



## DISAGGREGATED IMPACT ANALYSIS OF TRADE ON GROWTH: THE ROLE OF FINANCIAL OPENNESS IN NIGERIA

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### Abstract

This paper decomposes and estimates the impact of foreign trade on economic growth and evaluates the relevance of financial openness in the relationship in Nigeria using annual time series data between 1987 and 2020. The key findings of the paper are that although trade positively drives economic growth, the effect is due largely to the contribution of the non-oil export component in the long run and short run. This, however, does not rule out the fact that non-oil import over the long run and short run or the overall value of import in the long run lead to a high economic growth in the economy provided higher degree of financial openness is tolerated. In that, subject to broadening the scope of financial openness, Nigeria's participation in international trade will result in rapid economic growth both in the long run and short run.

### SZCZEGÓŁOWA ANALIZA WPLYWU HANDLU NA WZROST GOSPODARCZY: ROLA OTWARTOŚCI FINANSOWEJ W NIGERII

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### Abstrakt

W artykule przedstawiono i oszacowano wpływ handlu zagranicznego na wzrost gospodarczy oraz oceniono znaczenie otwartości finansowej w relacjach w Nigerii na podstawie danych rocznych szeregów czasowych z lat 1987-2020. Najważniejsze wnioski są takie, że chociaż handel pozytywnie napędza wzrost gospodarczy, to efekt ten w dużej mierze wynika z wkładu komponentu innego niż eksport ropy w długim i krótkim okresie. Nie wyklucza to jednak, że długoterminowy i krótkoterminowy import ropy lub ogólna długoterminowa wartość importu prowadzą do wysokiego wzrostu gospodarczego w gospodarce, z jednoczesnym tolerowaniem wyższego stopnia otwartości finansowej. W związku z tym po rozszerzeniu zakresu otwartości finansowej udział Nigerii w handlu międzynarodowym będzie skutkował szybkim wzrostem gospodarczym, zarówno w długim, jak i krótkim okresie.

## Introduction

Following the World War II, global trade drastically increased with more countries opening up their economies to foreign trading. However, rapid growth in the world trade often raises questions on its possible impact on the economic growth of the global economy, particularly among the trade participating economies. Both the classical and the neo-classical economists emphasize the importance of international trade in economic growth and development through specialization, diffusion of ideas and innovation gains that trade offers. Trade is a powerful tool for achieving outstanding economic growth. It stimulates both regional and within-country economic transformation (Hallaert, 2010).

Through expanded and diversified global trade, the economies of the Asian Tigers (Hong Kong, Taiwan, Singapore and South Korea) achieved robust economic growth and were able to sustain same over decades. Similarly, China became a driving force of the Asian economy following enlisting in the membership of the World Trade Organization (WTO) in the early 2000s. Many Economists argue that the trade-aided economic growth achieved by many advanced countries of the world is largely attributed to the composition and pattern of their trade.

Specifically, the rapid and sustained economic growth of the economies of Japan, Korea, Taiwan, and China began with import substitution and a strong preference for exports policies with each of these economies establishing a pro-export regime with a significant increase in the value of export goods exceeding those of other developing economies. The composition of the exports was largely services and manufactured goods while imports were restricted to knowledge or technology and primary products considered essential for advancing industrialization.

On the contrary, it is also argued that the nature and composition of external trade of the developing countries hamper the extent to which trade is beneficial they focus more on primary products exports alongside substantial imports of refined commodities which ought to have been produced locally (Todaro

& Smith, 2014). Expectedly, therefore, in the Middle East, Africa, and Latin America, primary product exports accounted for a sizable fraction of gross domestic products (GDP).

In some of the countries, a significant proportion of the economy's income accrues from the overseas sales of primary commodities (Todaro & Smith, 2014). In several of the oil producing countries in the regions like Nigeria and Libya, the sale of crude oil products accounted for over 70% of the national income. This imposes substantial economic costs including subjecting the economy to adverse shocks and instability with a negative impact on economic growth. Although largely contradictory in their submissions, evidence is abundant in the literature on the possible impact of trade on economic growth across the developing countries (Arema & Arambada, 2021; Kong, Peng, Ni, Jiang & Wang, 2020; Musila & Yiheyis, 2015).

