

Drivers of Export Performance of Services: Empirical Evidence from Nigeria, 1981-2020.

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Abstract

Against the background of impressive growth of the value of export of services as well as its share in total value added as a result of the revolution in information and communication technology (ICT), this study empirically investigated the drivers of services export performance in Nigeria from 1981 to 2020. The export demand function introduced by Bahmani-Oskooee (1986) and adopted in this study with little modification was estimated using the ARDL Bounds testing approach to cointegration. The short-run and long-run results revealed that the value added by the services, real income of the world, human capital development, financial sector development and trade openness in services exerted a positive effects on services export. This result implies that the aforementioned variables were the utmost determinants of services export in Nigeria. The findings further showed that communication facilities, foreign direct investment and real effective exchange rate had negative effects on service exports growth in the long-run. In light of the evidences, the study recommends that government should establish a functional education curriculum for primary, secondary and tertiary level with ICT skill content and by so doing, it will improve its human capital hence, this will translate to more production and export of more sophisticated services. Also, effort should be channeled towards design and implementation of policies and programmes to expand and enhance the capacity of the financial system to extend credits at lower cost to the servicing industries; encourage domestic investment and foreign direct investment in the services sector of the economy so as to boost output from the sector and improve its global competitiveness, thereby boosting its export as well as contributions to economic growth.

Keywords: Drivers of exports, Services export, Export demand function, ARDL, Nigeria.

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I. Introduction

In recent years, the services sector has been identified as the sector with the capability to become a significant driver of sustained growth in Africa. Mattoo and Stern (2007) affirm that the services sector is the new engine of growth for most developing countries, due to its increasing importance in global international trade and investment. Following from above, economists have acknowledged the significance of services exports to international trade and economic growth since 1980s. Services exports are services rendered by individuals or firms resident in one country to individuals or firms from another. The World Trade Organization (WTO) (2010) classified trade in services to include business services, communication services, construction and related services, distributional services, education services, recreational, culture and sporting services, transport services and others. Under the General Agreement on Trade and Services (GATS), services trade was classified into four modes of supply: cross-border trade (mode 1), consumption abroad (mode 2), commercial presence (mode 3), and presence of natural persons (mode 4) (Mattoo and Stern, 2007)

Services are becoming a major dominant driver of economic growth and as well offer opportunities for labour reallocation and job creation in Nigeria. Report from Nigeria Economic Recovery and Growth Plan (ERGP) (2017) reveals that the services sector has been the biggest contributor to Nigeria's economy, growing at an average of 5.8% annually since 2010 till date. As of 2018, service sector contribution to Nigeria's GDP stood at about 60% with an average of about 33% of employment share compared to 7% for industry, with largest contributors being wholesale and retail trade contributing 17.6%, real estate contributing 12.4%, and telecommunication and information services contributing 10% (US. International Trade Commission (USITC), 2018). Be that as it may, a productive service sector is known to strengthen the performance of other sectors in the economy such as manufacturing. This is because the sector enables and facilitates the functioning of most sectors (manufacturing, industrial etc.), as most of these sectors rely majorly on the service sector to supply needed functions such as banking, accountancy, information and technology.

Over the past decade, the share of services export to total number of exports of goods and services have been resilient than goods export. Musibau (2018) pointed out that the liberalization of the regulatory framework gave rise to innovation and higher exports from the services sector in Nigeria. Therefore, the foreign exchange generation capacity of the sector to the country has also improved. For instance, the value of services exports rose from \$1.2 billion in 2009 to \$4.48 billion in 2019 (World Bank, 2019). Apparently, while Share of travel services to total services export was 50.67%, 40.73% and 29.28%; transport services was 25.82%, 27.635 and 39.77% and that of ICT was 16.29%, 9.69% and 9.35% in 2017, 2018 and 2019 respectively (Statista, 2020). Nevertheless, this rapid growth of trade in services is closely linked to the economy's globalization and technological advances in information and communication (ICT) that has made it possible for many services to be delivered across country boundaries.

This upswing in services export has shown the potentials for trade in services as a new channel for growth and diversification of Nigerian economy away from oil. Yet, there has been limited research on services export and economic growth as well as the explanatory variables responsible for the services exports growth in Nigeria, hence the need of this study seeking to determine the important factors driving services export in Nigeria. Empirical evidences suggests that certain factors have influenced services export; services supply value added, human capital development, foreign direct investment, income of the trading partners, communication facilities and openness of the economy (Pravakar, Ranjan, and Prabhu, 2013; Nasir and Kalirajan, 2016); Kodi, 2016; Siti, Shivee and Normaz, 2017; Olamide, 2018; Abasimi, Vorlak, Salim and Li, 2019). Much of the literature (Abasim *et al.*, 2018; Siti *et al.*, 2017) on determinants of services export is based on panel analysis of developed and developing countries. To the best of our knowledge, a single country such as Nigeria analysis is limited (Olamade, 2018) hence, deserves further study. However, the present study validated the study of Olamide (2018) by including human capital, communication facilities and trade openness in services as one of the critical determinants of services exports in Nigeria. This is premised on the fact that Saez and Goswami, (2010) reported that export of business services tends to be highest in countries where the population is more educated. Also, increased ICT development and use by the population has the potential to improve the productivity and export of services. Amid this literature dearth, this study contributes to the growth enhancing factors of services empirics at the country level by investigating the drivers of export performance of services in Nigeria.

The study is organized as follows: Section 2 concentrates on literature review and theoretical framework. Section 3 describes the methodology. Section 4 dwells on the presentation of data, analysis and discussion while section 5 will focus on conclusion and policy recommendations.

II. Literature Review

2.1. Empirical Literature

There have been numerous empirical investigations on the services exports determinants at cross-country and country-specific level. The results of these studies vary from one to the other; owing to the difference in methodologies and time frames as well as the variables captured in the models. For instance, Grunfeld and Moxnes (2003) utilized the model of gravity to the dual export of services and foreign direct investment flows using data sourced from the Organization for Economic Co-operation and Development (OECD). The results suggested that the effects of the ordinary gravity model found in commodity trade studies also apply to services. Also, they found that having a Free Trade Area (FTA) is not great in the case services. Specifically, trade between the two countries is positively related to its size and is negatively related to the distance between them and barriers to services in the importing country.

