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## African Trade Policy Centre

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# The Impact of Chinese Investment and Trade on Nigeria Economic Growth

Djeri-wake Nabine

2009



## Abstract

This paper examines the impact of Chinese foreign direct investment and bilateral trade with Nigeria economic growth.

The study use an augmented aggregate production function (APF) growth model, three methods are performed to test the hypothesis that there is no causal relationship between foreign direct investment, exports, imports and economic growth. The statistical methods used are: the Ordinary Least Squares Method (OLS) and the Granger causality test. Using time-series and panel data from 1990 to 2007, The estimated both short and long-run analysis for Nigeria-China relationship shows that in short term the bilateral trade doesn't contribute to Nigeria economic growth but the long term relationship can enhance Nigeria economic growth; it should then be the policy priority for Nigeria to make sure that FDI inflows from China and its trade relationship with China exert the reinforcing and beneficial effects on GDP and exports through active acquisition of advanced technology and open trade regime.



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Djeri-wake Nabine\*

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## I. Introduction

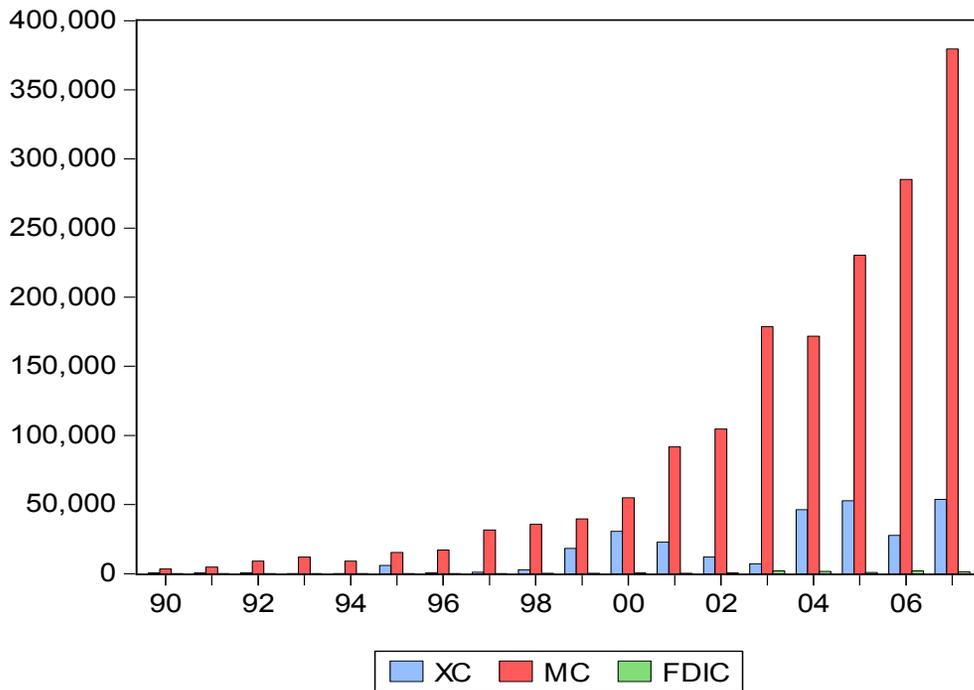
China started its formal trade with African countries in the late 1950s. Major partners were those countries in North Africa, especially Egypt. Now most African countries became apt to export primary products to, and import consumer and capital goods from China. Although there had been differences by country and time, this pattern didn't change until recently. Nigeria, for example, exported cocoa beans, rubber, cashew nuts, hide and skin, and some other agricultural products and oil. China tends to export large amounts of low-cost manufactures meeting with Nigeria local demands that reflected declining economy. This also resulted in serious trade imbalances between both sides. Trade imbalance with china has been a structural problem common to most African countries. For compensation, china utilized her economic assistance programs.

According to the China Customs, the bilateral trade volume between China and Nigeria in 2006 reached US\$3.13 billion, up by 10.6, from 2000 to 2006, among which China's export to Nigeria was US\$2.85 billion, up by 23.9, while China's import from Nigeria was US\$280 million, down by 47.3. China had a surplus of US\$2.57 billion. China mainly exported motorcycles, machinery equipment, auto parts, rubber tires, chemical products, textiles and garments, footwear, cement...

China's increasing presence in Nigeria, and elsewhere in Africa, has spurred much speculation about the nature of the emerging partnership model. A national debate across sectors on this partnership will be a healthy exercise and may drive more rigorous analysis of what best serves African countries' quest for human material advance; friendly, mutually beneficial relations in trade and politics; and stewardship of the shared heritage of the planet.

Most studies regarding the connection between trade and the Nigerian economy although they include Nigeria and China bilateral have ignored the contribution of the Chinese inward foreign direct investment as a predictor of growth even if it is recent and insignificant. The underlying objective of this study, therefore, is to determine the impact of Nigeria exports, imports and Chinese outward foreign direct investment to Nigerian economic growth. The study will also provide information on how economic growth reacts to changes in the explanatory variables used in the study.

**Figure 1: Nigeria trade and FDI from China**



The aim of this paper is then to see since the first formal agreement on trade between Nigeria and China signed in 1972 together with another agreement on economic, scientific and technological cooperation the effect of trade and Chinese inwards foreign direct investment on Nigeria's economic growth by empirically analyzing the trade-growth relationship and examining the direction of the causal relationship between trade FDI and economic growth.

## II. Nigeria General Situation

### A. Economy

The economic conditions of Nigeria have advanced over the last few years as a result of the rapid phase of industrialization. The economy of Nigeria also improved tremendously with foreign investment aided by high quality research and development. Nigeria was under the British colonial rule for a considerable period of time. During this phase, major raw materials and minerals were exported to foreign countries along with food grains which in due course of time spearheaded the rise of slavery and exploitation of labor class by the Europeans. After the achievement of independence in Nigeria, efforts were made to revive the economic growth of the country through a set of economic reforms. It's important to note that before the discovery of oil in Nigeria, the country survived mainly on its agricultural production. The present G.D.P growth rate has been 7% in the past few years .

