Efficiency of the fiscal and monetary stimuli: the case of Serbia

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Motivation

- Historically, fiscal policy in Serbia had a procyclical character.

- In order to assuage the negative ramifications of the first wave of the crisis, Serbia pursued an even more expansive fiscal policy.

- At first glance, considering the sluggish economic recovery over the past two to three years and level of public debt, it seems that the majority of the fiscal stimuli were insufficiently effective.

- Providing empirical examination of the effectiveness of countercyclical fiscal policy and its impact on monetary policy during the on-going global economic crisis on the example of Serbia.

- To the best of our knowledge, this is the first paper which presents the estimate of fiscal multipliers for Serbia.

Some stylized features (1)

- The unused factors of production are not prone to cyclical movement.

- Serbia is a small and open economy running a flexible exchange rate regime.

- High public debt to GDP ratio (around 60% of GDP).

- Inadequate fiscal position in the pre-crisis period.

- Serbia has scope for increasing government spending, particularly through investment in underdeveloped infrastructure.

- The relatively strong inflationary pressures, even under recession conditions, prevent monetary policy from exerting a countercyclical effect.

- In general, the efficiency of monetary policy in Serbia is largely constrained by the high euroisation of the domestic economy.
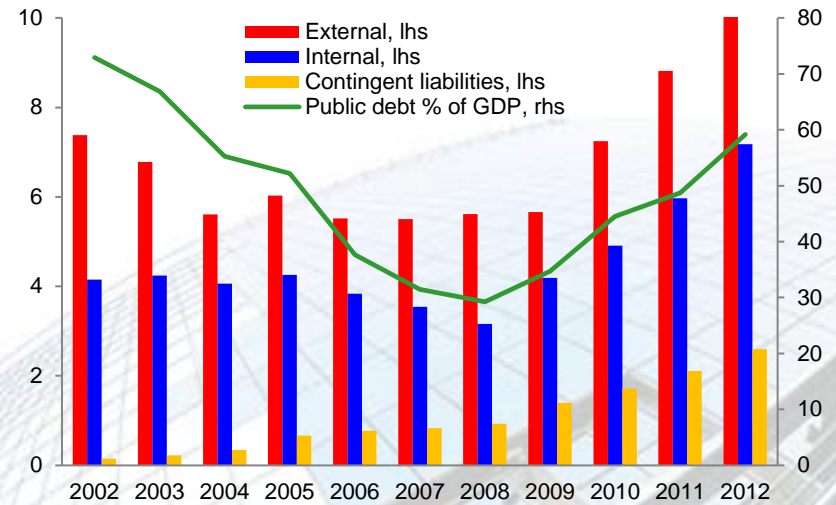
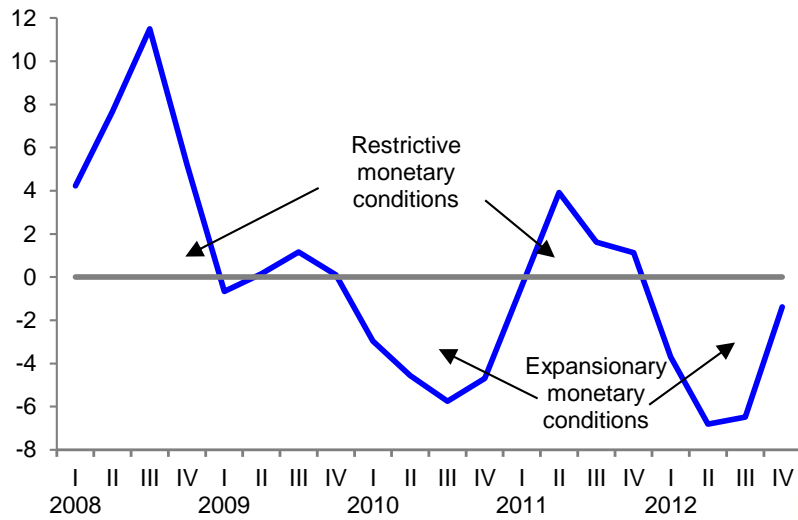National Bank of Serbia

