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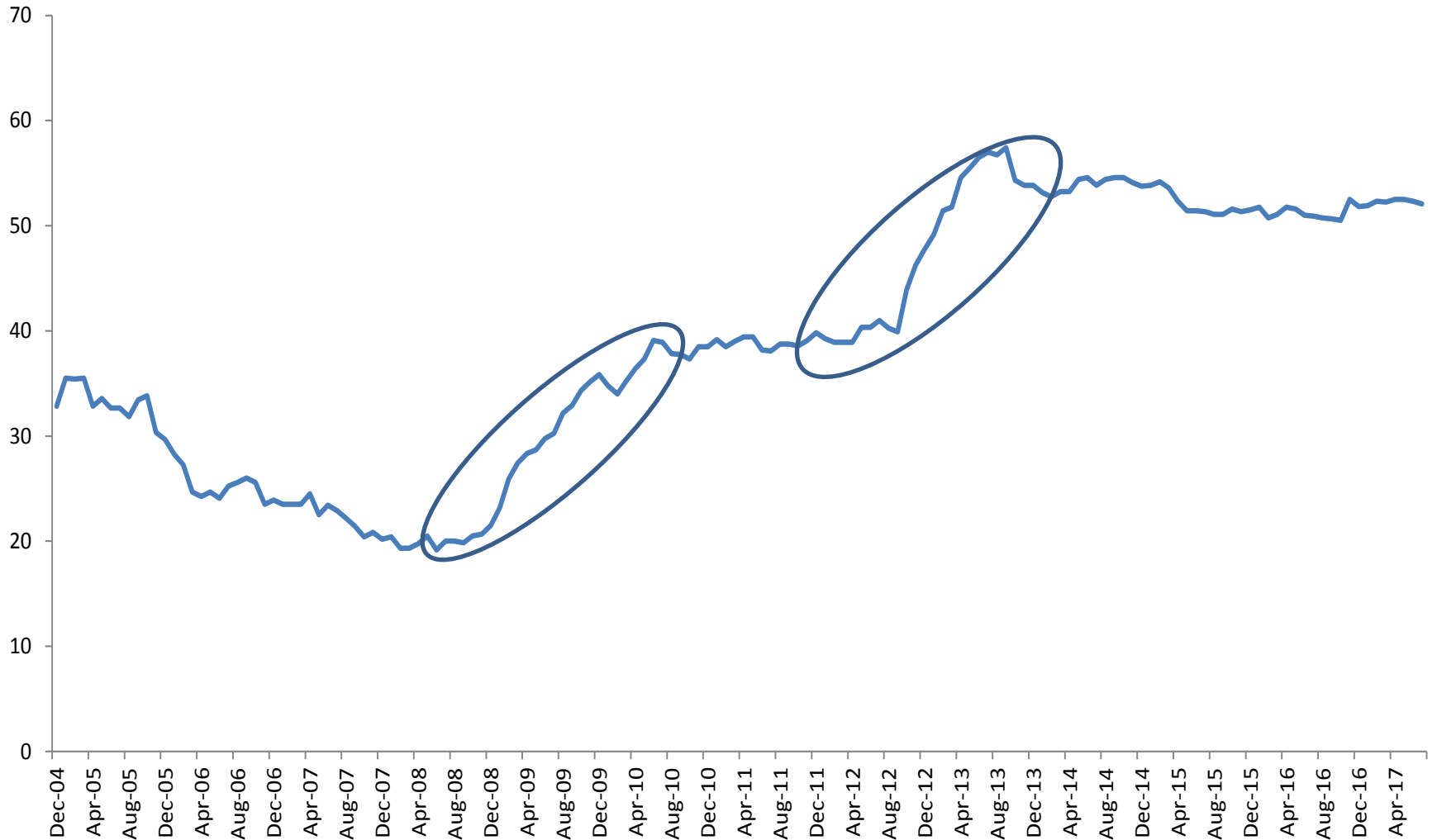
Empirical estimation of fiscal multipliers: case of selected SEE countries

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Term „fiscal multiplier” – frequency on Google





Background

Why this region?

