Granger Causality between Private Domestic Savings and Economic Growth in Nigeria: Toda-Yamamoto Approach

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Abstract

The study investigated the causality between private domestic savings and economic growth in Nigeria for the period 1981-2014. Specifically, the study examines whether private domestic savings have positive impact on economic growth; and as well investigate if there is existence (or not) of significant causality between private domestic savings and economic growth in Nigeria. Vector Auto Regressive (VAR) model and Toda-Yamamoto approach to Granger causality test were utilized for the analysis. The variables such as total private savings (TPS), government expenditure (GEX), financial deepening (FD) and real GDP were used in the study. Stationarity test was conducted by applying the Augmented Dickey-Fuller (ADF) stationarity test and the results revealed that all the variables were non-stationary at level, and however, became stationary after first and second differencing. The VAR model results showed that total private savings (TPS) has positive impact on real GDP. Furthermore, the results of the Toda-Yamamoto to Granger causality test revealed that significant causality exist between TPS and RGDP, with causality running from RGDP to TPS. Therefore, the study recommends that government should adopt those macroeconomic policies that tend to promote economic growth in order to achieve increased savings, investment and higher employment. Similarly, the study recommends that government should expand its expenditure level on real sector of the economy and as well encourage financial sector to enable them operate effectively and efficiently in order to finance investment and other macroeconomic policies that have the capacity to facilitates economic growth and savings rate in the economy.

Keywords: Nigeria, Domestic Savings, Economic Growth, Toda-Yamamoto

1. Introduction

The fast declining trend of domestic savings among developing countries, Nigeria is inclusive has caught attention of policy makers, development economists and researchers, knowing full well that savings play critical role in promoting and sustaining economic growth and development of any given economy (Eze & Okpala, 2014). Overtime, the development economists have applauded the role played by domestic saving mobilization in sustaining the nexus between saving and investment growth in both the developed and developing countries. Agheli et al. (1990) cited in Eze & Okpala (2014) revealed that saving rates and human capital investment indeed, have positive impact on economic growth of a nation. This implies that close relationship exists among saving, investment and economic growth in a development process. However, the poor economic growth performance existing in the developing economies, including Nigeria is directly linked to poor saving and investment culture in the developing countries. In neoclassical growth model as propounded by Solow (1956) argued that saving has positive correlation with economic growth. In that, the model postulated that higher saving results to higher investment, and hence, improves economic growth.

Musa et al. (2014) explained that savings create capital formation, which is very critical factor for economic growth and development of countries that are able to accumulate higher level of capital in their economies. The effects of capital formation on investment and economic growth are largely depended on aggregate demand in the economy. Increase in investment demand leads to proportional increase in the production of investment goods, which in turn results to economic growth and development of countries. Thus, the productive capacity of the economy expands as capital formation increases through savings mobilization of commercial banks. Therefore, investment in new plants and machinery helps to facilitate productivity growth and brings about new technical innovation and technology, and increases specialization that propels economic growth of countries. Ayanwu et al. (1997) postulated that capital formation involves increase in the volume of savings mobilization through commercial banks and investment. Both private and public sectors accumulates capital for investment through domestic savings mobilization in order to promote output growth and standard of living of citizen in a country. The more savings are accumulated by economic agents (private and public), the higher investment and economic growth are achieved in the economy. Furthermore, Lira & Kalebe (2015) stated that economic growth is a necessary factor that leads to country's progress. Every country in the world strives to achieve improved economic growth through higher savings and investment. However, low saving rates and investment have been identified as the major factor that limits the attainment of higher national output growth, investment and living standard of citizens in most countries, especially in the developing countries like Nigeria. In classical economist's theory, higher saving results to higher investment, employment opportunities and long run economic growth. Hence, understanding the nexus among saving, investment and economic growth in an economy is needed to achieve some macroeconomic objectives that would help to create conducive environment required for sustainable

economic growth and improve living standard of citizens.

