

## Fiscal Policy-Economic Growth Correlates: Further Evidence from Nigeria Economy

Nwankwo, Damian J

Economics and Finance Department, Coventry Univeristy, United Kingdom  
Corresponding Author's Email: [danga4jesus@yahoo.com](mailto:danga4jesus@yahoo.com)

Kalu, Chris U.

Economics Department, Nnamdi Azikiwe University, Awka  
Email: [cu.kalu@unizik.edu.ng](mailto:cu.kalu@unizik.edu.ng)

Chiekezie, Mary. O, PhD

Business Administration Department, Nnamdi Azikiwe University, Awka

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### Abstract

The study investigated the impact of fiscal policy on economic growth in Nigeria from the period of 1970 to 2014. The data used was sourced from Central Bank of Nigeria Statistical Bulletin of various issues and World Bank Development Indicator (WDI) and the Co-integration and Error Correction (ECM) approaches were utilized in analyzing the data. The result of the unit root test shows that government capital expenditure, oil revenue, gross domestic product and tax revenue are stationary at first difference  $I(1)$ , while government recurrent expenditure is stationary at levels at levels  $I(0)$ . The co-integration result shows that there are 3 co integrating equations at 5 per cent level of significance. This shows that there exist a long-run relationship between fiscal policy and economic growth. The estimated ECM has the required negative sign of -0.447 (45%) and lies within the accepted region of less than unity although, government capital and recurrent expenditures at lagged two years was found insignificant and therefore has no impact on economic growth. Based on the findings from the empirical analysis, the study recommends among others, the need for the Nigerian government to invest in productive investment through increase in capital expenditure over and above recurrent expenditure to stimulate economic growth.

**Keywords:** Fiscal Policy, Economic Growth, Co-Integration, Vector Autoregressive, Nigeria.

### Introduction

Fiscal policy is undoubtedly one of highly valued tools or policies used by the government to trace and achieve 'macroeconomic stability of the economy of most developing countries (Siyan and Debayo, 2005). Monetary policy is synonymous with fiscal policy as it the tool

which the central bank uses to monitor and influence money supply in economy. Fiscal policy implementation in essence is done through the government's budget, where the budget is an instrument of fiscal policy.

Fiscal policy as a major instrument deals with government deliberate actions in money expenditures and levying of taxes with the main objective of influencing sustainable economic growth, high employment creation and low rate of inflation (Microsoft Encarta Encyclopedia, 2004). Furthermore, the objective of fiscal policy is also inclusive of promoting an economic condition conducive for business growth while ensuring that any such government actions are consistent with economic stability (Anyanwu, 1993). More so, fiscal dominance is manifested when fiscal policy is set exogenously to monetary policy in a level or situation where there is a limit to the amount of government debt that can be held by the public. More broadly, in some emerging economies with unsteady financial systems as Nigeria, monetary policy is directly opposite of fiscal policy and plays only an accommodative role. In a situation like this with such shallow financial system, the government institutions are underdeveloped. The security markets do not function properly; the central banks have no sufficient amount of tangible securities and adequate instruments of monetary control. Situation like this is an inducing factor to fiscal dominance. As indicated by some of our literatures, that in a situation where fiscal policy dominance applies, the economy's economic policy will be as good as its fiscal policy and institutionalized central bank independence may not necessarily bring about an independent monetary policy (Oyejide, 2003). The management of fiscal policy and its implementation affects economic growth in particular and in general stabilizes the overall macroeconomic variables in every economy especially a frontier economy like Nigeria. In essence therefore, this research is of the view that further investigation on this area in this moment of structural reform in Nigeria will help the government with useful information based on the fiscal policy formulation measures.

