A Shadow Rate New Keynesian Model

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Summary

- Contribution to theoritical analysis:
  1. Standard New Keynesian model at the ZLB has counterfactual implications: correct it
  2. Modelling unconventional monetary policy with minimum deviation from the standard model
- Contribution to empirical analysis:
  1. Establish that the shadow rate can be used as a measure of unconventional monetary policy

Comment I

Shadow rate Taylor rule estimate:

$$s_t = \phi_s s_{t-1} + (1 - \phi_s)[\phi_y(y_t - y_t^n) + \phi_\pi \pi_t + s]$$

s_t = fed funds rate during normal times. Sample period 1954Q1-2016Q3

- same parameters during the entire sample period? passive before Volker and active after Volker
- May want to estimate the Taylor rule from 1982 to 2008 and the shadow rate taylor rule from 2008 to present, compare
- Or use method such as Clarida, Gali, and Gertler (2000)
- Or estimate the parameters using a structural model under different sample periods, and compare (similar to Boivin and Giannoni, 2006 ReStat)

Comment II

Mapping QE to Shadow rate New Keynesian Model

- QE operations are associated with a lower risk premium (empirical evidence)
- However, where does the risk premium come from? Government bonds risk? Corporate bonds risk? (there is no default)

Comment III

Government spending shocks during ZLB:

- standard New Keynesian model: increasing inflation and hence lowering the real interest rate, then consumption is stimulated
- shadow rate model: the shadow rate rises to fight against inflation, crowing out private consumption

However, according to Figure 2, the American Recovery and Reinvestment Act of 2009 (ARRA) was associated with a drop in the shadow rate.

Comment III

Figure 2: Shadow rate and Fed's balance sheet