

Macroeconomic effects of simultaneous implementation of reforms after the crisis

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¹Usual disclaimers apply

"Fiscal consolidation should be designed in a growth friendly manner while structural reforms will boost potential growth"

— ECB President M. Draghi, Hearing at the Committee on Economic and Monetary Affairs of the European Parliament, Brussels, 3 March 2014

Overview

- ▶ Two main legacies of the crisis for European economy: high public debt and persistently weak economic performance
- ▶ Growth-friendly fiscal consolidation: as \downarrow in the debt-to-GDP ratio progresses, new fiscal room is created to \downarrow tax rates in the long-run
- ▶ Structural reforms: expansion in economic activity increases tax base, thus favoring less (distortionary) fiscal pressure
- ▶ This paper: assess possible synergies across policies, by evaluating the effects of simultaneous implementation of growth-friendly fiscal consolidation and competition-friendly reforms in one European country

Motivation

- ▶ Crisis: challenges for aggregate demand-management tools in euro area. New limits to fiscal and monetary policy (fiscal compact, zero lower bound)
- ▶ Supply-side: historically poor performance in some countries
- ▶ Room for new policy mix: permanent reduction in public debt and increase in competition in services sector, jointly implemented

Contribution

- ▶ Study macroeconomic effects of simultaneously implementing growth-friendly fiscal consolidation and pro-competition reforms in one European country
- ▶ Use a 3-region large-scale New Keynesian dynamic general equilibrium model of one country in the euro area (Home), the rest of the euro area (REA) and the rest of the world (RW) economy, akin to the Eurosystem EAGLE (Gomes et al., 2010)

Results preview

- ▶ Long run: positive effects of debt reduction (\downarrow interest payment, fiscal room for \downarrow taxes). GDP increases by 0.3% (1.2%) in case of labor (capital) tax-based consolidation
- ▶ Service sector reform: positive long-run effects, GDP \uparrow by 1.3%
- ▶ Joint implementation of consolidation and liberalization: more than additive effects
- ▶ Structural reforms allow for \downarrow taxes for given public debt-to-GDP ratio. Increase in GDP: 2.3% (4.9%) if services reform implemented with labor (capital) tax based consolidation
- ▶ Short and medium-term costs of fiscal consolidation can be partially mitigated by joint implementation of reforms

Related literature

- ▶ Macroeconomic effects of structural reforms in euro area: Forni et al. (2010a), Gomes et al. (2013), Cacciatore and Fiori (2013), Lusinyan and Muir (2013)
- ▶ Structural reforms under tight financial conditions: Andrés et al. (2014)
- ▶ Fiscal consolidation: Forni et al. (2010b)
- ▶ Synergies: Fiori et al. (2012), product and labor market liberalisation
- ▶ This paper: joint implementation of reforms after the crisis, explore possible synergies

Road map

- ▶ Model setup: main features
- ▶ Simulation results
- ▶ Long run
- ▶ Short run, transition dynamics

A 3-region DSGE Model (1)

- ▶ A 3-region open-economy model: Home (H), rest of the monetary union (RMU) and rest of the world (RW)
- ▶ Standard New Keynesian open-economy features, nominal and real rigidities
- ▶ Perfectly competitive firms produce two final goods (consumption and investment)
- ▶ Monopolistic firms produce intermediate goods
- ▶ Intermediate tradable and nontradable goods produced with domestic capital and labor, mobile across sectors. Intermediate tradable goods can be sold also abroad

A 3-region DSGE Model (2)

- ▶ Government: 3 sources of revenues (taxes on labour, capital and consumption) and 3 spending items (govt consumption, govt labour and transfers)
- ▶ Fiscal rule to stabilise the debt-to-GDP ratio at desired level \bar{b}^g [Details](#)
- ▶ Monetary authority: move short-term policy rate R according to a Taylor rule (responding to euro-area variables) [Details](#)

Simulated scenarios: setup

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- ▶ Higher substitutability \implies lower markup \implies higher production (for given price)