- SEE region – transition economies with different experiences
- Government playing important role in the SEE region
 - communist/socialist heritage
 - high share of the government sector in the economy
 - constrained monetary policy in most countries
- Fiscal policy remained the main economic policy channel in most of the transition countries
- During the recent crisis almost all of the SEE countries intervened in their fiscal systems but economic developments varied significantly
- Fiscal consolidation important topic in many countries since the beginning of Great recession
 - question – would spending cuts lead to additional deterioration of the economic performance

Analytical perspective:

- different economic structure, size, monetary policy regime etc. providing solid background for the validation of theoretical assumptions (narrative approach)
- papers so far focusing on EA or New Member States, no SEE coverage

This presentation is mostly based on:

Deskari-Škrbić, M; Šimović, H. (2017): The effectiveness of fiscal spending in Croatia, Slovenia and Serbia: the role of trade openness and public debt, *Post-Communist Economies*, Vol. 30, 1-23

Deskari-Škrbić, M; Šimović, H. (2016): The size and determinants of fiscal multipliers in Western Balkans, *EFZG Working Paper Series*, No. 15-10; 1-21

Historia magistra vitae est

Origins of the idea (I)

Kahn, R.F. (1931). ["The Relation of Home Investment to Unemployment,"](#) *The Economic Journal* , Vol 41, No. 162, pp. 173-198

THE ECONOMIC JOURNAL

JUNE, 1931

THE RELATION OF HOME INVESTMENT TO UNEMPLOYMENT

I

THE case for "public works" has often been discussed, and there is a final plea that the advocate almost invariably appends to his argument. It is important, we are told, not to overlook the beneficial repercussions that will result from the expenditure of the newly-employed men's wages. But little is done to evaluate these repercussions in concrete terms. The main purpose, though not the only purpose, of this article is to outline the means by which this gap could be filled, and incidentally to suggest that the case for "public works" may be stronger than is always recognised.

J.M. Keynes (1936): „*General Theory of Employment, Interest and Money*”

CHAPTER 10

THE MARGINAL PROPENSITY TO CONSUME AND THE MULTIPLIER

WE established in Chapter 8 that employment can only increase *pari passu* with investment unless there is a change in the propensity to consume. We can now carry this line of thought a stage further. For in given circumstances a definite ratio, to be called the *Multiplier*, can be established between income and investment and, subject to certain simplifications, between the total employment and the employment directly employed on investment (which we shall call the *primary employment*). This further step is an integral part of our theory of employment, since it establishes a precise relationship, given the propensity to consume, between aggregate employment and income and the rate of investment. The conception of the multiplier was first introduced into economic theory by Mr. R. F. Kahn in his article on "The Relation of Home Investment to Unemployment" (*Economic Journal*, June 1931). His argument in this article depended on the

Origins of the idea (II)

III

We have been dealing so far with a *net* increment of investment. If, therefore, we wish to apply the above without qualification to the effect of (*e.g.*) increased public works, we have to assume that there is no offset through decreased investment in other directions,—and also, of course, no associated change in the propensity of the community to consume.

Key assumptions

(i) The method of financing the policy and the increased working cash, required by the increased employment and the associated rise of prices, may have the effect of increasing the rate of interest and so retarding investment in other directions, unless the monetary authority takes steps to the contrary

