The Effect of Globalization on Selected Sectors of the Nigerian Economy: Agriculture, Manufacturing and International Trade

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Authors' contributions

This work was carried out in collaboration between both authors. Author JAA suggested the topic, wrote the outline of the manuscript and the literature review. Author UFA also review part of the literature, draw up the model, collect the data and carried out the estimation and analysis. Both authors read, reviewed and approved the initial manuscript. Author UFA reviewed the accepted manuscript in line with reviewers' comments.

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ABSTRACT

One of the most contentious debate surrounding globalization relates to its net impact on the economic performance of national economies. This concern is much stronger for developing countries characterized by various degrees of distortions and weak institutions. There is a cloudy picture on whether or not globalization has brought more benefits than risks to African countries. This paper examines the evidence for the Nigerian economy. Rather than just looking at its impact on the country's growth, we followed a sector specific analysis with focus on agriculture, manufacturing and international trade. Using the error correction framework and utilizing annual time series data for the period 1970-2011, the results indicate that globalization has some positive impact on the selected sectors, although the magnitude and significance of these impacts varied from one sector to another. Overall, the evidence shows that globalization offers Nigeria greater opportunities to improve on its economic performance in the selected sectors. Policy options and critical issues

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that must however be considered for the country to fully maximize its benefits from the forces of globalization are highlighted in the paper.

1. INTRODUCTION

Globalization is a multidimensional concept that has been viewed from various perspectives including economic, social, political, cultural, environmental and geographical dimensions. Based on economic consideration, economists have conceptualized globalization as the increasing interdependence, interaction or integration of national economies through openness to trade, financial flows, foreign direct investment, advances in telecommunication and information technologies, labour mobility, among others. Usually, proponents of globalization believed that it offers greater opportunities for improved economic performance especially in less developed countries. In principle, given its basic components, Murshed [1] submitted that globalization offers less developed (poor) countries opportunities to grow faster and catch up with the more developed countries. In other words, it is believed that the 'convergence club' is possible through globalization. Thus, some of the policy drives geared towards attracting the perceived benefits of globalization has been the intensification of trade reforms, economic liberalization and deregulation and allied policy reforms in the less developed countries (LDCs), including Nigeria. Whether these initiatives or reforms have improved economic conditions in the LDCs is, to a larger extent, an empirical question. More so, it is now generally recognized that the benefits of globalization are neither automatic nor uniform across countries. The current thinking seems to support the fact that while globalization presents opportunities for nations to accelerate development in their national economies, it also poses severe risk and challenges. Perhaps, one of the most critical challenges is the capability of nations to take advantage of the perceived benefits that flow from globalization while minimizing its disruptive consequences on their economies.

Unarguably, in today's globalized world, no nation can truly survive in complete isolation. This is equally true of Nigeria. Interestingly, Nigeria has remained an active participant in the globalization process both at the regional, sub-regional and multilateral levels, especially as it relates to free trade arrangements. For instance, Nigeria is one of the founders of the Economic Community of West African States (ECOWAS), New Partnership for Africa's Development (NEPAD) and also a signatory to several multilateral trade agreements, especially with respect to the World Trade Organization (WTO). In addition, the country is increasingly lunching herself into the globalization train by carrying out series of market reforms including financial market reforms as well as privatization and deregulation of key sectors of the economy.

However, while evidence of Nigeria's participation in the globalization process over the past years is not in doubt, there is little agreement about the net impact of globalization on the nation's economy. In the present study, we examined the impact of globalization on three key sectors of the Nigerian economy: agriculture, manufacturing and international trade over the past decades (1970-2011). This effort is an important contribution to the literature as most of the existing studies (e.g. Uwatt [2], Ndiyo and Ebong [3], Rao, Tamazian and Vadlamannati [4]) on globalization have centered on its impact on economic growth with little or no attention paid to its relative impact on the specific sectors of the economy.

Apart from this introduction, the rest of the paper is organized as follows. Sections two and three present a brief review of related literature and an overview of the structure of the Nigerian economy respectively. Section four discusses the method of analysis while empirical findings are presented in section five. The paper ends in section six with some lessons for policy.

2. A Brief Literature

Although globalization is not a new phenomenon, its pace in recent years has been tremendous and most economies in the world are increasingly linked together by flows of trade, finance and factors of production as well as through transport, information and communication technologies, amongst other channels. A key feature of the growing trend is the fact that some of the forces that drives globalization appears to be largely unregulated.

For instance, the magnitude, speed and volatility of (unregulated) financial flows following series of financial deregulations across the world was linked to the recent global financial crisis. Indeed, in the last two decades, globalization has become inextricably linked with neoclassical economic doctrine of promoting free markets, deregulations and liberalizations, privatization of state-owned enterprises and minimal role of the state, among others.