In differing from previous studies which focused on the direct impact of foreign trade on growth, and in some cases, alongside trade liberalization effects (Leitao, 2012); trade impacts on growth due to financial development (Gokmenoglu & Taspinar, 2015) and macroeconomic policy and quality of institutions (Wacziarg, 2001) in the home economy, this paper looked at the disaggregated effects of trade on economic growth in Nigeria, and the extent to which the relationship, with respect to each of the components and sub-components of trade, is dependent on the level of financial openness in the country.

The increasing financial openness in Nigeria is evident in the broadening of her export and import base occasioned by increased foreign capital inflows. According to Arema and Arambada (2021), financial openness is an important factor determining Nigeria's subjectivity to and its participation rate in external trade which in turn determines the level of economic growth. Regrettably, an increase in foreign trade may not enhance economic growth because the associated foreign financial flows increases the level of volatility of trade. This paper, therefore, seeks to contribute to addressing the gap in the literature on the role of trade and financial openness on economic growth in Nigeria.

## **Literature Review**

On the theoretical frontier, one thread in the controversy holds that international trade comes with static and dynamic gains. The static gains perspective borders on the Heckscher-Ohlin theorem and the principle of comparative advantage (Cruz, 2008; Anderson & Babula, 2008). Iyoha and Okim (2017) describe static gains as the short run benefits countries obtain shortly after embracing external trade. On this premise, economic growth and welfare improvements are attributed to specialization gains like enhanced efficiency in production attributable to the comparative advantage, and gains

in consumption in the form of improved commodities choices at a reduced price (Were, 2015). Thus, (Iyoha & Okim, 2017; Were, 2015) asserted that as an engine of growth and development, international trade ensures attainable gains in nations' welfare. Dynamic gains, on the other hand refer to both the medium and long run (negative and positive) gains from international trade (Lawrence & Weinstein, 1999). Following the Ricardian trade theory, Kong et al. (2000) maintain a view rooted in the export-led growth hypothesis which postulates that rapid economic growth achievement is due to the practice of outward-based international trade policies. Growth in exports leads to growth in the economy by stimulating investment and technical change on one hand, and by causing positive demand spillover across other sectors on the other hand.

Grossman and Helpman (1990) posit that the degree of trade openness determines the level of economic growth through improvement in the transfer of new technologies and productivity enhancement. Smith (1776) and Marshall (1890) submitted that the economic progress of a nation is dependent on international trade. However, the opposing thread in the controversy maintains that external trade could be a drag on economic growth especially in developing countries owing to dumping and exposure of the domestic economy to external adverse shocks (Zahonogo, 2016). Young (1991) and Redding (1999) also claimed that foreign trade might reduce an economy's long run growth especially if the country focuses on sectors with comparative disadvantage.

The empirical frontier equally presents divergent results. In a cross-country study, were (2015) found a positive and significant impact of trade on economic growth for the developed and developing countries, but the impact is insignificant in the case of Least Developed Countries (LDCs). Yanikkaya (2003) established a positive role of trade on economic growth conditioned on channels like technology transfer and comparative advantage in developing countries. Giles and Williams (2000) found enormous evidence that trade has a significant positive effect on growth in several of the cross-country studies sampled. Focusing on the export component of trade in Africa, Fosu (1990) found that export improves economic growth in African Countries and Yelwa and Diyoke (2013) found same for the ECOWAS sub-region. On the Contrary, Ulasan (2015) established that trade is not robustly significantly related to economic growth.

Zahonogo (2017) showed that in sub-Saharan Africa, the presence of a trade threshold below which an increase in trade had a positive effect on economic growth in the region and above which the effect tended to decline. Moyo and Khobai (2018) suggested that trade openness had a negative effect on economic growth in the long run in the Southern African Development Community (SADC). Relatedly, Chang and Mendy (2012) showed a significant positive effect of trade on economic growth in the SSA.

For studies involving time series, Musila and Yiheyis (2015) concluded that trade negatively impacts on economic growth in Kenya. Ogbokor and Meyer (2017) suggested a long run relationship, and that export promotes economic

growth than trade (import plus export) in South Africa. Malefane and Odhiambo (2018) found a long run positive and significant impact of trade on South Africa's economic growth.