### B. Industries and Natural Resources of Nigeria

Agriculturally, Nigeria has been a fertile land and one of the major cash crop producing lands of Africa. Nearly 70% of Nigeria's rural population is dependent on agriculture with it serving as the major source of income for them. The main crops that are widely produced are - beans, cashew nuts, groundnuts, cola nut, melon, palm oil, rubber and rice. Also cattle rearing, grazing of sheep and well-maintained livestock farm are also practiced in parts of rural Nigeria . The presence of wide natural resources attracted foreigners and traders from different parts of the world in Nigeria. The rich deposits of oil and petroleum have served as the major revenue of income for the country throughout the years. Over the years, U.S.A has remained to be the vital oil consumer of Nigeria's petroleum and gas. But due to the absence of proper distribution system, this oil enriched reserves are not well marketed even within the country. Other chain of industries include crude oil, coal, tin, cotton, rubber, wood, textiles, cement, footwear, chemicals, fertilizer, ceramic products, steel and most prominently the ship construction industries.

### C. Trade and Business in Nigeria

Due to the establishment of bilateral ties with other countries, the trade scenario of Nigeria has received a great impetus over the last few decades. An overview of the economy of Nigeria remains incomplete without mentioning its growing foreign investments which have left behind a positive effect on its trade and commercial business. The present Nigerian government has

unleashed a set of economic reforms intended to bring about a radical change in its current financial growth. The major trading partners of Nigeria are China, United States, United Kingdom, Netherlands, France, Germany and Italy. In 1971, Nigeria became a member of O.P.E.C (Organization of the Petroleum Exporting Countries) which then made the country one of the important oil producing nations of the world standing at seventh position.

Though the defective infrastructure facilities have hampered the constant growth of the country, yet efforts are made to revive those sick industries of the country through foreign collaborations and investment. The agriculture and oil has been on the top of the priority list of economic growth of the country, efforts are made to modify other industries.

### III. Review of Relevant Literature:

The relationship between trade openness and growth is a highly debated topic in the growth and development literature. Yet, this issue is far from being resolved. Theoretical growth studies suggest at best a very complex and ambiguous relationship between trade restrictions and growth. The endogenous growth literature has been diverse enough to provide a different array of models in which trade restrictions can decrease or increase the worldwide rate of growth (see Romer, 1990; Grossman and Helpman, 1990; Rivera-Batiz and Romer, 1991a,b; Matsuyama, 1992). Note that if trading partners are asymmetric countries in the sense that they have considerably different technologies and endowments, even if economic integration raises the worldwide growth rate, it may adversely affect individual countries (see Grossman and Helpman, 1991a,b; Lucas, 1988; Rivera-Batiz and Xie, 1993; Young 1991).

It is worthwhile to note that the theoretical growth literature has given more attention to the relationship between trade policies and growth rather than the relationship between trade openness and growth. Therefore, the conclusion about the relationship between trade barriers and growth cannot be directly applied to the effects of changes in trade volumes on growth.

Nigeria, being fully integrated into the global economic system, is a member and signatory to many multilateral and regional trade agreements. The policy response of such economic partnership agreements on trade policy has been to remove trade barriers, reduce tariffs and embark on outward oriented trade policies. Expectations are that following Nigeria's obligations and commitments in these trade agreements, that tariffs will reduce drastically as required by the World Trade Organization (WTO) protocols and in compliance with regional trade agreements.

The large majority of the existing literature supports the axiom that openness is directly correlated to greater economic growth with the main operational implication being that governments should dismantle the barriers to trade. There are some good arguments suggesting that trade liberalization may improve resource allocation in the short term or raise growth rates permanently (and thus be beneficial to the poor), there are a number of other arguments suggesting the opposite (Jayme, 2001:13).

One of the limitations of the theoretical frameworks of the existing studies of the openness growth nexus "is that it lacks microeconomics foundations ...their focal point is the macroeconomic aspects to growth and their interrelations with trade" (Jayme, 2001:11). What are we to conclude

from this survey of empirical studies about the relationships between openness and growth, besides the fact that there is disagreement among economists on the matter? But, is there any consensus on the definition of openness?

To begin with, Dollar (1992) brought an important contribution to the trade and growth debate. The author defines openness as the combination of two dimensions:

1- A low level of protection, hence of trade distortions.

2- A stable real exchange rate so that incentives remain constant over time.

From that very definition, follow two measures openness: a trade distortion index, and a real exchange rate variability index. The distortion index measures the deviations from the Law of One Price after controlling for the impact of nontradables. The variability index captures the variance of the real exchange rate.

The most frequently used indicator of the importance of international transactions relative to domestic transactions is the trade-to-GDP (Gross Domestic Product) ratio, which is the sum of exports and imports of goods divided by GDP. International trade tends to be more important for countries that are small (in terms of size or population) and surrounded by neighboring countries with open trade regimes than for large, relatively self-sufficient countries or those that are geographically isolated and thus penalized by high transport costs. Other factors also play a role and help explain differences in trade-to-GDP ratios across countries, such as history, culture, (trade) policy, the structure of the economy (especially the weight of non-tradable services in GDP), re-exports and the presence of multinational firms (intra-firm trade).

This widely used indicator measures a country's "openness" or "integration" in the world economy. It represents the combined weight of total trade in its economy, a measure of the degree of dependence of domestic producers on foreign markets and their trade orientation (for exports) and the degree of reliance of domestic demand on foreign supply of goods and services (for imports). The trade-to-GDP ratio is often called the trade openness ratio.

However, the term "openness" to international competition may be somewhat misleading. In fact, a low ratio for a country does not necessarily imply high (tariff or non-tariff) obstacles to foreign trade, but may be due to the mentioned factors above, especially size and geographic remoteness from potential trading partners. Indicators on trade openness based on GDP are biased by the country size (both in terms of GDP as in terms of geographical size). It should be noted that this indicator may also be expressed as average of exports and imports (not as the sum of both).

Openness is also correlated with the country's size, as smaller countries tend to be more open. This correlation also affects the results by Malik and Temple (2006).

Maddison (1998) demonstrated that the gradual liberalization of trade and capital flows in the Organization for Economic Cooperation and Development (OECD) countries spurred West European reconstruction, recovery and catch-up growth. The outward-orientation of some East Asian countries played an important role in their catch-up growth. The gradual liberalization of foreign trade and inward investment in China, despite continuing protection, has undeniably contributed significantly to the spectacular and sustained growth rates over the past one and a half decades. Hong Kong and Singapore are the outstanding examples of long-standing free trade acting as a catalyst for high growth since the 1950s and 60s.

