

Impact of Chinese Trade and Investment on Nigeria's Economic Growth

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Abstract

The growth effect of China trade with Sub-Sahara Africa countries has generated a lot of controversies in recent times. Nigeria is a major trading partner with China and also one of the highest recipient of foreign direct investment (FDI) in Sub-Sahara Africa. This study therefore, examines the growth impact of trade and FDI inflow from China on Nigerian economy using annual time series data covering the period 1994 to 2017. The study relied on the co-integration and error correction modelling technique to ascertain the short run and long run effects of trade and FDI inflows from China on Nigeria's economic growth. Statistical facts from the study revealed that imports from China dominate the trade relation between Nigeria and China throughout the period of analysis. Imports from China consist mainly of finished goods which include electrical and electronics equipment, vehicles, machines, aluminum, plastic products etc. the exports from Nigeria are mainly primary products dominated by crude oil. Also, about 75% of Chinese investment in Nigeria is in the oil and gas sector, indicating a lopsided investment in the oil and gas sector which have little linkage with other sectors of the economy. The results from the estimated model revealed that imports from China have significant and positive impact on Nigeria's economic growth both in the short run and in the long run. The impact of FDI inflow from China was not a significant determinant of economic growth in Nigeria both in the short run and in the long run. Also, Export from Nigeria to China was only significant in the long run but with negative sign. This implies that the current export composition of Nigeria to China is not growth enhancing for Nigeria. It was therefore recommended among others that there should be a deliberate government policy to redirect FDI inflow to the non-oil sector of the economy.

Keywords: China Trade, Economic growth, FDI inflow, Chinese goods, Trade agreement

JEL Classification: F41, F43, F21

Introduction

China first formalized diplomatic relations with Nigeria in February 1971, a decade after Nigeria's Independence. The delays in this relations can be traced down to not only the young government's pro-west and anti-communist nature, but also to China's involvement in the Nigerian civil war. China was alleged to have supported Biafra by supplying arms. Trade at this time was concentrated with Europe and North America. According to Ogunsanwo (1974), as at independence, Nigeria political leadership did not consider close relations with China in its agenda.

Following the establishment of diplomatic ties in 1971, agreements on economic and technical cooperation were signed between the two countries. The trade agreement was hardly significant as it had no impact on the largely unregulated import of Chinese goods that had been entering Nigeria. In 1975 and 1976, Nigerian imports from China totaled US\$69.86 million and US\$140.87 million respectively, while Nigeria's exports to China for these combined years were US\$8.85 million. (Ogunsanwo, 2008).

Nigeria and china relations gained fresh momentum during the rule of Military dictator General Sani Abacha when Nigeria was isolated by the west for anti-human rights issues. By 1995 sanctions were imposed by the United States and its Western Allies which led the Sani Abacha led government to look Eastward (Elkanah, 2006). At the peak of this involvement, China secured various joint-venture contracts with Nigerian oil companies, often in exchange for low-interest loans and targeted development projects.

The volume of trade rapidly increased from ₦1.3 billion in 1990, to ₦5.3 billion in 1996. Most of this growth was attributable to the oil sector, with a small fraction emanating from the importation of cheaply manufactured Chinese goods and products (Utomi, 2008).

It was not until the return of democratic rule in Nigeria headed by Olusegun Obasanjo that economic relations developed in earnest. Marked by various visits by the then China's President Hu Jintao and Prime Minister Wen Jiabao, and fmr. President Obasanjo, as well as ministerial-level visits which led the two countries to develop and intensify mutual friendship and familiarity. In 2001, the two countries signed agreements on the establishment of a Nigeria Trade Office in China and a China Investment Development and Trade Promotion Centre in Nigeria. The intergovernmental Nigeria-China Investment Forum was then founded in 2006 (Egbula & Zheng 2011).

The trade volume between the two countries grew by nearly 300 percent by 2004 and reached \$7.2 billion in 2008. Trade volume between Nigeria and China in 2009 reached \$ 7.3 billion and \$7.7 billion in 2010 respectively while Nigeria's total exports to china was \$717 million and \$1.4 billion respectively. In 2014, Nigeria's imports from china hit \$10.2 billion and her exports to china was \$1.7 billion. According to Ayoola (2013), a surge in Nigeria imports of Chinese goods relative to Nigeria exports to China has resulted in a trade deficit with China and this is expected to grow significantly due to increased trade relations until Nigeria can offer its industrial producers home-grown alternatives of the same quality at competitive prices.

The Ministry of commerce in China has said that the main aim of the government policy towards china in summary is to (i) Increase Chinese Multinational Companies in the Nigerian market share. (ii) Expand the Nigerian market for Chinese manufactured goods. (iii) Increase China's presence in Nigeria oil and gas sector and leverage its investment in Nigeria as a gateway for entering the Economic Community of West African States (ECOWAS) market. (Egbula & Zheng, 2011). China's interest in Nigeria and Africa stems from the availability of abundant natural resources specifically oil, as well as zinc, iron ore, and copper, and of course, vast consumer markets. As noted by Ayenagbo (2015), three primary interests have been driving China to Africa namely access to resources, access to markets, and pursuit of diplomatic allies on global issues.

Gboyega, Musibau and Olawale (2011) opine that China's interest in Nigeria stem from the fact that the two countries have economic complementarities. While a major development challenge in Nigeria is infrastructural deficiency, China on the other hand has developed one of the world's largest and most competitive construction industries with particular expertise in the civil works, critical for infrastructure development coupled with its ability to provide the necessary financial assistance to the countries in need including Nigeria. Also, China's industrialization drive has led to fast growing manufacturing economy which requires oil and mineral inputs that are outstripping the country's own domestic resources. There is therefore a need to source them from abroad including Nigeria which is abundant in natural resources.

