Re: Reviewed Journal Article from Ogunniyi, M.B.

babatope ogunniyi (babatopeogunniyi@yahoo.com)
tarawalieabu@yahoo.com;

Wednesday, June 11, 2014 5:36 PM

On May 28, 2014 3:47 PM, babatope ogunniyi <babatopeogunniyi@yahoo.com> wrote:

Please receive the honorarium [$500.00] as promised.

Best regards,

Chim. Matthew Babatope

On May 28, 2014 3:47 PM, babatope ogunniyi <babatopeogunniyi@yahoo.com> wrote:

Dear

On receipt of your mail of 22nd May, 2014.

Kindly find my bank accounts.

Babatope, Matthew Babatope, Account Number: 2024958822
First Bank Plc, (Swift Code, FBINGLAC, Account Number: 3582-05964-001).
Standard Chartered Bank, New York, (Swift Code: SCBLUS33)

On May 22, 2014 11:23 AM, Abubakarr Tarawalie <tarawalieabu@yahoo.com> wrote:

I wish to inform you that your manuscript was accepted for publication in the "West African Monetary and Economic Integration", Vol 14, No 2, December 2013.

A sum of USD 500 will be paid to you. Kindly provide your bank detail including swift code so as we transfer the money into your account.

Abubakarr Tarawalie

CHIEF RESEARCH AND STATISTICS DEPARTMENT
AFRICAN MONETARY INSTITUTE (WAMI)

KUMASI INTERCHANGE

On May 28, 2014 6:03 PM, babatope ogunniyi <babatopeogunniyi@yahoo.com> wrote:
understanding.

Most of the comments and issues raised by the reviewers have been addressed adequately.

Please take a look of the article would find a consideration and acceptance for publication by your esteemed organisation.

Enclosed is the attached manuscript.

Please consider the reviewers' comments.

We look forward to your favourable reply.

Best regards,

Ademola Ogundipe

Ph.D. Student

Department of Economics,

University of Lagos, Nigeria.
The Role of International Trade in Growth Accounting: Evidence from Nigeria.

Matthew Babatope Ogunniyi:
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The variables for examining the effect of international trade on growth is based on literature. Foreign direct investment is a major channel of growth which has presented a sustained growth of many economies. This study examines the Solow model positive as well as economic dependency and the financial contagion adverse effect on both foreign and international trade in Nigeria. The data involved in this study are basically from the balance of payment account of the Central Bank of Nigeria statistical bulletin of the World Development Indicators (WDI) and Global Development Finance (GDF) of the World Bank (2011). Using Ordinary Least Square to regress on the Cobb productive function, which is re-fashioned into a log linear specification, we avail the proxies for labor and capital and these are the total population and the gross capital respectively and these are the control variables. The trade proxies used the total trade openness (which is the ratio of total trade to the gross domestic product (GDP).

The study shows that the effect of international trade on economic growth is significant, also that total trade, economic openness and foreign direct investment have negative on the gross domestic product as revealed by the negative elasticity of the gross domestic product the exchange rate volatility increases with higher levels of national output. It is noted that since the structure of the Nigerian economy clearly reveals increasing integration into the global economy it becomes pertinent not just to harness the benefits there are in international trade and finance but also to guard against the often adverse effects of international trade.

International Trade, Foreign Direct Investment.
INTRODUCTION

International trade dates from the pre-colonial times when foreign merchants from Europe began to expand their markets and open new economic links for their numerous products spread into Africa. The slave trade also revealed the unwholesome side of international trade of humans by African kings in exchange for Western goods and services of immense value to Africa was on the increase in the pre-colonial periods in many African countries.

After the colonial era, international trade continued as colonial masters – particularly the Britons – developed the domestic infrastructure of the countries colonized with the aim of developing the productive potential of the colonies and expanding the crown’s economic influence globally. International trade in this era brought social, political and economic changes and sweeping effect on the colonies. In the case of Nigeria during the pre-colonial and colonial times, foreign multinational companies such as the United African Company were established as a representative of the British economic interests in Nigeria. However, Nigeria like other African countries were net exporters of primary commodities while they net importers of consumables and this is directly evident from the statistical database of the Central Bank of Nigeria statistical bulletin (2011).

In the early 1970s, when Nigeria discovered crude oil commercial quantities and began the exportation of crude oil, Nigeria’s development was largely based on agriculture as it was the largest source of labour (providing about 70% of the working population employment) and hence it was expected that the exports of Nigeria had a high primary commodity concentration but with the discovery of crude oil, Nigeria switched from being agriculture-led to crude oil-led growth and this is evident in the increasing magnitude of the quantum of exports of the oil as oil exports in the relation to the gross domestic product exhibits a steady rise over the period 1960 till date while oil imports in relation to the gross domestic product exhibits a rise in means between the time frames 1960–1986 and 1986–2011 with the average values being largely representative due to comparatively low volatility in the period but higher the volatility is recorded to be quite high and in addition the average for the period to be higher than the former. In relation to the gross domestic product, the non-oil component of the current account of the Nigerian balance of payments exhibits a downward trend, and in like manner with the oil imports there are two time frames reflecting average values of the ratio of the non-oil exports to the gross domestic product and higher than the former suggesting the relative decline of the non-oil exports in relation to output as a whole. Non-oil imports in relation to the gross domestic product are somewhat higher than the ratio of the non-oil imports to the gross domestic product falls within the ranges...