Also, Freund and Weinhold (2004) made an effort to use detailed data from 31 countries and 14 industries to determine whether the internet has a significant impact on actual international service delivery. They estimated a general model of trade in services across countries and investigated whether internet penetration data, measured by the number of internet hosts in a country, is statistically significant. Overall, the findings confirm that the internet is related to the growth of trade in services.

Furthermore, employing the Partial Least Square (PLS) methodology, Sichtmann and Selasinsky (2010) investigated the drivers of service export performance and empirically tested a theoretical framework of the antecedent and performance implications of cross-border customer relationships in the context of service exports using survey data from 142 business-to-business service providers. The results showed that cross-border customer relationships had a positive impact the export performance of services. The results also revealed a positive link between relationship marketing activities and export commitment, customer orientation and managers cross-cultural skills. The study among other things recommended that customer-oriented culture with their firms be developed by service providers and conduct research to understand cross-border customer needs so as to enable them provide value to the customers.

Likewise, Mkpado (2013) examined the relationship between service trade and non-oil exports in Nigeria during the period of 1980 to 2010. Using descriptive, correlation and regression analysis, the results

showed that foreign direct investment, domestic services GDP, government capital expenditure on services (transport, communication and education) and agricultural credit had a positive impact on exportable services in Nigeria.

In assessing the determinants of export service in India, Pravakar *et al.* (2013) utilized the Autoregressive and Distributed Lag (ARDL) and Dynamic Ordinary Least Square (DOSL) technique over the period of 1980 to 2011, using annual time series data sourced from World Bank, World Development Indicator and RBI database. The empirical results revealed that human capital development, infrastructure stock, manufacturing exports, exchange rate, foreign direct investment, financial development, world demand and institutions constituted aggregate determinants of service exports in India. However, while factors such as institution, financial development, and foreign direct investment significantly influenced the modern service sector, traditional factors such as exchange rate, infrastructure stock, manufacturing exports and world demand have less impact on the traditional export services sector. The study recommended that infrastructure stock (that is power, transport and communication) be developed so as to make manufacturing and services exports competitive.

On the same subject, Covaci and Moldovan (2015) investigated the determinants of aggregate service export and seven subcategories (transport, travel, communication, computer and information, financial construction and other business services) in Lithuania using a panel dataset for 2003 to 2012 sourced from Eurostat database. In the study, a gravity model was estimated from Poisson Pseudo-Maximum Likelihood (PPML) approach. The estimated results revealed that GDP of exporting country and common spoken language exerted a positive influence on trade in services. Also, time zones differences, membership to European Union (EU) and human capital were found to have different effects across service subcategories while remoteness of the destination country was insignificant for the majority of service subcategories, except for computer and information services, transport services and other business services.

Using a stochastic frontier gravity model and the Maximum Likelihood estimation technique, Nasir and Kalirajan (2016) examined the export performance of emerging and developed Asian economies in information and communication technology-enabled modern services sourcing data from both primary and secondary. Variables used in the study includes: exporters real GDP, importers real GDP, internet subscribers per 100 person, stock of tertiary graduates, language, distance between them and colony. Their results underscored that the performances of emerging economies in South Asian and the Association of Southeast Asian Nations in terms of realization of export potential are weaker than those of developed economies in North America and Europe. Specifically, the results showed the number of graduates and quality of ICT infrastructure in emerging economies are the key factors in realizing services export potential. It was recommended that behind-the border constraints be removed and advanced technology adopted by emerging economies in order to catch up with high performing developing economies.

Likewise, Pham and Vu (2016) employed the gravity model to investigate the determinants of service trade flows between Vietnam and the European Union over the periods of 2002 to 2011 using panel data sourced from World Bank, World Development Indicator and Organization for Economic Co-operation and Development. Total services trade was expressed as a function of GDP per capita, population, distance, real effective exchange rate, colonial relationship and former membership of the Council of Mutual Economic Assistance. The fixed effect results revealed that the service trade flows between Vietnam and its European partner countries were determined by the gap in GDP per capita between Vietnam and the EU countries, the population of the EU countries, the real effective exchange rates, the colonial relationship and former membership of the Council of Mutual Economic Assistance.

Equally, Kodi (2016), employed the Ordinary Least Square (OLS) method to investigate the determinants of services exports in Kenya during the period of 1970 to 2015. The model built for the study specified aggregate commercial services exported by Kenya as a function merchandised GDP, service GDP, foreign direct investment, real exchange rate, terms of trade, secondary school enrollment, trade liberalization and trade openness. The study used data sourced from World Bank, World Development Indicator database. The results of the finding showed that merchandize goods and real exchange rate significantly influenced the services export in Kenya while value of service GDP, trade liberalization and trade openness had negative impact on service export. It was recommended that barriers associated with export services be removed in order to promote export of services.

In another similar study, Siti *et al.* (2017) applied the export demand function introduced by Bahmani-Oskooee (1986) to investigate the determinants of service exports in some selected Asian countries (China, Hong Kong, South Korea, India, Iran, Indonesia, Malaysia, Philippines, Singapore, Thailand, Kuwait, Saudi, Arabia, and Turkey) using annual series data spanning from 1985-2012 sourced from World Bank World Development Indicator and UNCTAD statistical database. Their results revealed that exchange rates, foreign income, foreign direct invest, services and communication facilities, added value to export of services affects service exports from the selected developing Asian countries. They recommend that to strive globally through

services export, these countries should develop and enhance their potentials by focusing on important and vital export service indicators.