### **Motivation and Originality of Contribution**

Fiscal policy is an integral part of macroeconomic/ stabilization policies by which the federal government adjusts its expenditure level to be able to monitor and influence a nation's economy (Agu et al., 2014). In view of this impact together with the economic growth, different researchers have investigated on fiscal policy and its variables in both the industrialized and developing countries. In line with this view, (Ogbole et al., 2011) investigated the impact of fiscal policy on economic growth in Nigeria (1970-2006). In a similar study, (Adeoye, 2011) gave analyses of the impact of fiscal policy on economic growth in Nigeria for the period of 1970-2002 where he made use of ordinary least square (OLS). In his studies he ignored the effect of regime shift of fiscal policy measures on economic growth which can even lead to spurious result and analysis. In another development, some researchers on the impact of fiscal policy on economic growth have come out with mixed results. Barro (1991); Cooray (2009) have shown positive relationship while (Laudau, 1986) came up with negative relationship in his findings. Then (Kermendi & Maguire, 1995) on their own studies could not find any relationship. However, as a result of these shortcomings which ranges from the methods or techniques of analysis to the mixed empirical results and with strong view of how important fiscal policy is to the economic growth in developing countries, and Nigeria in particular as a matter of concern gives a strong motivation to research further on the subject matter of fiscal policy and economic growth. Thereafter, with different reviews on fiscal policy and economic growth together with the empirical evidence drawn from the data analysis then appropriate conclusions would be drawn thereby, making a modest

contribution to the literature. To achieve this therefore, the rest of the study has been structured pro rata; section 2 deals with review of the relevant literature. Where the sample variables and methodology are examined in section 3, where data analysis and findings are discussed in section 4. Finally, section 5 concludes the research.

### **Literature Review**

The impact of fiscal policy on economic growth as a concept has been an age long discussion that has generated a lot of debate in both developed and developing countries. On this note for instance some studies have emphasized that short-run fiscal policy effects with respect to the industrialized countries have captured it that the condition under which fiscal multiplier effect can be small and even negative (Alesina & Perotti, 1996; Alesina & Ardagna, 1998). In his own considerations, fiscal considerations tend to be expansionary during period of rising debts (Alesina & Perotti, 1996). Again it was observed that the size of the fiscal impulse, composition of the government expenditure is significant in the explanation of private sectors responses to the policy and consequently the impact on the economic growth (Alesina & Ardagna, 1998). In addition to these views, it is observed that fiscal adjustments that fundamentally hang on the reductions in transfers the wage bill tend to last for some time and can be expansionary (Von. Hagen & Strauch, 2001).

In Nigeria our area of concern, related studies have also been carried out. On the course of this studies, it was examined empirically the contribution of fiscal policy in the achievement of sustainable economic growth in Nigeria from the period 1970 to 2005 (Omitogun & Ayinla, 2012). Accordingly, they made use of Solow growth model estimated with the use of ordinary least square method and found out that in Nigeria fiscal policy has not been active in good economic performance or induce an effective promotion of sustainable economic growth in Nigeria. In effect, the similar study carried out by Olawunmi and Ayinka in 2007 critically examined the contribution of fiscal policy in the achievement of sustainable economic growth in Nigeria (Oluwunmi & Ayinla, 2012). Their result finding was in line with that of Omitogun and Ayinla in 2007. In another development, Adefeso and Mobalaji in 2010 explored the relationship in the fiscal, monetary and economic growth (Adefeso & Mobalaji, 2010). Their main objective was however to further re-estimate and re-examine the relative effectiveness of both fiscal and monetary policies on economic growth in Nigeria where they made use of annual data from 1970-2007. In their work, the error correction mechanism and co-integration techniques were both employed in the analysis and drawing of date and policy inferences respectively. Their result finding indicated that the effect of monetary policy is much stronger than fiscal policy. Furthermore, Ogbole, Amadi and Essi in 2011 did their own investigation on the impact of fiscal policy on economic growth from 1970-2006. The study considered comparative analysis of the impact of fiscal policy on economic growth in Nigeria during the period of regulation and deregulation. Their data sourced from World Development Indicator 2013 were investigated through an econometric analysis of time series. Results indicated remarkable difference in the effectiveness of fiscal policy in stimulating economic growth during and after regulation period (Ogbole et al., 2011)

Audu in 2012 carried out another examination on the impact of fiscal policy on the growth of Nigeria economy between 1970 and 2010. The study again used co-integration and error correction mechanism and inferred that fiscal policy has a significant stimulation on the output growth of the economy.

Iyeh and Azubuike in 2013 also examined the impact of fiscal policy variables on economic growth in Nigeria between 1970 and 2011, adopting the co-integration and error correction

mechanism techniques. The study showed the existence of a long-run equilibrium relationship between economic growth and fiscal policy variables in Nigeria.

Agu et al in 2014 investigated and determined the impact of various components of fiscal policy on the Nigerian economy, involving both the descriptive and econometric approaches from 1986 to 2012. Their findings revealed some traced evidence of positive correlation between government expenditure on economy.

