An Investigation of Causality between Government Expenditures and Revenues

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Abstract

This paper examined the relationship between government expenditure and government revenue in Nigeria using causality test with annual time series data from 1961-2019. The study reviewed the theoretical propositions which includes Tax-Spend Hypothesis, Spend-Tax Hypothesis, Fiscal Synchronization Hypothesis and Institutional Separation Hypothesis. The findings of this study validated the Tax-Spend hypothesis of the nexus between government revenue and government expenditure and invalidated the other hypotheses on the government revenue-expenditure nexus in Nigerian situation. Specifically, it was found that unidirectional causality ran from revenue per capita to government expenditure per capita but there was no causal relationship in any of the remaining five pairs of variables examined. It is recommended that, policy makers or regulatory authorities need to understand when the expenditure is overblown so as to take appropriate measures as a corrective action as well as diversifying the revenue base beyond oil revenue.

Keywords: Causality test, Government Expenditure, Government revenue,

Jel Classification Codes: H00, H50

1. Introduction

The relationship between government expenditure and revenue has become controvercial issue in public sector economics. There are four aspects about the relationship of government spending and revenue. The first refers to the expansion in government spending according to revenue. Thus, spending should follow revenues. This means that if revenues or taxes increase, government must also increase spending.as well. So revenues are a remedy for minimizing public deficits. This hypothesis is supported by Friedman (1978) that there is positive causal relationship between revenues and spending Peacock and Wiseman (1961), Meltzer and Richard's (1981) and Hoover and Sheffrin (1992) argue against this, and suggest that tax increases will not lead to an expansion in expenditure but will rather be used for reducing the deficit. This nature of causal relationship has been explained by tax-spend hypothesis, spend-tax hypothesis, fiscal synchronization hypothesis and institutional separation hypothesis.

Recent studies have used different econometric models in empirical analyses to examine the relationship between government expenditure and revenue but most of the techniques produced results that are inconclusive, if not problematic, particularly for developing countries. This current study is unique in examining the relationship between government expenditure and revenue using Nigerian data. Specifically, in a developing country like Nigeria, very few convincing studies have attempted to explain the observed relationship between public expenditures and revenue. Majority of them are deficient in one aspect or the other. As a

result of this, it is very difficult to draw a definite conclusion on the the causal relationship between government expenditure and the total revenue in the country. The issue of causation is a problem that has long been controversial in the empirical literature. The causal effect between total revenue and government expenditure, which previous studies usually consider, may not provide good insight into Nigerian economy without separately testing for causation from government expenditure to internally generated revenue (IGR) which is the only component that the government controls in Nigeria, thereby making a test for causation from government expenditure to total revenue (which is majorly outside the government control) that existing studies have been testing for to be flawed and inapplicable to Nigerian setting.

It is the quest to provide a refined insight to the direction of relationship between government revenue and expenditure that provides the impetus for the present study. It is expected that the findings of this study will be useful to various stakeholders such as researchers and policy makers, just as it should be relevant to the development of existing theories by shedding a light on their applicability to Nigerian data**.**

The rest of this paper is structured as follows: Section 2 provides a review of relevant literature. Section 3 is devoted to Methodology. Section 4 presents the results for the causal test while Sections 5 discusses the result and implication of findings. Section 6 presents the conclusion and recommendations.

2.0 Review of Relevant Literature

2.1 Theories on Direction of Causality between Expenditure and Revenue

This sub-section reviews the theories on direction of causality between expenditure and revenue. The theories include tax-spending hypothesis, spend-tax hypothesis, fiscal synchronization hypothesis and institutional separation hypothesis.

(a) Tax-Spend Hypothesis

Friedman (1978) believes that causality runs from tax to expenditure, i.e. the level of spending adjusts to the level of tax available which defines a positive relationship between government spending and taxation while Buchanan and Wagner (1978) argue that the higher taxes would lead to spending reductions contrary to Friedman hypothesis, i.e the causal relationship here is that an increase in taxes causes a decrease in spending. Buchanan & Wagner (1977, 1978) argue that tax hike causes people to insist that the government spending should be reduced and that the government should behave responsibly. Thus, while both Friedman (1978) and Buchanan-Wagner (1977, 1978) agree that changes in taxes cause changes in government spending, Friedman posits that higher taxes cause higher spending, Buchanan and Wagner contend that higher taxes cause people to force their governments to reduce fiscal spending.

