

Research Article

Effects of Sectoral Public Expenditure on Economic Growth in Nigeria

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Abstract: The paper examines the effects of government spending on health care and agriculture on economic growth in Nigeria from 1981-2016. The study utilizes the Error Correction Modelling. Although the series of the variables used were not stationary at their levels, they became stationary at first difference. Granger Causality Test to ascertain the direction of the effect of the variables was also conducted. The results showed a unidirectional causality between the EXHTH and RGDP as well as EXAGR and RGDP, implying that total expenditure on agriculture and total expenditure on health care granger cause economic growth in Nigeria during the period of study. The result of the analyses is an indication that government spending on health care and agriculture in Nigeria are statistically significant and are positive to economic growth in the long run. The paper thus concludes that government expenditure on agriculture and health care impacts significantly and positively on economic growth in Nigeria. The study therefore recommends that government should increase its expenditure on health care services delivery and agriculture in order to accelerate real economic growth.

Keywords: Economic Growth, Agriculture, Error Correction Model, Health Care. Public expenditure.

INTRODUCTION

Public expenditure is an important instrument in the hands of government in bringing about economic growth which is one of the macroeconomic goals of governments at all levels. Government spending to accelerate effective demand in order to achieve real economic growth has been a clarion call by policy makers and scholars, especially in an economy like Nigeria that is gradually moving out of recession (Okumoko and Krokeyi, 2017). The Keynesians believe that during economic crises, of the sort Nigeria is experiencing, government could reposition the economy through productive spending and encourage effective demand to re-fix the economy by increasing disaggregated and sectoral expenditure in health care and agriculture. Agriculture is the largest sector in Nigeria which has contributed majorly to the GDP as it is the largest employer of labour. The general view is that government expenditure on social and economic infrastructure can be growth enhancing although the financing of such expenditure to provide essential infrastructural facilities including transport, electricity, telecommunication, water and sanitation, waste disposal, education and health can be growth retarding (Olukayode, 2009). It is argued that the relationship

between government expenditure and economic growth has continued to generate series of controversies among scholars in economic literature. While some scholars believed that the impact of government expenditure on economic growth is negative or non-significant, others believed that the impact is positive and significant.

Baro (1990) predicts that only those productive government expenditures will positively affect the long run growth rate. Solow (1956) argues that, productive government expenditure may affect the incentive to invest in human or physical capital, but in the long-run this affects only the equilibrium factor ratios, not the growth rate, although in general there will be transitional growth effects. Other scholars have argued that expenditure on infrastructure such as road, power etc, reduces production costs, increase private sector investment and profitability of firms, thus ensuring economic growth

In the same vein, others argued that growth in government spending, mainly based on non-productive spending is accompanied by a reduction in income growth, has given rise to the hypothesis that the greater the size of government intervention the more negative is

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its impact on the economy. Public spending has been on the rise over the years with little or no positive real impact on the economy as the nation records worsening state of infrastructures that could not enable real economic growth in Nigeria. This study, therefore, examines the impacts of government sectoral spending on economic growth in Nigeria by empirically estimating and analyzing the effects of sectoral health care and agricultural spending on economic growth in Nigeria.

In order to achieve the objective of this paper, therefore, the remaining part of the paper is divided into four sections. The next section reviews related literature, followed by the methodology adopted in the study. Section four is data analysis, results and discussion while section five is conclusion and recommendations.

Literature Review

Theoretical Literature

There are a number of theories that explain government expenditure and economic growth. These are;

Wagner's Law/ Theory of Increasing State Activities

Wagner (1893) propounded the "law of increasing state activity" after an empirical analysis on the Western Europe at the end of the 19th century. According to him, government growth is a function of increased industrialization and economic development and that as the real income per capita of a nation increases, the share of public expenditures in total increases. He designed three bases for the increase in state expenditure. He said, during industrialization, public sector activities tends to replace private activities and that state functions like administrative and protective functions will increase. Secondly, government needed to provide cultural and welfare services like education, public health, old age pension or retirement insurance, food subsidy, natural disaster aid, environmental protection programs and other welfare functions. Thirdly, increased industrialization will bring about technological transformation and large firms tends to monopolize by yearning for larger market share, as a result, governments would have to avert the effects through the provision of social and merit goods. This law is further corroborated by Musgrave and Musgrave (1988) where it says that as progressive economies industrializes, the share of the public sector in the national economy grows progressively

Peacock and Wiseman Theory of Public Expenditure

Peacock and Wiseman (1961) developed the pattern of increase in government expenditure as a result of their study of public expenditure in England. In 1967, they averred that the growth of public expenditure does not occur as a result of increase state activities; rather it is the political prepositions instead of

the organic state where it is considered that government like to spend money, and peoples' dislike of increasing tax but want government to increase social services.