Long-run effects

- ▶ **Fiscal consolidation:** \downarrow interest payment $\implies \downarrow \tau$ (permanently)
 - ▶ $\downarrow \tau^L$: $\uparrow L^S \implies \uparrow$ capital productivity $\implies \uparrow C, I, L, Y$
 - ▶ $\downarrow \tau^K$: qualitatively similar, $\uparrow I$ larger than before, $\uparrow L^S$ smaller, as investment is now cheaper than labor [Table](#)
- ▶ **Services reform:** firms \uparrow demand for K and L ; households $\uparrow C$, as prices \downarrow
 - ▶ $\uparrow C, I, L, Y$; exports and imports both \uparrow
 - ▶ Terms of trade deterioration, driven by \uparrow price of tradables (complementarity in consumption)
 - ▶ Small spillovers to REA [Table](#)
- ▶ **Joint implementation:** more than additive expansionary effects. Increase in competition $\implies \uparrow$ in tax base. As $b_t^g \downarrow$, larger fiscal room for tax reductions. Overall sizeable effects on GDP (2.3% and 4.9%) [Table](#)

Short-run effects

- ▶ **Fiscal consolidation:** initial \uparrow in tax rates, to permanently reduce public debt-to-GDP ratio [Figure](#)
- ▶ τ^l : GDP \downarrow below baseline for 10 years; C , I , L all \downarrow . Return to steady state once $b_{g,t}$ reduced and labor tax \downarrow [Figure](#)
- ▶ τ^K : similar pattern [Figure](#)
- ▶ Tax-based consolidation: substantial short-run macroeconomic costs, to be compared with long-run benefits (large and permanent)

Short-run effects

- ▶ **Services reform:** Figure
- ▶ GDP: slight \downarrow in 1st year (reflecting \downarrow in C), then \uparrow , driven by I growth
- ▶ Excess supply of services \implies RER depreciation, exports \uparrow
- ▶ Gradual effects: expansionary effects arise 2 years after reform process starts; inflation below baseline for longer

Simulated scenarios: synergies

- ▶ Fiscal consolidation: initial $\uparrow \tau$ has prolonged recessionary effects
- ▶ Medium term: \downarrow in public debt and interest payment allows for permanent $\downarrow \tau$. Expansionary effects via labor supply and investment increases
- ▶ Service sector reform: markup reduction $\implies \downarrow$ price of intermediate nontradable goods $\implies \downarrow$ price of final goods.
 $\uparrow C, I$
- ▶ Implied medium-term output expansion is the source of synergy:
- ▶ Medium-term increase in tax rates is lower
- ▶ Long-run decrease in tax rates is higher

Short-run effects: simultaneous implementation

- ▶ Short-run gains from implementing structural reforms during fiscal consolidation: extra output from services reforms used to reduce taxes earlier and more than before
- ▶ Increase in Home GDP due to reform favours the increase in tax base \implies smaller \uparrow in the tax rate is needed to reduce public debt
- ▶ Path of tax rates is monotonically declining after initial rise, due to monotonic \uparrow GDP, generated by services reforms Figures
- ▶ Similar message if labor or capital tax based consolidation is considered Labor Capital
- ▶ Simultaneous implementation of reforms can benefit Home also in the short and medium term, by limiting initial $\uparrow \tau$ and implied recessionary effects

Conclusions

- ▶ Higher competition in services sector + fiscal consolidation
⇒ higher GDP in the long run
- ▶ Transition costs of fiscal consolidation are substantial, but can be reduced by simultaneous implementation of structural reforms
- ▶ Synergies: increase in tax base due to higher competition allows for (i) smaller increases in tax rates in the short-term and (ii) larger tax reduction in the long-run
- ▶ Further issues and possible extensions: labor market reforms and joint implementation with fiscal consolidation, role of financial conditions

Thanks

A 3-region DSGE Model: fiscal authority

Government budget constraint:

$$\frac{B_{t+1}^g}{R_t} - B_t^g \leq (1 + \tau_t^c) P_{N,t} C_t^g + Tr_t - T_t$$

where $B_t^g \geq 0$ is nominal public debt, C_t^g government purchases, $Tr_t > 0$ (< 0) are lump-sum transfers. Total government revenues T_t :

$$T_t \equiv \tau_t^\ell W_t L_t + \tau_t^k \left(R_t^k K_{t-1} (j) + \frac{\Pi_t^P}{s} \right) + \tau_t^c P_t C_t - \tau_t^c P_{N,t} C_t^g$$

where τ_t^ℓ , τ_t^k and τ_t^c are tax rates on labor, capital and consumption. Debt-stabilizing fiscal rule:

$$\frac{i_t}{i_{t-1}} = \left(\frac{b_t^g}{\bar{b}^g} \right)^{\phi_1} \left(\frac{b_t^g}{b_{t-1}^g} \right)^{\phi_2}$$