With the increasing dismantling of trading barriers and integration of the world economies, economies of the world are now viewed as one "global village". A major component of this integration is that countries are now faced with both opportunities and threats as they struggle to grow their economies. Some of the perceived opportunities from globalization have been enumerated by various authors (Adawo [5], Aluko [6]) to include exposure to new ideas, technology and products; increased competitiveness and output; access to world inputs at competitive prices; economies of scale in production; better quality products and wide options for consumers; amongst others. On the other hand, the associated possible risks have been listed to include financial crisis, increasing obliteration of sovereignty of nations and loss of policy autonomy, inequalities in world trade, widening the gap between world's rich and poor people and between developed and developing countries, the marginalization of developing countries by the developed ones, especially LDCs who are unable to meaningfully participate in globalization due to supply – side weaknesses and debt, amongst others. Indeed across Africa, there appears to be a handful of intellectual discontentment about the net impact of globalization in the continent. However, while it could be theoretically logical to link most of these issues to globalization, some of these arguments are (most often) not empirically born out. This is further complicated by the fact that it could be difficult to completely isolate the impact of globalization on national economies from other aspects of economic policies in the domestic country.

Really, attempts to examine the impact of globalization on economic growth or some aspects of it, are yet to produce any common picture. In a critical analysis, Aluko [6] strongly submits that globalization (in its present from) is gradually leading to the disintegration of the African economies. From his statistics and stylized facts, he observed that the African continent with a population of about 760 million in 2002 or about 12.5% of the world's population, carried out only about 1.5% of the world trade and enjoyed only about 1.3% of the world income. At the same time, Africa's per capita annual GDP was found to be about $530 which was less than the annual GDP of the State of Texas or of New York in USA or about half the annual GDP of Canada in 2002.

In line with the submission of Aluko [6], it has been argued elsewhere (by Busari [7]) that globalization has been less favourable to Africa than it is to other developing regions. UNIDO [8] attributed Africa's vulnerability to the forces of globalization to its failure to penetrate international markets for manufactured goods. The thinking seems to be that Africa's experience in the globalization process is compounded by the fact that most of the existing manufacturing industries are increasingly going out of business due to their inability to compete with imported industrial products from other countries through the liberalized trade regimes (see Busari [7]).

However, in another interesting study, Uwatt [2], using panel data for 41 African countries, obtained mixed evidence regarding the impact of globalization on Africa's economic growth- a result that was sensitive to the method of estimation used. He argued that the positive impact of globalization will not only depend on how fast Africa becomes integrated with the rest of the world but also on how prepared they are to deal with the adverse consequences of financial globalization such as those experienced in the late 1990s. In his conclusion, he noted that it is imperative for Africa to brace up for the challenges posed by globalization by adopting appropriate policies that will ensure increased trade and capital flows into the region.

However, Baddeley [9] assesses the impact of globalization on a cross-country comparative pattern of growth and development using panel data. His empirical evidence indicates that globalization has been associated with increasing trade and financial flows to less developed countries. However, his result also shows that the current era of globalization has not been associated with convergence in economic outcomes; instead less-developed countries were found to have suffered from increases in international income inequality. His finding seem to support the assertion that globalization has served the interest of rich countries in the North at the expense of poor countries in the South.

Coming to Nigeria, a good number of studies on the impact of globalization in the country exist but with mixed results. For instance, Patrick [10] attempts an examination of the effect of globalization on Nigeria's economic development since 1986 using a purely descriptive analysis. He found that some economic variables such as exports, FDI and GDP showed some marginal improvements (in absolute terms) arising from the structural changes during the period. However, such increases were found to be titled towards sectors that that do not portend any prospect for global competition and growth, while a sector like agriculture was neglected.

In their study of the impact of globalization on the Nigerian manufacturing sector, Aluko, Akinola and Fatokun [11] found that globalization has had an inverse effect on the manufacturing sector. In particular, the result shows that globalization has strong adverse effects on capacity utilization in the manufacturing sector.

However, a different conclusion was reached in a study by Umoh and Effiong [12] that trade openness (often used to proxy globalization) has a significant positive impact on manufacturing productivity in Nigeria. A similar conclusion was equally reached by Ebong, Udoh and Obafemi [13]. Specifically they [13] found that globalization (proxied by trade openness) had significant impacts on industrial development in Nigeria. With this result, the authors argued that increase in trade openness would create opportunities to export local raw materials and import necessary inputs into the industrial process.

Although several other studies have equally shown that there is a positive relationship between openness and economic performance (Adebiyi and Dauda [14]; Lal and Rajapatirana [15]; Fosu [16]; Matin [17]), others (Ndiyo and Ebong [3]; Rodrik [18]) have obtained contrary results. Indeed, Rodrik [18] argued that openness by itself is not a reliable mechanism to generate sustained economic growth. To Rodrik [18] the fundamental determinants of economic growth are the accumulation of physical capital and technological development. Specifically, Ndiyo and Ebong [3] found that globalization has had some positive but more negative impacts on the Nigerian economy. According to the authors, the negative impacts were predominant because of the nature of the Nigerian economy including being a price taker in many respects, lack of economic or political power to stop or control the process, lack of appropriate environment for effectiveness of market-oriented policies, as well as internal distortions.

What can be deduced from the above review is that the impact of globalization on economic performance of nations, especially in the developing nations, are not clear-cut as a common picture is yet to emerge. The general consensus seems to support the thesis that not only should appropriate domestic policies be put in place for countries to benefit from globalization but that international policy coordination should be fashion out to moderate the inequality potentially generated by globalization. In all, it has become obvious that no nation can afford to remain aloof and be isolated from the world economic interplay. In addition, a major research gap that emerged from the above is the limited focus on the impact of globalization on agricultural sector and to some extent – international trade. This paper attempts to fill these gaps by showing evidence for the Nigerian case.

