International Journal of Social Science and Economic Research

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

TAX REVENUE POLICY ADJUSTMENTS: DOES ITS POLICY SHOCK STABILISES GROWTH, GOVERNMENT COMPENSATORY SPENDING, INDUCED CONSUMPTION AND INDEBTEDNESS PRESSURES ON CITIZENS

Andrew E.O Erhijakpor (PhD, FCA)[1] and Edward O. Ediagborume[2]

[1]Department of Banking and Finance, Faculty of Management Sciences, Delta State University, Abraka, Nigeria

[2]PG Student, Department of Accounting, Faculty of Management Sciences, Delta State University, Abraka, Nigeria

DOI: 10.46609/IJSSER.2022.v07i03.005 URL: https://doi.org/10.46609/IJSSER.2022.v07i03.005

Received: 7 March 2022 / Accepted: 18 March 2022 / Published: 30 March 2022

ABSTRACT

This study analyse the effect of fiscal policy shocks due to tax revenue adjustments, kept track of the dynamic links of these shock possibilities on the macroeconomic measures specified in the vector autoregression (VAR) model. Their responds to these permanent shock innovations that were exhibited due to pressure from tax revenue shifts were reconciled to understand their feedback effects. This process permits the test for the hypothesis of diagonal covariance and the symmetric covariance processes. It explore the degree of own variance asymmetry exhibited by the variables in the model. This approach was administered to ease the analysis of the related concepts of exogeneity, and temporal superiority associated with the Granger-causality analysis. These variables exhibit basic levels of statistical significance. The impulse response estimates indicates that the shock response of tax revenue adjustments to innovations in tax revenue policy shows a continuous increasing diverse expansionary policy path that is declining beyond anticipated government stabilisation policy limits. The shock response of tax revenue shift to innovations in economic growth expressed moderate consistent expansionary policy path that increased the disclosed policy shocks at a slow consistent pace. Relatively government compensatory spending follow a moderate expansionary path that shrined slightly into a contractionary policy path as observed. Also, indebtedness pressure on citizens indicates a stable contractionary policy path, further innovative expansionary policy feedback effect mirrored

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

fractional policy uncertainties with tax revenue distortive effects on indebtedness pressure. Thus, government induced consumption due to economic growth exhibited favourable contractionary policies, which gradually became expansionary over the observation with implications for lopsided, unsteady and inconsistent feedback, which emits pressure that pushed the observed innovations out of balance. Other results have implications for domestic private investment productivity, private citizens' income and consumption power, and political and macroeconomic stability.

Key words: Budget deficit, fiscal policy, government expenditure, macroeconomic policy, taxation, vector auto-regression models.

JEL Classification: C11, C40, E60, H20, H30, H50, H61

1. Introduction

Fiscal policy shocks that emanates from a policy adjustment in tax revenue will have substantial effects on government expenditure, budget deficit, and economic growth (Agbontaen, 2019). In turn, this permanent shock may likely weaken the future policy path of economic growth and constrain the growth path of the other macroeconomic variables beyond the policy target of government (Agbontaen, 2019; Favero&Giavazzi, 2007; Perotti, 2007; Romer&Romer, 2007). This is because government's inter-temporal budget inducements are constrained to deliver at the most efficient cost. This analysis used the Vector Autoregression analysis (VAR) and its observed impulse response function to account for silent policy views, in line with permanent fiscal policy shock distortions, emanating from an adjustment in tax revenues and its effect on the innovations of other macroeconomic variables as they transit over the period observed. Consequently, the objective of this study is to analyse the permanent shock effect of tax revenue to innovations in economic growth and other related macroeconomic variables specified in the model to enhance citizen economic welfare and domestic investment productivity.

To achieve this fit, we probe further to obtain empirical answers to the following research questions: Does shock response of tax revenue exhibit permanent shocks that are self-induced asymmetry? Are tax revenue adjustments liable for the shock innovation effect in economic growth? How do tax revenue adjustments yield fiscal policy shock innovations from government compensatory spending due to economic growth? Does indebtedness pressure that affects citizens generate innovative shock responses from tax revenue policy adjustment? What level of government induced consumption as a result of economic growth yield permanent shock responses from tax revenue policy adjustment? Why will fiscal shocks from tax revenue shifts

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

influence policies proposed to stabilize domestic private investment productivity? Are tax revenue shifts directly linked to permanent shock innovations that affect the stabilization of the persisting rates of inflation? What levels of permanent shocks innovation enact pressure on citizens' private income as a result of government adjustment on tax revenue? Did policy innovations in tax revenue put political stability measures under permanent shock pressures? And will citizens' consumption power respond non-linearly to fiscal policy shocks from tax revenue?

Thus, from these questions the following null hypotheses were derived and tested: Tax revenue shock responses do not exhibit permanent shocks that are own variance asymmetry. Tax revenue adjustments are not liable for the shock innovation effect in economic growth. Tax revenue adjustments do not yield fiscal policy shock innovations from government compensatory spending due to economic growth. Tax revenue adjustment does not generate innovative shock responses from indebtedness pressure that affects the poor. Tax revenue adjustment does not yield permanent shock responses from government induced consumption as a result of economic growth. Fiscal shocks from tax revenue shifts do not generate policy shocks that influence policies proposed to stabilise domestic private investment productivity. Tax revenue shifts are not directly linked to permanent shock innovations that affect the stabilisation of the persisting rates of inflation. Tax revenue permanent shocks innovation does not enact pressure on citizens' private income. Tax revenue innovations do not put political stability measures under permanent shock pressures. And citizens' consumption power does not respond to non-linearity in tax revenue fiscal policy shocks. A properly functioning fiscal policy and hence public service is sine qua non for good governance, institutional capacity and private sector growth (Ogurin and Erhijakpor, 2009).

This study follows the scholarly debates in literature on how tax revenue is a catalyst to economic growth and how it may be detrimental to other macroeconomic variables that lead economic development (Favero&Giavazzi, 2007; Perotti, 2007; Romer&Romer, 2007). These opposing perspectives led this study to examine the permanent shock impact of tax revenue on economic growth, in a developing economy like Nigeria, beyond its resource mobilisation function. It empirically considers how tax revenue permanent fiscal shocks influences economic growth, transforms budget implementation distortions, projects domestic investments, while stabilising income poverty and the economic power of the populace through government fiscal policy ability to invest effectively in sectors that will project economic growth (Olushlola, Oliver &Osang, 2020; Agbontaen, 2019; Edewusi&Ajayi, 2019; Uzoka&Chiedu, 2018; Brautigam, 2018; Abomaye-Nimenibo, 2017).

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

Secondly, it attempt to unveil the impact of permanent fiscal shocks emanating from tax revenue policies, in order to understand how they have been able to curtail macroeconomic cyclical fluctuations from external debt service shocks that suppresses domestic economic welfare gain for the timid population within the poverty index. In this light we analyses how tax revenue permanent fiscal shocks reduce the pressure of indebtedness on the domestic economy, via its capacity of debt repayment. Consequently, this study probe how tax revenue has been used to stabilise national income, in the light of its demand management function to dampen prevailing cyclical fluctuations in the economy. The empirical results will reveal how tax revenue stabilisation policies shocks have influenced inequality in income and wealth, improved capital formation in order to enhance investment financing, curtailed debt burden and boost growth.

The review of literature gives a clear description of the conceptual, theoretical and empirical issues expressed by scholars on tax revenue, fiscal policy link to economic growth and other macroeconomic variables. The third section express a model used by other scholars, describes the data set and estimation process in accordance with the research objective. The fourth section expose facts from the results obtained from the analysis. The fifth section discussed the implication of the findings, recommendations and conclusion.

2. Literature review

Theoretically, an essential fiscal policy instrument is taxation; it facilitates the reduction of private consumption, support investments and ensures the transfer of funds to policy makers for economic development planning (Jhigan, 1995). Gale and Samwick (2014) accept the fact, when it is effective, it will encourage citizens to work, save and invest. Consequently, we view tax as a levy administered by government to create a financial leverage, in order to defray the cost of governance, while enforcing the provision of public services as planned in the budget for the known fiscal period (Cepal, 2021; Gambacorta, 2017). It automatically facilitates resource re-allocation, ensure social equality, equitable distribution of wealth, ensure economic growth, while stabilising the macroeconomic from pressure due to exogenous shocks (Gale &Samwick, 2014).

