Journal of Business and Economic Development
2017; 2(4): 204-214
http://www.sciencepublishinggroup.com/j/jbed
doi: 10.11648/j.jbed.20170204.12

Services Sector Growth and Development Sustainability in Nigeria

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To cite this article:
Olumuyiwa Olamade. Services Sector Growth and Development Sustainability in Nigeria. *Journal of Business and Economic Development*. Vol. 2, No. 4, 2017, pp. 204-214. doi: 10.11648/j.jbed.20170204.12

Received: May 8, 2017; **Accepted**: May 18, 2017; **Published**: July 11, 2017

Abstract: Between 1981 and 2013, services share of gross domestic product in Nigeria grew five times the share of manufacturing coming second to agriculture. However, the output growth rates of services and manufacturing exceed that of agriculture. The study formulated the question as to whether the observed services sector expansion can support long-term economic growth. Two models were specified for estimation with manufacturing and agriculture as dependent variables and vectors of services outputs as independent variables. Data expressed in 1990 constant basic prices were sourced from Central Bank of Nigeria and expressed in logarithm form for regression. Using two test statistics, all variables in the regression were confirmed stationary at not more than one order of integration Given that the variables are cointegrated, the autoregressive distributed lag model and three other augmented static estimators were applied to the models. All diagnostics tests support the stability of our models and reliability of results. We conclude that a strong service-manufacturing association is necessary for services sector growth to sustain long-run economic development.

Keywords: Services, Manufacturing, Agriculture, Growth, Development, Sustainability, Nigeria

1. Introduction

Access to quality services is very important to achieving sustainable economic development as they provide critical infrastructural services that are requisite inputs to all productive activities. In almost all forms of economic arrangement, provision of services often comes with a significant level of government participation, either as regulators or as providers. The growing importance of services in the economic development of developed and developing countries have in the last two decades extensively engaged academic and policy debates. There appears to be a consensus that this phenomenon is positive and a necessary condition of the evolutionary pattern of development. The services sector accounts for 75 percent of gross domestic product (GDP) in most of the advanced countries and approximately 45 percent in low-income and least developed countries. When measured on the basis of value-added, services now account for about 50 percent of world trade [1]. Prior to the 1990s, received theories often advanced that growth in manufacturing is required to stimulate growth in services, employment, and income casting doubts on the sustainability of service-led growth in developing countries [2]. Recent empirical evidence, however, confirms cases of service-led growth in developing countries such as India, Bangladesh, the Philippines, Mozambique, and Rwanda. Increasing tradability of modern services thus appears to offer a new ground for developing countries to specialise, integrate into the global marketplace, close productivity gap and enhance competitiveness as well as achieve high economic growth.

The services sector in Nigeria like other developing countries has displaced the manufacturing sector as a major contributor to the GDP. Services generally have a catalytic role as a tool for poverty reduction, welfare upgrading, availability and accessibility of basic infrastructure, regardless of the stage of economic development. This study focused on the production of services and demand for services by other sectors of the economy in Nigeria and implications for development sustainability. Starting from the well-established premise, which emphasised the role of demand from other sectors in explaining the growth of the services sector, this paper seeks to identify the sectors of the economy that demands drive growth in the services sector. Services growth will be considered development sustainable

if supply of services significantly drives output growth in the two sectors and in particular if the producer services are the major drivers of output growth in the other sectors. Conversely, services growth is good for sustainable development if demand for producer services from the other sectors stimulates growth in the services sector.

The rest of the paper is organised successively as follows – section 2 conducts a brief survey of the literature and examines the structural characteristics of the Nigerian economy over the study period as well as the interrelations among GDP growth and growths in the services, agriculture and manufacturing sectors. Section 3 describes the data and methodological considerations leading to the choice of appropriate estimation techniques for the models specified. Estimation results are reported and discussed in section 4, and the study concludes with recommendations in section 5.

2. Brief Survey of Literature

Inquiries into the drivers of growth and their sustainability have preoccupied the attention of policy makers and researchers for decades. Even though, there is no consensus as to the main drivers of growth of the services sector theories have centred mainly around three dynamics (i) a shift in the structure of final demand from goods to services (ii) changes in the inter-industry division of labour favouring specialised services activities, and (iii) inter-industry productivity differentials [3]. Whatever factors are at play, the economic development process generally is believed to entails the structural transformation of countries. The productive structure of the world economy has changed rapidly in the last decades to support the view that tertiarisation was the dominant feature of structural change in the global economy, and that world economic development has reached the stage in which services was growing more rapidly not only than agriculture but also than the industrial sector [4]. This development directly challenged the dominant notion that manufacturing-led growth is the only sure way to sustainable economic growth [5-6]. Drawing experiences across developed and developing countries, empirical literature has shown that the growth of the services sector is a credible alternative route to economic development.

Whereas, manufacturing contributed significantly to the growth of the services sector the nature, productivity, and tradability of services have undergone proud transformation in the last two decades so that services are no longer exclusively an input for manufacturing. They have become a "final export" for direct consumption [7]. The observed transformation is attributable to the combined effects of information and communication technology (ICT) and the rapid growth of the global forces of technology, transportability, and tradability resulting in rapid growth of modern impersonal services or producer services, such as communication, banking, insurance, business-related services, etc. [5-8].

Over the last two decade, the services sector has become increasingly important at both the national and world levels in employment and contribution to GDP. Services make up roughly 75% of gross domestic product (GDP) in high-income economies and approximately 45% of GDP in low-income countries (LICs) and least developed countries (LDCs); they now account for around 50% of the global trade when measured on a value-added basis [1]. In terms of employment, services accounted for about 75% of total employment in developed countries and about 38% in developing countries. Consistent with the increasing role played by the services sector in domestic economies, the trade in services has also witnessed rapid growth. In the last two decades, exports of services have grown faster than merchandise trade [9-10].

Recent studies and researches have shown that services contribute to increased productivity in the agricultural and manufacturing sectors as well as in the services sector itself, as many services are indispensable inputs to other sectors of the economy. [11] have adopted the view that rising demand for producer services as inputs into manufacturing implies overall productivity growth along with increasing share of the service sector. The producer or modern business services, which are tradable and impersonal, leverage on ICT, globalization, and scale of economies; and benefit from higher productivity growth. ICT also provide ample scope for the traditional services to absorb productivity gains, knowledge spillovers and tradability [7].

