Determinants of Nigeria's International Trade in Services

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Abstract

The paper investigates the determinants of Nigeria's international trade in services from 1981 to 2017. The study examined the short- and long-run relationships among integrated variables using an ARDL methodology. The empirical results show that services value added, merchandise trade, growth in GDP, official exchange rate and secondary school enrolment are the significant determinants of trade in services in Nigeria. While services value added, merchandise trade, growth in GDP, official exchange rate exhibited a positive relationship with international trade in services, secondary school enrolment showed a negative relationship. The study therefore recommends that policies should be geared towards improving technology and skill-oriented services which are recognised as the drivers of services globally. This is expected to develop domestic capacity and attract FDI to the services sector. With the negative relationship between services and human capital, there is the need for capacity building and skills acquisition, particularly in technical skills needed in the tradeable service sector to enhance productivity and competitive labour costs. This would serve as an avenue to generate employment as new job opportunities would be created.

Keywords: Foreign Capital Flows, Services, Trade Performance and Economic Growth
JEL Classification: F1, F43, F31, E31

I. Introduction

Until the last three decades, most categories of services were considered non-tradable as most countries concentrated on trade in goods. However, in recent times, international trade in services has gained recognition and has been receiving increasing interest in international trade literature, due to the growing importance of services in the global economy. This has become imperative in the face of globalisation and technological advancement, particularly in the area of information and communications. Therefore, the services sector has been identified as the new engine of growth for most countries, especially the developing economies (Copeland & Mattoo, 2008).

Statistics from the World Trade Organisation (WTO) (2019) shows that the value of global export of commercial services has maintained an upward trend, from US$2,971.32 billion in 2006 to US$4,506.82 billion in 2018. Similarly, Sub-Saharan Africa's export of services grew from US$35.17 billion to US$50.01 billion in the same

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period. In spite of this performance, its presence in the global market is still limited as the developed countries dominate the international trade in services landscape. Also, its share has remained between 1.0 and 1.9 per cent of total world services export, and 0.9 – 3.1 per cent for services import (WTO, 2019). Nigeria's share in total world services export remained dismal, at an average of 0.1 per cent between 2006 and 2018. Similarly, the share of Nigeria's services imports in total world import averaged 0.5 per cent in the same period. This explains why developing countries like Nigeria continually incur a deficit balance in their services sub-account.

Although services contribute more than 35.0 per cent to the gross domestic product (GDP) of the Nigerian economy, the sector's role in international trade remains weak. Nigeria's international trade is dominated by the export of merchandise goods, particularly crude oil, which is the major source of foreign exchange earnings with low contribution of services to total export of goods and services. On the other hand, the country has been a net importer of international services over the years, with high payments, particularly in respect of transportation, travel and other business services. In terms of share, export of services constitutes an average of about 10.0 per cent of total export of goods and services. By the same token, services import accounts for more than 35.0 per cent of total import of goods and services. This necessitates the need to investigate what determines both export and import of international trade in services, in order to identify ways to boost Nigeria's share in the world market.

Most studies dwell on issues related to merchandise trade flows or aggregated flows, despite the growing importance of the services sector. The rapid internationalisation and commercialisation of services has exposed the need to explore issues related to trade in services and ways to maximise benefits from the global market. There is also the growing need to examine what drives services export and its competitiveness at the international market. Against this backdrop, the objective of this paper is to empirically investigate and identify the determinants of services export in Nigeria and proffer policy recommendations on ways to improve service export sub-sector. The existing literature on services largely focuses on the impact of services on growth, determinants of service trade and impact of services-based FDI on growth, and the relationship between services trade and non-oil export (Gabrielle, 2006; Mishra, Lundstrom, & Anand, 2011; Dash & Parida, 2013; and Alege & Ogundipe, 2015). Therefore, this paper seeks to add to existing literature on international trade in services, particularly in Nigeria. The major contribution of this paper is to explore the determinants of service export in Nigeria with the aim of complementing the small existing literature on trade in services and services export in Nigeria.

Following this introduction is section II, which gives an overview of Nigeria's services sector. Section III dwells on theoretical and empirical literature review, while section IV describes the empirical model, the econometric method and the data. Section V discusses the empirical findings, and section VI concludes the paper and proffers policy recommendations.

II. Overview of the Services Sector in Nigeria

Since the rebasing of Nigeria's gross domestic product in 2013, the services sector has been one of the major drivers of growth in the Nigerian economy. It contributes about 50.0 per cent to GDP growth and has great potential for income and employment generation. The services sector is classified into eleven broad categories in line with the classification in the International Monetary Fund's Balance of Payments Manual. These are: transportation, travel, insurance, communication, construction, financial, computer and information, royalties and license fees, government, personal, cultural and recreational, and other business services.

Transport services cover all transportation services provided by residents to non-residents. It involves mainly the carriage of passengers and the movement of goods (freight) on all modes of transport including the sea, air, rail, and road. Travel services covers goods and services acquired by travellers during visits of less than one year. Travel service is divided into two sub-components namely: business and personal travel. Insurance services covers all insurance companies providing life insurance and annuities, nonlife insurance, reinsurance, freight insurance, and auxiliary services to insurance, pension schemes, and standardised guarantee schemes. Construction covers the creation, renovation, repair, or extension of fixed assets in the form of buildings, land improvements of an engineering nature, and other such engineering constructions.