In Nigeria, Ekpo and Egwaikhide (1994) and Fajana (1979) established a positive relationship between exports and economic growth. Iyoha and Adamu (2011), Obadan and Okojie (2010), Arodoye and Iyoha (2014) established a positive impact of trade on growth.

## Theoretical Model, Methodology and Data

The augmented Solow model shows that the impact of physical capital accumulation and growth of population (labour) is greater on per capita income if human capital accumulation is considered in the basic Solow model (Mankiw, Romer & Weil, 1992). Functionally,

$$g_t = f(K_t, L_t, H_t) \quad (1)$$

with  $g_t$  representing per capita income growth,  $L_t$  is labour, and  $H_t$  is human capital. Each of these variables is assumed to be positively related to income.

## Empirical Model Specification

From equation (1), the study's empirical model is stated as:

$$\ln g_t = \alpha_0 + \alpha_1 \ln K_t + \alpha_2 H_t + \alpha_3 \ln T_t + \alpha_4 F_t + e_t \quad (2)$$

note that,  $g$  is the per capita income used a proxy for economic growth,  $K$  is the physical capital stock,  $H$  represents human capital (measured by secondary school enrolment rate), and  $T$  and  $F$  stand for external trade and financial openness respectively, all measured at time  $t$ .  $e_t$  is the error term. Note that  $g$ ,  $K$  and  $T$  are in the log form. Financial openness is measured by total flows of foreign direct investment as a fraction of GDP (Aremo & Arambada, 2021; Estrada, Park & Ramayandi, 2015):

$$\ln g_t = \alpha_0 + \alpha_1 \ln K_t + \alpha_2 H_t + \alpha_3 \ln T_t + \alpha_4 F_t + \alpha_5 \ln(T \cdot F)_t + e_t \quad (3)$$

To examine the disaggregated effects of trade on growth,  $T$  (trade) in equations (2) and (3) is decomposed into import and export components with oil and non-oil exports and imports as sub-components.

## Estimation Methods

The Autoregressive Distributed Lag (ARDL) approach is applied to equations (2) and (3). The ARDL method is an important and quite a very useful technique especially if the underlying variables are a combination of different orders of integration. A representation of the general form of the ARDL of equations (2) and (3) is:

$$\Delta(g_t) = \beta_0 + \sum_{\tau=1}^q \beta_1 \Delta g_{(t-\tau)} + \sum_{\tau=0}^q \beta_2 \Delta \mathbf{X}_{(t-\tau)} + \delta_1 g_{(t-1)} + \delta_2 \mathbf{X}_{(t-1)} + e_t \quad (4)$$

$$\begin{aligned} \Delta(g_t) = \beta_0 + \sum_{\tau=1}^q \beta_1 \Delta g_{(t-\tau)} + \sum_{\tau=0}^q \beta_2 \Delta \mathbf{X}_{(t-\tau)} + \\ \sum_{\tau=0}^q \beta_3 \Delta W_{(t-\tau)} + \delta_1 g_{(t-1)} + \delta_2 \mathbf{X}_{(t-1)} + \delta_3 W_{(t-1)} + e_t \end{aligned} \quad (5)$$

where  $\mathbf{X}$  represents all the explanatory variables in equation (2) and  $W$  stands for interaction of financial openness and trade. The long run and short run estimates are derived from equations (4) and (5) provided the variables are co-integrated. The long run parsimonious model of equation (4) is:

$$g_t = \alpha_0 + \alpha_1 \mathbf{X}_t + e_t \quad (6)$$

and its parsimonious short run model is:

$$\Delta(g_t) = \lambda_0 + \sum_{\tau=1}^i \lambda_1 \Delta(g_{(t-\tau)}) + \sum_{\tau=0}^j \lambda_2 \Delta(\mathbf{X}_{(t-\tau)}) + \gamma \text{ECM}_{(t-1)} + e_t \quad (7)$$