Financial side, the ratio of the cumulative foreign private investment to the gross domestic product declines continuously as the gross domestic product grows faster than the cumulative foreign private investment and the quantum of reserves (denominated in dollars) between 1960 and 1974 was comparatively stable about 1.8 billion dollars and in the 1973 and 2003 there was a steep rise which saw a decline from 2009 till 2011. This could be attributed amongst other factors to the decline in the oil activities in the Niger Delta due to illegal
considering, kidnapping and other underground activities in the Niger Delta. Another factor to consider is the rise in the activities of the government as well as the decline in the demand for Nigerian crude oil by its largest purchasers United States of America.

In the whole it is clear that the different indicators of international trade – both real and financial – exhibit different movements over time and in relation to the gross domestic product variables suggesting positive or negative impact on economic fundamentals. This is pertinent for the research on the impact of international trade on growth in the Nigerian economy a worthwhile venture.

In the case of Nigeria, a country that is largely drive by oil-led development, there is the tendency to conclude that international trade portends positive consequences for growth but a study of Karl (2007) reveals that countries that adopt the oil-led development paradigm are very adverse effects such as: the Dutch disease, and the skewing of the social structure. The justification of this study is based on the lack of consensus regarding the effect of trade on economic growth from literature. While most studies investigate the effect real and financial realizations of international trade they fail to examine the effect of international trade on economic growth. It is expected that while variables capturing international trade can have a positive impact, some others may have a negative impact and it is expected that the net effect could be positive or negative. Hence this study adds to literature by resolving the consensus in the Nigerian situation and determining the effect of international trade – as reflected in the real and financial dimensions of trade – on economic growth.

Generally, this study covers the Nigerian economy from 1960 till 2011 and it studies mostly the payment components that affect the growth of an economy. It is expected that some may limit the depth and coverage of this research. Due to the nature of variables employed in this study. Following this Introduction is the Literature Review in section III, section III is the Theoretical Framework and Methodology. Sections IV and V are

LITERATURE REVIEW

In this section we review literature on the effect of international trade on economic growth and consider this on three fronts and these are the theoretical review, empirical review and methodological review. While the theoretical and methodological reviews are not necessarily specific as the reviews stem from different studies on different economies but on the empirical review we consider empirical findings on the Nigerian economy as this would enable a comparison between the findings from literature and findings from this study.

Theoretical Review: Trade-Growth Nexus Theories

Several papers have been published concerning the impact of trade on growth and income and are engaged in the debate since the early days of economic history. The early classical authors Smith, Ricardo, Heckscher and Ohlin already pointed out to possible gains from trade; these gains stem from specialization in production due to international trade (Smith, 1976). However, despite the views of the classical authors on the role of
Growth Accounting and the Role of International Trade

Endogenous growth literature has been diverse enough to provide a different array of models where trade restrictions can decrease or increase the worldwide rate of growth (see Romer, Grossman and Helpman, 1990; Rivera-Batiz and Romer, 1991; Matsuyama, 1992).

Feder (1982) adopts Feder (1982) growth accounting model where export is expressed as a function of labour and capital in the export sector and also a determinants of growth and the growth differential reflect[ed] in both the differences in the sectoral productivities of the production and the externality effect of exports'. Cui et al (2009) in investigating the formation of exports to China's growth avail the use of a modified growth accounting model. They consider export proxies such as: export growth and the ratio of exports to GDP. Their specific growth in China.

Lin and Li (2000) also adopt the growth accounting but examines the direct and indirect effect of exports on growth via its effect on consumption and investment. Their model improves on those of Zhu (1998) and Wang (1998) as they were able to explain that the negative effect of exports on growth in Zhu (1998) and Wang (1998) is occasioned by the relationship which export had with the model where statistical issues, and in their specific growth in China.

Heshmati (2010) and Mehrabadi et al (2012) and their studies 'a priori' allude to the role played by international trade in economic growth. However literature also availed the use of the growth accounting framework include: Medina-Smith and Heshmati (2010) and Mehrabadi et al (2012) and their studies 'a priori' allude to the view that international trade may be inimical to growth and this is examined in the following section.