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 (Utomi, 2008). The recent economic interests and investments in Africa have put its bilateral relations with Africa under scrutiny. As a fact, the impacts of Chinese economic activities are being felt in many parts of Africa. The areas of impacts include Foreign Direct Investment (FDI), funding for infrastructural development and increasing the prices of African commodity products and introduction of low-price electronic and telecom hardware products. (Ayodele & Sotola, 2014).

Trade and Foreign direct investment (FDI) are channels through which economic growth can be achieved. Thus the ever increasing bilateral trade and Chinese FDI inflows should be beneficial to Nigeria. However, there seems to be controversy on the likely long-run effect of China-Africa trade relations on economic growth in African countries. Kaplinky (2007) is of the view that trade with china is hindering industrialization in Africa as the export from Africa countries are basically primary products. And that these products lack job creation effects or ability to trigger activities in other key sectors of the economy. Lin (2012) on the other hand argued that China- Africa trade would have a long run positive effect on Africa Economic growth. He argued that growth starts from high performance of the primary sector and resources generated from such performance are harnessed for industrialization and human capital development which will sustain growth in the future. Hence this study is aimed at investigating the likely effect of China-Africa Trade and investment on economic growth using annual time series data from Nigeria from 1994 - 2015

The study is divided into five sections. Apart from section 1 which is the introduction, section 2 deals with the review of literature. Section 3 covers the theoretical framework and model specification, while the empirical analysis is contained in section 4. The study is concluded in section 5 with some policy recommendations and conclusion.

Literature Review

One common theory that has been used to explain growth benefits from trade among different countries is the dependency theory. The dependency theory tend to explain the historical condition which shapes a certain structure of the world economy such that it favors some countries to the detriment of others and limits the development possibilities of the subordinate economies thus conditioning it to the development and expansion of another economy to which it is subject to.

Dependency theory also suggests that, despite increased trade with poorer countries, the international system is controlled by richer states seeking to maximize their benefits at the expense of poorer states. Poorer states then become subject to economic policies which are in the favour of the richer states. Dependency theorists made the argument that dominant developed countries had established a world economic system that they controlled and it was the machinations of this system that allowed wealthy countries to prosper and poor countries to suffer (Smith, 1979). Developing countries sell raw materials to developed countries who use those materials to create manufactured “value-added” products which are then sold back to the developing countries at a higher price (Ferraro, 1996). A trade imbalance then exists, as finished goods cost more than raw materials; thus developing countries cannot accrue enough income from their exports to pay for their imports, resulting in debt and decrease of economic growth (Ferraro, 1996). This imbalance creates a state of dependency for developing economies.

Dependency theorists (Frank 1976; Sunkel 1979; Furtado 1964; Dos Santos 1970; Emmanuel 1972; Ake 1981; Onimode 1982), argue that the dependence of the less developed countries on the industrialized nations is the main cause of their underdevelopment. They hold that the present economic and socio-political conditions prevailing in the periphery are the result of a historical international process. The trade between Nigeria and China has largely followed a classical pattern of trade disequilibrium between the developing and the developed economies (Jumbo, 2007). While Nigeria’s exports to China consist mainly of primary commodities, its imports from that country are made up of largely of industrial goods (Soludo 2006; Agbu 2006). Can dependency theory define or give an insight into the nature of the relationship between Nigeria and china? Some scholars tend to imply that the Sino-Nigeria relationship is indicative of dependency and bad for Nigeria (Kagan (2006), Tull (2006), and Behar 2008), while others disagree (Alden, 2007 & Brautigam, 2009).

In empirical literature on China-African trade relations, there have been mix results on the growth implication of China African trade for African countries. Nabine (2009) in his empirical work on Nigeria-China trade and investment relations reveals that in the short term, trade relations with china does not contribute to Nigeria’s economic growth, while in the long term there is much potential to enhance economic growth.

Izuchukwu and Ofori (2014) in their empirical study on the booming China FDI to Nigeria, found that FDI inflows from china has contributed significantly to GDP, and thus economic growth since 1999. They demonstrate in their work that China FDI inflow has a bidirectional relationship with GDP, indicating a significant contribution to the economic growth of Nigeria. They also find a unidirectional relationship between trade volume and GDP. Signifying that the trade volume between china and Nigeria though lopsided, is beneficial. Aisien, Guobadia and Iyoha (2017) in their empirical study of china – Africa trade relations and the growth implications f or ECOWAS countries observed that many West African countries had good growth performance until 2013. And this period coincided with the period of high China –Africa trade relations. Their empirical findings however reveled that it is the imports from china that significantly support growth in ECOWAS states rather than their exports to China.

Ogunkola et al (2008) are of the opinion that while some Chinese investments and activities in the country are directed at addressing critical gap in the provision of basic infrastructure, these are not comparable to the level at which Chinese are seeking Nigeria’s oil and gas and other raw materials. There is a need to examine all barriers facing Nigeria’s export to china. They however recommend that further studies and investigation should be carried out to determine Chinese interest in Nigeria. According to Kabassi (2012), China’s investments in the trade sector does not increase Nigeria’s opportunity to develop its manufacturing industries, promote local and small medium enterprises, increase employment, reduce the importation of cheap goods, reduce goods smuggling, and develop Nigerian local markets. Its investments in the oil sector are only worsening the reliance over Nigeria’s natural resources, while degrading the environment. Even though China’s partnership has been relieving some urgent needs, these needs cannot eradicate poverty and underdevelopment in Nigeria. Its investments are not sustainable to Nigeria’s economy that is becoming increasingly dependent on China. China relations will yield optimal outcomes if Nigeria puts in place the policies and institutions to maximize the complementary effects and minimize the competing effects of this relation. Other empirical study that found positive impact of china – African trade on economic growth in Africa include Chen (2007), Balamoun-Lutz (2011) and Stapleton (2013).

