

Faraglia, Marcet and Scott: In Search of a Theory of Debt Management

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May 2008

Overview

“Complete market theory of the maturity structure” generates quantitatively implausible results

Discussion

- Theoretical background, main insights
- Thoughts

Theory

Ramsey policy in Lucas and Stokey (1983)-type model smoothes tax distortions by means of state contingent debt

One issue: Time consistency

- Can Ramsey policy be rendered time consistent, using state contingent debt of all maturities?
- Yes; appropriate maturity structure fully insures multiplier of implementability constraint (Lucas and Stokey, 1983)

Another issue: Implementability (disregarding time consistency)

- Can rich maturity structure substitute for lack of state contingent debt?
- Yes; appropriate maturity structure replicates state contingent value of debt (Gale, 1990; Angeletos, 2002)
- Shocks affect equilibrium consumption, interest rates; response of debt price varies by maturity

Quantitative Implications

Central problem

- Response of debt price varies by maturity, but not much
- Implausibly (?) large gross positions required to replicate desired state contingent payoffs

Fixes

Introducing capital does not help

- Capital accumulation margin dampens effect of shocks on consumption and thus, interest rates
- This increases the gross positions required

Introducing habits does not help either

- Habits increase volatility of kernel and thus, reduce size of required gross positions
- However, implied positions are very volatile

Ruling out debt buyback

- When issuing new debt to generate desired net exposure, government now must account for inherited maturities (which cannot be redeemed prematurely)
- This additional constraint does not undermine insurance, but may render dynamics of maturity positions unstable
- Quantitatively, ruling out debt buyback does not help either

What Next?

Adding microfoundations?

- Modeling sources of market incompleteness might reduce equilibrium gross positions (Faraglia, Marcet and Scott)

Adding microfoundations might backfire

- E.g., moral hazard—no state contingent debt since government could manipulate the state (cf. GDP-/inflation-indexed bonds in Argentina)
- Why should investors buy long-term debt if its payoffs replicate those of state contingent debt?

Adding microfoundations might help

- E.g., lack of commitment to debt repayment generates plausible maturity structure (Niepelt, 2008)
- E.g., lack of commitment to taxes (cf. Lucas and Stokey (1983); cf. $\tau^k = 0$ result in model with capital)?

In any case, adding microfoundations along the lines suggested above pushes the insurance motive of debt maturity policy in the background

Two broader questions in that context

First, how important is the insurance motive of debt policy?

- Not that important in baseline models

(Standard asset pricing model suggests small benefits from more than partial insurance; cost of state contingent inflation under sticky prices dominates benefits from insurance (Siu, 2004))

- Irrelevant in the minds of treasury officials

Second, how important are GE effects for insurance purposes?

- Probably even less important than in the model (cf. small open economy)
- Other factors rendering debt implicitly state contingent are likely to dominate (inflation, exchange rates, ...)
- Why not take a more empirical approach, conditioning on observed rather than model generated asset price volatility to derive optimal government portfolios, as in Bohn (1990)?

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References

- Angeletos, G.-M. (2002), 'Fiscal policy with noncontingent debt and the optimal maturity structure', *Quarterly Journal of Economics* **117**(3), 1105–1131.
- Bohn, H. (1990), 'Tax smoothing with financial instruments', *American Economic Review* **80**(5), 1217–1230.
- Gale, D. (1990), The efficient design of public debt, *in* R. Dornbusch and M. Draghi, eds, 'Public Debt Management: Theory and History', Cambridge University Press, Cambridge, England, chapter 2, pp. 14–47.

- Lucas, R. E. and Stokey, N. L. (1983), 'Optimal fiscal and monetary policy in an economy without capital', *Journal of Monetary Economics* **12**(1), 55–93.
- Niepelt, D. (2008), Debt maturity without commitment. Mimeo, Study Center Gerzensee.
- Siu, H. E. (2004), 'Optimal fiscal and monetary policy with sticky prices', *Journal of Monetary Economics* **51**(3), 575–607.