Drabek and Laird (1998) noted that developing countries with progressively more liberal trade policies are the ones with growing ratios of trade and inward investment to national income, and with higher growth rates. East Asian, Latin American and Eastern European countries have lower average tariffs, fewer nontariff trade barriers and fewer restrictions on inward investment than is the case in South Asia, Africa, the Middle East, South-eastern Europe and the ex-Soviet Union, with the exception of the Baltic States. The former cluster of countries has undertaken more extensive external liberalization than the latter during the last two decades, starting earlier in East Asia and Chile and later in Eastern Europe.

The studies of Kandiero and Chitiga (2003) report a significantly positive relationship between openness and FDI in Africa. However, some caution must be exercised on the empirical evidence so far. First, there are limitations inherent in the type of data and/or methodologies used while some used the ratio of total merchandise trade (import + export) to GDP for openness as a proxy. Others used ratio of export to gross output in manufacturing sector or the ratio of world price (converted to domestic currency) to domestic price indexes of manufactured products.

Fosu and Magnus (2006) examine the long-run impact of foreign direct investment and trade on economic growth in Ghana between 1970 and 2002. Using an augmented aggregate production function growth model and by applying the bounds testing approach to cointegration, they found cointegration relations between growth and its determinants in the aggregate production function model. Their results indicated the impact of FDI on growth to be negative. Trade however was found to have significant positive impact on growth.

At the other hand, Henry J. Burton (1998) noted that over the last 15 or so years, the outward-oriented approach has gained dominance among academic economists and those in international organizations concerned with development. Many national aid agencies in the North have also become convinced of the validity of the outward-oriented approach. A number of countries have made noteworthy efforts to shift from an essentially import substitution approach to a more outward-oriented approach, other countries are trying to do so, and virtually all countries are being urged to do so by aid donors and advice givers.

In more recent years, evidence and argument have questioned this new orthodoxy. There is increasing doubt that growth is as simple as it appears in the export-oriented arguments, and renewed emphasis is being placed on more basic characteristics of an economy, especially entrepreneurship, institutions, and knowledge accumulation and application. Outward orientation is pushed hard by influential individuals and institutions at the same time that a strong revisionist movement is underway and gaining strength. A state of limbo exists with respect to trade strategy (and development strategy in general) that qualifies the simple, universal prescription of the last decade or so.

Singer (1950) and Prebisch (1950) are early statements of the position that a more or less free market would not solve the development problem were widely accepted. The problem was not market failure in the usual textbook sense (externalities, decreasing costs, etc.). Rather, the notion was that the division of labor between the rich countries and the poor ones seemed to doom the latter to permanent poverty. The most widely cited evidence was data purporting to show that the net barter terms of trade had turned against the developing countries over the decades prior to 1940. Raul Prebisch (1950), Hans Singer (1950), and others calculated many such series that seemed to show a secular deterioration in the terms of trade of the poor countries.

Also cited as a source of difficulties were Engel curve arguments that the income elasticity of demand for agricultural products and raw materials in the North declines as incomes reach higher and higher levels. If exports lagged behind the growth of income in the South for this reason, then import substitution of some kind must take place to protect the balance of payments, or growth would slow or stop. Widespread protection of agriculture in many rich countries exacerbated this effect. Added to all this was the argument that cyclical changes in the North resulted in reduced employment and income, and hence imports, rather than in falling product and factor prices, while in the South it was wages and prices that responded to downturns.

Economic policy in the last two decades had one dominating theme as an integral element of the structural adjustment package (SAP), trade liberalization was espoused on the argument that it enhances the welfare of consumers and reduces poverty as it offers wider platform for choice from among wider variety of quality goods and cheaper imports.

There are two fundamental reasons for this potential of welfare improvement: First, the nation would have access to many goods at relatively cheaper prices than in the domestic market; they also find more profitable markets in which to sell the products of her industries. Second, production of goods in which the country has a comparative advantage expands, while those sectors displaying comparative disadvantage shrink. It is against this backdrop that many developing countries liberalized their imports, reduced average tariffs and dismantled significant number of Non Tariff Barriers (NTBs).

To sum up, the empirical literature reveals mixed conclusions on the link between nature of trade policy regimes and FDI. This, notwithstanding, despite its sound theoretical rationale, an in-depth study of each country's economic, social and political conditions must be undertaken before any decision on the choice of trade policy regime is made.

If openness to trade and investment flows is no longer viewed simply as a component of a country's development strategy; it has mutated into the most potent catalyst for economic growth known to humanity.

The apostles of economic integration prescribe comprehensive institutional reforms that took today's advanced countries generations to accomplish, so that developing countries can, as the international activities goes, maximize the gains and minimize the risks of participation in the world economy.

Those who view global integration as the prerequisite for economic development now simply add the caveat that opening borders is insufficient. Reaping the gains from openness, they argue, also requires a full complement of institutional reforms. The only clear pattern is that countries dismantle their trade restrictions as they grow richer. This finding explains why today's rich countries, with few exceptions, embarked on modern economic growth behind protective barriers but now display low trade barriers.

The specific arguments about the terms of trade were buttressed by more general views that the market was an instrument that kept poor countries poor and rich countries rich. There were several reasons for such views.

However, in their zeal to promote the virtues of trade, the most ardent proponents are peddling a cartoon version of the argument, vastly overstating the effectiveness of economic openness as a tool for fostering development. Such claims only endanger broad public acceptance of the real article because they unleash unrealistic expectations about the benefits of free trade. Neither economic theory nor empirical evidence guarantees that deep trade liberalization will deliver higher economic growth. Economic openness and all its accouterments do not deserve the priority they typically receive in the development strategies pushed by leading multilateral organizations.

