International Journal of Economics, Business and Management Research

Vol. 9, No.02; 2025

ISSN: 2456-7760

Implications of Monetary and Fiscal Policy Shocks: Evidence from an Eastern European Economy

*Alin Ioan VID[1], Alexandra CHEPTIȘ[2], Miruna VASILCA[3], Cristina BEJENARU[4]

[1]Bucharest University of Economic Studies, Doctoral School of Finance, Tache Ionescu 11, Bucharest, Romania

[2]Bucharest University of Economic Studies, Doctoral School of Finance, Tache Ionescu 11, Bucharest, Romania

[3]Bucharest University of Economic Studies, Doctoral School of Finance, Tache Ionescu 11, Bucharest, Romania

[4]Bucharest University of Economic Studies, Doctoral School of Finance, Tache Ionescu 11, Bucharest, Romania

*corresponding author

doi.org/10.51505/IJEBMR.2025.9206 URL: https://doi.org/10.51505/IJEBMR.2025.9206

Received: Jan 25, 2025 Accepted: Feb 03, 2025 Online Published: Feb 13, 2025

Abstract

This study examines the impact of monetary and fiscal policy shocks on Romania, a former communist economy transitioning toward a functional market system. The research employs a structural vector auto regression (SVAR) model that integrates both fiscal and monetary policy variables, extending previous models by incorporating the short-term interbank interest rate as a key monetary policy indicator. The findings indicate that monetary policy plays a crucial role in controlling inflation in the medium term, while fiscal policy shocks - represented by government expenditure and revenue changes - exert marginal effects on macroeconomic indicators. Additionally, fiscal policy decisions influence monetary policy responses, prompting immediate central bank actions. These insights are particularly relevant in the current economic landscape, marked by geopolitical instability and inflationary pressures. The study contributes to the ongoing discourse on policy coordination in emerging economies, emphasizing the necessity of a balanced policy mix for macroeconomic stability.

Keywords: Fiscal policy, Monetary policy, SVAR, Government expenditure, Interest rate, Romania.

1. Introduction

The interplay between monetary and fiscal policy remains a critical determinant of macroeconomic stability, particularly in emerging economies like Romania. Over the past two decades, Romania has undergone a complex transition, adopting market-oriented policies while

Vol. 9, No.02; 2025

ISSN: 2456-7760

grappling with economic volatility. The importance of an effective policy mix has been underscored by global crises, including the COVID-19 pandemic, rising energy prices, and the ongoing geopolitical tensions in Eastern Europe. These external shocks have necessitated coordinated fiscal and monetary responses to mitigate inflationary pressures and support economic growth.

This study investigates the dynamic effects of fiscal and monetary policy shocks on Romania's macroeconomic indicators using a structural vector autoregression (SVAR) framework. While previous studies have examined fiscal or monetary policies in isolation, our approach integrates both, offering a more comprehensive understanding of their interplay. The research aims to assess the extent to which policy shocks influence GDP, inflation, interest rates, and exchange rates, thereby informing policymakers on optimal strategies for economic stability.

The relationship between fiscal and monetary policy has been extensively studied in economic literature, with a primary focus on advanced economies. Blanchard and Perotti (2002) pioneered the fiscal SVAR methodology, demonstrating how government expenditure and tax shocks influence output. Christiano et al. (2007) applied a similar approach to monetary policy, analyzing the transmission mechanisms of interest rate shocks. While these studies provide valuable insights, they do not account for simultaneous fiscal-monetary interactions, which are crucial in emerging economies.

A substantial body of research research emphasizes the importance of integrating fiscal and monetary policy analyses. Dungey and Fry (2009) examined policy interactions in New Zealand, highlighting how fiscal expansions can induce monetary tightening. Rossi and Zubairy (2011) extended this framework to the United States, showing that policy shocks contribute significantly to macroeconomic fluctuations. Haug et al. (2019) applied a fiscal-monetary SVAR to Poland, an economy comparable to Romania, demonstrating that coordinated policy responses enhance economic stability.

