. Nowbutsing (2014) analyzed the relationship between openness and economic growth for Indian Ocean Rim Countries in a panel data framework and consists of 15 countries from 1997-2011. Three measures of openness are used: trade as a percentage of GDP, exports as a percentage of GDP and imports as a percentage of GDP. They employed the panel unit root and co integration test as well as the Pedroni (2004) statistics. Their result shows stationary at first difference and the presence of long run relationship among the variables. In estimating the model, the Fully Modified Ordinary Least Square (FMOLS) was used and the result proves that the measures of openness positively affect economic growth. However, imports as a percentage of GDP have the maximum impact on economic growth in terms of size.

2. Data Presentation and methods

Table 3.1 Data for the variables of GDP, TOT, REER, FDI, and CPS

YEAR	GDP	TOT	REER	FD1	CPS
1981	7.088479812	25.29858992	0.117031515	0.354836924	9.085659351
1982	8.96217183	18.78692102	0.108760184	0.287096791	10.5615402
1983	5.64048945	14.9060506	0.099796455	0.240132948	10.60113978
1984	15.75046585	13.98984693	0.097357769	0.309962366	10.718875777
1985	0.013173773	13.95647186	0.074227858	0.322545675	9.711546137
1986	43.47803605	11.07268379	0.038550312	0.546643277	11.32769236
1987	36.33285385	24.96932058	0.007621959	1.270050361	10.91669161
1988	45.18402324	19.99225506	0.004926044	0.652577346	10.37865235
1989	23.64540043	23.23838585	0.002323017	3.630342151	7.953512834
1990	15.44987901	32.92169925	0.001633348	0.991433914	7.097807833
1991	60.41538915	38.67221361	0.001161869	1.267445426	7.578257133
1992	24.48609488	39.84302054	0.000427261	1.652278927	6.640023234
1993	28.4508828	35.2763746	0.000272557	2.721928238	11.665603
1994	107.7124735	26.35187193	0.000211473	1.588136662	10.24675848
1995	38.69293325	58.67144653	2.54527E-05	2.612013907	6.191351351
1996	3.892305056	46.42932922	0.000472931	2.759985383	5.917132746
1997	-4.76933821	49.82704338	0.000458793	2.636574711	7.548059881
1998	17.28964448	39.83695217	0.000498314	2.024063325	8.82217265
1999	43.47661034	43.84254182	0.001148911	1.983079608	9.214550461
2000	2.705317127	43.65402591	0.000867645	1.727130519	7.900013275
2001	13.06068335	46.7881277	0.001023611	1.920665566	11.09411916
2002	27.16553983	41.77750071	0.001092004	2.889068515	11.93590005
2003	15.10612773	52.13206453	0.001076106	2.606426851	11.0610133
2004	28.04132659	57.74943616	0.001110238	2.175297034	12.45864251
2005	27.06005995	68.76649526	0.000984061	4.477437944	12.58233415
2006	11.27265621	56.19944874	0.000798994	3.364041818	12.33863594
2007	17.61608975	59.16407491	0.00075397	3.676084389	17.75960404
2008	2.049319319	63.19034129	0.000385408	3.998726632	28.48372142
2009	37.06714127	54.52319422	0.000398359	5.137547506	36.71033918
2010	10.07836181	56.36845283	0.000271622	2.665109085	29.88699326
2011	8.378110153	65.42501362	0.000240044	3.636228224	28.495353
2012	4.569507703	59.41017913	0.000198821	2.746418299	36.13170962

Source: CBN Statistical Bulletin, 2013.

Note: GDP=Growth Rate of the Gross Domestic Product; TOT=Total Trade (Exports + Imports) to the GDP; REER=Real Effective Exchange Rate to the GDP; FDI=Foreign Direct Investment to the GDP; CPS=Private Sector Credit to the GDP

The main objective of this study is to investigate the rate at which a change in each of the variables of trade openness has jointly influenced the growth rate of the Nigerian economy. We obtained standard annual data from the Central Bank of Nigeria statistical database which provides better quality data for empirical analysis; and the E views 7 statistical software will be used to empirically estimate our data. The sample period is from 1981-2013 and has been characterized by changes in trade liberalization policies. Specifically, trade policies were relaxed in the early 80's which led to a boom in the economy mostly due to crude oil export earnings. However, in 1986, a fall in oil prices but an upward demand for imports made the government to introduce the Structural Adjustment Programme and impose stricter restrictions on exchange rate pricing. Also, the Export Incentive and Miscellaneous Provision Decree were promulgated to encourage exports as well as the Nigerian Export-Import bank to provide credit. During the period under review, custom tariffs were imposed and exchange rate devalued to discourage excessive imports; and based on a Common External Tariff (CET) and the Tariff Trade Restrictive Index, Nigeria became open to trade to enhance food security.