Contrary to these findings, Giovannetti and Safillippo (2009) in his disaggregate analysis of China – Africa trade relation found the existence of displacement effect of African products at different levels.

Theoretical Framework and Research Methodology

The study employed an augmented version of the Aggregate Production Function Model to establish the link between trade, foreign investment and economic growth. The aggregate production function describes how productivity or Real GDP per worker depends on physical and human capital. It relates outputs to inputs or factors of production. It shows how total real GDP in an economy depends on available inputs. Aggregate output (real GDP) depends on Physical capital, Labour, Human capital, knowledge, available natural resources among others. Foreign trade and investment contributes to growth through its impact on productivity. A number of studies have found a positive relationship between international trade and productivity growth in developing countries (Edwards, 1993 and Rodrik, 1995). Coe, Helpman and Hoffmaister (1997) found that increased trade with industrial countries boosts productivity growth of developing countries through research and development spillovers. A mechanism through which trade can facilitate productivity is via increased contact with foreign agents. Imports are important for acquiring foreign technology. Such contact could lead to rapid transmission of foreign technological knowledge, it could also make imitation easier. Trade in one sector may also enhance productivity in another sector via input-output relations (Choudhri & Hakura, 2000)

According to Herzer (2006), exports lead to increase in productivity. An expansion in exports may promote specialization in sectors in which a country has comparative advantage, leading to a reallocation of resources to more productive export sector. An increase in Exports also offers larger economies of scale (Helpman & Krugman, 1985).

FDI as an important vehicle for the transfer of technology that contributes to growth in a large measure than domestic investment (Borensztein et al, 1998). FDI has a numerous of advantages such as augmenting domestic capital; transfer of technology, knowledge and skills; promotion of competition and innovation; and enhancing export performance. These must be weighed against other issues such as anti-competitive and restrictive business practices; tax avoidance and abusive transfer pricing; volatile flows of investment and related payments deleterious for balance of payments; transfer of polluting activities and technologies; and excessive influence on economic affairs with possible negative effects on industrial development and national security (Ogunkola et al. 2008).

De Gregorio (2003) notes that FDI may allow a country to bring in technology and knowledge that are not readily available to domestic investors and in this way increase productivity growth throughout the economy. FDI may also bring expertise that the country does not possess while the foreign investors may have access to global markets.

As a result, our data analysis is modeled after an aggregate production function (APF) framework. The standard APF model has been used extensively in econometric studies to estimate the impact of FDI inflows on growth in many developing countries. The APF assumes that, along with conventional inputs of labour and capital used in the neoclassical production function, unconventional inputs like FDI may be included in the model to capture their contribution to economic growth (Ashgari, 2013). The APF model has also been used by Nabine, 2009; Kohpaiboon, 2004; Mansouri, 2005; Feder, 1983; Fosu, 1990 & Ukpolo, 1994).

Following Herzer et al. (2006), the empirical model starts with a simple neoclassical production function:

$$Y_t = A_t K_t^\alpha L_t^\beta \quad (1)$$

Where Y denotes the aggregate production function of the economy at time t, and A K L are the level of total factor productivity, the capital stock, and the stock of labour respectively.

According to Bhagwati (1985), any gains from FDI on TFP will be dependent on the volume of trade of a particular host country. This study looks at the impact of Trade and FDI on productivity, and by extension economic growth. Thus, we express total factor productivity as a function of FDI and Trade and, other exogenous factors. According to Lipsey (2000), FDI does not fully capture addition to domestic investment by foreign firms, separating the effects of foreign interaction from local interaction on domestic investments will be impossible. We assume that the methods of estimating trade, FDI and their effect on economic growth operating through TFP have been consistent over the years (Nabine, 2009). Our new equation incorporates all these effects, thus we express total factor productivity:

$$A = f(X, M, FDI, OPN) \quad (2)$$

Combining equation 2 with equation 1 we obtain

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

The estimating equation now used in the empirical analysis is:

$$RGDP_t = \alpha + \beta_1 CHINAEXP_t + \beta_2 CHINAIMP_t + \beta_3 CHINAFDI_t + \beta_4 LFPR_t + \beta_5 GFCE_t + \beta_6 HCD_t + \varepsilon_t \quad (4)$$

The corresponding error correction model is expressed as

$$RGDP_t = \alpha + \beta_1 \sum_1^{\eta} CHINAEXP_t + \beta_2 \sum_1^{\eta} CHINAIMP_t + \beta_3 \sum_1^{\eta} CHINAFDI_t + \beta_4 \sum_1^{\eta} LFPR_t + \beta_5 \sum_1^{\eta} GFCE_t + \beta_6 \sum_1^{\eta} HCD_t + \rho ECM_{t-1} + \varepsilon_t \quad (5)$$

Where

RGDP = Real Gross Domestic Product measured in 2010 constant price (N'billion)(proxy for Economic) growth

CHINAEXP = Total export to China (US\$ 10,000)

CHINAIMP = Total import from China (US\$ 10,000)

CHINAFDI = Inwards of Chinese foreign direct investments to Nigeria (US\$10'000)

LFPR = Labour Force Participation Rate (%)

GFCF = Gross fixed capital formation (N'billion)

HCD = Human Capital Development (Measured by secondary School enrollment rate)

t = Time subscript

ε = Stochastic error term

α = A constant parameter

The coefficients of Labour force participation rate, gross fixed capital formation, FDI, exports and human capital development are expected to carry positive signs, while the coefficient of Imports is expected to carry a negative sign. The coefficient of the error correction mechanism is expected to carry a negative sign. $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ are the elasticities of output with respect to the determinants since the variables are expressed in their log form.