In the context of emerging economies, fiscal-monetary coordination remains an area of ongoing debate. Hollmayr and Kuhl (2019) explored the effectiveness of unconventional monetary policies in fiscally constrained environments, concluding that central bank interventions can mitigate fiscal imbalances. Similarly, Michel (2020) underscored the need for coherent fiscal policies within the European Union to prevent excessive reliance on monetary interventions.

Additional studies reinforce the necessity of integrating fiscal and monetary analyses in emerging markets. Setiawan (2018) employed an SVAR model to examine the effects of fiscal and monetary policy on Indonesia's macroeconomic performance, finding that expansionary fiscal policies had limited positive effects on output but increased inflationary pressures. Büyükbaşaran, Çebi, and Yılmaz (2019) investigated monetary and fiscal interactions in Turkey, showing that both policies complement each other in response to demand and supply shocks but may act as substitutes in responding to policy-specific shocks. Cazacu (2015) analyzed fiscal-

Vol. 9, No.02; 2025

ISSN: 2456-7760

monetary interactions in Romania, revealing that while monetary policy played a dominant role, fiscal policies had a weaker and often inconsistent impact on macroeconomic stability.

Despite these advancements, studies specifically addressing Romania's policy dynamics remain limited. Previous research has largely focused on individual policy impacts (Bobașu et al., 2013; Mirdala, 2009), without integrating fiscal and monetary interactions. This study builds upon existing models by incorporating Romania-specific data and extending the fiscal-monetary SVAR framework. By doing so, it provides policymakers with empirical evidence on the effectiveness of coordinated policy actions in maintaining macroeconomic stability.

This review highlights the necessity of an integrated approach to analyzing fiscal and monetary policy shocks. Given Romania's economic structure and external vulnerabilities, understanding these interactions is essential for crafting effective policy responses. The subsequent sections detail the methodology employed and present the empirical findings that contribute to this growing body of knowledge.

2. Method

In order to quantify the effects of fiscal and monetary policy shocks, a structural vector autoregression (SVAR) methodology has been employed, based on a model used by Haug et.al (2019) for a study on the Polish economy. This paper use a fiscal-monetary SVAR, which is common in the literature since its first introduction by Dungey and Fry in 2009. The model starts from the fiscal SVAR proposed by Favero and Giavazzi (2012), which develops Blanchard and Perotti's (2002) SVAR methodology.

The SVAR proposed by Favero and Giavazzi (2012) is extended by Haug et.al by including monetary policy. Hence, a new variable is included, the short-term interest rate on the interbank market, which, according to the literature, is representative for the monetary policy of a central bank that has a direct inflation targeting strategy.

Considering a structural vector autoregression that has the following form:

$$A \cdot y_t = \beta + B_1 \cdot y_{t-1} + \cdots + B_p \cdot y_{t-p} + B \cdot u_t \quad (1)$$

Where:
- y_t is a vector of $n \times 1$ macroeconomic variables at time t,
- β is an $n \times 1$ vector of constants,
- A and B_i (i = 1, ..., p) are $n \times n$ parameter matrices,
- u_t is an $n \times 1$ vector of orthogonal shocks, where $u_t \sim N(0, E(B \cdot (u_t u_t') \cdot B'))$.

y_t contains a number of n = 6 macroeconomic variables, as follows:

$$y_t = [\ pib\ ipc\ rd\ reer\ chl\ ven\ ]' \quad (2)$$

Where:
- *pib*: Gross Domestic Product,
- *ipc*: Consumer Price Index,

- *rd*: Short-term interest rate on the interbank market,
- *reer*: Real Effective Exchange Rate,
- *chl*: Government expenditure,
- *ven*: Government revenues.

