Export of Services and Economic Growth in Nigeria

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Abstract

Against the background of rising tradability and the productive nature of services as a result of the revolution in information and communication technology (ICT), this study examined the impact of services exports on economic growth in Nigeria. Time series estimations established a positive relationship between services export and economic growth after controlling for a number of variables. In addition, causality was found to run from export of services to economic growth. This is an indication that services exports offered a new channel for growth that may be of significance for Nigeria, especially when it is trying to get out of the slump in crude oil price and diversify her economy.

1. Introduction

Traditional theories of economic growth postulated economic growth as the transition from agricultural production to industrial production with the manufacturing sector as the major driver of the growth. Hence, the focus on manufactured exports led growth by a wide body of knowledge. Nonetheless, one of the stylized facts of economic development is the rising share of services in the total output as per capita income increases (Hoekman and Mattoo, 2008; Mishra, et al., 2011). In addition, the recent rapid growth of China and India has rekindled the debate on the importance of manufacturing and services in the growth process. The two countries have taken two different routes to achieve growth rates of nearly 7 percent per annum. While China has followed a more traditional manufacturing led growth strategy, India's growth has been largely driven by growth in the services sector. The Indian experience has therefore led to the challenge of the conventional notion that industrialization is the only plausible route to rapid economic development (Ghani and Kharas, 2010; Mishra et al., 2011). The argument is that services can provide an alternative engine of growth, enabling latecomers to development to leapfrog the traditional manufacturing route.

Services are becoming a dominant driver of economic growth, both in developed and developing countries. The services sector accounts for 72 per cent of gross domestic product (GDP) in high-income countries, 53 per cent in middle-income countries and 46 per cent in low-income countries (ITC, 2016). It currently accounts for about 53 per cent of Nigeria's GDP. Trade in services now accounts for more than a fifth of global trade volumes, and an even larger share of employment in many countries (WTO, 2015). On the export side, it generates income/foreign exchange for the country with the potential for micro services companies to develop and trade successfully given the small nature of such firms and scarcity of capital. Service exports are generally environmentally friendly, raising GDP without placing substantial additional pressure on the country's extremely important natural environment. The service sector boom in Nigeria in the post GATS period demonstrates that Nigeria has a competitive advantage in several service sectors.

Nevertheless, the negligence of services as drivers of growth in the policy and research debate stems from the notion that services are associated with low productivity, are intrinsically less tradable than merchandise (as they were often assumed to require face-to-face interactions between buyers and sellers) and are merely inputs in the production of goods. However, the revolution in information and communication technology (ICT) has made it easier for services to be delivered across physical distances and national boundaries and is now treated as a final output. It is therefore now possible and attractive to export services globally. This has resulted in rapid growth of what is tagged *modern impersonal progressive services*, such as communication, banking, insurance, business-related services, remote access services, transcribing medical records, call centers, education, and etc. These services differ significantly from the *traditional personal services,* which demand face-to-face interaction.

An increasing number of services can now

be stored and traded digitally, and are not subject to many of the trade barriers that physical exports have to overcome. They have become similar to manufacturing goods in the sense that they benefit from technological advancement, and their costs depend on economies of scale, agglomeration, networks, and division of labor. For example, the ability to operate globally via the digital economy has made it easier for Nigerian deposit money banks to expand their global operations by selling services via local affiliates and offshore offices. Consequently, there has been rapid expansion of the cross-border supply of services. The cross-border expansion has largely taken place through the setup of subsidiaries in the host countries. For example, the Nigerian deposit money banks such as First Bank Nigeria PLC, Guaranty Trust Bank and Eco Bank have been able to operate competitively in Benin, Cameroon, Central Africa Republic, the Gambia, Ghana, Ivory Coast, Kenya, Liberia, Senegal, Sierra Leone, South Africa, Uganda, the United Kingdom, the United States and Zambia. The Nigerian telecommunication giant, Globacom has also spread its operation to the Republic of Benin, Ghana and Cote-d'Ivoire under the cross-border expansion arrangement.

In addition, the export of professional services such as Legal services, Accounting, Architectural services, Engineering services, Medical and Dental services, among others, offers an excellent opportunity to diversify the economy from oil. In specific terms, Nigeria has continued to export health-care professionals to the developed world. The nature of these professional services exports means that there is no purchasing of inputs involved and

almost the full amount of output is value-added and as such, is a relatively low cost contribution to growth. Also, Nigeria is well placed in the entertainment industry, especially Nigerian films and music which now transverses across Europe, Africa, Asia, the United States and the United Kingdom. It is therefore possible that countries could potentially benefit by adopting policies that increase the value addition in service exports, improve productivity and eliminate obstacles to increasing sophistication in niche service activities, and promote export performance. Hence, increasing services export sophistication may be an additional channel for sustained high growth in Nigeria.

In view of the changes in the nature of services and its growing importance in the growth framework, the objective of this paper is to measure the effects of service exports on economic growth and establish the direction of causality between service exports and economic growth. For example, while the expanding importance of services in the economy has certainly been noticed, services export does not figure prominently in research on economic growth in Nigeria. The literature has tended to give more attention to merchandise exports and imports (Ekpo and Egwaikhide, 1994; Aminu, 2008; Usman, 2010; Ewetan and Okodua, 2012; Adenugba and Dipo, 2013; Abogan et al., 2014), and relatively less weight to services export and economic growth. Consequently, the effects of services exports on growth and the direction of causality have not been established for Nigeria.

In addition, much of the limited literature (Hoekman and Matoo, 2008) on services export is based on panel analysis of developing coun-

tries. A single country analysis is not common. By using a time series analysis, we investigate whether the case study of a single country will generate different implications for services export and economic growth as against a panel framework. A major contribution of this paper is to measure the effect of services export on economic growth and the direction of causality. Perhaps our findings will bring services export as a channel of growth to the fore of discussion on the drivers of growth and show that it may be an alternative route for Nigeria. To the best of our knowledge, this is the first attempt to measure the effect of services export on economic growth in Nigeria. In addition, we adopt the Toda and Yamamoto (1995)'s Granger causality technique. This is because the standard Granger causality tests still contain the possibility of incorrect inference. They also suffer from nuisance parameter dependency asymptotically in some cases. Consequently, their results are unreliable. Many economic time-series are integrated of order one, i.e. I(1), and when they are cointegrated, the simple F-test statistic does not have a standard distribution.

The rest of this study is divided into five sections. Section Two provides stylized facts on services exports and economic growth in Nigeria while Section Three presents a brief review of the literature. Section Four discusses the analytical framework on which the model is predicated. The empirical analysis is carried out in Section Five while Section Six concludes.

2. Stylized facts: trade in services in Nigeria

The General Agreement on Trade in Services (GATS) was created in January 1995 as one of the achievements of the Uruguay Round of multilateral trade negotiations. Many services, which used to be considered as only domestic activities, have increasingly become internationally mobile. This trend has particularly continued, as a result of the introduction of new transmission technologies (electronic banking, tele-health or tele-education services), the liberalization in many countries of long-entrenched monopolies (e.g. voice telephony and postal services), and regulatory reforms in hitherto tightly regulated sectors such as transport. Combined with changing consumer preferences, such technical and regulatory innovations have enhanced the "tradability" of services and, thus created a need for multilateral disciplines (WTO, 2016). Coupled with dynamics of consumer preferences, the technical and regulatory innovations have boosted the tradability of services and therefore created a need for multilateral disciplines. The GATS distinguishes between four modes of supplying services: cross-border trade, consumption abroad, commercial presence, and presence of natural persons.