In Africa, structural evolution appears to relate with changes in relative prices of mineral products. Between 1970 and 2008, [4] observed three distinct phases of structural evolution, which respond to the fluctuations in relative prices of mineral products. The 1970s were characterised by a strong rise in the value-added share of industry and in particular of mining and utilities. Reverse trends emerged between 1980 and 1995 when the service sector's share went over 50%. Since then, mining and utilities recorded a rapid recovery and followed by agriculture. The African economy thus appears to have further deepened its specialisation in raw materials production to the detriment of manufacturing and services, whose combined share of total value added fell from 65% to 53% between 1995 and 2008.

2.1. The Services sector and Structural Characteristic of the Nigerian Economy

The structural composition of an economy communicates a clear message about the development fundamentals of the economy. The historical pattern of structural change is a transition from agriculture to manufacturing (industrialisation) and from manufacturing to services (post industrialisation or tertiarisation) with each successive shift featuring more sophisticated skill and technology-intensive activities. The structural change pattern in Nigeria shows somewhat interesting, but not uncommon characteristics. As Figure 1 shows, the Nigerian economy remains largely agrarian with the GDP growth driven by increasing agriculture output. In the period 1981-2013 the average contribution of agriculture to GDP stands at 40.09% with

services and manufacturing contributing 14.4% and 4.59% respectively. The combined contribution of services and manufacturing to GDP during the period was approximately half of agriculture contribution to GDP (see Figure 2). An indication of structural change can be seen in the trajectory of the contributions of manufacturing and services to total output. Services contribution to GDP almost doubled increasing from about 14% in 1981 to about 22% in 2013. Manufacturing share of total output, on the other hand, plunged from a peak of 12.42% in 1990 to 1.4% in 2013. At its peak in 1990, manufacturing contribution to GDP was slightly above half the share of services in GDP in 2013. Manufacturing contribution to GDP (3.88%) in the two decades to 2013 averages about one-fifth of services share of GDP (15.65%).

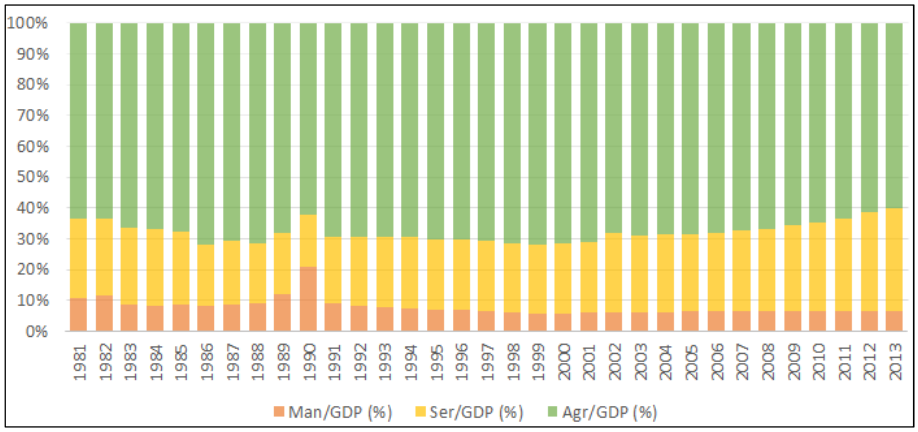

Figure 1. *Sectoral structure of Nigeria GDP 1981-2013.*

Though the share of services in the GDP has increased globally across all income classifications, two patterns of structural change are commonly witnessed in most developing countries. In the low income and lower-middle income countries, the services sector contributed most to GDP followed by agriculture and manufacturing, respectively. Upper-middle-income developing followed the pattern observed in high-income countries with services leading contribution to GDP followed by manufacturing and agriculture.

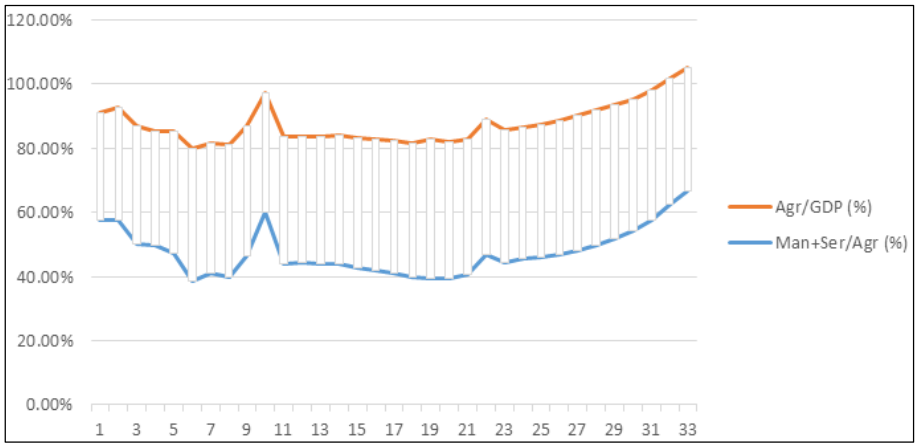

Figure 2. *Combined services and manufacturing as percentage of agriculture, 1981-2013.*

The Nigerian economy in the period 1981-2013 presents a third pattern in which agriculture tops contribution (about 40.09%) to GDP and followed by services and manufacturing, respectively.

2.2. Effects of Growth

In terms of growth performance, manufacturing compares favourably with services and both surpasses the growth rate of agriculture. Manufacturing and services growth rates averages 5.94% and 5.95% annually respectively and exceeds agriculture's 4.77% average annual growth rate. However, for development sustainability, there are two areas of concern for this study. First, we are concerned with how growth in each of the sectors influences overall economic growth. Secondly, we are concerned as to whether growths in the sectors are mutually reinforcing and as a result capable of generating economy-wide growth. For the first concern, Figures 3 – 5 show that output growth in agriculture, manufacturing, and services is positively related to the overall economic growth. However, in terms of causality of the observed positive relationships we conduct Granger causality tests using the logarithms of real GDP and of real

outputs agriculture, manufacturing and services.