Chart 1 **Actual and cyclically adjusted fiscal deficit**
(in %)
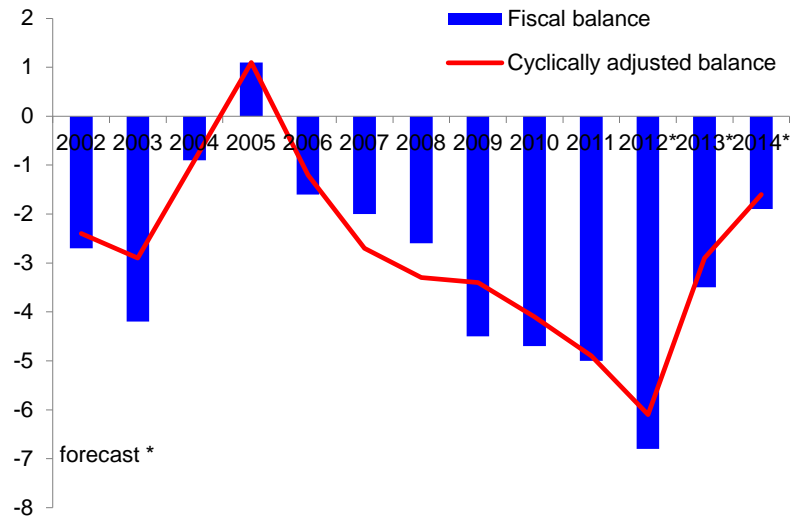
Source:Ministry of Finance and Economy

Chart 2 **Public debt**
(EUR billion)

Source:Ministry of Finance and Economy

National Bank of Serbia

Chart 3 **Monetary conditions index**
(in %)

Restrictive monetary conditions

Expansionary monetary conditions

Source: NBS.

Chart 4 **Price movements**
(in %)

- Consumer prices
- Targeted inflation
- Target tolerance band

Sources: SORS and NBS.

Overview of existing empirical results for CEECs

Authors	Countries; Period; Approach	Findings
Baksa, Benk and *Jakab* (2010)	Hungary; 1995-2008; DSGE	Large differences between the multipliers of different types of fiscal expansions were found. If the fiscal measures are permanent, the multiplier of government purchases is the largest and that of financial transfers is the smallest. In a small open economy where monetary policy mostly reacts to inflation, accommodative monetary policy only hardly modifies fiscal multipliers.
Serbanoiu (2012)	Romania; 2000-2011; DSGE	The estimated fiscal response parameters to output gap seem to indicate a pro-cyclical fiscal policy, the automatic stabilizers being too weak or insufficient to stabilize the economy.
Cariani (2010)	Czech Republic, Poland, Hungary and Romania; 2000-2009; DSGE	The fiscal policy can counteract not only the negative domestic shocks, but also adverse shocks from Euro Area.
Cuaresma, Eller and Mehrotra (2011)	Czech Republic, Poland, Hungary Slovakia and Slovenia; 1995-2009; SVAR	Fiscal policy stance in CEE is affected by fiscal policy changes in Germany. For domestic fiscal shocks authors found Keynesian response in Hungary and Slovenia and non-keynesian response in other countries.

Methodological issues: Econometric approach

- Estimation is based on SVAR as proposed by *Blanchard* and *Perotti* (2002):

$$A_0 X_t = A(L)X_{t-1} + B\varepsilon, \qquad \varepsilon_t \sim \left(0, \sum_\varepsilon diag(\sigma_i^2)\right)$$

where is $\quad X_t = (G_t, NT_t, VANA_t, CPI_t, R_t)$

- The corresponding reduced form:

$$X_t = C(L)X_{t-1} + U_t$$

$$C(L) = A_0^{-1}A(L), \qquad U_t = A_0^{-1}B\varepsilon$$

- Model for innovations:

$$
\begin{pmatrix}
1 & 0 & 0 & 0 & 0 \\
0 & 1 & -0.9 & -0.5 & 0 \\
-\alpha_{yg} & -\alpha_{y\tau} & 1 & 0 & 0 \\
0 & 0 & 0 & 1 & 0 \\
-\alpha_{rg} & -\alpha_{r\tau} & 0 & -\alpha_{r\pi} & 1
\end{pmatrix}
\begin{pmatrix}
u_t^g \\
u_t^\tau \\
u_t^y \\
u_t^\pi \\
u_t^r
\end{pmatrix}
=
\begin{pmatrix}
\beta_{gg} & 0 & 0 & 0 & 0 \\
0 & \beta_{\tau\tau} & 0 & 0 & 0 \\
0 & 0 & \beta_{yy} & 0 & 0 \\
0 & 0 & 0 & \beta_{\pi\pi} & 0 \\
0 & 0 & 0 & 0 & \beta_{rr}
\end{pmatrix}
\begin{pmatrix}
\varepsilon_t^g \\
\varepsilon_t^\tau \\
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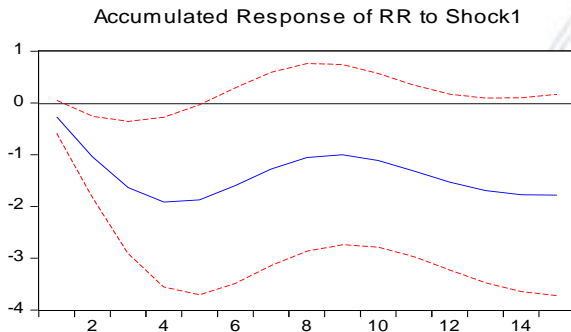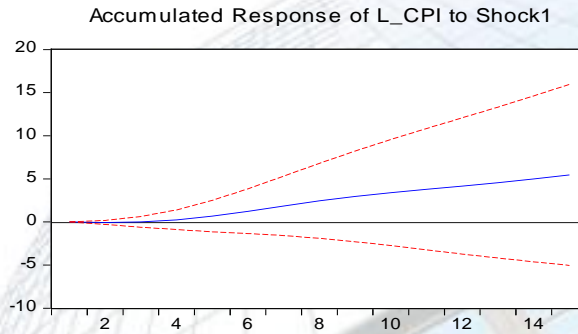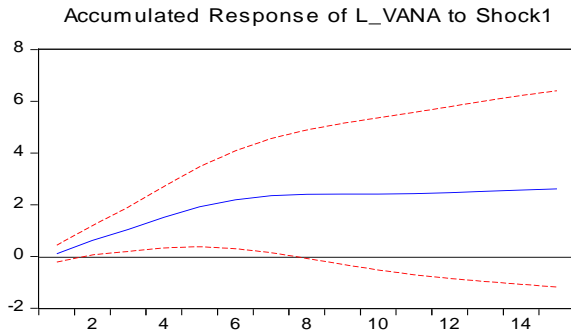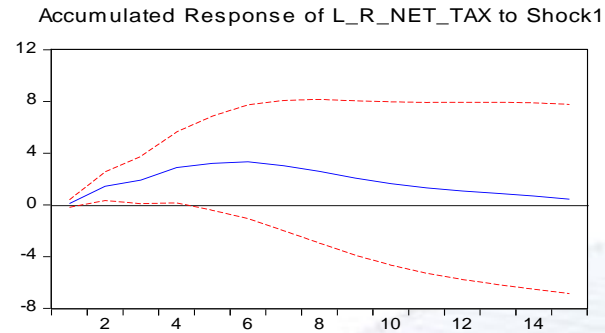\varepsilon_t^r
\end{pmatrix}
$$

Description of variables

| Variables	Description of variables	Unit	Treatment	Source
Government spending (G)	Government spending = purchase of goods and services + compensation of public employees + government investments	log, In millions of RSD	Seasonal adjustment, deflation using CPI	Ministry of finance and economy
Net taxes (NT)	Net taxes = government revenues – subsidies – transfers	log, In millions of RSD	Seasonal adjustment, deflation using CPI	Ministry of finance and economy
Output (VANA)	Gross value added without agriculture at market prices from the previous year	log, In millions of RSD	Seasonal adjustment	National statistical office
Consumer price index (CPI)	Consumer price index	log, index (2010=100)		National statistical office
Interest rate (R)	Short term nominal interest rate on interbank money market– two week BELIBOR	% per annum		National bank of Serbia

Accumulated responses to public spending one structural s.d. shock

Accumulated Response to Structural One S.D. Innovations ± 2 S.E.

