“Government Debt Management at the ZLB”
by Greenwood, Hanson, Rudolph, Summers
Discussion

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Trade off

- Trade off: cost of borrowing vs budget stability
- Literature on optimal fiscal policy with maturity choice
- Emphasize budget stability
- Government debt is not state contingent, but long-term debt is a way to add state contingency
Hedging

- Dynamic model with no capital, taxes chosen optimally to finance primary balance $x_t$
- Only a consol and a one period bond

$$q_t^L \left( b_t^L - b_{t-1}^L \right) + q_t^S b_t^S + x_t = \kappa b_{t-1}^L + b_{t-1}^S$$

- To simplify suppose at $t$ zero issuance of long term and short term debt
- Perturb the plan to reduce long term debt by $1$, finance it with short term debt
Hedging

- Marginal effect on welfare

\[ E_t \left[ \lambda_{t+1} \left( \frac{q_{t+1}^L + \kappa}{q_t^L} - \frac{1}{q_t^S} \right) \right] \geq 0? \]

- Where \( \lambda_{t+1} \) is the marginal cost on welfare of increasing the primary deficit by $1
- Captures distortionary cost of taxation
- If no tax distortions \( \lambda_{t+1} = 0 \) (Ricardian equivalence)
- If issuances are positive, monopolistic terms arise (especially important under no commitment)
Optimal maturity

Figure 2: Debt Positions Providing Full Insurance

Notes: The figure shows the short-term (dashed line) and long-term (solid line) debt positions required to provide full insurance, as a function of the standard deviation of the underlying shock.

Position of about -300% of GDP and a positive long-term debt position of a similar magnitude. These large positions, which are consistent with the results of Angeletos (2002) and Buera and Nicolini (2004), are due to the fact that the variation in short-term interest rates captured by the variation in $c_1/c_2$ in the efficient equilibrium is not substantial enough to be able to facilitate full hedging with smaller debt positions.

What is the welfare benefit of choosing these massively tilted debt positions? One way to explore this question is to compare welfare under the optimal policy to the best possible equilibrium in a scenario in which the government is constrained to issuing consols, that is, a 14 This observation explains why full hedging requires smaller positions as the volatility in public spending rises.

Though an increase in public spending volatility implies an increase in the volatility of the deficit (which would push towards larger debt positions), it also implies an increase in the volatility of the short-term interest rate (which would push towards smaller debt positions). The figure shows that the second effect dominates in this simulation.

Figure : Optimal maturity under commitment (Debortoli, Nunes, Yared 2015)
Hedging (continued)

• Why?
• Reason 1:
  • model does not generate large (realistic) excess return

$$E_t \left[ \frac{q_{t+1}^L + \kappa}{q_t^L} - \frac{1}{q_t^S} \right]$$

• so it’s not cheaper to borrow short

• Reason 2:

  • model driven by shocks to $g_t$, when $g_t$ goes up interest rates go up, $q_{t+1}^L$ goes down, $\lambda_{t+1}$ goes up
  • so long term borrowing is a good hedge against $g_t$ shocks
Hedging (continued)

- Greenwood, Hanson and Stein (2015) has similar hedging properties
- But excess return is large and there is additional welfare gain from supplying liquidity

\[ E_t \lambda_{t+1} \left[ \frac{q_{t+1}^L + \kappa}{q_t^L} - \frac{1}{q_t^S} \right] + \frac{\partial U}{\partial b_t^S} \]

- So trade off goes more in favor of short
- Question: what are the hedging benefits of long?
  - It depends on shocks, if mostly shocks to \( g_t \) (wars) negative correlation \( q_{t+1}^L \) and \( \lambda_{t+1} \)
  - If shocks mostly due to recessions (and flight to safety) probably opposite correlation
Money parallels

- Connection to Del Negro and Sims (2015)
- They focus on balance sheet of central bank alone, long-term and short-term
- Positive shock to interest rates that leads exactly to losses contemplated above
- “a central bank’s ability to earn seigniorage can make it possible for it to recover from a situation of negative net worth at market value without recapitalization from the treasury”
- If $b_t^S$ grows at same rate of GDP and $1/q_t^S$ is lower than the growth rate of GDP then we can have

$$q_t^S \frac{b_t^S}{b_{t-1}^S} - 1 > 0$$

(fiscal free lunch, not unlike seignorage revenue)
More comments

- What is special about the government ability to issue liquid short-term liabilities?
- Ability to avoid runs (must be connected to credible monetary institutions)
- However, historically a consistent fraction of liquid short-term liabilities issued by banks, backed by real loans
- Pushing the logic of this approach can lead to purely gov’t supplied liquidity (possibly with some form of narrow banking)
- Important open question: is there something good about having the private sector be part of the game? (One example where yes: Diamond-Rajan)