Adverse Effects of Trade: Dependency Theory, Pathologies of Trade and Contagion

International dependence model postulates that there is a dependence of developing nations on developed countries, such that the former remains underdeveloped as a result of their dependence on multinational corporations (MNCs) as a potential source of green-field FDI, have the tendency to engender or entrench a persistent monopoly structure in developing countries and thus exacerbating the level of inequality gap. In addition the neo-classical dependency model argues that developed countries via international trade tend to open their doors to every form of technology and capital by the MNCs without consideration of the prevalent resource endowment of the recipient country and this underscores the 'demonstration effect'. The second variant of the dependency model is the dualistic model which is premised on the international dependence in the division of the world into two: the exploitative peripheral and the exploited core undermines even further that the presence and activities of a peripheral unit in the developing nations make it impossible for the developing nations to move out of the vicious poverty cycle.
future (2003) in his discussion of pathologies involved when growth is export-led, explains that
growth may not necessary translate into economic growth, as rising foreign demand may
change the composition of exports whilst leaving exports as a whole unchanged. In addition
he argues that the phenomenon of "poaching of domestic demand" and "export displacement"
may result in the event that developing countries are at the centre of rivalrous situations that pits
their interests against those of more sophisticated developed or market emerging economies.
future (2003) also explains that export led growth could result in the flooding of global markets
with goods and services that would aggravate the terms of trade of countries participating in
international trade and thus result in exports performing poorly in bringing about sustainable
growth and in conclusion he also states that international trade could engender financial
instability and this could be exacerbated by the existence of financial contagion.

Consider the fact that contagion is usually associated with financial flows, it is plausible to
think of a situation where contagion is facilitated by real trade flows between the source
country of the crisis and the recipient of affected country. Rijckeghem and Weder (1999);
Caramazza et al (2000); Hernandez and Valdes (2001); Kali and Reyes (2005) all consider the
role of international trade in facilitating the transmission of economic characteristics from one
country to another and their theoretical considerations are examined.

Contagion reveals itself in bilateral trade, where financial crisis in one of the trading
countries has the effect of adversely impacting on the other countries connected to the crisis source
country via bilateral (and possible multilateral) trade relations (Gerlach and Smets 1995). This
occurrence is facilitated by the dynamics in the demand and supply of exports and imports as a
result of the financial crisis occurring in the source country involved in a trade relationship with
affected countries. In another fashion Eichengreen et al (1996) reveals the possibility for
contagion to occur between countries whose supply compete for a common market and hence as
Rijckeghem and Weder (1999) "countries that trade and compete with the targets of
positive attacks are themselves likely to be attacked".

Addressing the aforementioned channels through which crisis can be transmitted via
international trade, Caramazza et al (2000) maintain that in the event of an exchange rate crash
as a result of the exchange rate), accompanied by an economic downturn, which has the effect
of depressing exports and hence imports - through the income effect - and hence the exports
of the crisis laden country. In addition they note that through price competition and income
losses in third world markets could also facilitate the trade contagion as suggested by

The whole literature is divided on the impact of international trade on economic growth.
The growth accounting literature may substantiate the positive effect of trade on growth from
other theories suggest the opposite.

**Methodological and Empirical Review**

International trade impact on growth is reflected in the real section of the balance of payment
and hence we shall consider the facts and figures revealing the effect of exports, imports
and the combination of these effects – and their proxies – on economic growth.

Eichengreen (2009) in his study of ‘international trade and economic growth in developing countries’
used, using cross country regression analysis, that in the sample of 52 less developed
economies over a period of 15 years and using a variety of measures of factor endowment and growth determinants of trade and from the results it is the trade gravity determinants significantly affect growth while factor endowments played a significant role in affecting the behavior of economies in consistency with the theoretical model developed by Foster (2009).

Firouz et al (2012) in his study of the ‘effects of international trade on economic growth’ adopt a growth model that includes different proxies of international trade which are: the ratios of imports and exports to the gross domestic product, the terms of trade (ratio of the sum of exports to the gross domestic product) and trade openness measured as the ratio of the terms of trade and the ratio of imports to the gross domestic product and in his empirical findings they concluded that in the economy of Pakistan and from the regression results it is clear that only the terms of trade and the ratio of imports to the gross domestic product play a significant role in explaining the growth of Pakistani economy positively by as much as 0.23 and 0.18 respectively emphasizing that the international trade proxies have a positive impact on economic growth.

Bidlingmaier (2007) in his study of ‘international trade and economic growth in developing countries’ adopts cross country regression models variants and he discovers that the importation of capital goods has a consistent negative effect on economic growth in the range -0.21 – 0.23 for all the different variants of the regression model. In another model Bidlingmaier (2007) finds that the importation of capital in relation to the gross domestic product has also a positive impact on the growth of the gross domestic product per capita in purchasing power parity (PPP). These empirical findings reveal that while imports of capital goods may have a positive impact on economic growth, the effect of capital imports rising faster than the gross domestic product could be detrimental to growth and though importation may have adverse effects on the growth of the GDP per capita the positive effect of exports outweighs it and consumers total trade beneficial for growth.

and Hesmati (2010) in their study of ‘international trade and its effects on economic growth in the Chinese economy reveals that the net export ratio and the high tech export ratio have a negative and statistically significant impact on the real gross domestic product (GDP) and find that the high tech export ratio affects growth adversely comparatively more than the net export ratio.