Additionally, employing Autoregressive and Distributed Lag (ARDL) model technique over the period 1981 to 2017, Olamide (2018) investigated the structure, characteristics and determinants of services export in Nigeria, using annual time series data sourced from World Bank World Development Indicator database. The study highlighted five key indicators that play vital role in Nigeria's service export sector, specifically, the empirical results showed that real income of the rest of the world and services valued added are the paramount determinants of services export in Nigeria. However, variables such as real effective exchange rate, foreign direct investment, real income of the rest of the world and services valued added significantly influenced the service export sector whereas, domestic credit provided by the financial sector and value of export from Nigeria have negative impact on service export sector. The study recommends that business-friendly environment and appropriate incentive structure will stimulate the required development in services sector.

Similarly and adopting the export demand function introduced by Bahmani-Oskooee (1986), Abasimi *et al.* (2019) investigated the determinants of export of services in some selected West African countries (Ghana, Benin, Cote D'Ivoire, Gambia, Mali, Niger, Sierra Leon, Togo, Nigeria, and Burkina Faso) from 1990 to 2012, using panel data set sourced from World Bank World Development Indicator and United Nations Conference on Trade and Development. The empirical results pointed out that foreign direct investment, communication facilities, real effective exchange rate and gross domestic product had a positive and significant relationship with service exports from the selected countries. Also, the findings revealed that value added by the services had no impact on services export from the selected countries. The study therefore, recommends that efforts to widen opportunities to strive in exporting services worldwide should be channeled through exploiting the potentials of these countries.

It is evident from the literature review above that while a plethora of empirical studies has been undertaken to investigate the determinants of service export, the results have been mixed and inconclusive. Besides, studies on the determinants of services export executed in the context of Nigeria are quite limited and calls for further studies. On the other hand, based on current evidence, the factors that affect services exports may be internal and external. In view of the above mentioned, the study of Olamide (2018) did not include human capital development, communication facilities and openness to trade in services as one of the most important variables while pondering on the determinants of services export capacity in Nigeria. Our study is a departure from the study of Olamide (2018) in the sense that we validated the inclusion of human capital development, trade openness in services and communication facilities which are very crucial in the study of this nature. The inclusion of the aforementioned variables was premised on the ground that a country's level of human development indicators and communication facilities are an important and useful indicator of how much it is likely to benefit from international trade in services. Thus, this study intends to bridge these knowledge gaps by investigating the empirical drivers of services export in Nigeria in isolation.

2.1. Theoretical Framework

There are numerous theories that underpin international trade in goods but that of trade in services has not been developed. Nevertheless, Hindley and Smith (1984); Deardorff (1985) were of the view that the standard concepts of comparative advantage and product specialisation could be applied to services trade to determine the patterns of trade in services. This has been supported by Sapir and Winter (1994) who argued that, 'under perfect competition', the theory of comparative advantage could be applied to international trade in services. Therefore, in this study, the comparative cost advantage used to explain trade in goods will also be applied in explaining the determinants of patterns in the trade of services and of services export too.

The comparative advantage model of trade emerged as a result of the fault identified by David Ricardo (1817), in the absolute advantage theory. The flaw is whether there will still be a benefit to trade and if trade will ever occur if a country has no absolute advantage in the production of any product. The theory advises that a country which is more efficient in the production of a certain service than other countries should specialize in the production of the service whose production cost is the lowest and relatively more efficient compared with the production of all other services and by so doing, she will increase her output of the services and trade with other countries in which case she exports her surplus quantity of the services and imports those service in which its comparative cost are high while the less efficient country should specialize in the production and exportation of the services in which it is relatively less efficient (i.e. where its comparative disadvantage is least) (Obioma, 2002).

He underscored that a country can specialize in the efficient production of services through comparative advantage (Henderson, 1993). In the perspective of comparative advantage, specialization spearheads better living standards for all and sundry and increased global production in the real world. Under this idea, markets are created by exports for producers where countries are able to expand their production and significantly increase their economies of scale as a result of their comparative advantage in certain areas of trade

(Simon and Sheefeni, 2016). These economies of scale result from large scale production of a country at a very low cost in comparison to all other countries in the same region.

Under the assumption of similar tastes in both countries, labour being the only factor of production and homogeneity of labour units, the principle of comparative cost is based on the differences in production costs of similar commodities in different countries which arise from their differences in their factor endowment or technical progress. The interesting thing about this theory is that it shows how a country without any absolute cost advantage in any sector can benefit from trade by specializing in industries at which it is least bad. The argument here is that such specialization and subsequent trade is beneficial both to the trading partners in particular and the world economy at large. Concisely increasing tradability in services allows for cross-border exchange of services such as professional and business services which is beneficial and leads to growth and development by the trading nations. This form of trade facilitates export diversification by allowing developing countries to access new markets and new materials which open up new production possibilities. According to a report from European commission, 2015, international trade also enhances competitiveness by helping developing countries reduce the cost of inputs, acquire finance through investments, increase the value added of their products and move up the global value chains. One of the criticisms of the comparative advantage model is the unrealistic assumption of labour as the only factor of production.

Nigeria is well placed in the entertainment industries especially Nigerian films and music which now transverses around the world. Also the country's rich bio-diversity and eco system, traditional cultural diversity, historical cities, and arts and craft present a big edge for her tourism industry over other countries. In this case, comparative cost advantage is believed to favour diversification of Nigeria economy simply by specializing in producing more of her "best". Therefore, Nigeria should comfortably rely on producing and exporting of services than depending on exhaustible oil which she has no control over as export of services enables countries to secure capital, technology transfer and exchange of services from other parts of the world. In this way, export stimulates growth and serves as engine of growth. Therefore, this study adopts the comparative cost advantage theory as a working theoretical framework.

III. Methodology

3.1. Data Sources

We employed annual time series data from 1981 to 2020 for the study. The choice of the variables was informed by economic theory, extant literature and data availability. The data were drawn from World Bank's (WB), World Development Indicators (WDI) database and Central Bank of Nigeria's Statistical Bulletin (various issues) 2014 and 2021 Editions respectively. The variable name, definition and/or proxy, source and expected sign are shown in Table 1.