The reduced form of Equation (1) can be written as:

$$y_t = A^{-1}\beta + A^{-1}B_1 y_{t-1} + \cdots + A^{-1}B_p y_{t-p} + A^{-1}B u_t \quad (3)$$

or:

$$y_t = \alpha + D_1 y_{t-1} + \cdots + D_p y_{t-p} + e_t \quad (4)$$

where:

$$e_t = A^{-1}B u_t;\ D_i = A^{-1}B_i, \quad (5)$$

$$E(e_t e_t') = A^{-1}B\,E(u_t u_t')\,B' A^{-1\prime} \quad (6)$$

Also:

$$Ae_t = Bu_t \quad (7)$$

In order to identify structural parameters, it is necessary to impose the following contemporary zero-value restrictions for the equation (12), which are standard in the literature:

$$\begin{bmatrix} a_{11} & 0 & 0 & 0 & a_{15} & a_{16} \\ a_{21} & a_{22} & 0 & 0 & a_{25} & a_{26} \\ a_{31} & a_{32} & a_{33} & 0 & a_{35} & a_{36} \\ a_{41} & a_{42} & a_{43} & a_{44} & a_{45} & a_{46} \\ -a_{chl,pib} & -a_{chl,ipc} & -a_{chl,rd} & -a_{chl,reer} & a_{55} & 0 \\ -a_{ven,pib} & -a_{ven,ipc} & -a_{ven,rd} & -a_{ven,reer} & 0 & a_{66} \end{bmatrix} \begin{bmatrix} e^{pib} \\ e^{ipc} \\ e^{rd} \\ e^{reer} \\ e^{chl} \\ e^{ven} \end{bmatrix} =$$

$$= \begin{bmatrix} b_{11} & 0 & 0 & 0 & 0 & 0 \\ 0 & b_{22} & 0 & 0 & 0 & 0 \\ 0 & 0 & b_{33} & 0 & 0 & 0 \\ 0 & 0 & 0 & b_{44} & 0 & 0 \\ 0 & 0 & 0 & 0 & b_{55} & b_{56} \\ 0 & 0 & 0 & 0 & b_{65} & b_{66} \end{bmatrix} \begin{bmatrix} u^{pib} \\ u^{ipc} \\ u^{rd} \\ u^{reer} \\ u^{chl} \\ u^{ven} \end{bmatrix} \quad (8)$$

Going forward, the elements on the diagonal of matrix A take the value 1, as is common in literature. Moreover, $a_{chl,\ j}$ and $a_{ven,\ \ j}$ (with j = *gdp*, *ipc*, *rd* and *reer*) represent the various elasticities of government expenditure and revenue and will have the values shown below. These were calculated by Haug. et al. (2019) for the Polish economy on the basis of the methodology proposed by Blanchard and Perotti (2002) and Perotti (2004).

Given that the economies of Poland and Romania are similar, both being in the category referred to by the International Monetary Fund as 'Emerging Markets and Developing Economies', both are former economies of the European communist bloc until 1990 and both being part of the Central and Eastern EU Member States that did not join the euro area (non-euro Member States), we decided to use these elasticities for the model presented. At the same time, we imposed b_{65} =

Vol. 9, No.02; 2025

ISSN: 2456-7760

0, according to Haug et al. (2019). It should be noted that considering b_{56} = 0, does not alter the results of the estimations, fact that was also concluded by both Haug et.al (2019) and Favero and Giavazzi (2012). The parameters of matrices A and B were estimated using the maximum *likelihood* method. For the robustness of the results, we used a model identification with different values within ±1 range for elasticities and we also used a Cholesky decomposition. The results were not significantly different from those of the base model.

The values of the elasticities estimated by Haug et al. (2019) are:

$$a_{11}=a_{22}=a_{33}=a_{44}=a_{55}=a_{66}=1;$$
$$a_{chl.pib}=0;a_{chl,ipc}=-0.5;a_{chl,rd}=0;a_{chl,reer}=0;$$
$$a_{ven,pib}=0.95;a_{ven.ipc}=0.9;a_{ven,rd}=0;a_{ven,reer}=0; \quad (9)$$
$$b_{56}=0.$$

In order to estimate the previously specified SVAR model, quarterly data from 2000 to 2021 was used. The seasonal adjustment was done using the Census X-13 method. The time series for fiscal variables and for REER were extracted from Eurostat's database (ESA methodology 2010), the Consumer Price Index was extracted from the TEMPO Online database administered by the National Institute for Statistics, and the short-term interest rate from the National Bank of Romania database. With the exception of the interest rate and the *dummy* variable, all data was introduced into the model in natural logarithm. The table below provides a structured overview of the macroeconomic indicators incorporated into the SVAR model, ensuring clarity and consistency in our empirical analysis.