(b) Spend-Tax Hypothesis

The second school, known as *spend-and-tax* school, has been proposed by Peacock and Wiseman (1961; 1979). This school advocates that increase in government expenditures induces an increase in taxes, suggesting that government first spends, and then increases tax revenues as necessary to finance the expenditures. According to Peacock and Wiseman (1979), during crisis, the government introduces new economic programs which lead to increase in their spending, thereby, forcing government to finance the resulting deficit by

raising taxes after the crisis. Thus, expenditure causes revenue. The spend-and-tax hypothesis is valid when spending hikes created by some special events, such as war or critical situations, necessitate increasing taxes. That is, higher spending now will result to higher tax later. This hypothesis suggests that causality runs from government spending to revenue (Yousef & Mohammad, 2012).

(c) Fiscal Synchronization Hypothesis

According to Meltzer and Richard's (1981) *fiscal synchronization* hypothesis, government takes decision to tax and to spend simultaneously and changes occur concurrently, implying that causality runs in both directions. To the proponents of this hypothesis, the quantity and quality of public goods offered by the public sector reflects the preferences of the community and the size of the government is determined by the welfare-maximizing choice of a decisive individual. The decisive voter chooses on the basis of comparison of the marginal costs and benefits associated with government alternative packages implemented by the government (Zinaz & Samina, 2009)

(d) Institutional Separation Hypothesis

Hoover and Sheffrin (1992) suggest that there is no inter-temporal causality between public expenditure and public revenue. This absence of causal link is due to many important actors with divergent interests and agendas (Zinaz & Samina, 2009). This implies that both public expenditure and public revenue are independent, i.e. no causality between the two budget items. This hypothesis is based on the fact that different institutions are in charge of taxation and expenditure, and that each of them works independently without interference by one on the other so that no causal relationship is expected between revenue and expenditure.

2.2 Empirical Review

Different studies have examined the causality test, prominent among which is Danladi, Akomolafe, Olarinde and Ayandiegwu (2015), who empirically analyse the relationship between aggregate government spending and economic growth in Nigeria over the period of 1980 to 2013 using Autoregressive Distributive Lag (ARDL) and granger causality test. The empirical result reveals that aggregate government expenditure has positive effect on economic growth.

Dhanasekaran (2001) analyses the dynamics of causal relationship between revenue and expenditure in India covering the period of 1960 to 1996, using Granger-Sims causality tests. The results show an absence of co-integration between government tax revenue and expenditure variables, The Granger's test suggests the uni-directional causality flowing from government expenditure to revenue.

For Pakistan, Zinaz and Samina (2009) examine the relationship between government expenditure and tax revenue over the period of 1972 to 2007 and find that government expenditures and revenues exhibit a stable long run relationship and that there exists unidirectional causality from expenditures to revenues in Pakistan.

The findings of Fazal, Muhammad, Mahmood and Ejaz (2010) are similar to the findings of Zinaz and Samina in their study of the relationship between expenditures and revenues at

federal level of the government of Pakistan for the period 1978-79 to 2008-09 using Toda and Yamamoto (1995) causality methodology. The results show that there is a unidirectional causality from expenditures to revenues.

Paparas and Stoian (2016) examine the relationship between economic growths and government expenditure using the Johansen co-integration test and the Granger causality test for the period of 1995 to 2015 in Romania. The findings show that Wagner's Law holds in the long term while there is absence of Wagner's Law in three out of five versions in the short term.
Ghartey (2010) examines the long-run and short-term causal relationships between taxes and spending during the period of 1990 to 2004 to determine the effective way of reducing deficit and debt problems in four Caribbean countries with bicameral legislatures. The result shows that taxes cause spending for only Belize, and independent for the rest of the countries. Estimates of the error correction model show long-run bi-directional causation in the Bahamas, Barbados and Belize, and independence in Jamaica. The author concludes that tax limitation is the optimal policy for controlling deficit and debt problems over the short-term for only Belize, although, in the long-run, the Bahamas, Barbados and Belize have flexibility in balancing their budgets because their ruling parties closely control budgetary and tax initiatives. The study also concludes that for Jamaica, taxes and spending are independent.

In contrast, Ali and Shah (2012) empirically examine government revenue and expenditure nexus using annual data covered 1976-2009 to test hypothesis in the case of Pakistan by applying the Johansen co-integration and Granger causality techniques and find no relationship among the variables both in the long run and the short run.

