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

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<sup>&</sup>lt;sup>1</sup>Usual disclaimers apply



Question: what is the size of the fiscal multiplier? Does an increase in government consumption lead to a more than 1:1 increase in GDP?

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- How the central bank reacts (zero lower bound)
- How financial markets react (sovereign risk channel)

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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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- This paper's contribution: a DSGE model-based assessment of fiscal multipliers for Italy

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Discuss role of monetary policy and sovereign risk

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- Discuss role of monetary policy and sovereign risk
- Assess impact on GDP of 2011 consolidation packages

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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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- Monetary authority: move short-term policy rate *R* according to a Taylor rule (arguments are euro-area *Y* and *π*). Country weights reflect relative size •MP
- 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

▶ Debt-financed, temporary stimulus (1, 2, 5 and 10 years), 1 percent of GDP increase in gov't purchases ⇒ ↑ Y by 0.9% (in 1Y) Table

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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

Euro-area sovereign debt crisis: strong links btw gov't fiscal position and default+redenomination risk

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- Increase in spread is assumed to fade away gradually and become zero when the fiscal stimulus is withdrawn
- 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 Tabl2

# Fiscal multipliers: wrap up



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 Results: largest reduction 0.69% first year (with 5-year monetary accommodation), smallest 0.04% (Tab.13)

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### Conclusions

- Short-run fiscal multipliers typically < 1, tax multipliers smaller than government consumption multipliers
- Govt consumption multipliers > 1 if monetary policy rate kept constant for at least 5 years (coincidence with fiscal stimulus)
- 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

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

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Simultaneous fiscal stimulus in EA: Tab.15

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- Simultaneous fiscal stimulus in EA: Tab.15
- Spread increase Tab.16

### A DSGE model for IT: fiscal authority

Government budget constraint:

$$\left[\frac{B_{t+1}^{g}}{R_{t}^{H}} - B_{t}^{g}\right] = (1 + \tau_{t}^{c})P_{N,t}C_{t}^{g} + Tr_{t} - T_{t}$$
(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  $T_t$ :

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

where the  $\tau_t^I$ ,  $\tau_t^k$  and  $\tau_t^c$  are tax rates on labor and capital income and on consumption.

Debt-stabilising fiscal rule:

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

where  $i_t$  is one of the six fiscal instruments  $(\tau_t^{\ell}, \tau_t^k, \tau_t^c, C_t^g, L_t^g, Tr_t)$ . (Back)

### A DSGE model for IT: monetary authority

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

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

where  $\rho_R$  (0 <  $\rho_R$  < 1) captures inertia in interest rate setting and  $\rho_{GDP}$  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.

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# 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:

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

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

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

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### Figure 1. Italian public consumption shock

# Benchmark fiscal multipliers

I able         0.         Public consumption multipliers											
	1 year-s	stimulus	2 year-s	stimulus	5 year-s	stimulus	perm	anent stir	nulus		
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	LR		
	year	year	year	year	year	year	year	year			
Italian variables											
GDP	0.86	-0.10	0.80	0.67	0.78	0.56	0.69	0.52	0.59		
Consumption	-0.04	-0.06	-0.08	-0.17	-0.15	-0.32	-0.51	-0.80	-0.79		
Investment	-0.05	-0.13	-0.03	-0.25	0.34	0.31	0.57	1.03	0.54		
Exports	-0.42	-0.18	-0.56	-0.73	-0.62	-0.98	-0.48	-0.69	-0.30		
Imports	0.05	0.00	0.09	0.06	0.22	0.30	0.01	0.11	-0.16		
Terms of Tr. REA (+=deterior.)	-0.13	-0.11	-0.21	-0.35	-0.27	-0.54	-0.20	-0.38	-0.20		
Terms of Tr. RW (+=deterior.)	-0.35	-0.12	-0.44	-0.55	-0.47	-0.69	-0.36	-0.49	-0.20		
Real Exc. Rate $REA (+=depr.)$	-0.05	-0.05	-0.09	-0.16	-0.13	-0.27	-0.09	-0.20	-0.15		
Real Exc. Rate RW (+=depr.)	-0.06	-0.05	-0.10	-0.16	-0.15	-0.29	-0.12	-0.21	-0.15		
Inflation(annualized)	0.08	-0.03	0.15	0.02	0.20	0.11	0.14	0.07	0.00		
Real.Int.Rate (annualized)	-0.03	0.04	-0.12	0.04	-0.18	-0.07	-0.12	-0.05	0.00		
Nominal Int. Rate (annualized)	0.01	0.00	0.01	0.02	0.01	0.01	0.01	0.00	0.00		
Labor	1.34	-0.18	1.22	0.99	1.17	0.74	1.02	0.66	0.46		
Pub.Def.(%gdp)	0.72	-0.10	0.75	0.84	0.76	0.90	0.84	0.98	0.00		
Prim.Pub.Def.(%gdp)	0.73	-0.13	0.76	0.82	0.78	0.89	0.85	0.97	0.00		
REA GDP	0.00	0.00	0.00	0.00	-0.01	-0.02	-0.02	-0.01	0.00		
RW GDP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		



