Liquidity Traps and Monetary Policy: Managing a Credit Crunch

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Overview

- Study monetary/fiscal policies after credit crunch at ZLB
  - no sticky prices
  - heterogeneous entrepreneurs collateral constrained
  - tighter constraint affects productive, reduces TFP, Y
- Study 2 policies:
  1. No monetary intervention: deflation, then inflation
     - costly if nominal debt – redistributes away from productive
  2. Constant, low inflation target
     - Less misallocation – lower TFP decline, less severe recession
     - Prevent real rate from declining, prolong recession

Intuiton from real model, Moll 2012

- Entrepreneurs heterogeneous in productivity, z:

$$\max_{c_t, a_{t+1}} \sum_{t=0}^{\infty} \beta^t \log(c_t)$$

- Technology: $y_t = zk_t$. Friction: $k_t \leq \lambda a_t$, $\lambda \geq 1$

- Budget constraint:

$$c_t + a_{t+1} = \max_{k_t} (z - r_t)k_t + (1 + r_t)a_t$$

- Solution: $k_t = \lambda a_t$ for $z > r_t$, 0 otherwise

- Return on a: $R_t(z) = \lambda \max(z - r_t, 0) + 1 + r_t$

Intuition from real model, Moll 2012

$$\max_{c_t, a_{t+1}} \sum_{t=0}^{\infty} \beta^t \log(c_t)$$

s.t.

$$c_t + a_{t+1} = R_t(z) a_t$$

- Solution: $a_{t+1} = \beta R_t(z) a_t$

Intuition from real model, Moll 2012

- Equilibrium r_t given $g_t(z,a)$

$$\int_z \int_a k_t(z,a) g_t(z,a) \, da dz + B_t = \int_z \int_a a g_t(z,a) \, da dz = A_t$$

$$\lambda \int_{z \geq r_t} \int_a a g_t(z,a) \, da dz = A_t - B_t$$

- Higher B – higher r

Intuition from real model, Moll 2012

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- Higher B – higher r

Intuition from real model, Moll 2012

- Higher B – higher r
- Two effects on Y:
  - higher TFP – unproductive drop out
  - lower K – high r reduces $R_t(z) = \lambda(z - r_t) + 1 + r_t$
  - overall reduces Y

Monetary model

- Flex. prices: $(\Delta M, i)$ alone small effect on allocations
  - But fiscal policy (ΔB) changes r
- Suppose $r^* < 0$ – e.g. constrained economy
- Suppose $\pi = 0$ – bad monetary policy
  - ZLB $(i \geq 0)$ implies $r \geq -\pi = 0 > r^*$
  - Need to increase B to implement $i = 0$ and $\pi = 0$:
  - Higher r implies drop in Y relative to $r = r^*$

Key lessons:

- Strict low π targeting bad idea
  - With ZLB, does not allow r to adjust
  - Amplifies effect of credit crunch
- Tradeoff btw current and future Y declines
- Nature of government transfers important

Comparison to NK models: inflation

- NK models: $\pi_t = \kappa y_t + \beta \pi_{t+1}$
- Low inflation due to price stickiness + lack of commitment
  - not poor choice of M.P.
- Question in NK: what is optimal policy given constraints?
- BN: ZLB not an actual constraint on policy
  - E.g., choose high i and low π – same r
  - Friedman rule optimal
  - Unlike NK, no distortions from non-zero π
  - Such distortions motivate π targeting in NK models
- But very similar lesson: want higher inflation at ZLB

Comparison to NK model: ↑ Fed balance sheet

- NK models: banks constrained, don't lend entrepreneurs
  - E.g. Gertler-Karadi: $k_t \leq \lambda a_t$, k_t bank loans
  - Implies $R_{k,t} - r_t$ higher when lower λa_t
  - Direct Fed loans reduce spreads: $K = k^{bank} + k^{Fed}$
  - Rationale for MBS etc. purchases
- BN would work similarly:
  - Lump-sum transfers vs. transfers targeted to entrepreneurs
  - Even lower Y declines if target to high z
- High debt, r not necessarily bad – inefficient transfers are

Questions, comments

- What is role of transaction frictions?
  - Are Y, K, TFP responses affected?
  - Cashless limit?
- What is optimal policy?
  - Uninteresting in current version: lots instrum., commit.
  - No cost inflation
  - Restrict instruments and study optimal responses
  - Model source of $k \leq \lambda a_t$, cost of π