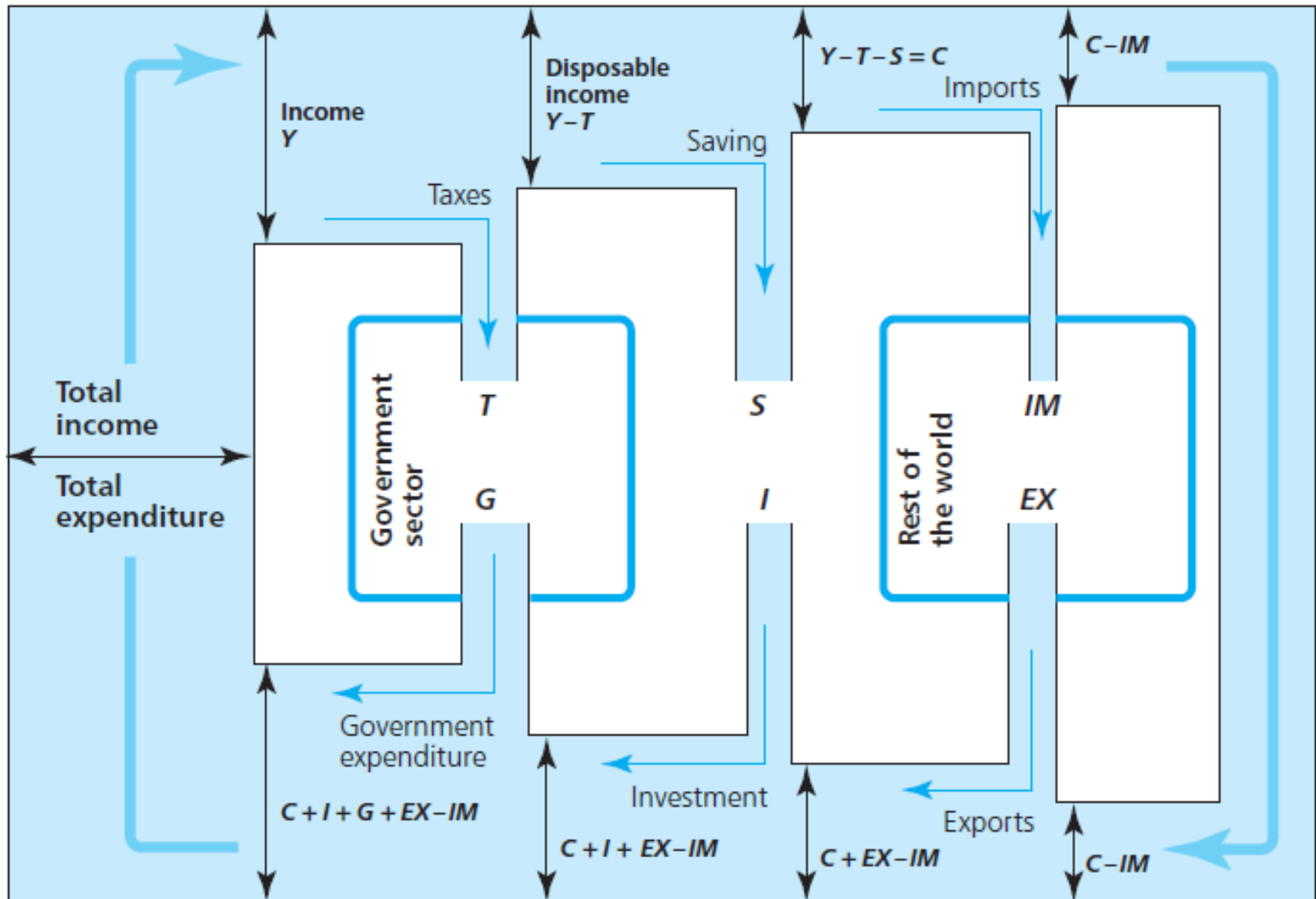
Key offsetting factors

(ii) With the confused psychology which often prevails, the Government programme may, through its effect on “confidence”, increase liquidity-preference or diminish the marginal efficiency of capital, which, again, may retard other investment unless measures are taken to offset it.