Musgrave Theory of Public Expenditure Growth

Musgrave and Musgrave (1988) propounded this theory due to noticeable changes in the income elasticity of demand for public services in three areas of per capita income. Musgrave averred that at low levels of per capita income, demand for public services tends to be very low, this according to him, satisfies primary needs and that increase in income leads to a rise in the demand for public services like health care, education and transport and government would be left with no option than to increase expenditure on such public goods.

The Keynesian Theory

The Keynesian theory of employment posits that government expenditure leads to economic growth and development especially its importance in stimulating the economy at the long run. The Keynesian theory of employment indicates the functional relationship as $Q = f(K)$ (2.1), where; Q represents the rate of employment, K represents the government expenditure. From the above functional equation, government can reduce unemployment through its expenditure. Keynes considers government expenditure as the only means to stimulate the economy for positive growth, hence, he recommend that government increase its expenditure.

Empirical Literature

Studies on government spending and economic growth abound in underdeveloped, developing and developed economies like Nigeria with different results. Alexander (1990) applied OLS method with a sample of 13 Organization for Economic Cooperation and Development (OECD) countries panel during the period ranging from 1959 to 1984. The results show that growth of government spending has significant negative impact on economic growth. It therefore implies that government expenditure is critical to economic growth. Foster and Skinner (1992) evaluated the relationship between government expenditure and economic growth for a sample of wealthy countries for 1970-95 periods, using various econometric approaches. They found a positive relationship between public sector expenditure and economic growth. The result of Foster and Skinner is a clear indication of the importance of public spending in bringing about economic growth. Josaphat and Oliver (2000) investigated the impact of government spending on economic growth in Tanzania (1965-1996) using time series data for 32 years. They formulated a simple growth accounting model, adapting Ram model in which total government expenditure is disaggregated into expenditure on (physical) investment, consumption spending and human capital investment. It was found that increased productive

expenditure (physical investment) have a negative impact on growth and consumption expenditure relates positively to growth, and which in particular appears to be associated with increased private consumption. The results revealed that expenditure on human capital investment was insignificant in their regression and confirm the view that public investment in Tanzania has not been productive, as at when the research was conducted. Devarajan and Vinay (1993) used panel data for 14 developed countries for a period ranging from 1970 to 1990 and applied the Ordinary least square method on 5-year moving average. They took various functional types of expenditure (health, education, transport, etc) as explanatory variables and found that health, transport and communication have significant positive effect while education and defense have a negative impact on economic growth

Gregorious and Ghosh (2007) made use of the heterogeneous panel data to study the impact of government expenditure on economic growth. Their results suggest that countries with large government expenditure tend to experience higher economic growth. Fajingbesi and Odusola (1999) empirically investigated the relationship between government expenditure and economic growth in Nigeria over the period 1970 to 1995. The econometric results indicated that real government capital expenditure has a significant positive influence on real output. However, the results showed that real government recurrent expenditure affects economic growth only by little. Abu and Abdullah (2010) investigates the relationship between government expenditure and economic growth in Nigeria from the period ranging from 1970 to 2008. They used disaggregated analysis in an attempt to unravel the impact of government expenditure on

economic growth. The results of their study reveal that government total capital expenditure, total recurrent expenditure and Education have negative effect on economic growth. Though, the findings of Abu and Abdullah shows negative relationship between government expenditure and economic growth, however, majority of the studies reviewed about indicate strong positive relationship between public spending and economic growth. These, further explains the fact that government expenditure on health care and agriculture have positive relationship with economic growth.

Health is also important for economic growth and development due to the central importance of man in the growth and development process of an economy. On the same vein, studies have been conducted to confirm the positive effects of health care investment and economic growth. For instance, Grossman (1972) averred that people are born with initial endowments that depreciate over time but can grow with investments in health. Grossman further argued that increase in health capital reduces the time lost to illness and thus, heal and allows more effective performance that increases productivity. Jack (1999) found that the productivity of a labour force depends on investments in human capital and also the physical and mental capabilities of the workforce. Bloom and Canning (2000) indicates that healthy communities or populations tend to have enhanced physical abilities and mental clarity which in turn increases productivity. In a bid to echo the imperatives of health to development, Sorkin (1977) says that in areas where economic activity has been hindered owing to unfavorable health condition, an investment into a robust major health programme could be a catalyst to promote development.

