ECONOMIC SECTOR PERFORMANCE AND AGRICULTURAL DEVELOPMENT IN NIGERIA: A TEST OF MUSGRAVE HYPOTHESIS

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Abstract

This paper titled Economic Sector Performance and Agricultural Development in Nigeria: A Test of Musgrave hypothesis; is set to analyze the role of the three (3) major sectors of the economy on economic growth and development, with special attention to the role of agricultural sub-sector in economic development. Lack of sufficient attention to the role of agricultural sectors in economic growth and development prompted the study. The essence of the study is to test the validity of Musgrave hypothesis using the Nigeria time series data. To guide the study, three (3) research objectives and three (3) null hypotheses were formulated. The paper highlighted that the structural characteristics of an economy is the most important indicator of a country's or regions economic development. It concluded that the shares of agriculture, manufacturing and services in total GDP, as well as the shares of employment in different occupational groups are closely correlated to aggregate economic performance. And that although the growth of the three major sectors of Agriculture, Industry and the services correlate with economic performance; Musgrave hypothesis on the correlation between the lag values of each of these major economic sectors and the economic performance was not valid in Nigeria.

Key words: Economic Sector Performance, Agricultural Development, Musgrave Hypothesis

Introduction

Nigeria is a country of immense economic opportunity and potentials. It is one of the largest in size in sub Saharan Africa, occupying an estimated land area of about 923,769 square km with a coastline of about 960 km bordering the

Atlantic Ocean. Ecologically, the country cuts across three main vegetational zones; Sahel/Sudan savannah in the north; Guinea/ Derived savannah in the middle belt region; and Rainforest/Mangrove swamp in the south. In terms of climatic conditions, average annual rainfall in the country ranged from a minimum of 679mm in the far north (Sokoto) to a maximum of 3,211mm in the south (Port Harcourt). Average minimum temperatures ranged from a low of 10^0C in Jos to a high of 26.2^0C in Lagos, while maximum temperatures ranged from 31.4^0C in Lagos to 41.1^0C in Maiduguri.

It has a wide/ broad economic sector most of which depends on the agricultural sub sector for survival. In order to gain a deeper insight into the topicality of the relationship between economic sector performance and agricultural growth and the growth of other subsectors of the economy, the study sought to test the Musgrave hypothesis of economic development. The Musgrave hypothesis states that economic sector performance of any economy depends on the growth of the key sectors and their immediate past values. He said that the past values provided the pillars upon which the next level of development is based (Musgrave 1959). The purpose of this research is to test the validity of Musgrave hypothesis on the correlation between economic performance and other subsectors using Nigeria time series data.; while the specific objectives are to:

i. Test the validity of Musgrave hypothesis on the correlation between economic sector performance and agricultural growth and it lag values in Nigeria
ii. Test the validity of Musgrave hypothesis on the correlation between economic sector performance and industrial growth and it lag values in Nigeria
iii. Test the validity of Musgrave hypothesis on the correlation between economic sector performance and the growth in services subsector and it lag values in Nigeria

Research Hypotheses

i. Musgrave hypothesis which postulates that there is a correlation between economic sector performance and agricultural growth and it lag values is not valid in Nigeria
ii. Musgrave hypothesis which postulates that there is a correlation between economic sector performance and industrial growth and it lag values is not valid in Nigeria
iii. Musgrave hypothesis which postulates that there is a correlation between economic sector performance and the growth in services subsector and it lag values is not valid in Nigeria

Theoretical Framework and Review of Related Literature

Musgrave hypothesis of Economic Development provided the framework for this research. This hypothesis/theory was propounded in the year 1959. It states that economic sector performance of any economy depends on the growth of the key component subsectors (in Nigeria case: agriculture, industries and services sub sectors) and also depended on the immediate past values of each of these sub sectors. The theory maintained that the past values provided the pillars upon which the next level of development is based. According to the theory, Economic development is a building process upon which the next stage of development is built upon the previous foundations made; thus, the past values (lag values) of the principal subsectors correlates with the next rate of growth for aggregate economic performance. The relevance of this theory to this research is that its provides the insight on the fact that emphasis should not be placed only on the current values of the major economic sectors without considering their past values in the assessment of economic performance.