(iii) In an open system with foreign-trade relations, some part of the multiplier of the increased investment will accrue to the benefit of employment in foreign countries, since a proportion of the increased consumption will diminish our own country’s favourable foreign balance; so that, if we consider only the effect on

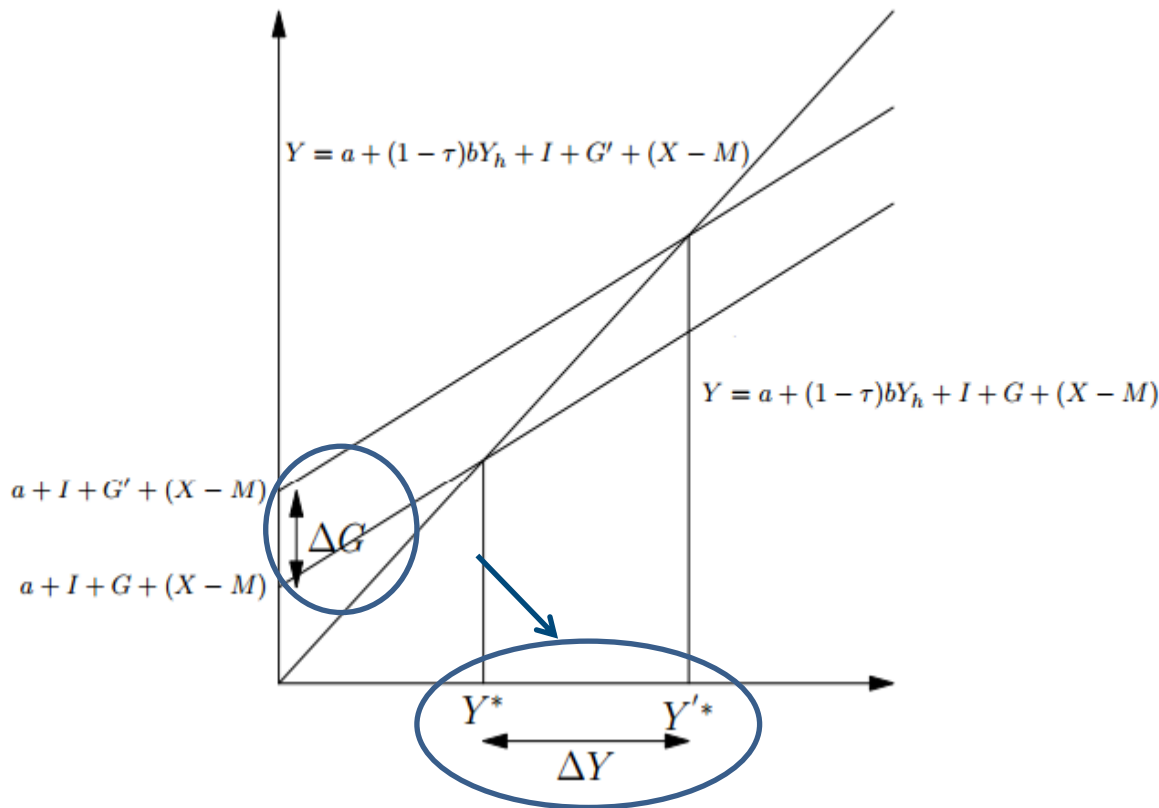
Back to basics – macro 101

Circular flow of the economy



Fiscal multiplier – brief recap of theory

Keynesian cross



$$Y^* = \frac{a + I + G + (X - M)}{1 - b(1 - \tau)}$$

$$Y'^* = \frac{a + I + G' + (X - M)}{1 - b(1 - \tau)}$$

$$\Delta Y = Y'^* - Y^*$$

$$= \frac{a + I + G' + (X - M)}{1 - b(1 - \tau)} - \frac{a + I + G + (X - M)}{1 - b(1 - \tau)}$$

$$= \frac{G' - G}{1 - b(1 - \tau)}$$

$$= \frac{\Delta G}{1 - b(1 - \tau)}$$

basic
+
m in small
open economies

Let's introduce some more analytical rigor

Fiscal multiplier – in practice

Estimation

- Hard to estimate – data, econometric assumptions etc.
- Stronger interest of academia only after the outburst of crisis and Great Recession
- Methodology still developing + many approaches (see next slide)