Solow (1956) revealed that saving is an important factor necessary for growth and development of any economy. It leads to full utilization of nation's scarce resources in an efficient manner, and promotes national output level, employment and national income. It also helps to solve inflation problem, balance of payments deficit problem, high unemployment, national debt burden, income inequality and high poverty rate in many economies of the world; in Nigeria however, it is not clear whether savings actually have significant effect on investment and growth of the country, as these ugly situation appeared to persistently exist in the economy. Nigeria is situated in West Africa in the continent of Africa and belongs to a member of African Union (AU) and organization of petroleum exporting countries (OPEC) by the virtue of its discovery of oil in commercial quantities and its attendant oil boom in earlier 1970s. Since then, the country has operated mono-product economy without diversification, with crude oil being the major foreign exporting product in its engagement in international trading. This new development destroyed economic structure of the Nigerian economy, especially when agriculture that was the economic base of the economy neglected by government toward developing dependence on oil sector. Consequently, the economy suffered external shocks and vulnerability due to instability of oil price in the world market; the financial sector in response collapsed and some banks closed down leading to low savings, investment and economic growth; exchange rate depreciated against US dollar, debt profile rose sharply, and national income decreases as well. Thus, it should be noted here that the slow rate of growth in developing countries today, are largely linked to low level of national savings, which has constrained its capacity to invest in the productive sectors of the economy due to low capital formation. The implication therefore, is that the low saving rate in the developing countries has resulted in lower rate of growth and development, as against the developed countries that accumulate higher savings and attained higher economic growth and development (Dhanya, 2015).

For example, Nigeria witnessed investment boom and significant economic growth in 1970s and partly in earlier 1980s within the period of oil boom, especially in the public sector of the economy. But with the collapse of oil price in the world market in early 1980s, both the investment and the economic growth fell simultaneously. The percentage contributions of investment, gross investment to gross domestic product (GDP) in 1974 and 1976 which accounted for 16.8% and 31.4% respectively, declined to 9.5% and 8.9% in 1984 and 1985 (Eze & Okpala, 2014). It was against this decline in investment growth and economic growth that the IMF-World Bank supported structural adjustment programme (SAP) was adopted in 1986 with the aim to provide a stable macroeconomic and investment growth environment. During the implementation of the programme, fixed interest rates were abolished and adopted interest rate regime driven by market forces. The programme focused on the deregulation of interest rates and other economic reforms in order to encourage savings mobilization and as well stimulate economic activities in the economy. From 1990 to earlier 2014, the economy again witnessed another round of oil boom that was sufficient to trigger off an investment boom and economic growth, yet the economy has not felt the significant impact of the boom as the economy is still characterized by low investment, high unemployment, high inflation, high poverty level, debt burden, balance of payment deficit, among others which have continued to dwindle economic performance of the country for the past decades now.

Mahmood (2007) noted that financing investment by external source is unhealthy for growth and development of nations, especially the developing nations because it exposes their economies to external shocks and vulnerability due to external economic fluctuations. In this view, Nigeria has overtime fell victim of external shocks and vulnerability as a result of its over dependence on external source for savings and investment. Every effort made by the regulatory authority to accelerate savings rate internally through appropriate policy options appear not to have positive response in the economy. The question is: does private domestic saving have positive and significant relationship with economic growth in Nigeria? Is there any existence (or not) of significant causality between private domestic savings and economic growth in Nigeria? Base on this therefore, the study investigates the causality between private domestic savings and economic growth, with the specific objectives being to determine the positive impact of private domestic savings on economic growth, and as well examine if there is existence (or not) of significant causality between private domestic savings and economic growth in Nigeria. The remaining sections of the paper is structured as follows: section two reviews related literature; section three presents the research methodology, section four discusses the empirical results, while section five deal with summary and conclusion of the study.