Table1. Variable name, proxies, sources and apriori expectations.

| Variable Name | Definition and/or proxy | Source | Apriori Expectation |
|---|--|---|---------------------|
| Dependent Variable | | | |
| Services Export | Value of services export from Nigeria (SEX) (BOP, Current US\$) in logarithm form. | WB, World Development Indicator, 2020 | Dependent Variable |
| Dependent Variable | | | |
| Services Value Added | Services value added (SVA) (Proxy for Services Production) (% of GDP) | WB, World Development Indicator, 2020 | + |
| Communication Facilities | Communication facilities (CMF) (Sum of fixed telephone and mobile cellular subscriptions per 100 people) | WB, World Development Indicator, 2020 | + |
| Human Capital Development | Human capital development (HCD), Measured by Government Expenditure on Education (₦' Million) in logarithm form. | Central Bank of Nigeria's Statistical Bulletin (various issues) 2014 and 2021, Editions respectively. | + |
| Financial Sector Development | Financial sector development (FSD) Measured by the Domestic Credit Provided by the Financial Sector (% of GDP) | WB, World Development Indicator, 2020 | + |
| World Real Income | World income (WRI) Measured as World RGDP (Constant 2010 US\$) | WB, World Development Indicator, 2020 | + |
| Degree of Openness to Trade in Services | Ratio of the sum of services exports and imports to GDP ($X + M/GDP$) | WB, World Development Indicator, 2020 | ± |
| Foreign Direct Investment | Foreign direct investment, net inflows (% of GDP) | WB, World Development Indicator, 2020 | + |
| Real Effective Exchange Rate | Real Effective Exchange Rate (REER) (2010 = 100) in logarithm form | WB, World Development Indicator, 2020 | - |

3.2. Model Specification

This study builds on Bahmani-Oskooee (1986) model which posits that a country's total export to the rest of the world is a log-linear function of: quality of export (X), weighted average of the real national product (GNP) of a country's trading partners (TW), export price (PX), weighted average of the export prices of a country's trading partners (PXW) and export weighted effective exchange rate (E). Simply, the hypothesized functional relationship of the Bahmani-Oskooee (1986) export demand function is:

$$\ln X_t = a + b \ln YW_t + c \ln \left(\frac{PX}{PXW} \right)_t + d \ln E_t + V_t \quad 1$$

Simply, the above export demand function implies that exports are influenced by foreign income, relative prices and exchange rate. Based on the reviewed literature, we extended equation 1 by incorporating six relevant policy variables that fundamentally affect services export in Nigeria. The weakness of our model is the non-inclusion of services export prices and weighted average of the services export prices of a country's trading partners that can significantly affect the export growth of services in developing countries like Nigeria besides the six variables employed. However, our study added the services value added, communication facilities, human capital development, financial sector development, degree of openness to trade in services and foreign direct investment which may have a significant effect on services export growth nexus in Nigeria. Therefore, following Bahmani-Oskooee (1986) with some modifications, the functional form of the model in this study is stated as follows:

$$SEX = f(SVA, CMF, HCD, FSD, WRI, TOPEN, FDI, REER) \quad 2$$

Taking natural log of some variables in equation (1), and specifying it in econometric form, we transform it to:

$$\begin{aligned} \ln(SEX_t) = & \alpha_0 + \alpha_1 SVA_t + \alpha_2 CMF_t + \alpha_3 \ln(HCD_t) + \alpha_4 FSD_t + \alpha_5 WRI_t \\ & + \alpha_6 TOPEN_t + \alpha_7 FDI_t + \alpha_8 \ln(REER_t) + \varepsilon_t \end{aligned} \quad 3$$

Where:

SEX_t = Aggregate value of services export at time t

SVA_t = Services value added at time t

CMF_t = Communication facilities at time t

HCD_t = Human capital development at time t

FSD_t = Financial sector development at time t

WRI_t = World real income at time t

$TOPEN_t$ = Trade openness at time t

$REER_t$ = Real effective exchange rate at time t

Log, as attached to a variable, indicates its logarithm value

α_0 = Intercept or constant coefficient

$\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6, \alpha_7, \alpha_8$ = the parameters or coefficients to be estimated

ε_t = Error term or stochastic variable accounting for other variables affecting the dependent variables (SEX).

However, because of highly skewed values, the variables SEX, HCD and REER were logged. The logarithmic transformation was meant to transform them into a dataset that is normalized to avoid the problem of heteroscedasticity. The remaining regressors were unlogged since they did not depict highly skewed values. The apriori expectation is that openness here can have positive or negative impact on services export growth. This is premised on the fact that Nigerian services sector development is at its infant stage of development, therefore, competition in international services trade can stifle Nigeria's services export growth, leading to adverse effect on services export growth. But in this study, the regression coefficients of the remaining variables are expected to exhibit the signs stated in Table 1 above.

Before the estimation of the equation of services export growth, the time series properties of the data were checked through the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests. Also, diagnostic and stability tests were employed to check the goodness of fit and model adequacy of our specification. Thereafter, the estimation of the services export growth equation was done through the Autoregressive Distributed Lag (ARDL) Bounds test to co-integration proposed first by Pesaran and Shin (1999), and developed by Pesaran, Shin and Smith (2001). The justification for the selection of this approach is based on the advantage of the ARDL for revealing the short-run dynamics apart from the estimated long-run coefficients. The computation of the ARDL statistical procedure was done with version 9 of the E-views econometric software. Restating Equation 2 into the ARDL model in line with the framework of Pesaran *et al.* (2001), we have:

$$\begin{aligned} \Delta \text{Log}(SEX_t) = & \alpha_0 + \sum_{j=0}^k \alpha_{1,i} \Delta \text{Log}(SEX_{t-1}) + \sum_{j=0}^k \alpha_{2,i} \Delta SVA_{t-1} + \sum_{j=0}^k \alpha_{3,i} \Delta CMF_{t-1} \\ & + \sum_{j=0}^k \alpha_{4,i} \Delta \text{Log}(HCD_{t-1}) + \sum_{j=0}^k \alpha_{5,i} \Delta FSD_{t-1} + \sum_{j=0}^k \alpha_{6,i} \Delta WRI_{t-1} + \sum_{j=0}^k \alpha_{7,i} \Delta TOPEN_{t-1} \\ & + \sum_{j=0}^k \alpha_{8,i} \Delta FDI_{t-1} + \sum_{j=0}^k \alpha_{9,i} \Delta \text{Log}(REER_{t-1}) + \beta_1 \text{Log}(SEX_{t-1}) + \beta_2 SVA_{t-1} + \beta_3 CMF_{t-1} \\ & + \beta_4 \text{Log}(HCD_{t-1}) + \beta_5 FSD_{t-1} + \beta_6 WRI_{t-1} + \beta_7 TOPEN_{t-1} + \beta_8 FDI_{t-1} + \beta_9 \text{Log}(REER_{t-1}) + \varepsilon_t \end{aligned} \quad \text{----- 4}$$