## IV. Methodology and Variables

### A. Trade Variables Relationship

Trade openness is interpreted to include import and export taxes, as well as explicit non-tariff distortions of trade or in varying degrees of broadness to cover such matters as exchange-rate policies, domestic taxes and subsidies, competition and other regulatory policies, education policies, the nature of the legal system, the form of government, and the general nature of institutions and culture (Baldwin, 2002). Most empirical studies define openness of an economy as the ratio of trade to GDP. Trade (exports and imports) as a proportion of GDP does not capture the dynamic effect of trade to growth (Such analysis from the supply side neglects the manifest balance of payments difficulties experienced by many countries. But balance of payments constraints as well as internal saving and budget constraints are central variables for the understanding of trade and growth nexus.). “In order to capture the dynamic effects of trade from demand and supply side, growth rate of exports related to marginal propensity to import is clearly more appropriate. Exports are an important demand side variable” (Jayme, 2001:15).

Pritchett (1996) laments that the different indicators do not even signal openness, i.e. the rough direction of trade policy, in a uniform way. In 5 cases out of 15 possible comparisons, countries scored as open by one measure have been scored as closed by another. This adds plausibility to the inconsistency of the results of different empirical analyses. However, for time series studies the ratio (exports + imports)/GDP seem more preferable and the only viable choice.

The trade to GDP ratio is, to say the least, a highly idiosyncratic statistic. The trade/GDP ratio is

$$\text{Open} = \frac{X+M}{\text{GDP}} - \frac{X-M}{\text{GDP}}$$

where X represents the value of all exports, M represents the value of all imports, and GDP represents total domestic consumption and investment (by both public and private sectors). Therefore, to highlight one of the more peculiar idiosyncrasies of the statistic, it is not difficult to notice how a country running a trade deficit, other things being equal, was more “open” by this measure than a country running an identically sized trade surplus

It has to be pointed out that this measure is not very useful for cross-country comparisons, since this ratio does vary with the size of a country, large countries usually having smaller ratios and

tiny countries having huge ratios. For small countries trade may account for a large share of the GDP than for larger countries. A small country may be open in practice in the face of numerous policy distortions to trading activities.

Even more troubling, is that the different measures of openness that have been used in a host of studies, tend not to be correlated with one another (One reason for lack of convergence is that openness variables may be proxies for other country characteristics that have very little to do with trade.). For example, most of the developing countries that have reduced trade barriers in recent decades have also implemented a variety of other policy reforms in fiscal and monetary policy, capital flows, financial regulation and labor markets.

More recent studies of the openness and growth relationship have resorted to more creative empirical methodologies. These methodologies include: (a) constructing alternative indicators of openness (Dollar 1992; Sachs and Warner 1995); (b) testing robustness by using a wide range of measures of openness, including subjective indicators (Edwards 1992, 1998); and (c) comparing convergence experience among groups of liberalizing and non-liberalizing countries (Ben-David 1993). Following Sachs and Warner [1995] comprehensive measure of openness, an economy is deemed open to trade if it satisfies five tests: (1) average tariff rates below 40 percent; (2) average quota and licensing coverage of imports of less than 40 percent; (3) a black market exchange rate premium of less than 20 percent; (4) no extreme controls (taxes, quotas, state monopolies) on exports; and (5) not considered a socialist country.

## **B. Research Methodology and Model specification**

This section develops the estimating equation and draw from the literature by using the augmented production function approach in investigating the interaction of FDI and trade policy regime in economic growth in Nigeria during the period 1990- 2007.

Following the analytical framework provided by Kohpaiboon, (2002) let a country's production be represented by the following aggregate production function:

$$Y = f(L, K, A) \quad 1$$

where

Y is output (gross domestic production (GDP));

L is employment;

K is capital stock.

A captures the total factor productivity (TFP) of growth in output not accounting for increasing in factor inputs (K and L).

According to the new (endogenous) growth theory, A is endogenously determined by economic factors. We know in economic literature that the available data on FDI do not fully capture addition to domestic investment by foreign firms (Lipsey, 2001).

Therefore, it is not possible to separate local and foreign components of domestic investment. We start with the assumption that the methods of estimating trade, FDI and their effect on economic growth operating through A have been consistent over the years.

It is noteworthy that the effect of trade and FDI on A also depends on the trade policy regime. Hence, a proxy variable for the openness of trade policy regime (TP) needs to be incorporated in the equation.

$$A = G(X, M, FDI, FDI*T) \quad 2$$

Substituting (2) in (1)

$$Y = f(L, K, X, M, FDI, FDI*T) \quad 3$$

In view of the fact that a reliable data series on capital stock is not available for Nigeria, this study employs the gross domestic capital formation to represent K; this proxy variable has been used in numerous previous studies (e.g. Barro, 1999; Balasubramanian et al, 1996). There is no unique measure of openness of the trade policy regime. This study uses the sum of exports and imports of goods (import + export) divided by GDP as a proxy for index of openness ( ) due to availability of data.

The estimating equation used in the empirical analysis is

4

Where Y = gross domestic product, GDP (in log form)

L = number of labor force (in log form)

K = GCF= the gross capital formation

FDI = the Chinese foreign direct investment inwards to Nigeria

T = openness of the trade proxies alternatively by the sum of exports and imports of goods divided by GDP

t = time subscript.

$\varepsilon$  = stochastic error term

The coefficient signs are as follows:  $\beta_1 > 0$ ;  $\beta_2 > 0$ ;  $\beta_3 < 0$ ;  $\beta_4 > 0$ ;  $\beta_5 < 0$ ;  $\beta_6 > 0$

A positive sign is expected from the coefficients of the number of labor force, capital, exports and index of openness, a negative sign is expected from the coefficient of imports while the coefficient sign on foreign direct investment can be either negative or positive. The outcomes are based on a priori expectation

The coefficient  $\beta_1$ ,  $\beta_2$ ,  $\beta_4$ , and  $\beta_5$  are the output elasticity with respect to L, GCF, X and M. The impact of FDI on growth is given by  $\beta_3$ . The sign of  $\beta_3$  is ambiguous; it can be positive or negative depending on the nature of the trade policy bias over the entire sample period whereas  $\beta_4$  aims to capture the impact of trade policy regime operating thorough FDI on growth. Even when  $\beta_3$  is negative, it does not imply that the FDI contribution is negative. Whether its contribution is negative or not depends on the size of the coefficient of the interactive term of FDI and trade policy regime,  $\beta_4$  compared to the  $\beta_3$ . (Kohpaiboon, 2002).

### **C. Estimation Technique and Data**

Prior to the estimation of equation (4), the characteristics of the data have to be examined. The main reason is to determine whether the data is stationary i.e. whether it has unit roots and also the order of integration. Augmented Dickey-Fuller (ADF) is used. The result of the stationarity test with intercept term is shown in Table 1 (Appendix).