3. The Structure of the Nigerian Economy: Some Stylized Facts

Table 1 presents an overview of the structure of Real GDP growth in Nigeria from 2007 to 2011 and shows the relative contribution of critical sectors of the economy to it. The table shows that as at 2011, the services sub-sector contributed the largest (13.3%). This contrast sharply with the other periods under review. For instance, as at 2007, the largest contribution to real GDP growth was the wholesale and retail trade sub-sector (15.2%), followed by building and construction (13%), while the service sector contributes only 9.9%. A further examination of the tables indicates that the non-oil GDP recorded a growth rate of 8.9% in 2011 compared with 8.5% in 2010. This moderate improvement could be attributed to the improvement in the agricultural sector which grew by 5.7% in 2011 compared with 5.6% in 2010. The growth rate of the manufacturing sector was on the decline; from 9.6% in 2007 to stagnate at 7.6% 2010 and 2011. Generally, looking at the performance of wholesale and retail trade, agriculture, manufacturing sector and indeed the contribution of the non-oil sector to Real GDP from 2007, then one could submit that the overall trend is on the decline. This is somehow worrisome given the number of market reforms carried out in the country to stimulate growth over the past decades. However, the extent to which the observed downward trend

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Table 1. Sectorial growth rates of GDP in Nigeria (at 1990 constant basic prices)

Activity Sector	2007	2008	2009	2010*	2011**
1. Agriculture	7.2	6.3	5.9	5.6	5.7
Crop production	7.3	6.2	5.8	5.6	5.7
Livestock	6.9	6.9	6.5	6.5	6.2
Forestry	6.1	6.1	5.9	5.8	5.9
Fishing	6.6	6.6	6.2	6.0	5.9
2. Industry	-2.2	-3.4	2.0	5.6	1.3
Crude petroleum	-4.5	-6.2	0.5	5.0	-0.6
Solid minerals	12.8	12.8	12.1	12.3	11.5
Manufacturing	9.6	8.9	7.9	7.6	7.6
3. Building & Construction	13.0	13.1	12.0	12.1	12.3
4. Wholesale & Retail trade	15.2	14.0	11.5	11.2	11.3
5. Services	9.9	10.4	10.8	11.9	13.3
Transport	7.0	7.0	6.8	6.7	6.8
Communications	32.9	33.2	34.2	34.5	34.8
Utilities	4.9	3.7	3.2	3.3	3.4
Hotel & Restaurant	13.0	12.9	11.9	12.0	12.1
Finance & Insurance	5.0	4.8	4.0	4.0	4.0
Real Estate & Business Services	11.4	11.4	10.6	10.4	10.1
Producers of Govt. Services	5.9	6.0	5.9	5.7	5.6
Comm., Social & Pers. Services	10.6	10.7	9.8	9.7	9.9
Total GDP	6.5	6.0	7.0	8.0	7.4
Non-Oil GDP	9.5	9.0	8.3	8.5	8.9

*Note: *, ** Indicate revised and provisional data respectively; Source: CBN Annual Report and Statement of Accounts [19]*

may be attributed to the influence of globalization is less clear.

In addition, Table 2 shows the composition of Nigeria's exports within the last eight years. Although once a large exporter of agricultural products before 1970s and still a largely agriculture-based economy, the bulk of the country's export is dominated by crude petroleum. The oil sector continued to account for over 90 % of the total exports in Nigeria, while the non-oil sector accounts for the balance. It should be noted that such dominance of oil exports makes the Nigerian economy highly vulnerable to external shocks.

Further analysis of Nigeria's non-oil exports as at 2011, reveals that agricultural produce, semi-manufactured goods, manufactured goods and solid minerals accounted for 54.1%, 30.6%, 11.1% and 0.6% of the total respectively. The current thinking among scholars supports the need to diversify the nation's economic structure from crude oil. Two of such sectors that are readily mentioned include agriculture and manufacturing sub-sectors and to a large extent being able to significantly stimulate non-oil exports. Serious concerns have always been raised concerning the relative share of African exports (including Nigeria) in the overall world trade volume (see for example, Aluko [6]). Besides, it has been argued that the structure of trade, under which exports are concentrated on raw agricultural and few semi-finish products while imports are constituted mostly by manufactured goods, would tend to render Nigeria overtly dependent and vulnerable to external shocks (or the forces of globalization). Due to the low price elasticity of developing countries' export products and the fact that the demand for primary products are contained in the international market, it appears Nigeria may continuously face deteriorating terms of trade and poor growth performance in the face of global competition. But whether the forces of globalization has brought about any positive or negative impact on these sectors remains blurred and needs to be empirically verified.