From a same front, Nabine (2009) studied ‘the impact of Chinese investment and trade on economic growth’ and in his study, adopts the framework of Kohpaiboon (2002) which is similar to the Cobb-Douglas product function but Nabine (2009) augments the function by adding the foreign direct investment and economic openness variables. He estimates short run relations examining the effect of trade proxies on economic growth and in the long run relations he discovered that exports, imports, foreign direct investment and total trade openness have a positive effect on economic growth with the exception of the total trade openness which has a negative impact on economic growth. Of all the trade proxies the foreign direct investment had the largest positive impact on economic growth of all the trade proxies by 80.2% and this is followed by the import growth which had an impact of 66.80% on growth. The aforementioned is buttressed by the Granger-causality analysis and reveals that
Imports and foreign direct investment from China all Granger cause economic growth. The reverse is does not hold and this substantiates the thriving trade relations between China and Nigeria as far as international trade is concerned.

In the Nigerian economy Emeka et al (2012) studied the ‘macroeconomic impact of trade and foreign direct investment as proxies for international trade and use a system of equations that introduces and observes the impact of these trade proxies piecemeal. The findings reveal that when introduced singly exports and foreign direct investment both positive impacts on economic growth with exports playing a comparatively greater role and results are sustained even when both variables are introduced into the regression model and the model specification is transformed to a log-linear form the empirical results were found unchanged hence substantiating the robustness of the regression results to functional form [see also Lin and Li (2002), Mehrabadi et al (2012)].

Cui et al (2009) study ‘how much do exports matter for China’s growth?’ and in their results reveal that for every 10% point decline in export growth has been associated with about 2.5% points in GDP growth on average. This is much higher than the estimated impact of exports on growth. The spill-over effects from exports to domestic demand and investment are found to be positive and statistically significant, and are particularly sizable in countries with greater trade exposures.

Organization of Economic Cooperation and Development (OECD) countries, Konya investigates ‘export-led growth, growth-driven export, both or none’ and it was found in this work that while there was no causality between exports and growth for some there was causality in some others.

It is clear that in most studies, the exports of most countries have done a lot in affecting to growth. While this may be the case, we consider literature on imports and how they affect the growth of output.

Uzgar (2008) investigates the effect of imports on economic growth in Turkey, Kogid investigates how imports affect economic growth in Malaysia. Li et al (2003) reveals ‘imported services and economic growth’ in a panel of 82 countries and in his findings countries and a negative impact on developing countries. In developing countries, Foster (2008) in their study of the connection between imported equipment, human economic growth reveal that there exists a complex interrelationship between equipment and human capital and that the relationship between equipment investment growth is low and often negative for countries with low levels of human capital and highest
countries with an intermediate range and somewhat in between for countries with the highest
degree of human capital.

in the whole, literature reveals a lack of consensus on the effect of international trade on
economic growth and this is expected as most studies consider imports, exports and capital flows
which are manifestations of international trade in different lights – while some use aggregate
variables some others use the decomposed versions of these variables.

THEORETICAL FRAMEWORK AND METHODOLOGY

The Effect of International Trade on Economic Growth

Presence of the variables for examining the effect of international trade on growth is based on
Exports and foreign direct investment were adopted by Ezike et al (2012) in their
study of trade and in Bidlingmaier (2007) capital imports as well as knowledge transfer (via
MFD) which usually are associated with foreign direct investment were adopted.

shall dwell on Foreign Direct Investment and Economic Growth:

foreign direct investment is a major channel of growth and it may also present a threat to the
growth of an economy. The positive effect of foreign direct investment on growth is
represented via the Solow model – with a production function augmented with foreign direct
investment as an input – and we consider the adverse effect of foreign direct investment via the
concept of the economic dependency and the financial contagion – and its implications during

foreign direct investment (FDI henceforth), particularly Greenfield FDI signifies inflow of new
projects which may increase the rate of return of the foreign investor beyond that of the
recipient and by so doing generate positive externalities (Kokko 1994). If the recipient
does not have the requisite absorptive capacity then even the domestic firms could internalize these
externalities and expand production. On adopting the basic Solow framework, we consider the
production function where output \( y_t \) is dependent on capital \( k(f) \), labour \( l_t \) and technical
progress \( A(f) \) and in addition it is assumed that the technical progress component as well as the
growth rate of capital stocks are dependent on the quantum of foreign direct investment \( f_t \) which are both
endogenous in the event of an increase in foreign direct investment.

\[
\begin{align*}
\dot{k} & = \alpha \dot{y} - \beta k + \delta + \gamma k - \delta k - \gamma y \\
\dot{y} & = \gamma y + \delta k - \delta y \\
\dot{y} & = \gamma y + \delta k - \delta y \\
\end{align*}
\]

where \( 0 < \alpha < 1; 0 < \beta < 1; \alpha + \beta = 1; k = k(f) \geq 0; A = A(f) \geq 0; A_f > 0; \\
y > 0; \ y_f > 0 \\
\]

production function can be re-written as:

\[
\begin{align*}
\dot{y}^* & = \frac{\gamma y}{\gamma} \\
\dot{k}^* & = \frac{k}{\gamma}
\end{align*}
\]

we note that savings \( s \) equals investment \( i_t \) such that: \( s = i \) and we assume
that savings is connected to income by the relation: \( s = \sigma_s y \) where \( \sigma_s \) is the savings-
min. Also we assume that investment is defined as: \( i_t = \frac{\dot{k}}{\dot{t}} \) where we assume
the equilibrium rule: \( \frac{\dot{k}}{\dot{t}} = s_0 y \) and on simplifying this:
\[
\frac{d(k)}{dt} = \frac{1}{i} \left( \frac{dk}{dt} - \frac{k}{l} dt \right) = \frac{k}{l} \left( \frac{1}{k} \frac{dk}{dt} - \frac{1}{l} dt \right)
\]