2.   Review of Related Literature
2.1 Theoretical Review
The principal theoretical review upon which this study is based includes the neoclassical theory of savings and investment, and endogenous growth theory. These theories are used to explain the behaviours of savings, investment and economic growth in economic development process of Nigeria. The proponents of neoclassical theory of savings and investment include Alfred Marshall (1842-1924) and Vilfredo Pareto (1848-1923), among others. The theory postulated that savings is a function of disposable income and that it determines level of investment, which in turn accelerate economic growth of a nation. In neoclassical growth model, Harrod (1939)

and Domar (1946) argued that if countries, especially the developing ones desire to achieve higher economic growth, they should accumulate higher savings sufficient to create investment and enhance economic growth. The growth model believed that economic growth is derived from the level of productivity of capital and savings, and that aggregate savings are mobilized from financial institution for the purpose of investment. Hence, economic growth depends on the level of savings and capital output ratio in the economy. This means that capital formation is a function of savings that in turn accelerate economic growth. Economically, inadequate incomes in the developing countries are considered as the major factor that limits saving rates and capital stock accumulation through low investment. In other hand, the endogenous growth theory propounded by Pagano (1993) assumed that the effects of savings and investment on economic growth results from capital accumulation. The theory further argued that efficient financial system affect economic activities of a country through reduction in transaction costs and increases savings channel and capital allocation to industries for productive investments.

In this view, Igbatayo & Agbada (2012) and Solow (1956) conceived savings as essential factor for economic growth and development of any given economy. Increase in national saving leads to proportional increase in investment that in turn propels economic growth and improves standard of living of citizens. Musa et al. (2014) in supporting this argument revealed that countries with higher capital accumulation tend to achieve higher economic growth and development than countries with low capital formation. This is because, aggregate demand for investment goods will increase, thereby leading to higher production of investment goods and hence, higher economic growth and development. Reza et al. (2014) postulated that savings create capital formation that invariably results to economic growth, and improves standard of living of citizens. Adequate capital accumulation through sufficient savings is a necessary and condition needed to create investment and accelerate economic growth in an economy. Sache (2004) stated that low savings rate in developing countries are blamed for its low investment, and economic growth and development. Thus, sufficient savings is required to improve investment and productivity in the developing countries. Hugues (2010) also agreed that low savings rate limit economic growth in sub-Saharan Africa. According to him, saving rate is low compared to developed countries that have higher saving rate and accelerated economic growth.

In Keynesian economics, savings is the cost of consumption postponement of a person subtracted from the disposable income of the person's earnings at a particular period of time. It is a portion of disposable income that is not spent on consumption; rather, it is accumulated as a savings and invested in fixed capital or in paying off a home mortgage, or through purchase of securities as an indirect investment (Nwanne, 2014). Abu (2010) explained that increase in savings leads to higher capital formation and investment, which in turn results to economic growth of a nation and that strong positive correlation exist between high savings rate and economic growth. Wondwesen (2011) while reviewing Keynesian theory conceived investment as a critical factor that determines aggregate demand and productive capacity, as well as growth rates of a country. Savings and investment are the basic requirements for economic growth of any nation (Nwanne, 2014). In order to achieve economic growth of countries, investment growth is highly needed which can be financed through sufficient savings (Mohamed, 2014). In the same vein, Lewis (1955) stated that increased saving is a condition necessary for investment since it provides adequate funds for investment, and leads to growth and development of a nation. In growth theories as championed by Barro (1990), Lucas (1988) and Romer (1986, 1990) illustrated that capital accumulation as a component of aggregate demand and a means of creating productive capacity is the main factor that drives long term economic growth. Higher saving and investment are the key determinants of growth due to its strong positive correlation with economic growth.

However, Carroll-Weil hypothesis countered the proposition of the neoclassical growth models that savings is a growth-led factor, and argued that saving precedes economic growth (Carroll & Weil, 1994). In this argument, the hypothesis explained that rather than savings causing growth, it is economic growth that causes increase in savings rate.

2.2 Empirical Review

Nwanne (2014) evaluated the implications of savings and investment on economic growth in Nigeria by applying ordinary least square (OLS) technique. The results revealed that change in savings has significant and negative effect on change in economic growth, while change in domestic investment has significant positive effect on change in economic growth in Nigeria. Reza et al. (2014) assessed the relationship between savings and economic growth in Iran for the period 1972-2010 through the application of Autoregressive Distributed Lag (ARDL) model. The results indicate that economic growth has positive and significant effect on savings in the economy. It also showed that long term causality exists between savings and economic growth in Iran. Davis (2013) employed cointegration technique to investigate the determinants of private savings in Ghana using Philips and ouliaris residual based tests for cointegration. The results showed that financial liberation per capita, income and inflation have positive and significant impact on private savings. Nwakeze & Omoju (2011) examined the effect of population growth on savings in Nigeria for the period 1980-2007 by employing error correction model (ECM) and found that rapid population growth has negative and significant impact on savings in Nigeria.