Annual time series data on gross domestic product (Y), gross capital formation (K), Labor force (L) collected from the World Bank, World Development Indicators; FDI inflows from China, the Nigerian exports to China (X), the Nigerian imports to China (M) collected for the period 1990-2007 from the Chinese year book.

#### Granger Causality Test

The definition of Granger causality did not mention anything about possible instantaneous correlation between the variables. If the innovation to one variable and the innovation to another variable are correlated we say there is instantaneous causality. You will usually find instantaneous correlation between two time series, but since the can go either way; one usually does not test for instantaneous correlation. However, if you do find Granger causality in only one direction you may feel that the case for “real” causality is stronger if there is no instantaneous causality, because then the innovations to each series can be thought of as actually being generated from this particular series rather than part of some vector innovations to the vector system.

Based on the F-Statistics values (F Greater Critical Value, F-statistic 3) and the p-value ( $p \leq 0.2$  for the weak causality) reported in the tables below, it appears that there exists bidirectional and unidirectional causality between the variables in the short run for each country as the p-value associated with the Wald test in each equation is less than 0.20.

Tables present the Granger causality test results for the seven sample countries.

Note that, the results here are from using the first difference series,  $dlnX$ ,  $dlnM$ ,  $dlnFDI$ ,  $dlnTT(c,t)$ ,  $dlnGDP$   $dlnGCF$  and  $dlnLF$  for their related trade with China and the World.

**Table 1: VAR Granger Causality/Block Exogeneity Wald Tests Result**

Variables		Xc	Mc	FDIc	TTc	GDP	GCF	LF
Xc	F-Stat		9.97603	1.76711	1.66453	3.07081	2.49607	1.19851
	Prob.		0.0034	0.2160	0.2336	0.0872	0.1277	0.3382
Mc	F-Stat	12.1370		2.76299	0.90566	4.39695	6.85768	3.36012
	Prob.	0.0016		0.1066	0.4324	0.0395	0.0117	0.0726
FDIc	F-Stat	23.5224	4.83205		5.15411	4.43626	2.83461	8.50526
	Prob.	0.0001	0.0312		0.0263	0.0387	0.1017	0.0059
TTc	F-Stat	3.43136	6.89715	4.28411		2.02129	2.00927	2.47210
	Prob.	0.0695	0.0114	0.0421		0.1788	0.1804	0.1298
GDP	F-Stat	6.66371	2.34637	0.58857	0.58004			
	Prob.	0.0127	0.1417	0.5717	0.5761			
GCF	F-Stat	11.1406	2.34488	1.69626	0.43849			
	Prob.	0.0023	0.1418	0.2280	0.6558			
LF	F-Stat	5.51995	1.21262	18.9788	1.56845			
	Prob.	0.0219	0.3343	0.0003	0.2516			

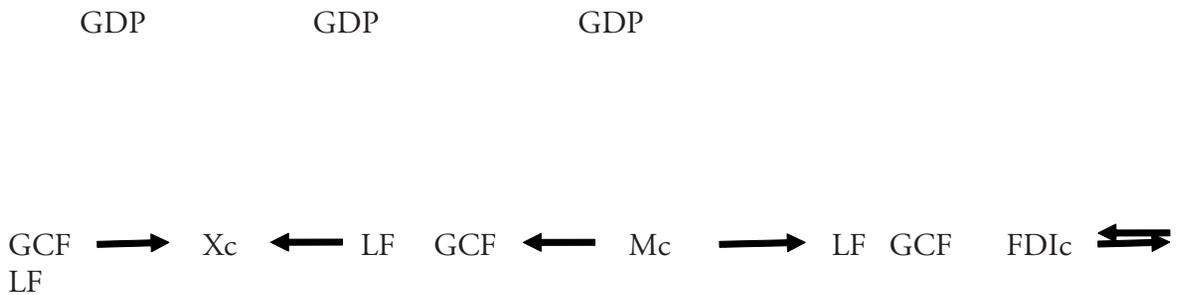
Indeed, the drivers of China's interest in Africa in general and Nigeria in particular are multifaceted. There is no doubt that "China's increasing need for energy sources and raw material to fuel its rapidly growing economy" is principal among these. Nonetheless, others are also important.

-From the first equation (Xc) of Table, we have found one bidirectional causality between Xc and GDP. We have also found two unidirectional causalities: GCF and LF cause Xc. This causalities relation indicates that the Labor Force and growth in Gross Capital Formation is the vital force in promoting exports to China that contribute to the growth of Nigeria Gross domestic product.

-From the second equation (Mc), we have found three unidirectional causalities from Mc to GDP, GCF and LF. This causalities relation indicates that Mc is a vital force in promoting Nigeria economic growth.

-From the third equation (FDI<sub>c</sub>) we have found one bidirectional causality between FDI<sub>c</sub> and LF. We have also found a unidirectional causality from FDI<sub>c</sub> to GDP. This indicates that Chinese foreign direct investment inflows to Nigeria is due to the Nigeria Labor Force performance and contribute to the Nigeria economic development.

-From the fourth equation (TT<sub>c</sub>) we didn't find any causality relation, this implies that Nigeria trade policy regime with China doesn't any influence on its economic development. Therefore, it should be the policy priority for Nigeria to make sure that FDI inflows from China and its trade relationship with China exert the reinforcing and beneficial effects on GDP and exports through active acquisition of advanced technology and open trade regime.



## V. Growth model: OLS Estimate Equation

Since there are only lagged values of the endogenous variables appearing on the right-hand side of the VAR equations, simultaneity is not an issue and OLS yields consistent estimates. Moreover, even though the innovations may be contemporaneously correlated, OLS is efficient and equivalent to GLS since all equations have identical regressors.

One of the most obvious variables to check for the impact of FDI, X, M and the trade regime (TT) is economic growth. In this first section, we presented the ordinary least squares regression that is one of the most popular and widely used for regression analysis. The regression is mainly used to establish whether one variable is dependent on another or a combination of other variables.

