

Sovereign risk, monetary policy and fiscal multipliers: a structural model-based assessment

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- ▶ Crisis rekindled academic interest on fiscal policy as a demand management tool, since zero lower bound (ZLB) limits standard monetary policy tools application
- ▶ Euro-area sovereign debt crisis added another dimension to the debate on fiscal multipliers: attempts at fiscal consolidation could possibly backfire (sovereign risk channel)

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- ▶ Tax multipliers are always smaller than government spending multipliers

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- ▶ Christiano et al. (2011): expected length of ZLB is crucial, multiplier as high as 2.3 at peak

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- ▶ Nominal side: quadratic costs make wages and prices sticky

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- ▶ Cost of borrowing for home borrowers (both government and households) equal to area-wide risk-free nominal interest rate (set by central bank of the monetary union) plus a *premium* reflecting sovereign default risk. Spread enters Euler equation, affecting households' intertemporal consumption choices ▶ RP

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- ▶ **Tax multipliers are much smaller than spending multipliers.** However, permanent tax changes have large long-run multipliers Tab.8

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- ▶ **Tax multipliers are larger as well and approach 1 for long-lasting stimuli** Tab.11

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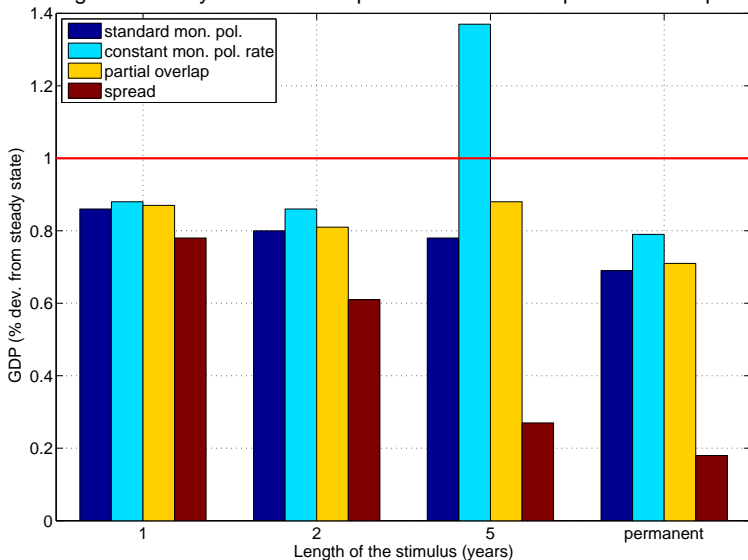
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- ▶ Rapid pass-through to private sector borrowing cost (see Albertazzi et al. 2012)
- ▶ Results: **fiscal multiplier becomes much lower and approaches zero as the duration of the stimulus increases**: higher borrowing costs exacerbate the fall in consumption and prevent investment from rising

Fiscal multipliers: wrap up

Figure 3. First year–GDP multiplier associated with public consumption



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- ▶ Sovereign risk channel: stimulus deteriorates public finances and induces rapid increase in sovereign risk premium, thus reducing fiscal multipliers
- ▶ Fiscal consolidation: short-run costs may be partially mitigated by reduction in sovereign spread
- ▶ All in all, size of multipliers changes in normal vs crisis times; monetary policy response and financial markets reaction are key

Thanks

Sensitivity analysis

- ▶ The larger the share of rule-of-thumb (ROT) consumers, the larger fiscal multipliers; however, multipliers still < 1 . The stronger GDP response reflects the more subdued fall in household spending Tab.14

Sensitivity analysis

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Sensitivity analysis

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- ▶ Spread increase [Tab.16](#)

A DSGE model for IT: fiscal authority

Government budget constraint:

$$\left[\frac{B_{t+1}^g}{R_t^H} - B_t^g \right] = (1 + \tau_t^c) P_{N,t} C_t^g + Tr_t - T_t \quad (1)$$

where C_t^g (government purchases) is a bundle of nontradables, whose price is $P_{N,t}$. Tr_t are lump-sum transfers.

Total government revenues T_t :

$$T_t \equiv \tau_t^l W_t L_t + \tau_t^c P_t C_t + \tau_t^k \left[R_t^k K_{t-1} + \Pi_t^P \right] \quad (2)$$

where the τ_t^l , τ_t^k and τ_t^c are tax rates on labor and capital income and on consumption.