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

A 3-region DSGE Model: monetary authority

Set short-term policy rate R_t according to a Taylor rule:

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

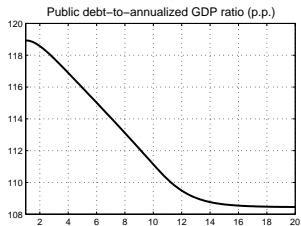
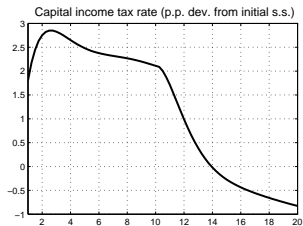
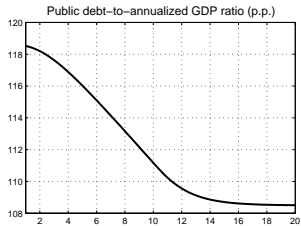
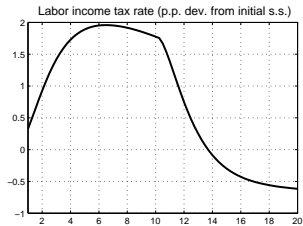
CPI inflation rate is a geometric average of CPI inflation rates in Italy and the REA (respectively Π_t and Π_t^*) with weights equal to the correspondent country size (as a share of the EA):

$$\Pi_{EA,t} \equiv (\Pi_t)^{\frac{s}{s+S}} (\Pi_t^*)^{\frac{S}{s+S}}$$

EA GDP, $GDP_{EA,t}$, is the sum of the Italian and REA GDPs (respectively GDP_t and GDP_t^*):

$$GDP_{EA,t} \equiv GDP_t + rer_t * GDP_t^*$$

Fiscal consolidation



Simulated scenarios: Long-run effects

Long-run effects of fiscal and competition reforms. Main macroeconomic variables

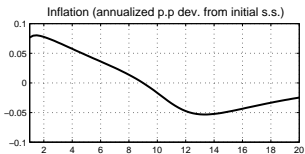
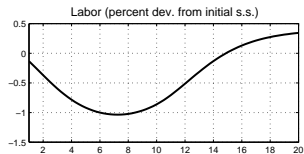
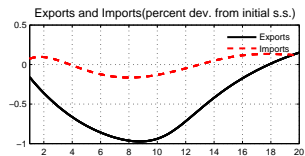
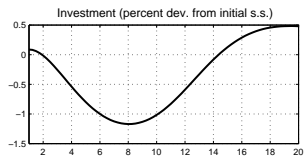
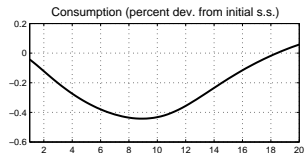
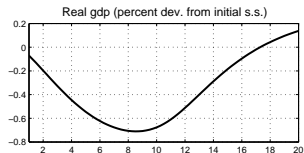
	(a)	(b)	(c)	(d)	(e)
	τ^{ℓ}	τ^k	services	services+ τ^{ℓ}	services+ τ^k
Home					
GDP	0.32	1.17	1.25	2.29	4.92
Consumption	0.35	0.63	0.66	1.76	2.56
Investment	0.24	2.64	1.97	2.74	10.43
Exports	0.35	1.48	0.55	1.65	5.20
Imports	0.11	0.48	0.18	0.54	1.68
Labor	0.40	0.13	0.60	1.88	1.01
Real exch. rate (vis-à-vis REA)	0.17	0.69	1.57	2.11	3.73
Real exch. rate (vis-à-vis RW)	0.17	0.68	1.56	2.10	3.71
Terms of trade (vis-à-vis REA)	0.23	1.00	0.37	1.11	3.50
Terms of trade (vis-à-vis RW)	0.23	0.98	0.36	1.10	3.43
Rest of euro area					
GDP	0.01	0.03	0.01	0.01	0.04

Note: % deviations from initial steady state. For real exchange rate, +=depreciation, for terms of trade