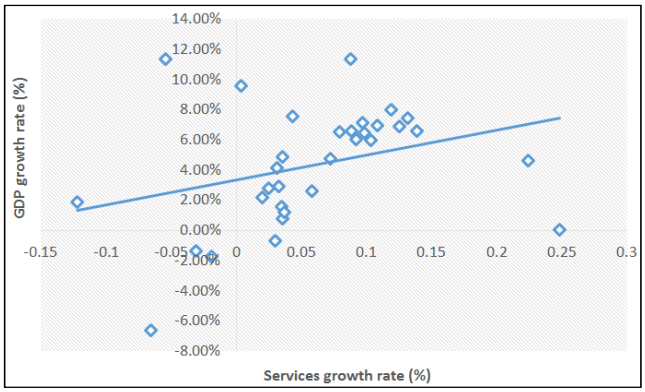

Figure 3. *Services sector growth and economic growth, 1981-2013.*

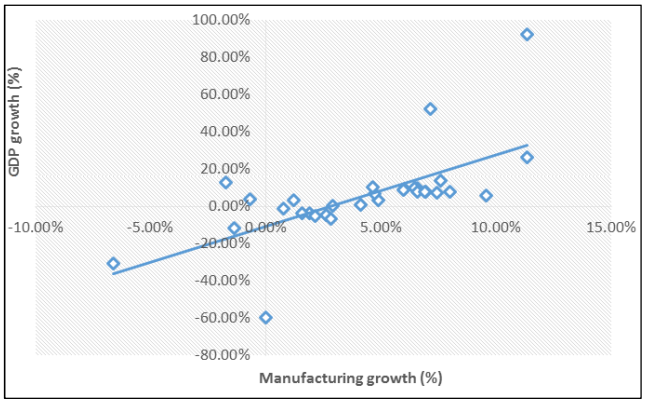

Figure 4. *Manufacturing sector growth and economic growth, 1981-2013.*

Causality was found to run one-way from GPD to manufacturing output and services output, and bi-directional between GDP and agriculture output. A bi-directional causality is also observed between agriculture and manufacturing, and one-way causality from services to manufacturing, and from agriculture to services (see appendix I). The outcome of the causality tests present us with some important observations about the growth characteristics of Nigerian economy as follows. First, growth in GDP drives growth in the agriculture, manufacturing and services sectors. Second, growth in agriculture drives growth in GDP, manufacturing and services sectors. Third, the mutual reinforcing growth between agriculture and manufacturing is stronger that between agriculture and GDP. Fourth, the two-way causality between agriculture growth and GDP growth, and between agriculture and manufacturing growths suggests that the effect of maufacturing growth on overall economic performance is stronger than the corresponding effect of services growth on overall economic performance. Agriculture thus emerges as the hub of economic growth as it drives growth in GDP which in turn drives growth in manufacturing and services outputs. Services growth influences overall economic growth indirectly flowing through growth in manufacturing output which impels growth in agriculture, and from agriculture growth to GDP growth.

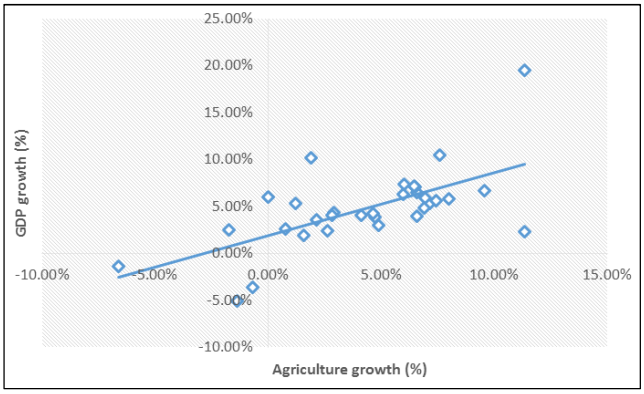

Figure 5. *Agriculture sector growth and economic growth, 1981-2013.*

Most empirical research around the globe shows a positive association between services sector growth and economic growth suggesting that the sector is a growth generator. Can services be relied upon to generate economy-wide growth by positively driving growth in other sectors? We explore this question by drawing some preliminary facts based on the evidence provided in appendices II to IV.

The trend represented in Appendices II to IV has implications for development sustainability. For most parts, the association between services growth and agriculture growth is positive and increasing, whereas, service and manufacturing growths relation for most parts is positive but declining. Agriculture and manufacturing growths relationship is positive and rising. The causality tests support the graphs enough to draw a preliminary conclusion for development sustainability. Causality runs more strongly from agriculture to both services and manufacturing. Services only significantly affect growth in manufacturing and not in agriculture. In the same vein, manufacturing only significantly influence growth in agriculture and not in services. The implication for economic development sustainability is that agriculture is the main driver of output growth in services contrary to the generally held notion that service growth depends on manufacturing demand. According to [12-13] manufacturing is characterised by both static and dynamic increasing returns, while agriculture and traditional services are subject to diminishing returns. Going by Kaldor's engine of growth hypothesis the combined strength of these two sectors (agriculture and services) which are subject to diminishing returns cannot lead to sustained economic development. However, it is a well-established stylised fact in the literature that services growth depends on manufacturing demand, and consequently, growth in services is not sustainable without a concomitant growth in manufacturing [14].

Where services become increasingly important to manufacturing efficiency and growth, the faster manufacturing output grows the faster the growth of productivity, which in turn is the source of sustainable GDP growth and of living standards [15]. This circumstance of a positive two-way association between services and manufacturing growth creates a virtuous cycle that will allow both sectors to grow and guarantee the sustainability of

overall economic growth [14]. The manufacturing-services virtuous cycle envisaged by [14] and [15] appeared not observed in Nigeria. Services growth energies growth in manufacturing but the concomitant drive from manufacturing to services is insignificant, effectively suggesting a one-way causality from services to manufacturing. Similarly, demand from agriculture significantly spurs growth in services output without a corresponding service growth effect on agriculture. The picture emerging from the above causal scenario places agriculture as the fulcrum of manufacturing and services growth in Nigeria. Agriculture demand propels growth in services, which in turn raises services demand for manufacturing output. The cycle is complete with manufacturing increased demand for agriculture output. Economy-wide productivity growth that is the source of GDP growth is unknown in modern development literature to arise from a combination of increasing agriculture output, rapid deindustrialisation, and services sector growth. Thus, the structural composition of the Nigerian economy in the period 1981-2013 cannot be the basis for a sustainable economic development.