Ogujiuba and Abraham (2012) also examine the revenue-spending hypothesis for Nigeria, using macro data from 1970 to 2011 and applying correlation analysis, and Granger causality test. The result reveals that revenue and expenditure are highly correlated and that causality runs from revenue to expenditure in Nigeria.

It was observed from all the previous studies that IGR was not considered as a specific factor on which causality of government expenditure is tested for. Rather, it is the causality of government expenditure on the total revenue that was given consideration in all the studies. This is despite the fact that Nigeria is an oil dependent nation and the revenue from the oil (which accounts for over 70% of the total revenue) is determined by external forces which are not in any way under the control of Nigerian government. Therefore, to fill this gap, this study investigates the causality on IGR (as defined in Section 2.1) of government expenditure.
The above conflicting results have major implications for government expenditure policy. Despite the voluminous research carried out to investigate the causal relationship between government expenditure and revenue, there seems to be no consensus even among studies for a single country.

2.2.1 Gaps in the Empirical Literature that the Present Study intends to fill

The empirical review conducted revealed that most of the studies are deficient in one way or the others in examining causal relationships between government revenue and expenditure particularly Nigeria, such as emphasising only on aggregate to test causality or not minding of breaking the expenditure or revenue into components.

A proper understanding of the relationship between government expenditure and revenue is best done through country specific analysis, contrary to the cross-country data that a number of studies used. Also, it is observed that all studies that test for causality between government expenditure and revenue limited their consideration to total revenue, without separately testing for whether government expenditure has a causal effect on the IGR component (i.e. non-oil revenue in Nigerian setting) of the total revenue. This would be in order if virtually all the total revenues are IGR as it is the case for most other countries. But for a government that depends mainly on exogenous proceeds from extractive industry, export (e.g. crude petroleum) as in the case of Nigerian government, it would be inapplicable to test for whether government expenditure causes government total revenue that is mainly exogenously determined, outside the control of the government. In such a setting, government expenditure can, at best, have a causal effect on only the IGR component of the total revenue (which is the only component that the government controls) and it is, therefore, the causal effect of government expenditure on only the IGR component that should be tested for, as it is done here and contrary to what previous studies for Nigeria and other natural resource dependent countries have been doing.

3.0 Methodology

The main theoretical framework of this study is based on the theories of direction of causality between expenditure and revenue which include tax-spending hypothesis, spend-tax hypothesis, fiscal synchronization hypothesis and institutional separation hypothesis.

3.1. Model Specification

This section presents the choice of variables tested in line with existing studies and how they are specified for econometric estimation. The study specifies different equations estimated in order to investigate the the relationship between government expenditure and revenue based on theoretical literature reviewed previously as well as the findings from the extant empirical studies among others.

Granger causality test framework is employed to examine the relationship between government expenditure and revenue. The testable hypotheses that were advanced by these studies have been well accepted in the literary circle. The reason for carrying out causality test in this section is to establish the direction of causality so as to see whether it supports any of the theories earlier reviewed such as tax-spending hypothesis, spend-tax hypothesis, fiscal synchronisation hypothesis and institutional separation hypothesis.

The most common way to test the causal relationship between two variables is the Granger-Causality developed by Granger (1969), a relatively simple test that defined causality as follows: a variable Y_t is said to Granger-cause X_t if X_t can be predicted with greater accuracy by using past values of the Y_t variable rather than not using such past values, all other terms remaining unchanged.

Greene (2004) points out that causality in econometrics, is somewhat different to the concept in everyday use; it refers more to the ability of one variable to predict the other. Suppose two variables, say Y_t and X_t affect each other with distributed lags. The relationship between those

variables can be captured by *a* VAR model. In this case, there are four possible alternatives thus: (a) Y_t causes X_t, (b) X_t causes Y_t, (c) There is a bi-directional feedback (causality among the variables), and finally (d) the two variables are independent. The problem is to find an appropriate procedure that allows us to test and statistically detect the cause and effect relationship among the variables.