In furtherance, we determined the Stationary of the variables employing the PP and ADF test with automatic lag length selection using the Akaike Information Criterion (AIC) to ascertain if the mean, variance, and auto covariance's of the series are not time dependent. The ADF test brings to play the lagged dependent variable as explanatory variables to approximate for autocorrelation. It is the most widely used test and has demonstrated to be very efficient among other tests in testing for integration of variables (Charemza and Deadman, 1997).

Most macroeconomic variables are non-stationary in levels and so contain a unit root. For this reason, it is appropriate to do a unit root test to avoid spurious results (Granger and Newbold, 1974).Likewise, most time series data are stationary after being differenced to exclude seasonal influences and this can also discard valuable long-run information that are relatively unique to the features of the variables. Consequently, we utilize the Co-integration technique to integrate short-run dynamics with long-run equilibrium. Following previous study by Awojobi (2013), we empirically analyze our data with the Vector Error Correction model (VECM). A vector error correction model (VECM) is a restricted VAR designed for use with non-stationary series that are known to be stationary after being first differenced and also co integrated. The VECM has Cointegration relations built into the specification so that it restricts the long-run behaviour of the endogenous variables to converge to their co integrating relationships while allowing for short-run adjustment dynamics. The co integration term is known as the error correction term since the deviation from long-run equilibrium is corrected gradually through a series of partial short-run adjustments (Eviews, 2013).

Impulse response and Variance decomposition test is also employed to measure how shocks to economic variables reverberate. The impulse response function traces the effect of a one-time shock to innovations on current and future values of the endogenous variables; while the variance decomposition separates the variation in an endogenous variable into the component shocks to the VAR. Thus, the variance decomposition provides information about the relative importance of each random innovation in affecting the variables in the VAR (E-views, 2013).

In addition, we intend to understand better, the direction of influence of one variable on another, hence, the Granger causality test. The Granger (1969) approach to the question of whether X causes Y is to see how much of the current Y can be explained by past values of Y and then to see whether adding lagged values of X can improve the explanation. Y is said to be Granger-caused by X if X helps in the prediction of Y, or equivalently if the coefficients on the lagged X's are statistically significant. If we say "X Granger causes Y", this does not mean that Y is the effect or the result of X. Granger causality measures precedence and information content but does not by itself indicate causality in the more common use of the term. (Eviews, 2013)

Accordingly, our functional model is specified thus:

$GDP_t = f (TOT_t, REER_t, FDI_t, CPS_t$

The econometric linear form is given as:

$GDP_t = \alpha + \beta_1 TOT_t + \beta_2 REER_t + \beta_3 FDI_t + \beta_4 CPS_t + \varepsilon_t$

Where;

GDP_t = It is the rate of growth of the Gross Domestic Product of an economy at time t. The GDP is an aggregate measure of an economy's total productivity. When government relaxes trade restrictions, make policies that will attract foreign inflows as well as encourage private sector credit, then a positive growth rate will be experienced.

TOT_t = Total trade is the sum of exports + imports to the GDP at time t. This is the central operations of international trade; and is closely related to trade openness. So, an increase in international trade has a multiplier effect on the economy of a nation by way of exposure to foreign transactions.

$REER_t$ = It is Real effective exchange rate to the GDP at time t; and helps in the determination of a country's currency in relation to other currencies like the pounds, dollars, euros, yen etc. It shows the value an investor pays for his imports which include tariffs and other transaction costs. The REER is closely related with trade openness such that an increase in REER indicates that local currencies are depreciating which stimulates exports and positively impacts on the growth rate of the GDP. Thus, a higher REER results to higher openness.

