THE IMPACT OF THE FISCAL POLICY CHANGE ON THE MAIN MACROECONOMIC VARIABLES

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Abstract:

In this article we propose an empirical study using a Bayesian VAR type model with which we quantify the impact of fiscal policy changes on the main macroeconomic variables, namely the exchange rate, market interest rates, inflation, unemployment, etc. The results show us that most shocks extinguish at the time of monetary policy interventions of the opposite direction to the type of fiscal policy.

Keywords: *Bayesian VAR, Fiscal Policy, Monetary Policy*

JEL classification: *E62, H21, O23*

Introduction

Afonso and Sousa (2011) used in their study a new quarterly dataset (1979:1-2007:4), estimating a Bayesian-based Structural Vector Autoregression (BSVAR), in order to analyze how the fiscal policy can affect the macroeconomics. They concluded their study by demonstrating how positive government spending shocks have a negative effect on real gross domestic product, but also on investments and private consumption, leading to major "crowding-out" effects. However, these shocks have a positive effect on the average cost of financing government debt and price level. Positive government revenue shocks have opposed effects on the price level, but the GDP is still negatively affected. The study also demonstrates the importance of taking into consideration the government debt dynamics in the model. At the same time, the "crowding-out" effects derived from unexpected positive government spending shocks are confirmed by a VAR counterfactual exercise.

Corsetti et all, (2011) Conventional wisdom indicates that a fixed exchange rate leads to a more effective fiscal policy, rather than a flexible one. In their study, within a New Keynesian model of a small open economy, the authors reassess the transmission of shocks to government spending across these two types of regimes.

With a stronger emphasis on intertemporal optimization, the standard New Keynesian model calls for a precise specification of monetary and fiscal policies, but also an interaction of these two, both in the short run and in the long run. The study demonstrates how the long-term interest rate rises as a response to an increased government spending if initially the inflation

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rises. This causes the private demand to decrease, although real rates fall in the short-run. Under reasonable fiscal policies in the medium-run and under floating exchange rates, government spending is not considered less expansionary.

Parkyn & Vehbi, following the methodology used by Blanchard & Perotti (2002), conducted a study based on the changes in government revenue, inflation, interest rate and spending on output in New Zealand, analyzing the effects of business cycles in a Structural VAR framework.

The results of the study demonstrate the fact that government spending shocks have a small but positive short-term impact and also lead to a lower output and higher interest rates in the medium to long-run. The effects on gross domestic product (GDP) seem similarly modest.

After studying the effects of past fiscal policy, Parkyn & Vehbi concluded that a discretionary fiscal policy leads to a pro-cyclical impact on gross domestic product, having also a serious impact on the interest rate in the long run. Thus, the study demonstrates that a fiscal expansion has a small effect on inflation, yet positive.

Methodology and Data

This chapter presents a methodology for the empirical analysis of identifying strategies of fiscal policy shocks and the data used in this process. After the introduction of Vector autoregressive (VAR) model by Sims (1980), most studies have focused on the impact that monetary shocks have on the economy, using forecast error variance decomposition, results of impulse response functions and historical decomposition.

SVAR models are used, in general, to determine the macroeconomic effects of key interest rate innovations. In this article, in order to explore the dynamic effects of unconventional monetary policies, we will use the SVAR methodology.

The VAR model used to decompose innovations into mutually orthogonal components is represented below:

$Y_t = \alpha + A(L)Y_{t-1} + D\varepsilon_t,\ \ \varepsilon_t N),\ t = 1,2,\dots,T$ where:

Y_t is a vector of endogenous variables;

α - the vector of constants;

$A(L)$ is a matrix polynomial in the lag operator L and D the contemporaneous impact matrix of the mutually uncorrelated disturbances.

ε_t. $\varepsilon_t = (\varepsilon_{1,t}, \varepsilon_{2,t}, \dots, \varepsilon_{n,t})$ is a vector of residuals of the model, following a multivariate normal distribution, the errors being identically and independently distributed;

In Bayesian statistical inference, a priori probabilities are treated as random variables and assigned to the parameters utilized in the model. Based on findings in the scientific literature, a priori distributions of the estimated parameters are combined with the likelihood function. This reflects the information contained in the data, leading to a posterior distribution.