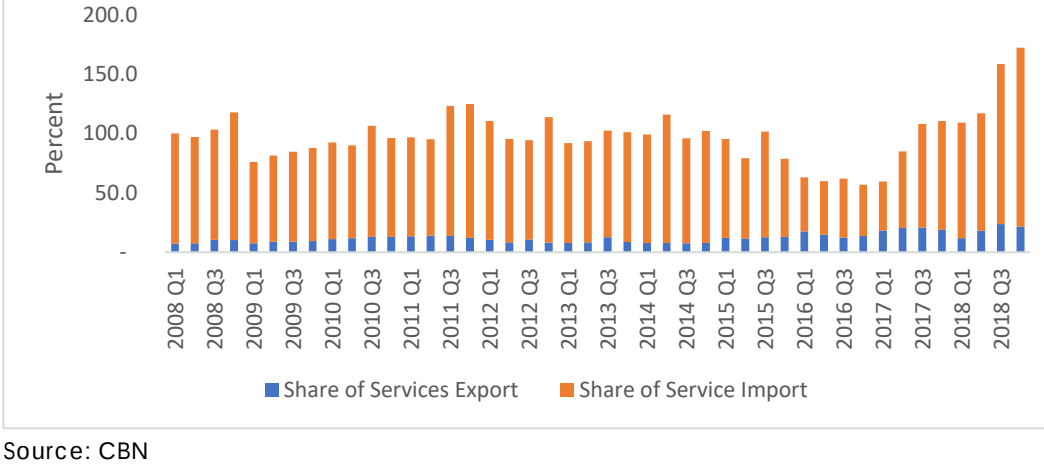
Telecommunications services encompass the broadcast or transmission of sound, images, data, or other information by telephone, telex, telegram, radio and television cable transmission, radio and television satellite, electronic mail, facsimile, among others. Also included are mobile telecommunications services, Internet backbone services, and online access services, including provision of access to the Internet. Financial services cover financial intermediary and auxiliary services, except insurance and pension fund services. These services include those usually provided by banks and other financial corporations. Computer services consist of hardware and software-related services and data-processing services. Information services include news agency services, such as the provision of news, photographs, and feature articles to the media. Other

information provision services include database services-database conception, data storage, and the dissemination of data.

Personal, cultural and recreational services comprise audio visual and related services, and other personal, cultural, and recreational services. Government services covers all government transactions on goods and services not included elsewhere (n.i.e.). Other business service is sub-divided into research and development, professional and management consulting as well as technical, trade related and other business services.

Analysis of balance of payments data on international trade in services reveals that Nigeria had been a net importer of services over the years. This was as a result of low receipts compared with the large and increasing out-payments on all the items in the account. Other reasons included high payment of freight services due to high import bills and lack of domestic shipping lines; and increased payment of passenger fares due to absence of domestic national carriers and inadequate private domestic airlines that operate international routes. Figure 1 shows the share of services import and export to total services trade over the years. The share of services export in total services trade has remained inadequate accounting for less than 25.0 per cent of total all through the review period, signalling the problems identified earlier. Importation of services has been consistently above 70.0 per cent of total services trade.

Figure 1: Share of Services Export and Import

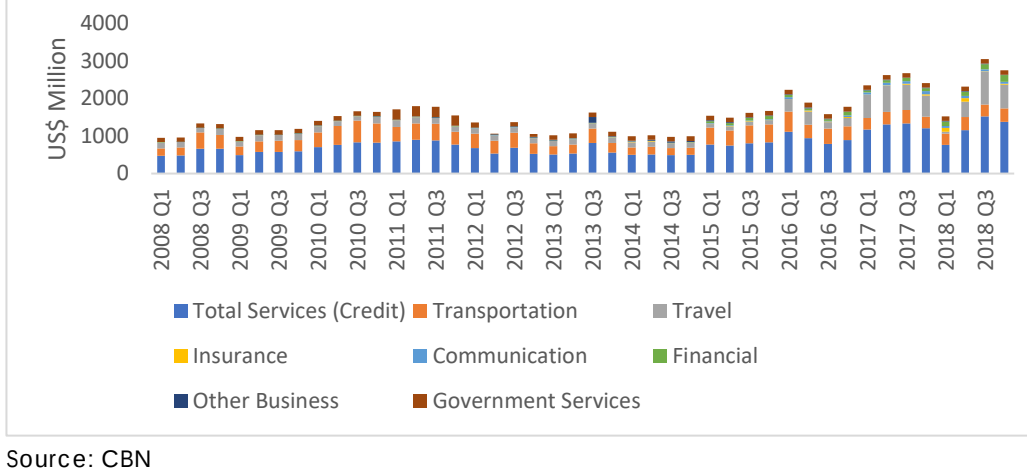


Source: CBN

Further analysis shows that services export has grown over the years, increasing from US$0.47 billion in Q1 2008 to US$0.66 billion in Q4 2008, and further to US$0.76 billion in Q2 2010. It maintained an upward trend over the quarters to US$0.90 billion in Q2 2011. However, it trended downwards, and the trend persisted up to Q4 2015. Export of services increased to US$1.12 billion in Q1 2016 and further to

US$1.34 billion and US$1.53 billion in Q3 2017 and Q3 2018, respectively, due to increase in personal travels, financial services, government services and other transportation services. Figure 2a shows the export of Nigeria's services and its components. It is worthy to note that the major driver of services export over the years is transportation services, followed by travel services which is comprised of both personal tourism and business travels. The contribution of travel services has overtaken that of transportation services since 2016, due largely to reduction in the value of passenger transportation on account of fewer airlines providing international services in the country. The contribution of financial services has grown over the years, reflecting the presence of Nigerian banks outside the shores of the country. Government services abroad, mainly undertaken by Nigerian embassies abroad is also a major driver of services export over the years.