Where k denotes lag lengths for each of the variables, Δ symbolizes the first difference operator, α_0 signifies the drift, ε_t is the disturbance term, t represents time, t-1 is lag one (previous year), $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6, \alpha_7, \alpha_8, \alpha_9$ are coefficients of the short-run parameters whereas $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \beta_7, \beta_8, \beta_9$ coefficients of the long-run parameters.

According to Pesaran *et al.* (2001), two procedures are involved in estimating equation 3; the first step is testing for the long-run relationship and the next step is the estimation of long and short-run parameters using the OLS and Error Correction Model (ECM) respectively. The bounds test was employed to examine the existence of a long-run relationship between SEX, SVA, CMF, HCD, FSD, WRI, TOPEN, FDI and REER. We made use of critical value bounds of the F-statistic proposed by Pesaran *et al.* (2001) to ascertain the existence or absence of co-integration among the variables. In conducting the test, we compared the F-statistic with both the upper 1(1) and lower 1(0) critical values at the 5% level. In equation 3, the parameters that would be tested under the null and alternative hypotheses of absence and presence of long-run relationships between services export and its determinants are specified as:

$$H_0 : \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = \beta_8 = \beta_9 = 0$$

Against

$$H_1 : \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq \beta_7 \neq \beta_8 \neq \beta_9 \neq 0$$

The decision is: if the computed F-statistic exceeds the upper critical bounds, the null hypothesis would be rejected implying that there is presence of a long-run relationship among the variables; but if the computed F-statistic lies below the lower critical bounds, the null hypothesis would be accepted, indicating that there is absence of co-integration. However, if the computed F-statistic falls between the lower and upper critical bound values, the result becomes inconclusive. Nevertheless, if the presence of co-integration was concluded among the variables in the model, the short-run and long-run parameters, depicting the short-run and long-run impacts of each variable on services export growth respectively would be evaluated. Based on equation 4, the long-run elasticities can be estimated using OLS, hence we:

$$\begin{aligned} \text{Log}(SEX_t) = & \alpha_0 + \sum_{j=0}^k \alpha_{1,i} \text{Log}(SEX_{t-1}) + \sum_{j=0}^k \alpha_{2,i} SVA_{t-1} + \sum_{j=0}^k \alpha_{3,i} CMF_{t-1} + \sum_{j=0}^k \alpha_{4,i} \text{Log}(HCD_{t-1}) \\ & + \sum_{j=0}^k \alpha_{5,i} FSD_{t-1} + \sum_{j=0}^k \alpha_{6,i} WRI_{t-1} + \sum_{j=0}^k \alpha_{7,i} TOPEN_{t-1} + \sum_{j=0}^k \alpha_{8,i} FDI_{t-1} + \sum_{j=0}^k \alpha_{9,i} \text{Log}(REER_{t-1}) + \varepsilon_t \end{aligned} \quad \text{---- 5}$$

After estimating the long-run coefficients, the estimation of the short-run coefficients which is the final step would be done by constructing an error correction model associated with the long-run estimates which was used to establish causality as depicted below:

$$\begin{aligned} \Delta \text{Log}(SEX_t) = & \alpha_0 + \sum_{j=0}^k \alpha_{1,i} \Delta \text{Log}(SEX_{t-1}) + \sum_{j=0}^k \alpha_{2,i} \Delta SVA_{t-1} + \sum_{j=0}^k \alpha_{3,i} \Delta CMF_{t-1} \\ & + \sum_{j=0}^k \alpha_{4,i} \Delta \text{Log}(HCD_{t-1}) + \sum_{j=0}^k \alpha_{5,i} \Delta FSD_{t-1} + \sum_{j=0}^k \alpha_{6,i} \Delta WRI_{t-1} + \sum_{j=0}^k \alpha_{7,i} \Delta TOPEN_{t-1} \\ & + \sum_{j=0}^k \alpha_{8,i} \Delta FDI_{t-1} + \sum_{j=0}^k \alpha_{9,i} \Delta \text{Log}(REER_{t-1}) + \Psi ECM_{t-1} + \varepsilon_t \end{aligned} \quad 6$$

Where $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6, \alpha_7, \alpha_8, \alpha_9$ are the coefficients of the short-run dynamics of the model's convergence to equilibrium while Ψ is the speed of adjustment to long-run equilibrium following a shock to the system which is anticipated to be negative and significant to verify the existence of co-integration among the variables and ECM_{t-1} is the error correction term which shows how disequilibrium in output can be adjusted in the short-run. The ECM coefficient shows the speed with which the system converges to equilibrium. However, after introducing shocks in the system in the short-run, the rate of adjustment back to long-run equilibrium is determined by the magnitude of Ψ . Other variables are as defined earlier.