We assume the growth of labour to be equal to the population growth \( \frac{1}{l} dt = n \) and we fix the growth of capital per worker. We have:

\[
\frac{dk}{dt} = \frac{k}{l} \left( \frac{1}{k} \frac{dk}{dt} - \frac{1}{l} dt \right)
\]

\[
\left( \frac{1}{k} \cdot s_0 y - n \right)
\]
\[
\left( \frac{s_0}{\sigma} - n \right)
\]
\[
k^* = \frac{1}{k} \cdot \frac{dk^*}{dt}
\]

This reveals that at the equilibrium level the growth of capital per worker is related to the savings rate and the labour force growth rate and inversely related to the output ratio. At equilibrium when the growth of the ratio of capital to labour ratio is zero the following equilibrium condition:

The national output ratio \( \sigma \) is influenced by the foreign direct investment and this is due to the fact that the inflow of foreign direct investment impacts on the capital stock and the national income, the effect on the national income comes from the effect of foreign direct investment on the capital stock and the effect of foreign direct investment on technical progress and hence the output ratio \( \sigma \) declines and hence given the savings ratio \( s_0 \) and the labour force growth capital per worker grows to a new level.

Neoclassical General Equilibrium (Solow Model)

The graphical depiction describes the growth expanding effect of foreign direct investment, via the national output ratio. The inflow of foreign direct investment has the effect of depressing the capital-output ratio and given the equilibrium labour force growth and the savings ratio the capital per worker ratio grows and this growth is reflected in the new equilibrium savings-ratio which expands output from \( y^* \) to \( y^{**} \) as shown in the graph of motion above.

On the other side of the coin, FDI is theorized to be an instrument for the underdevelopment of countries as Larrain (1989) notes "...capitalism is conceived as a world system
ized by an inherent duality, a centre-periphery dichotomy which determines two different developmental possibilities...these different potentialities are caused by of resources through mechanisms of unequal exchange in the international market. is that some countries develop because others under-develop, and that the latter underbecause the former develop.' This suggests that foreign direct investment can be a conduit for manipulating periphery economies to the benefit of the core which are more a not capitalist economies and this is evident in the rise of multinational firms in the oil, uring and service sectors of the Nigerian economy.

, we took a closer look at Real Trade, Economic Growth and Stability: account section of the balance of payment accounts contained real flows and these lections for growth and development in any economy. Izani (2002) in his study of the exports on economic growth considers exports as an input in the aggregate production and this constitutes the export led-growth hypothesis. However the depressing effect of be felt via imports and as rightly observed by Palley (2003) the adoption of export led-powerful trading partners would amount to what he calls 'poaching of domestic or 'export displacement' and this is so because the adoption of export led-growth would the aggressive need to strike trade deals that would encourage exports and this may ring domestic demand or out-pricing a rivals exports and this has the effect of the imports and depressing the exports of developing but less industrialized countries is like Nigeria, we consider these views mathematically in a two country framework. If is comparatively less industrialized and smaller (in terms of trade terms) than B which industrialized, larger and basis its growth strategy on the export led-growth strategy and respective production functions $y_A, y_B$ dependent on the labour $l_A, l_B$, capital $k_A, k_B$ and $x_A, x_B$ respectively such that:

$$
\frac{d^2x_A}{d^2y_A} < 0 \quad \text{where } 0 < \alpha < 1; y_{Ak} > 0; y_{Al} > 0; y_{Ax} > 0
$$

$$
\frac{d^2x_B}{d^2y_B} < 0 \quad \text{where } 0 < \beta < 1; y_{Bk} > 0; y_{Bl} > 0; y_{Bx} > 0
$$

Her state the export functions such that the exports of the small and less industrialized are an inverse function of exports from the large and industrialized country then:

$$
\text{if we assume that the small country imports are positively related to the exports of the small country imports are positively related to the exports of the large country.}
$$

$$
\frac{d^2m_A}{d^2x_B} > 0 \quad \text{where } \frac{d^2m_A}{d^2x_B} > 0
$$

Equations stated above it is clear, from the aggregate supply angle that, that despite the exports may be a veritable source of finance for growth in developing countries, the fact exports of developed economies can stifle exports of developing countries and by so open growth. Given that:

$$
\frac{\delta y_A}{\delta x_A} > 0
$$

$$
< 0 \quad \text{then } \frac{\delta y_A}{\delta x_B} = \frac{\delta y_A}{\delta x_A} \frac{\delta x_A}{\delta x_B} < 0
$$

The aggregate demand angle, given the Keynesian Identity:

$$
\frac{d^2m_A}{d^2x_B} > 0 \quad \text{and since } \frac{\delta x_A}{\delta x_B} < 0; \frac{d^2m_A}{d^2x_B} > 0
$$

It is clear that:
And hence it becomes evident that an adoption of an export-led strategy by industrialized countries like China, U.S and the E.U would not only depress the aggregate supply of a developing country like Nigeria but will also depress its aggregate demand thus engendering a decline in national output. Hence the combination of the views of Izani (2002); Palley (2003) suggests the beneficial effects of trade and its adverse effects as well.