The results of the Ordinary Least Squares regression are summarized in the table below;

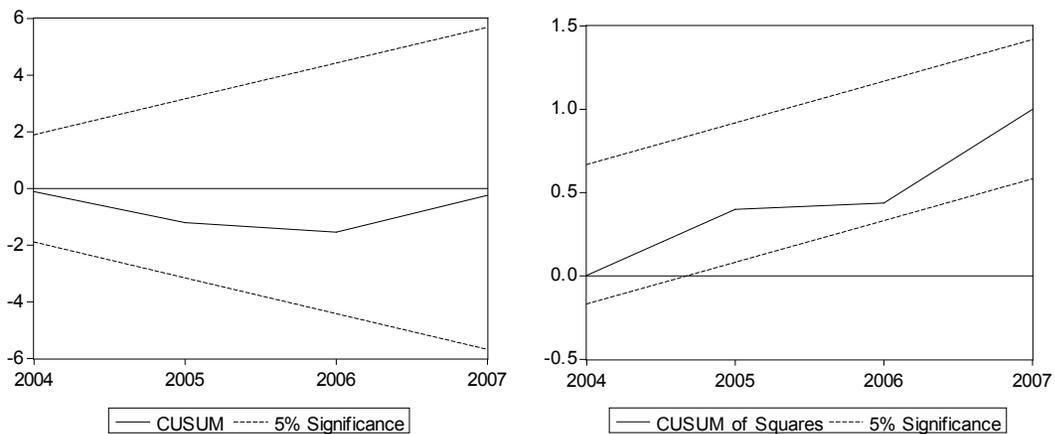
**Table 2: Estimated Short-run Coefficients**

Dependent Variable: LNGDP				
Method: Least Squares				
Date: 10/24/09 Time: 14:32				
Sample(adjusted): 1992 2007				
Included observations: 16 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.098403	3.598901	1.416656	0.2295
LNGDP(-1)	0.792125	0.185749	4.264497	0.0130
DLNGCF(-1)	0.887605	0.755581	1.174732	0.3053
DLNLF(-1)	-44.16387	25.23483	-1.750115	0.1550
DLNXC(-1)	0.045195	0.046959	0.962436	0.3903
DLNMC(-1)	-0.996809	0.480826	-2.073119	0.1069
DLNFDIC(-1)	-0.223316	0.166094	-1.344518	0.2500
DLNNTTC(-1)	0.003909	0.671713	0.005819	0.9956
DLNXC	-0.118666	0.063771	-1.860816	0.1363
DLNMC	-0.921306	0.393074	-2.343850	0.0790
DLNFDIC	-0.210957	0.165495	-1.274705	0.2714
DLNNTTC	0.132907	0.420079	0.316387	0.7675
R-squared	0.985367	Mean dependent var	15.41987	

Adjusted R-squared	0.945126	S.D. dependent var	0.634727
S.E. of regression	0.148687	Akaike info criterion	-0.860245
Sum squared resid	0.088431	Schwarz criterion	-0.280803
Log likelihood	18.88196	F-statistic	24.48646
Durbin-Watson stat	2.093758	Prob(F-statistic)	0.003663

The estimated short-run constant and the trade policy regime between China and Nigeria are positive but the coefficient of imports, exports and FDI are negative. This finding implies that instead of the god relationship between China and Nigeria, their bilateral trade and FDI relationship doesn't have any positive impact on Nigeria economic growth.

**Figure 2: Impulse response**

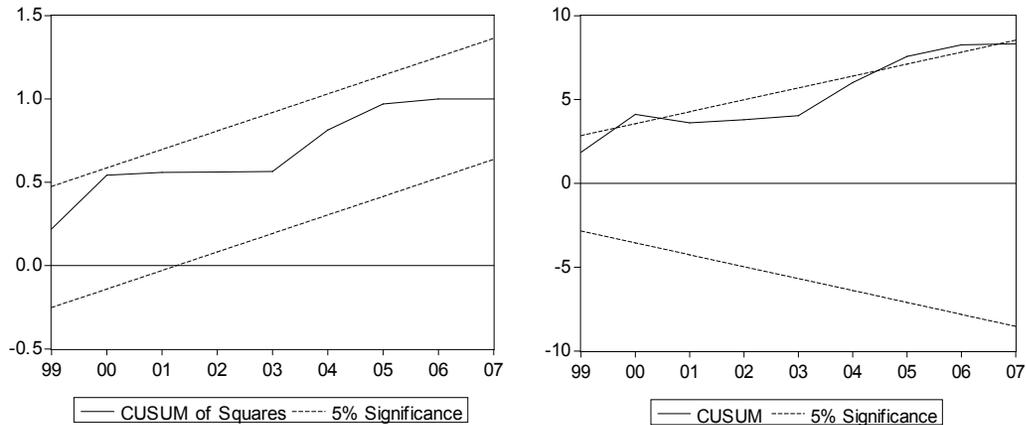


**Table 3: Estimated Long-run Coefficients**

Dependent Variable: LNGDP				
Method: Least Squares				
Date: 10/24/09 Time: 14:40				
Sample(adjusted): 1991 2007				
Included observations: 17 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.024000	6.182181	0.327393	0.7509
LNGDP(-1)	0.143517	0.140411	1.022119	0.3334
LNGCF	-0.021383	0.140213	-0.152502	0.8822
LNLF	0.423818	0.826677	0.512677	0.6205
LNXC	0.085064	0.020229	4.204941	0.0023
LNMC	0.669708	0.131713	5.084608	0.0007
LNFDIC	0.801950	0.109511	7.323032	0.0000
LNTTC	-0.785478	0.100569	-7.810316	0.0000
R-squared	0.995449	Mean dependent var	15.38460	
Adjusted R-squared	0.991909	S.D. dependent var	0.631541	
S.E. of regression	0.056808	Akaike info criterion	-2.593082	
Sum squared resid	0.029045	Schwarz criterion	-2.200982	
Log likelihood	30.04120	F-statistic	281.2041	
Durbin-Watson stat	1.936575	Prob(F-statistic)	0.000000	

The estimated long-run constant  $c$  and the coefficient of imports, exports and FDI are positive while the coefficient of the trade policy regime between China and Nigeria is negative. This indicates that the China-Nigeria bilateral relationship will be a win-win relationship if the two partners settle a clear and appropriate trade policies regime.