FDI_t = It is Foreign direct investment to the GDP at time t. A foreign direct investment exists when a foreign firm acquires at least a 10 percent interest in a company based in another country. FDI's ushers in technical expertise, competition, new innovations etc. which leads to more activities that are productive and thereby increases the growth rate of an economy.

CPS_t = It is Private sector Credit to the GDP at time t; and involves the provision of financial resources by financial institutions to private investors. This type of credit is given to encourage both domestic and international trade. The higher the volume of credit given, is an indication of a financially developed economy.

α is the intercept

$\beta_1, \beta 2, \beta_3 \beta_4$ are parameter estimates

ε_t is an uncorrelated stochastic error term at time t

A priori it is expected that there will be a significant relationship between the variables for trade openness, financial development and economic growth i.e. $\beta 1>0$, $\beta 2>0$, $\beta 3>0$, and $\beta 4>0$.

4. Empirical Results and Discussions

In Table 4.1, we employ the Augmented Dickey Fuller and Phillips-Perron Unit root test to check if the variables are stationary in their first difference. The first differences of input variables are made to eliminate autocorrelation and thus achieve a stationary nature (**Širůček** 2012). For the ADF test we found that GDP and REER are stationary at levels while GDP, TOT, REER, FDI and CPS are stationary in their first difference. The PP test also shows same as GDP and REER are stationary at levels while, after being first differenced, all the series are stationary. The Phillips-Perron test is robust to a wide variety of serial correlation and time dependent heteroscedasticity (Habibullah and Baharumshah 1996).

Table 4.1: ADF and PP Unit Root Test of Stationarity

	ADF		PP	
Series	**Level**	**First Difference**	**Level**	**First Difference**
GDP	-4.519308*	-4.459439*	-4.519308*	-16.79110*
TOT	-0.938632	-8.302218*	-1.085193	-14.84010*
REER	-38.66124*	-5.367379*	-3.412195*	-2.971452*
FDI	-1.692838	-4.772704*	-2.537456	-12.36855*
CPS	1.699347	-5.106498*	0.776416	-3.935880*

Source: Authors 'extraction from E-views 7 computation

Note: *denote significant at 5% using t-statistic

We went further to conduct the Johansen co integration test in order to know the number of co integrating relation that we will employ to our VECM analysis. This we present in table 4.2 which indicates four (4) co-integrating equations at the 5 percent significance level. Hence, we reject the null hypothesis that there is no co integrating equation. In addition, the maximum eigen value statistic test also indicates four co integrating equations among the variables. Thus we can ascertain that a long- run equilibrium relationship exist among the variables.

Table 4.2: Johansen Test of Co integration

VARIABLES	MAX-EIGEN STATISTIC	TRACE STATISTIC	0.05 CRITICAL VALUE	P-VALUES
GDP	75.81421*	185.2272*	69.81889	0.0000
TOT	53.87229*	109.4130*	47.85613	0.0000
REER	36.96362*	55.54068*	29.79707	0.0000
FDI	16.84338*	18.57706*	15.49471	0.0166
CPS	1.733678	1.733678	3.841466	0.1879

Source: Authors' extraction from E-views7 computation

Note: *denote significant at 5% using t-statistic

We employed the VECM estimation technique due to the fact that there is co integration and stationarity among the variables in their first differences. The VECM is used to estimate the short-run properties of the co integrated variables and to obtain the actual relationship linking the variables. It allows for short-run variations to be integrated. The coefficient of the error correction term must be a negative number to account for a push in the direction of long-run equilibrium.