Debt-stabilising fiscal rule:

$$\frac{i_t}{i_{t-1}} = \left(\frac{b_t^g}{b^{g,*}} \right)^{\phi_1} \left(\frac{b_t^g}{b_{t-1}^g} \right)^{\phi_2} \left(\frac{GDP_t}{GDP_{t-1}} \right)^{\phi_3} \quad (3)$$

where i_t is one of the six fiscal instruments

$(\tau_t^l, \tau_t^k, \tau_t^c, C_t^g, L_t^g, Tr_t)$. [◀ Back](#)

A DSGE model for IT: monetary authority

Monetary authority controls the short-term policy rate R according to a Taylor rule:

$$\left(\frac{R_t}{\bar{R}}\right) = \left(\frac{R_{t-1}}{\bar{R}}\right)^{\rho_R} (\Pi_{MU,t})^{(1-\rho_R)\rho_\pi} \left(\frac{GDP_{MU,t}}{GDP_{MU,t-1}}\right)^{(1-\rho_R)\rho_{GDP}} \quad (4)$$

where ρ_R ($0 < \rho_R < 1$) captures inertia in interest rate setting and ρ_π and ρ_{GDP} are respectively the weights on euro-area inflation and GDP. The former is defined as $\Pi_{MU,t} \equiv (\Pi_t)^s (\Pi_t^*)^{1-s}$, i.e. a geometric average of home and rest-of-the-monetary-union inflation, with weights corresponding to the country size; the latter is defined as $GDP_{MU,t} \equiv GDP_t + rer * GDP_t^*$, where rer is the home real exchange rate.

A DSGE model for IT: sovereign risk premium

Interest rate paid by home government and households (R^H) when borrowing is determined as a spread over area-wide risk-free nominal interest rate (R), set by central bank. The (gross) spread reflects the risk of sovereign default and is linked to (expected) variations in the fiscal stance:

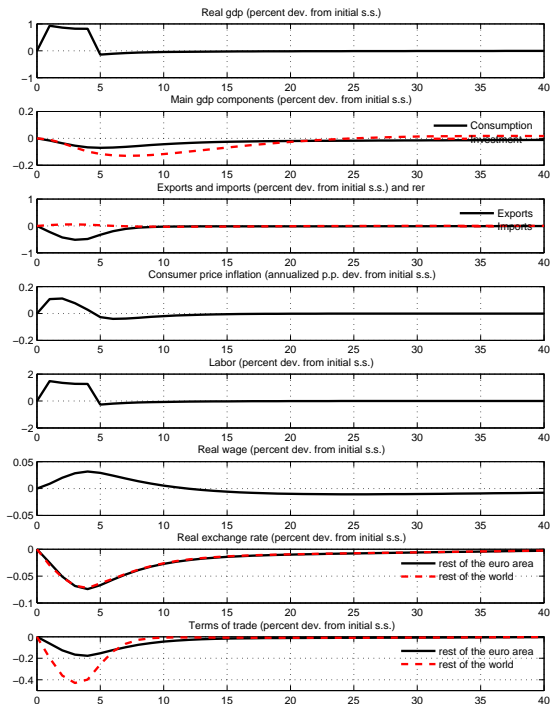
$$spread_t^H \equiv E_t \left[\left(\frac{b_{t+1}^g}{b_t^g} \right)^{\psi_b} \right] \quad (5)$$

where $0 < \psi_b < 1$. Term on RHS includes (expected) changes in the public debt-to-GDP ratio (b_t^g); pass-through to borrowing rates is quick. Gross interest rate R^H paid by Home government is:

$$R_t^H \equiv R_t * spread_t^H. \quad (6)$$

The spread affects the intertemporal (home) household consumption choices through the standard Euler equation (see Corsetti et al. 2012)

Figure 1. Italian public consumption shock



Benchmark fiscal multipliers

Table 8. Tax multipliers. Italian GDP and inflation

	labor tax			capital tax			consumption tax		
	1st year	2nd year	LR	1st year	2nd year	LR	1st year	2nd year	LR
1 year-stimulus	0.02	0.04	0.00	0.02	0.02	0.00	0.34	0.07	0.00
2 year-stimulus	0.06	0.13	0.00	0.08	0.11	0.00	0.30	0.37	0.00
5 year-stimulus	0.11	0.29	0.00	0.23	0.47	0.00	0.28	0.30	0.00
permanent stimulus	0.19	0.37	0.89	0.17	0.53	2.51	0.08	0.15	0.37
Inflation									
1 year-stimulus	-0.02	0.00	0.00	0.00	0.00	0.00	0.06	-0.01	0.00
2 year-stimulus	-0.04	-0.02	0.00	0.00	-0.01	0.00	0.09	0.03	0.00
5 year-stimulus	-0.09	-0.08	0.00	0.04	-0.03	0.00	0.11	0.07	0.00
permanent stimulus	-0.06	-0.07	0.00	0.00	-0.05	0.00	-0.02	-0.03	0.00