Figure 2a: Export of Services



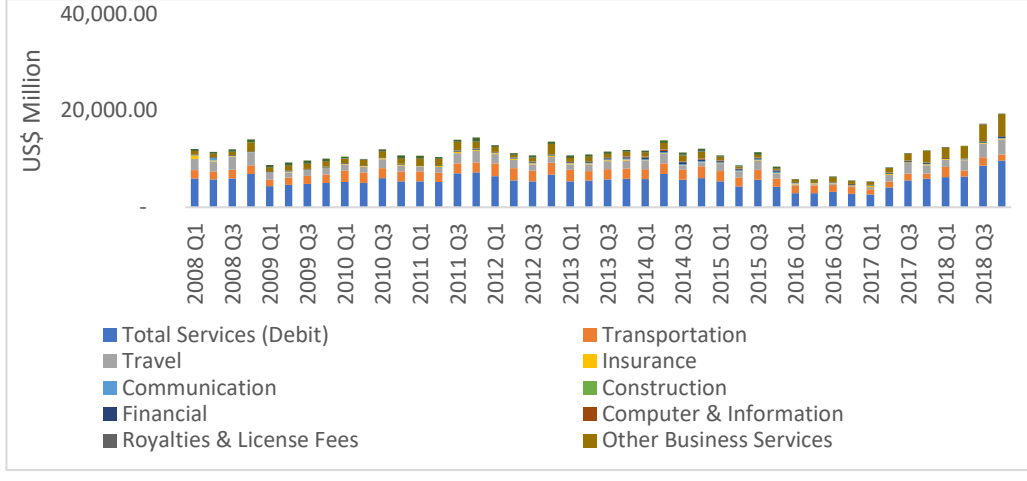
Source: CBN

Import of services accounts for the bulk of services trade over the years. Services import which was US$5.94 billion in Q1 2008 rose to US$6.90 billion in Q4 2008. It however declined from Q1 2009 to Q2 2011 but increased to US$7.00 billion and US$7.23 billion in Q3 and Q4 2011, respectively. It declined steadily from US$6.41 billion in Q1 2012 to US$5.85 billion in Q1 2014. The development was mixed through the quarters with increases in some quarters and declines in other quarters. However, a significant increase in services import was recorded in Q3 and Q4 2018 at US$8.64 billion and US$9.66 billion, respectively, on account of significant increase in travel services during the period (Figure 2b).

Over the years, transportation, travel, other business services and insurance services have been identified as the major contributors to services out-payments, as can be observed in Figure 2b. The share of transportation services, which has been significant over the years, has been reducing since 2017, due largely to significant reduction in freight payment due to decline in import of merchandise

into the country. The share of travel services, on the other hand, has been on the increase over the years particularly due to increase in education and health related travels. Similarly, the share of other business services has increased significantly and become the major driver of service import in Nigeria.

Figure 2b: Import of Services



Source: CBN

III. Review of Literature

III.1 Theoretical Review

This section provides the theoretical and empirical foundation for investigating the determinants of Nigeria's trade in services. Since services are traded just like merchandise, the existing trade theories such as the Ricardian Theory of Comparative Advantage and the Heckscher-Ohlin (H-O) theorems would serve as theories to explain trade in services.

III.1.1 The Ricardian Theory of Comparative Advantage

The theory of comparative advantage propounded by David Ricardo is known as the classical theory of international trade. It holds that the essence of international trade is not the absolute but the comparative difference in cost. According to Ricardo, other things being equal, a country tends to specialise in the exports of those commodities it has maximum comparative cost advantage or minimum comparative disadvantage and import goods having relatively less comparative cost advantage or greater disadvantage. The main assumptions of the theory include labour as the only factor of production; perfect mobility of labour within a country; perfectly immobile labour between countries; absence

of transportation costs; no technological change; perfect competition; two countries; and two commodities.

III.1.2 The Heckscher-Ohlin (H-O) Theorem

The Heckscher-Ohlin (H-O) theorem holds that trade between countries arise because different countries have different factor endowments. Thus, countries which are rich in labour will export labour intensive goods and those which are rich in capital will export capital intensive goods. According to the H-O theorem, for instance, Nigeria will specialise on production of goods and services that require cheap labour available in the country, while USA will specialise on production of goods and services using cheap capital. The theory assumes that there are two commodities, two countries, no transport cost, no qualitative difference in factors of production, identical production functions, constant return to scale and full employment, among others. Leontief, however, negated the H-O theorem as he found that the US exports labour intensive goods and services and imports capital intensive goods and services, contrary to the theorem and this is the popular Leontief Paradox.

From the foregoing discussion, it is worthy to note that both the Ricardian and H-O theories are important to this study. This is because for a country to maximise the benefits of international trade, both comparative advantage and specialisation are key.

III.2 Empirical Literature

Most literature on services focus largely on the impact of growth on the services sector (Francois & Schuknecht, 2000; Li, Greenaway & Hine, 2005; El Khoury & Savvides 2006; Gabrielle, 2006; Mishra, Lundstrom & Anand, 2011; Lorde, Francis & Drakes, 2011; Dash & Parida, 2013; and Alege & Ogundipe, 2015). On the other hand, studies on the determinants of service export and service trade are few and far between (Sapir & Lutz, 1981; Freund & Weinhold, 2002; Kimura & Lee 2006; and Choi, 2010).

In African economies, scholars have used different case studies to demonstrate the increasing role of services. For instance, Bhorat et al. (2016), examined the case of South Africa and demonstrated that an ongoing decline in industry has been coupled with rapid growth across a range of service sectors. The potential offered by the service sectors was also shown to be recognised in the policy arena in South Africa, as evident in the targeting of the business sectors in South Africa's National Development Plan, and the New Growth Path.

Using unique firm level data for both Uganda and Rwanda, Spray and Wolf (2016), showed that services now make up to 40.0 per cent of exports, compared to less than 25.0 per cent, twenty years ago in both countries. They found out that economies of scale matter not only in the manufacturing sector, but also in successful service sectors such as tourism and transportation. Moreover, services are vital in linking the economy together and generating productivity spill-overs. Addressing the role that different subsectors of formal and informal services had played in Tanzania's growth, Ellis, McMillan and Silver (2017) argued that subsectors such as business and transportation services display higher productivity and improve the environment for other firms to operate in Tanzania's economy.

