EUROPEAN CENTRAL BANK

EUROSYSTEM

Monetary-Fiscal Interactions and the Euro Area's Malaise

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Introduction

- The euro area recently experienced a period of malaise, with
  - weak economic activity,
  - inflation short of the ECB objective of “below, but close to 2 percent,”
  - ECB policy rates near zero,
  - a sovereign debt crisis.
- A simple model formalizes the idea that monetary-fiscal interactions were important for the recent outcomes:
  - After a recessionary disturbance fiscal policy faces a trade-off between business cycle stabilization and debt sustainability, in particular close to the zero lower bound.
  - With a national fiat currency, the monetary authority and the fiscal authority can coordinate to ensure that public debt will not default.
  - With this arrangement in place, fiscal policy can focus on business cycle stabilization until a recovery has been achieved.
  - In the euro area, the fiscal authorities of the member states have given up the ability to issue non-defaultable debt.

Model overview: the lower bound and defaultable public debt

- The model is based on the standard general equilibrium model with sticky prices.
  - Price setting firms, households who consume, supply labor, and pay lump-sum taxes to *N* fiscal authorities corresponding to imaginary member states of a monetary union (*N = 2*, "North" and "South").
  - A single monetary authority that follows a Taylor rule subject to the **lower bound**.
  - Each fiscal authority issues debt that can **default**.
- Fiscal authority *n* sets its primary surplus S_{nt} according to:

$$\tilde{S}_{nt} = \psi_n + \psi_B \tilde{B}_{n,t-1} + \psi_{Y_n}(Y_t - Y)$$

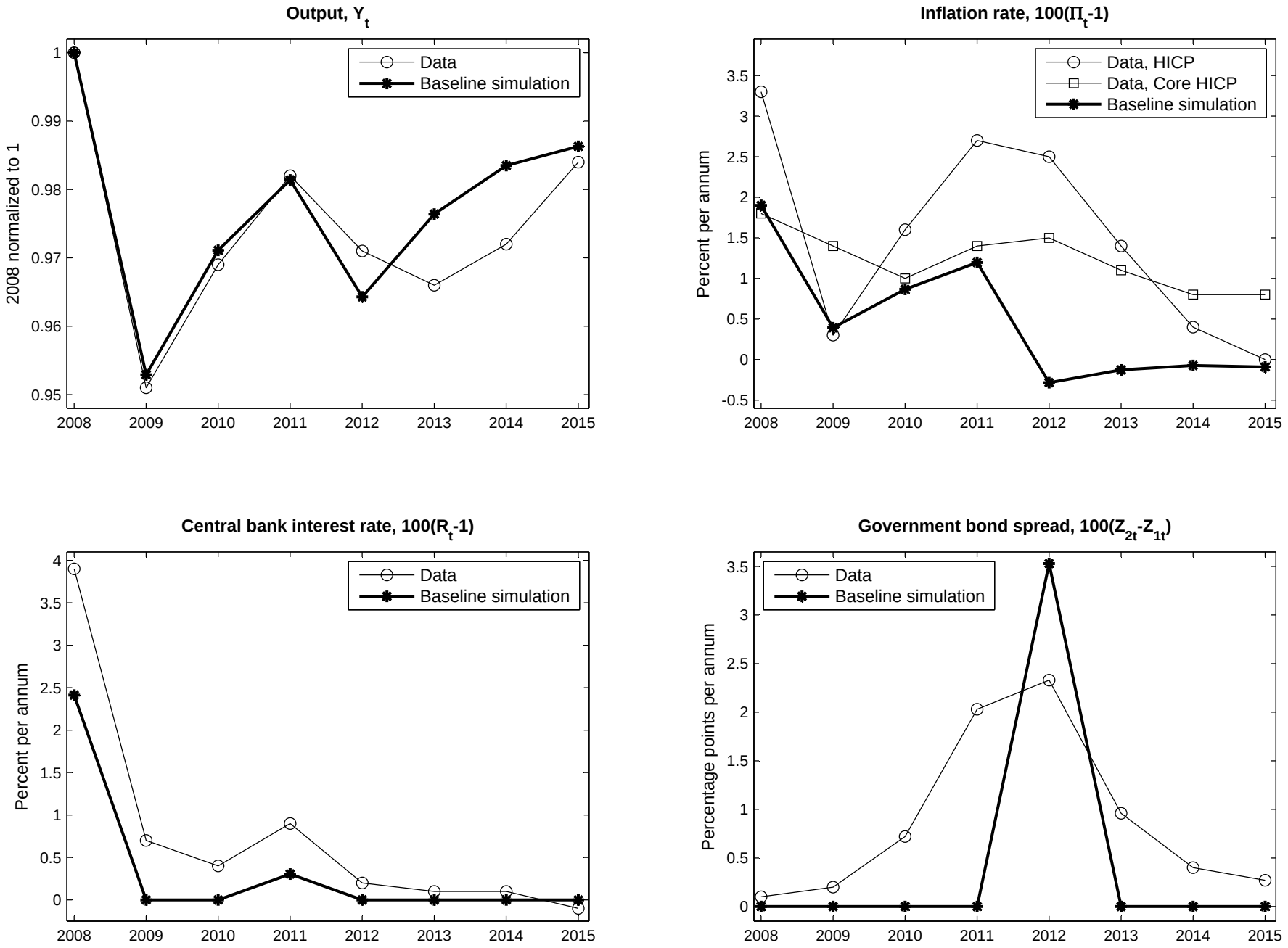
where $\tilde{S}_{nt} \equiv \frac{S_{nt}}{Y_t}$, $\tilde{B}_{nt} \equiv \frac{B_{nt}}{P_t Y_t}$, $\psi_B > 1/\beta - 1$, and faces a **"fiscal limit"**:

  - If $\tilde{B}_{n,t-1} \geq \tilde{B}_{nt}^{max}$ there is default, with a recovery rate $\Delta \in (0,1)$.
  - $\tilde{B}_{nt}^{max}$ i.i.d. uniform on $[\tilde{B}_n^a, \tilde{B}_n^b]$.
  - Default produces no wealth effect.

Baseline simulation: reproducing the main features of the data

- The model has **two steady states**: "intended" and "unintended."
- We study the response to a **discount factor disturbance**, starting from the intended s.s.
  - The response of output, inflation, and the central bank's policy rate is **indeterminate**.
  - In general, the response of the default premia is also **indeterminate**.
- To solve for a unique response to the discount factor disturbance, we introduce two **sunspot shocks**. We also suppose that:
  - The discount factor disturbance occurs in 2009.
  - "North" is the sum of GER, FRA, and NED, and "South" is the sum of ITA and SPA.
- One sunspot shock can occur in each year starting in 2009, so long as the shock has not occurred.
  - After the shock has occurred, the economy converges to the unintended steady state.
  - In the simulation the shock occurs in 2012.
- The other sunspot shock picks a solution for the default premium in South.
  - In the simulation a high default premium is selected in 2012 and a low default premium is selected in 2013.

Figure 3: The baseline simulation versus the data



The policy experiment: a centrally-operated fund

- The fund issues non-defaultable "eurobonds" and purchases national public debt.
  - Initially, the fund holds a fraction $\lambda \in (0, 1]$ of each national public debt.
- After the discount factor disturbance, fiscal authority *n* sets:

$$\tilde{S}_{nt}^{H} = \psi_n + \psi_B \tilde{B}_{n,t-1}^{H} + \psi_{Y_n}(1-\lambda)(Y_t - Y)$$

$$\tilde{S}_{nt}^{F} = \bar{\psi}_n + \psi_B \left[\tilde{B}_{n,t-1}^{F} - \theta_n \left(\sum_n \tilde{B}_{n,t-1}^{F} \right) \right] + \psi_{Y_n} \lambda (Y_t - Y)$$

where $\tilde{S}_{nt}^{H} + \tilde{S}_{nt}^{F} = \tilde{S}_{nt}$, $\tilde{B}_{nt}^{H} + \tilde{B}_{nt}^{F} = \tilde{B}_{nt}$, and $\theta_n = \tilde{B}_{n,0}^{F} / \left(\sum_n \tilde{B}_{n,0}^{F} \right)$.