The main objective is to decompose the residuals into structural shocks, by identifying the contemporary relationship between the residuals in the reduced form of the VAR model and structural innovations. Economic theory provides ways to identify contemporary links between variables, starting from the hypothesis that structural shocks are mutually orthogonal, necessary in order to obtain significant impulse response functions.

The data used in the model has a quarterly frequency, from July 2005 – June 2022 and includes a series of variables that allow us to correctly identify the shocks and also to analyze the main transmission channels of the fiscal policy of the Romanian economy. Data used in this article is collected from Eurostat.

The strategy used to identify shocks requires a fiscal policy shock, quantified by increasing the budget deficit, thus suggesting a procyclical fiscal policy, presented in the table below:

Table 1

Budget deficit	ROBOR 3M	Unemployment	Inflation	Real Exchange Rate
+	0	0	0	0

Results

Intuitively, analyzing impulse response functions, the reactions of the macroeconomic variables to a positive shock of the budget deficit are consistent with the economic theory, and thus, the links between them and the fiscal policy can be highlighted, using a Bayesian vector autoregressive model.

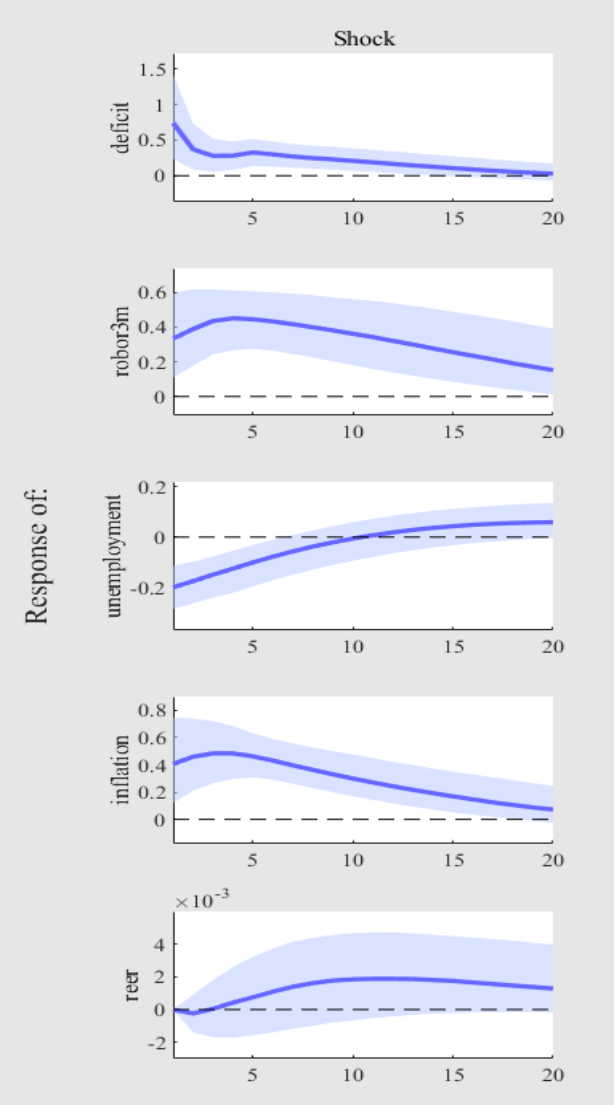

Figure 1 – Impulse response function (IRF)

Source: own processing

A truly positive shock to the fiscal impulse should come from higher revenues, as a consequence of fiscal optimization and from a more efficient redistribution of resources.

Usually, a pro-cyclical fiscal policy suggests an overheated economy, which leads to major imbalances. In the short term, the fiscal impulse has positive effects, quantified by decreasing unemployment and increasing output, but it also has the effect of depreciating the real exchange rate. In the long term, the unemployment rate is very little influenced by government intervention.