The annual time series data is sourced from the National Bureau of statistics of Nigeria, World Development Indicators from the period 1994 -2017 and National Bureau of Statistics of China, China statistical yearbook from 1994-2017.

Sino-Nigeria trade and investment relations: Some statistical facts

Trade relationship between China and Nigeria has increased in recent years. Numerous bilateral agreements between both contries have been signed to further boost cooperation between both countries in various areas. Some of the major bilateral agreements concerning commerce, agriculture, tourism and security were signed over the years are shown in table 1 below:

Table1: Selected Agreements between Nigeria and China

TYPE OF AGREEMENT	YEAR
Agreement on Cultural and Educational Cooperation. and 1990	1981
Agreement on Promotion and Protection of Investments	1997
Agreement on Trade, Investment Promotion and Protection	2001
Agreement for the avoidance of double Taxation and Prevention of Fiscal Evasion with respect to Tax and Income	2002
Agreement on Consular Affairs	2002
Agreement on Cooperation on Strengthening Management of narcotic Drugs, Psychotropic Substances and diversion of Precursor Chemical	2002
Agreement on Tourist Cooperation	2002
Agreement of South-South Co-operation among China, Nigeria and FAO	2003
Strategic Partnership Agreement	2005
Memorandum of Understanding on a Strategic Partnership	2006
Agreement against fake products exported to Nigeria from China	2009
Memorandum of Understanding on peace co-operation	2010
Agreement on Defence Cooperation between Nigeria and China.	2013
Agreement on Economic and Technical Cooperation	2014
Agreement on Finance for the Zungeru Power Plant and Airport Terminals	2014
Agreement on Mutual Visa Exemption for Holders of Diplomatic and Official Passports.	2014
Memorandum of Understanding between Nigeria and China on Scientific and Technological Cooperation.	2016
Agreement to Boost Industrial Activities and Infrastructural Development in Nigeria	2016

Source: Authors

Bilateral trade has grown exponentially since China and Nigeria signed an agreement on trade and investment promotion and protection in 2001. Though Chinese trade with Nigeria is booming, a glance at export and import values shows that the trade balance heavily favours China. In 2017, Nigeria's total import from China was US\$12.2 billion making Nigeria the 34th largest export market for China in that year. Although this represent only 0.5% of China total export in 2017.

The total export of Nigeria in 2017 was US\$1.6 billion making Nigeria the 70th largest source of import for China. This represent only 0.1% of China total Import in 2017. In Africa, Nigeria is one of the largest export market for China. According to statistics from Chinese year Book (2017), an average of 12.52% of china’s export to Africa comes to Nigeria. However, only an average of 2.24% of China’s import from Africa comes from Nigeria. Figure 1 below shows the trend in trade relationship between China and Nigeria. The fig 1 below clearly shows that the trade relationship is highly dominated by import from China.

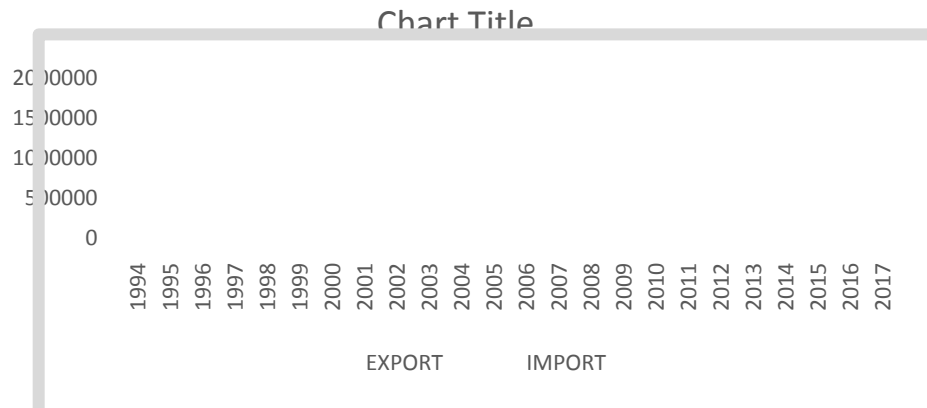


Figure 1: Trend of Nigeria Trade with China (1994 - 2017)

A close look at the trade statistics shows that the top ten import of Nigeria from Chian include electrical and electronics, nuclar reactor and machines, vehicles, plastic products, articles of iron and steel, articles of rubber, aluminimum and footwears. The value import of electrical and electronics equipment from China in 2017 was US\$1.5 billion. This represents about 22% of the Nigeria total import from China in 2017. Nuclar reactor and machine constitute about 16% of Nigeria’s total import from China in 2017. The overall picture shows that capital goods and manufactured goods constitute a large proportion of import from China. A chart of major Nigeria import from China in 2017 is shown in fig. 2 below. Closing related is the composition of nigeria major export to China which is shown in fig 3. From this statistics, crude oil constitute the bulk of nigeria export to China. Crude oil alone constitute over 80% of Nigeria total export to China. Other leading exports include wood, cocoa, copper, raw hides andskins and leather, edible fruits and rubber. This clearly means that nigeria export is mainly primary products which attracts low prices in the international makets. This explain while the export figure is low relative to the import figure.