4. METHOD OF ANALYSIS

4.1 The Models and Data Sources

Drawing from the macroeconomic models of the Nigerian economy as put forward by Ekpo, Ndebbio, Akpakpan and Nyong [20], the following double-log models are formulated to examine the effect of globalization towards agriculture, manufacturing and international trade from the Nigerian perspective:

$$lnAgr_t =$$

$$\beta_1 + \beta_2 lnCps_t + \beta_3 Inf_t + \beta_4 lnAFdi_t + \beta_5 lnTrgdp_t + \beta_6 lnk_t + \beta_7 lnLf_t + \beta_8 lnGxp_t + \beta_9 lnAgrl_t + \varepsilon_t \quad (1)$$

$$lnManf_t = \alpha_1 + \alpha_2 \ln MFdi_t + \alpha_3 lnTrgdp_t + \alpha_4 lnk_t + \alpha_5 lnLf_t + \alpha_6 lnGxp_t + \alpha_7 lnExr_t + \epsilon_t \quad (2)$$

$$lnTrade_t = \varphi_1 + \varphi_2 lnExr_t + \varphi_3 lnXp + \varphi_4 lnTrgdp_t + \varphi_5 lnGxp_t + \varphi_6 lnNetfls_t + \mu_t \quad (3)$$

Table 2. Composition of Nigerian exports

Component	2004	2005	2006	2007	2008	2009	2010	2011
Oil Export	97.5	98.3	97.8	97.9	99.0	95.8	96.4	96.6
Total Non-oil Export	2.5	1.7	2.2	2.1	1.0	4.2	3.6	3.4
Non-Oil								
Agric.	33.0	41.9	37.8	39.7	58.3	46.9	35.7	54.1
Solid Minerals	2.0	4.0	8.5	6.3	7.7	6.7	11.2	0.6
Semi-manufactured	48.9	40.6	37.9	39.4	17.0	29.2	37.5	30.6
Manufactured	5.0	9.8	11.1	10.3	8.7	9.1	5.8	11.1
Others	11.2	3.9	4.7	4.3	8.3	8.1	9.8	7.8

Source: Compiled from CBN Annual Reports and Statement of Accounts, Various Issues

Where *In* denotes natural logarithm, *Agr, Manf,* and *Trade* are respectively the shares of agriculture, manufacturing and trade in gross domestic product (GDP).The share of agriculture in GDP (*Agr)* here composed of GDP for crop production, livestock, fisheries and forestry. That of manufacturing (*Manf*) composed of oil refining, cement and others. The share of international trade in GDP (*Trade*) is made up of wholesale and retail trade. *Cps* is credit to the private sector, *Inf* is inflation rate, *AFdi* and *MFdi* are foreign direct investments in agricultural and manufacturing sectors respectively, *Trgdp* is the ratio of total trade to GDP (capturing the openness of the economy), *Exr* is exchange rate, *Netfls* is the ratio of net capital flows to GDP, *Xp* is export price index, *k* is real capital stock, *Gxp* is government expenditure and *Lf* is labour force.

The justification and a priori expectations for the coefficients of the various explanatory variables in the models are the following:

I. Total trade-GDP ratio (trgdp)

This variable is used to proxy openness of the Nigerian economy and therefore globalization. The same variable have been used by other studies including Uwatt [2] to proxy globalization. The variable is measured as the ratio of total trade (exports+imports) to GDP. Its impact on the selected sectors cannot be established a priori. It would, to a large extent, depends on the elasticity or responsiveness of the sectors to external competition and influences induced by the degree of openness. The data for this variable were sourced from WDI-GDF database [21].

II. Net capital flows to GDP (flows)

This variable is also used (as in Uwatt [2]) to measure financial openness or integration of the Nigerian economy and is included only in model 3. A key feature of the current globalization process is the increasing integration of capital markets and the attendant rise in capital flows. This trend is encouraged by the liberalization of financial markets and the dismantling of capital controls in many developed and developing countries including Nigeria. Usually, the poor performance of the Nigerian industrialization (and therefore export potentials) effort have been partly blamed on inadequate foreign capital inflows. A priori therefore, we expect this variable to exert a positive impact on Nigeria's export potentials. The data for this variable were sourced from WDI-GDF database [21].

III. Agricultural loan (Agrl)

This variable is included in model 1 and is measured as the value of loans granted to the agricultural sub-sector through the Agricultural Credit Guarantee Scheme (ACGS), an initiative of the Central Bank of Nigeria, which started operations in 1978. This scheme was meant to share the risks of banks in the agricultural lending and hence encourage them to extend credit to the agricultural sector. On a priori ground, we expect a positive relationship between the variable and the performance of

agricultural output in Nigeria. The data for this variable were gotten from CBN Statistical Bulletin [22].

IV. Government expenditure (Gxp)

There was no disaggregated data on government capital expenditure on agricultural and manufacturing sub-sectors. To this end, we used the closest component which is the ratio of government capital expenditure on economic services (agriculture, construction, transport, communications and others) to total capital expenditure. An increased of government capital spending is expected to have a remarkable positive impact on the performance of selected sub-sectors. The data for this variable were obtained from CBN Statistical Bulletin [22].

V. Inflation rate (Inf)

Inflation rate is one of the control variables included in model 1. The variable is used as an indicator of production cost and as a measure of impact of macroeconomic instability on the performance of Nigeria's agricultural sector. A priori, we maintained that the impact of the variable on agricultural sector is ambiguous; an increase in inflation can stimulate production as producers seek to take advantage of the high price for their produce. On the other hand, when viewed from the demand side, an increase in inflation may not only reduce the demand for agricultural produce but also increases the cost of agricultural inputs and therefore impacting negatively on the sector's performance. The data for this variable were gotten from Penn World Table, Version 8 [23].

