Monetary/Fiscal Interactions with Forty Budget Constraints

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The views expressed herein are those of the authors and not of the Federal Reserve Bank of Minneapolis or the Federal Reserve System.

Motivation

- Monetary and Fiscal policy are connected by a common budget constraint.
  - Unpleasant monetarist arithmetic
  - FTPL
  - "New-style central banking:" in-house fiscal policy by the central bank (Sims, Bassetto-Messer, Reis)
- How does this work in the Eurozone ?
  - 19 National Treasuries
  - European Union
  - 19 National Central Banks (NCBs)
  - European Central Bank

Key Questions

- How does seigniorage flow from the monetary authority to the budget of each country ?
- Who's paying if a member country defaults on its debt ?

QE and default risk in Europe

- Focus on government bonds:
  - PSPP: Public Sector Purchase Programme
  - PEPP: Pandemic Emergency Purchase Programme
- How they work:
  - 10%: ECB buys supranational bonds
  - 10%: ECB buys national bonds
  - 80%: NCBs buy their Treasury's bonds
  - Risk of 80% not supposed to be shared

General Set up

- 2 countries (A and B) populated by a continuum of private households
- Each country has its own Treasury and its own NCB
- NCB A and NCB B are joined in a currency union ('Eurozone')
- We abstract from EU and ECB's budget costraints

Eurosystem's Present Value BC

$$
\begin{aligned}
&\bar{B}^A_{-1} + A_{-1} + \bar{B}^B_{-1}(1 - \delta I_0) \\
&- M_{-1} - X_{-1} + M_0 \frac{R^A_0}{1 + R^A_0} + X_0 \left(\frac{1}{1 + R^X_0} - \frac{1}{1 + R^A_0} \right) \\
+&E_0 \sum_{s=1}^{\infty} z_{0,s} \left[M_s \frac{R^A_s}{1 + R^A_s} + X_s \left(\frac{1}{1 + R^X_s} - \frac{1}{1 + R^A_s} \right) \right] = S^A_0 + S^B_0 \\
+&E_0 \sum_{s=1}^{\infty} z_{0,s} (S^A_s + S^B_s) + \lim_{s \to \infty} E_0 [z_{0,s} (\bar{B}^A_{s-1} + \bar{B}^B_{s-1}(1 - \delta I_{s-1})]
\end{aligned}
$$

Monetary/ Fiscal Interaction

- With a single Eurozone fiscal authority explosive term irrelevant (Modigliani-Miller theorem)

$$
\begin{aligned}
& B_{A,-1} + B_{B,-1}(1-\delta I_0) = T_0^A + T_0^B + S_0^A + S_0^B \\
& + E_0 \sum_{s=1}^{\infty} z_{0,s} \left[T_s^A + T_s^B + S_s^A + S_s^B \right] \\
& + \lim_{s \to \infty} E_0[z_{0,s}(\bar{B}_{A,s-1} + \bar{B}_{B,s-1}(1-\delta I_{s-1}))]
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- Does not matter if CB remits profits to Treasury or keeps them in ever-increasing amounts of assets
- With many different fiscal authorities asymmetries may matter!

NCBs' PVBC

$$\bar{B}_{i,-1}(1-\delta I_0) + A^i_{-1} - M^i_{-1} - X^i_{-1} + \tau^i_{-1}$$
$$+M^i_0 \frac{R^A_0}{1+R^A_0} + (X^i_0 - \tau^i_0)\left(\frac{1}{1+R^X_0} - \frac{1}{1+R^A_0}\right)$$
$$+E_0 \sum_{s=1}^{\infty} z_{0,s}\left[M^i_s \frac{R^A_s}{1+R^A_s} + (X^i_s - \tau^i_s)\left(\frac{1}{1+R^X_s} - \frac{1}{1+R^A_s}\right)\right]$$
$$= S^i_0 + E_0 \sum_{s=1}^{\infty} z_{0,s} S^i_s + \lim_{s\to\infty} E_0[z_{0,s}(\tau^i_s + \bar{B}_{i,s-1}(1-\delta I_{s-1}))]$$

- TARGET2 is debt of variable rate and infinite maturity with unlimited balance
- Consequences of a default by B in $t=0$?

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&= S^i_0 + E_0 \sum_{s=1}^{\infty} z_{0,s} S^i_s + \lim_{s\to\infty} E_0[z_{0,s}(\tau^i_s + \bar{B}_{i,s-1}(1-\delta I_{s-1}))]
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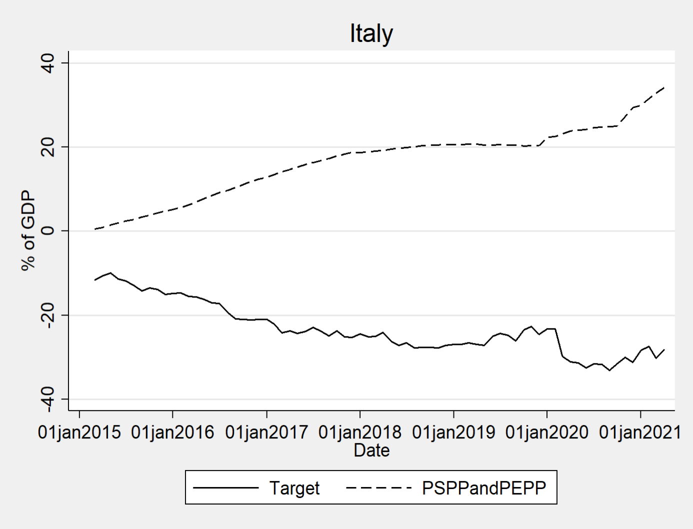
Bank of Italy Positions



Wrapping up

- Assessing risk sharing principles is, in practice complicate
- Coordinating remittance policies is fundamental:
- What happens if neither NCB cuts S_t^i enough?

How does this work in practice

- Bank of Italy buys a bond from Italian bank:
  - BoI gets the bond
  - BoI issues reserves (its own liability)
- Bank of Italy buys a bond from a German bank:
  - BoI gets the bond
  - Bundesbank issues reserves
  - BoI incurs a TARGET2 liability against ECB, Buba a TARGET2 asset against ECB
- Interest rates:
  - BoI or Buba pay interest on reserves
  - TARGET2 balances pay interest at the MRO rate (top of corridor)
  - BoI pockets interest on Italian debt above MRO.