„Real-world” determinants

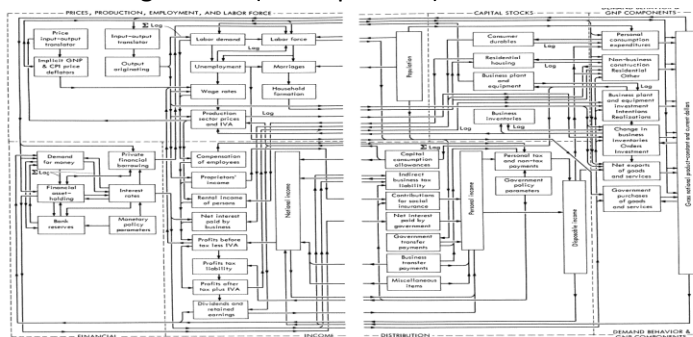
- In theory – MPC, MPM and marginal tax rate
- Additional:
 - quality of institutional framework, risk premium, indebtedness, size of the economy, structure of government expenditures, structure of the economy, expectations, links with the banking system, source of financing etc.

Fiscal multiplier – methodological approaches

Large-scale macroeconomic models (before Sims (1980))

- Wharton model, the Klein-Goldberger model, and the Brookings model (300 equations)
- e.g. Evans (1969)

Flow diagram of brookings-ssrc econometric model



Identification of fiscal shocks in VAR framework

- Burnside, Eichenbaum and Fisher (2001), Christiano, Eichenbaum and Eidelberg (1999) and Ramey and Shapiro (1998), fiscal policy shocks are identified by way of the “**narrative approach**” of Romer and Romer (1989)
- Mountford and Uhlig (2002), consists in identifying fiscal shocks by **sign restrictions** on the impulse responses, following a methodology originally applied by Uhlig (1997) and Faust (1998) to monetary policy analysis
- Fatas and Mihov (2001) and Favero (2002), essentially relies on **Choleski ordering** to identify fiscal shocks
- Blanchard and Perotti (2002) - **structural VAR** !

Dynamic Stochastic General Equilibrium Models (DSGE) – e.g. Leeper et al. (2012); Zubairy (2012)

(non-empirical) Bucket approach – Batini et al. (2014)

Blanchard-Perroti identification

Blanchard&Perroti (2002)

Baseline model (VAR)

$$Y_t = A(L, q)Y_{t-1} + U_t$$

$$Y_t \equiv [T_t, G_t, X_t]'$$

$$U_t \equiv [t_t, g_t, x_t]' \quad \text{RF residuals}$$

Identification scheme

$$\begin{aligned} t_t &= a_1 x_t + a_2 e_t^g + e_t^t \\ g_t &= b_1 x_t + b_2 e_t^t + e_t^g \\ x_t &= c_1 t_t + c_2 g_t + e_t^x \end{aligned} \quad e$$

$$a_1 = \sum_i \eta_{T_i, B_i} \eta_{B_i, X} \frac{\tilde{T}_i}{\bar{T}}$$

$$b_1 = 0$$

$$a_2 \neq 0, b_2 = 0$$

Deskar-Škrbić&Šimović (2017)

Baseline model (VAR)

$$X_t = \alpha + \beta D_t + \gamma T_t + \sum_{i=1}^p A_i X_{t-i} + u_t$$

$$X_t = [T_t, G_t, DD_t, F_t]'$$

exogenous: constant (α), time trend (T_t) and a 'crisis' dummy variable (D_t) + public debt/trade openness

$$u_t = [t, g, dd, f]', u_t \sim (0, \Sigma_u)$$

Identification scheme

$$t_t = a_1 dd_t + a_2 f_t + \beta_2 e_t^G + \beta_1 e_t^t$$

$$g_t = b_1 dd_t + b_2 f_t + \beta_4 e_t^T + \beta_3 e_t^g$$

$$dd_t = c_1 t_t + c_2 g_t + c_3 f_t + \beta_5 e_t^{dd},$$

$$f_t = d_1 t_t + d_2 g_t + d_3 dd_t + \beta_6 e_t^f,$$

$$\begin{pmatrix} 1 & 0 & a_1 & a_2 \\ 0 & 1 & b_1 & b_2 \\ c_1 & c_2 & 1 & c_3 \\ d_1 & d_2 & d_3 & 1 \end{pmatrix} \begin{pmatrix} t_t \\ g_t \\ dd_t \\ f_t \end{pmatrix} = \begin{pmatrix} \beta_1 & \beta_2 & 0 & 0 \\ \beta_4 & \beta_3 & 0 & 0 \\ 0 & 0 & \beta_5 & 0 \\ 0 & 0 & 0 & \beta_6 \end{pmatrix} \begin{pmatrix} e_t^t \\ e_t^g \\ e_t^{dd} \\ e_t^f \end{pmatrix}$$