Also, the long run parsimonious model of equation (5) is:

$$g_t = \alpha_0 + \alpha_1 \mathbf{X}_t + W_t + e_t \quad (8)$$

$$\Delta(g_t) = \vartheta_0 + \sum_{\tau=1}^i \vartheta_1 \Delta(g_{(t-\tau)}) + \sum_{\tau=0}^j \vartheta_2 \Delta(\mathbf{X}_{(t-\tau)}) + \sum_{\tau=0}^k \vartheta_3 \Delta W_{(t-\tau)} + \pi \text{ECM}_{(t-1)} + e_t \quad (9)$$

In equations (7) and (9),  $\gamma$  and  $\pi$  are measures of the speed of adjustment between the short run and long run. Akaike info criterion is used for lag order selection. For the long run (co-integration) test, the ARDL Bound co-integration method is adopted with the critical values obtained from Narayan (2004).

## Data Sources

The study employed annual time series dataset between 1987 and 2020, a post adoption of Structural Adjustment Programme (SAP) period. Nigeria experienced significant flows of trade across the globe following the implementation of SAP policy. Data sourced are oil and non-oil export values, oil and non-oil import values, and total export and import values collected from the Central Bank of Nigeria Annual Statistical Bulletin. Data on physical capital stock was sourced from PenWorld table. The human capital and financial openness data were obtained from World Bank Development Indicators (WDI).

## Results

The results on the time series property of each of the variables in the model are presented in Table 1 with the  $p$ -value of the associated statistics in parenthesis. Other than the oil export and non-oil import variables which are level-stationary, all other variables are first-differenced series.

Table 1

Summary result of the stationary test  
Methods: Augmented Dickey-Fuller (ADF)

Variables	Level		First difference	
	$C$	$C \& T$	$C$	$C \& T$
$\ln g$	-1.508 (0.51)	-2.461 (0.34)	-3.421 (0.02)	-3.362 (0.07)
$\ln K$	-1.282 (0.63)	-2.022 (0.57)	-4.320 (0.00)	-4.286 (0.00)
$\ln X_0$	-3.069 (0.04)	-0.958 (0.94)	-4.731 (0.00)	-5.120 (0.00)
$\ln X_n$	-0.967 (0.75)	-2.902 (0.17)	-6.222 (0.00)	-6.115 (0.00)
$\ln M_0$	-2.295 (0.17)	-1.363 (0.85)	-5.727 (0.00)	-6.483 (0.00)
$\ln M_n$	-2.723 (0.08)	-2.472 (0.34)	-7.850 (0.00)	-8.535 (0.00)
$\ln T$	-2.443 (0.14)	-1.633 (0.76)	-5.632 (0.00)	-4.596 (0.00)
$H$	-1.447 (0.55)	-0.879 (0.95)	-10.113 (0.00)	-10.209 (0.00)

Note:  $C$  means constant, and  $C \& T$  stands for constant and trend assumption.

Source: own study.

The empirical results are presented in Tables 2 to 9. The first component of each of the tables shows the results of the long run tests of the basic models. The results suggest the presence of co-integration at a 5% level in all the models, hence, there is a long run relationship between trade and economic growth in the models. The second component of each of the tables contains the estimated long run and short run coefficients of the disaggregated and aggregated direct and indirect impact of trade on growth.

In Table 2, the direct effect of non-oil and oil exports components of trade on growth is reported. Non-oil export has a positive impact on economic growth at a significance level of 5% both in the long run and short run. On the contrary, the oil export component of trade has a negative and statistically insignificant long run and short run coefficients implying that improvement in oil-based export may not lead to increased economic growth over time. This is explained by the fact that non-oil exports are less volatile and reliable compared to the oil-based exports.