Similarly, Toda and Yamamoto (1995) propose a simple procedure with the estimation of an augmented VAR which guarantees the asymptotic distribution of the Wald statistic (an asymptotic $\chi 2$ - distribution), since the testing procedure is robust to the integration and cointegration properties of the process. This frame work is also used by Nasiru (2018) and the augmented model is expressed as follows

$$\ln G_t = \alpha_0 + \sum_{i=1}^{p+n} \alpha_1 \ln G_{t-1} + \sum_{i=1}^{p+n} \beta_1 \ln R_{t-1} + ? \quad (1a)$$

$$\ln IGR_t = \alpha_0 + \sum_{i=1}^{p+n} \delta_1 \ln IGR_{t-1} + \sum_{i=1}^{p+n} \varphi_1 \ln G_{t-1} + ?_t \quad (1b)$$

$$\ln R_t = \alpha_0 + \sum_{i=1}^{p+n} \theta_1 \ln R_{t-1} + \sum_{i=1}^{p+n} \partial_1 \ln G_{t-1} + ?_t \quad (1c)$$

$$\ln G_t = \alpha_0 = \sum_{i=1}^{p+n} \alpha_1 \ln \alpha G_{t-1} + \sum_{i=1}^{p+n} \beta_1 \ln R_{t-1} + ?_t \quad (1a)$$

$$\ln IGR_t = \alpha_0 = \sum_{i=1}^{p+n} \delta_1 \ln \alpha IGR_{t-1} + \sum_{i=1}^{p+n} \varphi_1 \ln G_{t-1} + ?_t \quad (1b)$$

lnG, lnR and lnIGR are the natural logarithm of government expenditure, government total revenue and government internally generated revenue respectively. p is the optimal lag order, **n** is the maximum order of integration of the variables in the VAR model $?_t$ and $\square_t$ are white noise error terms.

The three alternative concepts of total revenue (R), internally generated revenue (IGR) and total government expenditure (G) - viz: aggregate, per capita and as ratios of GDP - will be adopted and compared. With 3 variants of each of Equations (1a) and (1b), these would be a total of 6 equations to estimate and report on. The results of estimation of the six equations are as reported later in Table 4.1, Sub-section 4.3 of Section 4.

3.3 Data coverage, Sources, Definitions and Measurements

Time series annual data covering the post-independence period of 1961-2019 for only the federal government budgetary variables are employed. To achieve the objective of this study, annual time series data that were collected for the period 1961 to 2019 from the Central Bank of Nigeria (CBN) (2020) Statistical Bulletin, and National Bureau of Statistics (2020) were employed in the study. The sources, measurements and definitions of each variable are as discussed below:

(a) Government Expenditure (G), Government Expenditure per capita (G/P) and Government Expenditure/GDP ratio (G/Y): Total government expenditure excludes interest payment and is in million naira, converted to real term by using GDP implicit deflator (base

year 1961). The G/P is derived by dividing real value of G by population (also in million) just as the G/Y is derived by dividing G in real terms (million Naira) by GDP (also in real terms and million Naira as in (a) above). The nominal government expenditure, GDP implicit deflator, real GDP and population data are sourced from Central Bank of Nigeria Statistical Bulletin (2020).

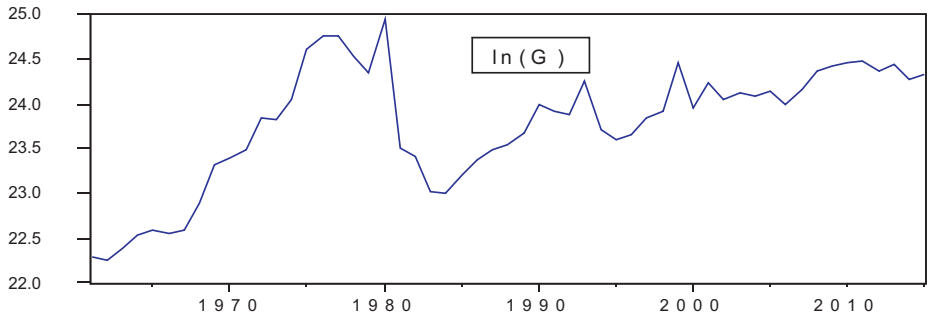
(b) Revenue (R): Total government revenue, including internal generated revenue and crude petroleum-based revenue, are from the Central Bank of Nigeria's Statistical Bulletin (2020). The revenue in nominal terms (million Naira) is converted into real terms as well as per capita real term and as a ratio of GDP through the same procedure used for government expenditure, as fully explained in (b) above.