Tax revenue policies analysis suggests that it influences welfare efficiency and economic performance (Uzoka&Chiedu, 2018; Bleaney, Gemmell& Kneller, 2001). Agbontaen (2019) uphold these views but emphasised the fact that it elicits permanent shocks, which initially suppress economic growth with positive feedback effects that leads it to the same level of stability in economic growth levels. This perspective supports the supply side hypothesis, which suggests that contractionary policies that lead to increase in tax revenue significantly distort

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

economic progress (Agbontaen, 2019; Poulson& Kaplan, 2008; Koester &Kormendi, 1989). It is essential to note that contractionary fiscal policy increase taxes and cut government spending, with the anticipation to slow growth to a healthy level, but in turn government revenue falls because economic activities within the business cycles are unstable (Cepal, 2021; El-Khouri, 2002). Furthermore, it systematically increases budget deficits and national debts, thus fiscal balance is in deficits, because government public spending is increased to cushion the impact of economic and social crisis (Cepal, 2021; El-Khouri, 2002). This effect drives up the prices in investments and increases the rates of inflation (Cepal, 2021). Thus, national income declines, the economy head into recession, tax revenue automatically declines and government compensationary spending automatically increase (El-Khouri, 2002). Consequently, expansionary fiscal policies find it difficult to drive transformative economic recovery (Cepal, 2021). This is as a result of built in flexibility between government spending and tax revenue, within the fiscal policy system (El-Khouri, 2002).

Empirically, Agbontaen (2019) analysed the unanticipated permanent shock responses elicited by tax revenue and evaluated its effect on government spending, budget deficit and economic growth. The VAR model informed that tax revenue indicated positive own variance asymmetry that dipped after the first three periods. The impulse responses of the variables specified point out that tax revenue elicits shocks that initially suppress economic growth with positive feedback effect that last for two periods (Agbontaen, 2019). It exacerbated weak negative shocks exhibited by government expenditure and generated strong persistent declines with consistent negative shocks in budget deficit. This in turn exacted short minimal shocks that projects domestic investment in controlled macroeconomic circles every three years (Agbontaen, 2019).

Olushlola, Oliver, and Osang (2020) estimated tax revenue and economic growth using multiple regression approach, with a data set that span from 1980 to 2016. Their result suggests that tax revenue is positively related to economic growth. Ogundana, Ogundana, Ogundana, Ibidunni and (2017) analysis used a data set that span from 1994 to 2013, their ordinary least square regression estimates indicated that direct and indirect tax effect growth positively. Relatively, Ojong, Anthony, and Arikpo (2016) used a similar model; their estimated data set was from 1986 to 2010. They observed that petroleum profit tax influences growth, while company income tax has no significant impact on growth.

Edewusi and Ajayi (2019) examined the nexus between tax revenue and economic growth in Nigeria by evaluating the impact of company income tax, petroleum profit tax and value added tax on economic growth. The ex-post facto research design ascertained the short and long run effect of these forms of taxes on economic growth using the co-integration analysis. The results

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

indicated that petroleum profit tax, company income tax, and value added tax all exert a positive significant impact on economic growth at the 5 percent level. Similarly, Yahaya and Bakare (2018) ascertained the effect of petroleum profit tax and companies' income tax on economic growth in Nigeria. The co-integration time series analysis was applied by the study to evaluate a secondary data set spanning 34 years (1981-2014). The study ensured the desired robustness in its assessment by using the fully modified least square regression technique, Augmented Dicker Fuller unit root test and the co-integration test. The study revealed that that petroleum profit tax and company income tax have positive significant impact on economic growth in Nigeria.

Edewusiand Ajayi (2019) averred that the basic idea behind taxation policy is to create adequate revenue for the federal government, increase the citizens' wellbeing, while improving the rates of economic growth and development. Although, Abomaye-Nimenibo (2017) contended that tax revenues do not induce economic growth. He further argued that irrespective of economic distortion, taxation policies and aggregate revenue have insignificant impact on economic growth in the long run. Contrarily, Afuberoh and Okoye (2014) stated that taxation policy plays an important role in the overall control and management of the economy. In addition, it helps government to reasonably stabilise prices, promote the near-full employment of resources to develop other sectors of the economy and ensure a stable economic growth rate. Consequently, the main purpose of tax is to raise revenue to meet government expenditure and to redistribute wealth and management economic stability (Brautigam, 2018).

However, these findings are mixed and provide a need for further examination of the effect of tax revenue and economic growth. Therefore, the inconsistencies of the results in this debates leaves us with knowledge gaps, to resolve on how tax revenue permanent shocks influence economic growth, price stability, citizen income, domestic investment productivity, indebtedness pressure on citizens and government compensatory spending on citizens. To effectively capture the influence of government fiscal policy inconsistency in the model, we account for the timing of fiscal transactions. Thus the lag length criteria were calibrated accordingly, to bring these dynamics to limelight. The lack of recent studies on this subject matter made this study explore insights from recent data sets that span 1980 to 2020. In this light, this study examines how tax revenue adjustment policy stabilises economic growth, government compensatory spending, investment productivity, and induced consumption and indebtedness pressures on citizens. The observed findings will give useful information to policy makers on the expository interplay of the permanent shocks of these macroeconomic variable with implications for designed policies aimed at stabling economic growth, domestic investment productivity and citizens' welfare through a better tax revenue system. We look forward to how the results obtained from this

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

study will generate further valuable debates from endogenous growth scholars, neoclassic reformist and other academics with interest in the clarity of our productive insights.

3. Methodology

This study uses annual time series data from 1980 to 2020, obtained from the Nigeria Central Bank (CBN) statistical bulletin (2020), OECD (2021) and IMF data base (2021). It examines the shock impact of tax revenue on economic growth captured by real gross domestic product growth, other macroeconomic variables in the model include: government compensatory spending represented by budget deficit, indebtedness pressure on poor citizen encapsulated by debt service as a ratio of GNI (DS_GNI), government induced consumption due to growth was captured by government final consumption expenditure as a ratio of GDP (GFCEGDP), domestic private investment productivity represented by Gross Fixed Capital Formation (GFCF), inflation rate (INF), citizens private income captured by per capital GDP (PCGDP), political stability (POLSTAB) where 1= era of political instability i.e. military regimes, and citizens private consumption represented by Purchasing Power Parity (CPC).

A vector auto-regression model was estimated to analyze the specified innovation relationships between these macroeconomic variable for fourth year to understand tax policies permanent systematic innovations. The observed impulse response will reveal the shock variations in the specified variables in relation to the shock responses associated with tax revenue policy adjustments (Agbontaen, 2019).

The specification of the VAR model:

$$Y_t = \beta + \varphi_j Y_{t-1} + \ldots + \varphi_j Y_{t-j} + \varepsilon_t \quad - - - - - - - \quad (3.1)$$

Where Y_t is an n x 1 vector composed of the variables outlined in the study. β is an n x 1 vector and $\varphi_j's$ are n x n matrices and ε_t is an n x 1 vector of innovation. Here, the innovation of ε_t is assumed to have a multivariate normal distribution with $\varepsilon_t \sim iidN\left(0, \sum \varepsilon\right)$(Agbontaen, 2019; Favero&Giavazzi, 2007).

Consequently,

$$DTAXR = \beta_{10} + \sum_{t-1}^{n} \varphi_{11} DTAXR_{t-1} + \sum_{t-1}^{n} \varphi_{12} GFCEGDP + \sum_{t-1}^{n} \varphi_{13} DGCS + \sum_{t-1}^{n} \varphi_{14} DGDPG + \sum_{t-1}^{n} \varphi_{15} DGIN1 + U_t \quad (3.2)$$

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

Where; DTAXR is the first difference of tax revenue, DGOVEXP is the first difference of government expenditure, DGFCF is the first difference of gross fixed capital formation, which captures domestic investment, DGDPG is the first difference of gross domestic product growth, while DBUGDF1 is the first difference of budget deficit.