Table 4.3: VECM: Long and Short- run dynamics

Coint. eqn	Coint Eq1	Coint Eq2	Coint Eq3	Coint Eq4	
CPS(-1)	**-1.144598** (0.77220) [-1.48226]	**-0.316076** (0.43851) [-0.72080]	**0.000638** (0.00143) [0.44692]	**-0.040328** (0.02915) [-1.38367]	
C	-9.570224	-37.29533	-0.019937	-1.739001	
Error correction	**D(GDP)**	**D(TOT)**	**D(REER)**	**D(FDI)**	**D(CPS)**
VECM1	-0.967531 (0.38256) [-2.52912]	0.061351 (0.12739) [0.48160]	2.78E-05 (0.00012) [0.24126]	0.016619 (0.01520) [1.09330]	-0.034658 (0.04250) [-0.81546]
VECM2	-0.361078 (0.91869) [-0.39304]	-0.457123 (0.30592) [-1.49425]	0.000170 (0.00028) [0.61522]	0.072812 (0.03650) [1.99462]	0.016562 (0.10207) [0.16226]
VECM3	-646.4015 (276.532) [-2.33753]	-8.015997 (92.0842) [-0.08705]	-0.129819 (0.08334) [-1.55778]	-0.146281 (10.9880) [-0.01331]	16.78733 (30.7225) [0.54642]
VECM4	-21.59597 (15.0473) [-1.43521]	7.370709 (5.01070) [1.47099]	-0.000716 (0.00453) [-0.15794]	-1.151300 (0.59790) [-1.92556]	2.129283 (1.67175) [1.27369]
D(GDP(-1))	0.062476 (0.36191) [0.17263]	0.132089 (0.12051) [1.09604]	-4.98E-05 (0.00011) [-0.45643]	-0.010411 (0.01438) [-0.72398]	-0.018341 (0.04021) [-0.45616]
D(TOT(-1))	0.289454 (0.87842) [0.32952]	-0.111607 (0.29251) [-0.38155]	-7.68E-05 (0.00026) [-0.28998]	-0.043863 (0.03490) [-1.25666]	-0.215075 (0.09759) [-2.20381]
D(REER(-1))	-510.9464 (714.303) [-0.71531]	-147.1509 (237.861) [-0.61864]	0.670332 (0.21526) [3.11400]	15.69732 (28.3829) [0.55306]	-78.58987 (79.3588) [-0.99031]
D(FDI(-1))	13.08196 (11.4265) [1.14488]	-5.962478 (3.80499) [-1.56702]	0.000705 (0.00344) [0.20461]	-0.164329 (0.45403) [-0.36193]	-2.445470 (1.26948) [-1.92636]
D(CPS(-1))	2.823071 (1.77176) [1.59337]	-0.741406 (0.58999) [-1.25664]	-6.70E-05 (0.00053) [-0.12553]	0.092591 (0.07040) [1.31520]	0.648591 (0.19684) [3.29499]
C	0.273476 (5.19222) [0.05267]	3.101951 (1.72899) [1.79408]	-0.002583 (0.00156) [-1.65079]	0.023592 (0.20631) [0.11435]	1.739089 (0.57685) [3.01479]
Adj. R-squared	0.481345	0.411120	0.527566	0.469991	0.577926
F-statistic	2.856124	2.396277	3.233398	2.773524	3.738509

Source: Authors' extraction from E-views7 computation Standard errors in ( ) & t-statistics in [ ]

The significant negative value of the ecm(-1) coefficient in table 4.3 indicates that growth rate of GDP responds to disequilibrium with an adjustment period of 1 year (1/0.967531). Hence, 96.7% deviations from equilibrium in the previous year are adjusted back to equilibrium in the current year. This shows a long-run error correction among the variables. Furthermore, an increase of one percent of CPS led to growth rate decreasing by 1.145 percent and shows a negative influence on the economic growth rate of Nigeria. This may be due to the huge non-performing loans of the banks that made the Central Bank of Nigeria (CBN) revoke the licenses of Afribank, Spring Bank and Bank PHB in August, 2011 because it said they did not show the necessary capacity to recapitalize, following a N620 billion bailout of nine lenders in 2009. In addition, banks are very skeptical in funding risky projects which led to very low investment activities in the private sector; and a distortion on the economy. The overall amount of "noise" in the data is small (S.E 0.38256); and gives a more precise measurement of the coefficient. Adjusted R^2 is 0.481345 which means that 48% of variations in the growth rate of the GDP are explained by changes in TOT, REER, FDI and CPS. Overall, all the variables are jointly significant and hence the model is fit for forecast and policy (F-statistic=2.856124).