Okojie & Umoru (2011) empirically examined the impact of financial deepening on aggregate savings in Nigeria and found that exchange rate, real income growth and level of financial depth of the economy are the key determinants of financial savings in Nigeria. Eze & Okpala (2014) investigated the impact of some proximate determinants of private domestic savings in Nigeria for the period 1970 to 2010 by employing Ordinary least square (OLS) method and Johansen cointegration in the empirical analysis. The variables used in the study includes: private domestic savings, money supply, gross domestic product, inflation rate and real interest rate. The result showed that all the variables were highly significant determinants of private domestic savings in Nigeria. Musa et al. (2014) empirically investigated the determinants of private domestic savings in Nigeria, as well as the impact of private domestic savings on Nigerian economy for the period 1986-2010 using classical least squares method with the aid of error correction modeling procedure using cointegration and Granger causality tests. The results showed that money supply and per capita income are the strong determinants of private domestic savings. More so, private domestic savings and commercial banks credit were indicated to be the major factors that lead to economic growth in Nigeria.

Dhanya (2015) investigated the role of savings in economic growth in Botswana for the sampled period 1980 to 2013 through the application of Autoregressive Distributed Lagged (ARDL) model and DOLS approach to examine the dynamic long run cointegration between GDP and its independent variables. The result demonstrated that significant relationship exists between savings and economic growth in the economy. Lira & Kalebe (2015) examined the relationship among saving, investment and economic growth in Lesotho for the period 1970-2012 by using autoregressive distributed lag (ARDL) bounds approach to cointegration and vector error correction model (VECM) based on Granger causality test. The results indicated that both short run and long run Granger causality exist between savings and investment with causality running from investment to economic growth. Similarly, the result showed that saving contributed to long term economic growth in Lesotho. Olesia (2014) studied the causal relationship between savings and economic growth in Albania for the period 1992-2012 using Johansen cointegration test. And the empirical results revealed that savings and economic growth cointegrated, and that a positive relationship exists between savings and economic growth in the economy. George et al. (2015) investigated the impact of finance on investment, as well as the impact of investment on economic growth in Nigeria using error correction distributed lag model with a distributed lag model estimated through the classical least squares. The results indicated that increase in private sector credit leads to increase in economic growth in Nigeria. Similarly, the result revealed that saving level in Nigeria is inadequate to match investment opportunities as shown by insignificant status of saving in the short run.

Kalu & Mgbemena (2015) empirically investigated the relationship between domestic private investment and economic growth in Nigeria for the period 1970-2012 through the applications of Cob-Douglas model and Error Correction Modeling (ECM) technique. The estimation results indicate that investment has significant impact on real gross domestic product (RGDP). Similarly, the result revealed that equilibrium relationship exists between real GDP and its determinants in both the long run and the short run periods. Elom-Obed et al. (2016) examined the determinants of private domestic savings in Nigeria for the sampled period 1980- 2015 using cointegration test, vector error correction model and Granger causality test. The variables employed in the investigation were domestic private savings (DPS), household consumption (HHC), nominal interest rate (INTRT) and domestic credit to private sector (DCPS%GDP). The results showed that long run relationship exists among the variables. The results also indicate that interest rate has positive and significant relationship with domestic private savings in the long run and insignificant influence in the short run. The results as well indicate that unidirectional causality runs from DCPS%GDP to DPS and bidirectional causality existing between HHC and DPS in Nigeria. Kanu & Ozurumba (2014) studied the impact of capital formation on economic growth in Nigeria using multiple regressions technique. It was found that the short run, gross fixed capital formation do not have significant impact on economic growth, while in the long run; the VAR model estimate showed that gross fixed capital formation, total exports and the lagged values of GDP had positive long run relationships with economic growth. However, the results also indicated that an inverse relationship exists between imports (IMP), Total National Savings (TNSV) and economic growth; while GDP was seen to have a unidirectional causal relationship with export (EXP), Gross fixed capital formation (GFCF), Import (IMP) and Total national saving (TNSV).