A positive shock of the fiscal impulse leads to an inflationary pressure in the economy which automatically attracts a restrictive monetary policy conducted by the Central Bank, having the role of stabilizing the economy. The increase in the monetary policy interest rate will have as an immediate consequence the increase of the interbank interest rate and implicitly of the rates charged by state banks, companies and households. The state and the real economy will borrow more and more expensively, the long-term result being a decrease in economic activity.

The excessive increase in the budget deficit during the Covid-19 pandemic shows its effects in this period through extremely high inflation, persistent over time and amplified by the energy crisis we are going through. The central bank's interventions, to reduce inflation with the help of monetary policy instruments, lead to a significant increase of the interest rate and also create big shocks in the real economy, inevitably leading to a decrease in economic growth or even a recession.

Conclusions

The impact of fiscal programs aimed to stimulate savings depends on the degree of economic openness and financial integration of the countries in which they are applied.

The short-term effects of the fiscal stimulus packages of the economy are influenced by the perception of its long-term costs. Thus, the more an expansionist fiscal policy is perceived to be more expensive in the long term (the rapid increase in public debt and its associated service, a high-country risk), the less it will influence the economy in the short term.

The strategy for identifying the fiscal-budgetary policy shocks, chosen by us highlights, at the same time, the interaction between the fiscal-budgetary policy and the monetary one.

Bibliography

Sims, A. C., (1980), "Macroeconomics and reality", Econometrica.

Afonso, A. & Sousa, R. M. (2011), "The macroeconomic effects of fiscal policy in Portugal: A Bayesian SVAR analysis", Portuguese Economic Journal, 10 (1), 61 – 82.

Corsetti, G. et al. (2011), Floats, pegs and the transmission of fiscal policy, Federal Reserve Bank of Philadelphia, Working Paper, No. 11-9.

Akanbi, O. A. (2013), "Macroeconomic effects of fiscal policy changes: A case of South Africa", Economic Modeling, 35, 771 – 785.

Castro, F. de (2003), Macroeconomic effects of fiscal policy in Spain, Banco de Espana, Working Paper, No. 0311.

Blanchard, O. & Perotti, R. (2002), "An empirical characterization of the dynamic effects of changes in government spending and taxes on output", Quarterly Journal of Economics, 117 (4), 1329 – 1368.

Parkyn, O. & Vehbi, T. (2013), The effects of fiscal policy in New Zealand: Evidence from a VAR model with debt constraints, New Zealand Treasury Working Paper, No. 13/02.