Tabel 1. Variables used in the SVAR

Variable	Symbol	Description	Data processing	Data Source
Gross Domestic Product	PIB	Seasonally adjusted GDP at constant prices	Log transformation, seasonally adjusted	Eurostat
Consumer Price Index	IPC	Inflation index, seasonally adjusted	Log transformation, seasonally adjusted	National Institute for Statistics
Short-term Interest Rate	RD	Interbank market short-term rate	Raw data, quarterly average	National Bank of Romania
Real Effective Exchange Rate	REER	Deflated real effective exchange rate index	Log transformation, deflated	Eurostat
Government Expenditure	CHL	Government consumption and investment	Log transformation, seasonally adjusted	Eurostat
Government Revenue	VEN	Tax revenue and net social contributions	Log transformation, seasonally adjusted	Eurostat

Source: Based on Haug et. al (2019)

Vol. 9, No.02; 2025

ISSN: 2456-7760

Additionally, a dummy variable for the financial crisis (exogenous variable) was employed, taking the value 0 between 2000 and 2008Q4 and the value 1 between 2009Q1 and 2021Q4

3. Results

Table 1 presents the roots of the characteristic polynomial of the model. As can be observed, no root lies outside the unit circle (not greater than 1). This confirms that the model described in the first section of Chapter 3 is stable, so its results can be interpreted.

Tabel 2. Roots of Characteristic Polynomial

Roots	0,97	0,93-0,04i	0,934+0,04i	0,50-0,04i	0,50+0,04i	0,32-0,35i	0,32+0,35i	-0,43	0,22	-0,19	-0,14	0,05
Modulus	0,97	0,94	0,94	0,51	0,51	0,48	0,48	0,43	0,22	0,19	0,14	0,05

Source: Author's own calculations

Another important aspect of setting up an SVAR model is choosing the number of lags to be inserted into the model. A number of 2 lags were chosen, according to the Akaike and Schwarz informational criteria (Table 2).

Tabel 3. VAR Lag Order Selection Criteria

Lag	Akaike Information Criterion	Schwarz Criterion	Hannan-Quinn Criterion
0	-15,99	-15,65	-15,85
1	-25,10	-22,02	-24,84
2	-25,35*	-24,93*	-24,37*

Source: Author's own calculations

The Appendix presents the impulse response functions for structural shocks of the six endogenous variable model proposed in the first section of this chapter. Each shock has the size of a standard deviation, and the confidence bands are set at 95%. The graphs will be explained focusing on the response of variables to fiscal and monetary shocks, while the other interpretations will be brief.

The first column displays the response of the variables to a positive GDP shock. This shock produces positive, albeit statistically insignificant effects on CPI inflation, interest rate and REER. In contrast, a positive GDP shock leads to a long-term increase in public expenditure (although initially the answer is insignificant). Thus, it clearly reflects the preference for pro-cyclical policies promoted by the Romanian authorities, which have had a constant tendency to increase public expenditure in periods of prolonged economic growth (both in the period 2005-2008 and in 2016-2019). At the same time, government revenues respond positively and

Vol. 9, No.02; 2025

ISSN: 2456-7760

statistically significantly up to the 14th quarter to this shock, as increased economic activity also leads to higher amounts of taxes.
A positive inflationary shock does not produce statistically significant effects on GDP and REER. The interest rate responds positively and statistically significantly to an inflationary shock after three quarters, with the effect dissipating after around the tenth quarters. Therefore, the monetary policy reacts carefully to keep inflation under control, assessing the effects of such a shock after 2-3 quarters and acting accordingly. Public expenditure and revenue also respond significantly to such a shock, but the response is short-lived.