Table 2

Direct impacts of exports (oil vs. non-oil) on growth

ADRL Bound co-integration results						
Critical values	lower bound			upper bound		
1%	4.28			5.80		
5%	3.06			4.22		
10%	2.53			3.51		
$F_{\text{lng}}(\cdot): 8.95$						
$K = 4$						
The long run and short run estimates						
Variables	short run impact			long run impact		
	coefficient	s.e.	prob.	coefficient	s.e.	prob.
$\ln K$	-0.343	0.242	0.17	-1.561	1.386	0.27
$\ln X_n$	0.033*	0.012	0.01	0.151*	0.041	0.00
$\ln X_0$	-0.008	0.011	0.45	-0.037	0.040	0.37
$H$	0.001*	0.0004	0.01	0.009*	0.002	0.00
ECM	-0.219	0.071	0.00	–	–	–
$\beta$	–			34.27	19.79	0.09
s.e.			0.0265			
Breusch-Godfrey autocorrelation test				$F(1.766)$ , prob. 0.19		
Heteroskedasticity Test: White				$F(0.917)$ , prob. 0.50		

\*\*\*, \*\* and \* denote statistically significant at 10%, 5% and 1% levels respectively.

Source: own study.

In line with the human capital model of Mankiw, Romer and Weil (1992), the coefficient of human capital (school enrolment) is positive and statistically significant. On the other hand, the impact of physical capital is not statistically different from zero in the long run and short run. One reason for this is the current efforts at transitioning the Nigerian economy to a knowledge-based economy which has engendered the erosion of the fundamental role of physical capital in economic growth in recent years. The model's speed of adjustment of roughly 22% per annum suggests a low convergence rate.

In Table 3, the effect of financial openness on the relationship between growth and trade (non-oil versus oil exports) is reported. Contrary to logical expectation, the result suggests that increasing the degree of financial openness does not reinforce the positive impact of non-oil exports on economic growth over the short run and long run. This is because most of the foreign funds inflows in the economy go to the oil sector at the expense of the real sector. This is true from the fact that the coefficient of the interactive term of oil-based export and financial openness is positive and statistically significant over the long run and short run, suggesting that improvement in opening up of the economy to global funds flows is necessary for oil-based exports to have a positive long run and

Table 3

## The effect of financial openness

Variables	Short run Impact			Long run Impact		
	coefficient	s.e.	prob.	coefficient	s.e.	prob.
$\ln K$	-0.167	0.402	0.68	-0.490	1.176	0.68
$\ln X_n$	0.101*	0.033	0.01	0.294*	0.077	0.00
$\ln X_n \cdot F$	-0.029**	0.013	0.04	-0.083**	0.032	0.02
$\ln X_0$	-0.072**	0.028	0.02	-0.308*	0.102	0.01
$\ln X_{0(-1)}$	0.050*	0.013	0.00	—	—	—
$\ln X_0 \cdot F$	0.036**	0.014	0.02	0.125*	0.043	0.01
$\ln X_0 \cdot F_{(-1)}$	-0.007***	0.003	0.07	—	—	—
$H$	0.001**	0.0004	0.04	0.008*	0.001	0.00
$H_{(-1)}$	-0.001*	0.001	0.01	—	—	—
$F$	-0.192*	0.060	0.01	-0.844**	0.337	0.02
$F_{(-1)}$	0.096**	0.043	0.04	—	—	—
ECM	-0.342*	0.091	0.00	—	—	—
$\beta$	—			20.67	16.64	0.23
s.e.			0.0209			
Breusch-Godfrey autocorrelation test				$F(0.090)$ , prob. 0.91		
Heteroskedasticity test: white				$F(0.834)$ , prob. 0.63		

\*\*\*, \*\* and \* denote statistically significant at 10%, 5% and 1% levels respectively.

Source: own study.

short run impact on economic growth in Nigeria. However, with a lag this impact becomes negative hence, there is no sure evidence that the extent to which the non-oil export contributed to economic growth in the past is dependent on the level of global financial funds inflows in Nigeria.