Summarily, fiscal policy as a concept entails the management of the economy by the government through the manipulation of its income and expenditure power that will result to a desired macroeconomic objective inclusive of economic growth (Gbosi, 2002). The power of fiscal policy as an instrument that stabilizes economy has also been acknowledged in the works (Tombofa, 1999). The impact of fiscal policy on economic growth has opened a lot thoughts and debates in many decades ago in many countries particularly Nigeria. Some of these studies have been empirically reviewed above with the use of different data (annually and quarterly), different methodology (econometrics and descriptive) which indicated variances in their findings, ranging from negative to positive, mixed result and even to no result at all in the relationships between fiscal policy and economic growth). Sequel to this gap, this study will through the above mentioned theoretical framework production function try to fill this outstanding gap found from the reviewed studies, which is as the result of the inability of the studies to underpin the proper structural breaks arising from policy regime Shift of fiscal policy measures. And the result obviously contradicts their major findings with the emanating policy prescriptions, an econometric flaw. In view of this therefore, this study will bridge this chasm in between the literature by the way of specifying a theoretical fiscal policy and economic growth models. This will however incorporate dummy variables to capture the influence of the fiscal policy regimes exact on economic growth in the diagnostic tests, thereby specifying the robustness of the empirical results/findings.

### **Theoretical Frameworks and Model Specification**

This study by itself will be located within the theoretical framework of some selected schools of thought. In the first place, the neoclassical which opines that economic growth is the output of the product of accumulation of physical capital and labour force expansion in addition to the exogenous variables of technological input. In this case however, the fundamental growth theory becomes the case on the work of Solow (1956) popularly known as Solow Growth Model. Hence the original Solow (1956) model appeared to be at spread with some of the shortfalls. Secondly, the Keynesians are of the opinion that there is strong linkage between government expenditure and economic growth. In their model, it is indicated that increase in government expenditure (on infrastructures) leads to higher economic growth. In opposition to this view, the neo-classical growth models again argue that government fiscal policy is at variance with the growth of national output. This leads to further argument that government fiscal policy (intervention tool) helps to adjust failure that might arise from the inefficiencies of the market.

The seminal work of (Barro, 1990) opened new ground for the investigation of the impact of fiscal policy (government expenditure) on economic growth. Throwing more light to this Barro & Sala-i-Martin (1992); Easterly & Rebelo (1993); Brons et al (1999) clearly pointed out that government activities adjust the direction of economic growth. In the same view (Dar Atul & Amirhaikhal, 2002) indicated that fiscal policy in the endogenous growth model is very relevant in the prediction of future economic growth. Therefore, it is worthy of note that the two interesting aspects of the approach adopted by Mankiw et al (1992) had been

underpinned and employed in the literature. In the first place by proposing a role for the human capital investment rate, which gives a link between educational and health expenditure and growth. Secondly which identified constant returns to the entire three variables (K, AL, A), where K is for capital, AL for effective labour and H for human variable and diminishing returns to the two reproducible variables (K and H)

### **Data and Variables**

This study because of the availability of data and for the purpose of further research and findings is an attempt to investigate the impact of fiscal policy on economic growth in Nigeria between 1970 to 2014. In view of the availability and reliability of sources, secondary data of these periods will hitherto be used. The related fiscal policy variables will be sourced from Nigerian Bureau of Statistics (NBS) and complimented with data from World Development Indicator (WDI, 2013). The explanatory/ independent variables will be represented by the components of fiscal policy variables while the dependent variable will be depicted by a proxy for economic growth, real gross domestic product (real GDP).