A monetary policy contractionist shock, reflected by rising interest rates, leads to a long-term drop in GDP. A rise in interest rates discourages lending, leading to a decrease in consumption and investment, negatively affecting GDP. Although the GDP is negatively affected, the interest rates rises are necessary, especially amid the current high inflation rates, in order to alleviate the inflationary pressures stemming from the real economy, but also to anchor inflation expectations over the medium term. Public spending reacts negatively on the long term, although slightly statistically significant (the upper limit of the range is close to zero). A similar reaction is also observed for government revenues, which decrease statistically significantly after three quarters, but the effect dissipates over the next two periods. The REER reaction is unclear, recording positive and negative values close to zero, which is statistically insignificant.

The fifth column outlines the responses to an expansionary fiscal policy shock, reflected by a rise in public spending. GDP's response to this shock is counterintuitive, being negative and considered statistically significant (the upper limit of the confidence interval is close to zero). This response can be explained by the fact that during the considered period, public expenditure was mostly oriented towards consumption and not investment, which does not produce long-term multiplication effects, reflecting a structural problem that public finance has. Results of the study in Haug et. (2019) were the opposite, with Poland's GDP responding positively to an expansionist fiscal policy shock. In a study conducted by Bobașu et al. (2013) at the National Bank of Romania, also using a SVAR model, but with six other endogenous variables, the IRF of GDP to public expenditure were positive, however, of small and statistically insignificant size. At the same time, we estimated a fiscal SVAR model with sign restrictions, according to the Dallari (2020) methodology. The GDP response was also insignificant to a government spending shock. However, a rise in public spending was mandatory in the context of the COVID-19 outbreak, so that the new public health expenses were accommodated and the the companies and population are being temporarily supported throughout the mobility restrictions affecting their usual way of living. In the current context, characterized by rising energy prices and cost of living and by uncertainty induced by the situation in Ukraine, new public spending is needed to temporarily support the people affected by this conjuncture.

The expansionist fiscal policy shock also leads to a positive and statistically significant response by the CPI inflation, with the effect dissipating after about 8 quarters (two years). The response reflects the same tendency of public spending to encourage consumption, triggering inflationary pressures. At the same time, the interest rate responds positively and significantly for a period of

Vol. 9, No.02; 2025

ISSN: 2456-7760

about six quarters to this shock, showing that its chain effects also lead to a reaction from monetary policy. Government revenues respond negatively, but statistically insignificant.
A positive government revenues shock does not lead to a significant reaction of GDP, also a counterintuitive response, as it stands generally negative in developed economies. This counterintuitive response can be attributed to the fact that an increase in government revenues might come from bringing a part of the underground economy into the official one, from lowering the level of tax evasion or from improving the tax collection system, all those facts not leading to a decrease in output. Haug et al. (2019) shows a similar response of Poland's GDP to a positive government revenue shock. Giordano et al. (2007) reported positive and statistically significant responses to a study on the Italian economy. Mirdala (2009) also presents positive and significant responses, in some cases, for six countries (including Romania) in Central and Eastern Europe.

The responses of the other variables to the government revenue shock are insignificant, with the exception of public spending, which has a positive response in the third quarter.

4. Discussion

The results of this study underscore the complex interplay between fiscal and monetary policies in response to macroeconomic shocks, particularly in times of economic strain. The findings reveal that, in Romania, fiscal policy measures – specifically those involving increased public expenditure – did not yield the anticipated positive effects on GDP. Instead, they seem to have exacerbated inflationary pressures, particularly in the short term. This aligns with the broader literature on the counterproductive effects of consumption-driven fiscal policies, as opposed to investment-oriented fiscal measures, which could stimulate longer-term economic growth. These results indicate that fiscal policies aimed at boosting economic activity may need to be more targeted towards investment rather than consumption to generate more sustainable growth outcomes.