Cross-border supply is defined to cover services flows from the territory of one Member into the territory of another Member (e.g. banking or architectural services transmitted via telecommunications or mail);

Consumption abroad refers to situations where a service consumer (e.g. tourist, student, patient) moves into another Member's territory to obtain a service;

Commercial presence implies that a service supplier of one Member establishes a territorial presence, including through ownership or lease of premises, in another Member's territory to provide a service (e.g. domestic subsidiaries of

Figure 1: Composition of the Nigeria Gross Domestic Product (2010-2014)
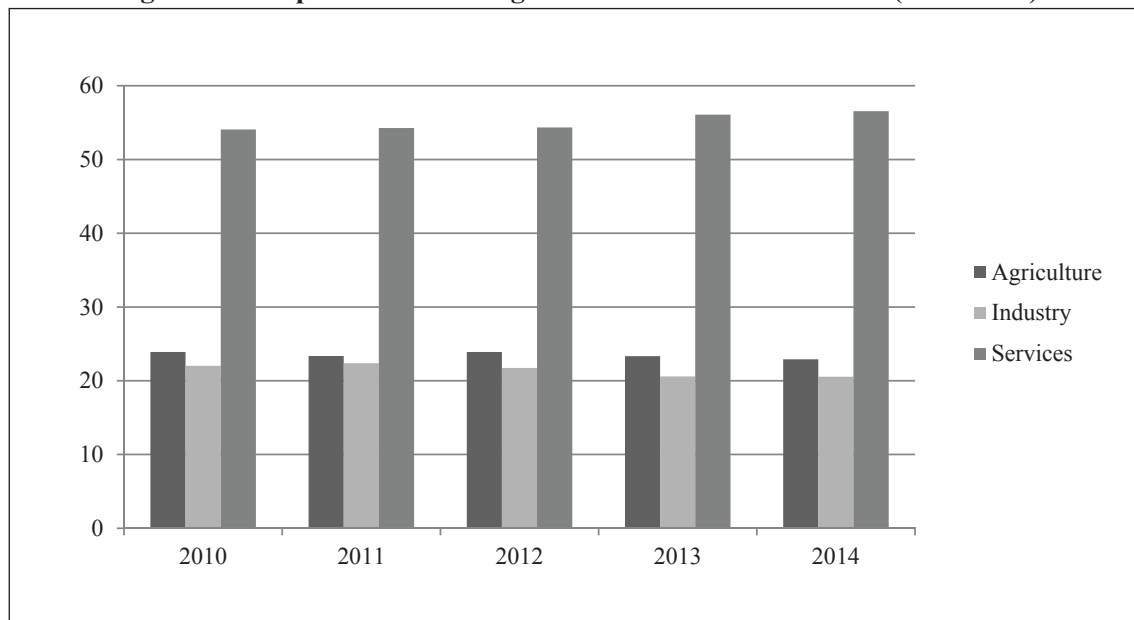
Source: Author's computation from Statistics Obtained from Central Bank of Nigeria Statistical Bulletin

foreign insurance companies or hotel chains);

Presence of natural persons consists of persons of one Member entering the territory of another Member to supply a service (e.g. accountants, doctors or teachers). The Annex on Movement of Natural Persons specifies, however, that Members remain free to operate measures regarding citizenship, residence or access to the employment market on a permanent basis**.**

Economic growth in Nigeria has witnessed a steady increase in the last decade. For example, the GDP growth rate averaged 6.80 percent between 2005 and 2013. The growth rate increased from 4.2% in 2012 to 5.5% in 2013. In addition, the Nigerian economy is ranked 26th in the world in terms of GDP (nominal: 30th in 2013 before rebasing, 40th in 2005, 52nd in 2000), and is the largest economy in Africa

(based on rebased figures announced in April 2014). As a result of the statistical revision, Nigeria's GDP for 2013, is now N80.2 trillion (US$509.9 billion). With the new GDP results, the services sector consistently accounted for the largest share of the GDP with over 50 per cent between 2010 and 2014 (Figure 1). This implies the significance of services in the Nigerian economy.

The supply of many services is possible only through the simultaneous physical presence of both producer and consumer. There are therefore many instances in which, in order to be commercially meaningful, trade commitments must extend to cross-border movements of the consumer, the establishment of a commercial presence within a market, or the temporary movement of the service provider himself. Nevertheless, the GATS expressly recogniz-
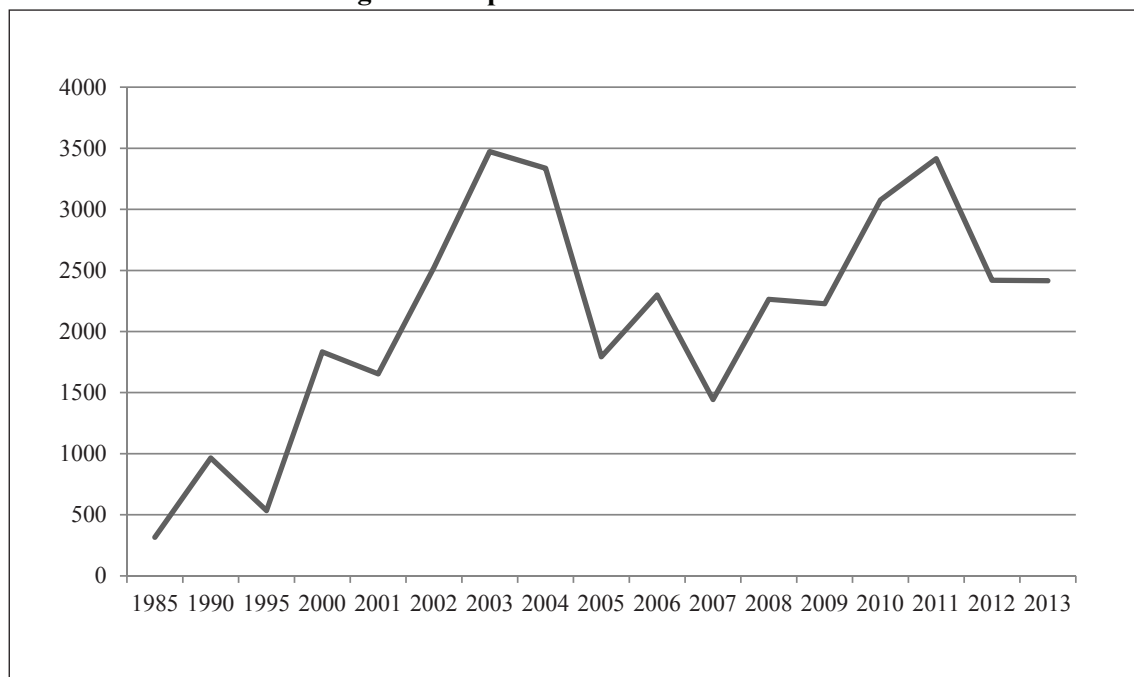
Source: Computed from the IMF Balance of Payment Statistics (various issues)

es the right of Members to regulate the supply of services in pursuit of their own policy objectives, and do not seek to influence these objectives. Rather, the Agreement establishes a framework of rules to ensure that services regulations are administered in a reasonable, objective and impartial manner and do not constitute unnecessary barriers to trade.

Trade in services can be analyzed under many and varied trade-related perspectives. Figure 1 shows the value of the export of Nigeria's services. The export of services has largely fluctuated; it peaked at US$3.4 billion in 2003 but fell significantly to a paltry US$0.53 billion in 1995. Afterwards, it experienced a stable growth until 2004 when it witnessed another decline. In the pre-GATS period, export of services was US$0.6 billion. This average value

increased to US$1.7 billion during the post-GATS period (TPRTP, 2006). In contrast, services export contribution declined from 32.8% in 1990 to 8.7% in 2008 (Figure 2).