Therefore, equation 3.2 can be expressed as;

$$DTAXR_t = \beta_{10} + \sum_{t-1}^{n} \varphi_{11} DTAXR_{t-1} + \ldots + \sum_{t-1}^{n} \varphi_{19} DGDPG_{t-1} + U_t \quad - \quad - \quad - \quad (3.3)$$

$$DGDPG_t = \alpha_{90} + \sum_{t-1}^{n} \varphi_{91} DTAXR_{t-1} + \ldots + \sum_{t-1}^{n} \phi_{99} DGDPG_{t-1} + \varepsilon_t \quad - \quad - \quad - \quad (3.8)$$

Where U_t and ε_t are the uncorrelated error terms. Causality is determined by estimating equations (3.3) and (3.8) and testing the null hypothesis that $\sum_{i=1}^{n} \varphi_{11} = 0$ and $\sum_{i=1}^{n} \varphi_{19} = 0$ against the alternative hypothesis, which states that $\sum_{i=1}^{n} \varphi_{11} \neq 0$ and $\sum_{i=1}^{n} \varphi_{19} \neq 0$ (Agbontaen, 2019).For own variance and contemporaneous permanent shocks, for these outlined equations.

Relatively, the VAR model specified in equation (3.3) to (3.8) will be used to analyze the perceived innovations between the stated macroeconomic variables. It will unveil the shock impacts of the levels of tax revenue on economic growth, government spending, domestic investment and budget deficits. To satisfactorily evaluate the shock impacts between the outlined macroeconomic variables, it is assumed that the innovations of U_t are functions of some fundamental shock impacts on ε_t, with a proposed error term (Agbontaen, 2019) stated as:

$$\varepsilon_t = \varphi * \cup_t \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad - \quad (3.9)$$

In this wise, $\varepsilon_t \sim iidN(0, \Omega)$ and the observed innovations are assumed to be transmitted through unanticipated innovations in the levels of tax revenue (Agbontaen, 2019). Obviously, the evaluation of the outcome of the matrix $\varphi *$, may follow an indirect appropriation process.

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

4. Discussion of findings

This section considers the adequacy of the model specified, the interpretation of the estimates obtained from the data calibration process. The empirically obtained residual covariance and the outlined hypothesis will be tested and interpreted. The fiscal policy implications of these results will be expressed and their macroeconomic consequences outlined as noted shock responses are evaluated from the empirical results.

4.1 The unit root test

The unit root tests of each of the variables at levels, as specified in the model, have missed results. The Augmented Dickey-Fuller (ADF) (1979) test with and without trends, shows that most of the variables were both I(0) while others were I(1) in very few cases. Thus, the need to transform these variables to their logarithm forms (see Appendix 3). The unit root test results became stationary I(0) series. The group unit root test of variables in the model indicates that these variables are stationary confirming that they are I(0) series (see Appendix 3). Thus, the logarithm transformation of these variables was used for the econometrics estimation process.

4.2 The lag selection criteria tests

The vector error correction (VEC) lag selection criteria tests reveal that the most appropriate lag length for the test is the second lag (lag 2) (see Appendix 3). This was indicated by the Final prediction error (FPC) of 1.16e142 and the Akaike information criterion (AIC) 123.9614.

4.3 The Vector Autoregression (VAR) specification tests

The dynamic VAR estimates disclose that there is significant conditional heteroscedasticity in the dataset used for the estimation process. This was revealed by the determinant residual covariance of 6.82. The moderately high outcome of the Akaike Information Criterion of 123.96 and the Schwarz Criterion of approximately 132.92 confirms that the estimated coefficients in the model are jointly and individually significant. The outcome of the test of the hypothesis of a diagonal covariance process shows that the off diagonal elements of the estimated coefficient need to be jointly insignificant. From the results obtained, these estimated coefficients are jointly significant in most cases at the 1 percent and 5 percent levels (see Appendix 4).

Relatively, the insignificance of the non-diagonal estimates may increase the persistence of the conditional variances as observed by the results of the determinants residual covariance with a reasonable degree of adjustment of the observed degree of freedom that obtained 1.56 points, which is basically lower than the result of the determinant residual covariance process as

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

estimated. Technically, this imply that the analogous coefficients levels of significance obtained at various lags in each series may have slight variation in the degree of change in impact on the conditional variance of the other series in the model.

Further, the hypothesis of a symmetric covariance process which viewed the fact that the coefficient of the estimates may be significant from the results obtained is confirmed. This is because the output indicates that most of the variables specified in the model are individually statistically significant and the as expressed by superior levels of the R-square values and their related F-test statistics values which were reasonably normal.

It is important to note that the tax revenue variable demonstrates own-variance asymmetry at the first lag.

4.4 The impulse response of variables specified in the model

The response to Cholesky one standard deviation innovations plus or minus two standard error, express the response of tax revenue to the various macroeconomic variables in the model on the first row, while the responses of the specified macroeconomic variables to shock innovations to tax revenue are expressed in the first column (see Appendix 5).

1. The shock response of a tax revenue shift to innovations in tax revenue policy estimates indicate a continuous persistent increasing diverse expansionary path that is declining, with similar magnitude of estimated declining tax revenue fiscal shock response that reached control line after the first twenty years of the observation. It remains in this control zone for another four years before it gradually slipped below the control line at zero over another sixteen years. This suggests that the estimated shocks response of expansionary tax revenue shits to innovations in tax revenue is explosive but steadily declining over time, beyond the limits of anticipated government stabilisation policy control.

2. The shock response of tax revenue adjustment to innovations in policy shocks from the economic growth measure reveals a moderate consistent path that is expansionary over the observation. The actual fiscal shock response of tax revenue to economic growth shocks increased at a slow consistent pace, which starting increasing after the first eight years of the observation where it has remained stable. This slight increase remain stable for another sixteen years before it started nose diving steadily, up until the fortieth year of the observation, but it did not reach the zero mark on the control line. This suggests that economic growth policy measures have successfully curtain the shock responses of tax revenue policy adjustments over the observation. Consequently, the inherent permanent shocks from economic policy stabilisation

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

measures curtail the excesses from the degree of permanent shocks emitted by tax revenue, although its efficacy dwindles down overtime.

On the other hand, the response of economic growth policy measures to tax revenue adjustment shocks have approximately smooth and consistently stable estimated shock effect over the observation. The actual fiscal policy shock response of economic growth to tax revenue shocks remain actually stable for the first sixteen years of the observation, a subsequent adjustment of tax revenue policy after this period lead to an economic growth policy shock that spiral slightly above the control line with slight estimated adjustment that is barely visible through the other part of the observation. This make its obvious that the shock response of economic growth policy measure to tax revenue adjustment shocks were only stable in the first sixteen years of the observation while the other twenty four year were left with shocks that emit slightly inconsistent variations that was persistent to the end of the observation. These indicate that the feedback effect follows a similar path with more shock pressure on the response of tax revenue to economic growth than on the response of economic growth to tax revenue.

3. The shock response of tax revenue adjustment policy to innovations in policy shocks from government compensatory spending follow a moderately expansionary path that shrink slightly into a contractionary policy path over the observation. The actual fiscal policy response of tax revenue innovations to government compensatory spending policy was stable in the first four years of the observation; slight went out of control in the next eight years, stayed steady for another four years and lost its consistency slightly below the zero mark for the remaining part of the observation.

Relatedly, the response of government compensatory spending policy to innovations in tax revenue policy shocks reveal estimates that exhibits decreasing contrationary innovations that are inconsistent over the entire observation. Its contractionary features persisted for the first four year, when it eventually hit the zero mark, as it nose dives, it encounter a moderate expansionary phase that was inconsistent but persisted over the observation. The actual government compensatory spending policy response nose-dived steeply out of control for over twelve years, reaching the zero mark after the four years and consistently lingered below the zero mark for another eight years. For another eight years, it consistently rose to gain stability but it was plagued with some levels of inconsistencies that last for twelve years and stayed stable with little success for another four years before it loss balance and stayed slightly below the control margin for last four years of the observation. These indicate that the feedback effect follows different policy paths, since government compensatory spending policies were contractionary and later became expansionary over the observation, with known inconsistencies that could not be

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

stabilised. While the shock response of tax revenue policies to innovation in government compensatory spending policy follow an approximate consistent smooth policy path that was stable. This pronounced difference indicated that the feedback mechanism is roughly diverse and unstable, with inconsistent shock measures emanating from government compensatory spending policy response to innovations in tax revenue policies.

4. The shock response of tax revenue shift to innovations in indebtedness pressure on poor citizen's estimate indicates that the first four years was contrationary and stable. Further policy innovations were gradually expansionary for the next twelve years and this stayed consistent up until the end of the observation. The actual shock response was stable in the early sixteen year of policy implementation, after which it gradually receded below the control indicator. This lingered steadily, and remained stable, for another twenty four years before it tends toward its formal steady state, within the control line in the last four years of the observation.