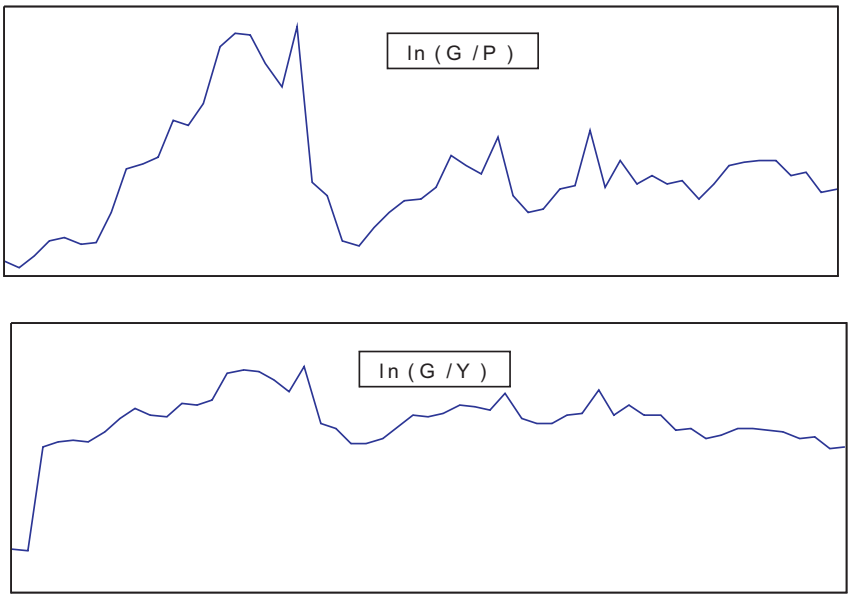
(c) Internal Generated Revenue (IGR): The Internally Generated Revenue is the totality of other revenue sources outside those derived from crude petroleum export and it includes tax, rates, licenses, registration e.t.c., excluding other external revenue like oil revenue and it was sourced from the Central Bank of Nigeria's Statistical Bulletin (2020). The data are in nominal terms (million Naira) and the nominal data are converted into real ones as well as into per capita and ratio of GDP equivalents in the same manner as for government expenditure that is explained in (b) above.

4. Research Findings/Results

4.1 Trend Analysis

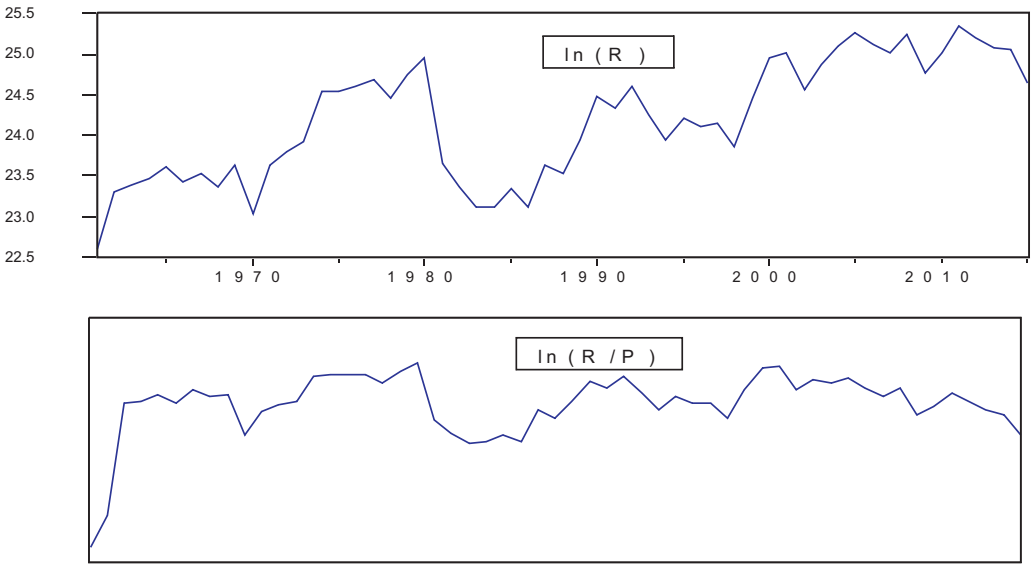
This sub-section presents the tables as well as graphs which show the temporal movements of all the variables over the period of 1961- 2019, using Nigerian data, in order to have an overall view. Graphic method is used because it is considered an easy method to have a visual look at the movement of the variables under consideration. These variables are transformed into natural logarithmic form for uniformity of scaling. The figure shows trend for logarithm values of the variables and they are (in their log values), viz: government expenditure (G), government expenditure per capita (G/P), government expenditure as a ratio of GDP (G/Y), government revenue (R), per capita government revenue (R/P), government revenue as ratio of GDP (R/Y) and internally generated revenue (IGR),