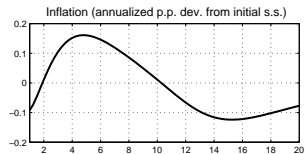
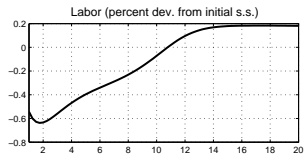
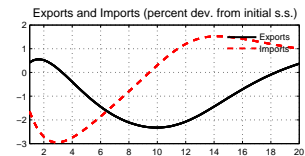
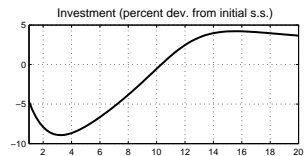
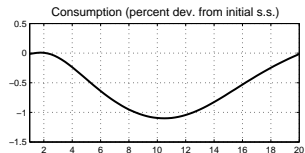
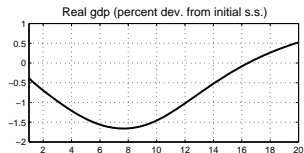
+=deterioration.

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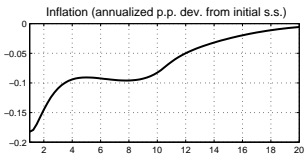
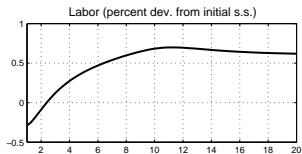
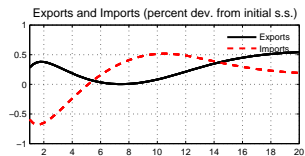
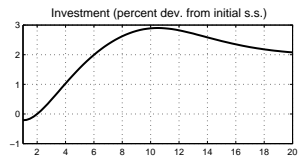
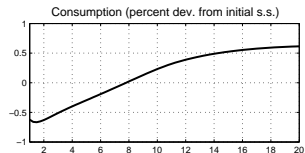
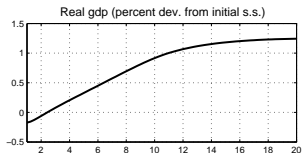
Fiscal consolidation: labor income tax



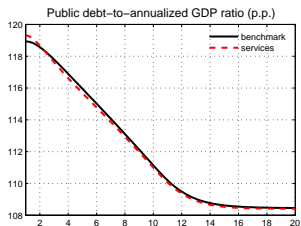
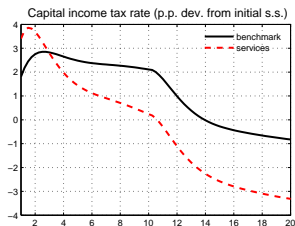
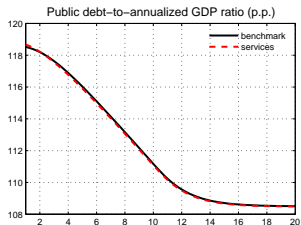
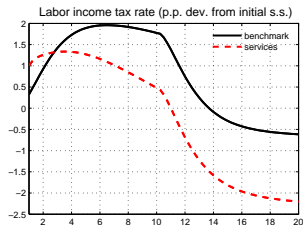
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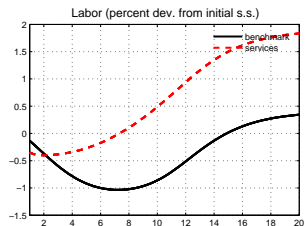
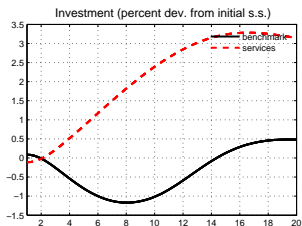
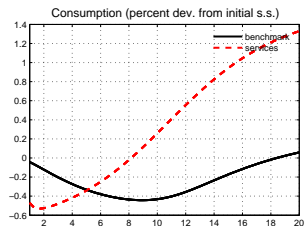
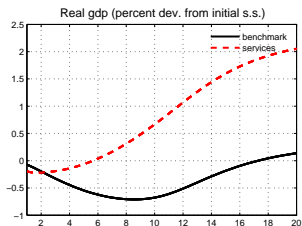
Services reform



Simultaneous implementation of reforms



Simultaneous implementation of reforms



Simultaneous implementation of reforms