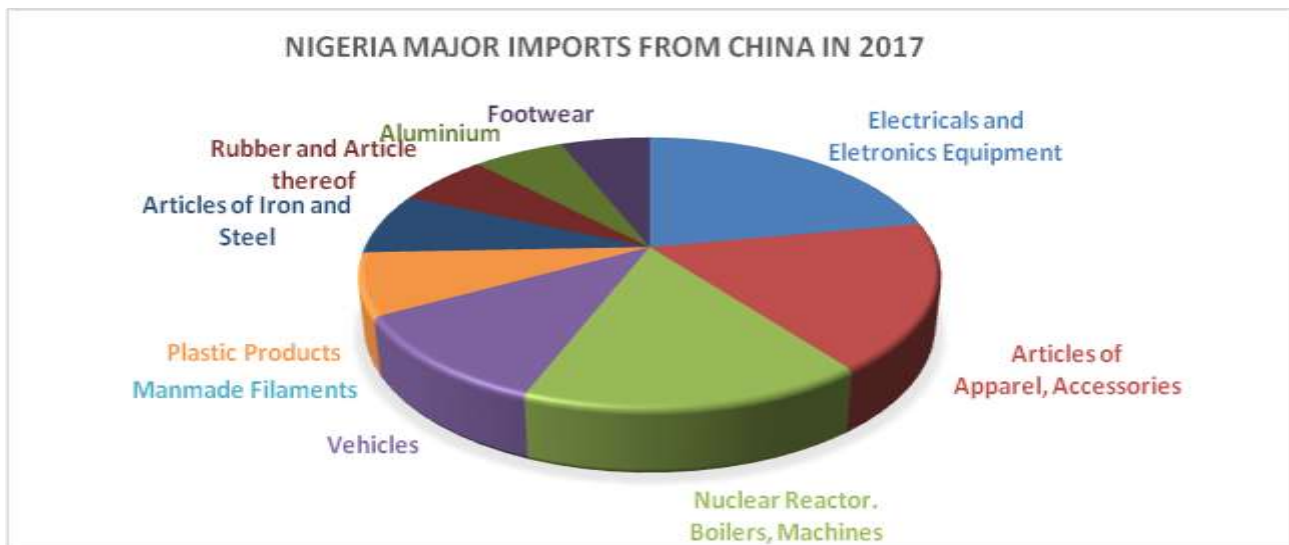


Figure 2: Major Nigeria Import from China in 2017

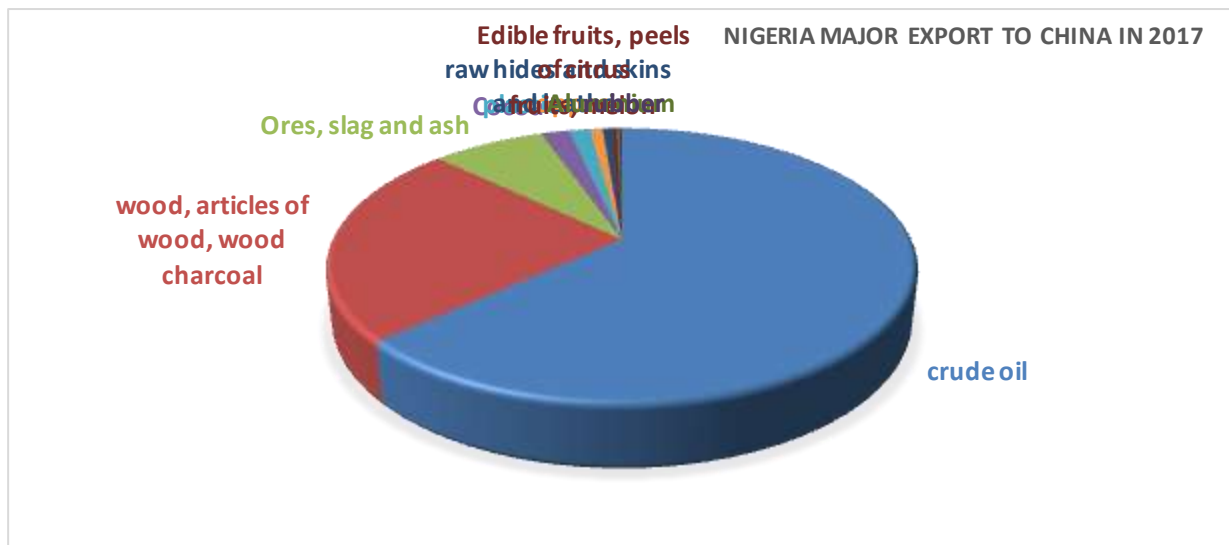


Figure 3:Major Nigeria Export to China in 2017

In terms of FDI inflow from China, Nigeria has benefited greatly. The total China FDI inflow into Nigeria stood at US\$20,830,000 in 1994. This fell to US\$12,110,000 in 1988, representing a drop of 41.86%. The FDI inflow from China however increased to US\$67,790,000 in 2006 and thereafter rose to a record height of US\$390,350,000 in 2007. There was another sharp fall in FDI inflow from China in 2008 to US\$162,560,000. This represents a drop in Chinese FDI inflow into Nigeria by 58.3%. Between 2008 and 2012, FDI inflow into Nigeria from China maintained an upward trend hitting a record high level of US\$333,050,000 in 2012. This period coincided with the high economic growth era of Nigeria. However, from 2012 to 2015, FDI inflow into Nigeria from china fell continually reaching a bottom level of US\$50,580,000 in 2015. From 2015 to 2017, there was another turn as FDI inflow from China increased monotonically hitting US\$137,950,000 in 2017. The trend in FDI inflow into Nigeria from China is show in fig 4 below.