METHODOLOGY

Model Specification

This study adopts the Vector Error Correction Model (VECM) approach to examine the impact of government spending in Health Care and Agriculture on economic growth in Nigeria. Davidson and Mackinnon (1993; Bannerjee 1993; and Verbeck 2000) state that Vector Error Correction Model (VECM) is a derivation of autoregressive distributed lag (ADL) model. In the same light, Armorer (1996; Engert and Hendry 1998) found Vector Error Correction Model to be a good tool for public expenditure and economic growth forecasting.

The model hence estimates that:

$$Y_t = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \mu \dots\dots\dots (1)$$

Where Y_t represents the real gross domestic product (RGDP), β_0 is the intercept term, β_1 and β_2 are the regression coefficient, X_1, X_2 are the set of baseline explanatory variables and μ is the stochastic random variable.

The modified version of the above model is as follows:

$$RGDP = (EXHTH, EXAGR) \dots\dots\dots (2)$$

The functional and econometrics effect of government expenditure in health care and agriculture on economic growth is stated as;

$$RGDP = f(EXHTH, EXAGR) \dots\dots\dots (3)$$

$$RGDP = \beta_0 + \beta_1 EXHTH + \beta_2 EXAGR + \mu \dots\dots\dots (4)$$

Where :RGDP is Real Economic Growth, EXHHTH is Health Care expenditure, EXAGR is Educational expenditure, μ is stochastic random variable, Bo is intercept parameter, β_1 & β_2 are Slope parameters and t is Time /Period. On the a priori it is expected that; $\beta_1 > 0$, and $\beta_2 > 0$.

Estimation Technique and Procedure

ADF Unit Root Test

The study conducted a stationarity test for each of the variables by employing the augmented Dickey-Fuller test proposed by Dickey and Fuller (1979) to check for the stationarity properties of the variables in order to avoid any spurious regression. The general form of ADF is estimated by the following regression

$$\Delta Ydt = \beta_0 + \beta_1 Yd t_{-1} + \sum \beta_1 \Delta Ydi + \delta t + \mu t \dots\dots\dots (5)$$

Where : Yd is a time series, t is a linear time trend, Δ is the first difference operator, β_0 is a constant, t_{-1} is the optimum number of lags in the independent variables and μ is random disturbance term.

The Granger Causality Test

Granger causality test shows the direction of the effect between the two time series. This effect could take the form of bilateral, bidirectional, unidirectional and independent causality. The general form of granger causality is estimated by considering two variables which are Real Gross Domestic Product (RGDP) and Health Care expenditure (EXHHTH) and Real Gross Domestic Product (RGDP) and Agricultural expenditure in the following regressions:

$$RGDP t = \sum_{t=1}^n + \psi EXHHTH t_{-1} + \sum_{t=1}^n \Omega RGDPt_{-1} + \epsilon_{1t} \dots\dots\dots (6)$$

$$EXHHTH t = \sum_{t=1}^n + \omega_1 RGDPt_{-1} + \sum_{t=1}^n \theta_1 EXHHTH t_{-1} + \epsilon_{2t} \dots\dots\dots (7)$$

Where it is assumed that the disturbances e_{1t} and e_{2t} are uncorrelated in the two variables case is called bilateral causality. However, the RGDP and EXHHTH in the equations above, the case of unidirectional causality from RGDP to EXHHTH exists if the set of lagged EXHHTH coefficients in (3.4) is not statistically different from zero (i.e., $\sum \omega_1 \neq 0$) and the set of the lagged RGDP coefficients in (3.5) is statistically different from zero (i.e., $\sum \theta_1 \neq 0$).

$$RGDP t = \sum_{t=1}^n + \psi EXAGR t_{-1} + \sum_{t=1}^n \Omega RGDPt_{-1} + \epsilon_{1t} \dots\dots\dots (8)$$

$$EXAGR t = \sum_{t=1}^n + \omega_1 RGDPt_{-1} + \sum_{t=1}^n \theta_1 EXAGRt_{-1} + \epsilon_{2t} \dots\dots\dots (9)$$

Where it is assumed that the disturbances e_{1t} and e_{2t} are uncorrelated in the two variables case is called bilateral causality. However, the RGDP and EXAGR in the equations above, the case of unidirectional causality from RGDP to EXAGR exists if the set of lagged EXAGR coefficients in (3.4) is not statistically different from zero (i.e., $\sum \omega_1 \neq 0$) and the set of the lagged RGDP coefficients in (3.5) is statistically different from zero (i.e., $\sum \theta_1 \neq 0$).