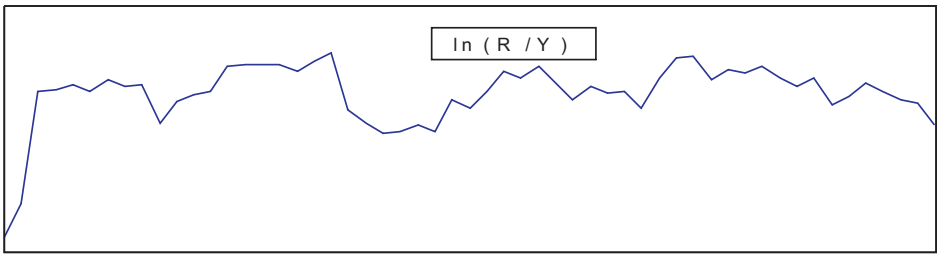




Explanatory note: In each chart, the vertical line represents the variables (in natural logarithm) while the horizontal line shows the years (1961-2019).

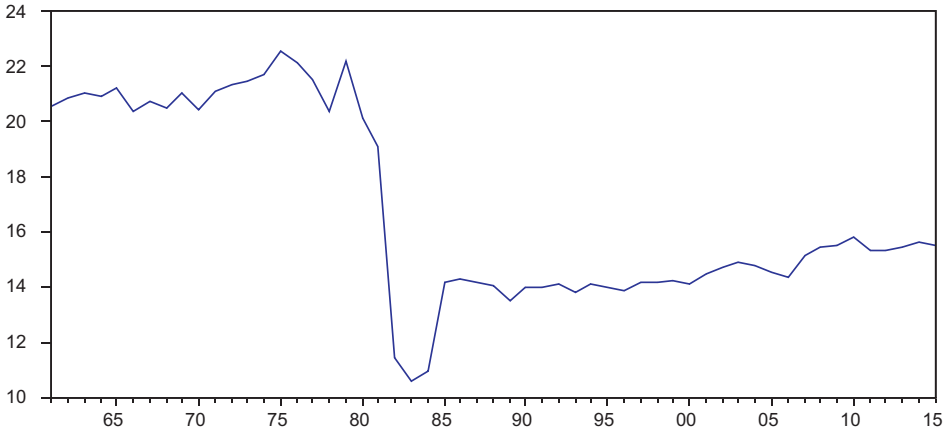
Figure 4.1: Time Trend of Variables – Real total government expenditure (G), real total government Expenditure Per capita (G/P) and total government Expenditure/GDP Ratio. The Figure shows that the ln(G) exhibited an upward trend from 1961 to 1980 with a sharp rise but fell back in 1984 and thereafter, rose again and, since then, it has been unstable, exhibiting rise and fall throughout the period. Similarly, lnG/P exhibited upward trend from the beginning and fell in 1984. ln(G/Y) has since been unstable, exhibiting rise and fall throughout the period, after a rise in 1963.





Explanatory note: In each chart, the vertical line represents the variables (in natural logarithm) while the horizontal line shows the years (1961-2019).

Figure 4.2: Time Trend of Variables **–** Real total government revenue (R), real total government Revenue Per capita (R/P) and total government Revenue /GDP ratio (R/Y). The Figure shows that the ln(R) exhibited an unstable trend, with intermittent rise and fall, it later exhibited, an upward trend with a sharp rise in 1980 and, then, fell back in 1985 only to rise again in a ziz-zag movement. The trends for ln(RP) and ln(R/Y) have been unstable, exhibiting rise and fall throughout the period.



Explanatory note: In each chart, the vertical line represents the variables (in natural logarithm) while the horizontal line shows the years (1961-2019).

Figure 4.3: Time Trend of Variables – Real Internally Generated Revenue (IGR). The Figure shows that the ln(IGR) nose-dived around 1982 to an "abyss" sort of from the flat level it had been since 1960, only to rise a bit immediately thereafter and remain flat at this new lower level. Concerning the ln(OIL) and starting from 1970, it rose to a level where it had since been exhibiting a zig-zag movement until 2010 when it fell sharply and has still been showing a declining, though less sharp, movement.

4.2 Causality Result from Toda Yamamoto Procedure

As pointed out, the causality test here is for verifying the predictions of certain theories. The result of the causality model is presented in this Sub-section following the Granger causality/Wald test approach suggested by Toda and Yamamoto (1995). This entails the estimation of an augmented VAR model which guarantees the asymptotic distribution of the Wald test statistic (that has an asymptotic χ^2 - distribution). The decision rule is that if the P-

value of the asymptotic χ^2 - distribution is less than 5% (which is the cut-off significance level adopted in this study), it means that there is sufficient evidence to reject the null hypothesis of no causality. But if otherwise, the reverse is the case (i.e., the alternative hypothesis that there is causality between the variables is to be accepted).