Table 1 presents export of services by modes of supply, which are mode 1 (cross border supply); mode 2 (consumption abroad); mode 3 (commercial presence); and mode 4 (presence of natural persons). The export of services is dominated by mode 4 (presence of natural persons) and mode 1 (cross border supply). Export of mode 4 services witnessed a steady increase from $0.70 billion in 1995 to $18.2 billion in 2009. Similarly, export of mode 1 services increased from $0.28 billion in 1985 to $1.6 billion in 2009. Data limitation did not allow us to appraise the performance of export mode 3. It is discernible from the table that services export

Table 1: Export and import of services by mode (US $ Million)

Year	Export of Services by mode			
	Mode 1	Mode 2	Mode 3	Mode 4
1985	283	33	Na	10
1990	940	25	Na	10
1995	519	15	Na	707
2000	1732	101	Na	1392
2005	1739	54	15	14485
2006	2115	184	22	16740
2007	1230	213	471	17793
2008	1695	569	356	19079
2009	1626	602	140	18230
2010	15595	575	922	19814
2011	5498	628	823	20607
2012	7056	559	1542	20528
2013	26871	542	1237	20776

Note: Mode 1= Cross Border Supply (BOP-Travel-Government Services); Mode 2= Consumption Abroad (Travel); Mode 3= Commercial Presence (Direct Investment); Mode 4= Presence of Natural Persons (Workers' Remittances). Source: Computed from the IMF Balance of Payments Statistics, Various issues. The computation follows the modified version of Bankole (2005). Mode 3 export (Direct Investment Abroad) is reported as the debit value of direct investment in the IMF Balance of Payment Statistics while Mode 3 import (Direct Investment Abroad) is reported as the credit value of direct investment in the IMF Balance of Payment Statistics.

has improved significantly since 2005. Therefore, the foreign exchange generation capacity of the sector to the country has improved.

Table 2 presents data on the exports of services, which are transport, passenger services, freight, other transport services, travel, and government services, among others. Export of the various categories of services has increased from what they were in 1994 to higher levels in the post-GATS period. For instance, transportation service export rose from US$37 million in 1990 to US$1.0 billion in 2009. Similarly, passenger and freight services increased from US$ 5 million and US$ 25 million respectively in 1990 to US$ 189 million and US$ 567.0 million in 2009. In the same vein, travel services export rose from US$25 million in 1990 to

US$602 million in 2009. The top three sub-sectors are transport, freight and travel. It would have been very interesting to examine the export destination of the Nigerian services sector but unavailability of statistics did not permit such an exercise.

3. Review of related studies

The bulk of the literature on trade in services has either focused on the barriers to exports of services or the elasticity of services trade (Marquez, 2005; Ketenci and Uz, 2010; Babatunde, 2016). Only a handful of literature is available on the impact of services exports and economic growth. This is because the services sector was considered as inputs to agriculture and industry and also exclusively thought to be for domestic

Table 2: Export and imports of services by categories of services

Export of services by categories of services								
Year	Transport	Personnel Service	Freight	Other Transport Services	Travel	Government Services	Other Services	Total
1990	37	5	25	7	25	na	903	1002
1995	87	26	21	40	15	na	432	621
2000	220	85	49	87	101	Na	1512	2054
2005	1338	85	72	1181	54	360	401	3491
2006	1827	25	372	1429	184	242	288	4367
2007	830	124	375	330	213	345	400	2617
2008	1209	390	416	404	569	430	486	3904
2009	1098	189	567	343	602	458	528	3785
2010	1994	168	1438	386	575	466	185	5212
2011	1600	66	1057	476	628	1081	213	5121
2012	1405	84	868	452	559	335	202	3905
2013	1108	78	554	475	542	483	245	3485

Source: IMF Balance of Payment Statistics (Various Issues)

consumption that requires face-to-face transactions such as eating in restaurants, haircuts, and loans from a bank. As a result, the literature did not devote much attention to services trade or to services as drivers of economic growth. However, technological changes and globalization in the last decade have changed the traditional notions about services, and the way economists have looked at them. According to Bhagwati (1984) services have acquired the characteristics of goods and have become tradable (Mishra et al., 2011).

Baumol (1985) has classified these services as modern impersonal progressive services, which can be thought of as the modern service exports such as financial services, insurance, business processing, and computer information services. Francois (1990) noted that the growth of intermediation services is an important de-

terminant of overall economic growth and development because they allow specialization to occur. As firm size increases and labor specializes, more activity needs to be devoted to coordinating and organizing the core businesses of companies. Ghani and Kharas (2010) have argued that technology, tradability, and transportability have transformed the dynamism of service exports, as they can be produced and stored and traded in binary code globally, and unlike goods these high-productivity modern services are no longer restricted by time and space. Nevertheless, given the growing importance of services in GDP growth and increased tradability of services, a body of research has developed to explore how certain aspects of services affect growth.

For example, Mattoo et al. (2006) examined the openness in financial and telecommunica-

tion services to demonstrate that it is an important driver of long run economic growth. Fixler and Siegel (1999) examined specific services exports and productivity gains from outsourcing (Mishra et al., 2011). In addition, Broadberry and Gupta (2008), Eichengreen and Gupta (2009) noted that investment in tertiary education, telecommunication policy with a concoction of global economic environment, domestic regulations and soft infrastructure, English language heritage and democratic society that paved the way for service led the growth strategy in India. This was corroborated by Bosworth et al. (2006) who reported that the growth in India's total factor productivity comes from productivity in services. Similarly, Lashmi and Kumar (2012) investigated the contribution and development of the services sector in the Indian economy. They identified the sources of service sector growth in India to be: income elasticity of demand, open policies and the growth in the service sectors like communications, business, banking and insurance and trade services.

Gabriele (2006) also confirmed that, in the long run, services exports do have a positive impact on GDP growth, both in developed and in developing countries. However, in developing countries, the services exports/GDP growth nexus was severely weakened in the 1990s (to the point of becoming statistically not significant), while it grew quite strongly in developed countries. Moreover, in the developing countries, the growth-enhancing impact of exports as a whole appears to have declined in the 1990s, although this decline appears to be due more to the merchandise component of exports rather than to the services component.

An explanation for this result is because export-oriented services activities in developing countries tend to be concentrated on the less advanced services sectors and are poorly integrated with the rest of the domestic economy, and are often under the control of foreign economic agents. The modalities and sequencing of trade and financial liberalization policies in many developing countries were sub-optimally designed and implemented, due both to domestic and external factors and constraints, among them the fact that the reforms were often carried out under conditions of duress and financial starvation. Domestic resources were diverted toward exports as if they constituted a goal per se, rather than in the framework of a comprehensive long-term growth-maximizing strategy. As a result, the opening-up reform process in many previously inward-oriented developing countries has been facing diminishing returns (Gabriele, 2006).

In a cross-section, cross-country regression analysis, Mattoo et al. (2006) found that controlling for other determinants of growth, countries with open financial and telecommunications sectors grew, on average, about 1 percentage point faster than other countries. Fully liberalizing both the telecommunications and the financial services sectors was associated with an average growth rate 1.5 percentage points above that of other countries. Eschenbach and Hoekman (2006) investigated the impact of changes in services policy, including liberalization, on economic performance over this period for a sample of 20 transition economies. They found that changes in policies towards financial and infrastructure services, including telecommunications, power and transport, are

highly correlated with inward FDI. Controlling for regressors commonly used in the growth literature, they concluded that measures of services policy reform are statistically significant explanatory variables for the post-1990 economic performance of the transition economies in the sample (Hoekman and Matoo, 2008).

Van Neck (2015) examined the impact of exporting modern services on economic development. The study noted that technology has made it possible to export many services in a similar manner to goods which has greatly influenced the impact on economic growth. Technology has influenced the proximity, location and time requirements, making them redundant. In order to trade services internationally, electronic infrastructure is essential. This is because export of services relies on telephone lines and Information technology (IT) (Ghani, 2009). Information technology related services are a large share of modern services export. Controlling for other determinants of economic growth, the empirical evidence from Van Neck (2015) showed that there is a significant positive effect of modern services exports (financial, IT and communication services) on GDP per capita growth. For example, a one percent increase in the export of modern services will increase GDP per capita by 0.177 percentage point, ceteris paribus. However, the positive effects of modern services export on economic growth take some time.