However, some research work and diverse opinions on economic sector performance and agricultural development in different economies of the world are hereby presented to provide an insight on the subject matter. A paper entitled "Structural Change and the Growth of Industrial Sectors: Empirical Test of a General Purpose Technology (GPT) Model" investigated the empirical relevance

of a model of structural change and the growth of industrial sectors to the economy. The model analysed the process of diffusion of general-purpose technologies (GPTs) and how this affects the dynamic performance of manufacturing and service industries. The empirical analysis studies the dynamics and the determinants of labour productivity growth for a large number of sectors in 18 OECD countries over the period 1970-2005. The results of dynamic panel data and cross-sectional analysis provide support for the empirical validity of the model that industrial growth that are using lCT-related GPTs enhances economic performance. Relatedly, countries that have been able to shift their industrial structure towards high-opportunities in manufacturing and service industries have grown more rapidly than those without (Castellacci, 2010).

In a related study; Pyke (2019) admitted that there are obvious gaps between long-term change in economic structure and its principal driving force-technological progress. This paper simulated aggregate economic performance as represented by input-output structure under specific technological change. A new version of a dynamic input-output model was developed, in which both technological progress and deployment are endogenous. Investment in research and development (R&D) drives the development of new technologies, installation of capital stock brings new technical processes into sector production, new and old technical processes within a sector exchange their relative weights in production as they are phased in or out, and sectors evolve or transform over time. Scenario analysis using this model applied to the Chinese electric power industry shows that the phasing-in of non-fossil energy technology has greatly change the structure of both the sectors and the economy overtime.

In the same vain, Yi and Zhang, (2010) developed a tractable three-sector model to study structural change in an open economy. The model features an endogenous pattern of trade dictated by comparative advantage. The authors derive an intuitive expression linking sectoral employment shares to sectoral expenditure shares and to sectoral net export shares of total GDP. The authors

showed how these driving forces can generate the "hump" pattern that characterises the manufacturing employment share as a country develops.

Another author employs an input-output framework to identify the contribution of economy-wide changes in technology and international trade to sectoral output growth in the German economy. Distinguishing two manufacturing sectors, a manufacturing core of export-oriented sectors and the rest of manufacturing. It subsequently formulates several scenarios about structural changes that are assumed to take place in each of these sub-sectors; comparing the resulting output and employment to actual base-year values, the authors identified the impact of the most important changes within manufacturing on the two sub-sectors of business-related services and agricultural sector. They concluded that both had important contribution to economic performance (Franke, Kalmbach, 2019).

The Ogunyemi and Femi (2020) examined the emergence of manufacturing in developing countries for the period 1970-2019. They presented data on structural change in a sample of 67 developing countries and 21 advanced economies. Theoretical and empirical evidence for the proposition that industrialisation rooted on agriculture acts as an engine of growth in developing countries was uphold. Manufacturing has been important for growth in developing countries, but not all expectations of the “engine of growth hypothesis” were covered by the study.

In a research entitled "Structural Convergence of European Countries" its authors investigated the development of economic structures of Western European countries over three decades using employment data. The authors tested for structural convergence on the aggregate level as well as specifically for manufacturing and service industries. For this the authors uses both time-series and panel data analysis methods. The results showed strong and persistent inter-sectoral convergence patterns as lagging countries shift from industrialised to service oriented economies. (Peneder, 2009).

Szirmai (2012) proposes an economic model to analyse a dynamic interaction among capital accumulation, economic structure and preference in a perfectly competitive economic system. The system consists of three sectors: agriculture, industry and services. A typical consumer's utility is dependent on consumption of agricultural and industrial goods, services, housing and health. The model in this study was influenced by the structural approach of example, Leontief, Sraffa and Pasinetti. The traditional neoclassical growth models, such as the Solow-Swan one-sector model, the Uzawa two-sector model and the Ricardian models of Samuelson and Pasinetti, were considered, from a structural point of view, as special cases of the model in this study. Conditions for the existence of equilibria and stability were provided. The effects of changes in some parameters on the long-run economic performance are examined.

This paper showed that levels and trends of comparative labour productivity in manufacturing differ from levels and trends of labour productivity at the whole economy level, suggesting that structure and structural change play an important role in the growth and economic performance process. The main characteristics of economic growth of nations are a sustained increase in the growth of output and factor productivity and a widespread process of structural transformation. (Syrquin, 2010).