Accumulated Response of L_R_G to Shock1

Accumulated Response of L_R_NET_TAX to Shock1

Accumulated Response of L_VANA to Shock1

Accumulated Response of L_CPI to Shock1
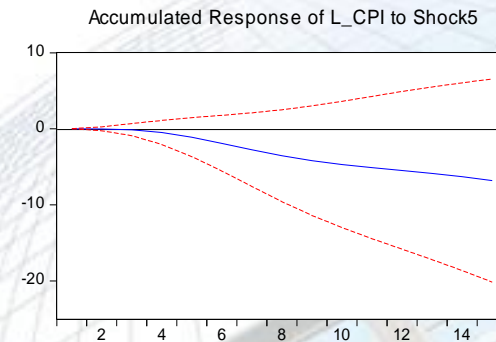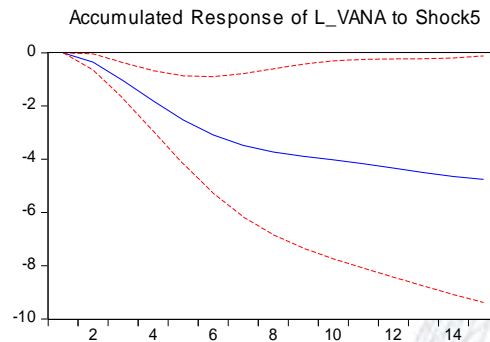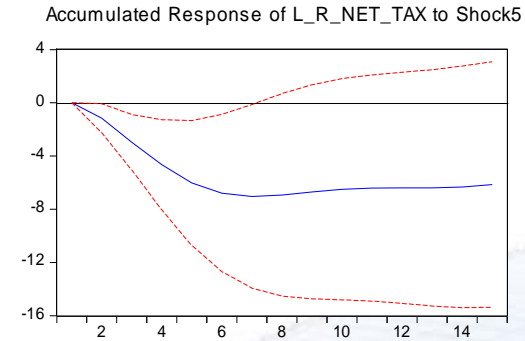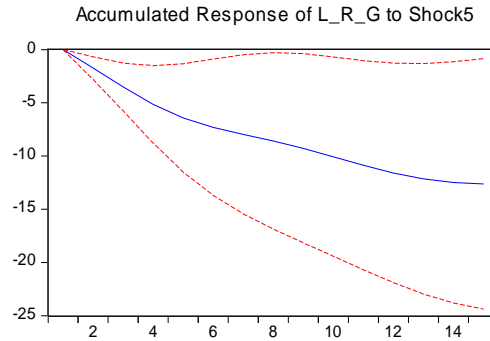
Accumulated Response of RR to Shock1
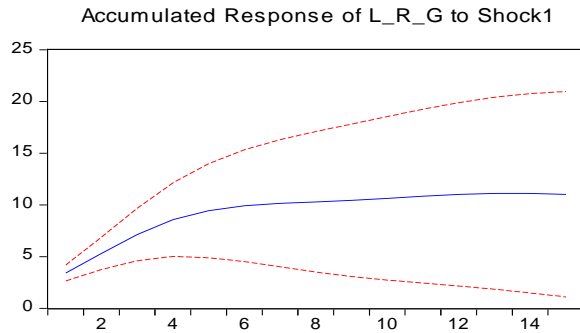
Accumulated responses to net taxes one structural s.d. shock