Additionally, Khanna et al. (2016) found that Kenya services export more than doubled from US$1.90 billion in 2005 to US$4.90 billion in 2012, and thereby experienced more dynamic growth than goods exports. With this, they contended that Kenya has rapidly asserted itself as a regional services hub. Under these premises, there are signs that deficits in manufacturing in African economies have relatively been compensated for with gains in the service sector. Indeed, these developments continue to offer support for the arguments that there are growth potentials that can be tapped from developing the service-sector. However, some have called for caution in this new optimism accorded to services, arguing that many developing countries in Latin America and Sub-Saharan Africa are undergoing what Rodrik (2015) referred to as a "premature de-industrialisation" as the majority of surplus labour is presently absorbed in non-tradable services. The sustainability of the services led growth, especially the idea that it creates the risk of "jobless growth" for late developers, given the youth upsurge experienced by several of these countries is also often cited (Ajakaiye et al., 2016; and Bhorat et al., 2016).

Another key area for services trade research was applying the gravity model of trade. One of the reasons for the popularity of the gravity equation was the problem with availability of micro-level data from services market. The bilateral determinant of trade was investigated by Freund and Weinhold (2002); Grunfeld and Moxnes (2003); Kimura and Lee (2006); Walsh (2006) and Head et al. (2009). The results of many of these studies are similar to the contributions on goods trade. They revealed the positive impact of trade partner's GDP on trade volume in services market.

Martin (2016) investigated the determinants of service exports in Kenya employing OLS estimation technique on data from 1970 to 2015. The results showed that merchandised goods, and real exchange rate were very significant and positively related to export of services, while value of service GDP, trade liberalisation and trade openness were negatively related to the export of services.

Ahmad et al. (2017) examined the determinants of service export in selected developing Asian countries (China, Hong Kong, South Korea, India, Iran, Indonesia, Malaysia, Philippines, Singapore, Thailand, Kuwait, Saudi Arabia and Turkey). The study conducted a static linear panel data analysis on annual data covering the period, 1985-2012. The main finding indicates that exchange rate, foreign income, foreign direct investment (FDI), the value added by services and communication facilities are statistically significant and are positively related to services exports except for real exchange rate in all the selected developing Asian countries.

Kandilov and Grennes (2010) in a study to identify the determinants of service exports from Eastern and Central Europe using gravity model, found that geographical distance varied across different service categories. Their results showed that the importance of geographical distance varies substantially across types of service exports. Geography is important for exports of construction services, but it has a negligible impact on computer related services. However, the relative quality of legal institutions influences trade across a broad range of service categories. The results revealed that aggregating services that are not homogeneous could conceal important differences in the effects of geographical distance and other variables on the pattern of service trade.

Kaur (2011) used gravity model to analyse the determinants of service exports of US with its Asian partners (Japan, China, India, Singapore, South Korea and Hong Kong). Annual panel data spanning 2000-2008 were used. They found that GDP and openness of trade had significant impact on the export of services. Countries tend to trade in services with those ones that have liberalised their trade. Corruption was also found to have a significant impact on the export of services.

Covaci and Moldovan (2015) investigated the determinants of aggregate service exports and the determinants of seven service sub-categories (i.e. transport, travel, communication, computer and information, financial, construction and other business services) of Lithuania using a gravity model and a panel dataset for the period 2003-2012. The results showed that GDP of the destination country and a common spoken language exert a positive effect on trade in services. Time zone differences, EU membership and relative human capital are found to have a heterogeneous effect across service sub-categories. Also, the significance of physical distance between Lithuania and its partners varies depending on the type of service. Remoteness of the destination country was found to be insignificant for most of service sub-categories, except transport services, other business services, and computer and information services.

Despite the growing importance of the services sector and the rapid internationalisation of services, very few studies exist on the services sector. To the

best of our knowledge, none of these studies explored the determinants of trade in services for Nigeria. Service export can be an important part of Nigeria's economic recovery and growth plan as the government seeks to transform the economy towards services or knowledge-based economy. As such, it is important to understand the determinants of Nigeria's trade in services for evidence-based policy prescriptions.

IV. Methodology

IV.1 Data

The study utilised annual data spanning from 1981 to 2017. The set of variables include trade in services as a percentage of GDP (TSERV), domestic credit as percentage of GDP (DC), merchandise trade as a percentage of GDP (MER), terms of trade as a percentage of GDP (TOT), foreign direct investment as a percentage of GDP (FDI), average official exchange rate (EXC), secondary school enrolment as a percentage of gross enrolment (SCLE) a measure of human capital, government services expenditure as percentage of GDP (GEXP), domestic GDP growth (NGDP), world GDP growth (WGDP), and services value added as percentage of GDP (SERV). All data used in the analysis were sourced from the World Bank Database.

IV.2. Model Specification

The Autoregressive Distributed Lag (ARDL) technique was used, as it is among the most popular techniques for estimating short and long run relationships among cointegrated economic variables. The ARDL is preferred to other methods, such as Engle and Granger (1987), Johansen (1988), Johansen-Juselius (1990) and Hansen and Phillips (1990), because it is a more flexible procedure that can be applied even when the variables are of different orders of integration but must not be of order 2 (Pesaran, 1997). Thus, the approach avoids problems resulting from using non-stationary time series data and also enables sufficient number of lags to capture the data generating process in a general-to-specific modelling framework (Laurenceson & Chai, 2003). Also, both the short- and long-run coefficients of the model are estimated simultaneously.