The relationship between economic structure and agricultural development (productivity and growth) has been the subject of increasing interest over recent decades. The innovative focus of this paper concerns the role of the services sector in economic development. Services play a core role in advanced economies, both from a quantitative and a strategic point of view. However, empirical research in this area lies considerably behind the research into the agricultural and manufacturing sectors. This paper focuses on the impact of tertiary production on overall productivity growth, using a sample of 37 OECD countries for the period 1980 and 2005. The results partially refute traditional knowledge on the productivity of services. Contrary to what conventional theories suggest, this research demonstrates that several tertiary activities have

shown dynamic productivity growth rates, while their contribution to overall productivity growth plays a more important role than was historically believed (Maroto-Sanchez, Cuadrado-Roura, 2009).

Economic Sector Performance Indicators

It is worthy to note that every economy consists of economic sectors. The term economic structure reflects the part or the proportion of the entire economy occupied by each of the component sector. Most popularly, it is reflected by the share of the Gross Domestic Product (GDP) from each of the sectors. In this section, we will concentrate on possible economic sector performance as the share of the GDP from each of the sectors.

Economic growth ultimately depends on the competitive performance of individual enterprises. The competitiveness of these enterprises in turn depends on the relative abundance (and hence cost) of resources, as well as the incentives and capabilities to use them in a productive and sustainable manner. Even though many determinants, such as macroeconomic stability, the corporate tax rate or the operation of factor markets, are thus shaped by the general business environment, the relative intensity in factor use, the incentives to pursue opportunities, and the specific capabilities required for transforming them into successful business vary between sectors. As a consequence, countries differ greatly in their sectoral growth and performance. Within an identical macroeconomic setting, they show considerable strength in some industries and weaknesses in others. Based on the goals of the Lisbon Agenda, the comparison of aggregate output can only provide an incomplete picture of economic competitiveness. Competitiveness is a multifaceted target for which no single and fully comprehensive measure exists. 'The multitude of objectives must be taken into account when striving for a 'general' picture (Peneder, 2009). Authors assess the competitive performance of economic sectors along the following set of selected indicators:

Growth

- The growth of value added indicates an economy's success in creating income and thus its ability to increase material well-being. For given constraints with respect to a society's non-economic goals, such as social fairness or ecological sustainability, it is probably the most straightforward target of economic activity.
- The growth of employment or hours worked indicates not only success in mobilizing productive resources, but also the ability to offer employment opportunities to the populace. As labour input is also a cost factor in production, its growth is consequential and significant. If it must be sustained, the growth of value added and' productivity must keep pace accordingly.

Productivity

- Labour productivity is the ratio of output (either gross output or value added) to labour input. Integrating changes in inputs and outputs into a single measure reflects competitiveness more accurately than the aforementioned growth of output and employment. In this study, we define labour productivity as value added per hour worked. A more productive economic sector is the sector with highest marginal productivity of labour.
- Multifactor productivity (MFP) additionally nets out the returns to all other inputs, i.e. capital (and intermediates in the case of a gross output specification), and is therefore the most comprehensive measure of the efficiency of operations. Multifactor productivity is calculated as a residual, i.e. the gain in output which cannot be assigned to any single measurable input. The higher it value, the more productive is the sector.

Profitability

- The net profit margin is the ratio of after-tax revenue net of extraordinary items (and associated taxes) to sales. Indicating the efficient translation of sales into profits, the net profit margin tells how much profit is made for every dollar of revenue generated.

- Indicating the efficient use of assets to generate profits, the return on assets (ROA) is calculated as the ratio of profit after- tax net of sales cost to the total invested assets(funds). The ROA figure offers an idea of how effective a company is converting its available investment funds into net income, both through debt and equity financing.

International trade

- The revealed comparative advantage (RCA) indicator measures trade specialisation. In this study, it is defined as the logarithm of the export to import relation of one sector divided by the export to import relation of all sectors. Positive RCA values indicate comparative advantages and negative values represent comparative disadvantages of a particular industry.
- Export market shares reflect the capacity to respond to external demand or open up new markets in direct comparison to international competitors. They show how much of the total 'world' export is covered by the export.

Foreign direct investments (FDI)

- The ratio of inward FDI stock to value added indicates the contribution of FDIs to capital formation, stimulating value added and employment but also the acquisition of new technology and management practices in the host market.
- Analogously, the ratio of outward FDI stocks to value added reflects a corresponding outflow of capital. However, it can also be an indication of corporate strength, where companies venture abroad to seize opportunities from foreign markets and resources (Lanauskiiene and Tvarnaviciene, 2013).