Table 4.4: Impulse Response

Response of GDP: Period					
	GDP	TOT	REER	FDI	CPS
1	21.31123	0.000000	0.000000	0.000000	0.000000
2	-0.187514	-1.632103	-3.477703	-1.150330	8.988348
3	-2.639772	-10.10199	-3.597780	3.797231	4.493750
4	1.798635	-9.262017	8.318040	-8.726391	-3.251794
5	-2.860605	0.054483	-2.718508	-1.416480	-4.914438
6	-5.701984	0.417907	-0.646513	1.228042	4.056509
7	-3.958591	-0.534079	0.105838	3.599588	8.860687
8	3.851495	-5.335917	-1.309770	1.999881	3.030334
9	2.001754	0.515309	-2.770363	2.261314	-2.980926
10	-2.169459	4.995899	1.068962	0.706055	-1.326016

Source: Authors' extraction from E-views 7 computation

Table 4.4 shows Impulse response of GDP growth rate to one standard deviation innovation in TOT, REER, FDI and CPS for 10 periods. The response of GDP growth rate to its own shocks is high and positive in the first period but negative from periods 2-3 and 5-7. Thereafter it became positive in the 8th and 9th period but turn out to be negative in the 10th period. The response of GDP to shocks from TOT, REER, FDI, and CPS is mixed but mostly negative from the 2nd-10th periods. Negative shocks may seem to be the initiation of trade policies that negatively affects international trade as well as the inability of banks to lend to the private sector.

Table 4.5: Variance Decomposition

Variance Decomposition of GDP:						
Period	S.E.	GDP	TOT	REER	FDI	CPS
1	21.31123	100.0000	0.000000	0.000000	0.000000	0.000000
2	23.47500	82.42132	0.483375	2.194693	0.240123	14.66049
3	26.60171	65.16945	14.79739	3.538247	2.224575	14.27034
4	30.86397	48.75233	19.99810	9.891846	9.646609	11.71112
5	31.53283	47.52903	19.15902	10.21991	9.443501	13.64854
6	32.33246	48.31728	18.23978	9.760634	9.126434	14.55587
7	33.95326	45.17373	16.56470	8.851978	9.399848	20.00975
8	34.79982	44.22752	18.11963	8.568194	9.278335	19.80632
9	35.17065	43.62373	17.76102	9.008925	9.497102	20.10922
10	35.63761	42.85859	19.26383	8.864352	9.289100	19.72413

Source: Authors' extraction from E-views 7 computation

While impulse response functions trace the effects of a shock to one endogenous variable on to the other variables in the VAR, variance decomposition separates the variation in an endogenous variable into the component shocks to the VAR. Thus, the variance decomposition provides information about the relative importance of each random innovation in affecting the variables in the VAR (E views, 2013).In table 4.5, GDP accounts for 100% variation in its own shock while from the 2nd - 10th period; there is a decreasing trend in variations. A thorough look at the results shows that variations in TOT, REER, and CPS are quite unstable but that of FDI shows some degree of an increasing trend. This validates our Vector Error Correction Model.

Table 4.6: Granger Causality Test

Pair wise Granger Causality Tests			
Date: 03/18/15 Time: 14:47			
Sample: 1981 2012			
Lags: 1			
Null Hypothesis:	**Obs**	**F-Statistic**	**Prob.**
TOT does not Granger Cause GDP	31	1.26013	0.2712
GDP does not Granger Cause TOT		10.9881	**0.0025**
REER does not Granger Cause GDP	31	0.53863	0.4691
GDP does not Granger Cause REER		0.26068	0.6137
FDI does not Granger Cause GDP	31	0.50562	0.4829
GDP does not Granger Cause FDI		0.51544	0.4787
CPS does not Granger Cause GDP	31	0.39873	0.5329
GDP does not Granger Cause CPS		9.43251	**0.0047**
REER does not Granger Cause TOT	31	6.16011	**0.0193**
TOT does not Granger Cause REER		4.76810	**0.0375**
FDI does not Granger Cause TOT	31	0.67018	0.4199
TOT does not Granger Cause FDI		12.6651	**0.0014**
CPS does not Granger Cause TOT	31	0.32273	0.5745
TOT does not Granger Cause CPS		4.92451	**0.0348**
FDI does not Granger Cause REER	31	1.65205	0.2092
REER does not Granger Cause FDI		6.49953	**0.0166**
CPS does not Granger Cause REER	31	0.03107	0.8613
REER does not Granger Cause CPS		0.10989	0.7427
CPS does not Granger Cause FDI	31	0.45718	0.5045
FDI does not Granger Cause CPS		0.85879	0.3620