The ARDL relates the dependent variable to its lagged values and the lag values of all the independent variables in the model. In this study, the model representing the relationship between the dependent and independent variables is presented below:

$$TSERV_t = \beta_0 + \sum \beta_1 DC_t + \sum \beta_2 MER_t + \sum \beta_3 TOT_t + \sum \beta_4 FDI_t + \sum \beta_5 EXC_t + \sum \beta_6 NGDP_t + \sum \beta_7 WGDP_t + \sum \beta_8 SCLE_t + \sum \beta_9 GEXP_t + \sum \beta_{10} SERV_t + \varepsilon_t \quad (1)$$

The ARDL representation of equation 1 in a conditional or unrestricted error correction model (ECM) is presented in the following forms:

$$\Delta TSERV_t = \beta_0 + \beta_1 TSERV_{t-1} + \beta_2 DC_{t-1} + \beta_3 MER_{t-1} + \beta_4 TOT_{t-1} + \beta_5 FDI_{t-1} + \beta_6 EXC_{t-1} + \beta_7 NGDP_{t-1} + \beta_8 WGDP_{t-1} + \beta_9 SCLE_{t-1} + \beta_{10} GEXP_{t-1} + \beta_{11} SERV_{t-1} + \sum_{i=1}^{n} \psi_i \Delta\Gamma_{it-1} + \varepsilon_t \quad (2)$$

Where $TSERV$ is the dependent variable and $DC, MER, TOT, FDI, EXC, NGDP, WGDP, SCLE\ and\ GERP$ are the independent variables. Γ is a vector of the lag difference of all the variables in the model. The coefficients β_1 to β_{10} are the long-run elasticities and the ψ_i stand for short-run elasticities. The error term, ε_t , is expected to be serially independent. β_0 represents the constant term, while Δ represents the change operator.

In terms of *a priori* expectations, $\beta_2 > 0, \beta_3 > 0, \beta_4 > 0, \beta_5 > 0, \beta_6 > 0, \beta_7 > 0, \beta_8 > 0, \beta_9 > 0, \beta_{10} > 0, \beta_{11} > 0$.

The reliability of equation 1 is judged by the direction and strength of its estimates and diagnostics, which were conducted using tests for serial correlation, normality and heteroscedasticity. The long-run relationship among specified variables is established on the basis of an F-statistic (Wald test) relative to the two critical (lower and upper bounds) values introduced by Pesaran et al. (2001) for the co-integration test. If the F-statistic lies above the upper bound, a long-run relationship is established and if it lies below the lower bound, no long-run relationship exists. In the event that the F-statistic falls within the bounds, inference on the long-run relationship is inconclusive (Pesaran et al., 2001).

Once long-run co-integration is established, an error correction specification of the models is required for the speed of adjustments to the long-run equilibrium. To this extent, we estimated two models along with an error correction term, which was derived from the original long- run equation as follows:

$$\Delta TSERV_t = \beta_0 + \beta_1 TSERV_{t-1} + \beta_2 DC_{t-1} + \beta_3 MER_{t-1} + \beta_4 TOT_{t-1} + \beta_5 FDI_{t-1} + \beta_6 EXC_{t-1} + \beta_7 NGDP_{t-1} + \beta_8 WGDP_{t-1} + \beta_9 SCLE_{t-1} + \beta_{10} GEXP_{t-1} + \beta_{11} SERV_{t-1} + \sum_{i=1}^{n} \psi_i \Delta\Gamma_{it-1} + \gamma ect_{(-1)} + \varepsilon_t \quad (3)$$

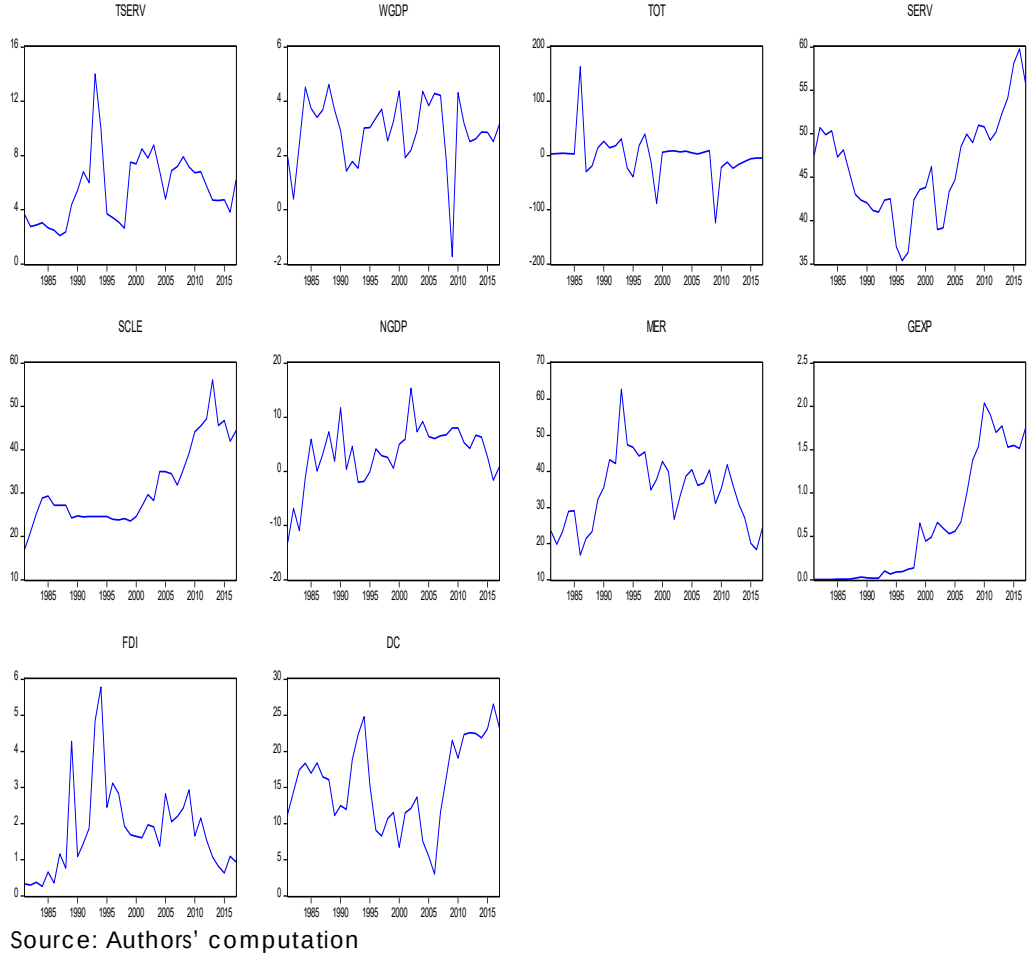
In equation 3 the coefficient of ect must be negative, less than 1 and statistically significant for there to be short-run adjustment to long-run equilibria. The parsimonious model is then tested for fitness and normalised for short- and long-run elasticities.