IV. Data Presentation, Analysis And Discussion Of Result

4.1. Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) Unit Root Tests Results on Series

In all time series analysis, examining the stationarity of the series is essential so as to avoid regressing non stationary variables which results to spurious regression results. In this study, the tests are evaluated under the framework of the Augmented Dickey-Fuller (ADF) and Philips-Perron (PP). The null hypothesis of no stationarity against the alternative was tested at 5% critical value. Results of the findings displayed in Table 2 below show that the variables were either 1(0) or 1(1). The variables (FDI, LREER) were integrated at the level 1(0), whereas the remainders were integrated at the first difference 1(1). The ADF results were validated through the PP unit root test. The findings depict that the results of the PP unit root test are a corroboration of those realized utilizing the ADF. Therefore, the unit root test results of 1(0) and 1(1) exhibited by the variables justify the usage of the ARDL technique to estimate the parameters of the model.

Table 2. ADF and PP unit root tests results.

| Variable | Augmented Dickey-Fuller (ADF) | | | | Philip-Perron (PP) | | | |
|----------|-------------------------------|----------------------------|-------------------|----------------------|--------------------|----------------------------|-------------------|----------------------|
| | At level | 1 st Difference | 5% critical value | Order of Integration | At level | 1 st Difference | 5% critical value | Order of Integration |
| LSEX | -1.0543 | -4.9774** | -2.9411 | 1(1) | -1.2295 | -5.0119** | -2.9411 | 1(1) |
| SVA | -1.4843 | -4.8299** | -2.9411 | 1(1) | -1.6430 | -4.8299** | -2.9411 | 1(1) |
| COMM | -0.0552 | -3.6684** | -2.9411 | 1(1) | -0.3214 | -3.6538** | -2.9411 | 1(1) |
| LHCD | -0.6799 | -7.7398** | -2.9411 | 1(1) | -0.6032 | -7.6629** | -2.9411 | 1(1) |
| FSD | -2.2692 | -5.8791** | -2.9458 | 1(1) | -1.6588 | -7.1118** | -2.9411 | 1(1) |
| WRI | -1.5506 | -6.9508** | -2.9411 | 1(1) | -0.9755 | -6.9229** | -2.9411 | 1(1) |
| OPEN | -2.3200 | -7.7181** | -2.9411 | 1(1) | -2.3200 | -8.3386** | -2.9411 | 1(1) |
| FDI | -3.8340** | - | -2.9390 | 1(0) | -3.7671** | - | -2.9390 | 1(0) |
| LREER | -3.0385** | - | -2.9411 | 1(0) | -4.3210** | - | -2.9411 | 1(0) |

Source: Author's Compilation (2022) using E-Views 9; Note: ** denotes statistical significance at the 5% level of significance.

4.2. Results of the Bounds Test for Co-integration

Having ascertained that the series are integrated of order zero 1(0) and order one I(1), we proceed to conduct a test for long-run relationship among the variables. The summary of the results of co-integration is displayed in Table 3.

Table 3: Co-integration Results from Bound Tests

| Test Statistic | Value | Lag | Significance level | Bound critical values | |
|----------------|----------|-----|--------------------|-----------------------|-------------|
| | | | | Lower Bound | Upper Bound |
| F-statistic | 4.117515 | 8 | | 1(0) | 1(1) |
| | | | 1% | 2.79 | 4.1 |
| | | | 5% | 2.22 | 3.39 |
| | | | 10% | 1.95 | 3.06 |

Source: Author's Compilation (2022) using E-Views 9. Note: Lower and Upper Bounds critical values for the F-statistic at 5% significance level were taken from Pesaran *et al.* (2001).

Table 3 reveals the results of the bounds tests for the existence of co-integration between services export and the causal variables. From these results, the calculated F-statistic for the joint test of the parameters $a_1, a_2, a_3, a_4, a_5, a_6, a_7$ and a_8 was 4.117515. The critical value bounds were 2.22 and 3.39 at the 5% significance level. Therefore, the null hypothesis of no co-integration between services export and the explanatory variables in the model is rejected since the calculated F-statistic (4.117515) is greater than the upper bound I(1) (3.39) of the critical value band at the 5% significance level. We conclude that there is a long-run relationship among the variables in the model. Hence, we proceed further to estimate the long and short-run impacts in equations 5 and 6 above through the ARDL co-integration method.

4.3. Long-Run Relationship Results

Table 4: Estimated Long-Run Coefficients Results

Dependent Variable: Log (SEX)

| Variables | Coefficient | Std. Error | t-Statistic | Prob. |
|-----------|-------------|------------|-------------|--------|
| C | 21.054866 | 2.798010 | 7.524943* | 0.0000 |
| SVA | 0.046198 | 0.043475 | 1.062637*** | 0.0981 |
| CMF | -0.035250 | 0.024028 | -1.467026 | 0.1548 |
| LHCD | 0.065765 | 0.195685 | 0.336075 | 0.7396 |
| FSD | 0.075050 | 0.083700 | 0.896650 | 0.3785 |
| WRI | 1.053942 | 0.731877 | 1.440054*** | 0.0623 |
| OPEN | 0.032820 | 0.020091 | 1.633556 | 0.1149 |
| FDI | -0.704617 | 0.304909 | -2.310905** | 0.0294 |
| LREER | -1.078953 | 0.313948 | -3.436720* | 0.0021 |

Source: Summary of result compiled by the authors (2022) using E-Views 9. Note *, ** and *** denotes significance at 1%, 5% and 10% respectively.

The ARDL long-run results in Table 4 above show that services value added (SVA) has a positive and significant effect on services export growth in Nigeria which is in line with the theoretical expectation. This means that growth in services supply value added drives export performance of services in Nigeria in the long-run. The result indicates that a unit increase in services value added will lead to a 0.05% increase in services export. This finding aligns with the submissions of Siti *et al.* (2017); and Olamide (2018). One terrifying long-run result which defies expectation is the influence of communication facilities (CMF) on services export growth. Communication facilities exerted a negative and insignificant effect on services export growth in Nigeria contrary to expectation. This implies that communication facilities do not determine export performance of services in Nigeria. The result suggests that a unit increase in communication facilities would reduce services export by 0.04%. This finding contravenes those of Freund and Weinhold (2004); Nasir and Kalirajan (2016); Siti *et al.* (2017); Olamide (2018) and Abasimi *et al.* (2019). The discrepancy in the result could be due to the fact that our study measured communication facilities with number of fixed line users while the former measured it with the number of internet users.