The effect of trade flows on growth, there is also the effect of exchange rate instability, which becomes a threat to macroeconomic objectives as the borders are opened to trade with other countries of the world. The opening of the borders of a country to trade with other countries of the world also opens the borders of the country to financial flows as well and all transactions - both real and financial - are all facilitated by the medium of exchange rates. As noted by Hooper and Kohlhagen (1978) and Clark (1973) exchange rate volatility has the effect of depressing trade and by so doing depressing the beneficial effect of trade - that is, if benefits from trade. In addition exchange rate volatility could stifle the flow of finance across borders on account of the manner in which the exchange rate enters into the parity theorem defined in Appleyard and Field (1998).

The aforementioned underscores again the possibility that international trade and the resultant flows as well as financial flows may have positive or adverse effects on growth in a developing economy like that of Nigeria.

**Model Specification**

In line with the objectives of this study as well as the theoretical investigation conducted above it is pertinent to consider growth models and augment these models with real trade proxies, foreign direct investment and exchange rate volatility. Medina-Smith’s (2001) growth model is modified for the purpose capturing the aggregate supply side of the Nigerian economy and this is due to the fact that the model closely captures the Cobb-Douglas production function by proxying labor with the total population and capital with the gross capital formation augmenting the model with the trade proxies.

Medina-Smith (2001) model is given as:

$$y_t = \phi_1 p_t + \phi_2 l_t + \phi_3 X_t$$

Let $$X_t$$ be the set of all trade proxy open (measured as the ratio of total trade to the gross product), foreign direct investment $$fdi$$ and exchange rate volatility $$evol$$ and from the theoretical investigation we observe the lack of consensus on the effect of international trade on the productive side of the economy such that:

$$\frac{dy_t}{dop_{en_t}} \leq 0; \frac{dy_t}{dfdi_t} \geq 0 \text{ and } \frac{dy_t}{devol_t} \leq 0$$

To estimate the modified Medina-Smith (2001) model, which is a log-linear model, and allowing for the stochastic disturbance term we have the following:

$$\log y_t = \phi_0 + \phi_1 \log p_t + \phi_2 \log cap_t + \phi_3 X_t + \mu_t$$

$$X_t = \{ltri, lopen, levol\}$$
to avoid the effect of interacting regressors, and hence prospects of multicollinearity, we use the proxies of international trade in different versions of the econometric model. The definitions are given below:

Variable
Log transformation of gross domestic product
Log transformation of total population
Log transformation of the gross capital formation
Log transformation of total trade
Log transformation of economic openness
Log transformation of the exchange rate volatility proxy

Data Requirement and Sources
The data involved in this study are basically drawn from the balance of payment account of the Central Bank of Nigeria statistical bulletin (2011) while data on the total population is drawn from the World Development Indicators (WDI) and Global Development Finance (GDF) database of the World Bank (2011).

In order to capture the Cobb-Douglas production function, which is re-fashioned into a log linear transformation, we avail the use of the proxies for labor and capital and these are the total trade and the gross capital formation respectively and these are the control variables. The proxies used in this study are the total trade and economic openness (which is the ratio of gross domestic product (GDP) to the

EMPIRICAL ANALYSIS

Trend Analysis:

Analysis of the trend of the different time series involved in this study is discussed in this section. The gross domestic product (GDP), the size of the population (POP), the size of total trade (TTR), economic openness (OPEN) and foreign direct openness (FDI) all exhibited trends with that of POP recording the least deviation from the trend line. Total trade, openness, the level of foreign direct investment and the gross domestic product all had annual growth with the values in the time period 1988 – 2005 lying below the trend line and before 1988 and after 2005 rising above the trend line.

Gross capital formation (GCAP) and the exchange rate volatility (EVOL), however exhibit negative trend components – compared to those of GDP, TTR, OPEN and FDI. Prior to 2006 and these figures may be responsible for the trend line slightly cluster of values in the 1985 – 2005 range – with the exception of the values recorded
2003 which were comparatively lower in magnitude. Exchange rate volatility recorded in 1985 an 1986 and these values are responsible for the seeming negative trend and it is expected that if these values are screened out the EVOL would be in a cluster ranging -6 for the entire period of the study. It is hence expected that GDP, POP, TTR, OPEN have unit roots, after they are de-trended. GCAP and EVOL on the other hand are also expected to have unit roots due to the effect of outliers on either side of the trend lines.