VI. Labour force (Lf)

In the traditional production function, labour is regarded as an important factor of production and therefore it is included in models 1 and 2. The variable is proxied by labor force participation rate which is the proportion of the population ages 15 and older that is economically active (i.e. all people who supply labor for the production of goods and services during a specified period). A priori, the elasticity of output in the two sub-sectors to labour input is expected to be positive. The data for this variable were obtained from WDI-GDF database [21].

VII. Real capital stock (k)

Like labour, capital stock is also a key input in production process; thus it is equally included in models 1 and 2. In line with neoclassical theorizing, the output elasticity of capital in both models are presumed a priori to be positive and significant. The data for this variable were extracted from Penn World Table, Version 8 [23]

VIII. Exchange rate (Exr)

The inclusion of exchange rate as an additional control variable in models 2 and 3 is instructive. Basically, variations in exchange rate affects the ability to import raw materials and other factors of production needed in the manufacturing sub-sector. In addition, it also affect the profitability to produce or manufacture goods for export. Generally, international trade depends crucially on variations in exchange rate. A priori, the variable could either assume negative or positive value in its coefficient in both models. The data for this variable were gotten from Penn World Table, Version 8 [23].

IX. Credit to Private Sector (% of GDP) (Cps)

This is a control variable that enters into model 1. Usually one of the most discussed constraints to agricultural development is limited access to credit facilities. Improved access to credit is expected to improve agricultural performance. Thus, this variable is presume to have a positive and significant coefficient. The data for this variable were extracted from CBN Statistical Bulletin [22].

4.2 Estimation Procedure

To estimate the models, and to avoid obtaining spurious results, we first examine the time series properties (unit root) of all the series. This is important because most macroeconomic time series variables often exhibit non-stationarity behavior in their level form. There are various statistic for conducting such analysis in the literature. In this paper, we employed the one due to Dickey and Fuller [24] usually referred to as the Augmented Dickey-Fuller (ADF) test and complement the results with that developed by Kwiatkowski, Phillips, Schmidt, and Shin [25] usually referred to as KPSS test[1]. Usually, while null hypothesis of the ADF statistic is that the series in question contains unit root (i.e. non-stationary), that of the KPSS is that the series is

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[1]*The formulation of these test statistic are well documented in the literature and it will serve no useful purpose restating them here. Thus, the specifications are omitted to conserve space. However, interested readers can consult the underlying references or Patterson [26] as well as Kirchgassner and Wolters [27]*

stationary (i.e. there is no unit root). These two test statistic thus provide complementary and confirmatory evidence on the stationary properties of the series.

Next, we proceed to check if the variables are cointegrated. In other words, we test to see if the presence of long-run relationship among the variables can be detected even when the included series are individually 1(1). Here we utilized the method developed by Johansen [28,29].

If there is cointegration, we go further to estimate the dynamic relationship that incorporates both the long-run equilibrium and short-run adjustments to it. Practically, we used the residuals from the equilibrium regressions to estimate the error correction models (ECM). Using the general-to-specific approach, we first obtained the over-paramatized ECM model and thereafter derived the parsimonious model of interest.

5. EMPIRICAL RESULTS AND DISCUSSION

The diagnostic results for the properties of the data used for the study are presented in Tables 3 and 4. Table 3 shows the results of the unit root test. The results from the two test statistic used

consistently show that most of the variables are non-stationary at their level form but become stationary at their first difference. A few others (inflation rate, labour force participation rate and government capital expenditure) were shown to be stationary at levels.

However, mixed results were found for other variables like real capital stock and export price index. For instance, using ADF statistic, export price index was shown to be stationary at level while the KPSS statistic show that it is stationary at its first difference.

Given these results, we proceeded to check for evidence of cointegration among the variables. Table 4 summarizes these results. The results revealed that the variables included in Model 1 (the agricultural sub-sector equation) are cointegrated irrespective of the assumption made about the data trend and the test type[2]. However, results for models 2 and 3 tend to indicate that they are somewhat sensitive to the assumptions regarding the data trend, mostly when the Max-Eigen statistic is considered. Going by this test statistic, no evidence of cointegration was found in model 2, irrespective of the assumption. However, there was a qualified evidence for rejection of the null hypothesis (of no cointegration) using the trace statistic in all the models.