Sustainable economic growth is intertwined with economic modernisation. The growth of the services sector especially is an important aspect of economic development strongly associated with economic modernisation [16-17] where medium and high technology manufacturing generate higher positive externalities and modern impersonal services provide more growth benefits for the economy. Economic modernisation, therefore, presupposes the development of medium and high technology industries and modern impersonal services. Hence, the service-manufacturing relationship observed in Nigeria in the period 1981-2013 might be attributable to the disparity in the level of sophistication of manufacturing activities and services. An unsophisticated services sector may find growth impetus in agriculture than it will from medium and high technology manufacturing. This is the case portrayed by the Nigerian experience.

2.3. Services Sector Composition and Growth Path

Table 1. *Five-year average contribution to services output.*

	1981-85	1986-90	1991-95	1996-00	2001-05	2006-10	2011-13
Transport (TRPT)	26%	22%	19%	19%	18%	16%	13%
Communication (COMM)	3%	4%	3%	3%	7%	18%	34%
Utilities (UTLS)	32%	27%	25%	22%	23%	20%	15%
Hotel and restaurant (HORS)	5%	4%	3%	3%	2%	3%	3%
Finance and insurance (FISU)	12%	19%	29%	31%	29%	22%	17%
Real estate and business services (REBS)	12%	13%	11%	11%	10%	10%	10%
Producers of government services (PRGS)	8%	10%	8%	7%	6%	6%	4%
Communities, social and personal services (CSPS)	3%	2%	2%	4%	5%	5%	5%

Table 1 shows the eight sub-sectors of the services sector in Nigeria and their five-year average contribution to total service output. Finance and insurance sub-sectors leads utilities and transport as the top three major contributors to total services output. In the decade 1981 – 1990 utilities top contribution to services output and closely followed by transport. This decade represents the golden era of government investment and ownership of electricity, water, rail transport, air transport and inland waterways infrastructure. It is interesting to note that the five-year average contribution of utilities and transport to total services output declined progressively since 1991 reflecting inadequate government investment in infrastructure upgrade. While utilities and transport still provide a large share of services output, finance and insurance, leads the services sector from 1991 and only surpassed by communication in 2011. Following two decades of increasing percentage contribution to services; finance and insurance witnessed increasingly decreasing contribution to total services output. Thus, the three top contributors to services supply have witnessed successive decline in their average contribution to services since 2001. On the other hand, communication emerged a key contributor to services from 2001 increasing its contribution by more than 100% within a decade (2001-2010) and the largest average contributor between 2011 and 2013. Real estate and business services made modest contributions to services not exceeding an average of 13%. Government services peaks at average of 10% and communities, social and personal services average 5% at peak level.

Based on the evidence of Table 1, we can *a priori* expect that the services sector will most strongly relate to the economy's production structure through the supply of finance and insurance services, utilities, transport, communication, and real estate and business services. We expect that in a regression of manufacturing output against services, the coefficients of finance and insurance services, utilities, transport, communication, and real estate and business services will be positive and significant, and larger than a similar regression where agriculture is the variable to be predicted.

3. Data, Estimation Technique and Empirical Model

The Central Bank of Nigeria (CBN) Statistical Bulletin 2014 is the source of data analysed in this paper. Data are recorded in 1990 constant basic prices and natural logarithm taken for the purpose of regression.

3.1. Stationarity Test

This study analysed macroeconomic time series, which most often are trended. The resulting innovation to the process is known to produce biased standard errors in regressions and renders unreliable the outcome of the conventional criteria for determining the causal relations between variables. Thus, the necessity for stationarity tests [18]. In deciding by classical methods whether a series is stationary or integrated, several empirical studies including [19-22] suggested the conduct of both the tests of the null hypothesis of stationarity, and of a unit root. Conducting both tests made it possible to distinguish between series that appear to be stationary, have a unit root, or series for which the data/tests are insufficiently informative to reach a conclusion as to whether they are stationary or integrated. Following this tradition, we employ the [23] test of the null hypothesis of unit root as well as [24] test of the null hypothesis of stationarity, which provides a straightforward test of the null hypothesis of stationarity against the alternative of a unit root.

Results of the tests show that most of the variables present unit roots. For such variables, we take the first difference after which they become stationary. The result for transport was difficult to interpret when we compare the two tests. Under the [23] test, we reject the null of a unit root at 5% and accept stationarity at the level, while with [24] the null hypothesis of stationarity is acceptable at 1% but not at 5% and 10%. We thus reject the null of stationarity and take the first difference. The first difference rejects stationarity at all levels of significance. To resolve the potential problem of bias that may result if transport is included in the regression, we drop the variable. Hence, all variables included in the regression are stationary (see Table 2).

Table 2. *Unit root tests.*

	Phillips-Perron [15]			**KPSS [16]**		
	t* at level	**t* at 1st difference**	**Order of integration**	**t* at level**	**t* at 1st difference**	**Order of integration**
LMAN	-2.448789	-6.988544*	(1)	0.138943**	-	(0)
LAGR	-2.243043	-5.981884*	(1)	0.155238	0.036382*	(1)
LTRPT	-3.995122**	-	(0)	0.193125*	0.254996	?
LCOMM	-.0378702	-4.887100*	(1)	0.200102	0.086098*	(1)
LUTLS	-1.969634	-6.045979*	(1)	0.162761	0.058895*	(1)
LHORT	-1.874356	-3.441088***	(1)	0.205030	0.118945*	(1)
LFISU	-1.508617	-5.389734*	(1)	0.155615	0.064328*	(1)
LREBS	0.447420	-7.165725*	(1)	0.198151	0.064408*	(1)
LPRGS	-0.113267	-6.679629*	(1)	0.192859	0.103972*	(1)
LCSPS	-2.462147	-5.966098*	(1)	0.131520**	-	(0)