Secondly, the reverse case that evaluates the policy shock response of indebtedness pressure on the poor citizen's adjustments to innovations in tax revenue policy estimates shock response was slightly unstable over the observation. It engaged an expansionary outlook that was basically steady within the control region through the entire observation. The actual shock response was calm slightly beyond the firs sixteen years before it gradually receded below the control margin. This lapse lingered for another twenty four years; before it basically gained stability in the later part of the observation. Consequently the feedback effect mirrors fractional policy uncertainties with virtual repelling effect in the first four years of the observation, and in the next sixteen year after that. The other half life time of the observation witness opposite directional policy effects, which was within approximately equal expansionary policy framework. These policy interactions between both policy variables indicate reasonable levels of instability over the observation as a result of solvency of the public sector and vulnerability to liquidity crises.

5. The estimated shock response of tax revenue adjustment to innovations in government induced consumption due to economic growth reveal that contractionary policy pressure kept tax revenue policy pressure as a result of government induced consumption due to persistent economic growth steady for the first four years of its life time. Further initial expansionary policy was favourable only for the second four year of the observation, further expansionary policy witness declining estimated policy shocks from government induced consumption due to economic growth that were unfavourable to tax revenue, despite further expansionary policy moves by policy makers through the observation, tax revenue only recovered twenty eight year after its initial policy shock for innovations in government induced consumption as a result of economic growth pressures. Subsequent gradual expansionary policy innovations of government induced

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

consumption as a result of growth send positive signals to actual tax revenue and it peaked lightly above the control grid, this policy flow persisted only for the second four years of the observation after which it plunged as policy becomes subsequently expansionary. This fall dipped slightly further through another sixteen years of the policy life cycle, after which it gradually progressed through an upwards trajectory that was slow and consistent for another sixteen year towards the end of the observation.

On the other hand, the estimate of the response of government induced consumption due to economic growth policy adjustment to innovations in tax revenue policy was contractionary for the first four year of its life time. These favourable contractionary policies gradually witness various levels of expansionary policy innovations through the entire observation. Despite these innovative expansionary policies, the estimated policy flows remain positive. The actual policy shocks of tax revenue policy on innovations in government induced consumption by economic growth persistently remain steady and positive for over thirty two years. It slightly peaked after twenty year, of steady low increase, and stayed afloat for eight years before it witness a light fall to its initial positive position in the last four years of the observation. Consequently, the feedback effect is lopsided, unsteady and inconsistent overtime. This is because while expansionary policy outlooks kept the response of government induced consumption due to economic growth policy adjustments to innovations in tax revenue policies slightly positive and stable over the observation, it emitted pressure that pushed the response of tax revenue policy to innovations in government induced consumption due to economic growth policies out of balance. Thus, it was unstable and struggled to gain reasonable balance, which was barely attained towards the end of the observation after thirty four years of expansionary policy experimentations.

6. The estimates of the reflection of the response of tax revenue to domestic private investment productivity processed a close mirror reflection of the estimates of tax revenue to policy innovations of government induced consumption due to economic growth but with low swings and less intensive shifts, over precisely the same period within the entire observation.

Contrarily, the estimates of the response of domestic private investment productivity to innovations in tax revenue policy have strong detrimental effect on the policy response of domestic private investment over the observation. It opened up with a contrationary policy intension that reduced the intensity of domestic private investment productivity, after the first eight years. As it becomes expansionary it declined consistently further up until the end of the observation. The actual policy shock response of domestic private investment productivity to tax policy changes dipped after the first four years of administering a contrationary policy but it remained positive. This remains stable for another twelve years, before it further declined

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

gradually in a twenty years period, before it reached the control line. As the expansionary policy persist, the actual policy shock response of domestic private investment productivity plummeted further and did not gain stability up until the end of the observation. From these views, the feedback effect is inverse and unsubstantial. This is because their policy feedback loops of these variables did not cross similar macroeconomic paths within the observation.

7. The estimates of tax revenue policy response to innovation in inflation stabilisation policies in the economy revel that tax revenue policy response to innovation in inflation are loosely guarded by policy changes that are proceeding erratically despite their persistent expansionary nature. The actual response of tax revenue policy to innovation in inflation policy pressure struggled to stay stable in the first eight years of its life time as observed, despite the persistent nurturing of perceived expansionary policies to curtail inflationary pressures. After eight years of stability, inflation policy pressure on tax revenue increased slightly and lingered consistently with a slight depression for eight years before it peaked doubling its formal slight increase. This doubled slight increase peaked after another eight years and stayed afloat for four years before it starts witnessing a slight decline for sixteen year but it did not attain a steady state to become stable.

Similarly, the estimates of the inflation stabilisation policies response to innovation in tax revenue policy shocks indicates moderate expansionary policy that is stable over time. The actual shock response of inflation stabilisation policies to change in tax revenue policy, seems to be under control in its first eight years, it dropped slightly below the control line, within the first gauge of its negative axis, while maintaining to stay stable and close to the control line. This persisted from the eighth observation through to the end of the period covered by the study. Although these two shock response flow along slightly opposite directions, they are directly similar in context, following the same estimated steady state expansionary policies and their actual responses to innovations from policy shocks either way ran along the control line light from the positive and native terminals with slightly similar purposeful trends of policy shock innovations. Thus, the feedback effects are reasonable and policy makers can easily harmonise the difference in policy interest to achieve effective stability.

8. While estimates of the response of tax revenue policy to policy innovations in citizens private income strata was embedded in a contractionary monetary trap that was steady over the observation, its actual shock innovations stay slightly positive for over thirty six years of the observation cycle before its slightly declined.

Contrary the estimates of the response of citizens' private income status to policy innovations in tax revenue adjustment shocks were contrationary and negative in the first twelve years of the

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

observation. After this period, it exhibits an explosive expansionary outlook that stayed strongly positive for the remaining thirty eight years of the observation. The actual shock innovations follow a similar path, it was negative for the first twelve years of the observation, astronomically increase for another twenty years before it gain a stable increase pace that lasted for another eight years. The feedback effect in this case shows that the shock innovations exhibited by these variables has opposite relations in the first twelve years on their economic life cycle, with declining implications for citizens' private income. Its subsequent super-furious positive expansionary nature outweighs the stable consistent contrationary nature of the response of tax revenue adjustment innovation to citizens' private income within the same period in the observation. Consequently, the feedback effect has opposing phases that only supports stability from the response of tax revenue policy shift to innovations in citizens' private income perspective, while it spiral out of the stability mark for the response of citizen's private income to innovation in tax revenue policy adjustment from basic native shocks to strong highly explosive positive shock innovations throughout the observation. Therefore, it suggests structural fiscal inconsistencies without prudent monitoring probably due to in accurate policy forecasting.

9. The estimates of the response of tax revenue policy to innovations in policies geared towards political stability in the country was consistent and stability through a steady contractionary policy path over the observation. Its actuals were most effectively stable in the first twelve years of the observation, but gained a slight increase just above the control line that remain consistent for over twenty eight years in the observation.

The other perspective shows that the estimates of the response of political stability to innovations in tax revenue policy shocks were contractionary in the first four years of the observation. It became explosively expansionary in the next twelve years of the economic cycle and became consistent at an increased rate that is approximately two times stronger than its initial shock position in its early four years its actual shock response slightly dipped after the first four year of the contractionary phase of the trends. It quickly recovered at a steady pace and remains positively stable slightly over the zero margin for twenty eight years before it gradually witnessed a decline that dragged on for last eight year of the observation. These indicate that the feedback effect is reasonably cordial and stable despite the pronounced differences in the contractionary and expansionary phases of their policy shock effects. Their actual shocks were stead and consistently stable over the entire observation. This suggests that all forms of tax shift shocks and political stability measures of government were favourably interwoven to ensure

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

fiscal stability, despite variations in different levels of contractionary and expansionary policy adjustments observed.

10. The estimated response of tax revenue policy to innovations in citizens' consumption power is contractionary and stable over the observation, it is important to note that the contractionary policy innovation slightly tightened towards the end of the observation. Thus, the actual response of tax revenue policy to innovations in citizens' private consumption power was stable and stayed slightly afloat on the control line for the last twenty eight year of the entire observation.