.Within this context, this study on economic sector performance is aimed to identify the major determinants, patterns and trends in Nigerian competitiveness from a distinct sectoral perspective. The first part of this study investigates Nigerian sectoral competitiveness, assessing the relative strengths and weaknesses of the industries with respect to the various dimensions of performance, such as the growth of value added, employment, labour and

multifactor productivity, profitability, international trade, and foreign direct investments. The second part now turns to an investigation of the major determinants or 'drivers' of sectoral growth (Peneder, 2009).

- Sectoral performance is driven by a myriad of distinct sources. At present, no single, comprehensive theory exists which can explain the role of each of these elements within a jointly integrated economic model. Econometric models sometimes give an insight as to the extent of correlation among these sectors within the limit of available data in different economic context and within the peculiarities of the economy concern. Accordingly, this study is organised according to six groups of related factors: macroeconomic conditions, demand side factors, inputs to production, R & D and innovation, market structure, and finally openness and barriers to trade (Lanauskiiene and Tvarnaviciene, 2013).

Model Specification

There has been various interpretations as to the nature of relationship between economic sector performance and agricultural development. Two (2) of the interpretations are highlighted in this study. There seem to be a consensus in the literature that there would be an increasing relative share of development of the agricultural sub sector to support the activities of other sectors of the economy for sustainable development. Thus,

GDPGR = f(AGRGR) - - - - - - (1)

Where GDCPGR represents growth in Gross Domestic Product, AGRGR represents growth in the agricultural sub-sector. In this model agricultural sector is regarded as the catalyst of growth for increase in economic performance. This model assumes that there is a co-movement and agricultural led growth between the two sectors.

Musgrave (1958) predicted the nature of relationship between economic sector performance and agricultural development as;

$GDPGR = f(GDPGR_{t-1}, AGRGR, AGRGR_{t-1}, R)$ - - - - - - (2)

Where

$GDPGR_{t-1}$ = one year lag value of GDPGR.

$AGRGR_{t-1}$ = one year lag value of agricultural output and R = other factors which contribute to GDP growth in an economy.

In this study we replace R with industrial sector and services sub sectors and their lag values and impose it on the Musgrave model presented in equation (2). Thus we obtained;

$GDPGR = f(GDPGR_{t-1}, AGRGR, AGRGR_{t-1}, INDGR, INDGR_{t-1}, SERVGR, SERVGR_{t-1})$ - - - (3)

Where

INDGR = growth in industrial output

$INDGR_{t-1}$ = one year lag value of industrial output.

SERVGR = growth in the output of service sector

$SERVGR_{t-1}$ = one year lag value of output of services subsector

The explicit form of the model in equation (3) is as presented below;

$GDPGR = a_o + a_1GDPGR_{t-1} + a_2AGRGR + a_3AGRGR_{t-1} + a_4INDGR = a_5INDGR_{t-1} + a_6SERVGR, + a_7SERVGR_{t-1} + Ɛ_t$ - - - - - - - - - - - - - - (4)

Where

.a_o is the intercept and a_1, a_2, a_3, a_4, a_5, a_6 and a_7 are the coefficients of the independent variables in the model. $Ɛ_t$ = error term.

Apriori expectation: a_1, a_2, a_3, a_4, a_5, a_6 and $a_7 > 0$

We shall then proceed to test for stationarity and cointegration in the variables. If cointegrated, implying a long run equilibrium relationship between economic sector performance and the key economic subsectors and their lag values as postulated by Musgrave hypothesis. Following Engel and Granger (1987), a homogeneous non-stationary series which can be transformed to a stationary series by differencing d times is said to be cointegrated of order d. Thus Y_t, a time series, is integrated of order d denoted Y,-l(d). If Y, is stationary, then no differencing is required that is, Y,-I(0). A test for order of integration of Y, has been proposed by Dickey-Fuller (1979), Banerjee et al (1993) etc. The test proposed by Dicker -Fuller, hereafter denoted DF is called the unit root test and would be used in this study. The DF class of unit root tests is based on the regression equation;

$\Delta Y_1 = \delta Y_{t-1} + \mu_t \; ; \; \mu_t \sim N(o, \sigma^2), Y_0 = 0$ - - - - - - (5)

which could be written as $Y1 = (1 + \delta)\, Y_{t-1} + \mu_t$. The null hypothesis is

Ho : δ : 0, implying non-stationarity of the series,

with the alternative $H_1 : \delta < 0$.