Notes:
PP test critical values at level: 1% (-4.273277); 5% (-3.557759); 10% (-3.212361)
PP test critical values at 1st difference: 1% (-4.284580), 5% (-3.562882), 10% (-3.215267)
*, **, *** denotes rejection of the null of a unit root at 1%, 5%, and 10% levels of significance
KPSS Asymptotic critical values: 1% (0.216000); 5% (0.146000); 10% (0.119000)
*, **, *** denotes acceptance of the null of stationarity at 1%, 5%, and 10% levels of significance

3.2. Cointegration Test

Since our data is a mixture of $I(0)$ and $I(1)$ variables and none is $I(2)$ the possibility of cointegrating relationships exists. We proceed to estimate an autoregressive distributed lag (ARDL) model of [25] and [25] which in addition to accommodating a mixture of $I(0)$ and $I(1)$ variables also provide the basis for applying the bounds test for cointegration. A key assumption in the ARDL/bounds testing methodology is that the errors of the "unrestricted" error - correction model (ECM) are serially independent. This is tested by computing the F - Statistic of the null hypothesis, H_0: $\mu = 0$ against the alternative that H_0 is not true. According to [25], there is a cointegration of two or more time series, if and only if, the value of the computed F - statistic exceeds the upper critical bound value at any of the conventional levels of significance. The result presented in Panel 2 of Table 3 satisfies the condition for cointegration at all levels of significance for the two models estimated.

3.3. Diagnostic Tests

The residuals diagnostic tests for serial correlation, heteroscedasticity, and normality turns out good as indicated the Breusch-Godfrey, Breusch-Pagan-Godfrey and Jarque-Bera tests presented in Panels 3 and 4 of Table 3

3.4. Estimation Techniques and Models Specification

Our principal estimation technique is the ARDL model, which allows the lags of the dependent variable as well as lags of other variables as regressors, thus making the model dynamic. Granted that the bounds test leads to the conclusion of cointegration, we can meaningfully estimate the short-run and long-run effects of different services output on manufacturing and agriculture outputs. The long - run equilibrium relationship of the ARDL model estimated for manufacturing and agriculture is:

$$Y_t = \alpha_0 + \alpha_i Xit + \varepsilon_t \quad (1)$$

where Y_t represents the log of real manufacturing (agriculture) output, and X_t the vector of different services output. The associated unrestricted ECM, which captures the deviation from the long-run equilibrium, is:

$$\Delta Y_t = \beta_0 + \Sigma\beta i \Delta Y_{t-i} + \Sigma\gamma j \Delta X_{it-j} + \varphi Z_{t-1} + et \quad (2)$$

where $Z_{t-1} = (Y_{t-1} - a_0 - a_i X_{it-1})$, and the a's are the OLS estimates of the α's in (1).

The error-correction speed of adjustment parameter φ and the long-run coefficients are the parameters of interest to be estimated. Parameter φ is expected to be negative for the estimated model to exhibit a return to the long-run equilibrium.

The analysis applies three other estimators, the Fully Modified Least Squares (FMLS), Generalised Least Squares (GLS) and Dynamic Ordinary Least Squares (DOLS). The three estimators belong to a class of the ARDL models referred to as Augmented Static (AS) models. The FMLS modifies least squares to account for serial correlations effects and for endogeneity in the regressors that result from the existence of a cointegrating relationship [26]. Thus, the method is applicable to models with either full rank or cointegrated *I*(1) regressors as well as models with stationary regressors. The GLS and DOLS estimates are almost equivalent and superior to FMLS whenever the persistence of the cointegration error is low and the truncation bias is negligible [27]. AS models, unlike the ARDL do not involve lagged values of the dependent variable in the regression. They are nevertheless each best linear unbiased estimator (BLUE). We compare results from ARDL and AS models to arrive at reliable conclusions about the objectives of the paper.

We estimated two equations using ARDL and AS models. First, we regress real manufacturing output *(MAN*) against different components of services. In the second estimation, real agriculture output (*AGR*) is the dependent variable regressed against the same components of services. All variables in the regressions are in their logarithm form. The estimated dynamic equations are:

$$MAN = \eta_0 + \eta_1 Comm_t + \eta_2 Csps_t + \eta_3 Fisu_t + \eta_4 Hors_t + \eta_5 Prgs_t + \eta_6 Rebs_t + \eta_7 Utls_t + \varepsilon_t \quad (3)$$

$$AGR = \lambda_0 + \lambda_1 Comm_t + \lambda_2 Csps_t + \lambda_3 Fisu_t + \lambda_4 Hors_t + \lambda_5 Prgs_t + \lambda_6 Rebs_t + \lambda_7 Utls_t + \varepsilon_t \quad (4)$$

where *Man* and *Agr* represent the real output of manufacturing and agriculture, respectively and η and λ the parameters to be estimated in equations (3) and (4) respectively. The independent variables are as defined in Table 1.

4. Results and Discussion

Results from [23] and [24] tests for unit root are presented in Table 2 showing a mixture of levels and first difference stationarity of variables. Stationarity guarantees that we can reasonably judge whether there is a causal relationship among the variables as well as provide the basis for selecting appropriate estimation technique.