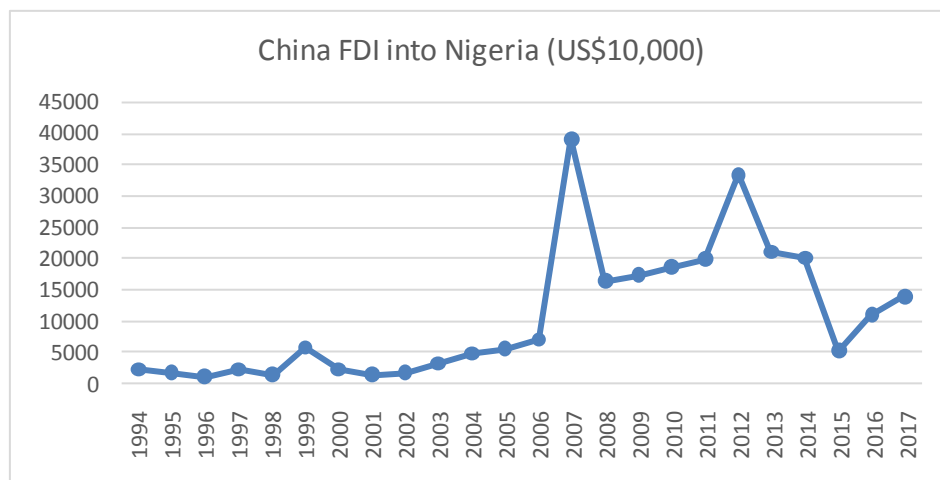


Figure 4: FDI inflow into Nigeria from China (US\$10,000)

In Africa, Nigeria is a strong destination of Chinese FDI. In 2004 about 14.3% of total Chinese FDI inflow into Africa found its way to Nigeria. This increased to 24.7% in 2007 and fell to 6.2% in 2014. On the whole, between 1994 and 2017, an average of 9.4% of total Chinese FDI inflow into Africa comes to Nigeria. Fig. 5 shows the FDI inflow into Nigeria as a proportion of the flow to Africa.

Chinese investment in Nigeria is predominantly in the oil and gas sector. About 75% of Chinese investment in Nigeria is in the oil and gas sector. The developments in the non-oil FDI is also significant as this component increased from about \$0.3 billion in 2003 to about \$1.7 billion in 2005. China has set up over 30 solely owned or joint venture companies in Nigeria actively involved in construction, oil and gas, technology, manufacturing, services and education sectors of Nigerian economy (Ogunkola *et al.* 2008). Major Chinese investment in Nigeria is shown in table 2 below:

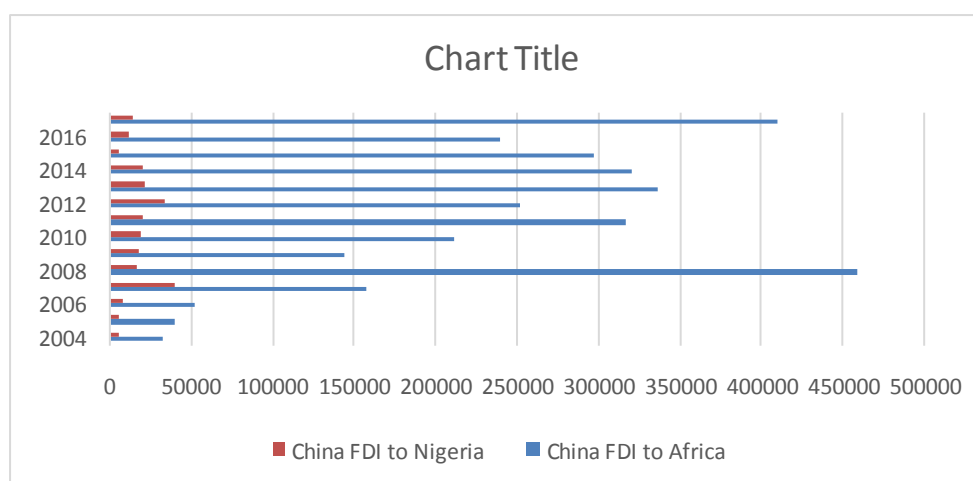


Figure 5: China FDI inflow into Africa and Nigeria

Table-2. Major Chinese companies in Nigeria

Companies	Sector	Assets (USD billion)	Employees	Area of Investment
SINOPEC	Oil and Gas	152.80	373,375	Block of 64,6629 and operating right to block 2 Nigeria- Sao Tome Joint Development Zone.
CNPC	Oil and Gas	470.80	1.6 Million	Licenses for OPL 471,721,732,298.
SEPCO	Electric and Power construction	38.60	19,756	Papalanto power plant
CCECC	Construction	2.17	70,000	Construction of Games Village Lekki Free Trade zone etc.
CSCEC	Construction and Real Estate	58.9	121,500	Refinery
CNOON	Offshore oil and gas	13.8	21,000	45% interest in Offshore exploitation license OML 130.
Huawei	Telecom	25.00	51,000	Network and handsets
ZTE	Telecom	13.00	85,232	CDMA, Handsets
Sinoma	Cement Engineering	2.9	9000	in collaboration with Nigeria Dangote Group for cement production line EPC project in 2008

Source: Egbula& Zheng (2011)

From the above statistics of China trade and investment in Nigeria, it can be seen that China has a strong bilateral trade relations with Nigeria. Nigeria imports a lot of capital goods from China but mainly exports primary products to China. Also, China investments in Nigeria are visible, but they are predominantly in the oil and gas sector. With this trade pattern, it has been argued that China trade with Africa country may not support sustainable growth.

According to Bradsher and Nossiter (2015), Low cost Chinese goods can be found everywhere. Although keeping life affordable for Nigerian families, however smaller scale domestic manufacturing companies are out of business unable to compete with Chinese rock-bottom prices. Moreover, their FDI inflow is predominantly in the oil and gas sector with little linkage with other sector of the Nigerian economy.