For the response of citizens' consumption power to innovation in tax revenue policy permanent shocks, the estimates reveal a native contrationary shock response in the first four years of the observation, which was followed by a consistent increasing expansionary path over the entire observation despite its initial negative weakness. The actual shock response of citizens' consumption power to innovations in tax revenue policy shocks was basically negative in the first four years of the observation. It barely rose to a stable positive consistent minimum after another four year and then it stead consistently stable for the next twenty years. The last twelve years witness slight consistent increase up until the end of the observation. The feedback effect of the permanent shock patterns of these variables shows that while tax revenue policy shock to innovations in citizens' consumption power was successfully stable over the observation, tax revenue policy shocks curtailed shocks from citizens' consumption power for the first eight years but heighten the intensity of the shock response of citizens' consumption power through the other part of the observation. This suggest fiscal policy stability misappropriation due to policy inconsistency after the twenty eight years of the observation before tax revenue policy shocks heightened citizens' consumption power policy shock reasonably.

5.0 Conclusion

This study used the Vector Autoregression model to analyze tax revenue fiscal policy efficiency on economic growth, government compensatory spending, indebtedness pressure on citizens, government induced consumption due to growth, domestic private investment productivity, inflation rate, citizens' private income, political stability, and citizens' private consumption. Also, the results of the impulse response analysis was presented to shed light on the dimensions of permanent shocks caused by variables in the model, interpreting their effect on these other macroeconomic variables to support fiscal policy efficiency through taxation policy that adjust revenue to stabilise the economy.

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

It is essential to note that economic growth path was expansionary and actual growth was initially stable for the first sixteen years. It then spiral out of control for twenty four year. Government compensatory spending follows a moderate expansionary path that later shrink into a contractionary policy path. Further expansionary agents were clouded by inconsistencies that could not be stabilised. Consequently, government induced consumption due to economic growth policy adjustment was contractionary, while further expansionary flows remains positive for over thirty two years, with inconsistent feedback effects. Overall, the result established that the response of tax revenue policy adjustments to innovations in the other macroeconomic variable specified in the model are driven by contractionary and expansionary policies that leads stable and uncertain policy innovations that need close monitoring to attain efficient fiscal policy shifts across the macroeconomic

5.1 Policy implications

1. Tax Revenue Policy adjustment indication that expansionary tax policy that increases revenue is over-anticipated by policy that increases revenue is over anticipated by policy makers in anticipation to use tax revenue to stabilize government spending, debt control and growth. Thus, the result justify the fact by showing a consistent decline of tax revenue expansionary path for over 20years and the consistent decline that went out of control after a short stable period.
2. Shock response of Economic growth indicates that tax revenue policy was able to moderate Economic growth for over 32 years of the observation after an initial 4years struggle with inconsistency in macroeconomics stability measures, that influences economic growth
3. Shock Response of government compensatory spending indicates that it is in close alliance with the revenue strategy of policy makes despite macroeconomics inconsistencies that could not be stabilized by reversing expansionary and contractionary policy measures over the observation. Shock response of indebt pressure to poor citizens indicates that expansionary tax revenue generated by government did stabilize debt pressure as was formerly observed when policy was contractionary. Further expansionary policy led to more fractional uncertainty that worsen indebtedness pressure on citizens. Policymakers' further expansionary outlook to correct this bias left the economy vulnerable to consistent macro economic in stability.

5.2Recommendations

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

1. To attain efficient fiscal policy shifts across the macroeconomic, the stable and uncertain policy innovation need close monitoring
2. Government needs to establish sustainable compensatory spending path that are monitored every 4years in line with the known revenue generating capacity of government in other to generate an effective feedback mechanism that ensures stability .
3. Also, it will be wise for government to schedule contractionary measures that will reduce government indebtedness overtime, control indebtedness pressures on citizens and macroeconomic activities related to growth.

References

Abomaye-Nimenibo, W.A.S., Michael Jack Eyo, M. & Friday, H.C. (2018).An empirical analysis of tax revenue and economic growth in Nigeria from 1980 to 2015.*Global Journal of Human-Social Science, Political Science*, 18(3), 9-40.

Afuberoh, D. &Okoye E. (2014). The Impact of Taxation on Revenue Generation in Nigeria: A Study of Federal Capital Territory and Selected States. *International Journal of Public Administration and Management Research (IJPAMR), 2*(2), 22-47.

Agbontaen, O.O. (2019). Economic growth and taxation revenue: Are there known distortions to Bleaney, M., Gemmell, N., & Kneller, R. (2001). Testing the endogenous growth model: public expenditure, taxation, and growth over the long-run. *Canadian Journal of Economics*, 36-57.

Brautigam, D., (2018). policy efficiency. Department of Economics Working Paper, 01-2019, Pan-Atlantic University, Lagos, Nigeria, April.

Taxation and governance in Africa.AEI online. Available from http://www.aei.org/publication/taxation-and-governance-in-africa. Accessed 27th May, 2021.

Cepal, N. U. (2021). Fiscal panorama of Latin America and the Caribbean: fiscal policy challenges for transformative recovery post-COVID 19. Economic Commission for Latin America and the Caribbean (ECLAC), 2021(ILC/PUB 2021/5-P), Santiago.

Edewusi, D. G. &Ajayi, I. E. (2019).The Nexus between Tax Revenue and Economic Growth in Nigeria. *International Journal of Applied Economics, Finance and Accounting*,*4*(2), 45-55.

Favero, C. &Giavazzi, F. (2007). Debt and the effects of fiscal policy, Federal Reserve Bank of Boston, Working Paper No. 07-4, 29th May.

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

Gale, W.G. &Samwick, A.A. (2014).Effect of income tax change on economic growth. Economic Studies at Brookings, Brookings Institution and Tax Policy Center, September.

Gambacorta, L., Ricotti, G., Suresh, S., & Wang, Z. (2017). The effect of tax on bank liability structure. BIS Working Papers No. 611, Monetary and Economic Department, Bank of International Settlement, February.

Jhingan, M.L. (1995): The Economics of Development and Planning (28th Revised Edition). New Delhi: Prabhat Offset Press.

Koester, R.B. &Kormendi, R.C. (1989). Taxation, aggregate activity and economic growth: Cross-country evidence on some supply-side hypotheses. *Economic Inquiry*, 27(3), 367-386.

Perotti, R. (2007). In search of the transmission mechanism of fiscal policy, NBER Macroeconomic Annual.

Poulson, B.W. & Kaplan, J.G. (2008). State income taxes and economic growth, *CATO Journal*, 28(1), 53-71.

Ogundana, M.O., Ogundana, M.O., Ogundana, M.O., Ibidunni, S.I. &Adetoyinbo, A.A. (2017).Impact of direct and indirect tax on the Nigerian economic growth.*Binus Business Review*, 8(3), 215-220.

Ogunrin, F.O and A.E.O Erhijakpor (2009). SERVICOM policy intervention: improving service quality in Nigeria public sector, Global Journal of Social Sciences, 8(1), 51-60.

Ojong, C.M., Anthony, O. &Arikpo, O.F. (2016). The impact of tax revenue on economic growth: Evidence from Nigeria.*Journal of Economics and Finance*, 7(1), 32-38.

Olushlola, O.K., Oliver, &Osang, O.D. (2020).Tax Revenue and Economic Growth in Nigeria. (An Econometric Approach).*International Journal of Economics and Business Management*, 6(2),52-72.

Romer, C. &Romer, D. (2007). The macroeconomic effects of tax changes: estimates based on a new measure of fiscal shocks. Mimeo, March.

El-Khouri, S. (2002).Fiscal policy and macroeconomic management. IMF paper, International Monetary Fund, Washington, D.C., ISBN 1-58906-094-6.