## Benchmark fiscal multipliers

Table 7. Pub	Table 7. Public consumption multipliers. Labor tax-based financing											
	1 year-:	stimulus	2 year-	stimulus	5 year-	stimulus	perm	anent sti	mulus			
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	LR			
	year	year	year	year	year	year	year	year				
Italian variables												
GDP	0.83	-0.14	0.74	0.54	0.66	0.27	0.49	0.14	-0.33			
Consumption	-0.05	-0.09	-0.11	-0.24	-0.22	-0.50	-0.85	-1.33	-1.76			
Investment	-0.07	-0.18	-0.09	-0.41	0.23	-0.07	0.45	0.67	-0.13			
Exports	-0.47	-0.26	-0.68	-0.97	-0.83	-1.46	-0.58	-0.97	-1.31			
Imports	0.05	0.00	0.09	0.06	0.22	0.28	-0.19	-0.19	-0.42			
Terms of Tr. REA (+=deterior.)	-0.16	-0.15	-0.27	-0.48	-0.37	-0.82	-0.26	-0.56	-0.89			
Terms of Tr. RW (+=deterior.)	-0.39	-0.18	-0.54	-0.73	-0.62	-1.03	-0.43	-0.68	-0.88			
Real Exc. Rate REA (+=depr.)	-0.07	-0.07	-0.12	-0.22	-0.18	-0.43	-0.13	-0.32	-0.65			
Real Exc. Rate RW $(+=depr.)$	-0.07	-0.07	-0.13	-0.23	-0.22	-0.46	-0.16	-0.33	-0.65			
Inflation(annualized)	0.10	-0.03	0.20	0.04	0.29	0.20	0.20	0.13	0.00			
Real.Int.Rate (annualized)	-0.05	0.04	-0.17	0.03	-0.29	-0.15	-0.20	-0.12	0.00			
Nominal Int. Rate (annualized)	0.01	0.00	0.01	0.02	0.01	0.01	0.00	0.00	0.00			
Labor	1.29	-0.26	1.11	0.76	0.97	0.23	0.68	0.01	-0.68			
Pub.Def.(%gdp)	-0.31	-0.11	-0.29	-0.22	-0.27	-0.13	-0.12	0.03	0.00			
Prim.Pub.Def.(%gdp)	-0.29	-0.11	-0.26	-0.20	-0.24	-0.10	-0.10	0.05	0.00			
GDP REA	0.00	0.00	-0.01	-0.01	-0.02	-0.03	-0.02	-0.02	-0.01			
GDP RW	0.00	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.00			

### Benchmark fiscal multipliers

		labor tax	•		capital ta:	x	con	sumption	tax
	1st	2nd	LR	1st	2nd	LR	1st	2nd	LR
	year	year		year	year		year	year	
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

Table 8. Tax multipliers. Italian GDP and inflation

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Iable 9.         Public consumption multipliers.         Constant monetary policy rate											
	1 year-s	stimulus	2 year-s	stimulus	5 year-s	stimulus	perm	anent stir	mulus		
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	LR		
	year	year	year	year	year	year	year	year			
Italian variables											
GDP	0.88	-0.09	0.86	0.73	1.37	1.13	0.79	0.62	0.59		
Consumption	-0.02	-0.05	-0.01	-0.11	0.50	0.22	-0.40	-0.71	-0.79		
Investment	-0.02	-0.09	0.09	-0.09	1.43	1.80	0.77	1.29	0.54		
Exports	-0.40	-0.17	-0.50	-0.70	-0.17	-0.71	-0.40	-0.64	-0.30		
Imports	0.06	0.01	0.15	0.13	0.77	0.92	0.11	0.22	-0.16		
Terms of Tr. REA (+=deterior.)	-0.13	-0.11	-0.22	-0.35	-0.29	-0.55	-0.20	-0.38	-0.20		
Terms of Tr. RW (+=deterior.)	-0.36	-0.12	-0.47	-0.55	-0.75	-0.69	-0.41	-0.49	-0.20		
Real Exc. Rate REA (+=depr.)	-0.05	-0.05	-0.09	-0.16	-0.13	-0.27	-0.09	-0.20	-0.15		
Real Exc. Rate RW (+=depr.)	-0.03	-0.04	0.00	-0.11	0.75	0.16	0.04	-0.13	-0.15		
Inflation(annualized)	0.10	-0.03	0.21	0.05	0.81	0.44	0.25	0.12	0.00		
Real.Int.Rate (annualized)	-0.06	0.03	-0.19	0.00	-0.78	-0.35	-0.23	-0.09	0.00		
Nominal Int. Rate (annualized)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Labor	1.37	-0.16	1.34	1.09	2.21	1.62	1.21	0.82	0.46		
Pub.Def.(%gdp)	0.69	-0.12	0.70	0.78	0.42	0.54	0.77	0.92	0.00		
Prim.Pub.Def.(%gdp)	0.72	-0.13	0.73	0.79	0.48	0.60	0.80	0.92	0.00		
REA GDP	0.02	0.01	0.07	0.06	0.58	0.53	0.09	0.08	0.00		
RW GDP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