A significant channel through which export of services impacts economic growth is improvement in productivity. By way of illustration, growth of labour productivity in the service sector benefits from trade in services. Domestic firms are being exposed to foreign competition from imported services. This forces firms to become more efficient. Equally, when a firm wants to export services it need to be able to compete in foreign markets (Park and Shin, 2013; Freckleton, 2013). Gordon and Gupta (2004) also find that in the fast growing service sectors in India, like communications, banking services, business services and community services there are significant productivity gains, which leads to lower relative prices. Hence, the export in services improves the productivity, which could lead to a higher GDP (Van Neck, 2015). Many developing countries are characterized by their low cost labour. If they can offer similar quality as developed countries services can substantially lead to new employment. The tradability of services has led to firms looking for countries where these services can be produced at much lower costs. Firms strive to reduce fixed overheads by outsourcing routine functions (Bosker and Garretsen, 2009; Gordon and Gupta, 2004; McGuire, 2002; Seyoum, 2007, Van Neck, 2015).

However, productivity performance of service industries differs significantly across countries. Inklaar et al. (2006) show that differences in aggregate productivity levels and growth rates in a sample of seven OECD countries can mainly be attributed to specific services sectors as opposed to goods producing industries. That is, productivity levels/growth rates of the latter are much more similar across countries than is the case for producer and business services. In addition, the type of services that are exported however, matters for growth. For example, exporting knowledge intensive services (the type of products developed countries export) may sustain higher growth rates than exporting

lower-skill goods according to Ghani (2009). Bosker and Garretsen (2009) find that in South Asia the majority of the tradable services are not produced for the local market. For example the domestic demand for software in South Asia is low, but software exports increased to US$23 billion in 2006 (Van Neck, 2015).

Nevertheless, certain fundamentals must be in place before export of services could affect economic growth. Human capital is very important for service exports. According to UC-TAD (2013) information technology skills are crucial. It could be expected that higher usage of the Internet would mean the population is more skilled in IT which is an advantage when producing services. Saez and Goswami (2010) reported that export of business services tends to be highest in countries where the population has more schooling. People temporarily working abroad in foreign services markets can develop a new range of skills and knowledge. Upon return they can share this new information and skills in the domestic economy. This way human capital can be improved (McGuire, 2002). With these acquired skills developing countries can improve the quality of their services.

Also, common language gives service exporting countries an advantage (UNCTAD, 2015). For example, one of the factors contributing to India's success in the service sector is the ability to speak English and also because of their cheap and skilled labour. Proficiency in English is necessary for certain service tasks. Liberalization can help the service sector. As reported by Banga (2005) growth in services in India has improved after gradually opening up. Reducing barriers to trade and allowing foreign direct investment have increased the demand in services. FDI brings capital and technology and can help increase exports and economic growth (Seyoum, 2007).

The level of sophistication of exports is also important for economic growth. Mishra et al. (2011) employed a panel study to examine the association between the sophistication of service exports and growth in per capita income. The study specifically examined what countries export rather than how much. Sophistication aims to capture the productivity level associated with a country's production. It measures the increasing improvements in technology and ICT as well as countries exporting high value services. The authors' develop a new service exports sophistication index. They use the revealed comparative advantage in specific services, and values of services exported by a country. This is used to predict the dependent variable, GDP growth per capita. In their GDP growth model four other determinants of economic growth are added; initial income level, rates of physical and human capital accumulation, trade openness and institutional quality. The service sophistication coefficient is positive and significant, which implies that higher GDP per capita growth is associated with higher export sophistication even when controlling for a number of variables across different samples.

Dam (2017) constructed a linkage between customer-based brand equity for a tourism destination (destination image, destination awareness, quality of destination and destination loyalty) and behavioral intentions for selecting a tourist destination (revisit and/or recommendation to other people), in order to better un-

derstand the role of tourism destination branding with respect to trade in services. The study carried out a survey of international tourists that selected Hanoi - Vietnam as their holiday destination and findings revealed that brand image and brand loyalty played an important role on tourist's decision of returning or recommendation to others while brand awareness and quality have no impact. The study therefore enhanced tourism destinations' competitiveness from the tourist's perspective.

In summary, the evidence, although scanty, implies that services export can act as an engine of growth in many cases. Modern services are emerging rapidly because of growing tradability, reduced transport costs, and more sophisticated technology, which includes off-shoring, scale economies and specialization. Not only the value of export of services has grown but also its share in total value added. Services do not have to deal with logistical barriers like customs, decreasing the transport costs and making it a genuine opportunity for poor countries. However, in order for services to impact positively on economic growth, the level of productivity, human capital, common language among trading partners, categories of services that are exported, openness of the economy and level of human capital matters.

In terms of the growth enhancing effects of services, low cost and high quality telecommunications will generate economy-wide benefits, since the communications network is a transport mechanism for information services and other products that can be digitized. In addition, telecommunications are crucial to the dissemination and diffusion of knowledge - the spread of the Internet and the dynamism that

that has lent to economies around the world is a confirmation of the importance of telecommunications services. Similarly, transport services affect the cost of shipping goods and movement of workers within and between countries. Also, business services such as accounting, engineering, consulting and legal services reduce transaction costs associated with the operation of financial markets and the enforcement of contracts, and are a channel through which business process innovations are transmitted across firms in an industry or across industries. Retail and wholesale distribution services are a vital link between producers and consumers, with the margins that apply in the provision of such services influencing the competitiveness of firms on both the local and international markets. Health and education services are key inputs into – and determinants of – the stock and growth of human capital (Hoekman and Matoo, 2008).

4. Methodology

4.1. Model specification and data sources

Economic theory hypothesizes that aggregate growth is a function of increases in the quantity and productivity of capital and labour inputs, with long run (steady state) growth determined by technological progress. This is highlighted in the context of a simple neoclassical production function as:

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

where Y_t denotes the aggregate production of the economy at time t; A_t is the level of total factor productivity; K_t, L_t are the levels of the capital stock, and the stock of labour, respectively; and α and β are constants between zero and one that measure capital and labour's share of income respectively. This study goes beyond

the traditional neoclassical theory of production by estimating an augmented Cobb-Douglas functional form, which includes exports. This specification derives from the export led growth (ELG) hypothesis which postulates that exports are one of the determinants of overall economic growth. The argument is hinged on the hypothesis that export growth may affect total factor productivity through dynamic spillover effects on the rest of the economy (Feder, 1983). Therefore, the inclusion of exports as a third input provides an alternative procedure to capture total factor productivity (TFP) growth.

Following Herzer et al. (2006) and Waithe et al. (2011), we assume that total factor productivity can be rewritten as a function of exports of goods (XG_t), exports of services (XS_t) and other exogenous factors (C_t) assumed to be uncorrelated with XG_t and XS_t. This implies that our estimates will be unbiased. The resulting specification is:

$$A_t = f(XG_t, XS_t, C_t) = XG_t^{\delta}, XS_t^{\gamma}, C_t \quad (2)$$

Combining equation (2) with (1) we obtain:

$$Y_t = C_t K_t^{\alpha} L_t^{\beta} XG_t^{\delta} XS_t^{\gamma} \quad (3)$$

where α, β, δ and γ are the elasticities of production with respect to K_t, L_t, XG_t, and XS_t. Taking the natural logs (*Ln*) of equation (3) and expressing it econometrically for estimation purposes we obtain:

$$LnY_t = \pi + \alpha LnK_t + \beta LnL_t + \delta LnXG_t + \gamma LnXS_t + \varepsilon_t \quad (4)$$

Where *Ln* is a natural logarithm, π is a constant parameter; all coefficients are constant elasticities; and ε_t is an error term, which captures the influence of all other exogenous factors. In the model, LnY_t is measured as the real gross domestic product (GDP), LnK_t

is measured as gross fixed capital formation (GCFC),[1] LnL_t is measured as the total labour force,[2] $LnXG_t$ is merchandise exports,[3] $LnXS_t$ is services exports.[4] A priori, we expect α, β, δ, γ > 0. Annual time series data for net real GDP, GFCF, Labour force, merchandise exports and services exports were sourced from the World Bank World Development Indicators. The analysis was carried out between 1980 and 2016 due to the limited data availability on the total labour force.