- The sum of the primary surpluses backing the eurobonds does *not* respond to debt:

$$\sum_n \tilde{S}_{nt}^{F} = \sum_n \bar{\psi}_n + \left(\sum_n \psi_{Y_n} \right) \lambda (Y_t - Y)$$

- The share of each national bond in the fund's assets is constant in the long run.
- After the discount factor disturbance, the central bank's policy rate follows an exogenous path that converges to the intended steady state.

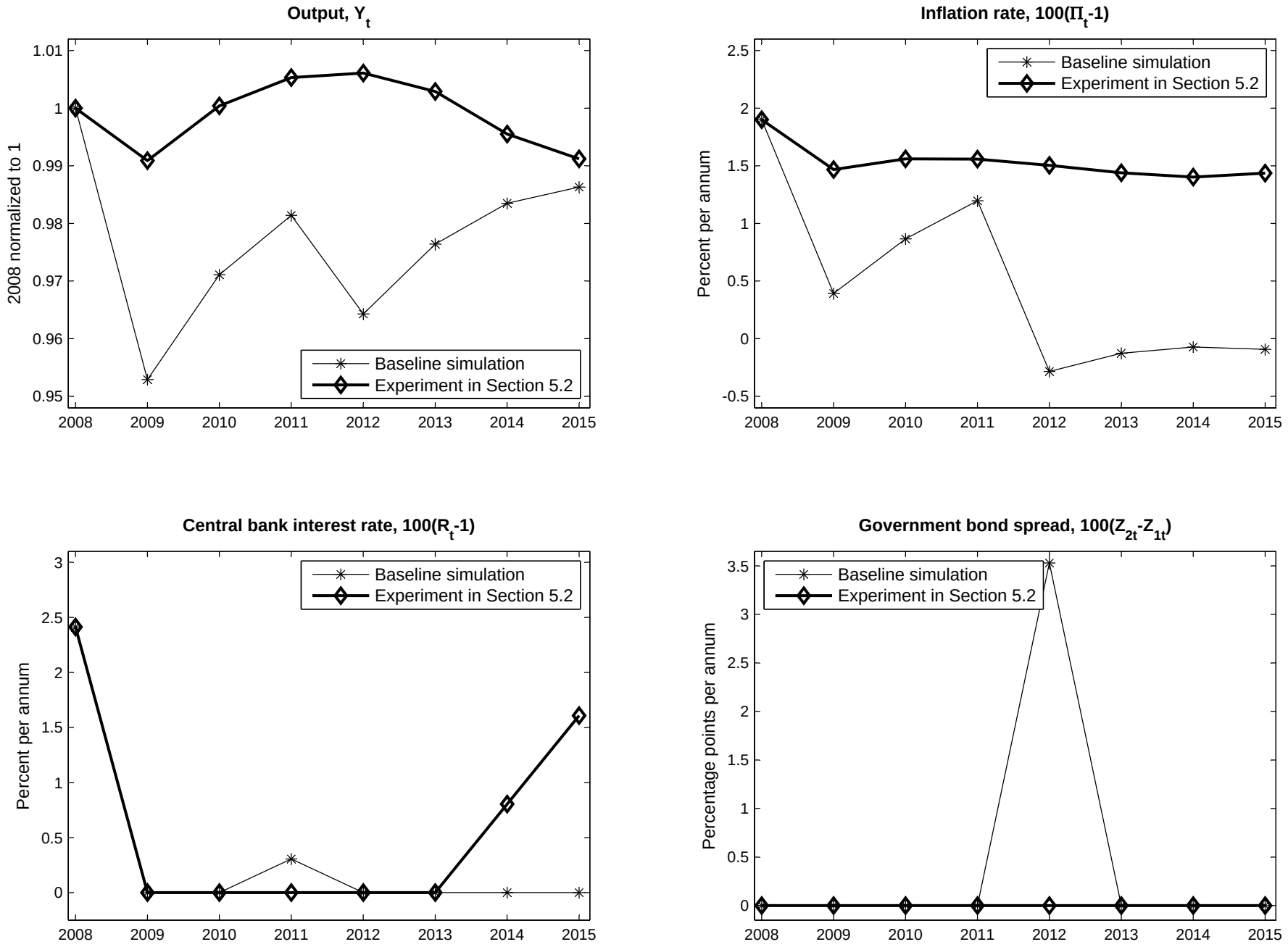
The policy experiment: key mechanism

- In the baseline, the initial fall in the primary surpluses is offset by a rise in future primary surpluses and an increase in the probability of default (in South in 2012).
  - But with non-defaultable public debt, there would have been no need to undo an initial fiscal accommodation.
- In the experiment, an initial fiscal accommodation is never undone.
  - We assume that the part of each national primary surplus flowing to the fund falls in the long run, by 5 percent.
- A decrease in the present value of the primary surpluses flowing to the fund relative to the value of the eurobonds implies – since the eurobonds are non-defaultable – that households are wealthier at a given price level.
- The forward solution of the budget constraint of the fund

$$\frac{\tilde{F}_{t-1}Y_{t-1}}{\Pi_t Y_t} = \sum_{k=0}^{\infty} E_t \left[\beta^k e^{\xi_{t-k}-\xi_t} \left(\sum_n \tilde{S}^F_{n,t+k} \right) \right]$$

lets us find a unique solution for output and inflation. Monetary policy ensures that inflation converges to the central bank's objective.

Figure 4: The policy experiment in Section 5.2 vs. the baseline simulation



The fund and determinacy of national bond yields

- Suppose that, in the absence of the fund, there are multiple equilibria in the market for bonds of fiscal authority *n*, and in one equilibrium the probability of default is zero.

- If the fund purchases a sufficient quantity of bonds at the price free of default premium, the only one equilibrium survives – the equilibrium in which the probability of default is zero.