Abiara & Arosanyin (2014) examined the determinants of personal savings in Nigeria: a case study of Ilorin Metropolis by using modified logit model and Ordinary Least Square (OLS). The main objective of the study was to examine the determinants of personal savings in Ilorin metropolis. The results indicated that age distribution, income and wealth are highly determinants of personal savings in Ilorin metropolis and that income level and socio-economic variables have positive correlation with saving. Emmanuel et al. (2015) investigated the impact of private sector credit on economic growth in Nigeria for the period 2000-2014 using the Gregory and Hansen (1996) cointegration test that accounted for structural breaks and endogeneity problems. The method was applied to quarterly data ranging from 2000:Q1 to 2014:Q4, while the ordinary least squares procedure was employed to estimate the model coefficients. The study found cointegration between output and its selected determinants, and showed structural break in 2012Q1. More so, the findings from the error correction model

confirmed a positive and significant effect of private sector credit on output, while increased prime lending rate was inhibiting growth.

However, Seng (2014) studied the causality between domestic saving and economic growth in Cambodia for the period 1989-2012 using Granger Causality Test, and found that domestic saving does not Granger causes economic growth, which violates the conventional postulation that causality runs from saving to economic growth in any economy.

3.   Data and Research Methodology

In order to investigate the causality between private domestic savings and economic growth in Nigeria, this study applied annual data from 1981 to 2014 on real gross domestic product, total private savings, government expenditure and financial deepening. The data are obtained from the Central Bank of Nigeria (CBN) statistical bulletin for various years. Vector Auto Regressive (VAR) model and Toda-Yamamoto approach to Granger causality test were applied in the analysis. The VAR model is used to examine the linear interdependence among the variables employed in the investigation. It is also used to test individual elasticites of the coefficients of the independent variables on dependent variable; Toda-Yamamoto approach to Granger causality test on the other hand, is applied to examine the causality between private domestic savings and economic growth in the Nigerian economy. Hence, the CBN statistical data on total private savings, government expenditure, financial deepening and real gross domestic product ranging from 1981 to 2014 were employed in the investigation.

3.1   Model Specification

The primary model illustrating the relationship among the variables: real GDP, total private savings, government expenditure and financial deepening in functional form is presented thus:

$$RGDP = f (TPS, GEX, FD) \qquad\qquad 3.1$$

Where,

RGDP is real gross domestic product as a common proxy for economic growth, TPS is total private savings which represents private domestic savings in the private sector of the economy, GEX is government expenditure and it represented both the capital and the recurrent expenditures of the country. Lastly, FD is financial deepening that represents the level of increase in the stock of financial asset resulting from growth in financial intermediation.

The equation 3.1 above is further expressed in linear form as:

$$RGDP_t = \beta_0 + \beta_1 TPS_t + \beta_2 GEX_t + \beta_3 FD_t + U_t \qquad\qquad 3.2$$

Where,

RGDP is the dependent variable; TPS, GEX and FD are the independent variables; b_1, b_2 and b_3 are the linear coefficients of the estimation equations, b_0 is the constant term of the savings function and U_t is the error term.

4.   Data Analysis and Discussion of Empirical Results

4.1   Augmented Dickey-Fuller (ADF) Unit Root Test

Table 1 below depicts the estimation of the unit root test, conducted in order to avoid running into spurious estimates problem. It helps to determine the level of stationarity of the variables through the application of the Augmented Dickey-Fuller (ADF) unit root technique.