Empirical Analysis of the impact of Chinese Trade and investment on economic growth in Nigeria.

The study employed the co-integration and error correction modelling technique to examine the impact of Chinese trade and FDI inflow on economic growth in Nigeria. The analysis commenced with unit root test on the selected variables.

Table 3: ADF unit root test

Variables	ADF statistics	Test critical value (5%)	Remark
RGDP	-0.135	-3.004	Non-stationary
DRGDP	-3.199	-3.004	Stationary
CHINAEXP	-0.633	-3.633	Non-stationary
DCHINAEXP	-6.213	-3.012	Stationary
CHINAIMP	-0.347	-2.998	Non-stationary
DCHINAIMP	-4.935	-3.012	Stationary
CHINAFDI	-2.470	-2.998	Non-stationary
DCHINAFDI	-6.972	-3.004	Stationary
GFCF	-1.062	-2.998	Non-stationary
DGFCF	-4.966	-3.012	Stationary
LFPR	-2.357	-3.004	Non-stationary
DLFPR	-3.484	-3.004	Stationary
HCD	0.476	-2.998	Non-stationary
DHCD	-4.149	-3.004	Stationary

From above result, all the variables are non-stationary in levels but were stationary in first order difference. This implies that all the variable are integrated of order one $I(1)$. This simply means that a regression model with the first difference for the variables would be more appropriate in testing our formulated hypotheses, this also means that the use of levels variables in this study would lead to spurious regression results. However, it would be appropriate to conduct a co-integration test in order to ascertain if a long run or equilibrium relationship exist between them. Since all the variables are $I(1)$, the Johansen co-integration test would be appropriate. The result is presented below:

Table 4: Johansen co-integration test

Hypothesized No. of CE	Trace statistics	0.05 critical value	Max. Eigen statistics	0.05 critical value
None*	302.334	125.615	88.166	46.231
At most 1*	214.168	95.753	83.963	40.077
At most 2*	130.204	69.818	50.967	33.876
At most 3*	79.237	47.856	40.916	27.584
At most 4*	38.321	29.797	21.588	21.131
At most 5*	16.732	15.494	14.506	14.264
At most 6	3.225	3.841	3.225	3.8414

The above table shows that there exist at least six co-integrating equations. Hence the null hypothesis of no co-integration among the variables is rejected. Since the variables are co-integrated, it means that though the variable are non-stationary, however, a linear combination of the variables are stationary. Therefore estimating the specified model would not lead to spurious regression.

Error correction representation

The short run elasticity of the variables were obtained using the error correction representation of the selected autoregressive distributed lagged model based on R-bar squared criterion. The result is presented in the table below:

Table 5: Error correction representation of

Regressors	Coefficient	t-ratio	Probability
dCHINAEXP	-0.0038	-0.5456	0.593
dCHINAIMP	0.0163*	8.6048	0.000
dCHINAFDI	0.0153	0.6435	0.530
dGFCF	2.9459*	3.1285	0.007
dLFPF	0.1819	0.1376	0.892
dHCD	1.6573***	1.9046	0.076
C	1.1652*	5.8847	0.000
ecm _{t-1}	-0.2154*	-3.2105	0.006
R-Squared : 0.8629		R-Bar-Squared: 0.7487	
F-Statistics (7, 15): 10.7947 [0.000]			

*=significant at 1% ***=significant at 10%

From the table, the coefficient of determination shows that about 86% of the systematic variation in real GDP is explained by variations in the group of explanatory variables. Also, the F-Statistics is highly significant even at 1% level. This is an indication that the group of selected explanatory variables are significant determinants of the changes in the real GDP. The error correction term has the expected negative sign and the t-ratio shows that it significant at 1% level. This is a further confirmation that the variables are co-integrated and also that the model is dynamically stable. The coefficient was -0.2154. This implies that about 21% of the deviation from the intertemporal equilibrium is adjusted for in each period.

Other results shows that import from china has a significant and positive impact on economic growth in Nigeria. Whereas, the impact of export to China and FDI inflow from China were not statistically significant even at 10%. Also, human capital development and capital accumulation has significant and positive effect on economic growth in Nigeria. The long run coefficient of the estimated model is presented in the table 6 below:

Table 6: Long run coefficient of variables

Regressors	Coefficient	t-ratio	Probability
dCHINAEXP	-0.0936***	-2.1200	0.056
dCHINAIMP	0.0244**	2.4470	0.031
dCHINAFDI	0.0710	0.6765	0.512
dGFCF	1.3672**	2.6160	0.023
dLFPF	-9.6469*	-3.1928	0.008
dHCD	0.7691**	2.6488	0.021
C	54.0782*	3.1537	0.008

From the table above, export to china has a significant but negative impact on economic growth. The impact of import from China on economic growth is still positive and significant, while the impact of FDI inflow from China is not statistically significant.

This estimate was subjected to some diagnostic test for reliability. The test include normality test, serial correlation test and heteroscedasticity test. The results are presented below:

The normality test was based on the Jarque-Bera test. From the Jarque-Bera coefficient and the corresponding probability value, it shows that the model passed the test at 0.05 level hence, the residual is normally distributed as shown below.