Hence, the test involves testing the negativity of δ in the OLS regression of (5). Rejection of the null hypothesis implies that Y_t, is integrated of order zero i.e. the series is stationary. The t-statistic in the regression equation (5) does not possess limiting normal distribution. Dickey (1979), and Mackinnon (1990) had tabulated critical values for the distribution of the t-statistic in the regression. These are simulated values and tabulated, according to whether the model is estimated with a constant trend or both. If Y_t, is integrated of order l, [Y,-I(1)], then its first difference is integrated of order zero [Y,-I(0)] and the test could be repeated.

One demerit of the DF test is that it assumes that the underlying process generating the observation is an autoregressive process of order 1 [AR(l)]. If it is not, then autocorrelation in the error term in (5) will bias the test. In order to overcome this problem, the Augmented Dickey-Fuller (ADF) test would also be used. It is identical to the standard DF test, but is constituted with a regression model of the form:

$\Delta Y_t = \beta Y_{t-1} + \sum_{i=1}^{k} \alpha \Delta Y_{t-1} + \mu_t$ - - - - - - (6)

where the lag, k is set so as to ensure that any autocorrelation in ΔY, is absorbed and that a reasonable degree of freedom is preserved, and also the error term is white noise. The testing procedure is the same as the DF. The concept of cointegration is derive from the fact that if two series X_t and Y_t are I(d), then X_t and Y_t are said to be cointegrated if there exists a unique value b which ensures that the residual, $(Y_t - \beta X_1)$ is I(0). The residual, denoted ϵ_t, is called the disequilibrium error and must be stationary.

Testing for cointegration, therefore, means examining the order of integration of the residual from the OLS regression model. If the residuals are stationary then

the series are cointegrated. Thus, the equation of the regression of the residual for this test is;

$$\Delta\hat{u}_t = \beta\hat{u}_{t-1} + \epsilon_t \quad - \quad - \quad - \quad - \quad - \quad - \quad -- \quad - \quad (7)$$

For he DF and

$$\Delta\mu_t = \beta\mu_{t-1} + \sum_{i=1}^{k}\beta i\, \Delta\mu_{t-1} + \epsilon_t \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad (8)$$

where

μ, is the residual from our static regression and β is the coefficient in the regression, for the ADF which now would be used to examine the negativity of β. The null hypothesis is the same as in the test for order of integration, but here residual stationary implies cointegration of the series.

Source of Data

Data for this work were obtained from Central Bank of Nigeria Statistical Bulletin and Annual Report (CBN 2020). They are annual data and span over a period of 30 years (1990 to 2020)

Data Presentation, Analysis and Discussions

Table 1.0 presents the sectoral competiveness and the contribution of four underlisted sub-sectors to Economic sector performance in Nigeria for the period 1990 – 2020

Table 1: Table to show the Contribution of the three key sub-sectors to Economic Sector Performance in Nigeria

YEARS	GDPGR	$GDPGR_{t-1}$	INDGR	$INDGR_{t-1}$	AGRGR	$AGRGR_{t-1}$	SERVGR	$SERVGR_{t-1}$
1990	80.84	419.2	28.03	144.69	68.37	88.26	34.09	186.24
1991	96.36	499.6	42.39	172.72	16.61	106.63	37.37	22O.33
1992	313.76	596.04	121.83	215.11	60.88	123.24	131.05	257.7
1993	349.27	909.8	72.65	336.94	111.2	184.12	161.41	388.75
1994	503.74	1,259.07	131.86	409.59	149.95	295.32	221.93	554.16
1995	1132.39	1,762.81	389.65	541.45	344.87	445.27	397.87	776.09
1996	883.93	2,895.20	301.05	931.1	280.37	790.14	302.51	1,173.96
1997	332.51	3,779.13	29.21	1232.15	140.95	1,070.51	162.35	1,476.47
1998	477.35	4,111.64	-93	1261.36	129.58	1,211.46	441.06	1,683.82
1999	718.37	4,588.99	272.24	1168.07	85.93	1,341.04	360.19	2,079.88
2000	1,590.12	5,307.36	799.32	1440.31	81.44	1,426.97	709.38	2,440.07
2001	1,236.66	6,897.48	-57.01	2239.63	507.01	1,508.41	786.65	3,149.45
2002	3,198.11	8,134.14	249.98	2182.62	2,236.10	2,015.42	712.03	3,936.10
2003	1,969.31	11,332.25	778.59	2432.6	334.44	4,251.52	856.32	4,648.13