The Table 4.1 below presents the results of Granger causality/Wald test approach by examining the causality test for achieving a specific objective of the study. The test is to establish the direction of causality as to see whether it supports any of the theories earlier reviewed earlier in the paper, viz: tax-spending hypothesis, spend-tax hypothesis, fiscal synchronisation hypothesis and institutional separation hypothesis. The three alternative concepts of total revenue (R), internally generated revenue (IGR) and total government expenditure (G) viz: aggregate, per capita and as ratios of GDP are tested for and compared with 3 variants of each of the two Equations specified in Section 3 to produce the 6 equations estimated and reported on in Table 4.1.

Table 4.1: Result of Granger Causality Test using Toda Yamamoto Procedure

Null Hypothesis	**DF**	**Chi-Sq**	**Prob.**	**Direction of causality**
R does not Granger cause G	2	2.772	0.250**	No causality
R/P **does not Granger cause G/P**	2	6.213	0.044*	Causality from R/P to G/P
R/Y does not Granger cause G/Y	2	4.747	0.093**	No causality
G does not Granger cause IGR	2	2.011	0.365**	No causality
G/P does not Granger cause IGR/P	2	7.750	0.170**	No causality
G/Y does not Granger cause IGR/Y	2	1.895	0.387**	No causality

Source: Author's Computation, 2021

Explanatory Notes: **In the table above, DF indicates the lag length used in the system, *G means government expenditure, R is total revenue, IGR is internally generated revenue. When a variable is divided by P (i.e. population size), it becomes per capita, and when divided by Y (i.e. income), it becomes a ratio of GDP). This * sign indicates rejection of null hypothesis no causality at 5% level of significance due to the P-value of the χ^2 statistic that is below 5% while the* ** sign indicates non-significance (and, hence, acceptance of the null hypothesis) at 5%.**

5. Discussion of Results

The Table 4.1 above shows the results of Granger causality based on Toda and Yamamoto (1995) procedure that is based on the chi-square distribution. According to the results, the evidence from the causality tests reveals that there is only one unidirectional causality running from R/P to G/P, going by the low P-value (0.044) of the χ^2, meaning that it is statistically significant at 5% level. This implies that we reject the null hypothesis of no causality between R/P and G/P. Thus, apart from *the test of causality running from R/P* to G/P that posits the unidirectional causality, there is no causality that is confirmed in the table in respect of the remaining five causality tests, going by the recorded P-values of 0.250, 0.093,

0.365, 0.170 and 0.387.

It would be recalled that earlier in the paper, the study reviews the theories on direction of causality, which include tax-spending hypothesis, spend-tax hypothesis, fiscal synchronization hypothesis and institutional separation hypothesis. Of all these four hypotheses, the finding in respect of R/P and G/P relationship (i.e. whereby causality runs from R/P and G/P) in this study is consistent with the tax-and-spend hypothesis (i.e. revenue changes expenditure) proposed by Friedman (1978) as well as Buchanan and Wagner (1977, 1978). The evidence of unidirectional causality running from R/P to G/P means that a change in tax or revenue leads to a change in government expenditure. This means that there is some support for the Tax-Spend hypothesis of Buchaman and Wagner (1977, 1978) and Friedman (1978), even though the study is not able to confirm specifically whether revenue exerts a positive effect (as maintained by Friedman) or a negative effect (as posited by Buchaman & Wagner) on the expenditure. The limited support arises from the fact that it is only when both government expenditure and revenue are expressed as per capita terms that the causal effect of revenue on expenditure is observed, and not when in aggregate or ratios of GDP.

In all other (i.e. five out of six) cases, no causality is observed between the revenue and expenditure. Here, the evidence supports the institutional separation hypothesis suggested by Hoover and Sheffrin (1992) that there is no inter-temporal causality between public expenditure and public revenue. This is in line with the findings from some previous studies. For instance, as reviewed in Section 2.2, Ghartey (2010) reported that taxes cause spending for only Belize while there was no causality between taxes and spending for other countries while investigating the long-run and short-term causal relationships between taxes and spending during the period of 1990 to 2004.