Table 1. Augmented Dickey-Fuller (ADF) Unit Roots Test

Variables	Levels	P-Value	First difference	P-Value	Second difference	P-Value
RGDP	0.993972	0.9998	-4.775354	0.0029	-4.775354	0.0029
TPS	3.449219	1.0000	-2.678667	0.2513	-6.842322	0.0000
GEX	-1.254869	0.8816	-6.160164	0.0001	-6.160164	0.0001
FD	-2.471789	0.3389	-5.285713	0.0008	-5.285713	0.0008
Critical Values 5%	-3.552973		-3.557759		-3.557759	

Sources: Researcher's compilation from E-view 7

The table above represents the examination of the unit root test of all the variables using the Augmented Dickey-Fuller (ADF) method at 5% level of significance. The results indicate that all the variables such as RGDP, TPS, GEX and FD are non-stationary at level or exhibit unit roots; however, the results revealed that all the variables became stationary after first and second differencing. This claim is supported by the p-values of the coefficients of the variables such as 0.0029, 0.0001 and 0.0008. This stationarity status indicated in both the first and the second differences means that their variance, mean and covariance are constant overtime. Since all the variables are stationary after first and second differencing; it therefore, implies that the series are integrated of order one and order two, that is, I(1) and I(2).

4.2 Vector Auto Regressive (VAR) Test

Vector Auto Regressive (VAR) model is an econometric model employed to capture the linear interdependence among multiple time series. VAR model is flexible, easy and one of the most successfully used models for the analysis of multivariate time series. The VAR model is used to describe the dynamic behaviour of economic and financial time series. According to Toda & Yamamoto (1995) cited in Arshia & Bruno (2012), Vector Auto Regressive (VAR) model involves a method that minimizes risk associated with incorrect identification of the order of integration of individual time series and cointegration among variables. The Toda-Yamamoto long run causality test tend to augments the correct order of the VAR, k, via the maximum order of integration, d_{max} and it ensures that the usual test statistics for Granger causality have the standard asymptotic distribution (Wolde-Rufael, 2005 cited in Arshia & Bruno (2012). To avoid the risk associated with incorrect identification of the order of integration of the individual variables and cointegration among the variables, Toda &Yamamoto (1995) and Dolado & Lutkepohl (1996) advocates for the application of a modified Wald test for restriction on the parameters of the VAR (k) with k being the lag length of the VAR system. In the approach, the correct order of the system (k) is augmented by the maximal order of integration (d_{max}) then the VAR($k + d_{max}$) is estimated with the coefficients of the last lagged d_{max} vector being ignored. Toda & Yamamoto (1995) confirm that Wald statistic converges in distribution to a chi-square random variable with degrees of freedom equal to the number of the excluded lagged variables regardless of whether the process is stationary, possibly around a linear trend or whether it is cointegrated. In this study, VAR is used to capture the values of the excluded lagged variables since the time series are integrated of order one and order two, that is, I(1) and I(2). The estimation below illustrates the elasticities of the parameters.

RGDP = 2311 – 0.647 RGDP(-1) + 0.312 LRGDP(-2) - 4.537 TPS(-1) + 13.149 TPS(-2) + 0.457 GEX(-1) + 11.157 GEX(-2) – 538.09 FD (-1) + 386.06 FD(-2)

t- statistics = [-2.44090] [1.55932] [-1.86699] [4.46104] [0.19136] [3.95592] [-2.72478] [1.92827] [0.95500]

P-value = (0.0228) (0.1326) (0.0747) (0.0002) (0.8499) (0.0006) (0.0121) (0.0663) (0.3495)

R-squared = 0.996, F-statistics = 637 P-value [F-statistics] = 0.0000, VAR Residual Serial Correlation LM test = 25.42254, P-value = 0.0627.

The results above indicate that 1% unit increase in two year lag period of RGDP brings about 0.3% unit increase in current RGDP. More so, 1% unit increase in TPS in two year lag period of TPS results to 13.1% unit increase in RGDP. The results also revealed that 1% unit increase in two year lag period of GEX brings about 11.2% unit increase in RGDP, while 1% unit increase in two years period lag of FD leads to 386.1% unit increase in RGDP. This implies that the coefficients of the parameters of the independent variables in two year lag period have positive impact on LRGDP. The results also showed that the joint influence of the explanatory variables on the dependent variable is statistically significant. This claim is justified by the P-value of the F-statistics of 0.00000. Furthermore, the model is showed to be free from serial correlation, which means that autocorrelation does not exist in the model. This is evidenced by the P-value of 0.0627 of the LM test. The coefficient of R-square of 0.996 implies that 99.6% of the total variation in the dependent variable is explained by the changes in the explanatory variables such as TPS, GEX and FD.