2004	4,019.74	13,301.56	1,180.51	3211.19	349.33	4,585.52	2,489.88	5,504.45
2005	4,948.68	17,321.30	1,199.66	4391.7	1,097.07	4,935.26	2,651.96	7,994.33
2006	6,392.49	22,269.98	1,251.71	5591.36	1,480.97	6,032.33	3,659.81	10,646.29
2007	4,332.91	28,662.47	836.67	6843.07	1,038.68	7,513.30	2,457.57	14,306.10
2008	6,162.50	32,995.38	1,536.43	7679.74	1,548.35	8,551.98	3,077.72	16,763.67
2009	5,127.68	39,157.88	-207.91	9216.17	1,525.11	10,100.33	3,310.47	19,841.39
2010	10,326.70	44,285.56	4,818.17	9008.26	1,423.45	11,625.44	4,085.08	23,651.86
2011	8,368.14	54,612.26	4,026.68	13826.43	988.94	13,048.89	3,352.52	27,736.94
2012	8,733.54	62,980.40	1,734.61	17853.11	1,778.17	14,037.83	5,220.76	31,089.46
2013	8,378.62	71,713.94	1,266.13	19587.72	1,000.55	15,816.00	6,111.95	36,310.22
2014	8,951.06	80,092.56	1,359.16	20,853.85	1,202.06	16,816.55	6,389.83	42,422.17
1015	5,101.34	89,043.62	-3,024.43	22,213.01	1,618.36	18,018.61	6,507.41	48,812.00
2016	7,344.53	94,144.96	-547.41	19,188.58	1,886.54	19,636.97	6,005.40	55,319.41
2017	12,222.14	101,489.49	6,998.73	18,641.17	2,429.04	21,523.51	2,794.37	61,324.81
2018	14,023.20	113,711.63	7,578.43	25,639.90	3,418.75	23,952.55	3,028.02	64,119.18
2019	16,473.66	127,736.83	6,661.36	33,218.33	4,532.84	27,371.30	5,279.46	67,147.20
2020	NA	144,210.49	NA	39,879.69	NA	31,904.14	NA	72,426.66

Result from Stationarity Tests

Table 2: Unit Root Test on Variables without Trend

ADF STATISTICS				
Variable	Level	1st Difference	2nd Difference	Order of Integration
GDPGR	0.247 (-2.967)	-6.384 (-2.971)		1(1)
$GDPGR_{t-1}$	2.767 (-2.967)	0.247 (-2.967)	-6.384 (-2.971)	1(2)
AGRGR	-0.020 (-2.967)	-6.093 (-2.971)		1(1)
$AGRGR_{t-1}$	8.671(-2.963)			1(0)
INDGR	-2.019 (-2.967)	-5.954 (-3.752)		1(1)
$INDGR_{t-1}$	5.327 (2.986)			1(0)
SERVGR	-1.047 (-2.967)	-4.471 (-2.991)		1(1)
$SERVGR_{t-1}$	0.994 (-2.976)	1.117 (-2.976)	-4.369(2.981)	1(2)

Critical Values for ADF are in parenthesis.

The results in table 2 show that two variables indicated in the table were stationary at level, that is, they are integrated of order1(0), four were stationary at first difference while two were stationary at second difference.

Test for Cointegration-Johansen Cointegration Test

Table 3a: Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	**Eigen value**	**Trace Statistic**	**0.05 Critical** Value	**Prob.****
None*	0.81774	83.7051	47.8561	0.0001
At most 1*	0.53132	36.0393	29.7971	0.0084
At most 2	0.37038	14.8196	15.4947	0.063
At most 3	0.06444	1.86535	3.8414	0.172

Trace Test indicates 2 cointegrating eqn(s) at the 0.05 level
*denotes rejection of the hypothesis at the 0.05 level
**Mackinnon-Haug- Michelis (1999) p-values

Table 3b: Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigen value	Max- Eigen Statistic	0.05 Critical Value	Prob.**
None*	0.81774	47.6657	27.5843	0.0001
At most 1*	0.53132	21.2197	21.1316	0.0486
At most 2	0.37038	12.9542	14.2646	0.0797
At most 3	0.06444	1.86535	3.8414	0.172

Trace Test indicates 2 cointegrating eqn(s) at the 0.05 level
*denotes rejection of the hypothesis at the 0.05 level
**Mackinnon-Haug- Michelis (1999) p-values

The results from table 3a and 3b show that two (2) cointegrating variables both in the trace and in the maximum Eigenvalue. This imlies that thee is a long run relationship between the variables in the specified model.