Table 10. Public consumption multipliers. Partial monetary policy accommodation										
	1 year-	stimulus	2 year-s	stimulus	5 year-	stimulus	perm	anent stir	nulus	
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	LR	
	year	year	year	year	year	year	year	year		
Italian variables										
65.5										
GDP	0.87	-0.09	0.81	0.68	0.88	0.65	0.71	0.55	0.59	
Consumption	-0.03	-0.06	-0.06	-0.16	-0.04	-0.23	-0.48	-0.78	-0.79	
Investment	-0.04	-0.11	0.00	-0.22	0.52	0.55	0.62	1.09	0.54	
Exports	-0.41	-0.17	-0.54	-0.73	-0.55	-0.93	-0.46	-0.68	-0.30	
Imports	0.06	0.00	0.11	0.07	0.31	0.40	0.04	0.14	-0.16	
Terms of Tr. REA (+=deterior.)	-0.13	-0.11	-0.21	-0.35	-0.27	-0.54	-0.20	-0.38	-0.20	
Terms of Tr. RW (+=deterior.)	-0.35	-0.12	-0.45	-0.55	-0.52	-0.69	-0.38	-0.49	-0.20	
Real Exc. Rate REA (+=depr.)	-0.05	-0.05	-0.09	-0.16	-0.13	-0.27	-0.09	-0.20	-0.15	
Real Exc. Rate RW (+=depr.)	-0.04	-0.05	-0.07	-0.15	0.00	-0.22	-0.08	-0.19	-0.15	
Inflation(annualized)	0.09	-0.03	0.16	0.03	0.30	0.16	0.16	0.08	0.00	
Real.Int.Rate (annualized)	-0.05	0.03	-0.15	0.03	-0.29	-0.13	-0.15	-0.06	0.00	
Nominal Int. Rate (annualized)	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	
Labor	1.36	-0.17	1.25	1.01	1.35	0.89	1.07	0.70	0.46	
Pub.Def.(%gdp)	0.70	-0.11	0.72	0.82	0.69	0.83	0.82	0.96	0.00	
Prim.Pub.Def.(%gdp)	0.72	-0.13	0.75	0.81	0.73	0.84	0.84	0.96	0.00	
	0.01	0.01	0.01	0.01	0.00	0.07	0.01	0.01	0.00	
REA GDP	0.01	0.01	0.01	0.01	0.09	0.07	0.01	0.01	0.00	
RW GDP	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Table 10. Public consumption multipliers. Partial monetary policy accommodation



Table 11. Tax multipliers. Constant monetary poncy rate. Italian GDF and imitation										
		labor tax		(	capital tax		con	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	