The ARDL/Bonds cointegration results displayed in Panel 2 of Table 3 validates the claim of cointegration between manufacturing/agriculture and the predicting variables of services. The negative sign of the cointegrating equations further reinforces the existence of a cointegration relationship among the variables in the regression. Certain of the long-run relationships among the variables, we estimated the ECM of the ARDL for short-run relationships. In the short-run, *COMM* and *FISU* though positive are not significant in explaining changes in manufacturing output. *UTLS* is also found not a significant predictor of agriculture output in the short-run. However, the cointegrating equation is negative in each case with agriculture having a higher speed of adjustment (-0.92) to long-run equilibrium than manufacturing (-0.75)

Panel 1 of Table 3 show results of long-run coefficients from the four estimators. Our findings are summarised as follows:

Table 3. *Regression and diagnostic tests results.*

PANEL 1. LONG RUN COEFFICIENT AND COINTEQ(-1)					
		ARDL	**GLS**	**FMOLS**	**DOLS**
LCOMM	Manufacturing	0.224486	0.208161	0.175099	0.208161
	Agriculture	0.300729*	0.186648*	0.181114*	0.186648**
LCSPS	Manufacturing	-0.512552*	-0.553050*	-0.524040*	-0.553050*
	Agriculture	0.093741*	0.035539**	0.046818*	0.035539***
LFISU	Manufacturing	0.132168	0.310034*	0.298457*	0.310034*
	Agriculture	0.196832*	0.230436*	0.229512*	0.230436*
LHORS	Manufacturing	0.645047*	0.641546*	0.676246*	0.641546*
	Agriculture	-0.663672*	-0.304406*	-0.319877*	-0.304406*
LPRGS	Manufacturing	-1.911048***	-0.480134	-0.206557	-0.480134
	Agriculture	-0.614046	0.075745	0.108179	0.075745
LREBS	Manufacturing	0.751976	0.248187	0.064429	0.248187
	Agriculture	0.640508*	0.352828**	0.321640**	0.352828**
LUTLS	Manufacturing	0.366765	0.176210	0.186776	0.176210
	Agriculture	0.024775	-0.170350*	-0.153065**	-0.170350**

PANEL 1. LONG RUN COEFFICIENT AND COINTEQ(-1)					
		ARDL	**GLS**	**FMOLS**	**DOLS**
C	Manufacturing	2.435773***	1.617729***	1.572255***	1.617729
	Agriculture	4.159026*	4.129378*	4.105884*	4.129378*
CointEq(-1)	Manufacturing	-0.746519*	-	-	-
	Agriculture	-0.919836*	-	-	-
PANEL 2. ARDL BOUNDS COINTEGRATION TEST					
F-Statistics	Manufacturing	8.486210	Agriculture	14.52023	-
PANEL 3. RESIDUAL DIAGNOSTIC TESTS (Manufacturing)					
Breusch-Godfrey Serial Correlation LM	0.215771 (0.6476)	Breusch-Pagan-Godfrey	1.433327 (0.2331)	Jarque- Bera	1.636259 (0.441256)
PANEL 4. RESIDUAL DIAGNOSTIC TESTS (Agriculture)					
Breusch-Godfrey Serial Correlation LM	0.450164 (0.5113)	Breusch-Pagan-Godfrey	1.196509 (0.3549)	Jarque -Bera)	0.410188 (0.8145)

Notes:
*, **, ***, respectively represent the level of significance at 1%, 5% and 10%.
I(1) Bound at 1% is 4.26

4.1. Manufacturing

4.1.1. Producer Services

Three out of the four producer services captured in the study: communication, real estate and business services, and utilities are not significant in explaining the performance of the manufacturing sector. The long-run coefficients are positive across the four estimators but insignificant at all levels. This outcome is not surprising. It is a well-documented fact that one of the greatest hardship faced by the manufacturing sector in Nigeria is inadequate and poor infrastructure. Hence, firms in the sector are utility providers; they generate their own electricity and provide their own water. In the same vein, they provide facility to meet their real estimate demand. This scenario aptly explains the positive but insignificant influence of these services on the manufacturing sector. The process of 'servitisation' may also explain the positive but insignificant impact of the services sector on manufacturing. It has been empirically verified that where the activities that generate a higher share of the total value of a manufacture lean towards services, manufacturing firms tends to move up the value chain by expanding into such activities as a strategy to increase productivity [29-30].

However, three of the four estimators show positive and significant effect of finance and insurance on manufacturing at all levels of significance, thus making finance and insurance services the most significant producers' services to the manufacturing sector in Nigeria. Finance and insurance appear to be the services that manufacturing firms could not adequately provide in-house. A demand is therefore created to be satisfied by the services sector. This analysis, therefore, suggests that the demand for finance and insurance services is the only significant path for the transmission of growth stimulus from manufacturing to services.

4.1.2. Other Services

These services contribute the least to total services output. Overall, hotel and restaurant services exert the biggest positive and significant influence on the manufacturing sector with the long-run coefficient averaging.65 across the four estimators at all levels of significance, in contrast, to finance and insurance's average of 0.31. This may be connected with the fact that the manufacturing sector in Nigeria is dominated by the foods, beverages and the brewing subsectors. The outputs of this dominant subsector of manufacturing are a major input to hotel and restaurant services. Government services, and communities, social and personal services both negatively affect performance in the manufacturing sector. Essentially, growth in government services is insignificant to the manufacturing sector performance.

The empirical evidence put forward by this analysis is that significant interaction between the services sector and manufacturing occurs mainly through finance and insurance supply to manufacturing, and hotel and restaurant services demand for manufacture. With the average long-run coefficient of hotel and restaurant (.65) twice as large as finance and insurance (.31), the services sector transmits stronger growth stimulus to the manufacturing sector via its demand for manufactures than it receives from the manufacturing sector via its supplies to the manufacturing sector. This supports our causality test that shows a one-way causality from services to manufacturing.

4.2. Agriculture

4.2.1. Producer Services

Agriculture seems to respond to producer services more positively and significantly than manufacturing. The long-run coefficients of communications, finance and insurance, and real estate and business services are all positive and significant. Real estate and business services top agriculture's demand for services and followed by finance and insurance, and communication. Whereas communication is insignificant to manufacturing output expansion, it is significant for agriculture at all levels. Unlike manufacturing, the effect of utilities on agriculture is negative and significant. The implication here seems to be that inadequate and poor supply of utilities is significantly more harmful to agriculture performance than it is to manufacturing. The manufacturing sector's ability to provide utilities in-house provides a

cushion that is largely unavailable in the agriculture sector. The result also suggests evidence of increasing sophistication of the agriculture sector as it evolves from largely a primitive enterprise into a new enterprise capable of demanding and exploiting modern services.

4.2.2. Other Services

The long-run coefficient of communities, social and personal services are positive and significant. With a very large percentage of agriculture output coming from peasant and subsistence farming, a great deal of personal and communal services goes into agriculture operation. Government services are largely positive but insignificant predictor of agriculture output.