Estimated Long Run Results

Table 4 presents the long run estimates for the model. The estimated coefficient for each of the variables represents the effect of each of the independent variables(x's) on the dependent variable (Economic sector performance - GDPGR). From the regression results, the lead functional form for the model is the linear model. This is because, irrespective of having a high R-squared value, the Durbin- Watson statistic is reasonably higher than all other ones. The computed Durbin-Watson statistic of 2.1172 indicates that there exist a minor serial autocorrelation. The AIC and SIC are also not too high. The E-view computed R-squared Adjusted value of 0.9996 obtained simply means that the specified explanatory time series explained about 99.96% of the total variation in the Economic performance(GDP growth) in Nigeria, while the leftover 0.0004% variation may be due to error or factors outside the model. This factor may be other activities in the underground economy. The F- statistic

value of 10605.31 is significant at 1% probability level, indicating that the R-squared is significant and this implies that the model (equation) has goodness of fit

Table 4: **Estimated Long-Run Result Between Economic Sector Performance and Growth in other Economic Subsectors**

Variable	Linear Model (Lead Model)	Semi log Model	Exponential Model	Double log model
C	-19.7921(0.5133)	6.1034(0.0000)	3.8329(0.0417)	3.2326(0.6049)
AGRGR	1.0167(0.0000)***	0.0004(0.0307)	0.0723(0.0284)	0.3098(na)
$AGRGR_{t-1}$	-0.2113(0.9186)	-0.0052(0.6192)	-1.8324(0.0624)	0.6895(0.5946)
INDGR	0.9603(0.0000)***	0.0001(0.1992)	0.0054(0.1005)	0.2386(0.0001)
$INDGR_{t-1}$	-0.3072(0.8819)	-0.0057(0.6653)	-0.0721(0.4168)	0.2303(0.8559)
SERVGR	0.9559(0.0000)***	0.0004(0.0082)	0.0061(0.1820)	0.4229(0.0006)
$SERVGR_{t-1}$	-0.3082(0.8816)	-0.0056(0.6713)	-0.0138(0.4189)	1.0008(0.6900)
$GDPGR_{t-1}$	0.2909(0.8812)	0.0055(0.6745)	0.4208(0.1530)	-1.9152(0.7013)
R^2	0.9997	0.8800	0.8105	0.7634
Adjusted R^2	0.9996	0.8401	0.7934	0.7469
F- test	10605.31	22.0185	49.0316	34.2105
Prob.(F-statistic)	(0.0000)***	(0.0000)***	(0.0260)	(0.0046)**
DW	2.1172	0.8047	1.8421	1.9081
AIC	12.0210	1.9167	21.064	0.0836
SIC	12.3981	2.2939	18.4762	0.4573

Note: Variables are as defined in Eqn 2 and 3. C = Intercept, numbers in parentheses are the p-values, R^2 = Coefficient of determination, D.W = Durbin Watson Statistics, AIC = Akaike Information Criterion, SIC = Schwarz Information Criterion, t- tabulated value = 2.04

Discussions

The regression result presented on table 4 above shows that there was a positive correlation between agricultural growth and economic performance in Nigeria. Since the t-calculated value of 31.44 > t-tabulated value of 2.04 at 0.05 level of significance, we reject the null hypothesis and conclude that agricultural growth significantly correlate with economic performance in Nigeria. However, the Musgrave hypothesis on the correlation between the lag values of agricultural

output and economic sector performance was not valid in Nigeria. The evidence from Nigeria data showed that the economic sector performance at time t depends on the agricultural output at that same time and not on its lag values.