Table 4 reports the direct effect of the import component of trade (non-oil versus oil imports) on growth in Nigeria. In the short run, both the immediate and past values of non-oil imports positively contributed to economic growth in Nigeria. Contrarily, the impact of non-oil imports in the long run though positive, is not statistically significant. In other words, the positive impact of non-oil imports on growth may not be sustainable. In the case of oil-based imports component of trade, it is negative and statistically significant in the long run and

Table 4

Direct impacts of imports (oil versus non-oil) on growth

ADRL Bound co-integration results						
Critical values	lower bound			upper bound		
1%	4.28			5.80		
5%	3.06			4.22		
10%	2.53			3.51		
$F_{\text{lng}(\cdot)}: 7.04$						
$K = 4$						
The long run and short run estimates						
Variables	short run impact			long run impact		
	coefficient	s.e.	prob.	coefficient	s.e.	prob.
$\text{Lng}_{(-1)}$	-0.1101	0.130	0.41	–	–	–
$\text{lng}_{(-2)}$	0.268**	0.120	0.04	–	–	–
$\ln k$	0.026	0.639	0.97	2.684	1.619	0.11
$\ln K_{(-1)}$	-4.840	4.006	0.24	–	–	–
$\ln M_n$	0.051**	0.019	0.02	0.192	0.165	0.26
$\ln M_{n(-1)}$	0.027*	0.010	0.01	–	–	–
$\ln M_0$	-0.042***	0.022	0.07	-0.229	0.150	0.14
$H$	0.001*	0.0002	0.00	0.009*	0.003	0.01
ECM	-0.182*	0.045	0.00	–	–	–
$\beta$	–			-26.87	22.94	0.26
s.e.			0.022			
Breusch-Godfrey autocorrelation test				$F(0.409)$ , prob. 0.53		
Heteroskedasticity Test: White				$F(0.245)$ , prob. 0.99		

\*\*\*, \*\* and \* denote statistically significant at 10%, 5% and 1% levels respectively.

Source: own study.

it implies that increasing oil imports can dampen economic growth in Nigeria. However, we found no evidence on such in the long run since the coefficient was positive and insignificant. Similar to the exports model estimated, there is no statistical evidence that physical capital contributed positively to economic growth; rather, it is an increase in human capital that fosters economic growth over time. The estimated speed of adjustment of the model is about 18 per cent per year.

From Table 5, in the long run and short run, economic growth increased positively and significantly due to increase in non-oil imports with growth in financial openness over time. However, even with an increased rate of financial openness in the country, there is no statistical evidence that a rise in oil imports will facilitate economic growth over the short run and long run.

Table 5

The effect of financial openness

Variables	Short run impact			Long run impact		
	coefficient	s.e.	prob.	coefficient	s.e.	prob.
$\ln G_{(t)}$	0.189	0.143	0.20	–	–	–
$\ln K$	-0.596	0.408	0.16	-3.660	-3.661	0.26
$\ln M_n$	-0.053***	0.026	0.06	-0.324	0.266	0.24
$\ln M_n \cdot F$	0.057*	0.011	0.00	0.636**	0.305	0.05
$\ln M_0$	0.056*	0.018	0.01	0.671***	0.342	0.06
$\ln M_0 \cdot F$	-0.057*	0.011	0.00	-0.659*	0.305	0.04
$H$	0.0004	0.0003	0.21	0.007*	0.002	0.00
$F$	-0.065	0.038	0.10	-0.402	0.396	0.32
ECM	-0.163**	0.080	0.05	–	–	–
$\beta$	–			62.39	44.28	0.18
s.e.				0.022		
Breusch-Godfrey autocorrelation test				$F(0.528)$ , prob. 0.60		
Heteroskedasticity Test: White				$F(0.831)$ , prob. 0.63		

\*\*\*, \*\* and \* denote statistically significant at 10%, 5% and 1% levels respectively.

Source: own study.

Table 6 highlights the estimated results on the impact of oil plus non-oil exports and imports on growth. Based on the estimated results, it is obvious that the total of imports has a negative short run impact on economic growth but the relationship is not statistically significant at a conventional level. However, there is a positive impact of total exports on economic growth at 10 per cent in the short run. The short run convergence to long run takes approximately 28 per cent per annum.