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



Table 12.         Public consumption multipliers.         Spread increase											
	1 year-	stimulus	2 year-	stimulus	5 year-	stimulus	perm	anent stir	nulus		
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	LR		
	year	year	year	year	year	year	year	year			
Italian variables											
GDP	0.78	-0.12	0.61	0.57	0.27	0.07	0.18	0.03	0.59		
Consumption	-0.22	-0.10	-0.48	-0.36	-1.19	-1.28	-1.55	-1.75	-0.73		
Investment	-0.20	-0.21	-0.51	-0.67	-1.51	-2.35	-1.28	-1.64	0.56		
Exports	-0.37	-0.15	-0.42	-0.62	-0.15	-0.33	-0.01	-0.04	-0.37		
Imports	-0.12	-0.06	-0.35	-0.23	-1.17	-1.37	-1.37	-1.56	-0.08		
Terms of Tr. REA (+=deterior.)	-0.12	-0.10	-0.17	-0.30	-0.09	-0.25	-0.02	-0.09	-0.25		
Terms of Tr. RW (+=deterior.)	-0.31	-0.10	-0.33	-0.47	-0.10	-0.21	0.01	-0.01	-0.25		
Real Exc. Rate REA (+=depr.)	-0.05	-0.05	-0.07	-0.14	-0.05	-0.15	-0.02	-0.07	-0.18		
Real Exc. Rate RW (+=depr.)	-0.05	-0.05	-0.08	-0.14	-0.06	-0.15	-0.03	-0.07	-0.18		
Inflation(annualized)	0.07	-0.03	0.12	0.03	0.07	0.09	0.00	0.05	0.00		
Real.Int.Rate (annualized)	-0.03	0.03	-0.10	0.02	-0.07	-0.12	-0.01	-0.09	0.00		
Nominal Int. Rate (annualized)	0.01	0.00	0.01	0.01	0.00	-0.01	-0.01	-0.02	0.00		
Labor	1.21	-0.19	0.91	0.88	0.36	0.13	0.21	0.05	0.44		
Pub.Def.(%gdp)	1.27	-0.03	1.46	1.30	1.73	1.91	1.81	1.99	0.00		
Prim.Pub.Def.(%gdp)	0.78	-0.14	0.87	0.86	1.08	1.15	1.16	1.23	0.00		
GDP REA	0.00	0.00	-0.01	-0.01	-0.03	-0.03	-0.03	-0.03	0.00		
GDP RW	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	0.00	0.00		

### Fiscal consolidation

	standard m	ionetary policy	5 year const	ant 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

Table 13. Fiscal consolidation and spread reduction. Italian GDP

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

		benchmar	k .	RO	T househ	olds	fi	iscal coord	ł.	fiscal	coord.+o	c.m.p.
	1st	2nd	LR	1st	2nd	LR	1st	2nd	LR	1st	2nd	LR
	year	year		year	year		year	year		year	year	
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

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

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

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Table 15. Sensitivity. Public consumption multipliers. Spread increase											
	1 year-	stimulus	2 year-s	stimulus	5 year-s	stimulus	perm	anent stir	nulus		
	1st	2nd	1st	2nd	1st	2nd	1st	2nd	LR		
	year	year	year	year	year	year	year	year			
Italian variables											
GDP	0.82	-0.11	0.70	0.62	0.52	0.31	0.43	0.27	0.59		
Consumption	-0.13	-0.08	-0.28	-0.27	-0.68	-0.81	-1.04	-1.29	-0.76		
Investment	-0.13	-0.17	-0.27	-0.46	-0.59	-1.04	-0.36	-0.33	0.55		
Exports	-0.39	-0.16	-0.49	-0.67	-0.38	-0.65	-0.24	-0.36	-0.33		
Imports	-0.04	-0.03	-0.13	-0.09	-0.49	-0.55	-0.69	-0.73	-0.12		
Terms of Tr. REA (+=deterior.)	-0.13	-0.11	-0.19	-0.33	-0.18	-0.39	-0.11	-0.23	-0.22		
Terms of Tr. RW (+=deterior.)	-0.33	-0.11	-0.39	-0.51	-0.28	-0.45	-0.17	-0.25	-0.22		
Real Exc. Rate REA (+=depr.)	-0.05	-0.05	-0.08	-0.15	-0.09	-0.21	-0.06	-0.13	-0.16		
Real Exc. Rate RW $(+=depr.)$	-0.05	-0.05	-0.09	-0.15	-0.11	-0.22	-0.07	-0.14	-0.16		
Inflation(annualized)	0.08	-0.03	0.13	0.03	0.13	0.10	0.07	0.06	0.00		
Real.Int.Rate (annualized)	-0.03	0.03	-0.11	0.03	-0.13	-0.10	-0.07	-0.07	0.00		
Nominal Int. Rate (annualized)	0.01	0.00	0.01	0.02	0.00	0.00	0.00	-0.01	0.00		
Labor	1.27	-0.19	1.07	0.94	0.76	0.43	0.61	0.35	0.45		
Pub.Def.(%gdp)	1.00	-0.07	1.10	1.07	1.25	1.41	1.33	1.49	0.00		
Prim.Pub.Def.(%gdp)	0.75	-0.13	0.82	0.84	0.93	1.02	1.01	1.10	0.00		
GDP REA	0.00	0.00	-0.01	0.00	-0.02	-0.02	-0.02	-0.02	0.00		
GDP RW	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		

	standard m	onetary policy	5 year consta	ant 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

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

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