DATA ANALYSES, RESULTS AND DISCUSSION

Data Analyses and Results

This research examined the government spending and economic growth in Nigeria during the period 1980-2016. A growth model was estimated for the Nigerian economy. The real gross domestic product (GDP) was employed as the proxy for economic growth. While, expenditure on agriculture (EXAGR) and expenditure on health care (EXHHTH) were the set of explanatory variables. All the variables aforementioned variables are in Million Naira (₦ m).

The series of the variables used revealed that the growth in the GDP fluctuates between 1980 and 1987 and then increase progressively from 1988 to 2015 before economic recession in 2016. It was also observed that total government expenditure on agriculture and health care service witnessed a fluctuation in increase between the periods of 1980-2016.

The trend in the various variable used for the analysis is presented in the graphs below.

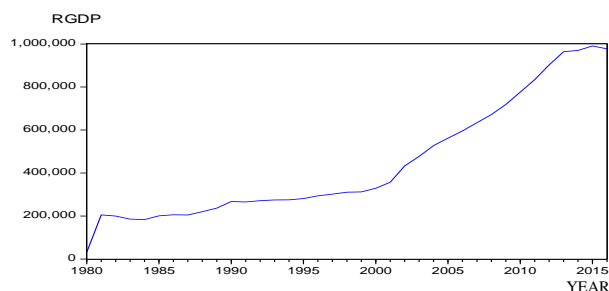


Figure 1: Line Graph Showing the Trend in RGDP

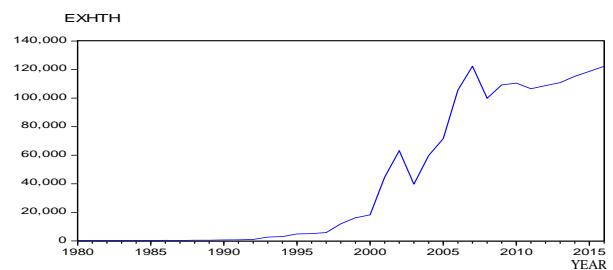


Figure 2: Line Graph Showing the Trend in Government Expenditure on Agriculture

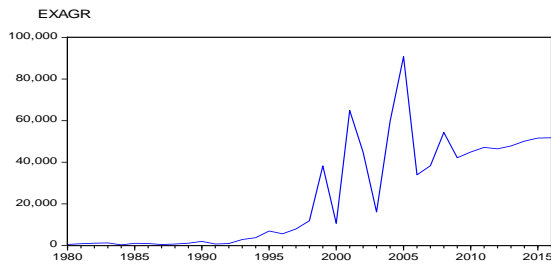


Figure 3: Line Graph Showing the Trend in Government Expenditure on Health Care

Empirical Data Analysis

The empirical analysis focused mainly on descriptive statistics and estimation of the regression result model amongst others

Descriptive Statistics for Underlying Series

The essence of the descriptive statistics is to ascertain stability of the time series

Table 1: Descriptive Statistics for Underlying Series

	RGDP	EXHTH	EXAGR
Mean	443848.7	42766.39	23896.90
Std. Dev.	278949.8	49307.85	25256.05
Skewness	0.760550	0.571232	0.659883
Jarque-Bera	4.337965	5.259502	3.427346
Probability	0.114294	0.072096	0.180203

Source: Researcher’s Computation, 2018

Table 2: Correlation Matrix of the Series

VARIABLES	RGDP	EXHTH	EXAGR
RGDP	1.00000	0.9488704	0.764892
EXHTH	0.9488704	1.0000	0.8168319
EXAGR	0.7648921	0.81683191	1.0000

Source: Researcher’s Computation, 2018

The correlation matrix result presented in Table 2 showed that the correlation coefficient depicting the relationship between each of the explanatory variables is below 0.94 which Gujarati (2004) describes as evidence of severe multicollinearity. Hence, the variables can be regressed together without the problem of multicollinearity. Specifically, RGDP,