4.3 Toda-Yamamoto Approach to Granger Causality (Modified Wald) Test

Table 2. VAR Granger Causality/Block Exogeneity Wald Tests

Dependent variable: RGDP

Excluded	Chi-sq	Df	Prob.
TPS	1.789601	2	0.4087
GEX	11.94285	2	0.0026
FD	10.79878	2	0.0045
All	29.59286	6	0.0000

Dependent variable: TPS

Excluded	Chi-sq	Df	Prob.
RGDP	8.529283	2	0.0141
GEX	19.04695	2	0.0001
FD	2.079148	2	0.3536
All	46.46213	6	0.0000

Sources: Researcher's compilation from E-view 7

The estimation results in table 2 depict the test of Toda-Yamamoto approach to Granger Causality (Modified Wald) test. The results as indicated by the p-values of the parameters showed that causality runs from RGDP to TPS; and GEX and FD to RGDP. The corresponding p-values of the variables include 0.0141, 0.0026 and 0.0045 respectively. This means that while causality runs from RGDP to TPS, causality runs from GEX and FD to RGDP. This finding is supported by the p-values of the estimated variables. Hence, the discovery of this study is in line with the finding of Seng (2014) who investigated the causality between domestic saving and economic growth in Cambodia and found that domestic saving does not Granger causes economic growth, rather, saving granger causes economic growth in the economy. However, the finding negates the findings of Okojie & Umoru (2011), Eze & Okpala (2014), Musa et al. (2014), Dhanya (2015), Lira & Kalebe (2015) , Olesia (2014), George et al. (2015), among others who conducted similar studies and found that savings granger causes economic growth in the economy.

5. Summary and Conclusion of the Study

This paper is an investigation of the causality between private domestic savings and economic growth in Nigeria for the period 1981 to 2014. The specific objectives of the study include; to examine whether private domestic savings have positive impact on economic growth; and as well to investigate if there is existence (or not) of significant causality between private domestic savings and economic growth in Nigeria. Stationarity test was conducted and the results of the test indicated that all the variables exhibited non-stationary at level, and it however, became stationary after first and second differencing. Since all the variables are integrated of order one and order two, that is, I(1) and I(2), Vector Auto Regressive (VAR) model and Toda-Yamamoto test were applied to test for the individual elasticites of the coefficients of the independent variables on dependent variable, and as well examines the causality between private domestic savings and economic growth in the Nigerian economy. The results of the Vector Auto Regressive (VAR) model revealed that private domestic saving has positive impact on economic growth in Nigeria. This claim is evidenced by F-statistic estimated in VAR model. In the estimation, the result showed that the value of F-statistics is 637, while its associated p-value is 0.00000 which is highly significant. Similarly, the result of the Toda-Yamamoto to Granger causality test indicates significant causality between private domestic savings and real gross domestic product (RGDP). Specifically, the results revealed that unidirectional relationship exists between private domestic savings and real GDP, with causality running from real GDP to total private savings (TPS); while the results also indicate that causality runs from GEX and FD to RGDP. The evidence is also shown by the p-value of 0.0141 as shown by the estimation results in table 2 above.

Based on these findings, the study recommends that government should pay more attention on macroeconomic policies that tend to promote economic growth as a way of encouraging domestic savings, investment and employment. With these, the economic base of the nation can be diversified thereby leading to economic growth, which would in turn results to higher savings. Since government expenditure and financial deepening were shown to contribute positively to economic growth of the country. The study therefore, recommends that government should expand its expenditures in the real sector of the economy and encourage financial sector to enable them operate effectively and efficiently in order to finance investment and other macroeconomic objectives. Furthermore, the study recommends that monetary authorities should adopt monetary policies that focused on reducing interest rate, as a way of promoting private domestic investment in the economy. Lastly, government should be proactive, consistent and focus in its pursuit in economic policies, rather than being inconsistent with its economic policies as a means of diversifying the economy.

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