Source: Authors' extraction from e-views 7

The test of causality is presented in Table 4.6. From the results, changes in REER cause changes in TOT and vice versa; hence lags of REER and TOT are significant in the equation for REER and TOT. This shows a bi-directional causality. Furthermore, there exist uni-directional causality from GDP to TOT, GDP to CPS, TOT to FDI, TOT to CPS and REER to FDI. There is a correlation between: the current value of GDP and past values of TOT and CPS; the current value of TOT and past values of REER, FDI, and CPS; and the current value of REER and past values of TOT and FDI.

3. Summary and Recommendation

Trade openness and financial development are very significant factors in identifying the level of international trade a nation is involved in. This paper investigates the relationship between changes in different variables of trade openness and financial development; and growth rate of the gross domestic product. Annual time-series data for the period 1981-2013 was sourced from the Central Bank of Nigeria statistical database; and used to estimate both long and short-run relationship as well as causal effects. The empirical results obtained from the co integration analysis show that a long-run equilibrium relationship exists among the variables. Also, the Vector Error Correction Model indicates that growth rate of GDP responds to disequilibrium with an adjustment period of 1 year. Hence, 96.7% deviations from equilibrium in the previous year are adjusted back to equilibrium in the current year.

A cursory look at Private sector credit (as a proxy for financial development) shows a decreasing growth rate of 1.145 resulting in a negative impact on the Nigerian economy. This weak result may not be unconnected with the fact that the financial sector is very fragile and not well-developed. This assertion is supported by the CBN publication on the banking crisis of 2009/2010 when eight bailed-out bank's merger was bordered on poor corporate governance, lack of effective risk management practices and other economic and macro-prudential issues.

The response of GDP growth rate to its own shocks is high and positive in the first period but negative thereafter whereas GDP's response to shocks from TOT, REER, FDI and CPS is mixed but mostly negative from the 2nd-10th periods. Negative shocks may seem to be the initiation of trade policies that negatively affects international trade as well as the inability of banks to lend to the private sector. Furthermore, the GDP growth rate accounts for 100% variation in its own shock while variations in TOT, REER, and CPS are quite unstable but that of FDI shows some degree of an increasing trend. This validates our Vector Error Correction Model.

In addition, the test of causality show both bi-directional causality between REER and TOT; and uni-directional causality from GDP to TOT, GDP to CPS, TOT to FDI, TOT to CPS and REER to FDI. First, it is the growth rate of an economy that actually brings changes in import and export activities as well as private sector credits. Second, a change in international trade is significant in explaining changes in private sector credit and foreign direct investments. Lastly, changes in real effective exchange rate affect investments and international trade.

Based on the above findings, the following recommendations were made. First, private investors should be more involved in exporting activities which is achievable through loans to SMEs and or support for infant industries.

The Bank of Industry and Bank of Agriculture should be more flexible in their loan policies and interest rates to encourage lending to the real sector. Second, government should engender more reforms in our foreign policies like minimal trade barriers in order to attract more foreign direct investments. This will give room for more modern technology and innovation in the production of goods and services and will result to quality products and competition and hence drive down prices. In a related study by Olulu-Briggs and Odi (2011), they found that a change in GDP precedes changes in foreign direct investments in the Nigerian economy. They conclude that preceding growth of an economy to a significant extent attracts foreign outlays. Third, financial regulations and subsequent monitoring and or supervision of financial institutions with adequate feedback mechanism should be put in place to forestall bankruptcy and corruption. This will help to stabilize the macroeconomic environment and promote long-run sustainable growth of the economy. Amiti and Weinstein (2011) established a causal link from shocks in the financial sector to exporters that result in exports declining much faster than output during banking crisis; and this drop in exports due to financial factors are typically at least 20%. Finally, the existence of democratic principles and the rule of law will result to more secured investments. This is also the view of Asiedu and Lien (2012) that democracy promotes Foreign Direct Investments.

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