Table 3. Unit root test results

Variable	ADF Statistic		KPSS Statistic		*Decision*
	Level	**1stDiff**	**Level**	**1stDiff**	
lnAgr	0.709(0.99)	-4.50(0.00)***	0.768(5)	0.201(1)***	*I(1)*
lnManf	-1.156(0.68)	-6.38(0.00)***	0.773(5)	0.103(0.00)***	*I(1)*
lnTrade	-0.384(0.90)	-5.412(0.00)***	0.773(5)	0.070(1)***	*I(1)*
lnCps	-1.745(0.40)	-5.759(0.00)***	0.378(4)*	0.108(8)***	*I(1)*
lnInf	-3.669(0.009)***	-	0.133(1)***	-	*I(0)*
lnAFdi	-1.512(0.52)	-5.946(0.00)***	0.708(5)	0.148(4)***	*I(1)*
lnTrgdp	-2.514(0.12)	-6.233(0.00)***	0.634(5)	0.211(3)***	*I(1)*
lnk	-3.01(0.04)**	-1.823(0.36)	4.464(5)*	0.405(5)**	*I(0)/I(1)*
lnLf	-22.03(0.00)***	-	0.375(5)**	0.072(1)***	*I(0)*
lnGxp	-3.571(0.01)***	-	0.171(4)***	-	*I(0)*
lnAgrl	-1.263(0.63)	-6.619(0.00)***	0.765(4)	0.136(7)***	*I(1)*
lnMFdi	0.050(0.96)	-6.247(0.00)***	0.765(5)	0.067(4)***	*I(1)*
lnflows	-2.079(0.25)	-6.268(0.00)***	0.548(4)	0.095(1)***	*I(1)*
lnExr	-0.559(0.868)	-3.582(0.01)***	0.746(5)	0.186(4)***	*I(1)*
lnXp	-4.123(0.00)***	-	0.573(4)	0.274(3)***	*I(0)/ I(1)*

*Notes: *, **, and *** denotes significance at 10%, 5% and 1% respectively. Values in bracket for the ADF-statistic are the P-values while that for the KPSS statistic are the optimal Bandwidth lag length selection using Bartlett Kernel criterion. . All tests include individual intercept.*

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[2]*There was a near singular matrix problem when we assume no deterministic trend in the data but with intercept (no trend) in the CE.*

Table 4. Summary of Johansen Cointegration test results

	Data Trend:	None	None	Linear	Linear	Quadratic
	Test Type	No Intercept	Intercept	Intercept	Intercept	Intercept
		No Trend	No Trend	No Trend	Trend	Trend
Model 1	Trace	5	-	6	7	6
	Max-Eig	3	-	4	5	5
Model 2	Trace	1	2	2	3	4
	Max-Eig.	0	0	0	0	0
Model 3	Trace	2	2	2	1	2
	Max-Eig.	2	0	0	1	1

Note: *The underlying figures show the selected (at 0.05 level) number of cointegrating relations under different model assumptions, using the trace and Max-Eigen statistic*

These results suggest the existence of some (long-run) equilibrium relationship among the variables, indicating further that a short-run dynamic modelling under the error correction framework is required. Thus, equations 1-3 were reparamatized as error correction models (ECMs) and the results of the consequent estimation are captured in Table 5.

The short-run dynamic results shown in Table 5 provide some evidence that globalization have brought positive impact on each of the selected sectors. Although the magnitude of the impact differs from one sector to the other and in some cases remains insignificant, the econometric results points to the fact that globalization has the potential of increasing Nigeria's growth performance in these sectors.

Looking at the results for our first model, the two measures used to capture globalization – inflows of FDI into the agricultural sector (*AFdi)* and total trade-GDP ratio (*Trgdp*) - are all positive and significant, except the immediate past values of FDI inflows into the sector (which turns up with a negative coefficient). In fact, a 10% increase in total trade-GDP ratio (*Trgdp*) will raise output in the agricultural sector by only 3.38%. Of course, this magnitude is quite small, suggesting that Nigeria's share in total world trade is very low. Our result is consistent with what Uwatt [2] found for Africa as a whole. On the other hand, a 10 % increase in inflows of FDI into the sub-sector will increase agricultural output by only 3.64% in the current period. The response of agricultural output to other control variables in the model were mixed and sometimes inconsistent as regards to the a priori expectations. For instance, the impact of credit to the private sector was insignificant and bears a negative sign in the current period. This is suggestive that the most of such credits are not channeled into the agricultural sector. However, the impact of agricultural credit loan was positive and

significant in the current period. On the average, a 10 % increase in agricultural loan in the current period would lead to about 22% increase in agricultural productivity. Unfortunately, immediate past value of the loan impact negatively on agricultural output by as little as 15% for a given 10% rise. This effect is significant and tends to reflect the difficulties as well as the constraints in the sector owing to the fact that the loan (contracted in the last period) have to be re-paid (and with interest). On the other hand, real capital stock, though significant, turns up with the wrong sign (negative) while labour input bears the correct sign in its coefficient and is equally significant. This results tends to provide an interesting insights about the relative factor intensities in the Nigerian agricultural sector. A possible explanation could be that the production process in the sector is mostly labour intensive. This is reflective in the dual structure of Nigerian agricultural sector. While the modernized subsector, which employs modern technologies, accounts for about 5% of Nigeria's total agricultural output, the traditional production subsector, relying mostly on manual labour with crude and less productive technologies accounts for the remaining 95%. In addition, we found that while the impact of inflation rate was positive, government capital expenditure on economic services (which agriculture is a key component) turns up with an unexpected negative coefficient and was insignificant. On the whole, the explanatory variables in the model explain about 49% total variations in agricultural output in Nigeria. The value of the Durbin-Watson (2.013) rules out any issue of serial correlation in the estimation. The error correction term is well-signed and significant. The result shows that the speed of adjustment of agricultural output to the long-run equilibrium path is high. Specifically, about 75% of the disequilibrium errors, which occurred in the previous year, are corrected in the current year.