IV.3 Pre-Estimation Analysis

IV.3.1 Graphical Presentation

Graphical presentation of the variables in level form is shown in Figure 3. An inspection of the graphs shows that Secondary School Enrolment, Trade in Services, Government Expenditure, Domestic Credit, and Services value-added exhibit a linear distinct upward and deterministic trend in their movements. TSERV maintained an upward trend until 1993, when it fell sharply but rose in 2000. TOT, NGDP, FDI, WGDP were volatile over the period of analysis. However, WGDP was at its lowest in 2008 following the global financial crisis.

Figure 3: Graphical Presentation of the Variables



Source: Authors' computation

IV.3.2 Summary Statistics

Summary statistics presented in Table 1 show that TSERV averaged 5.55 during the review period, and spread between 2.08 and 14.01, suggesting some level of volatility during the review period. Further analysis revealed that SERV, MER, EXC and DC appeared to be normal given by the result of Jarque-Bera statistic. Skewness revealed that all the variables except WGDP, NGDP and DC are positively skewed. In terms of kurtosis, TSERV, TOT, MER, WGDP, NGDP and FDI are platykurtic while SERV, SCLE, GEXP, EXC and DC are leptokurtic. The statistics highlight distinct characteristics and thus, the variables were subject to stationarity test.

Table 1: Summary Statistics

Statistics	TSERV	TOT	SERV	SSE	MER	GEXP	WGDP	NGDP	FDI	EXC	DC
Mean	5.5506	-0.9812	46.3146	31.4105	34.0209	0.6223	2.8969	3.2085	1.7945	82.9447	15.5910
Maximum	14.0114	163.4788	59.7851	56.1799	62.7554	2.0392	4.6239	15.3292	5.7908	305.8700	26.5551
Minimum	2.0804	-124.9189	35.3582	17.0999	16.7665	0.0024	-1.7333	-13.1279	0.2574	0.6177	3.0240
Std. Dev.	2.5632	40.8406	5.8617	9.2919	9.9571	0.7002	1.2606	5.6110	1.2527	80.6538	5.9670
Kurtosis	4.3183	10.6201	2.6211	2.8085	3.1966	1.9884	6.2306	4.4536	4.8485	2.8471	2.1074
Skewness	0.9230	0.7806	0.2250	0.8947	0.3411	0.7470	-1.3884	-0.8782	1.3069	0.7122	-0.0881
Jarque-Bera	7.9331[a]	93.2767[a]	0.5336	4.9928[c]	0.7770	5.012[c]	27.9776[a]	8.01283[a]	15.8009[a]	3.1642	1.2761

Note: [a], [b] and [c] denote 1%, 5% and 10% levels of statistical significance, respectively.
Source: Authors' computation

IV.4 Unit Root Tests

A formal test for stationarity/non-stationarity of the series was undertaken to ascertain the order of integration of the variables. The study used the Augmented Dickey Fuller test (ADF) and the Philips-Perron (PP) to ascertain the stationarity properties of the series.

Results of the ADF and PP unit root test using 5 per cent level of significance rejected the null hypothesis of unit root for DC, EXC, GEXP, MER, SCLE, SERV and TSERV, indicating that they are non-stationary in their level forms. They however became stationary after first difference and are integrated of order 1 i.e. I (1). FDI, WGDP, NGDP and TOT are found to be stationary at levels. Due to the mixed

orders of integration as shown in Table 2, the ARDL method was considered appropriate in estimating the equation.

Table 2: ADF and PP Unit Root Tests

Variable	ADF			Phillips-Perron		Remarks
	Level	*1st Difference*	Remarks	Level	1st Difference	
TSERV	-2.8758	-6.2005[a]	I(1)	-2.8758	-6.6835[a]	I(1)
TOT	-5.7552[a]		I(0)	-5.7554[a]		I(0)
SERV	-0.8873	-5.0666[a]	I(1)	0.4081	-5.0432[a]	I(1)
SCLE	-1.1849	-6.9075[a]	I(1)	1.0388	-6.7930[a]	I(1)
MER	-2.2766	-7.0500[a]	I(1)	-0.4322	-7.1728[a]	I(1)
GEXP	-0.0629	-5.4758[a]	I(1)	0.8010	-5.2450[a]	I(1)
WGDP	-4.7127[a]		I(0)	-4.7000[a]		I(0)
NGDP	-4.0455[a]		I(0)	-2.9455[a]		I(0)
FDI	-3.3548[a]		I(0)	-3.2733 [b]		I(0)
EXC	2.3251	-2.6972[a]	I(1)	3.3618	-2.6575[a]	I(1)
DC	-1.8195	-5.5718[a]	I(1)	0.3206	-6.1472[a]	I(1)