Similar to Agu et al (2014); Iyeh & Azubuike (2013) the explanatory variables for the study will be: **Government Capital expenditure (GCAP)**: Government expenditure on capital projects as well as infrastructure. This is expected to positively impact on economic growth depending on the weight of the effects on economic growth. Some empirical studies as found in (Ekpo, 1995) have shown that public spending on such factors as infrastructure is complimentary with private investment. As such Government expenditures would have both direct and indirect effect on the long-run growth; **Government Recurrent Expenditure (GREC)**. This measures expenditure on wages and salaries of government workforce. It is expected to impact positively on economic growth. The higher the motivation in terms of salaries and allowances received by government workers, the higher the output in the form of economic growth; **Oil Revenue (OREV)**: This measures revenue derived from oil as against other sources. The variable is included here to examine how the oil money that accrues from the sales has impacted on economic growth in Nigeria. The relationship between oil revenue and economic growth is expected to be positive. The utilization of the higher oil revenue in promoting productive investment will promote economic growth. This justifies its inclusion among the explanatory variables; **Tax Revenue (TREV)**: This is measured by other income other than oil. They may include personal income tax, company tax, profit tax etc; **Economic growth (GDP)**. Economic growth is the dependent variable. There are basically two ways of representing economic growth. First, the real per capita income and second is the real gross domestic product (RGDP). However, this study will adopt the real gross domestic product as a proxy for measuring economic growth.

### **Model Specification and Technique of Analysis**

The impact of fiscal policy on economic growth will be tested using co-integration and error correction model (ECM) approaches. To desist from spurious regression and to give chance for reliable data, stationary and co-integration pre-tests will be carried out (Gujarati, 2013). So to estimate this model, there is need to indicate if the variables are integrated at their levels, or their first and second difference. The use of the ECM approach has two important objectives. First, it can be used to investigate whether the impact of any of the explanatory variables are permanent or temporary. If responses are significant only in the short-run, then the effect of changes in any of the explanatory variables is temporary. However, if the response is significant in both the short-run and long-run, then it can be said that changes of

the explanatory variables are permanent. The error term (ECM) provides information about the speed of adjustment in response to a deviation from the long-run equilibrium, which could be useful for policy analysis. The estimation procedure will be carried out using Econometric View 9.0(E-View, 9.0)

$$\text{RGDP} = \theta_0 + \theta_1 \text{GCAP} + \beta_2 \text{GREC} + \theta_3 \text{OREV} + \beta_4 \text{TREV} + U_t \dots (1)$$

The equation (1) is log-linearised to enhance their marginal values and to ensure their linear properties and then re-specified as follows:

$$\text{LnRGDP} = \alpha_0 + \alpha_1 \text{LnGCAP} + \alpha_2 \text{LnGREC} + \alpha_3 \text{LnOREV} + \alpha_4 \text{LnTREV} + U_t \dots (2)$$

The theoretical a priori expectation of the variables in relation to the endogenous variables is given as follows;

$$\alpha_1 > 0, \alpha_2 > 0, \alpha_3 > 0, \alpha_4 > 0,$$

Where:

**GCAP** = Government capital expenditure; **GREC** = Government recurrent expenditures; **OREV** = Oil revenue; **TREV** = Tax revenue; **U<sub>t</sub>** = Error term with assumption of independent distribution and zero mean and **θ, α, β** = coefficients of the parameter.

## Empirical Results and Analysis

### Unit Root Test

The unit root test in Table b summary shows that government capital expenditure, oil revenue, gross domestic product and tax revenue are stationary at first difference I(1), since the ADF and PP values of each of the variables at first difference is greater than the Mckinnon 5% critical values, while government recurrent expenditure is stationary at levels because the ADF and PP values of the variable at levels is greater the Mckinnon 5% critical values. 1The results of the unit root tests of the variables are presented below.

Table 1A

### Unit Root Test Result

LEVEL						
Variables	Augmented Dickey-Fuller (ADF)			Phillip Perron (PP)		
	Constant	Constant & Trend	None	Constant	Constant & Trend	None
GCAP	0.811754	-5.123483*	-1.202610	0.628715	-2.965718	-1.202610
GREC	-0.511402	-1.318994	5.991152	-0.511402	-1.700339	4.586833
OREV	-1.53903	-4.176064**	0.081805	-3.213893**	-2.877286	0.492053
GDP	-0.69051	-1.247762	-0.17282	0.53728	-2.72528	0.32521
TREV	-1.3724	-2.52345	-2.28106	0.164257	-1.76002	-1.30624
FIRST DIFFERENCE						
GCAP	-3.284440**	-3.142588	6.059745	-3.247995	-3.102775	6.0459260
GREC	4.631382**	-4.601917	7.385781	-4.631382	-4.586924	-7.346533
OREC	4.975050**	-5.363074	4.974421	-8.182886	-8.848122	-6.201084
GDP	-3.3096	-4.2846	3.478985	-3.5578	-4.42010	-3.343848