5. Conclusion

This study examined the implication for sustainable development of the impressive growth of the services sector in Nigeria between 1981 and 2013. Growth of the services sector is a global phenomenal generally regarded as a positive and necessary condition for economic modernisation. The services sector in Nigeria over the period studied grew its average share of GDP as much as five times the average contribution of manufacturing to GDP. The study stated *a priori* that services sector growth is sustainable and capable of generating economy-wide growth if the growth is driven by demand for services from the agriculture and manufacturing sectors. The emphasis is on demand for producer services, which are known to be more technology intensive than the traditional services, and are thus more tradable.

From the analysis of the causality tests and the estimated models, this study reaches the following conclusions:

(1) producer services are all significant for output growth in the agriculture sector indicating that demands from agriculture drives growth in the services sector. The one-way causality running from agriculture to services supports significant services supply to agriculture

(2) producer services' supply to agriculture suggests increasing shift from traditional peasant agriculture to a modern agriculture enterprise driven by sophisticated services. This is good for the economy as agriculture remains the largest contributor to the GDP

(3) in the more sophisticated producer services where productivity is to be much higher, only finance and insurance significantly affects manufacturing output. The lack of significant demand from manufacturing in this category truncates the transmission of productivity gains in services production to manufacturing and creating an economy-wide productivity boost.

(4) the one-way causality from services to manufacturing in the regressions emanates from hotel and restaurant services demand for manufactures. The services sector demand for manufactures far outweighs its supplies to the manufacturing sector. The implication is that manufacturing sector growth significantly stimulates services growth much more than services growth drives output expansion in manufacturing.

(5) as the economy is presently structured, there is no two-way positive association between the services sector and either of agriculture or manufacturing sectors. With services as the fastest growing sector, it is a two-way association with each of the other two sectors that will guarantee sustainable development.

The current structure is not sustainable. The services sector expectedly will continue to increase its share of GDP while agriculture share will eventually decline in line with the global evolutionary pattern of development. Services therefore must look to manufacturing as a long-term ally for sustainable economic development. Manufacturing and advanced services are both subject to dynamic increasing returns to scale with capability to create a vicious cycle of productivity gains that will create mutual growth of both sectors as well as generate externalities required for overall sustainable economic growth.

Services, especially, infrastructure and core business services are indispensable inputs to increase productivity in agriculture and manufacturing. As the line between manufactures and services becomes increasingly blurred, sustainable development will demand a deliberate integration of services production and the requirements of manufacturing. In this regard, building national supply capacity through proper regulatory and institutional frameworks at national level, particularly in infrastructure services and core business services, is imperative. Although, infrastructure services like telecommunication and electricity have been privatised, the role of the government remains essential to promote development and correct market failures. There is a need to set priorities among different and sometimes competing policy and regulatory objectives to create incentives for private sector investment in infrastructure and business services.

Appendices

Appendix I.

Table 4. *Pairwise Granger Causality Tests*

Sample: 1 65535			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
LMAN does not Granger Cause LGDP	31	0.95862	0.3966
LGDP does not Granger Cause LMAN		3.77030	0.0365
LSERV does not Granger Cause LGDP	31	1.75922	0.1921
LGDP does not Granger Cause LSERV		8.75948	0.0012
LAGR does not Granger Cause LGDP	31	4.25589	0.0252
LGDP does not Granger Cause LAGR		4.72377	0.0178
LSERV does not Granger Cause LMAN	31	6.05064	0.0070
LMAN does not Granger Cause LSERV		2.79649	0.0794
LAGR does not Granger Cause LMAN	112	15.1320	2. E-06
LMAN does not Granger Cause LAGR		7.76921	0.0007
LAGR does not Granger Cause LSERV	31	7.89272	0.0021
LSERV does not Granger Cause LAGR		0.78046	0.4686

Appendix II.

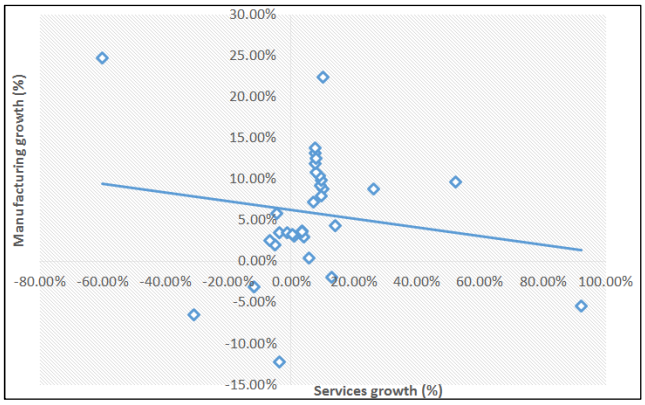

Figure 6. *Manufacturing Growth and Services Growth, 1981-2013.*

Appendix III.

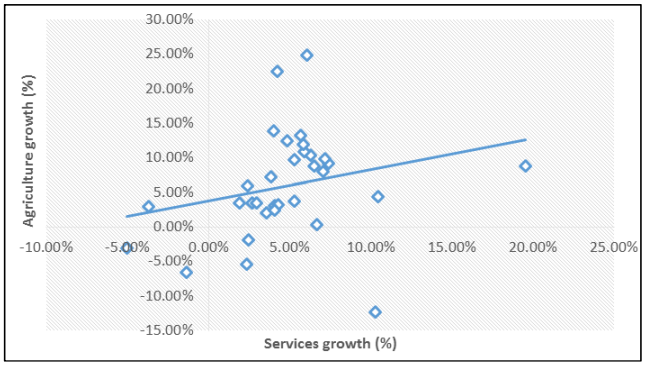

Figure 7. *Agriculture Growth and Services Growth, 1981-2013.*

Appendix IV.