„Bucket” approach

Structural

- *Trade openness* Countries with a lower propensity to import tend to have higher fiscal multipliers because the demand leakage through imports is less pronounced
- *Labor market rigidity* Countries with more rigid labor markets have larger fiscal multipliers if such rigidity implies reduced wage flexibility, since rigid wages tend to amplify the response of output to demand shocks
- *The size of automatic stabilizers* Larger automatic stabilizers reduce fiscal multipliers, since mechanically the automatic response of transfers and taxes offsets part of the initial fiscal shock, thus lowering its effect on GDP
- *The exchange rate regime* Countries with flexible exchange rate regimes tend to have smaller multipliers, because exchange rate movements can offset the impact of discretionary fiscal policy on the economy
- *The debt level* High-debt countries generally have lower multipliers, as fiscal consolidation (resp. stimulus) is likely to have positive (resp. negative) credibility and confidence effects on private demand and the interest rate risk premium
- *Public expenditure management and revenue administration* Multipliers are expected to be smaller when difficulties to collect taxes and expenditure inefficiencies limit the impact of fiscal policy on output

Conjunctural

- The state of the business cycle
- Degree of monetary accommodation to fiscal shocks

Results

Impact multiplier

$$M = \frac{\Delta Y(t)}{\Delta G(t)}$$

Cumulative multiplier

$$M = \frac{\sum_{j=0}^N \Delta Y(t+j)}{\sum_{j=0}^N \Delta G(t+j)}$$

Peak multiplier

$$M = \max_N \frac{\Delta Y(t+N)}{\Delta G(t)}$$

Table 4. Effects of structural fiscal spending shock on domestic demand in Croatia.

Quarter/Model	Closed model	Closed model with public debt	Open model with foreign demand	Open model with imports ratio
4	1.05	0.86	0.80	0.91
8	1.66	0.6849*	1.30	1.42
12	1.88	0.4131*	1.51	1.64
16	1.96	0.3808*	1.57	1.73

*Implies that the impulse is not statistically significant.; Source: Authors.

Table 5. Effects of structural fiscal spending shock on domestic demand in Slovenia.

Quarter/Model	Closed model	Closed model with public debt	Open model with foreign demand	Open model with imports ratio
4	-0.89	-0.97	-0.53	-0.61
8	-1.81	-2.09	-1.24	-1.32
12	-2.28	-2.59	-1.49	-1.57
16	-2.44	-2.67	-1.49	-1.53

Source: Authors.

Table 6. Effects of structural fiscal spending shock on domestic demand in Serbia.

Quarter/Model	Closed model	Closed model with public debt	Open model with foreign demand	Open model with imports ratio
4	1.28	0.84	0.37*	1.15
8	1.85	0.81*	0.10*	1.39
12	2.03	0.74*	-0.11*	1.37*
16	2.08	0.70*	-0.14*	1.34*

*Implies that the impulse is not statistically significant.; Source: Authors.

Results – IRF (Serbia)