**Figure 3: Impulse response**



The results obtained using the Ordinary Least Squares (OLS) methods show that there is a positive and consistent correlation between foreign direct investment, exports, imports and the trade regime policy both for the Chinese and World side. In addition, the results indicate that the  $r^2$  both for their short and long term is positive and with a high level.

In addition, the stability analysis of both the long-run and short-run parameter constancy use the single-equation CUSUM-type and the CUSUMQ (cumulative sum and the cumulative sum of squares) introduced by Brown et al. (1975) show that our test parameter are stable.

## VI. Impact on Economic Growth in Nigeria

Will Chinese FDI, trade, and corporate social responsibility help reduce Nigerian poverty and drive growth? A growth-driver framework that identifies six key sets of variables that, if affected positively, have the potential to drive sustainable economic growth, helps to evaluate Nigeria's prospects. In order for sustained growth and development to occur, demonstrable progress must be achieved in the areas of policy choices, institutions, human capital, entrepreneurship, culture, and leadership .

### A. Policy Choices:

As well as accumulated data, suggest that African policymakers in general and Nigerian particularly, including national and local officials, are not setting policies that will have the strongest possible impact on a long-term economic growth for the widest array of the citizens. While many of the current policies being pursued are likely to benefit Nigeria and significantly contribute to economic development in some areas, the strategies seem to neglect essential long-term needs, important segments of the population, and the targeting of essential sectors leading to a diversified economy. For instance, even though evidence suggests that much profit can come to Nigeria by stimulating agriculture through some of the same policies that helped benefit an industrializing China, a robust agricultural development program remains to be seen. Similarly, although development models suggest that a strong middle class is the backbone of growth, the government has not focused its attention on providing basic needs to a broad segment of the population.

### B. Institutions:

The evidence suggests that Nigeria is dramatically underperforming in spite of strong revenue flows from high-priced crude oil exports. Various bureaucratic obstacles and a lack of strong institutions have led to constrained progress in areas of infrastructure, agriculture, and technology transfer. Similarly, widespread corruption has not transferred wealth to the lower classes and has stifled foreign direct investment in the nonpetroleum sector. Until Nigeria can develop credible, accountable, and transparent institutions, a free-market system that encourages investment, diversification, and competition is unlikely to emerge.

### **C. Human Capital:**

The case study also suggests that on human capital development, language barriers and cultural differences weigh heavily against the transfer of technological skills and education from Chinese to Nigerian citizens. Because cheap Chinese labor is often used, large industrial projects rarely transfer skills to local African populations.

### **D. Entrepreneurship:**

Of all the variables that lead to sustained economic growth, interviews suggest that a strong degree of progress has been made in the development of Nigerian entrepreneurs. Some Nigerian businessmen have learned to export successfully by using Chinese models and have profited by partnering in joint ventures with the Chinese. Nonetheless, language and cultural barriers have resulted in relatively small and educated elite as the primary beneficiaries.

### **E. Culture/Leadership:**

Nigeria's elite officials have made China's engagement a priority, but the strongest leadership has been observed on the Chinese side. African leaders have dictated to the Chinese which development projects they would like to undertake, but the absence of true leaders who are willing to stand up and articulate a long-term development strategy that adequately addresses the needs of the majority of Nigerian citizens remains a key challenge. Nigeria's rampant corruption has also proven to be a serious cultural obstacle that must be overcome if Nigeria is to successfully leverage its demands vis-à-vis China.

## VII. Conclusion and Recommendations

### A. Conclusion

The granger causalities mainly shows that the Chinese FDI inflows to Nigeria is due to the Nigeria Labor Force dynamism, that Labor Force is also the main motor who contribute to the development of China Nigeria bilateral Trade growth which have a positive impact on Nigeria economic development.

Similarly, the OLS short and long-run estimation of China-Nigeria bilateral trade shows positive trends while the estimated coefficient of short-run are not positively correlated with Nigeria economic growth like the long-run coefficient.

However the possibilities certainly exist for Nigeria to derive higher value from China's growing influence, Nigerians have not fully capitalized on the potential benefits. Far more needs to be done to expand policy creation, institution building, human capital, entrepreneurship, and the culture and leadership capabilities to maximize gains. Most importantly, Nigeria needs to develop a comprehensive strategy to more effectively balance the engagement of China to leverage its own strength and create a plan for sustainable development that resonates with its citizens.

### B. Recommendations

Nigeria's first priority lies in developing the capacity to better manage its own policies toward China's engagement. Nigeria needs to realize that China's engagement gives it a unique opportunity to significantly expand its development and articulate a comprehensive strategy that addresses its long-term needs. The Nigerian government should avoid short-term fixes and front-loaded deals with the Chinese and move beyond arrangements that focus solely on the petroleum sector. High commodity prices are only a temporary vehicle that can be utilized to drive Nigeria's economy into a more economically diversified state, the true mechanism for sustained growth.

Nigeria should focus on how China's engagement in Africa fits into the broader picture of international engagement. In particular, Nigeria has an opportunity to diversify its development by balancing Western assistance with that of China but needs to better understand how each type of aid can be beneficial, and to what sectors, in order to implement a successful strategy. For instance, China's experience as a more disciplined society has the potential to curb corruption in Nigeria, while the United States' commitment to human rights and transparency restrain an abuse of power.

Nigerians should learn from the successes and failures of other states' relations with China and their policies toward development, while also learning from their own experiences. Nigeria should undertake a thorough review to investigate what policies have been beneficial for Nigeria's long-term development and what areas need improvement. Nigeria should also more closely examine the United States' relationship with China and replicate successful policies. The United States has a long history of trade disputes with China, challenging it in such multilateral institutions as the World Trade Organization. Nigeria appeared successful in its ability to confront China when it was being inundated with inferior goods by threatening a WTO complaint. Whether they learned anything from the U.S. experience is unclear, but Nigerians could certainly tap into the vast array of Western expertise on how to better manage a difficult economic relationship and how to protect important sectors of the economy against foreign competition.