From the analysis presented on table 4 above, since the calculated t-value of 65.17 > the t-tabulated value of 2.04 at 0.05 level of significance, we reject the null hypothesis and conclude that there is a correlation between industrial growth and economic performance in Nigeria. The result also showed that Musgrave hypothesis on the existence of correlation between economic sector performance and the lag value of industrial output is not valid in Nigeria. Musgrave hypothesized that economic performance/development is a stepwise building process which follows a dynamic synthesis which leverage on the past performance(past values of the key sectors)

The analysis also showed that the calculated t-value of 37.87 in respect of services growth > the t-tabulated value of 2.04 at 0.05 level of significance. Thus, we reject the null hypothesis and conclude that there is a correlation between growth in services and economic performance in Nigeria as postulated by Musgrave hypothesis. The result also showed that Musgrave hypothesis on the existence of correlation between economic sector performance and the lag value of services output is not valid in Nigeria

Conclusion

This research paper showed that the structural characteristics of an economy is the most important indicator of a country's or regions economic development. The shares of industrial sector, agriculture and services in GDP and in total employment, as well as the shares of employment in different occupational groups are closely correlated to aggregate indicators of economic performance.

Insufficient attention to the impact of economic sectors on economic development encouraged a very reasonable necessity for research on this topic. Aggregate economic sector performance targeted at a country's economic growth

accompanied by structural changes is tagged economic development. The study reveals that Musgrave hypothesis of the dependency of the present economy growth and performance on the past values of the key sectors of agriculture, industries and services was not valid in Nigeria. The policy implication is that economic performance can be taken to any dimension by adequate investment without recourse to what has been their past values.

Recommendations

In the light of the above conclusion, the following conclusions were made:

i. Economic performance (economic development) of any nation can be taken to any level if there is a political will to do so at any given time. This could be achieved through appropriate allocation and re-allocation of resources to the key sectors as highlighted above.

ii. In a mixed economy like our (Nigeria), where the task of economic development is a dual responsibility of both the government and the private sector. Thus, the private sector should show high level of commitment in the form of investment for high economic performance irrespective of what has been the past level of aggregate economic output.

References

Castellacci, F. (2010).Structural Change and the Growth of industrial Sectors: Empirical Test of GPT model. In; Lanauskiiene T. and Tvarnaviciene M. (2013). Economic Sector Performance and Growth: Contemporary Approaches in the Context of Sustainable Development. *Journal of Intellectual Economics* 3 (17): 355 -374

CBN (2020).Statistical Bulletin and Annual Report. Central Bank of Nigeria. Abuja.

Dickey, D. A., and Fuller, W. A. (1979): Distribution of the Estimators Autoregressive Time Series with a Unit Root. *Journal of American Association* Vol. 74:427 – 431

Engel. R. F., and Granger, C. W. J.(1987).Cointegration and Error Correction: Representation, Estimation an Testing. Econometrica,2(55): 251 – 276

Franke, R, Kalmbach, P. (2019). Structural Change in the Manufacturing Sector and it Impact on Economic Performance; An Input- Output Study o the Germany. European *Journal of Agricultural Economics* 8(16): 467 – 488

Lanauskiiene T. and Tvarnaviciene M. (2013). Economic Sector Performance and Growth: Contemporary Approaches in the Context of Sustainable Development. *Journal of Intellectual Economics* 3 (17): 355 -374

Maroto-Sanchez, , Caudrado-Roura, J. R.(2009). Comparative Analysis of Structural Change and Economic Dynamics. In: Lanauskiiene T. and Tvarnaviciene M. (2013). Economic Sector Performance and Growth: Contemporary Approaches in the Context of Sustainable Development. *Journal of Intellectual Economics* 3 (17): 355 -374

Musgrave, R. A. (1959). *The Theory of Public Finance and Economic Development*. New York, Mcgraw Hill.

Ogunyemi, A. and Femi, G. N.(2020). Economic Sector Performance and Rural Development in Nigeria. *Journal of Rural Development* 3(2): 47 – 54

Peneder, M. (2009). Structural Growth Drivers and Competitiveness in the European Union. European commission Enterprise and Industry, European Communities, pp.1 -542.

Pyke, E. (2019*). Economic Sector Performance and Rural Transformation; Theory, Practice and Policy*. New York: Oxford University Press

Szirmai, A. (2012). Industrialization as the Engine of Growth in Developing Countries,1950-2005, Structural Change and Economic Dynamics. *Asian Journal of Economics* 11(23); 406 – 420

Yi, K., Zhang, J.(2010) Structural Change in an Open Economy.