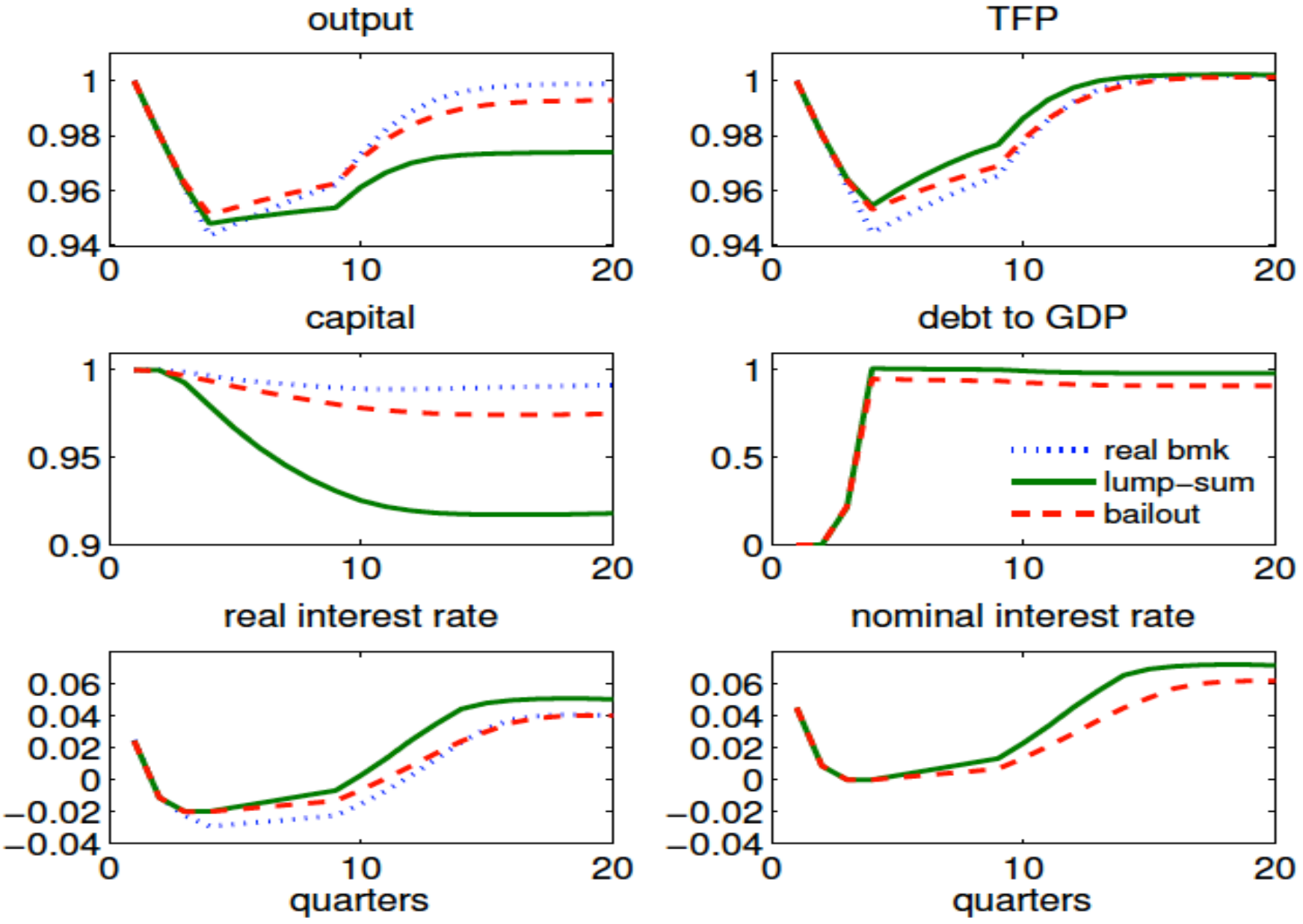
Questions, comments

- Study optimal monetary policy (M, i) given fiscal (B)
- Are CRS, no uncertainty important for results?
  - high z never grows out of credit constraint
  - high r unambiguously increases spreads
  - with DRS high r allows to quicker grow out of CC?
  - Bewley-Ayagari-McGrattan intuition on optimal B and r?