Note: a, and b denote 1% and 5% levels of statistical significance, respectively.
Source: Authors' computation

The Schwartz Information Criteria (SIC) was used in determining the best model because of its parsimony. Equation 4 revealed a parsimonious ARDL with eleven (11) independent variables each having $ARDL(p, q_1, q_2, q_3, q_4, q_5, q_6, q_7, q_8, q_9, q_{10,}, q_{11,})$ where p, q_1, q_2, q_3, q_4, q_5, q_6, q_7, q_8, q_9, q_{10}, q_{11}, represent the lag lengths of the ARDL model. The parsimonious model used in the determination of the Cointegration of the variables is given as

$$ARDL(p, q_1, q_2, q_3, q_4, q_5, q_6, q_7, q_8, q_9, q_{10,}, q_{11,}) = ARDL(1, 1, 0, 0, 1, 1, 0, 0, 1, 0, 0). \quad (4)$$

IV.5 Bounds Test

The bounds test was used to determine the joint significance of all the variables in the model. The F-value of 5.2951 is above the upper critical value at 1.0 per cent level of significance, which implies that there are unique cointegrating vectors for the model. The null hypothesis of no long-run relationship was strongly rejected. In other words, when compared with the critical values provided by Pesaran et al. (2001), the F-statistic lies above the upper critical bound. Therefore, the null hypothesis of no level effect was rejected thus, a long-run relationship amongst the variables was established.

Table 3: ARDL Bounds Test for Model

Test Statistic	Value	K
F-statistic	5.2951	10
Critical Value Bounds		
Significance	I(0) Bound	I(1) Bound
10%	1.76	2.77
5%	1.98	3.04
2.5%	2.18	3.28
1%	2.41	3.61

Source: Authors' computation

The short-run ARDL model was estimated with the first differenced series using the following equation:

$$\Delta y_t = \theta\widehat{\varepsilon_{t-1}} + \sum_{i=1}^{N} \delta_i \Delta y_{t-1} + \sum_{j=0}^{N} \gamma_1 \Delta X_{t-j} + \varepsilon_t \quad (5)$$

where $\theta\widehat{\varepsilon_{t-1}}$ is the adjustment factor.

IV.6 Results and Discussion

Table 4 presents the result for the model. It shows that services value-added as a percentage of GDP (SERV), merchandise trade (MER), growth in GDP (NGDP), official exchange rate (EXC) and secondary school enrolment (SSE) are significant determinants of trade in services in the long-run. Terms of trade as percentage of GDP (TOT), foreign direct investment as percentage of GDP (FDI), government services expenditure as percentage of GDP (GEXP), and world GDP growth (WGDP) are found not to be significant determinants of trade in services.

The results further show that a 1.0 per cent increase in services value-added as a per cent of GDP is expected to bring about 0.3 per cent increase in services trade in the long-run. Also, a 1.0 per cent increase in merchandise trade would lead to 0.2 per cent improvement in services trade in the long-run. The positive relationship between merchandise trade and services implies that increase in demand for goods would be accompanied by higher demand for specialised skills and services to produce the goods.

Table 4: Short-and Long-Run Estimation Results of Determinants of Services Trade for Nigeria

SHORT-RUN ESTIMATES													
	TOT	SERV	SCLE	MER	GEXP	FDI	WGDP	NGDP	EXC	DC	TSERV(-1)	**C**	**E(−1)**
P − Value	0.0024	0.2784	-0.1115	0.1874	-0.5368	0.3337	-0.0329	0.1667	0.0164	0.1253	-0.8478	-9.5394	-0.8478
T − stat	(0.7233)	(0.0097)	(0.2579)	(0.0001)	(0.6664)	(0.2745)	(0.8810)	(0.0330)	(0.0261)	(0.0691)	(0.0000)	(0.0594)	(0.0000)
TSERV	[0.3591]	[2.8582]	[-1.1645]	[4.7089]	[-0.4375]	[-0.1516]	[-0.1516]	[2.2898]	[2.4021]	[1.9211]	[-6.0152]	[-1.9991]	[-9.9242]
LONG-RUN ESTIMATES													
	TOT	SERV	SCLE	MER	GEXP	FDI	WGDP	NGDP	EXC	DC			
P − Value	0.0028	0.3284	-0.2980	0.2210	-0.6332	-0.0206	-0.4821	0.3746	0.0193	0.1479			
T − stat	(0.7231)	(0.0129)	(0.0097)	(0.0005)	(0.6614)	(0.9650)	(0.2079)	(0.0005)	(0.0172)	(0.0639)			
TSERV	[0.3594]	[2.7303]	[-2.8613]	[4.1620]	[-0.4445]	[-0.0444]	[-1.3015]	[4.1620]	[2.5978]	[1.9618]			
R^2=0.8522; F- stat =7.6878[a]; Durbin Watson = 1.92													
Linearity [Ramsey Reset test(F-stat)] = 4.3128													
Serial Correlation [Ljung Box (Q-stat)] =0.2296													
Heteroskedasticity [ARCH-LM (F-stat)] = 0.0356													
Normality [Jarque-Bera] =0.5510													

Note: a, b and c represent 1%, 5% and 10% levels of statistical significance.
Source: Authors' computation