  – As the fund purchases bonds charging the price free of default premium, the quantity of bonds that must be sold to households falls, and can become insufficient to validate expectations of default.

Quantifying what happens if "things go wrong"

- We have in mind an institutional setup in which the fund refuses to purchase debt of a national fiscal authority that has deviated from its reaction function.
- We refer to a deviation as "default" and examine the consequences for inflation.
- Suppose that South delivers a fraction of the primary surpluses promised to the fund.
  - If South delivers 60% of the promised primary surpluses, the inflation rate in the model jumps temporarily by 120 basis points at an annual rate, to 2.7%.
  - As another example, the same deviation by South with a steeper Phillips curve causes inflation to jump to 5.1%.
- The inflationary effects of a default on the fund diminish if the fund can tax, and disappear if the fund taxes sufficiently:

$$\frac{\tilde{F}_{t-1}Y_{t-1}}{\Pi_t Y_t} = \sum_{k=0}^{\infty} E_t \left[\beta^k e^{\xi_{t-k}-\xi_t} \left(\tilde{S}^F_{t+k} + \sum_n \tilde{S}^F_{n,t+k} \right) \right]$$

  - For example, if South defaults, the recovery rate is 60%, and the fund holds 40% of South's debt, the necessary tax revenue is about 350 billion euros in present value terms.

Conclusions

- The monetary-fiscal interactions in the euro area have consequences for macroeconomic stability.
  - The euro area is exposed to self-fulfilling fluctuations.
  - Effective fiscal stimulus has been difficult to achieve since the onset of the Great Recession.
- The recent macroeconomic outcomes could have been very different if monetary and fiscal policy had been configured differently.
  - The policy experiment in the paper requires only a fairly modest degree of centralization of fiscal decision-making among the member states.