4.2 Estimation technique

The empirical analysis for the study is fourfold. The unit root test is conducted to investigate the order of integration of the variables. The Dickey-Fuller Test with GLS Detrending (DFGLS) and Ng-Perron tests are employed. Elliot, Rothenberg, and Stock (1996) propose a simple modification of the ADF tests in which the data are detrended so that explanatory variables are *taken out* of the data prior to running the test regression. Elliot, Rothenberg, and Stock (ERS) define a quasi-difference of y_t that depends on the value *a* representing the specific point alternative against which we wish to test the null:

$$d(y_t \mid a) = \begin{cases} y_t & \text{if } t = 1 \\ y_t - ay_{t-1} & \text{if } t > 1 \end{cases} \quad (6)$$

Thereafter, let us consider an OLS regression of the quasi-differenced data $d(y_t|a)$ on the quasi-differenced $d(x_t|a)$:

$$d(y_t|a) = d(x_t|a)' \delta(a) + \eta_t \quad (7)$$

where x_t contains either a constant, or a constant and trend, and let δ(a) be the OLS estimates from this regression. To derive the value for *a* in the model, ERS recommend the use of $a = \bar{a}$, where:

$$\begin{cases} 1-7/T & \text{if } x_t = \{1\} \\ 1-13.5/T & \text{if } x_t = \{1,t\} \end{cases} \quad (8)$$

We now define the GLS detrended data y_t^d using the estimates associated with the $\bar{a}$.

$$y_t^d \equiv y_t - x_t' \delta(\bar{a}) \quad (9)$$

Then the DFGLS test involves estimating the standard ADF test equation, after substituting the GLS detrended y_t^d for the original y_t.

$$\Delta y_t^d = \alpha y_{t-1}^d + \beta_1 \Delta y_{t-1}^d + ... + \beta_p \Delta y_{t-p}^d + \nu_t \quad (10)$$

Since the y_t^d are detrended, we do not include the x_t in the DFGLS test equation. The DFGLS consider the -ratio for $\hat{\alpha}$ from this test equation. While the DFGLS -ratio follows a Dickey-Fuller distribution in the constant only case, the asymptotic distribution differs when you include both a constant and trend.

Ng and Perron (2001) construct four test statistics that are based upon the GLS detrended data y_t^d . These test statistics are modified forms of Phillips and Perron Z_α and Z_t statistics, the Bhargava (1986) R_1 statistic, and the ERS Point Optimal statistic. First, define the term:

$$\kappa = \sum_{t=2}^{T} (y_{t-1}^d)^2 \Big/ T^2 \quad (11)$$

The modified statistics may then be written as,

$$MZ_\alpha^d = (T^1 (y_T^d)^2 - f_0) / (2\kappa) \quad (12)$$

$$MZ_t^d = MZ_\alpha \, x \, MSB \quad (13)$$

$$MSB^d = (\kappa / f_0)^{1/2} \quad (14)$$

$$MP_T^d = \begin{cases} (\bar{c}^2 \kappa - \bar{c} T^1 (y_T^d)^2) / f_0 & \text{if } x_t = \{1\} \\ \bar{c}^2 \kappa + (1-\bar{c}) T^{-1} (y_T^d)^2 / f_0 & \text{if } x_t = \{1,t\} \end{cases} \quad (15)$$

$$\bar{c} = \begin{cases} -7 & \text{if } x_t = \{1\} \\ |-13.5 & \text{if } x_t = \{1,t\} \end{cases} \quad (16)$$

The Ng and Perron (2001) tests require a specification for x_t and a choice of method for estimating f_0 . The two unit roots tests are not sensitive to the choice of the lag length.

A wide range of econometric techniques have been proposed in the investigation of long run relationships (cointegration) among time-series variables. The fully modified Ordinary Least Square (OLS) procedures of Phillips and Hansen (1990) and the Englen and Granger 's (1987) approach are examples of univariate cointegration while the Johansen (1988) and Johansen and Juselius (1990) procedures and Johansen's (1995) full information maximum likelihood procedures are examples of multivariate cointegration. However, in this study, we use the bounds test proposed by Pesaran et al. (2001) which is based on the unrestricted error correction model (UECM). This is because the Pesaran et al.'s approach has certain advantages over the common practice of univariate and multivariate cointegration analysis (Engle and Granger, 1987; Johansen, 1988; Johansen and Juselius, 1990).

Firstly, endogeneity problems and inability to test hypotheses on the estimated coefficients in the long run associated with the Engle-Granger method are avoided. Secondly, the long and short-run parameters of the model are estimated simultaneously. Thirdly, all variables are assumed to be endogenous. Fourthly, the econometric methodology is relieved of the burden of establishing the order of integration amongst the variables and of pre-testing for unit roots. In fact, whereas all other methods require that the

variables in a time-series regression equation are integrated of order one, i.e., the variables are I(1), only that of Pesaran et al. (2001) could be implemented regardless of whether the underlying variables are I(0), I(1), or fractionally integrated. Finally, the methodology can be applied to studies that have a small sample size, such as the present study.

The ARDL representation of equation (1) is therefore formulated as follows:

$$
\begin{aligned}
\Delta LnY_t^N = {} & \alpha_0 + \sum_{i=1}^{q} \alpha_{1i} \Delta LnY_{t-i}^N + \sum_{i=0}^{q} \alpha_{2i} \Delta LnK_{t-i} \\
& + \sum_{i=0}^{q} \alpha_{3i} \Delta LnL_{t-i} + \sum_{i=0}^{q} \alpha_{4i} \Delta LnL_{t-i} + \sum_{i=0}^{q} \alpha_{5i} \Delta LnXG_{t-i} \\
& + \sum_{i=0}^{q} \alpha_{6i} \Delta LnXS_{t-i} + \alpha_{7i} LnY_{t-1}^N + \alpha_{8i} LnK_t \qquad (17) \\
& + \alpha_{9i} LnL_t + \alpha_{10i} LnXG_t + \alpha_{11i} LnXS_t
\end{aligned}
$$

Investigation of the presence of a long-run relationship amongst the variables of Equation (1) is tested by means of the bounds testing procedure of Pesaran et al. (2001). The bounds test is a Wald Test (or F-test) in which the joint significance of coefficients for lagged variables is tested with F-statistics calculated under the null. The distribution of the test statistics under the null is non-standard, in which critical values depend on the order of integration of variables involved. More formally, we perform a joint significance test, where the null hypothesis ($H_0 = \alpha_7 = \alpha_8 = \alpha_9 = \alpha_{10} = \alpha_{11} = 0$) against the alternative hypothesis that (H_A: $\alpha_7 \neq 0$, $\alpha_8 \neq 0$, $\alpha_9 \neq 0$, $\alpha_{10} \neq 0$, $\alpha_{11} \neq 0$).

Utilizing Monte Carlo simulation experiments, Pesaran et al. (2001) tabulates asymptotic critical values, depending on whether or not drift and/or time-trend terms are included as well as a number of independent variables. Given the number of independent variables, if all variables are I(0), the critical value comes

to a minimum and, if they are all I(1), the corresponding critical value becomes a maximum. In the cases of a mixture of integrating orders among variables, the critical value falls between a minimum and a maximum. Therefore, if the calculated F-statistics under the null is located outside the maximum, the null hypothesis of no cointegration is rejected, while if it is located inside the minimum, the null is not rejected. Finally, if the test statistics falls between them, one cannot draw a conclusive decision. In this case, further investigation based on more information about orders of integration is required to reach a conclusion.