TREV	-3.2124	-4.2733	-6.68974	-3.2096	-4.25621	-7.159105
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Note: \*\*\*, \*\* and \* imply significance at 1%, 5% and 10% respectively

Table 1B

*Summary of Unit Root Test Results*

	Augmented Dickey-Fuller (ADF)			Phillip Perron (PP)		
	Level	First difference	I(d)	Level	First difference	I(d)
GCAP	-1.203610	-6.059745	<b>1(1)</b>	-1.202610	-6.0459260	<b>1(1)</b>
GREC	5.991152	-	<b>1(0)</b>	4.586835	-	<b>1(0)</b>
OREV	-0.081805	-4.974421	<b>1(1)</b>	0.492053	-6.201084	<b>1(1)</b>
GDP	-0.17282	-3.478953	<b>1(1)</b>	0.32521	-3.343648	<b>1(1)</b>
TREV	-2.28106	-6.683974	<b>1(1)</b>	-1.30624	-7.159105	<b>1(1)</b>

Source: Author's Computation using e-view 9.0

**Co Integration Test Result**

The result of Johansen co-integration test is shown Table 2 below. The result shows that there are three (3) co-integrating equations at 5% level of significance. This is because the likelihood ratio is greater than the critical values at the 5% level of significance. This shows that there exist a long-run relationship between fiscal policy and economic growth explanatory variables. The result indicates that in the long-run, the dependent variable can be efficiently anticipated using the specified independent variables and thus, error correction model can be estimated..

Table 2

*Johansen Co-integration Test Result*

Hypothesized No of CES	Eigen value	Trace statistic	5% critical Value	Maximum Eigen value	5% Critical Value
None*	0.858027	119.7840	69.81889	58.56350	33.87657
At most 1 *	0.546394	61.22047	47.85613	23.71581	27.58434
At most 2*	0.504063	37.50467	29.799707	21.03921	21.13162
At most 3*	0.422268	16.46546	15.49471	16.45934	14.26460
At mot 4	0.000204	0.006120	3.841466	0.006120	3.841466

Sources: Author's computation using E-view 9.0

Note: Trace test indicates 4 co-integrating equations at the 0.05 level and the Max-Eigen value tests indicate 1 co-integrating equation at the 0.05 level. \*denotes rejection of the hypothesis at the 0.05 level, \*\* Mackinnon-Haug-Michelis (1999) P-values.

**Error Correction Model Test Result**

Analysis of the short-run dynamic equation has two important objectives. First, it can be used to investigate whether the impact of any of the explanatory variables are permanent or temporary. If responses are significant only in the short-run, then the effect of changes in any of the explanatory variables is temporary. However, if the responses are significant in both the short-run and long-run, then it can be said that changes of the explanatory variables are

permanent. Finally, the error correction term (ECM) provides information about the speed of adjustment in response to a deviation from the long run equilibrium, which could be useful for policy simulation (Cholifihani, 2008). The ECM test result is presented in Table 3 below:

Table 3

*Result of the Estimated Dynamic Correction Error Correction Model*

<b>Dependent Variable: D (LRGDP)</b>				
<b>Constant</b>	<b>Coefficient</b>	<b>Std. Error</b>	<b>T-Statistic</b>	<b>Prob.</b>
<b>C</b>	0.067562	0.014273	4.733632	0.0001
<b>D(LGCAP) (-1)</b>	0.026481	0.028237	0.937806	0.03585
<b>D(LGCAP) (-2)</b>	-0.063033	0.24514	-2.571307	0.0174
<b>D(LGREC)</b>	0.227975	0.110096	2.070692	0.0427
<b>D(LGREC) (-2)</b>	-0.029310	0.032609	-0.898840	0.3785
<b>D(LOREV (-1))</b>	0.318443	0.124005	2.567986	0.0279
<b>D(LTREV)</b>	0.120276	0.049631	2.423404	0.0309
<b>D(LTREV (-2))</b>	0.027789	0.029729	0.934737	0.3601
<b>ECM (1)</b>	-0.447484	0.173262	-2.582702	0.0261

R<sup>2</sup>= 0.744587, Adjusted R-squared 0.66254, F-statistic (Prob) = 12.44582 (0.000008)