Trend Analysis of the Time Series of the data used.

![Graphs showing trend analysis](image)

**Unit Root Testing**

For the variables involved in this study are presented below and we see that first order integration with exception of the log transformation of economic (OPEN) while in the case of the log transformed gross domestic product there is no augmented Dickey Fuller test states that the GDP is stationary at first difference Phillip Perron test states that the GDP is stationary at level. The presence of the first variables may signify the presence of cointegration even in a ordinary least specification and this is verified with the aid of the Engle-Granger test in the OLS results.

<table>
<thead>
<tr>
<th></th>
<th>At level</th>
<th>At first difference</th>
<th>At second difference</th>
<th>Order of integration</th>
<th>Test specification</th>
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<tbody>
<tr>
<td>ADF</td>
<td>-1.7270</td>
<td>-39.0633</td>
<td>-</td>
<td>I(1)</td>
<td>Trend and intercept</td>
</tr>
<tr>
<td></td>
<td>(0.7140)</td>
<td>(0.0000)</td>
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<td></td>
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<tr>
<td>PP</td>
<td>-8.5630 (0.0000)</td>
<td>-</td>
<td>-</td>
<td>I(0)</td>
<td>Trend and intercept</td>
</tr>
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<td>------</td>
<td>------------------</td>
<td>---</td>
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<tr>
<td>ADF</td>
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<td>-5.1228 (0.0002)</td>
<td>-</td>
<td>I(1)</td>
<td>Intercept alone</td>
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<tr>
<td>PP</td>
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<td>-5.1327 (0.0002)</td>
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<td>I(1)</td>
<td>Intercept alone</td>
</tr>
<tr>
<td>ADF</td>
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<td>-6.2071 (0.0000)</td>
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<td>I(1)</td>
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<tr>
<td>PP</td>
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<td>-10.0838 (0.0000)</td>
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<tr>
<td>ADF</td>
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<td>-6.0331 (0.0001)</td>
<td>I(1)</td>
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<td></td>
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<tr>
<td>PP</td>
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<td>-6.0331 (0.0001)</td>
<td>I(1)</td>
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</tr>
<tr>
<td>ADF</td>
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<tr>
<td>PP</td>
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<td>I(0)</td>
<td>Intercept and trend</td>
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<tr>
<td>ADF</td>
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<td>-4.7923 (0.0031)</td>
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<td>I(1)</td>
<td>Intercept and trend</td>
</tr>
<tr>
<td>PP</td>
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<td>-4.7483 (0.0034)</td>
<td>-</td>
<td>I(1)</td>
<td>Intercept and trend</td>
</tr>
</tbody>
</table>

Ordinary Least Square Estimation and Diagnostic Testing

The fact that the correlates as well as the graphical analysis reveals a positive relationship between the gross domestic product and total trade, economic openness and foreign direct investment and a statistically insignificant relationship between the gross domestic product and volatility, we still investigate these relationships using partial correlates which are estimated by the regression coefficients – as they remove the interacting effects that may influence the relationship between the gross domestic product and the proxies.

The model which this study seeks to estimate is given as: 

\[ \text{lgdp}_t = \phi_0 + \phi_1 \text{lgcap}_t + \phi_2 X_t + u_t \]

where \( X_t = \{lttr, lopen, levol \} \)

we estimate the following equations, while introducing the variables capturing piece-meal. These estimations, as well as the diagnostic tests, are done below

Ordinary Least Square Estimation of the Impact of International Trade on Economic Growth

Variable: LGDP
Observations: 32

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Coefficient</th>
<th>Coefficient</th>
<th>Coefficient</th>
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14
### Summary Measures

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<th>P-Value</th>
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<td>-68.13491</td>
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<td>(0.0651)</td>
<td>(0.0612)</td>
<td>(-1.4363)</td>
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<table>
<thead>
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<th>T-Statistic</th>
<th>P-Value</th>
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### Diagnostic Measures

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<thead>
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<td>26.46311</td>
<td>26.46311</td>
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<td>0.621462</td>
<td>0.621462</td>
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<thead>
<tr>
<th>Coefficient</th>
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<td>44.40184</td>
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<td>0.000000*</td>
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<td>0.0065*</td>
<td>0.0466*</td>
</tr>
<tr>
<td>0.00065*</td>
<td>0.000028*</td>
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<td>1.644758</td>
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<table>
<thead>
<tr>
<th>Coefficient</th>
<th>T-Statistic</th>
<th>P-Value</th>
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<td>0.000000*</td>
<td>0.000000*</td>
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<tr>
<td>0.000000*</td>
<td>0.000000*</td>
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<tr>
<td>-35.31339</td>
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<tr>
<td>0.0007*</td>
<td>0.0052*</td>
<td>0.0023*</td>
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Regression results presented above reveals consistently that population as a proxy of the current income has a positive and statistically effect on economic growth while gross capital formation also consistently has a positive impact on economic growth with the exception of the model where gross capital formation has a negative impact on growth and in more practical terms, the growth of output on account of capital formation is severely stunted. In addition we noted that the intercept of the equations are all consistently negative, thus signifying that the constant component of the estimated model is less than unity but statistically significant at the 5% level of significance. On the effect of the international trade proxies, we see that direct trade, economic openness (the ratio of total trade to the gross domestic product), investment and exchange rate volatility all have a negative impact on economic growth and this is witnessed in the negative elasticities. The total trade, economic openness, investment and exchange rate volatility elasticities of the gross domestic product are -31%, -19% and -0.4% respectively while the first two elasticities were statistically significant at the 5% level.