Turning to the estimated results for model 2, we found that globalization exert a positive influence on manufacturing output performance in Nigeria. Specifically, the impact of foreign direct investment in the manufacturing sector (*MFdi*) was found to be positive and significant. A 10% increase in this variable would (on the average) increase output in the manufacturing sub-sector by about 44.3%. This, no doubt, confirms the importance of FDI in spurring growth in Nigeria's manufacturing sub-sector. However, the impact of trade-GDP ratio (*Trgdp*) in the estimation was found to be positive but insignificant. This suggests that although Nigeria's integration with the rest of the world through openness to trade may have brought in some positive benefits, the impact of such relations on manufacturing output performance is insignificant. This result is not surprising as the structure of the Nigerian economy remains largely undiversified and import dependent including high import of manufactured goods[3]. It is worth noting that the biggest gainers from the current wave of globalization have been countries that are able to break into the global market for manufactures.

Looking at the control variables in Model 2, we found some of them are of the expected signs. For instance, government capital expenditure on economic services (*Gxp*) has a positive and significant effect on manufacturing output. Its coefficient is statistically different from zero at 10% level.

Table 5. Dynamic Short-run Parsimonious results

Variable	Model 1 Dep. Variable: $\Delta lnAgr_t$		Model 2 Dep. Variable: $\Delta lnManf_t$		Model 3 Dep. Variable: $\Delta lnTrade_t$	
	Coefficient (1)	Std. Error (2)	Coefficient (3)	Std. Error (4)	Coefficient(5)	Std. Error (6)
$Constant$	0.3241	0.2852	0.0524	0.0627	0.0979	0.1175
$\Delta lnAgr_{t-1}$	0.5091***	0.1576	-	-		
$\Delta lnManf_{t-1}$	-	-	0.0648	0.1764		
$\Delta lnTrade_{t-1}$	-	-	-	-	0.50816**	0.2387
$\Delta lnCps_t$	-0.0848	0.0914	-	-	-	-
$\Delta lnCps_{t-1}$	0.2848	0.2461	-	-	-	-
ΔInf_t	0.0019	0.0013	-	-	-	-
ΔInf_{t-1}	0.0034***	0.0010	-	-	-	-
$\Delta lnAFdi_t$	0.3641***	0.0968	-	-	-	-
$\Delta lnAFdi_{t-1}$	-0.2854*	0.1597	-	-	-	-
$\Delta lnMFdi_t$	-	-	0.4426***	0.1582	-	-
$\Delta lnTrgdp_{t-1}$	0.3377*	0.1763	0.1324	0.1656	0.3277*	0.1878
Δlnk_t	-3.7468**	1.4577	0.1970	0.2463	-	-
$\Delta lnLf_t$	3.7133*	1.8305	5.0399**	1.8552	-	-
$\Delta lnLf_{t-1}$	-	-	-4.0016***	0.8962	-	-
$\Delta lnGxp_t$	-0.0210	0.0279	0.0695*	0.0367	0.0806**	0.0289
$\Delta lnGxp_{t-1}$	-	-	-	-	-0.05837	0.0446
$\Delta lnAgrl_t$	0.2198***	0.0671	-	-	-	-
$\Delta lnAgrl_{t-1}$	-0.1519***	0.0461	-	-	-	-
$\Delta lnExr_t$	-	-	0.1953	0.2225	0.3009	0.1738
$\Delta lnExr_{t-1}$	-	-	-	-	-0.2866**	0.1235
$\Delta lnNetfls_t$	-	-	-	-	0.0639	0.0389
$\Delta lnNetfls_{t-1}$	-	-	-	-	0.0510	0.0435
$\Delta lnXp_t$	-	-	-	-	0.1363	0.2081
ECM(-1)	-0.7525***	0.1567	-0.70426**	0.2781	-0.3034**	0.1229
R-sqd.	0.7392		0.4835		0.6072	
Adj. R-sqd.	0.4783		0.3113		0.3762	
DW Stat.	2.0134		2.0358		1.8217	
F-statistic	2.8336	Prob.: 0.030	2.8085	Prob.: 0.018	2.6282	Prob.: 0.038
S.E. of Reg.	0.1213		0.1743		0.1237	

*Note: ***, **, * indicates significance at 1%, 5% and 10% levels respectively. Δ Denotes first difference operator. All estimation uses HAC standard errors and covariance (Bertlett Kernel, Newey-West fixed bandwidth)*

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[3]*Of the total imports in Nigeria, the percentage of manufacturing good import which was 27.2% in 1990 increased to 35.46% by 2009 (Computed from Table D 1.2 of CBN Statistical Bulletin [30]).*

The result indicates that a 10% increase in government capital expenditure will increase manufacturing output by only 6.95%. The observed little impact should however be interpreted with caution as the expenditure was not specifically on manufacturing sub-sector but on agriculture, construction, transport, communications and other unclassified sectors. Furthermore, the impact of real capital input is positive but insignificant in the model. This however indicates that capital is critical to manufacturing performance and low capital stock (as reflected in its insignificance in the model) may constitutes a major constraint to developing a virile manufacturing sector in Nigeria. A look at the result of labour input in the model confirms that it is positive and significant at the 5% level in the current period, which further confirms the importance of labour in the production process (as in the manufacturing sub-sector). Exchange rate (*Exr*) was positive but was shown not to be a major determinant of the performance of the Nigerian manufacturing sub-sector. The error correction term was negative and significant as expected and the speed of adjustment to its long-run equilibrium value is reasonably high (70.4%). Overall, the diagnostic tests indicates that although the problem of autocorrelation is ruled out, the model may not be a good fit judged by the low value of the adjusted R-square (31.1%).