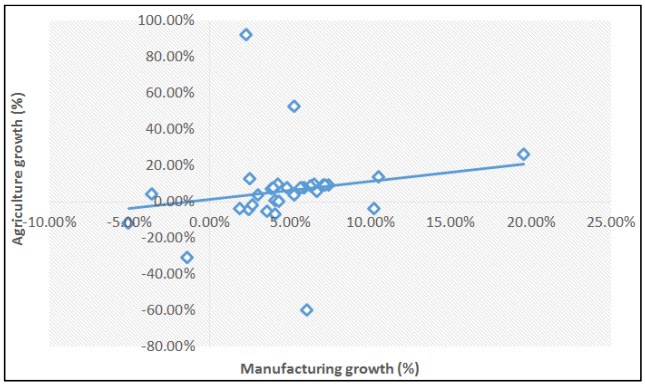

Figure 8. *Agriculture Growth and Manufacturing Growth, 1981-2013.*

References

[1] International Centre for Trade and Sustainable Development (2016). Services and sustainable development: A conceptual approach. Geneva, Switzerland.

[2] Singh, B. (2012). Is the Service-led growth of India sustainable? International Journal of Trade, Economics and Finance. 3(4), 316-322.

[3] Schettkat, R. and Yocarini, L. (2003). The Shift to Services: A Review of the Literature. Discussion Paper No. 964. Forschungsinstitut zur Zukunft der Arbeit, Institute for the Study of Labor. Bonn, Germany.

[4] Memedovic, O. and lapadre, L. (2009). Structural change in the world economy: main features and trends. Research and Statistics Branch Working Paper 24/2009, UNIDO, Vienna.

[5] Ghani, Ejaz, and Homi Kharas (2010). Overview in The Service Revolution in South Asia. Edited by Ejaz Ghani, Oxford University Press.

[6] Felipe, Jesus, Miguel Leon-Ledesma, Matteo Lanzafame, and Gemma Estrada (2007). Sectoral engines of growth in Developing Asia: Stylized Facts and Implications, Asian Development Bank ERD Working Paper No. 107, Manila, Philippines.

[7] Mishra, S., Lundstrom, S, and Anand, R. (2011). Service export sophistication and economic growth. Policy Research Working Paper 5606. The World Bank. South Asia Region.

[8] Baumol, W. (1967). Macroeconomics of Unbalanced Growth: The anatomy of urban crisis, American Economic Review LVII (3), 415-426.

[9] UNCTAD (2014). Services: New frontier for sustainable development: Exploiting the potential of the trade in services for development 2. United Nations, New York.

[10] UNCTAD (2014). Services: New frontier for sustainable development: UNCTAD findings on services, development and trade 1. United Nations, New York.

[11] Hoekman, B. (2000), The new round of services negotiations: Identifying priorities and options, Federal Reserve Bank of Saint Louis, (82), 31–47.

[12] Kaldor, N. (1966). Causes of the slow rate of economic growth of the United Kingdom. An Inaugural Lecture. Cambridge University Press, Cambridge.

[13] Kaldor, N. (1967). Strategic factors in economic development. Cornell University Press, Ithaca.

[14] Pasadilla, G. O., and Liao, C. M. M. (2007). Has liberalization strengthened the link between services and manufacturing? Philippine Institute of Development Studies Discussion Paper Serie No. 2007-13.

[15] Pacheco-Lopez, P., and Thirlwall, A. P. (2013). A new interpretation of Kaldor's first growth law for open developing economies. University of Kent School of Economics Discussion Papers KDPE 1321.

[16] Francois, J. F. and Reiner, K. A. (1996) The role of services in the structure of production and trade: stylized facts from a cross-country analysis. Asia-Pacific Review, 2(1), 1-9.

[17] Egüez, M. E. A. (2014). Manufacturing the only engine of growth? An extension of Kaldor´s first law. Universitat Wien. Available at repositorio.educacionsuperior.gob.ec/bitstream/28000/.../1/TSENESCYT-00632.pdf.

[18] Mahadeva, L., and Robinson, P. (2004). Unit root testing to help model building. Handbooks in Central Banking No 22, Centre for Central Banking Studies, Bank of England, London.

[19] DeJong, D. N., Nankervis, J. C., Savin, N. E., and Whiteman, C. H.(1989). Integration versus trend stationarity in macroeconomic time series, Working paper no. 89-99 (Department of Economics, University of Iowa, Iowa City, IA).

[20] Diebold, F. X. and Rudebusch, G. D. (1991). On the power of Dickey-Fuller tests against fractional alternatives, Economics Letters 35, 155-160.

[21] DeJong, D. N. and Whiteman, C. H. (1991). Reconsidering 'Trends and random walks in macroeconomic time series', Journal of Monetary Economics 28, 221-254.

[22] Phillips, P. C. B., (1991). To criticize the critics: An objective Bayesian analysis of stochastic trends, Journal of Applied Econometrics 6, 333-364.

[23] Phillips, P. C. B., and Perron, P. (1988). Testing for a Unit Root in Time Series Regression, Biometrika, 75, pp. 335-346.

[24] Kwiatkowski, D., Phillips, P. C. B., Schmidt, P., and Shin, Y. (1992). Testing the null hypothesis of stationarity against the alternative of a unit root, Journal of Econometrics, 54, pp. 159-178, North-Holland.

[25] Pesaran, M. H., Shin, Y., and Smith, R., (2001). Bounds testing approaches to the analysis of level relationships. Journal of Applied Econometrics 16, 289–326.

[26] Phillips, P. C. B. (1993). Fully modified least squares and vector autoregression. Cowles Foundation Discussion Paper N0. 1047. Cowles Foundation for Research in Economics at Yale University.

[27] Panopoulou, E., and Pittis, N. (2004). A comparison of autoregressive distributed lag and dynamic OLS cointegration estimators in the case of a serially correlated cointegration error. Econometrics Journal, 7(2), 585-617. http://dx.doi.org/10.1111/j.1368-423x.2004.00145.x.

[28] Crozet, M., and Milet, E. (2014). The servitization of French manufacturing firms. CEPII Working Paper 2014-10. Paris: Centre d'Etudes Prospectives et d'Informations Internationales (CEPII).

[29] Lodefalk, M. (2014). The role of services for manufacturing firm exports. Review of World Economics 150(1)1: 59–82. doi: 10.1007/s10290-013-0171-4.