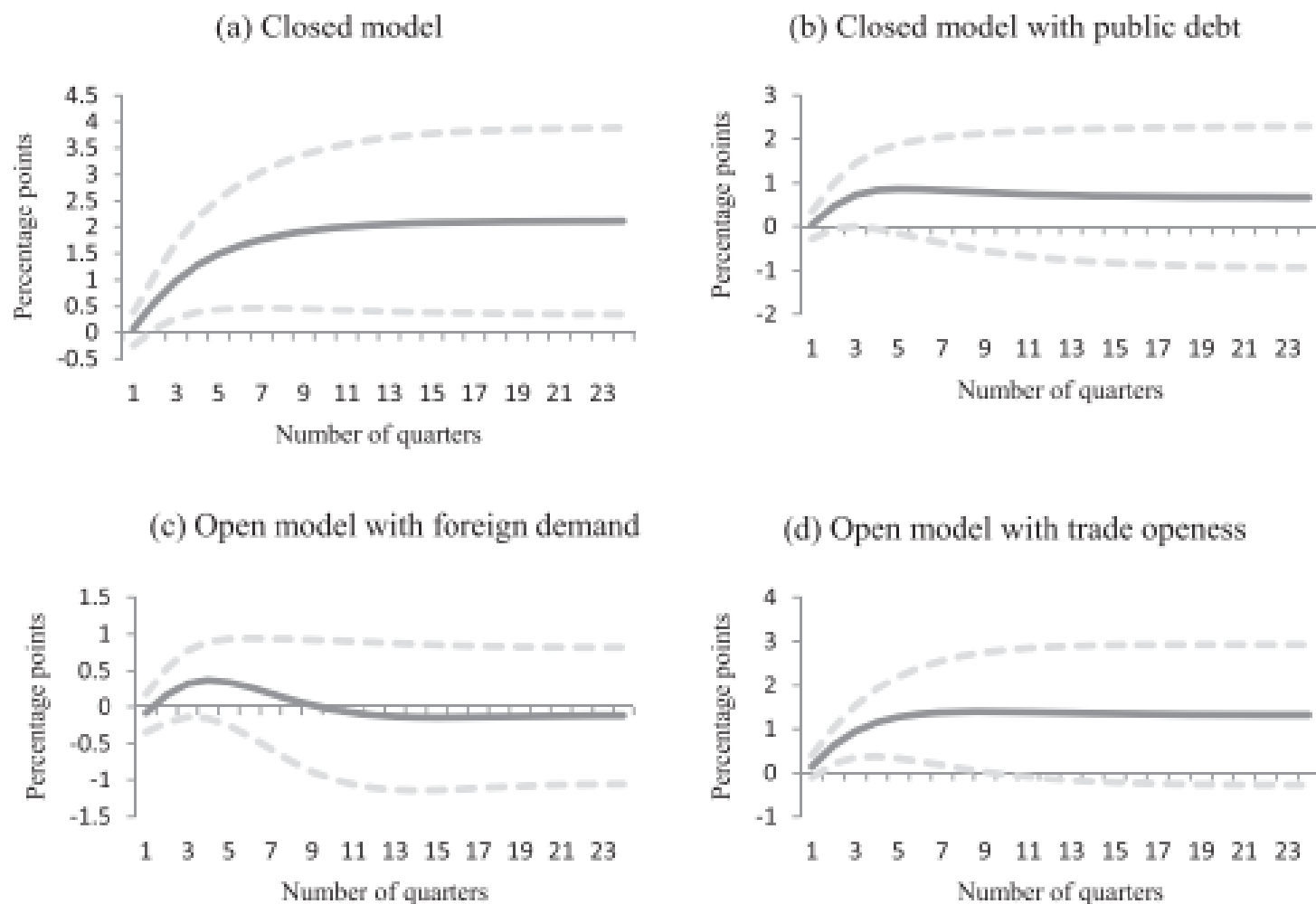


Figure 4. Effects of structural fiscal spending shock on domestic demand in Serbia. Source: Authors.

Almost done...

Conclusions

- Fiscal policy played an important role in SEE region from 2000-2015
- General effect of government spending on GDP growth was positive
- Fiscal multipliers vary among SEE countries (see literature), in line with the assumptions of a „narrative approach”
- Empirical results of our paper in line with theoretical assumptions

Open questions

- After the fiscal consolidation period in SEE is it time for the new fiscal cycle?
- Due to the fact that forecasts show that medium term growth rate is relatively low should fiscal policy step up?
- In the environment of massive yield compression should SEE countries restructure their debts and use new fiscal space (lower interest rate share) for expansion?

Literature

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Thank you for your attention