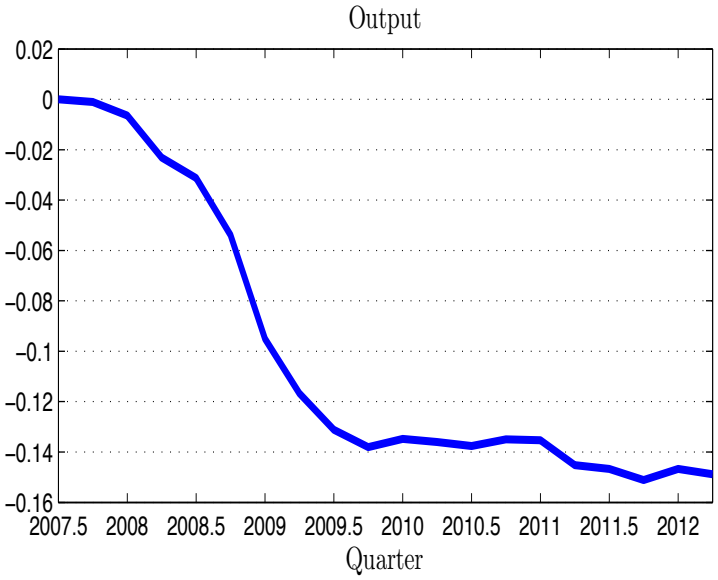
Questions, comments

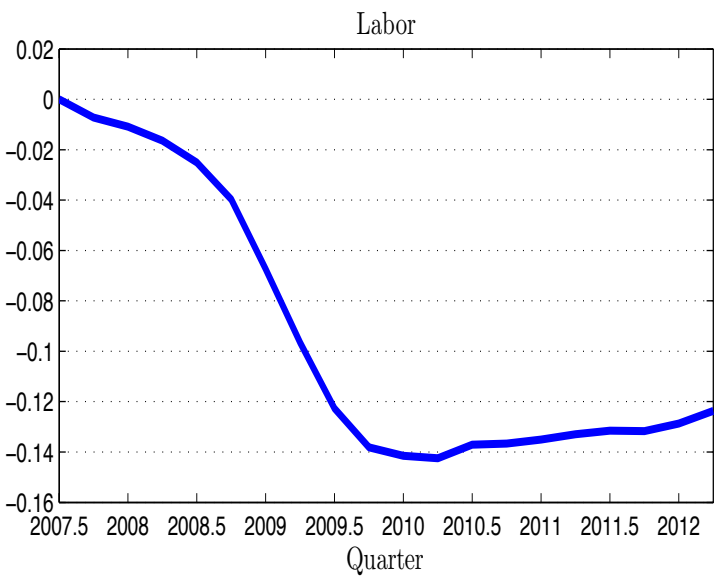
- Take a stand: positive or normative?
  - Study policy in an alternative non-NK environment?
  - Or argue model describes recent U.S. experience?
    - low π, high debt?
    - and therefore Fed made bad mistakes
    - contrary to what NK model suggests
    - quantitative evidence BN vs. NK?

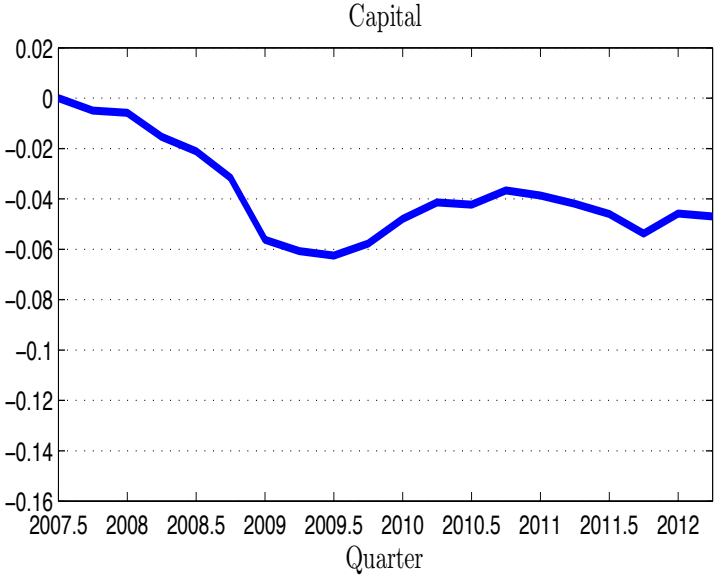
BN recession

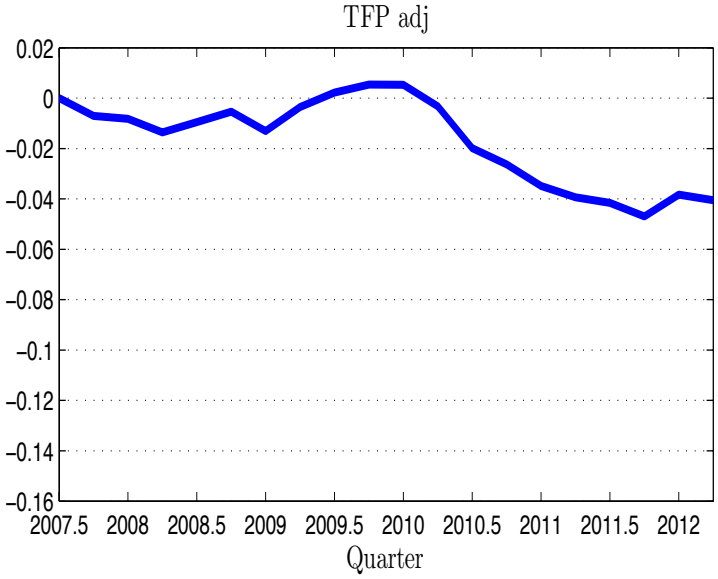


U.S. recession









Conclusions

- Overall: excellent, important paper
  - Closed-form solutions show mechanism very transparently
  - Explicitly model source of ZLB, decline r^*
  - Important interactions btw π and r^*
  - Raises lots of interesting questions
- One of few to explicitly introduce heterogeneity in monet. model
  - Striking feature recession: differential responses to CC
  - Model can inform on how M.P. can deal with heterogeneity