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

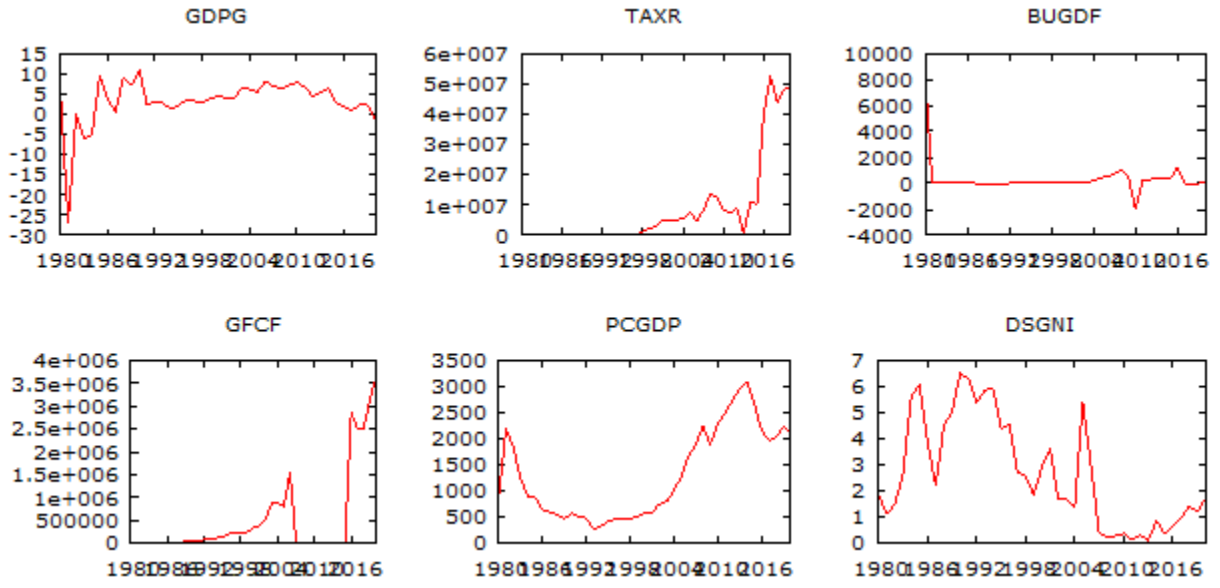
Uzoka, P.U. &Chiedu, C.O. (2018).Effect of tax revenue on economic growth in Nigeria.*International Journal of Social Sciences and Management Research, 4*(7), 17-24

Appendix

Appendix 1: Descriptive statistics of variables specified in the model

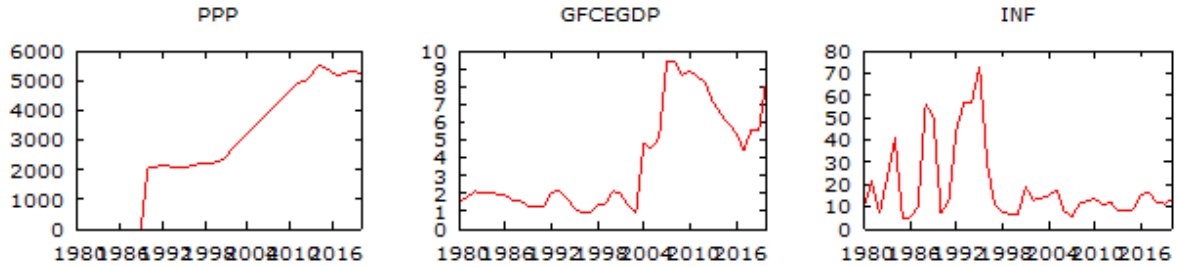
	TAXR	GDPG	BUGDF	DS_GNI	GFCEGDP	GFCF	INF	PCGDP	POLSTAB	PPP
Mean	8678076.	3.148632	307.0710	2.658537	3.790293	525915.2	19.27573	1317.261	0.609756	2725.741
Median	2248000.	3.787900	4.200000	1.884000	2.091000	45190.20	12.55500	902.2160	1.000000	2306.115
Maximum	52300000	10.89160	8188.100	6.521000	9.448000	3618601.	72.81000	3098.986	1.000000	5507.169
Minimum	2880.200	-26.81340	-2020.000	0.103000	0.911000	8799.500	4.670000	270.2240	0.000000	1.00E-05
Std. Dev.	14968081	5.934697	1339.888	2.077923	2.889991	967338.1	17.23548	867.2879	0.493865	1957.568
Skewness	2.051098	-3.266555	5.023858	0.481400	0.765572	2.041408	1.685274	0.484532	-0.450000	-0.089508
Kurtosis	5.773406	17.09957	30.91440	1.842723	2.072380	5.829243	4.662334	1.790649	1.202500	1.726262
Jarque-Bera	41.88797	412.5273	1503.624	3.871552	5.475005	42.15141	24.12842	4.102759	6.903386	2.826359
Probability	0.000000	0.000000	0.000000	0.144312	0.064732	0.000000	0.000006	0.128557	0.031692	0.243368
Sum	3.56E+08	129.0939	12589.91	109.0000	155.4020	21562525	790.3050	54007.71	25.00000	111755.4
Sum Sq. Dev.	8.96E+15	1408.825	71811944	172.7106	334.0818	3.74E+13	11882.46	30087530	9.756098	1.53E+08
Observations	41	41	41	41	41	41	41	41	41	41

Appendix 1B: Trend lines of the variables in the model



ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"



Appendix 2A: Group Unit root test

Null Hypothesis: Unit root (individual unit root process)
Series: BUGDF, DS_GNI, GDPG, GFCEGDP, GFCF, INF, PCGDP,
POLSTAB, PPP, TAXR
Date: 10/08/21 Time: 18:41
Sample: 1980 2020
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 9
Total number of observations: 381
Cross-sections included: 10

Method	Statistic	Prob.**
ADF - Fisher Chi-square	49.0224	0.0003
ADF - Choi Z-stat	-0.83043	0.2031

** Probabilities for Fisher tests are computed using an asymptotic Chi
-square distribution. All other tests assume asymptotic normality.

Intermediate ADF test results UNTITLED

Series	Prob.	Lag	Max Lag	Obs
BUGDF	0.0001	0	9	40
DS_GNI	0.2554	0	9	40
GDPG	0.0002	0	9	40
GFCEGDP	0.8166	0	9	40
GFCF	0.9903	9	9	31
INF	0.0228	0	9	40
PCGDP	0.6744	1	9	39
POLSTAB	0.5507	0	9	40
PPP	0.8323	0	9	40
TAXR	0.9949	9	9	31

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

Appendix 2B: Group Unit root test

Null Hypothesis: Unit root (individual unit root process)
Series: BUGDF, DS_GNI, GDPG, GFCEGDP, GFCF, INF, PCGDP, POLSTAB, PPP, TAXR
Date: 10/08/21 Time: 18:42
Sample: 1980 2020
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 9
Total number of observations: 381
Cross-sections included: 10

Method	Statistic	Prob.**
Im, Pesaran and Shin W-stat	-5.66531	0.0000

** Probabilities are computed assuming asympotic normality

Intermediate ADF test results

Series	t-Stat	Prob.	E(t)	E(Var)	Lag	Max Lag	Obs
BUGDF	-18.258	0.0001	-1.523	0.770	0	9	40
DS_GNI	-2.0750	0.2554	-1.523	0.770	0	9	40
GDPG	-5.0739	0.0002	-1.523	0.770	0	9	40
GFCEGDP	-0.7701	0.8166	-1.523	0.770	0	9	40
GFCF	0.7063	0.9903	-1.272	1.094	9	9	31
INF	-3.2762	0.0228	-1.523	0.770	0	9	40
PCGDP	-1.1777	0.6744	-1.520	0.806	1	9	39
POLSTAB	-1.4450	0.5507	-1.523	0.770	0	9	40
PPP	-0.7117	0.8323	-1.523	0.770	0	9	40
TAXR	0.9515	0.9949	-1.272	1.094	9	9	31
Average	-3.1129		-1.473	0.838			

Warning: for some series the expected mean and variance for the given lag and observation are not covered in IPS paper

Appendix 3: Lag length selection criteria

VAR Lag Order Selection Criteria
Endogenous variables: TAXR GDPG BUGDF DS_GNI GFCEGDP GFCF INF PCGDP POLSTAB PPP
Exogenous variables: C
Date: 10/08/21 Time: 18:53
Sample: 1980 2020
Included observations: 39

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2579.940	NA	2.28e+45	132.8174	133.2440	132.9705
1	-2335.743	350.6417*	1.64e+42	125.4227	130.1148*	127.1062*
2	-2207.248	118.6111	1.16e+42*	123.9614*	132.9191	127.1754