The concept of causality was initially defined by Granger (1969). Shirazi and Manap (2005) stated that in a bivariate framework, a time series x_{1t} Granger-causes another time series x_{2t} if series x_{2t} can be predicted with better accuracy by using past values of x_{1t} rather than by not doing so, other information being identical. The causal relationship between two series x_{1t} and x_{2t} (in such a bivariate case) can be tested on the following vector autoregressive process of order p such that:

$$
\begin{bmatrix} x_{1t} \\ x_{2t} \end{bmatrix} = \begin{bmatrix} B_{10} \\ B_{20} \end{bmatrix} + \begin{bmatrix} B_{11}(L) & B_{12}(L) \\ B_{21}(L) & B_{22}(L) \end{bmatrix} \begin{bmatrix} x_{1t-1} \\ x_{2t-1} \end{bmatrix} + \begin{bmatrix} \mu_{1t} \\ \mu_{2t} \end{bmatrix} \quad (18)
$$

Where B_{i0} are the parameters representing intercept terms, $B_{ij}(L)$ the polynomials in the lag operator and $\mu_t = (\mu_{1t}, \mu_{2t})$ is an independently and identically distributed bivariate white noise process with zero mean and non-singular covariance matrix. In this case, if $B_{12}(L)$ s are statistically significant, either in an individual coefficient or a subset of coefficients but $B_{21}(L)$ not, then it is said that x_{2t} is unidirectional Granger causal to x_{1t}. In contrast, if $B_{21}(L)$s are statistically significantly different from zero, either

in individual coefficient or a subset of coefficients, but $B_{12}(L)$ is not, then it is said that x_{1t} is unidirectional Granger causality to x_{2t}. Nevertheless, if both $B_{12}(L)$ and $B_{21}(L)$ are statistically significantly different from zero, either in an individual coefficient or a subset of coefficients in their respective equations, then there exists bi-directional causality (feedback effect) between these two variables.

However, evidence abounds in the literature (Toda and Phillips, 1993; Toda and Yamamoto, 1995; Zapata and Rambaldi, 1997) that the standard Granger causality tests still contain the possibility of incorrect inference. They also suffer from nuisance parameter dependency asymptotically in some cases. Consequently, their results are unreliable. All of these indicate that there may be no satisfactory statistical basis for using standard Granger causality tests in levels or in a difference vector auto-regressive system or even in error correction models. The sequential Wald tests of Toda and Yamamoto (1995) are designed to avoid these problems. Thus, the major strength of using the Toda and Yamamoto's techniques of testing for Granger causality lies in its simplicity and the ability to overcome many shortcomings of alternative econometric procedures.

Toda and Yamamoto (1995) proposed a simple procedure requiring the estimation of an *augmented* VAR, even when there is cointegration, which guarantees the asymptotic distribution of the modified Wald statistic. The important thing is to determine the maximal order of integration *dmax* (where *dmax* is the maximal order of integration suspected to occur in the system), which we expect to occur in the model and construct a VAR in their levels with a total

of ($k + dmax$) lags. Toda and Yamamoto point out that, for $d = 1$, the lag selection procedure is always valid, at least asymptotically, since $k >= 1 = d$. If $d = 2$, then the procedure is valid unless $k = 1$. Moreover, according to Toda and Yamamoto (1995), the modified Wald statistic is valid regardless whether a series is I(0), I(1) or I(2), non-cointegrated or cointegrated of an arbitrary order (Shirazi and Manap, 2005).

5. Empirical analysis

The characteristics of the data series used in the services export and economic growth regression analysis is presented in Table 3. It provides information about the means and standard deviations of the main variables. The means of the logarithm of the economic growth (GDP), export of services (XS), merchandise exports (XG), labour force and gross fixed capital formation (K) are 25.96, 20.72, 23.85, 17.37 and 22.84 respectively. Gross fixed capital formation and exports of services have the highest standard deviation of 1.25 and 0.96 respectively (Table 3).

Unit root tests

According to the Dickey-Fuller and the Ng-Perron tests in Tables 4 and 5, the variables were found to be non-stationary at their levels except the labour force that was found to be stationary at level. The first difference of the real income, export of service, merchandise exports, and gross fixed capital formation variables produces stationarity and are integrated of order one, that is, I(1), which implies the existence of unit root. On the other hand, labour force is integrated of order zero, that is, I(0), which implies the non-existence of unit root. This implies that the cointegration test must take into consideration the dynamics of the unit

Table 3: Descriptive statistics

	GDP	XS	XG	L	K
Mean	25.96322	20.72890	23.85261	17.37331	22.84041
Median	25.72598	20.84246	23.60499	17.40189	22.20098
Maximum	26.86376	22.04015	25.47686	17.86472	25.17470
Minimum	25.34250	19.05759	22.36323	16.76276	21.42491
Std. Dev.	0.502563	0.965823	0.902781	0.315859	1.250441
Skewness	0.635151	-0.307590	0.456460	-0.298538	0.713179
Kurtosis	1.823002	1.685243	1.923130	2.052847	2.070750
Jarque-Bera	4.623444	3.248340	3.072652	1.932631	4.467757
Probability	0.099090	0.197075	0.215170	0.380482	0.107112
Sum	960.6392	766.9692	882.5466	642.8125	845.0951
Sum Sq. Dev.	9.092491	33.58129	29.34049	3.591609	56.28973
Observations	37	37	37	37	37

root result. Hence, the adoption of the cointegration test (ARDL Bound Testing Approach) that utilizes I(0) and I(1) variable in its estimation.

Structural break

This study further evaluates the behaviour of the trends by considering possible structural breaks in the series as the previous tests lack power in the presence of structural breaks as they may fail to reject the null hypothesis of a unit root when structural breaks exist. To achieve this, we employ the Augmented Dickey-Fuller unit root test with structural breaks. The result of the ADF unit root test with structural breaks is also reported in Table 6. All the series report one break date. The dates indicated by the structural break are quite interesting. The liberalization of the services sector was carried out in 2001 which is therefore reflected in the value of the services sector in the year 2002. In addition the bank consolidation exer-

Table 4: Dickey-Fuller Test with GLS Detrending (DFGLS) unit root test results

Variable	Constant		Constant and linear trend		Order of integration
	Levels	First Diff.	Levels	First Diff.	
Y	0.220303	-1.849879*	-1.552634	-4.608330**	I(1)
XS	-1.128407	-4.538954*	-2.189692	-4.718321*	I(1)
XG	-1.040946	-4.152762*	-1.928244	-4.912671*	I(1)
K	-0.139467	-4.125092*	-1.147631	-4.904829**	I(1)
L	0.440642*	-1.253595	-2.147373*	-1.761458	I(0)
Asymptotic critical values:					
1%	-2.632688	-2.632688	-3.770000	-3.770000	
5%	-1.950687	-1.950687	-3.190000	-3.190000	
10%	-1.611059	-1.611059	-2.890000	-2.890000	

*Note: The Null Hypothesis is the presence of unit root. *, **, *** significant at 1%, 5% and 10% respectively. Lag length selected based on Schwarz information criterion (SIC). The Elliott-Rothenberg-Stock DF-GLS test statistics are reported.*

Table 5: Ng-Perron unit root test results

Variables	Constant (Model 1)		Constant and Linear Trend (Model 2)		Order of Integration
	Levels (MZα)	First Diff (MZα)	Levels (MZα)	First Diff (MZα)	
Y	0.85502	-6.14176**	-1.62210	-15.7020*	I(1)
XS	-3.00740	-16.3919*	-6.30462	-16.7212*	I(1)
XG	-2.14102	-15.4931*	-4.58662	-16.7767*	I(1)
K	-0.19479	-15.4439*	-1.25298	-16.4343*	I(1)
L	-1.49150*	-2.53593	-8.02122*	-5.68971	I(0)
Asymptotic Critical Values:					
1%	-13.8000	-13.8000	-23.800	-23.8000	
5%	-8.10000	-8.10000	-17.300	-17.3000	
10%	-5.70000	-5.70000	-14.200	-14.2000	

*Note: The Null Hypothesis is the presence of unit root. *,**,*** significant at1%, 5% and 10%. Ng-Perron test statistics are reported. Spectral GLS-detrended Auto Regressive based on Schwarz Information Criterion (SIC).*

Table 6: Unit root with structural breaks

Variables	ADF test with structural break			
	Break Date	Coeff.	T-stat.	I(d)
Y	2004	0.095	-6.861	I(1)
K	1995	0.067	-5.381	I(1)
L	2004	-0.520	-1.321	I(0)
M	2011	0.027	-5.597	I(1)
S	2002	0.202	-4.650	I(1)

cise was carried out in 2004 while the increase in the pump prices of petroleum products came into effect in the year 2011. However, the analysis reveals that all the trend term coefficients become statistically insignificant after the inclusion of structural breaks.

