"Optimal Bank Reserve Remuneration and Capital Control Policy" by Chun-Che Chi, Stephanie Schmitt-Grohè and Martin Uribe

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Introduction

- Previous literature: Private agents overborrow compared to the second-best
  - e.g. Bianchi (2011) among others
- This paper:
  - If bank intermediation channel is introduced to the model, can the key result (overborrowing) be overturned (underborrowing)?
- This discussion:
  - What drives the results, is it the cost of intermediating loans or the benefits of reserves?
  - What banking structure give rise to over/ or underborrowing?

Model

- Households maximize $E_0 \sum_t^\infty \beta^t U(c_t)$ subject to
  - Budget constraint
  - Borrowing constraint $l_t \leq \kappa(y_t^T + p_t y_t^N)$
- Banks maximize
  $\pi_{t+1} = (i_t^l - i_t^d) l_t + (i_t^r - i_t^d) r_t - (1 + i_t^d)\Gamma(l_t, r_t)$,
- Foreigners receive (from banks) $1 + i_t^d = (1 + \tau_t^c)(1 + i^*)$
- Gov't budget constraint
  $(1+i_{t-1}^r) r_{t-1} + \Gamma^r(r_t) = \tau_t(y_t^T + y_t^N + \pi) + \tau_{t-1}^c (1+i_{t-1}^*) d_{t-1} + r_t$
- Economy-wide resource constraint
  $c_t^T + (1 + i_{t-1}^*) d_{t-1} = y_t^T - \Gamma(l_t, r_t) - \Gamma^r(r_t) + d_t$

Constrained optimal allocations

Optimization problem

$$max_{c_t^T, d_t, l_t, r_t} E_0 \sum_t^{\infty} \beta^t U(c_t)$$

$$s.t. \quad c_t^T + (1 + i_{t-1}^*) d_{t-1} = y_t^T - \Gamma(l_t, r_t) - \Gamma^r(r_t) + d_t$$

$$d_t = l_t + r_t + \Gamma(l_t, r_t)$$

$$l_t \leq \kappa [y_t^T + A(c_t^T, y_t^N) y_t^N]$$

Planner's Euler condition (l_t), assuming $\mu_t = \mu_t^G = 0$

$$U_{c,t} = \beta E_t [U_{c,t+1} + \mu_{t+1}^G \kappa \frac{\partial A(\cdot)}{\partial c_{t+1}^T} y_{t+1}^N][(1 + i_t^*)(1 + \Gamma_{l,t})]$$

$\rightarrow$ Absent inter-mediation costs, $\Gamma(l_t, r_t)$, and reserve-facility costs, $\Gamma^r(r_t)$, the maximization problem and the optimal allocations reduce to those in Bianchi (2011).

Key result and intuition

- Key result: Under plausible parameterization of the economy: Private agents underborrow compared to the social optimum
- Intuition: Essentially, when negative shock hits and constraints bind, reserve remuneration can support household borrowing

Comment I: Costs of intermediation vs benefits of reserves

- If reserves play **no role** in the model...
  - ...overborrowing result is amplified (shown above) because...
  - ...more borrowing increases intermediation costs (uninternalized by private agents)
- Role of reserves in the model
  - more reserves reduce the intermediation costs because...
  - ...by supplying more reserves, the government can make intermediation less costly and potentially overturn the result (like a bailout)
- Intermediation cost pushes the result toward overborrowing vs reserve benefits push the result toward underborrowing, how do the assumptions of the cost function affect the net outcome?

Comment II: Modeling of bank intermediation channel

- As the assumptions on intermediation costs are crucial...
  - ...what types of bank models give rise to such functional forms?
    - some could amplify overborrowing
      (e.g. too big to fail $\rightarrow$ low default risk $\rightarrow$
      low benefits from reserves),
    - others could yield underborrowing

Summary

- Very interesting paper that introduces an important element in the SME framework in a very neat way...
- ...and asks an important question
- Key to understand: What is the role of the **cost of intermediation** vs the **benefits of reserves**
- Interesting to see how different modeling of the banking sector contribute to the under/overborrowing result