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

Appendix 4: Vector Autoregression Estimates

Vector Autoregression Estimates										
Date: 10/08/21 Time: 18:49										
Sample (adjusted): 1982 2020										
Included observations: 39 after adjustments										
Standard errors in ( ) & t-statistics in [ ]										
	TAXR	GDPG	BUGDF	DS_GNI	GFCEGDP	GFCF	INF	PCGDP	POLSTAB	PPP
TAXR(-1)	0.608878	-2.39E-07	3.81E-06	-2.16E-09	-1.70E-07	0.019345	5.78E-07	-2.97E-05	-9.53E-09	-2.81E-06
	(0.31502)	(1.8E-07)	(2.4E-05)	(6.3E-08)	(5.5E-08)	(0.03074)	(9.3E-07)	(9.3E-06)	(1.1E-08)	(1.9E-05)
	[1.93281]	[-1.33849]	[0.15689]	[-0.03428]	[-3.06666]	[0.62938]	[0.62056]	[-3.18203]	[-0.89995]	[-0.15000]
TAXR(-2)	0.496166	1.42E-08	-3.09E-05	3.29E-08	-1.54E-08	0.048516	1.83E-07	5.19E-07	-1.39E-09	7.41E-06
	(0.26514)	(1.5E-07)	(2.0E-05)	(5.3E-08)	(4.7E-08)	(0.02587)	(7.8E-07)	(7.9E-06)	(8.9E-09)	(1.6E-05)
	[1.87135]	[0.09420]	[-1.50874]	[0.62056]	[-0.33001]	[1.87546]	[0.23338]	[0.06593]	[-0.15573]	[0.47060]
GDPG(-1)	84544.06	0.250472	-1.876493	-0.061869	0.042913	-7444.311	-0.251134	-7.113082	0.001419	29.63896
	(333150.)	(0.18917)	(25.7118)	(0.06659)	(0.05866)	(32504.7)	(0.98500)	(9.88311)	(0.01120)	(19.7772)
	[0.25377]	[1.32406]	[-0.07298]	[-0.92908]	[0.73159]	[-0.22902]	[-0.25496]	[-0.71972]	[0.12666]	[1.49864]
GDPG(-2)	303186.0	0.244002	20.85942	0.053463	-0.003306	29023.05	-0.872459	15.54751	0.011405	45.60353
	(240826.)	(0.13675)	(18.5864)	(0.04814)	(0.04240)	(23496.8)	(0.71203)	(7.14425)	(0.00810)	(14.2965)
	[1.25894]	[1.78434]	[1.12229]	[1.11064]	[-0.07797]	[1.23519]	[-1.22531]	[2.17623]	[1.40856]	[3.18985]
BUGDF(-1)	2397.777	0.000654	-0.028974	-3.26E-05	-0.000284	146.2151	0.000638	-0.070509	3.01E-05	0.013075
	(2460.69)	(0.00140)	(0.18991)	(0.00049)	(0.00043)	(240.084)	(0.00728)	(0.07300)	(8.3E-05)	(0.14608)
	[0.97443]	[0.46793]	[-0.15257]	[-0.06619]	[-0.65544]	[0.60902]	[0.08765]	[-0.96590]	[0.36331]	[0.08951]
BUGDF(-2)	653.0475	0.000397	-0.217774	-0.000338	0.000305	-25.00953	-0.001135	0.001323	4.72E-05	-0.004044
	(1533.53)	(0.00087)	(0.11835)	(0.00031)	(0.00027)	(149.623)	(0.00453)	(0.04549)	(5.2E-05)	(0.09104)
	[0.42585]	[0.45648]	[-1.84001]	[-1.10285]	[1.12993]	[-0.16715]	[-0.25043]	[0.02907]	[0.91552]	[-0.04442]
DS_GNI(-1)	-143607.9	0.125388	46.50272	0.448902	-0.113083	113909.1	-0.561505	4.615998	-0.005135	-11.01640

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

	(948613.)	(0.53864)	(73.2117)	(0.18961)	(0.16702)	(92554.0)	(2.80469)	(28.1412)	(0.03189)	(56.3137)
	[-0.15139]	[0.23278]	[0.63518]	[2.36747]	[-0.67706]	[1.23073]	[-0.20020]	[0.16403]	[-0.16102]	[-0.19563]
DS_GNI(-2)	538015.6	-0.973918	29.72980	-0.223071	0.102673	-59428.70	3.968423	-51.21870	-0.079662	-33.60234
	(964279.)	(0.54754)	(74.4208)	(0.19274)	(0.16978)	(94082.4)	(2.85101)	(28.6059)	(0.03242)	(57.2437)
	[0.55795]	[-1.77872]	[0.39948]	[-1.15734]	[0.60474]	[-0.63167]	[1.39194]	[-1.79049]	[-2.45720]	[-0.58700]
GFCEGDP(-1)	1250997.	-0.049950	33.99578	0.388596	0.603354	-36877.39	0.881868	37.94899	-0.008522	-4.548018
	(1168010)	(0.66322)	(90.1443)	(0.23347)	(0.20565)	(113960.)	(3.45336)	(34.6497)	(0.03927)	(69.3381)
	[1.07105]	[-0.07531]	[0.37713]	[1.66446]	[2.93389]	[-0.32360]	[0.25537]	[1.09522]	[-0.21701]	[-0.06559]
GFCEGDP(-2)	-3564843.	1.009590	-183.1272	-0.654561	0.565655	-219519.3	-1.185691	73.88589	0.016374	-15.44865
	(1415048)	(0.80350)	(109.210)	(0.28285)	(0.24915)	(138063.)	(4.18376)	(41.9783)	(0.04758)	(84.0033)
	[-2.51924]	[1.25650]	[-1.67683]	[-2.31420]	[2.27038]	[-1.58999]	[-0.28340]	[1.76010]	[0.34417]	[-0.18391]
GFCF(-1)	2.112103	1.88E-06	-2.91E-05	1.10E-07	2.11E-06	0.110622	-8.12E-06	0.000275	1.03E-07	1.47E-05
	(3.52680)	(2.0E-06)	(0.00027)	(7.0E-07)	(6.2E-07)	(0.34410)	(1.0E-05)	(0.00010)	(1.2E-07)	(0.00021)
	[0.59887]	[0.93938]	[-0.10678]	[0.15579]	[3.39937]	[0.32148]	[-0.77918]	[2.62542]	[0.87282]	[0.07001]
GFCF(-2)	-6.585182	1.90E-06	0.000336	-4.45E-07	1.67E-06	-0.292186	-7.40E-06	0.000266	6.92E-08	1.45E-05
	(3.70345)	(2.1E-06)	(0.00029)	(7.4E-07)	(6.5E-07)	(0.36134)	(1.1E-05)	(0.00011)	(1.2E-07)	(0.00022)
	[-1.77812]	[0.90291]	[1.17640]	[-0.60104]	[2.55920]	[-0.80863]	[-0.67564]	[2.42542]	[0.55540]	[0.06584]
INF(-1)	20666.06	0.027744	2.643060	0.041450	-0.002594	-527.2846	0.596276	-0.190388	-0.003366	3.885246
	(80939.8)	(0.04596)	(6.24674)	(0.01618)	(0.01425)	(7897.11)	(0.23931)	(2.40113)	(0.00272)	(4.80493)
	[0.25533]	[0.60366]	[0.42311]	[2.56202]	[-0.18203]	[-0.06677]	[2.49166]	[-0.07929]	[-1.23694]	[0.80860]
INF(-2)	29731.47	0.003663	-0.739237	-0.006964	-0.011400	3195.691	-0.527028	2.946549	-0.002337	11.70480
	(81238.8)	(0.04613)	(6.26982)	(0.01624)	(0.01430)	(7926.28)	(0.24019)	(2.41000)	(0.00273)	(4.82268)
	[0.36598]	[0.07940]	[-0.11790]	[-0.42887]	[-0.79702]	[0.40318]	[-2.19419]	[1.22264]	[-0.85553]	[2.42703]
PCGDP(-1)	-3457.912	-0.000723	1.240314	-0.000681	-0.000655	-211.1019	-0.003589	0.560453	-2.20E-05	-0.006008
	(5990.40)	(0.00340)	(0.46233)	(0.00120)	(0.00105)	(584.469)	(0.01771)	(0.17771)	(0.00020)	(0.35562)
	[-0.57724]	[-0.21260]	[2.68277]	[-0.56887]	[-0.62138]	[-0.36119]	[-0.20266]	[3.15377]	[-0.10914]	[-0.01689]
PCGDP(-2)	11306.45	-0.001056	-0.443067	0.001239	0.000703	613.2300	-0.004060	0.149674	-0.000169	0.201376
	(5531.66)	(0.00314)	(0.42692)	(0.00111)	(0.00097)	(539.712)	(0.01636)	(0.16410)	(0.00019)	(0.32838)
	[2.04395]	[-0.33621]	[-1.03782]	[1.12018]	[0.72170]	[1.13622]	[-0.24822]	[0.91209]	[-0.90707]	[0.61323]
POLSTAB(-1)	4792020.	3.468297	108.6993	0.243051	0.086437	511519.5	-21.25803	213.1580	0.460145	533.7600
	(5940014)	(3.37287)	(458.437)	(1.18731)	(1.04585)	(579553.)	(17.5624)	(176.214)	(0.19971)	(352.625)
	[0.80674]	[1.02829]	[0.23711]	[0.20471]	[0.08265]	[0.88261]	[-1.21043]	[1.20965]	[2.30408]	[1.51368]
POLSTAB(-2)	-3653476.	-4.657631	-13.20048	-0.735803	-0.276519	-89191.02	17.34219	-174.4756	-0.035548	3.677700
	(5251931)	(2.98216)	(405.332)	(1.04978)	(0.92470)	(512419.)	(15.5280)	(155.802)	(0.17657)	(311.777)
	[-0.69564]	[-1.56183]	[-0.03257]	[-0.70091]	[-0.29904]	[-0.17406]	[1.11684]	[-1.11986]	[-0.20132]	[0.01180]