Nigerians should be pragmatic as they strive to "build institutions." Past attempts to build institutions in Nigeria particular and other African countries have shown that just uprooting and transplanting institutions does not work. The process is evolutionary in nature and dependent on political will and strong leadership to make the necessary changes. Most importantly, there needs to be transparent oversight, largely monitored by a large middle class. Since a large middle class is dependent on sustained economic growth, it will take time to build credible institutions, but small steps can be taken. One of the most critical elements in institution building is support for civil society organizations and social enterprises that enable the emergence of market institutions, transparent and accountable governance, and budget-monitoring mechanisms. Nigerian civil society organizations should press the Nigerian government to make their processes more transparent and to join such programs as the Extractive Industries Transparency Initiative (EITI).

Greater emphasis should be placed on building human capital and overcoming language and cultural barriers to facilitate the transfer of business knowledge and technology to a wider array of the Nigerian population. Exchanges between Chinese and Nigerian businessmen in the manufacturing sector seem to be a first step, but Nigerian businessmen need to develop the capacity to become leading entrepreneurs independent of the Chinese. World class business schools and public administration institutes focusing on building competences, leadership skills, and values need to be more greatly supported in Nigeria.

Advances in entrepreneurial skills need to be accompanied by similar advances in building a culture of leadership that is not only concerned about enriching themselves but about enriching their country as well. The fact that Nigerian businessmen have been accused of ordering the

same inferior products that Nigerian citizens have complained about demonstrates that stronger values are needed. Nigeria needs business leaders who are willing to press for reform and advocate the added value of transparent business practices. The limited success of the Lagos Business School in its passionate emphasis on business ethics shows the possibilities for considerable support of such initiatives.

Lastly, in order to meet all of these important needs, Nigerians should utilize their own talent by pooling together leading officials, scholars, businessmen, and civil society representatives to form a committee dedicated to prescribing ideas on how to optimize Western and Chinese engagement. At the same time, an inter-ministerial implementation committee drawn from the ministries of foreign affairs, industry, trade, agriculture, and investment promotion, should be set up to reduce all the protocols, using a critical path analysis of action plans, with civil society as monitors. On specific “accelerator” infrastructure interventions, like energy and transport, a project team with people seconded from the private sector, diaspora experts, and key government technocrats will be required to drive some key timelines.

# Appendix

## Unit Root Tests

The Augmented Dickey Fuller (ADF) test of unit roots was employed to test for the presence of unit roots and order of integration of time series data. The presence of unit roots culminated in the need to further test for co-integration between the variables. The Johansen's co-integration framework was adopted. An error correction model was specified and estimate for the study.

**Table 1: Unit Root Test Results using ADF Procedure**

Variables	ADF at Level	ADF at 1st Difference	Order of Integration	
dlnXc	-4.417683	-5.605410	1	1
dlnMc	-4.769821	-8.279166	2	0
dlnFDIc	-8.150546	-7.328181	0	1
dlnXt	-4.272011	-6.147251	1	1
dlnMt	-5.921969	-6.068563	0	1
dlnFDIt	-3.314359	-4.024026	0	1
dlnGDP	-3.782668	-4.526027	2	0
dlnGCF	-3.173538	-3.967838	0	0
dlnLF	-1.035404	-3.705119	2	0
dlnTtc	-5.152760	-5.624148	1	0
dlnTtt	-5.389550	-6.980478	1	1

Source: Own Computations

Note: Critical Values

Critical Values	ADF at Level	ADF at 1st Difference
1% level	-3.920350	-4.057910
5% level	-3.065585	-3.119910
10% level	-2.673459	-2.701103

The results at 5% significance level indicate that Mc, GDP, GCF, LF and Ttc variables are stationary at level while Xc, FDIc, Xt, Mt, FDIt and Ttt need to be differenced once to attain stationarity.

-Tests for Cointegration

Since the main interest is in the long-run relationship, the long-term relationships among the variables were examined using Johansen (1991) cointegration framework. The results of the cointegration test are reported in Table 2. The cointegration test results indicate the existence at least one cointegrating equation at 5% significance level.

**Table 2: Johansen Cointegration Test Results**

Hypothesized No. of CE(s)	Xc GDP GCF LF Ttc		Xt GDP GCF LF Ttt		Critical Value
	Trace stat	Max Eigen St	Trace stat	Max Eigen St	
None *	189.6169	104.7333	201.3531	111.5635	33.87687
At most 1 *	84.88364	44.23693	89.78955	43.48002	27.58434
At most 2 *	40.64670	26.53987	46.30953	24.83221	21.13162
At most 3	14.10684	8.354676	21.47733	16.55483	14.26460
At most 4 *	5.752159	5.752159	4.922501	4.922501	3.841466
Hypothesized No. of CE(s)	Mc GDP GCF LF Ttc		Mt GDP GCF LF Ttt		Critical Value
	Trace stat	Max Eigen St	Trace stat	Max Eigen St	
None *	152.9732	77.08763	194.8105	93.89046	33.87687
At most 1 *	75.88557	31.32615	100.9200	60.87346	27.58434
At most 2 *	44.55942	25.06152	40.04656	19.17975	21.13162
At most 3	19.49790	11.32947	20.86680	14.59780	14.26460
At most 4 *	8.168424	8.168424	6.269004	6.269004	3.841466
Hypothesized No. of CE(s)	FDIc GDP GCF LF Ttc		FDIt GDP GCF LF Ttt		Critical Value
	Trace stat	Max Eigen St	Trace stat	Max Eigen St	
None *	217.2785	131.8685	213.0262	153.5756	33.87687
At most 1 *	85.41000	46.37506	59.45060	36.09324	27.58434
At most 2 *	39.03493	25.44012	23.35735	13.22283	21.13162
At most 3	13.59481	8.340602	10.13452	7.867369	14.26460
At most 4 *	5.254212	5.254212	2.267155	2.267155	3.841466

The existence of at least one cointegrating relationship (Trace test indicates and Max-eigenvalue test indicates minimum 2 and maximum 5 cointegrating eqn(s) at the 0.05 level) between a set of variables implies that an error-correction model (ECM) exists. The significance of the ECM

is an indication of the existence of a long-run equilibrium relationship between the dependent and factors affecting it.

The Granger causality tests are then applied to test for the direction of causalities between the variables. Granger causality test estimates Vector Autoregressive (VAR) or Vector Error Correction (VEC) models for the calculation of the test statistic. The choice between VAR and VEC models depends on the cointegration test results: a VAR model with difference stationary variables is estimated for variables which are not cointegrated and a VEC model is estimated otherwise.

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