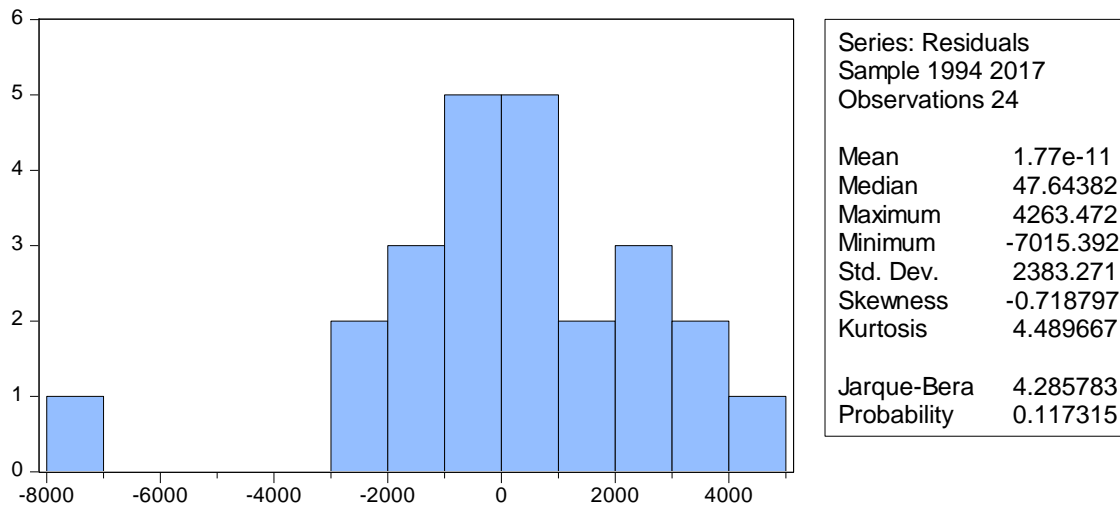


Figure 6: Normality test for the residual of the estimate.

The serial correlation test was based on Breusch-Godfrey serial correlation LM test, while the heteroscedasticity test was based on the Breusch-Pagan-Godfrey test. Both results are presented in table below:

Table 7: Serial Correlation and Heteroscedasticity test.

Breusch-Godfrey serial correlation LM test	Breusch-Pagan-Godfrey heteroscedasticity test
F-Statistics :2.838 Prob. F(1, 16): 0.1114	F-Statistics :1.5634 Prob. F(6, 17): 0.2179
Obs* R-squared 3.6166 Prob. Chi-Square (1): 0.0572	Obs* R-squared 8.5323 Prob. Chi-Square (6): 0.2015
	Scaled explained SS: 7.4712 Prob. Chi-Square (6): 0.2795

The F-Statistics of Breusch – Godfrey serial correlation LM test and its corresponding probability value shows that the null hypothesis of no serial correlation among the residuals cannot be rejected. Similarly, the Breusch-Pagan-Godfrey test revealed that the null hypothesis which states that there is no heteroscedasticity in the residual cannot be rejected. On this basis the residual $U \sim N(0, \sigma^2)$. This is an indication that the basic assumptions of the classical least square technique are not violated. Hence, the results can be said to be reliable estimates.

The nature of causality between the variables of interest was also examined using the pairwise Granger Causality test.

Table 8: Pairwise Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
CHINAEXP does not Granger Cause RGDP	23	0.27087	0.6085
RGDP does not Granger Cause CHINAEXP		12.3095	0.0022
CHINAIMP does not Granger Cause RGDP	23	3.96866	0.0368
RGDP does not Granger Cause CHINAIMP		10.1137	0.0047
CHINAFDI does not Granger Cause RGDP	23	1.73739	0.2024
RGDP does not Granger Cause CHINAFDI		2.79632	0.1101

The result above shows that there exist a unidirectional causality between Nigeria export to China and economic growth in Nigeria. The result clearly shows that causality run from economic growth to Nigeria export to China and not the other way round. This is a further confirmation that Nigeria export to China does not significantly influence Nigeria economic growth. Contrary to this, there exist a bi-directional causality between Nigeria import from China and economic growth in Nigeria. This again is a confirmation that growth in Nigeria can be influence by import from China. The result also shows that there is no causality between FDI inflow from China and Nigeria economic growth.

Conclusion.

The empirical result from this study revealed that the current export composition of Nigeria to china is not growth enhancing both in the short run and in the long run. This implies that the continuous export of primary products to china without value added does not promote growth for Nigeria, rather, it is detrimental to sustainable growth and development of the country in the long run. On the other hand, import from China promote economic growth both in the short run and in the long run. This implies that importation of low cost capital goods from China (which currently constitute a large proportion of Nigeria import from China) has great potential of driven economic growth in Nigeria. This findings is in line with the findings of Coe, Helpman and Hoffmaister (1997) and Aisien, Guobadia and Iyoha (2017).

FDI inflow from China has no significantly impact on economic growth in Nigeria. This could be due to the fact that a large proportion of Chinese investment in Nigeria is in the oil and gas sector which have little linkage with the other sectors of the economy. This findings was consistent with the findings Kabassi (2012) but contrary theoretical expectation and even to the findings of Izuchukwu and Ofori (2014). FDI inflow into Nigeria would only stimulate growth if it flows into growth enhancing non-oil sector of the economy such as manufacturing, Agriculture, education, health and tourism.

To enhance the growth benefits of china imports into Nigeria, there should be a deliberate strategic policy put in place to boost the technological skills of the populace through human capital development. This can be achieved through huge investment into the technological based institutions in the country. Development of the technical skills of the labour force would boost the country's capacity to utilized the technological transfer associated trade and FDI inflow into the country leading to promotion varieties of products hence economic growth. This can also lead to the diversification of the export base of the country from oil.

The current direction of Chinese FDI inflow in Nigeria is not growth enhancing. Therefore, there should deliberate government policy to encourage inflow of FDI into the non-oil sector of the economy such as manufacturing, agriculture, education, health, telecommunication, tourism etc.

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