Cointegration test

In order to ascertain the existence of a long-run relationship among the variables in the model, the *F*-statistic (Wald test) for the bounds test (Pesaran et al., 2001) was computed. The *F*-statistic and critical bounds values for testing the null of no cointegrating relationship are reported in Table 7. The computed F-Statistics of 9.4503 was found to exceed the lower and upper bounds critical values of 2.45 and 3.52, 2.86 and 4.01, 3.74 and 5.06 for the I(0) and I(1) bound at the 10%, 5% and 1% respectively. Therefore, the null of no cointegration is rejected. This implies that economic growth, export of services, export of goods, gross fixed capital formation, and labour force in Nigeria are cointegrated or co-moving. Therefore, we can conclude that there is a long run relationship between export of services, merchandise exports, economic growth, gross fixed capital formation and labour force.

Table 7: ARDL Bounds test for cointegration analysis

Sample: 1984 2016		
Included observations: 33		
Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	k
F-statistic	9.450328	4
Critical Value Bounds		
Significance	I(0) Bound	I(1) Bound
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.74	5.06

Short run and long run dynamics

With the presence of cointegration among the variables, it is necessary to estimate the cointegrating coefficients to explore the short run and long run relationship between them. The estimation result is presented in Table 8. The short run estimation revealed that export of services positively and significantly influence economic growth in Nigeria. For example, a 1 percent increase in services exports will increase economic growth in Nigeria by 0.038 per cent. Perhaps the small impact of services exports on economic growth could be attributed to the long period regulations existed in the sector before it was liberalized. In addition, certain structural barriers such as infrastructural constraints are still in place thereby limiting the impact of services exports on economic growth. In addition, it implies that merchandise exports is the dominant variable compared to services exports. The implication is that, in spite of the rise of services in the economy, the impact of merchandise exports on economic growth still tends to be more relevant.

Similarly, merchandise export has a posi-

tive and significant relationship with economic growth. The coefficient of the merchandise export is 0.058. In the short run, a 1 percent increase in merchandise exports will increase economic growth by 0.058% in Nigeria. The positive short run impacts of exports of services and merchandise were found to be instantaneous. Although positive, gross fixed capital formation (K) and labour force (L) were not found to be major determinants of economic growth in Nigeria. Nevertheless, the error correction term CointEq(-1) is negative and statistically significant which corroborates the results of the cointegration tests on the existence of a long-run relationship between the variables. The error correction term is -0.500 which indicates that 50.0% of the previous year's deviation from long-run equilibrium will be restored within one year. Our estimates are similar to the results reported by Gabriele (2006). The study also reported positive services and merchandise exports but found the coefficients of merchandise exports higher than services export. We therefore have enough evidence to conclude that export of services in Nigeria has

Table 8: ARDL cointegrating and long run form

Dependent Variable: Y
Selected Model: ARDL(1, 1, 2, 0, 4) selected based on Akaike Information Criterion
Sample: 1980 2016
Included observations: 33

Cointegrating form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(K)	-0.017639	0.035989	-0.490127	0.6294
D(L)	1.022622	2.098358	0.487344	0.6313
D(L(-1))	3.132350	2.250666	1.391744	0.1793
D(M)	0.058106	0.022072	2.632527	0.0160
D(S)	0.038211	0.020870	1.830865	0.0821
D(S(-1))	-0.010370	0.025412	-0.408079	0.6876
D(S(-2))	0.041560	0.025248	1.646072	0.1154
D(S(-3))	-0.088735	0.021545	-4.118512	0.0005
CointEq(-1)	-0.500703	0.111745	-4.480766	0.0002
Cointeq = Y - (0.0363*K + 1.0695*L + 0.1160*M + 0.2040*S -0.6290)				
Long run coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
K	0.036325	0.049830	0.728984	0.4745
L	1.069493*	0.214293	4.990805	0.0001
M	0.116048**	0.048653	2.385237	0.0271
S	0.204000*	0.056982	3.580113	0.0019
C	-0.628961	3.376556	-0.186273	0.8541

*Note: * significant at1%; ** significant at 5%; *** significant at 10%.*

impact on economic growth.

The long run coefficients are presented in the lower part of Table 7. The estimated long-run elasticities for services exports, merchandise exports and labour force are 0.204, 0.116 and 1.069 respectively. The estimated elasticities have the expected signs and are statistically significant at the 1% and 5% level. The result obtain confirmed the discussion in the literature that export of services is an important determinant of economic growth both in the short run and long run. For example, our results suggest that a 1% increase in services exports induces a 0.204% increase in economic growth in the long run. Similarly, a 1% increase in merchandise exports will contribute about 0.116% rise in Nigeria's economic growth. The labour force coefficient is still positive and now significant.

This implies that the impact of the labour force on economic growth is a long run phenomenon. The impact of the gross fixed capital formation was found to be negligible in the short run.

Tables 9 present the diagnostic tests of the estimation results in Table 8. We found no evidence of autocorrelation in the disturbance of the error term utilizing the Breusch-Godfrey Serial Correlation LM Test (Table 8). The model passes the heteroscedasticity tests using the Breusch-Pagan-Godfrey technique suggesting that the error variances are *not* equal. The Ramsey RESET test indicates that the model is correctly specified (Table 10). Hence, on the basis of these statistical properties, it is reasonable to say that the estimated model is well behaved.

Toda and Yamamoto causality result

Table 9: Diagnostic tests of the estimation results

Breusch-Godfrey Serial Correlation LM Test			
F-statistic	3.035509	Prob. F(2,18)	0.0731
Obs*R-squared	8.323021	Prob. Chi-Square(2)	0.0156
Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.818321	Prob. F(12,20)	0.6313
Obs*R-squared	10.86709	Prob. Chi-Square(12)	0.5403
Scaled explained SS	4.946682	Prob. Chi-Square(12)	0.9597
Ramsey RESET Test			
Specification: Y Y(-1) K K(-1) L L(-1) L(-2) M S S(-1) S(-2) S(-3) S(-4) C			
Omitted Variables: Squares of fitted values			
	Value	df	Probability
t-statistic	1.074319	19	0.2961
F-statistic	1.154162	(1, 19)	0.2961
	Sum of Sq.	df	Mean Squares
Test SSR	0.001777	1	0.001777
Restricted SSR	0.031031	20	0.001552
Unrestricted SSR	0.029254	19	0.001540

In addition, Table 10 presents the results of the Granger noncausality tests carried out for Nigeria based on the Toda and Yamamoto (1995) approach. Toda and Yamamoto's causality approach showed that the causality is running from export of services to economic growth and a no-causality result from economic growth to export of services. The results point out that there is a unidirectional relationship running from export of services to economic growth in Nigeria. A similar causality result was also found for the causality between merchandise exports and economic growth. Causality only runs from merchandise exports to economic growth and not otherwise. This implies that export of services remain a fundamental factor to achieving economic growth in Nigeria. However, statistical independence was found in the case of gross fixed capital formation and economic growth on one hand and labour force and economic growth on the other

hand.

Structural analysis

We further decompose economic growth to the parts related to export services, merchandise exports, gross fixed capital formation and labour force disturbance to know their relative importance in the model in Table 11. From the Table, 12.27% and 6.62% of future changes in the economic growth are due to changes in the export of services and merchandise exports in the tenth period respectively. The result highlighted that the labour force explains about 28.44 percent of future changes in economic growth while the future contribution of gross fixed capital formation stood at 1.211% in the tenth period. It can be therefore assumed that services export is likely going to be a major driver of future economic growth in Nigeria. The generalized impulse response function in Figure 3 also indicates the positive impact of

services exports, merchandise exports, labour force and gross fixed capital formation on economic growth from the first period up to the tenth period.