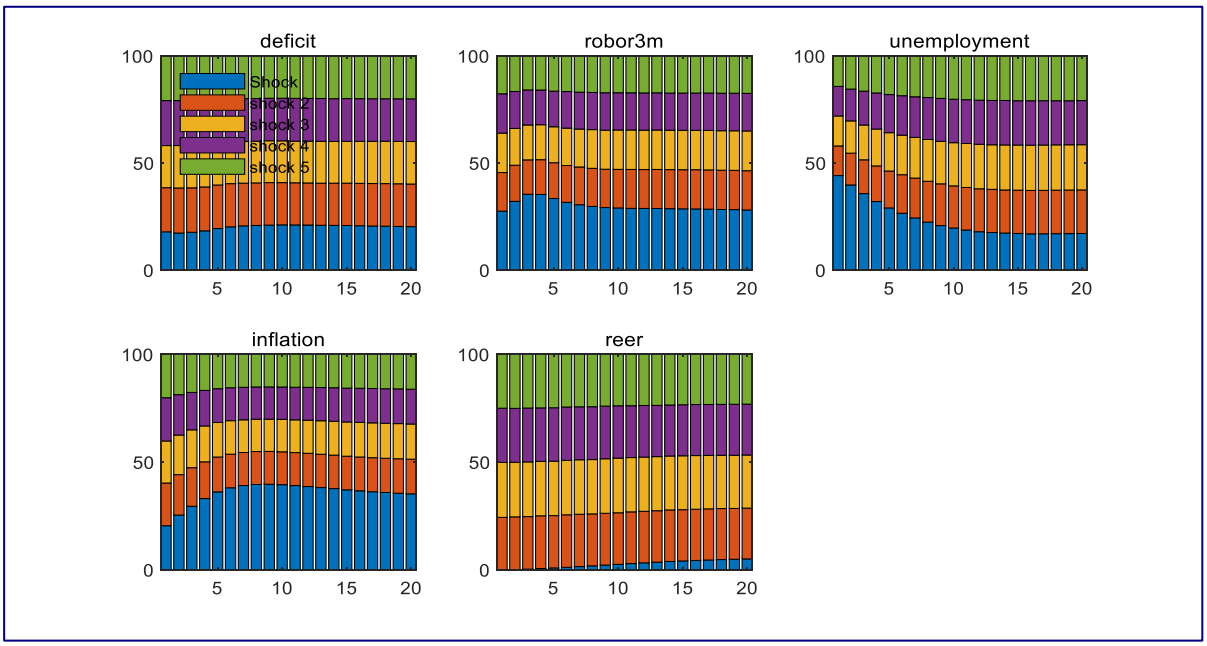

Figure 2 – Variance error decomposition
Source: own processing

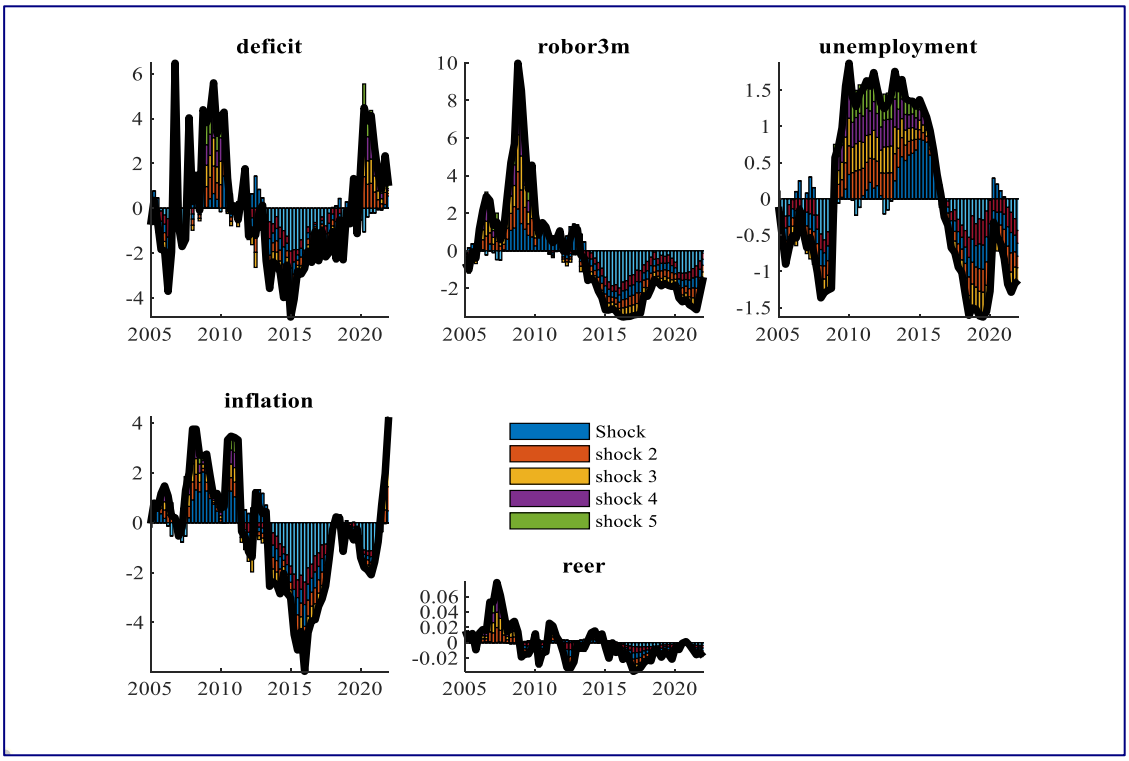

Figure 3 – Historical decomposition
Source: own processing