Accumulated Response to Structural One S.D. Innovations ± 2 S.E.
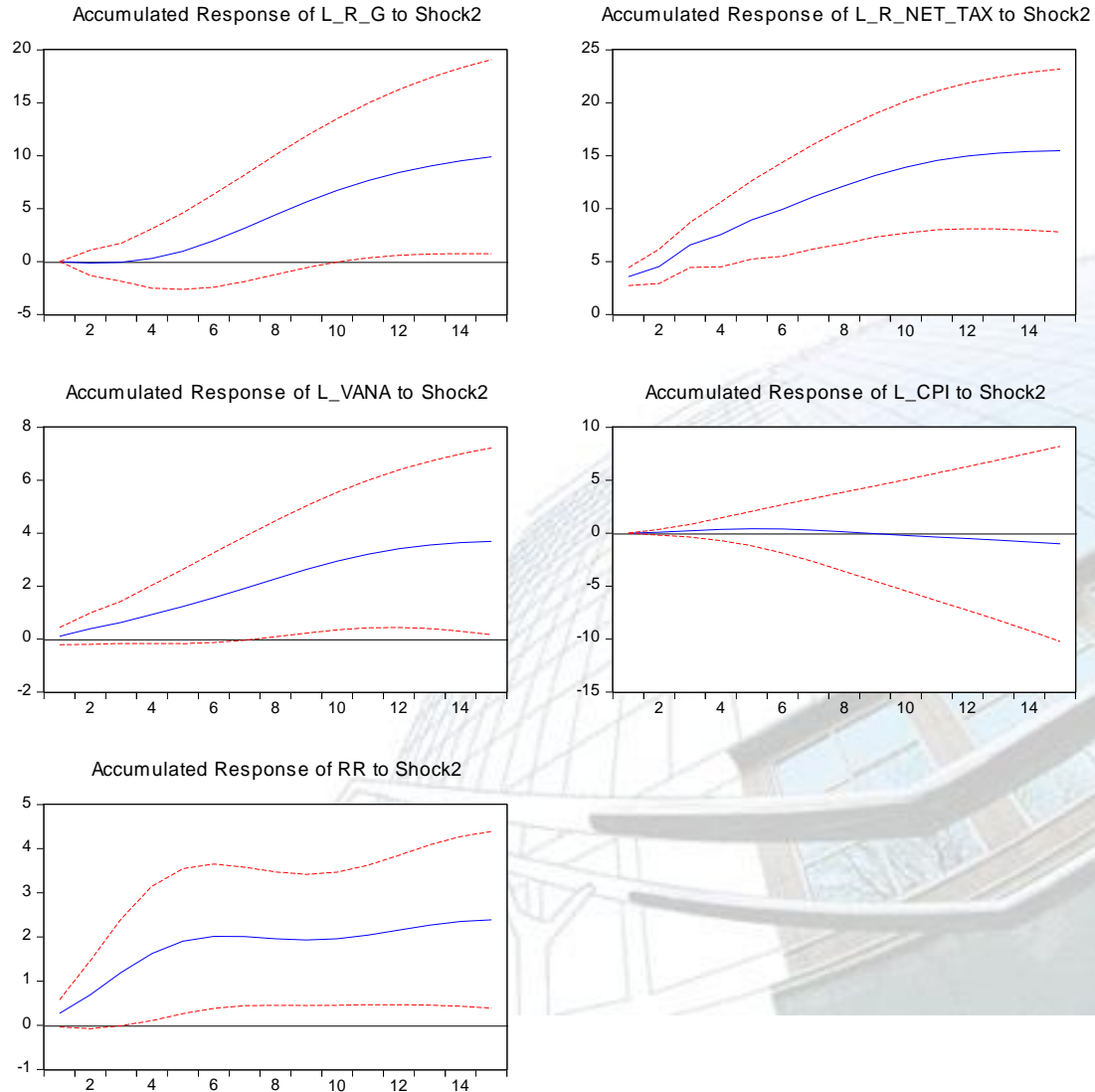
Accumulated responses to interest rate one structural s.d. shock

Accumulated Response to Structural One S.D. Innovations ± 2 S.E.

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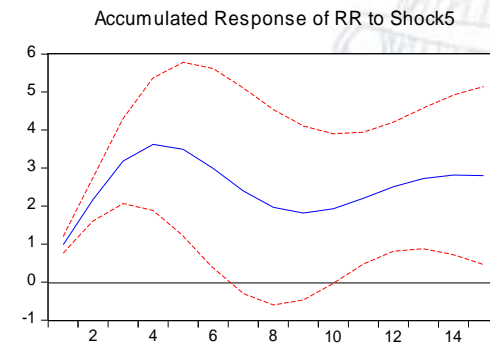
SVAR estimates of fiscal multiplier

Period	$IR^{VANA/G}/IR^{G/G}$	$(IR^{VANA/G}/IR^{G/G})*(Y/G)$	$IR^{VANA/NT}/IR^{NT/NT}$	$(IR^{VANA/NT}/IR^{NT/NT})*(Y/NT)$
1	0.0315	0.1368	0.0298	0.1863
2	0.1174	0.5105	0.0855	0.5347
3	0.1466	0.6376	0.0953	0.5957
4	0.1770	0.7696	0.1231	0.7695
5	0.2037	0.8856	0.1373	0.8581
6	0.2209	0.9603	0.1570	0.9810
7	0.2313	1.0056	0.1716	1.0725
8	0.2339	1.0168	0.1873	1.1706
9	0.2314	1.0062	0.1999	1.2493
10	0.2272	0.9877	0.2114	1.3215
11	0.2242	0.9746	0.2204	1.3777
12	0.2239	0.9735	0.2277	1.4232

Concluding remarks

- The results of the analysis suggest that an increase in public consumption of 1 pp of GDP pushes the non-agricultural economic activity up by 0.14 pp after one quarter or by 0.77 pp after four quarters, in accumulated terms.

- Funding possibilities determine significantly the character of fiscal policy in Serbia, which confirms its procyclicality in the past period.

- The estimated impact of fiscal policy on interest rates generally suggests accommodative monetary policy conditions.

- It is not possible to segregate the impact for periods of expansion and recession (solution STVAR models).