Figure 3: Response of economic growth to generalized one S.D services export innovation
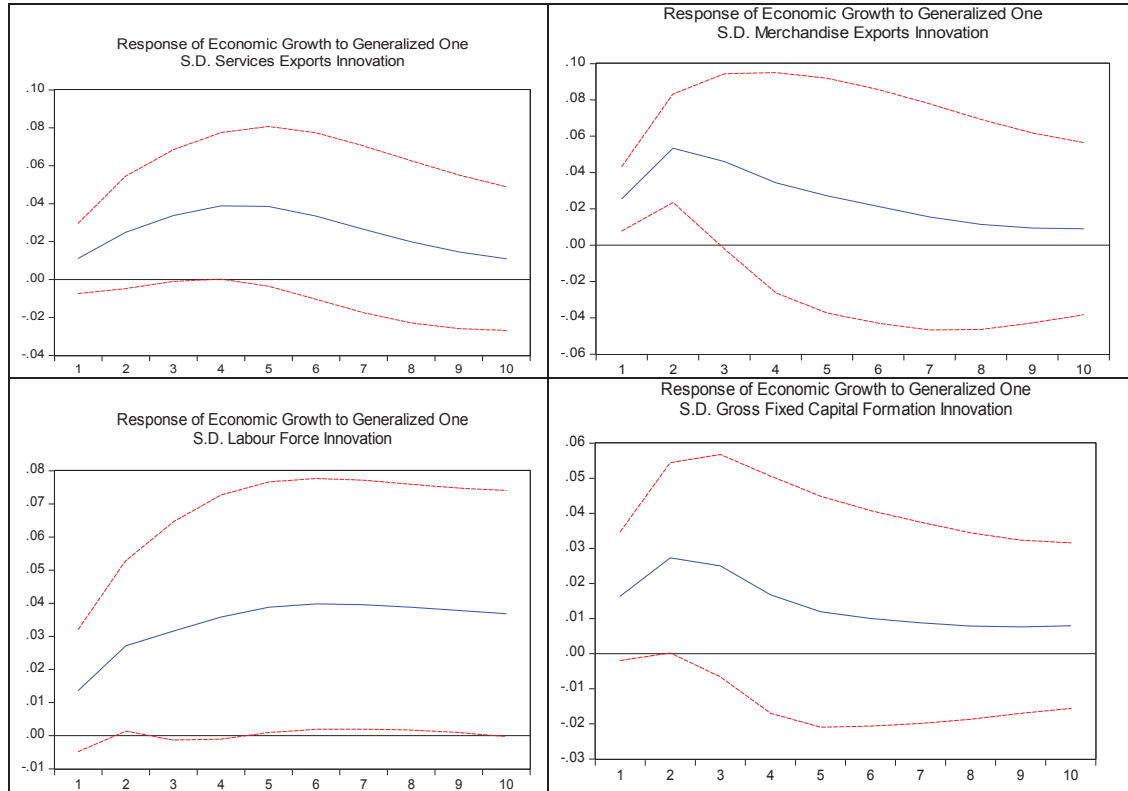

Table 10: VAR Granger Causality/Block Exogeneity Wald Tests based on Toda and Yamamoto's Technique

df	Null hypothesis	Chi-sq	ρ-value	Causality
1	Y does not cause XS	0.029897	0.8627	No
1	XS does not cause Y	3.916893**	0.0478	XS causes Y
1	Y does not cause XG	1.124321	0.2890	No
1	XG does not cause Y	5.787043*	0.0161	XG causes Y
1	Y does not cause K	0.116865	0.7325	No
1	K does not cause Y	0.559519	0.4545	No
2	Y does not cause L	0.398944	0.8192	No
2	L does not cause Y	1.797248	0.4071	No

*Note: * significant at1%; ** significant at 5%; *** significant at 10%; df=degree of freedom*

Table 11: Variance decomposition of economic growth

Period	S.E.	Y	K	L	XG	XS
1	0.055510	100.0000	0.000000	0.000000	0.000000	0.000000
2	0.084180	82.37375	2.148641	2.644822	11.97685	0.855939
3	0.103285	74.76945	2.757817	5.492751	12.99457	3.985417
4	0.117897	68.34776	2.334543	9.340514	11.49701	8.480176
5	0.130312	62.85205	1.932717	13.40194	9.924367	11.88893
6	0.140219	58.82416	1.677619	17.27607	8.678824	13.54333
7	0.148028	55.93392	1.510520	20.82476	7.788094	13.94270
8	0.154516	53.84563	1.388196	23.91666	7.222365	13.62714
9	0.160241	52.38922	1.291598	26.45723	6.870255	12.99170
10	0.165536	51.43477	1.211275	28.44788	6.626370	12.27970

6. Concluding summary

Information and Communication Technology (ICT) has changed the nature of the production frontier of services and in particular service exports, which particularly has resulted in a rapid increase in the service exports and growing share of services in GDP growth. In addition, the liberalization of the regulatory framework gave rise to innovation and higher exports from the services sector. All the service sectors played a part in this boom; growth was fastest in communications, banking, entertainment, hotels and restaurants, and distributive trade and business services. The analysis presented in this paper confirmed that, in the short and long run, services exports is positively related to economic growth even after controlling for a number of variables and testing for structural breaks in the model.

Services therefore have had a positive impact on economic growth due to the increasing sophistication from the spillover effects of ICT. In addition, the specialization from the export of services such as the film industry, banking services and telecommunication services has aided the growth of services exports in the country and encouraged the positive spillover effect on economic growth. For example, Nigeria has the third largest film industry next to Hollywood (US film industry) and Bollywood (India's film industry). Most of the Nigerian films produced in local languages are beginning to carry English and French subtitles to appeal to a wider audience. The industry is considered to be worth an estimated US$250 million although the real value is higher if we take into account the revenue lost to piracy. It is also estimated that it employs about 200,000 people directly as actors, producers, distributers and promoters. A further one million jobs are created in related retail segment, although these are mostly informal jobs. This is much greater than Bollywood which employs about 500,000 (AGORA, 2011). Nollywood has gained increasing popularity, pervading Africa, Europe and America as well as African diaspora communities. The largest contributing factor to this phenomenon is the ease of accessibility to Nollywood products through the online medium of pay per view. The popularity has therefore given Nollywood filmmakers access to a large international market. With respect to other African countries,

Nigerian films are shown on televisions across the continent, from Anglophone to Francophone countries. On M-NET, the South African based satellite television network, Nollywood films have become a stable with different channels allocated to different Nigerian languages (African Magic Yoruba, Hausa, Igbo, Urban, Showcase and Family among others). This is an indication that services exports offer a new channel for growth that may be of significance for Nigeria, especially when it is trying to get out of the slump in crude oil price and diversify her economy.

However, despite the rise in the importance of services, the dominance of the impact of merchandise exports over services exports was confirmed in the result. The impact of services exports on economic growth was also limited. Perhaps, this could be attributed to the presence of structural constraints such as an epileptic power supply that limits the impact of export-oriented services activities. In addition, export-oriented services activities in Nigeria tend to be concentrated on the less advanced services sectors that are poorly integrated with the rest of the domestic economy, and are often under the control of foreign economic agents. This implies that domestic resources should not be diverted toward exports in the context that the export sector constituted a goal per se, but rather in the framework of a comprehensive long-term growth-maximizing strategy. Given that service exports are positively related with economic growth, the future research agenda will require a better and more disaggregated data on service exports, treating them at par with data on goods exports. This is necessary in order to have a better understanding of how service exports affect growth. This will enable the identification of the determinants of services export and how they differ from the determinants of good exports sophistication and the channels through which service export sophistication affects growth.

Notes:

1. Gross fixed capital formation (formerly gross domestic fixed investment) includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. According to the 1993 SNA, net acquisitions of valuables are also considered capital formation. Data are in current U.S. dollars.

2. Labor force comprises people aged 15 and older who supply labor for the production of goods and services during a specified period. It includes people who are currently employed and people who are unemployed but seeking work as well as first-time job-seekers.

3. Merchandise exports show the f.o.b. value of goods provided to the rest of the world valued in current U.S. dollars.

4. Services refer to economic output of intangible commodities that may be produced, transferred, and consumed at the same time. Data are in current U.S. dollars.

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