On the other hand, human capita development (HCD) has a positive effect on services export growth as expected as improvement in the education and training system which produce skilled labour increases competitiveness in the international market, thereby inducing services export.. This implies that human capital development determines services export in Nigeria in the long-run. The coefficient of HCD reveals that a unit increase in HCD will result in 0.07% increase in services export growth in the long-run. However, the non-significance of HCD variable indicates the need for measures to be put in place to ensure that budgetary allocations to the education and health sectors are well utilized to promote performance. This finding is consistent with the submission of Pravakar *et al.* (2013). Also financial sector development (FSD) measured by domestic credit by banking sector exerted a positive but insignificant effect on services export growth in Nigeria in the long-run. This implies that a unit increase in FSD will increase services export by 0.07%. Therefore, access to finance at low interest reduces the variable cost (freight and transportation cost) of exporting services thereby increasing the competitiveness of services export. This result is in line with Pravakar *et al.* (2013) but disagrees with the submission of Olamide (2018).

World real income (WRI) has a positive and significant effect on services export growth in line with theoretical expectation. The estimated results show that WRI is the largest determinant of foreign demand for Nigeria's services in the long-run. A unit increase in WRI will lead to a 1.05% increase in services export. This result conforms to the findings of Greenfield and Moxnes (2003); Pravakar *et al.* (2013); Siti *et al.* (2017); Olamide (2018) and Abasimi *et al.* (2019). Furthermore, the long-run results revealed that trade exerted a positive though insignificant effect on services export in Nigeria. This finding showed that a unit increase in openness to trade in services (OPEN) could increase services export by 0.03%.

Foreign direct investment (FDI) has a negative and significant effect on services export growth contrary to expectation. This implies that a unit increase in FDI causes Nigeria's services export to fall by 0.07% units. It further shows that FDI does not determine services export growth in Nigeria. One plausible reason for the observed result could be the poor quality of services trade in Nigeria. Olamide (2018) asserts that transport services and travels dominate Nigeria's services export which invariably makes the services sector less attractive for FDI. Again, unconducive business environment in Nigeria caused by Boko Haram activities in the North, Unknown Gunmen in the East, Youth restiveness in the South and lack of basic infrastructures to make trading in services attractive could be a contributory factor. The significance of the FDI variable is an indication that the level of FDI in the economy is adequate. However, to perform optimally and have the desired sign, there is need for favourable government policies and incentives to stimulate the private sector giving room for FDI growth required to steer trade in services to the desired level. This result is in sharp contrast with the results of Francois *et al.* (2007); Mkpado (2014); Pravakar *et al.* (2013); Siti *et al.* (2017) and Abasimi *et al.* (2019) but in

line with the findings of Olamide (2018). Expectedly, the real effective exchange rate has a negative and significant effect on services export growth in Nigeria. This shows that appreciation of domestic currency adversely affects exports. Joshi and Little (1994); Srinivasan (1998); Sharma (2003) asserts that appreciation of the real effective exchange rate reduces export which indicates a loss of trade competitiveness, hence, a negative link between the appreciation of real effective exchange and services export demand is expected.

4.4. Results of the Short-Run Dynamic Model

Table 5: Estimated Short-Run Error Correction Model Results

| Dependent variable: Log(SEX) | | | | |
|---|--------------------|-------------------|--------------------|--------------|
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| D(SVA) | 0.019188 | 0.018271 | 1.050204* | 0.0037 |
| D(CMF) | -0.014641 | 0.009860 | -1.484931 | 0.1501 |
| D(LHCD) | 0.027315 | 0.083422 | 0.327436** | 0.0461 |
| D(FSD) | 0.015705 | 0.028896 | 0.543497 | 0.5916 |
| D(WRI) | 0.437754 | 0.313169 | 1.397821 | 0.1744 |
| D(OPEN) | 0.013632 | 0.006943 | 1.963296** | 0.0608 |
| D(FDI) | -0.075340 | 0.051975 | -1.449550 | 0.1596 |
| D(FDI(-1)) | 0.165498 | 0.048679 | 3.399762* | 0.0023 |
| D(LREER) | -0.448142 | 0.121725 | -3.681598* | 0.0011 |
| ECM _{t-1} | -0.415349 | 0.104169 | -3.987259* | 0.0005 |
| ECM= LSEX - 0.0462*SVA - 0.0352*COMM + 0.06558*LHCD + 0.0750*FSD +1.0539*WRI + 0.0328*OPEN - 0.7046*FDI - 1.0790*LREER + 21.0549C | | | | |

Source: Summary of result compiled by the authors (2022) using E-Views 9. Note * and ** denotes significance at 1% and 10% respectively.

Table 5 shows that the model performed satisfactorily with most of the explanatory variables having the expected sign with value of services export in Nigeria. Most of the variables were significant and their results were in line with apriori expectations. Change in services value added in the current year maintained its positive and significant effect with services export growth in the short-run consistent with the long-run results. The result suggests that if services valued added goes up by 1unit, services export will increase by 0.02%. Also, change in communication facilities of the current year had a negative and insignificant effect on services export growth in the short-run in line with the results of the long-run growth equation. This means that services export would decrease by 0.01% should communication facilities be increased by 1unit.

However, change in the log of human capital development of the current year had a positive and significant effect on services export in the short-run as in the long-run equation. This result implies that human capital development determine services export growth in the short-run in Nigeria. The result means that if human capital development is increased by 1 unit, services export would increase by 0.03%. In addition, change in financial sector development exerted a positive but insignificant effect on services export in Nigeria in the current year. The result suggests that financial sector development determine services export growth in Nigeria in the short-run which is also in line with the results of the long-run equation. This implies that services export would increase by 0.02%, should financial sector development be increased by 1unit.