Columns 5 to 6 in Table 5 shows the results of the impact of globalization on international trade in Nigeria. Here the two proxies used to capture globalization – total trade-GDP ratio (*Trgdp*) and net capital flows-GDP ratio (*Netfls*) – reveal a positive impact on international trade. However, it was only the former that was significant at the 10% level. A 10% increase in openness to trade improves international trade by 32.8% (on the average). This further points to the fact that Nigeria has an opportunity to increase her trade and therefore growth in the economy by following a less restrictive trade regime. What, however, should be of great concern to Nigeria is the structure of such trade, which currently is dominated by oil export. The non-significance of net capital flows (used as a proxy for financial openness) suggests that Nigeria is still less financially integrated with the rest of the world – a finding which agrees with what Uwatt [2] and Prasad, et al. [31] found for most African countries. The estimated coefficient of export price index (*Xp*) was positive but insignificant. The result could be a reflection of the fact that most of the country's export is dominated by primary products rather than manufactured

goods. It must be noted that while the prices of manufactured goods have generally been on the increase, there have been substantial declines in the prices of most primary products over the last decades. With the usual volatility and declining trend in primary commodity prices, this result indicates that it may be difficult for Nigeria to take full advantage of globalization in significantly enhancing its external trade performance. Of the other control variables in the model, government capital expenditure (in the current period) positively and significantly accounts for only 8.1% variation in international trade. The null hypothesis about its coefficient cannot be rejected at the 5% level. Overall, the error correction term is correctly signed and significant. With the Durbin-Watson statistic of 1.82, the problem of serial correlation is ruled out. However, only 37.6% variation in international trade (% of GDP) is explained by the regression plane – signifying a low fit. But the entire estimate appears satisfactory judged by the value of the F-statistic which cannot be rejected at the 5% level.

6. CONCLUSION AND LESSONS FOR POLICY

This paper evaluates the impact of globalization on three key sectors of the Nigerian economy: agriculture, manufacturing and international trade, using time series data for the period 1970-2011. The econometric results based on an error correction modelling framework reveals that globalization has some positive impact on the sectors under focus, although the magnitude and significance of these impacts varied from one sector to another (and given the index used to proxy globalization). The evidence shows that globalization offers Nigeria brighter opportunities to improve on its economic performance in the selected sectors. The policy dimensions to the results are clear. First, the statistical significance of FDI inflows into the agricultural and manufacturing sectors serve to emphasize the importance of foreign investment for economic transformation and growth. Policies that encourage inflows of FDI into the country should therefore be pursued and sustained. Doing this would require institutional reforms[4], maintaining

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[4]*Admittedly, carrying out institutional reforms is not an automatic process. Reforms usually take time and involve substantial "learning from experience". Thus building a strong and stable institution is much more difficult than changing policies. The challenge therefore lies in adopting the right policies and building the necessary capacity to initiate and sustain such reforms for long-term benefits.*

strong and stable macroeconomic environment including improvement in hardcore infrastructure, security and sustained fight against corruption. Furthermore, the positive but insignificant coefficient of net capital flows in the trade equation underscores the need to re-position the Nigerian financial architecture and make them more financially integrated with the rest of the world. The econometric results concerning the impact of index of openness to trade (and thus globalization) highlights the importance of adopting less restrictive (but cautious and gradual) trade channels in reaping the benefits of globalization. Nigeria seems to have done pretty well in this regard through various trade liberalization policies including entering into various trade arrangements at the international, regional and sub-regional levels. Such initiatives must be encouraged and sustained. However, that this index was insignificant in the manufacturing sector equation (Model 2) bears useful policy insight. Clearly, it underscores the need to urgently diversify the country's productive and export base from oil. Moreover, the "big news for celebration" should not just be that Nigeria has been playing a leading role in some regional and sub-regional economic integrations (such as ECOWAS and NEPAD) as well as being a signatory to several multilateral trade agreements around the globe, but it should be that she has taken full advantage of her rich resource endowments and switched from exporting primary products to exporting manufacturing goods to the rest of the world.

In conclusion, the evidence contained in this paper does not in any way suggest that there is no risk or cost of globalization to Nigeria. Rather, it points to the fact that Nigeria can re-position herself to benefit maximally from the globalization process while minimizing the attendant risk that accompanies it. The ability of Nigeria to derive long-term benefits from globalization hinge on her ability to participate "meaningfully" in the process of global economic integration through stronger domestic policies. The right conditions must exist or be put in place for the country to fully maximize its benefits from the forces of globalization.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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