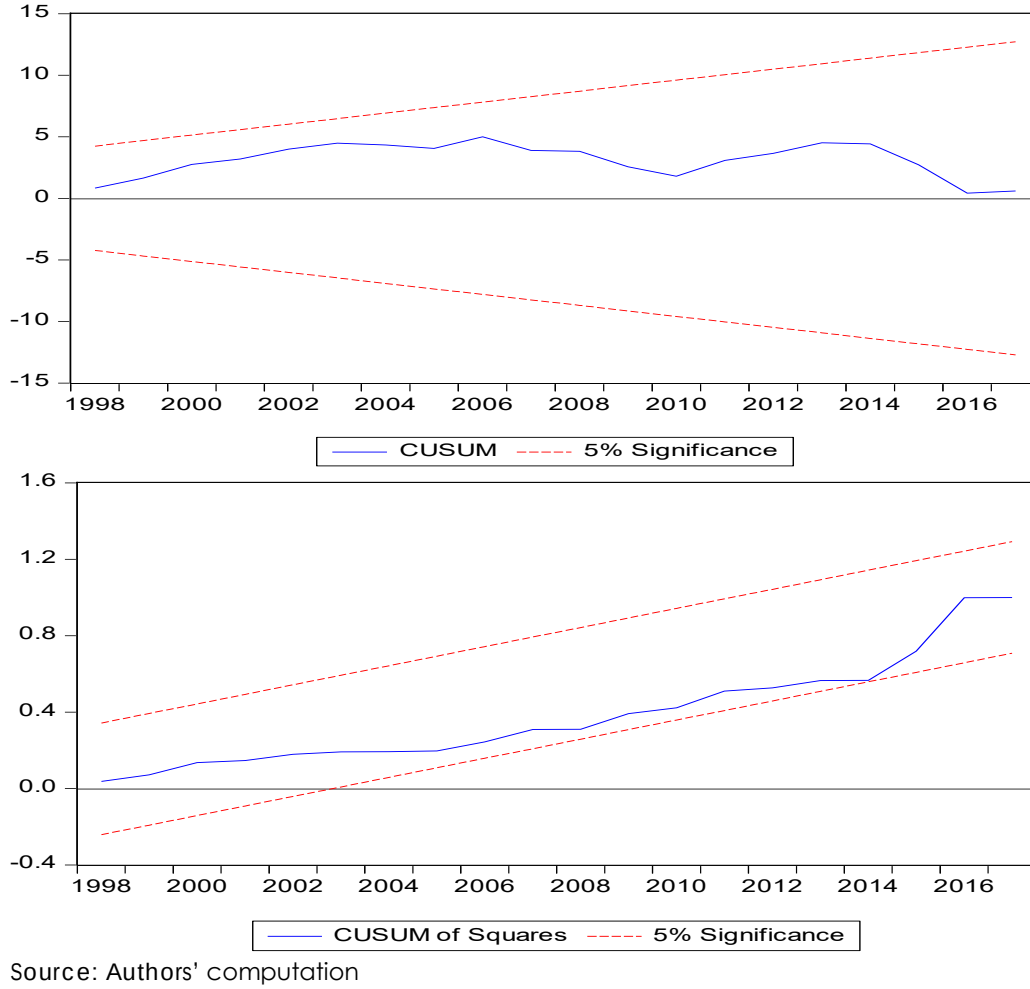
Furthermore, a 1.0 per cent growth in GDP would bring about a 0.3 per cent increase in trade in services in the long-run, implying that economic growth has a multiplier effect on services as more services are demanded in periods of growth. In the same vein, a 1.0 per cent increase in the official exchange rate leads to a 0.02 per cent increase in trade in services in the long-run. This simply shows improvement in competitiveness of services as the naira depreciates. This is in line with the theoretical underpinning that exchange rate depreciation improves trade generally. For secondary school enrolment, a measure of human capital, a 1.0 per cent increase would lead to a 0.3 per cent decrease in trade in services in the long-run. This does not conform to the a priori expectation and may not be unconnected to the dominance of non-tradeable services with majorly semi-skilled human capital.

The error correction term of -0.8478 is negative, less than 1 and statistically significant as expected. This implies that about 84.8 per cent of any disequilibrium is corrected for within one year.

IV.7 Post-Estimation Diagnostics

The study tested for the stability of the model using CUSUM and CUSUM Square tests. Both the CUSUM and the CUSUM square shows stability of the parameters as we fail to reject the null hypothesis of parameter stability as indicated in Figure 4 below. This implies that the model is stable. In addition, the adjusted R-squared of 85.2 per cent revealed that the overall goodness of fit of the model is very satisfactory. The joint significance of the explanatory variables is statistically significant at 1.0 per cent for the model as measured by the F-statistic. The results of the Breusch Godfrey (with F-stat of 0.2296) and the ARCH-LM (with F-stat of 0.0356) tests show evidence of no serial correlation and constant variance, which further support the robustness of the model.

Figure 4: CUSUM and CUSUM Square



Source: Authors' computation

V. Conclusion and Policy Recommendations

The paper investigated the determinants of services in Nigeria. The empirical results show that services value-added, merchandise trade, growth in GDP, official exchange rate and secondary school enrolment are significant determinants of trade in services in Nigeria. Results also show a positive relationship among all the significant variables except secondary school enrolment. Growth in GDP, merchandise trade and value-added by services being influential determinants of services, highlight the importance of exploiting all the sources that can increase production in the services sector, particularly technology and skill-oriented services which are recognised as the drivers of services globally. This is expected to develop domestic capacity and attract FDI to the services sector.

The result further shows that exchange rate depreciation leads to improvement in competitiveness of services trade. There is, therefore, the need for robust and consistent exchange rate policy that would ensure that the exchange rate is not overvalued. This would provide an opportunity to compete in exporting services globally, if Nigeria is to fully exploit the potentials of the services sector. With the negative relationship between services and human capital, there is the need for capacity building and skills acquisition, particularly in technical skills needed in the tradeable service sector in order to enhance productivity and competitive labour costs. This would serve as an avenue to generate employment as new job opportunities would be created. In conclusion, improving trade in services would offer the much-needed new opportunities for export diversification in Nigeria.

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