The interaction between fiscal and monetary policies also illustrates the delicate balancing act faced by policymakers. The monetary authority’s response to inflationary pressures, manifested through interest rate hikes, was appropriate but resulted in a contraction in GDP. This highlights the trade-off between controlling inflation and supporting growth, a challenge that is especially pronounced in the current economic environment. The findings provide valuable insights for policymakers, emphasizing the need for a nuanced approach that considers both the short-term consequences and long-term sustainability of fiscal and monetary measures. As global challenges – such as rising energy prices and geopolitical instability – continue to exert pressure on economies, the need for well-calibrated policy interventions remains critical. Future research could explore the impact of external variables on these dynamics, as well as employ alternative estimation techniques, such as Bayesian methods, to provide more robust insights into the effectiveness of fiscal and monetary policies.

The findings of this study also highlight the critical role of policy coordination between fiscal and monetary authorities. While monetary policy effectively controls inflation in the short run,

Vol. 9, No.02; 2025

ISSN: 2456-7760

its contractionary nature can inadvertently hinder economic growth, especially during periods of external shocks or domestic disruptions. The negative response of GDP to fiscal expansion further underscores the importance of strategic fiscal interventions. In particular, public spending directed towards consumption rather than investment could limit the longer-term economic potential. This suggests that fiscal policy should prioritize structural reforms and investments in productive sectors to maximize its growth-generating potential, rather than using it as a tool for immediate consumption-driven growth.

Moreover, the study's limitations point to areas for future research, especially the potential influence of external shocks and global economic conditions. As global interconnectedness continues to rise, it becomes increasingly important to incorporate external variables—such as global commodity prices, supply chain disruptions, or geopolitical risks—into these models. Additionally, as uncertainty around global economic conditions persists, alternative methodologies, such as Bayesian estimation, could provide more robust results by incorporating prior knowledge and addressing model uncertainties. Future studies could also examine the longer-term effects of fiscal and monetary policies, particularly in countries with similar economic structures to Romania, to assess the broader applicability of these findings in different contexts.

References

Blanchard, O. and Perotti, R., 2002. An Empirical Characterization of the Dynamic Effects of Changes in Government Spending and Taxes on Output. *Quarterly Journal of Economics*, Volume 117, pp. 1329-1368.

Bobaşu, A., Manu, A. S. and Stanca, R., 2013. O evaluare a dimensiunii multiplicatorilor fiscali din România folosind vectori autoregresivi structurali*, Bucureşti: BNR - Colocvii de politică monetară.*

Büyükbaşaran, T., Çebi, C., & Yılmaz, E. (2019). "Interaction of Monetary and Fiscal Policies in Turkey." *CBRT Working Paper No. 19/35*.

Cazacu, A.-M. (2015). "Fiscal-Monetary Policy Interaction: SVAR Evidence from a CEE Country." *European Scientific Journal*, April 2015/Special Edition, 79-94.

Christiano, L., Eichenbaum, M., and R. Vigfusson (2007). Assessing Structural VARs. in D. Acemoglu, K. Rogoff, and M. Woodford (Eds.), *NBER Macroeconomics Annual 21*, pp. 83-137. National Bureau of Economic Research, MIT-Press: Cambridge, Mass.

Dungey, M. and Fry, R., 2009. The identification of fiscal and monetary policy in a structural VAR. *Economic Modelling*, Volume 26, pp. 1147-1160.

Favero, C., and Giavazzi, F., 2012. Measuring Tax Multipliers: The Narrative Method in Fiscal VARs. *American Economic Journal*, Volume 4, pp. 69-94.

Giordano, R., Momigliano, S., Neri, S. and Perotti, R., 2007. The effects of fiscal policy in Italy: Evidence from a VAR model. *European Journal of Political Economy*, 23(3), pp. 707-733.

Haug, A. A., Jędrzejowicz, T. and Sznajderska, A., 2019. Monetary and fiscal policy transmission in Poland. *Economic Modelling*, Volume 79, pp. 15-27.

Hollmayr, J. and Kuhl, M., 2019. Monetary–fiscal interaction and quantitative easing. *Economics Letters*, Volume 174, pp. 200-207.

Michel, A. (2020). "Fiscal Policy Coordination in the European Monetary Union." *Journal of Economic Policy Reform*, 23(2), 123-140.