Furthermore, change in world real income and degree of openness to trade in services had a positive effect on services export in the current year with the former being significant in line with the long-run results. The results show that a 1 unit increase in world real income and degree of openness to trade in services would yield a rise of 0.43% and 0.01% respectively on services export growth. Change in foreign direct investment (FDI) was negative but positive in the first lag. The negative relationship between change in foreign direct investment and services export means that FDI does not determine services export growth in Nigeria. However, foreign direct investment exerted a positive and significant effect on services export in Nigeria contrary to the results of the long-run growth equation. This result implies that FDI determines services export growth in the short-run in Nigeria. This means that services export would increase by 0.06%, should FDI be increased by 1 unit.

Finally, change in the log of real effective exchange exerted a negative and significant effect on services export growth in Nigeria in the current year as in the long-run result. The coefficient of the lagged error correction term (ecm_{t-1}) for the growth equation has the expected significant sign at 1%. The coefficient of the lagged error correction term is (-0.41535) and its probability value is (0.0005). This means that divergence from short-run to long-run equilibrium in services export growth is 41.54% within one year. This significant value is in line with the result of co-integration test that there exists a long-run relationship between services export as determined by SVA, CMF, HCD, FSD, WRI, OPEN, FDI and REER in Nigeria.

4.5. Results of Diagnostic Tests for ARDL Model

After estimating the long and short-run dynamic coefficient, it is vital to establish whether our previous results are valid and capable of being utilized in making economic deduction. On this note, we conducted normality test, serial correlation test, heteroskedasticity test and specification error test applying the Jarque-Bera statistic, Breusch-Godfrey Serial Correlation LM test, heteroskedasticity ARCH test and Ramsey's Reset test statistic respectively.

Table 6: Diagnostic Results for ARDL Model

| Test | Test Statistic | P-value | Null hypothesis | Decision |
|-------------------------------|----------------|---------|---|---------------------|
| Jarque-Bera normality test | 2.904919 | 0.2340 | H_0 : The error terms are normally distributed. | Cannot reject H_0 |
| Heteroskedasticity Test: ARCH | 0.880195 | 0.3546 | H_0 : Homoskedasticity | Cannot reject H_0 |
| Ramsey RESET test | 2.557453 | 0.1229 | H_0 : Correctly specified | Cannot reject H_0 |
| Breusch-Godfrey LM test | 0.337702 | 0.7169 | H_0 : No serial correlation | Cannot reject H_0 |

The diagnostic tests results in Table 6 above shows that the model passed all the tests conducted. In case of the Ramsey Regression Equation Specification Error Test (RESET) model, Jarque-Bera normality test, heteroskedasticity test ARCH and Breusch-Godfrey Serial Correlation LM Test, it is evident that the rejection of the null hypothesis at the 5% level is not possible. The results showed that the model is linear or correctly specified. Under the Jarque-Bera normality test, a probability value of 0.2340 was greater than the proposed 0.05% level of significance. As a result, the null hypothesis of normality is accepted which suggests that the error terms are normally distributed at 0.05% level of significance. The result of the ARCH test showed that there was no heteroskedasticity in our model. The result shows a probability value of 0.3546 which is greater than 0.05 indicating the acceptance of the null hypothesis. Hence, there is no presence of heteroskedasticity in the model. Again, it was observed that the probability value of 0.1229 against the Ramsey Regression Equation Specification Error Test (RESET) test was greater than the proposed 0.05% level of significance indicating the acceptance of the null hypothesis that the model was correctly specified. This suggests that there was no possibility of the model not being specified correctly which may result in the omission of certain variables and hence, has no wrong functional form. The serial correlation of the residuals was tested through the Breusch-Godfrey LM test. It was observed that the probability value of 0.7169 exceeds the 0.05% level of significance. Hence, we accept H_0 and conclude that there was no serial correlation in our model.

V. Conclusion And Recommendations

In this study, we have empirically investigated the drivers of services export performance in Nigeria using data obtained from World Bank, World Development Indicator and CBN statistical bulletin (2021) for the period of 1981 to 2020. The export demand function introduced by Bahmani-Oskooee (1986) and adopted in this study with little modification was estimated using the ARDL Bounds testing approach to co-integration. The results of the long-run and short-run dynamics showed that the value added by the services, real income of the world, human capital development, financial sector development and trade openness in services exerted a positive effects on services export. This implies that the aforementioned variables were the utmost determinants of services export in Nigeria. Hence, the claim that a healthier, more skilled and educated workforce is likely to contribute to productivity, competitiveness and higher exports, particularly, services export is supported by this finding.

However, while Communication facilities exerted a negative and insignificant effect on services export growth both in the long-run and short-run, foreign direct investment and real effective exchange rate had a negative impact on service exports growth with the former being significant in the first lag under the short-run results and the latter being significant both in the long-run and short-run. This result is very informative as it clearly shows that Nigeria can rely on foreign direct investment and multi-national companies to change her economy from auxiliary services export to those of high technology and sophisticated services export by financing services export and adding value to them.

Based on the empirical evidence, it is recommended that government should establish a functional education curriculum for primary, secondary and tertiary level with ICT skill content and by so doing, it will improve its human capital and hence, this will translate to more production and export of more sophisticated services. Also, effort should be channeled towards design and implementation of policies and programmes to expand and enhance the capacity of the financial system to extend credits at lower cost to the servicing industries; encourage domestic investment and foreign direct investment in the services sector of the economy so as to boost output from the sector and improve its global competitiveness, thereby boosting its export as well as contributions to economic growth. It is also imperative to create an enabling environment, notably investing

in modern infrastructure and improving the business environment so as to attract large-scale investors to institutionalize world class production standards in the country's service sector.

VI. Limitations Of The Study

The data utilized for this study was extracted from WB, WDI database and CBN statistical bulletin of which data on number of internet users used as a measure for communication facilities were not available, in place of this, the study used the number of fixed line users which affected our result. Perhaps if it was available, it would have improved our result. Also, other variables such as institutional quality of governance (that is bureaucratic quality, government stability, rule of law and corruption index) and ethnic fractionalization that affect export of services were missing in our model. Therefore, the unavailability of the aforementioned variables prevented us from expanding our model beyond the variables used in the study.

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