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 constraints
Eurosysten’s Present Value BC

\[ \bar{B}_A^{-1} + A_0 + \bar{B}_B^{-1}(1 - \delta I_0) \]

\[ - M_0 - X_0 + M_0 \frac{R_0^A}{1 + R_0^A} + X_0 \left( \frac{1}{1 + R_0^X} - \frac{1}{1 + R_0^A} \right) \]

\[ + E_0 \sum_{s=1}^{\infty} z_{0,s} \left[ M_s \frac{R_s^A}{1 + R_s^A} + X_s \left( \frac{1}{1 + R_s^X} - \frac{1}{1 + R_s^A} \right) \right] = S_0^A + S_0^B \]

\[ + E_0 \sum_{s=1}^{\infty} z_{0,s} (S_s^A + S_s^B) + \lim_{s \to \infty} E_0 [z_{0,s} (\bar{B}_s^{-1} + \bar{B}_s^{-1}(1 - \delta I_{s-1}))] \]
Monetary/ Fiscal Interaction

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

\[ B_{A,-1} + B_{B,-1}(1 - \delta l_0) = T_0^A + T_0^B + S_0^A + S_0^B \]
\[ + E_0 \sum_{s=1}^{\infty} z_{0,s} \left[ T_s^A + T_s^B + S_s^A + S_s^B \right] \]
\[ + \lim_{s \to \infty} E_0[ z_{0,s}(\bar{B}_{A,s-1} + \bar{B}_{B,s-1}(1 - \delta l_{s-1}))] \]

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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

\[
\bar{B}_{i,-1}(1 - \delta l_0) + A_{i-1} - M_{i-1} - X_{i-1} + \tau_{i-1} \\
+ M_0^i \frac{R_0^A}{1 + R_0^A} + (X_0^i - \tau_0^i) \left( \frac{1}{1 + R_0^X} - \frac{1}{1 + R_0^A} \right) \\
+ E_0 \sum_{s=1}^{\infty} z_{0,s} \left[ M_s^i \frac{R_s^A}{1 + R_s^A} + (X_s^i - \tau_s^i) \left( \frac{1}{1 + R_s^X} - \frac{1}{1 + R_s^A} \right) \right] \\
= S_0^i + E_0 \sum_{s=1}^{\infty} z_{0,s} S_s^i + \lim_{s \to \infty} E_0[z_{0,s}(\tau_s^i + \bar{B}_{i,s-1}(1 - \delta l_{s-1}))]
\]

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• Consequences of a default by \( B \) in \( t = 0 \)?
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Consequences of a default by $B$ in $t = 0$?
NTB_i,−1(1 − δ I_0) + A_i,−1 − M_{i,−1} − X_{i,−1} + \tau_{i,−1}
+ M_0^i \frac{R_0^A}{1 + R_0^A} + (X_0^i − \tau_0^i) \left( \frac{1}{1 + R_0^X} − \frac{1}{1 + R_0^A} \right)
+ E_0 \sum_{s=1}^{\infty} z_{0,s} \left[ M_s^i \frac{R_s^A}{1 + R_s^A} + (X_s^i − \tau_s^i) \left( \frac{1}{1 + R_s^X} − \frac{1}{1 + R_s^A} \right) \right]
= S_0^i + E_0 \sum_{s=1}^{\infty} z_{0,s} S_s^i + \lim_{s \to \infty} E_0[z_{0,s}(\tau_s^i + \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 \( t = 0 \)?
Bank of Italy Positions
Wrapping up

- Assessing risk sharing principles is, in practice, complicated.
- 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.