The descriptive statistics reported in Table 1 indicated that real gross domestic product (RGDP), expenditure on health care (EXHTH) and expenditure on agriculture (EXAGR) averaged N443848.7million, N42766.9million and N 23896.9million respectively. The standard deviation showed that the dependent variables (GDP) converged around its mean. While, the independent variables (total expenditure on health care and expenditure on agriculture) do not converge around their respective mean. The skewness test result showed positive values for all the series. Meaning, they have high tails. The probability of Jarque-Bera statistics suggest that the null hypothesis of normal distribution for RGDP, total expenditure on health care and expenditure on agriculture are accepted at 5% level. This is because the probability of the Jarque-Bera of the respective variable is greater than 0.05% probability level.

Correlation Test

This study employed correlation matrix to check whether or not the explanatory variables can be regressed together. The correlation matrix result is presented in Table 2.

EXHTH and EXAGR has strong positive correlation of 94.81% and 76% respectively.

The Unit Root Test

The Augmented Dickey Fuller (ADF) test was used to investigate stationarity and the order of integration of the variables.

Table 3: Unit Root Stationarity Test (1980-2016)

Variables	ADF Test @ Level	Critical Value			ADF Test @ 1 ST Diff	Critical Value			Order of Integration
		1%	5%	10%		1%	5%	10%	
RGDP	2.40595	-3.6329	-2.9484	-2.6128	-6.74129	-3.6329	-2.9484	-2.6128	1(1)
EXHTH	0.12378	-3.6267	-2.9458	-2.6115	-5.86415	-3.6329	-2.9411	-2.6128	1(1)
EXAGR	-0.59236	-3.6394	-2.9511	-2.6143	-9.98808	-3.6394	-2.9511	-2.6143	1(1)

Source: Authors’ Computed Result, 2018

The summarized result presented in Table 3 showed that at various levels of significance (1%, 5% and 10%), the variables were stationary. Though, all the time series were not stationary at their levels. However, the non-stationary variables were differenced. Thus, the variables became stationary at first difference. That is,

RGDP, EXHTH and EXAGR were integrated of order one 1(1). Having established stationarity of the variables, the long-run relationship among the variables was conducted using the granger causality approach. The result of the pairwise granger causality test is reported in Table 4 below.

Granger Causality Test

Granger causality test shows the direction of effect between two time series. Such effect could be bilateral, bidirectional, unidirectional and independence

causality. In order to find out the direction of the government expenditure on economic growth, the Pairwise Granger Causality Test was conducted.

Table 4: Pairwise Granger Causality Test Result

Variables	Observation	F-Statistic	Prob.	Decision
(EXHTH) → (RGDP)	35	5.46481	0.0095	Reject Ho
(RGDP) → (EXHTH)		0.56698	0.5732	Accept Ho
(EXAGR) → (RGDP)	35	5.09552	0.0124	Reject Ho
(RGDP) → (EXAGR)		1.85325	0.1742	Accept Ho

Source: Researcher Computation, 2018

Note: → means does not granger cause RGDP, EXHTH and EXAGR as earlier defined

The results presented on table 4.5 showed a unidirectional causality between the EXHTH and RGDP as well as EXAGR and RGDP. Meaning that total expenditure on agriculture and total expenditure on health care Granger causes economic growth in Nigeria during the period of study. This means that the variables; government expenditure on health care and agriculture impact on economic growth.

DISCUSSION OF FINDINGS

Government Expenditure on Health Care and Economic Growth in Nigeria

The analysis of the empirical result as revealed by the Granger causality test showed that government expenditure on health care has a significant impact on economic growth. Therefore, a unit increase in government expenditure in the health sector will significantly spur the growth of the Nigerian economy.

Government Expenditure on Agriculture and Economic Growth in Nigeria

The analysis of the empirical result depicted by the Granger causality test showed that government expenditure on agriculture has a significant impact on economic growth. Thus, a unit increase in government expenditure in the agricultural sector will have a significant and positive impact on economic growth in Nigeria.

CONCLUSION AND RECOMMENDATIONS

From the analyses done and the findings of the study, we can conclude that government expenditure on agriculture and health care impact significantly and positively on economic growth in Nigeria. The study, therefore, recommends that:

- Nigeria government should increase its spending on health to encourage healthy nation.
- Government should direct its spending on productive sector like the agriculture sector that will create more job opportunities for the unemployed.