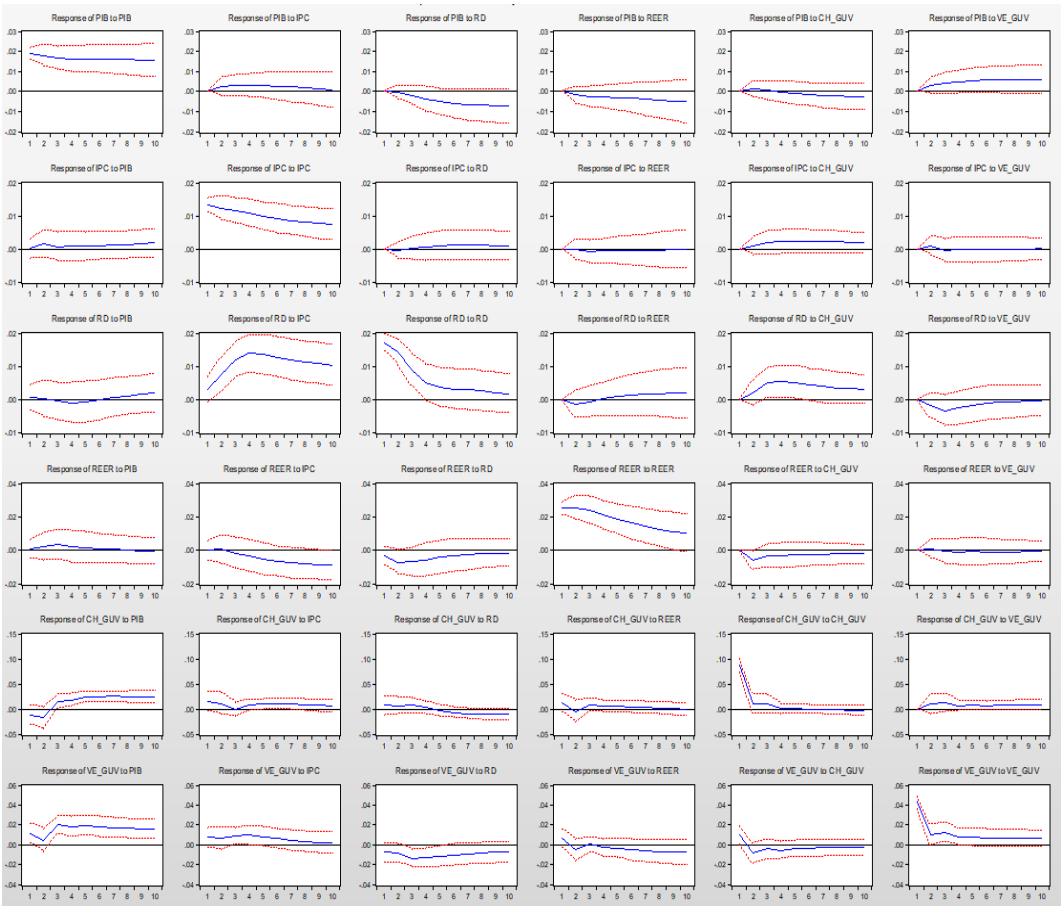
Mirdala, R., 2009. Effects of Fiscal Policy Shocks in the European Transition Economies. *Journal of Applied Research in Finance*, 1(2), pp. 141-155.

Rossi, B., and S. Zubairy (2011). What Is the Importance of Monetary and Fiscal Shocks in Explaining U.S. Macroeconomic Fluctuations? *Journal of Money, Credit and Banking*, Volume 43, pp. 1247-1270

Setiawan, H. (2018). "Analysis of the Impact of Fiscal and Monetary Policy on Indonesian Macroeconomic Performance With Model Structural Vector Autoregression (SVAR)." *Jurnal Ilmu Ekonomi Terapan*, 3(2), 91-105.

Appendix

Figure 1. Impulse Responses



* The meaning of the variables presented are the following: PIB is the GDP, RD is the interest rate, IPC is the consumer price index, REER is the real effective exchange rate, CH_GUV is the government expenditures and VE_GUV represents the goverment revenues

Source: Author's own calculations