6. Conclusion and Recommendations

The result of Granger causality confirms the tax-spend hypothesis of Friedman (1978) and Buchanan and Wagner (1977, 1978), which postulated that causality runs from tax to expenditure and institutional separation hypothesis of Hoover and Sheffrin (1992) that, there is no inter-temporal causality between public expenditure and public revenue. Therefore, judging from these findings, the set out objectives of the study have been achieved as expected. The findings of this study are able to validate the tax-spend hypothesis and institutional separation hypothesis of the nexus between government revenue and government expenditure and invalidate the other hypotheses on the government revenue-expenditure nexus. A consequence of this is that those theories that are being supported by those findings are further strengthened while those that are being contradicted should be under "surveillance" in future empirical studies, which if further invalidated by such future studies, may have to culminate in their eventual review. The policy makers or regulatory authorities need to understand when the expenditure is overblown so as to take appropriate measures as a corrective action.

References

Ali, R. & Shah, M. (2012). The Causal Relationship between Government Expenditure and Revenue in Pakistan. *Interdisciplinary Journal of Contemporary Research in Business,* 3(12), 323-329

Buchanan, J. M. & Wagner R. (1977) Democracy in Deficit. New York: Academic Press.

Buchanan, J. M. & Wagner, R. W., 1978, 'Dialogues Concerning Fiscal Religion', *Journal of Monetary Economics,* 3(4), 627-636.

Danladi, J. D., Akomolafe, K. J., Olarinde, O. S. & Anyadiegwu, N. L. (2015). Government Expenditure and its implication for Economic Growth: Evidence from Nigeria. *Journal of Economics and sustainable Development,* 142-152

Dhanasekaran, K. (2001). Government Tax Revenue, Expenditure and Causality: the Experience of India. *Indian Economic Review,* 36(2), 359-379. Retrieved Mar: 12, 2018 http://www.jstor.org/stable/29794248

Fazal, H., Muhammad, A. Q., Mahmood, K. & Ejaz, G. (2010). The Relationship between Federal Government Revenues and Expenditures in Pakistan. *The Pakistan Development Review,* 49(4), 641-649. Retrieved from http://www.jstor.org/stable/41428681

Friedman, M. (1978). The Limitations of Tax Limitation. *Policy Review*, 5(78), 7-14

Ghartey, E. (2010). Government Expenditures and Revenue Causation: Some Caribbean Empirical Evidence. *Applied Econometrics and International Development,* 10(2)

Granger, C. W. J. (1969). Investigating Causal Relations by Econometric Models and Cross-Spectral Methods. *Econometrica,* 37, 424-438

Greene, H. W. (2004). *Econometric Analysis.* Pearson Education, Inc., Upper Saddle River, New Jersey, Fifth Edition

Hoover, K. D. & Sheffrin, S. M. (1992). Causation, Spending, and Taxes: Sand in the Sandbox or Tax Collector for the Welfare State? *American Economic Review*, 225-248

Meltzer, A. H., & Richard, S. F. (1981). A Rational Theory of the Size of Government. *The Journal of Political Economy_89*, 914-927.

Nasiru, I. (2018). Toda-Yamamoto Granger No-causality Analysis of Stock Market Growth and Econmic Growth in Ghana. *Journal of Accounting, Business and Finance Research,* 3(1), 2521-3830

Ogujiuba, K. & Abraham, T. W. (2012). Testing the relationship between government revenue and expenditure: Evidence from Nigeria. *International Journal of Economics and Finance,* 4(11), 172-182

Paparas, D. & Stoian, A. (2016). The validity of Wagner's Law in Romania during 1995-2015. *MPRA, Munich Personal RePEc ARchive*.

Peacock, A. T. & Wiseman, J. (1961). Determinants of Government Expenditure NBER Chapters in: *The Growth of Public Expenditure in the United Kingdom* 12-34 National Bureau of Economic Research, Inc. Retrieved March:12, 2018 from http://www.nber.org/chapters/c2302

Peacock, A. & Wiseman J. (1979). Approaches to the Analysis of Government Expenditure Growth. *Public Finance Quarterly*, 7, 3-23

Toda, H. Y. & Yamamoto, T. (1995). Statistical Inferences in Vector Auto-regressions with Possibly Integrated Processes. Journal of Econometrics, 66(1-2), 225-250

Zinaz, A. & Samina, K. (2009). Government Expenditure and Tax Revenue, Causality and Cointegration. *The Pakistan Development Review,* 48(4), 951-959. Retrieved March:12, 2018 from http://www.jstor.org/stable/41261357