Sources: Author's Computation using E-View 9.0

The Table above shows economic growth in relation to fiscal policy variables of government capital expenditure, government recurrent expenditure, oil revenue and tax revenue. The expected sign of the parameters are satisfied with respect to oil revenue and tax revenue, and not satisfied with respect to government capital expenditure and recurrent expenditure, although the ECM(-1) has the expected sign. In the estimated model, government capital expenditure (lagged two years) and government recurrent expenditure (lagged two years) was found to be insignificant determinant of economic growth of Nigeria in the short-run. However, these results are not in line with the expected results as government expenditure is necessary for economic growth. The results show the coefficient of the total government expenditure on economic growth such that one per cent increase in government expenditures will lead to -0.06 per cent decrease in economic growth. An examination of the econometric results shows that the overall fit is satisfactory with R-squared of 0.744, thus, 74.4 per cent of the systemic variation in the dependent variable is explained by the independent variables. The estimated coefficient of the error term (-0.44748) was found statistically significant at about 5 per cent level of significance with appropriate (negative) sign. This suggests that the system corrects its previous period disequilibrium by 44.7 per cent a year. The long run model passed all the diagnostic tests: white heteroscedasticity (ARCH) [0.298324], serial correlation LM test [0.576110], Jarque-Bera, 2.162965[0.339092]. The DW test of the diagnostics was also significant at 1.743909 and 1.821865. Similarly, the F-statistic value was significant at 12.44582[0.000008]. To ensure the stability of the model, the model stability test was conducted using the cumulative sum (CUSUM), which was also found significant within the 5 per cent bounds.

### **Conclusion and Policy Recommendations**

To conclude, the study has investigated the impact of fiscal policy on economic growth in Nigeria from the period of 1970 to 2014 using the co-integration and ECM approaches because of its robustness. The result of the unit root test shows that government capital

expenditure, oil revenue, gross domestic product and tax revenue are stationary at first difference  $I(1)$ , while government recurrent revenue is stationary at levels,  $I(0)$ . Similarly, the co-integration result shows that there are three (3) co-integrating equations at 5 per cent level of significance. This shows that there exist a long-run relationship between fiscal policy and economic growth. From the error correction model, the expected signs of the parameter  $s$  are not satisfied, although the ECM (-1) has the expected a priori sign and is significant at the 5 per cent level of significance. From the ECM result, we can conclude that government expenditures have no impact on economic growth. The test further shows that fiscal policy has a long run relationship with economic growth in Nigeria.

Conclusively, the coefficient of determination R-squared is 0.744 indicating that 74 per cent of the total variations in economic growth are explained by the variations in the independent variables of fiscal policy. The F-statistics is significant at 5 per cent. The probability of its value (0.00008) is less than 0.05 critical levels. Based on this plausible result, we reject the null hypothesis that the model is not significant in explaining the variations in economic growth in Nigeria.

### **Policy Recommendations**

The study recommends as follows

1. There is need for the Nigerian government to invest heavily in productive investment and infrastructure to boost economic growth. Financing the real sector could do the magic. However, the financial sector reforms and liberalization should be strengthened to link up with the real sector.
2. Government spending should be channeled more on capital expenditure than on recurrent expenditure. This aims at stimulating productive investment rather than consumption investment. Transparency and accountability of income and expenditure should be the watch word to achieve the policy recommendation.
3. Since government depend heavily on oil revenue over tax revenue and which is mostly affected by oil price shock, the tax system should be strengthened to avoid the volatility of oil revenue. Effective tax administration and collection efficiency should be improved. The Federal Inland Revenue Services (FIRS), the agency of the Nigerian government responsible for tax matters should be empowered.
4. Fiscal responsibility and adequacy should be ensured. Moreover, the appropriation processes and budget implemented to the fullest must be strictly followed. A situation where budget process is not completed on time and half-implemented deters economic growth.
5. Finally, I think economic diversification away from oil and its price volatility is a necessary and sufficient condition for economic growth. This is also necessitated by the fact that oil and its discovery in Nigeria has been more bane than blessing. The high corruption in Nigeria is no doubt oil-induced.

As an agenda for further study, we recommend a constructive advancement to knowledge would be to use a structural vector autoregressive (SVAR) approach. This is because the construction of IRFs and VDCs from VAR model is not as theoretically robust as those from SVAR model (Hoffman and Rasche, 1997; Chang and Wong, 2003).

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