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

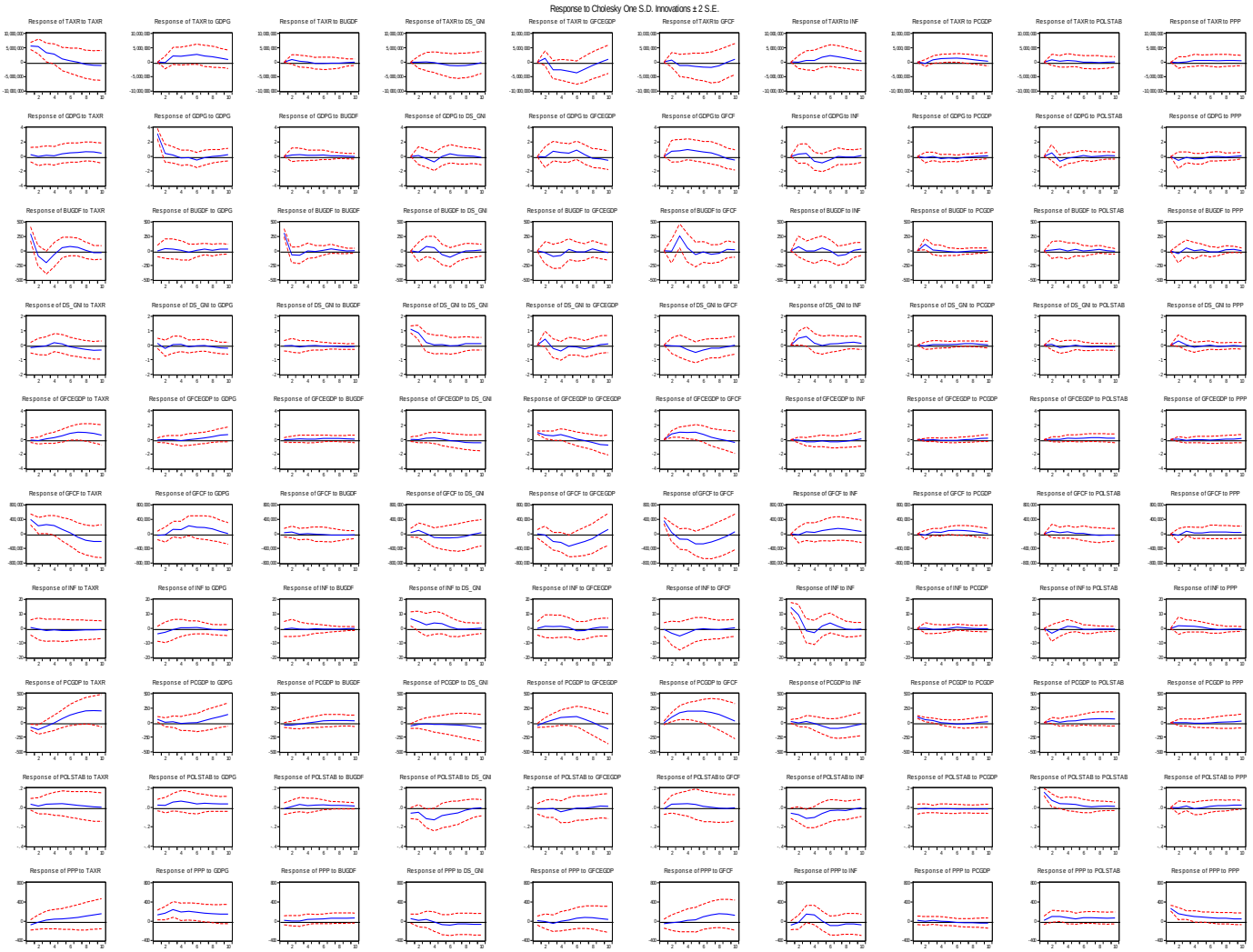
PPP(-1)	-621.0700	-0.001945	-0.187468	0.001107	0.000157	-162.6068	0.006698	0.001150	-1.11E-05	0.571702
	(3687.86)	(0.00209)	(0.28462)	(0.00074)	(0.00065)	(359.816)	(0.01090)	(0.10940)	(0.00012)	(0.21893)
	[-0.16841]	[-0.92895]	[-0.65866]	[1.50113]	[0.24205]	[-0.45192]	[0.61432]	[0.01051]	[-0.08936]	[2.61138]
PPP(-2)	1890.044	0.001111	0.200362	-0.001484	-0.000202	292.7700	-0.002662	-0.002948	0.000114	0.187946
	(3622.66)	(0.00206)	(0.27959)	(0.00072)	(0.00064)	(353.455)	(0.01071)	(0.10747)	(0.00012)	(0.21506)
	[0.52173]	[0.53988]	[0.71663]	[-2.04901]	[-0.31642]	[0.82831]	[-0.24855]	[-0.02743]	[0.93721]	[0.87394]
C	-6756409.	5.898698	-646.8566	2.840037	-0.281484	-278449.4	15.36194	10.23049	0.581652	-147.5662
	(5957610)	(3.38286)	(459.795)	(1.19083)	(1.04895)	(581270.)	(17.6144)	(176.736)	(0.20030)	(353.669)
	[-1.13408]	[1.74370]	[-1.40684]	[2.38492]	[-0.26835]	[-0.47904]	[0.87212]	[0.05789]	[2.90390]	[-0.41724]
R-squared	0.936765	0.630753	0.592483	0.868810	0.946834	0.856337	0.587265	0.983189	0.933312	0.985749
Adj. R-squared	0.866504	0.220478	0.139686	0.723042	0.887761	0.696712	0.128670	0.964510	0.859214	0.969914
Sum sq. resids	5.57E+14	179.4895	3315873.	22.24187	17.25752	5.30E+12	4866.371	489915.1	0.629263	1961847.
S.E. equation	5561231.	3.157790	429.2030	1.111602	0.979158	542596.5	16.44244	164.9773	0.186973	330.1386
F-statistic	13.33263	1.537390	1.308496	5.960257	16.02815	5.364674	1.280575	52.63581	12.59563	62.25247
Log likelihood	-645.9833	-85.10642	-276.6767	-44.38770	-39.43999	-555.2221	-149.4562	-239.3879	25.13335	-266.4424
Akaike AIC	34.20427	5.441355	15.26547	3.353215	3.099487	29.54985	8.741342	13.35323	-0.211967	14.74064
Schwarz SC	35.10003	6.337119	16.16123	4.248979	3.995251	30.44562	9.637106	14.24899	0.683797	15.63640
Mean dependent	9122911.	3.857149	112.7944	2.718385	3.899077	551950.9	19.45856	1306.490	0.589744	2865.523
S.D. dependent	15220774	3.576588	462.7370	2.112238	2.922677	985256.8	17.61469	875.7286	0.498310	1903.332
Determinant resid covariance (dof adj.)		1.56E+40								
Determinant residcovariance		6.82E+36								
Log likelihood		-2207.248								
Akaike information criterion		123.9614								
Schwarz criterion		132.9191								

Source: Author estimation using e-view

ISSN: 2455-8834

Volume:07, Issue:03 "March 2022"

Appendix 5: Impulse response



Source: Author estimation using e-view 10