- In order to achieve development of these sectors that would further boost the economy, corruption in these sectors and others should be properly checkmated so that funds meant for the development of these sectors shall be religiously utilized and expended.

REFERENCES

1. Abu, N., & Abdullah, U. (2010). Government Expenditure and Economic Growth in Nigeria: A Disaggregated Analysis: *Business and Economic Journal*, 4(3), 237-330.
2. Alexander, A.M.O. (1990). *Public Finance in a Developing Economy: The Nigerian Case*, Enugu: B&F Publications.
3. Armorer, D. (1996). Is public expenditure productive?, *Journal of Monetary Economics*, 23(2), 177 - 220.
4. Barro, R. J. (1990). Government Spending in a Simple Model of Endogenous Growth, *The Journal of Political Economy*, 98(5), 103-125.
5. Barro, R., & Martin, I. (1992). Public Finance in Models of Economic Growth: *Review of Economic Studies*, 59(3), 645-661.
6. Belgrave, A., & Craigwell, R. (1995). The impact of Government Expenditure on economic growth in Barbados: A Disaggregate Approach: Research Department: Central Bank of Barbados.
7. Central Bank of Nigeria (2009). Statistical Bulletin, Abuja: CBN
8. Central Bank of Nigeria (2011). Statistical Bulletin, Abuja: CBN
9. Chude, N.P., & Chude. D.I. (2013). Impact of Government Expenditure on Economic Growth in Nigeria, *International Journal of Business and Management Review*, 1(4), 64-71.
10. Devaragan, S., Swaroop, V., & Zou, H. (1996). The Composition of Public Expenditure and Economic Growth: *Journal of Monetary Economics*, 37(2), 313-344.
11. Dickenson, T. D. I. (1996). *Economics of Public Sector*, Malaysia: Macmillan Press Ltd.

12. Engert, E.A., & Hendry, D. (1998). Public Sector Growth: An Econometric Test of Wagner's Law, *Economic and Financial Review*, 35(3).
13. Fajingbesi, A.A., & Odusola, A.F., (1999). Public Expenditure and Growth: A Paper Presented at a Training Programme on Fiscal Policy Planning Management in Nigeria, Organized by NCEMA, Ibadan, Oyo State, 137-179.
14. Glomm, J.J., & Ravikumar, D.J. (1997). The Growth of Public Expenditure in Selected Developing Nations: Six Caribbean Countries: *Public Finance/Finances Publique*, 3(3), 57 – 74.
15. Gregorous, A., & Ghosh, S. (2007). Fiscal Policy in an Endogenous Growth Model with Public Capital and Pollution, *Japanese Economic Review*, 56(6), 67-84.
16. Josaphat, P.K., & Oliver, M. (2000). Government Spending and Economic Growth in Tanzania (1965 – 1996): *CREDIT Research paper*.
17. Keynes, J.M. (1936). *General Theory of Employment, Interest and Money*, London: Palgrave Macmillian
18. Musgrave, R.A., & Musgrave, B. (1988). *Public Finance in Theory and Practice*: New York: McGraw-Hill Book Company.
19. Olukayode, M. E. (2009). Does Government Spending Spur Economic Growth in Nigeria?, *MPRA paper No. 17941*
20. Okoro, A.S. (2013). Government Spending and Economic Growth in Nigeria (1980 -2011), *Global Journal of Management and Business Research Economics and Commerce*, 5, 20 – 30.
21. Peacock, A.T., & Wiseman, J. (1961). *The Growth of Public Expenditure in the United Kingdom*, Princeton: Princeton University Press
22. Solow, R. (1956). A Contribution to the Theory of Economic Growth, *Quarterly Journal of Economics and Statistics*, 39, 748 – 62.
23. Solow, R. (1957). Technical Change and Aggregate Production Function, *Review of Economics and Statistics* 39, 748-62
24. Taban, S. (2010). An Examination of the Government Spending and Economic Growth Nexus for Turkey Using Bound Test Approach, *International Research Journal of Finance and Economics*, 48,184-193.
25. Wagner, A. (1893). *The Foundation of the Political Okonomie* (3rd edn), Germany: Leipzig
26. World Bank. (2010). *Knowledge, Productivity and Innovation in Nigeria: Creating a New Economy*, Washington D. C.: World Bank.