Table 6

Direct impacts of trade (total import versus export) on growth

ADRL Bound co-integration results						
Critical values	lower bound			upper bound		
1%	4.77			6.67		
5%	3.35			4.77		
10%	2.75			3.99		
$F_{\ln g}(\cdot)$ : 8.95						
$K = 4$						
The long run and short run estimates						
Variables	short run impact			long run impact		
	coefficient	s.e.	prob.	coefficient	s.e.	prob.
$\ln K$	-1.358	0.858	0.13	-4.850**	2.310	0.05
$\ln T_m$	-0.038	0.024	0.12	-0.135	0.089	0.15
$\ln T_x$	0.035***	0.019	0.07	0.125	0.079	0.13
$H$	0.001	0.0004	0.16	0.006*	0.002	0.01
ECM	-0.280*	0.093	0.01	–	–	–
$\beta$	–			0.04	0.021	0.02
s.e.			0.028			
Breusch-Godfrey autocorrelation test			$F(0.112)$ , prob. 0.89			
Heteroskedasticity Test (White)			$F(1.556)$ , prob. 0.19			

\*\*\*, \*\* and \* denote statistically significant at 10%, 5% and 1% level; estimated with atrend.  
Source: own study.

Table 7 presents results on the importance of financial openness in the relationship between trade (total imports versus exports) and growth. The result showed that growth in financial openness failed to quash the short run negative effect of imports on growth in the previous year. The results further revealed that an increase in total import (oil and non-oil) increases economic growth with an increase in financial openness, albeit only in the long run. The relationship is statistically significant at 10%. In the case of exports, financial openness does not contribute to improved impact of total exports on economic growth over time.

The estimated impact of aggregate external trade (import plus export) on growth is summarized in Table 8. The estimated results suggested that the previous and current values of external trade have a statistically significant short run positive impact on economic growth in Nigeria. In the long run, there is no statistical evidence that the overall trade exerts a positive impact on growth in Nigeria.

Table 7

## The effects of financial openness

Variables	Short run Impact			Long run Impact		
	coefficient	s.e.	prob.	coefficient	s.e.	prob.
$\ln G_{(-1)}$	0.179	0.156	0.28	–	–	–
$\ln K$	0.402	0.804	0.63	17.20**	6.797	0.03
$\ln K_{(-1)}$	-3.789*	1.253	0.01	–	–	–
$T_m$	-0.138*	0.047	0.01	-2.384***	1.139	0.06
$\ln T_{m(-1)}$	0.063***	0.030	0.06	–	–	–
$\ln T_m \cdot F$	0.033	0.020	0.13	0.786***	0.415	0.08
$\ln T_m \cdot F_{(-1)}$	-0.010**	0.004	0.02	–	–	–
$\ln T_x$	0.051	0.052	0.35	1.484	0.931	0.14
$\ln T_{x(-1)}$	-0.037	0.030	0.24	–	–	–
$\ln T_x \cdot F$	-0.028	0.021	0.21	-0.651	0.383	0.12
$F$	-0.068	0.048	0.18	-1.615	1.101	0.17
$F_{(-1)}$	0.129**	0.045	0.02	–	–	–
$H$	0.0001	0.0004	0.80	0.001	0.003	0.79
ECM	-0.112**	0.041	0.02	–	–	–
$\beta$		–		-229.03	94.31	0.03
s.e.			0.020			
Breusch-Godfrey autocorrelation test				$F(0.794)$ , prob. 0.48		
Heteroskedasticity Test: White				$F(1.071)$ , prob. 0.47		

\*\*\*, \*\* and \* denote statistically significant at 10%, 5% and 1% levels respectively.

Source: own study.

Table 8

## Direct effect of trade (export + import) on growth

ADRL Bound co-integration results						
Critical values	lower bound			upper bound		
1%	4.54			6.37		
5%	3.13			4.61		
10%	2.58			2.86		
$F_{\ln G}(\cdot)$ : 4.93						
$K = 4$						
The long run and short run estimates						
Variables	short run impact			long run impact		
	coefficient	s.e.	prob.	coefficient	s.e.	prob.
$\ln G_{(-1)}$	0.312***	0.165	0.07	–	–	–
$\ln G_{(-2)}$	0.555*	0.157	0.00	–	–	–
$\ln K$	-1.115	0.829	0.20	-7.001*	1.296	0.00
$\ln T$	0.024***	0.016	0.06	-0.023	0.020	0.27

cont. Table 8

$\ln T_{(t-1)}$	0.034	0.016	0.04	–	–	–
$H$	0.0004	0.0004	0.30	0.002	0.001	0.17
$F$	0.040*	0.005	0.00	0.006	0.008	0.45
ECM	-0.606*	0.170	0.00	–	–	–
$\beta$	–			114.73	18.89	0.00
s.e.			0.024			
Breusch-Godfrey autocorrelation test				$F(2,383)$ , prob. 0.12		
Heteroskedasticity Test: White				$F(0.492)$ , prob. 0.89		

\*\*\*, \*\* and \* denote statistically significant at 10%, 5% and 1% levels respectively; estimated with a trend.