Corrective Measures and Re-estimation of the Corrected Model
The correction of the autocorrelation and heteroscedasticity is done by adding autoregressive and/or moving average terms up to the second order and this is due to the fact that since the residuals are stationary – as revealed by the Engle-Granger test for cointegration – then the model can be expressed as a linear combination of autoregressive and/or moving average terms. In addition we also state the summary measures and diagnostic tests to among others ensure that the problems of autocorrelation and heteroscedasticity are corrected and we shall re-estimate the regression coefficients of the international trade proxies.

Corrected Ordinary Least Square Estimation of the Impact of International Trade on Economic Growth

*Note: LGDP is the log of the Gross Domestic Product.*

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Coefficient</th>
<th>Coefficient</th>
<th>Coefficient</th>
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</thead>
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<td>-27.32105</td>
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<tr>
<td>(-3.8410)*</td>
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<td>(-2.7176)*</td>
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<tr>
<td>2.912077</td>
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<td>2.804185</td>
<td>2.480665</td>
</tr>
<tr>
<td>(7.4143)*</td>
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<td>(5.5445)*</td>
<td>(6.0960)*</td>
</tr>
<tr>
<td>0.033764</td>
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<td>0.041453</td>
<td>0.045916</td>
</tr>
<tr>
<td>(3.2563)*</td>
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<td>(9.6084)*</td>
</tr>
<tr>
<td>-0.036539</td>
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<td>-</td>
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<tr>
<td>(-2.7824)*</td>
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</tr>
<tr>
<td>-</td>
<td>(-3.2332)*</td>
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Observations: 32
### Diagnostic Measures

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<th>Diagnostic Measure</th>
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<th>Statistic</th>
<th>p-value</th>
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<th>p-value</th>
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<th>p-value</th>
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<tr>
<td>LM (SAR) test statistic</td>
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<td>12.22434</td>
<td>0.1415</td>
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<td>0.6512</td>
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<tr>
<td>Box-Pierce test statistic</td>
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<td>0.863539</td>
<td>0.649359</td>
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<td>0.815457</td>
<td>0.436032</td>
<td>0.804113</td>
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</table>
Summary measures reveal an improved coefficient of determination and adjusted
determination which are at least 99% suggesting a satisfactory fit of the linear
model. The diagnostic tests on the other hand signify the removal of all the problems associated
with previous regression models. The F-statistic of all four adjusted models have p-values of
which indicates that the regression models have overall statistical significance and the
test statistics that test the null hypotheses that the residuals of the regression models are
reveal that the null hypotheses is not rejected and hence the residuals are not
serially correlated. The Jarque Bera test for normality of the residuals reveals that the null
hypotheses of the normality of the residuals of the different models is not rejected at the 5% level
since the residuals are normal and hence the t-statistics and the F-statistics are normally
estimated and valid. On the presence of autocorrelation the Durbin-Watson statistic for all four
models reveals the absence of positive or negative autocorrelation and hence the regression
estimators are not only unbiased but also efficient thus achieving the best linear unbiased
estimation (BLUE) properties.

CONCLUSION

Findings of the empirical studies carried out in this study shows that the exposure that
Nigeria has to the world via international trade has had iminical influences on its growth
since this finding appears to be in consonance with theories of dependence and imperialism
that are discussed in the theoretical sections of this work. It is hence not too hard to foresee that with the
increased exposure of the country through international trade to the outside world, there is the
probability for the country to falter in the presence of adverse economic influences from major
trade partners.

It is recommended that since the structure of the Nigerian economy clearly reveals increasing
integration into the global economy, it becomes pertinent not just to harness the
benefits there are in international trade and finance but also to guard against the often
adverse effects of international trade.

In the light of the aforementioned it becomes necessary to ensure an enduring and
enduring focus on policies aimed at providing regulatory, monitoring and forecasting measures
that enable Nigeria withstand adverse effects from international trade.

International trade has come a long way and its effects could be a blessing or a curse. One
must be aware that the effects of international trade turns out to be depends on the extent to which
developed countries whose policies run the economy in question aim at extracting the positive effects
of international trade whilst filtering out the adverse effects. In the nearer future Nigeria expects
to be among the top 20 economies and there is not gain saying that if this must be
true Nigeria must be a haven for foreign investors but nevertheless it is pertinent that
taken into account that it does not fall into the cesspit of dependence, vulnerability and
crisis in a bid to integrate into the global economy.
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