◀ Back

Fiscal multipliers and constant monetary policy rate

Table 11. Tax multipliers. Constant monetary policy rate. Italian GDP and inflation

	labor tax			capital tax			consumption tax		
	1st year	2nd year	LR	1st year	2nd year	LR	1st year	2nd year	LR
1 year-stimulus	0.02	0.04	0.00	0.02	0.02	0.00	0.35	0.08	0.00
2 year-stimulus	0.05	0.12	0.00	0.09	0.12	0.00	0.36	0.42	0.00
5 year-stimulus	0.00	0.17	0.00	0.45	0.68	0.00	0.80	0.80	0.00
permanent stimulus	0.39	0.56	0.89	1.44	1.75	2.51	0.16	0.23	0.37
Inflation									
1 year-stimulus	-0.02	0.00	0.00	0.00	0.00	0.00	0.07	-0.01	0.00
2 year-stimulus	-0.05	-0.03	0.00	0.02	-0.01	0.00	0.14	0.05	0.00
5 year-stimulus	-0.22	-0.15	0.00	0.25	0.08	0.00	0.64	0.36	0.00
permanent stimulus	0.14	0.04	0.00	1.32	0.65	0.00	0.06	0.02	0.00

← Back

Fiscal consolidation

Table 13. Fiscal consolidation and spread reduction. Italian GDP

	standard monetary policy		5 year constant mon. pol. rate	
	1st year	2nd year	1st year	2nd year
No spread	-0.29	-0.40	-0.69	-0.79
Spread: -75 bp on impact, 0 bp after 1 year	-0.21	-0.38	-0.62	-0.78
Spread: -75 bp on impact, 0 bp after 2 years	-0.10	-0.30	-0.51	-0.70
Spread: -75 bp on impact, 0 bp after 3 years	0.02	-0.17	-0.38	-0.56
Spread: -75 bp on impact, 0 bp after 5 years	0.22	0.10	-0.04	-0.16

Note: GDP as % dev. from initial steady state.

◀ Back

Sensitivity analysis

Table 14. Sensitivity on public consumption multipliers. Italian GDP and inflation

	benchmark			ROT households			fiscal coord.			fiscal coord.+c.m.p.		
	1st year	2nd year	LR	1st year	2nd year	LR	1st year	2nd year	LR	1st year	2nd year	LR
GDP												
1 year-stim.	0.86	-0.10	0.00	0.98	-0.13	0.00	0.85	-0.10	0.00	0.99	0.00	0.00
2 year-stim.	0.80	0.67	0.00	0.90	0.75	0.00	0.75	0.63	0.00	1.31	1.13	0.00
5 year-stim.	0.78	0.56	0.00	0.88	0.61	0.00	0.60	0.35	0.00	6.96	6.14	0.00
permanent stim.	0.69	0.52	0.59	0.76	0.56	0.68	0.53	0.37	0.56	1.56	1.34	0.56
Inflation												
1 year-stim.	0.08	-0.03	0.00	0.09	-0.04	0.00	0.12	-0.02	0.00	0.22	0.01	0.00
2 year-stim.	0.15	0.02	0.00	0.17	0.02	0.00	0.20	0.07	0.00	0.71	0.30	0.00
5 year-stim.	0.20	0.11	0.00	0.22	0.12	0.00	0.17	0.17	0.00	6.76	3.57	0.00
permanent stim.	0.14	0.07	0.00	0.14	0.06	0.00	0.04	0.03	0.00	1.09	0.58	0.00

Note: LR=long run; GDP as % dev. from initial steady state, inflation as annualized % point dev. from initial steady state.

← Back

Sensitivity analysis

Table 16. Sensitivity. Fiscal consolidation and spread reduction. Italian GDP

	standard monetary policy	5 year constant mon. pol. rate		
	1st year	2nd year	1st year	2nd year
No spread	-0.29	-0.40	-0.69	-0.79
Spread: -37 bp on impact, 0 bp after 1 year	-0.25	-0.39	-0.65	-0.78
Spread: -37 bp on impact, 0 bp after 2 years	-0.19	-0.35	-0.60	-0.74
Spread: -37 bp on impact, 0 bp after 3 years	-0.14	-0.29	-0.54	-0.67
Spread: -37 bp on impact, 0 bp after 5 years	-0.03	-0.15	-0.36	-0.47

Note: GDP as % dev. from initial steady state.

◀ Back