Source: own study.

However, when trade is interacted with financial openness, the estimated current value of the interacted coefficient turned out positive and statistically significant over the short run and long run. Intuitively, we say that financial openness is critical to the dimension of impact of trade on economic growth in Nigeria. But this is not the case in the previous period as the lagged value of the interacted term was negative and statistically significant as shown in Table 9.

Table 9

The effect of financial openness

Variables	Short run impact			Long run impact		
	coefficient	s.e.	prob.	coefficient	s.e.	prob.
$\ln K$	0.022	0.811	0.98	9.386**	3.777	0.02
$\ln K_{(t-1)}$	-0.778*	0.291	0.00	–	–	–
$\ln T$	-0.059**	0.028	0.05	-0.576**	0.257	0.04
$\ln T_{(t-1)}$	0.049*	0.018	0.01	–	–	–
$H$	0.00004	0.0003	0.92	0.005	0.003	0.14
$\ln T \cdot F$	0.003	0.003	0.92	0.126**	0.058	0.04
$\ln T \cdot F_{(t-1)}$	-0.013*	0.003	0.00	–	–	–
$F$	-0.053	0.043	0.24	-1.772*8	0.810	0.04
$F_{(t-1)}$	0.166*	0.043	0.00	–	–	–
ECM	-0.143*	0.046	0.00	–	–	–
$\beta$	–			-117.44	52.04	0.03
s.e.			0.020			
Breusch-Godfrey autocorrelation test				$F(0.02)$ , prob.0.97		
Heteroskedasticity Test: White				$F(0.61)$ , prob. 0.83		

\*\*\*, \*\* and \* denote statistically significant at 10%, 5% and 1% levels respectively.

Source: own study.

## Policy Implication

1. The non-oil export component of trade is a good policy lever. Its expansion will promote rapid economic growth over the short run and long in Nigeria.
2. Boosting non-oil imports will lead to an improved economic growth. However, the positive impact of non-oil import on growth is limited to the short run and, therefore, it is not sustainable.
3. Promoting oil imports is detrimental to economic growth in Nigeria. Imports, in general, cannot ensure a lasting economic expansion in the country.
4. Financial openness matters for a positive and significant impact of imports on economic growth. Hence, allowing for a greater degree of global funds inflows would enable imports to contribute positively to economic growth.
5. Thus, subject to the implementation of the policy of financial openness, Nigeria's participation in international trade will result in rapid economic growth both in the long run and short run.

## Conclusion

The motivation of the paper stemmed from the unresolved debate in the literature on whether trade is a booster economic growth in the developing economies as seen in the advanced economies of the world. It is obvious from the results obtained that while trade indeed matters for accelerating economic growth, the non-oil export is the dominant component through which increase in trade positively impacts economic growth in Nigeria. This, however, does not rule out the fact that non-oil import over the long run and short run or the overall import in the long run could also serve as boost to economic growth, provided a higher degree of financial openness is tolerated in the economy.

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## Annex

Relationship	Directions of flow	<i>F</i> -stat (prob.)	Remark
Growth & trade	$G \rightarrow T$	0.75 (0.47)	no Granger causation
	$T \rightarrow G$	4.62(0.01)	unidirectional
Growth & human capital	$G \rightarrow H$	0.05 (0.95)	no Granger causation
	$H \rightarrow G$	3.26 (0.02)	unidirectional
Growth & financial openness	$G \rightarrow F$	0.20(0.82)	no Granger causation
	$F \rightarrow G$	0.24(0.78)	
Trade & financial openness	$T \rightarrow F$	4.16 (0.01)	bidirectional
	$F \rightarrow T$	2.37 (0.03)	

