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A DSGE model of a small open economy with
1. Bank capital requirements
2. Financial frictions → Bank capital channel, endogenous defaults and lending spreads
3. Other real and nominal rigidities
4. Monetary Policy

• Intended as a ‘platform’ for use in practical macroprudential policy making
• Amplification and rich dynamics
Financial Frictions: Entrepreneurs

• Entrepreneurs borrow from banks using nominal, non-state contingent debt
  – Aggregate and idiosyncratic productivity shocks
  – Default can occur and is costly → one reason for lending spreads
  – Contract exposes the banks to aggregate risk.
  
  • Different from BGG, but similar to Christiano, Motto Rostagno and others.
Financial Frictions: Banks

• Banks make loans to entrepreneurs
• Funded by inexpensive short-term debt from abroad and more expensive equity, owned by households (or foreigners).

• Bank Capital Regulation
  – Minimum required ratio of bank equity to loans
  – If bank equity falls below this minimum, there is a regulatory penalty (deadweight cost)
  – This penalty is sometimes incurred because…
Financial Frictions: Banks

- Frictions in the market for Bank Equity:
  1. Bank cannot *immediately* raise equity in response to defaults.
     - So banks optimally hold a precautionary buffer of excess capital to minimize the risk of capital inadequacy (Milne, Van den Heuvel) (→)
  2. Households pay a cost when the adjust their bank equity holdings.
     - Reduced form adjustment cost.
     - Captures dividend smoothing: the cost is minimized when banks pay out a constant fraction of their gross earnings as dividends.
The Bank Capital Channel

Shocks $\rightarrow$ bank capital $\rightarrow$ lending $\rightarrow$ real economy

Need 3 failures of M-M for a bank capital channel:

1. Bank capital is needed for lending due to a friction at the bank level
   - Here: Regulatory capital requirements

2. The market for bank equity is imperfect
   - Here: Raising equity is subject to a delay and adjustment costs $\rightarrow$ lending spread depends on bank capital

3. Bank lending matters
   - Here: Banks have a funding advantage – only they can borrow cheaply from abroad.
Model: The Mechanism

Example: Adverse Bank Capital shock
→ Higher risk of capital inadequacy
→ Banks lend less and increase lending spread
  • Both to *limit*, and be *compensated* for, the higher probability of paying the regulatory penalty.
→ Lower investment
→ Lower output and employment

• Lending spread increases more than pure credit risk spread.
• What happens to the price of physical capital?
Comments

• Great to see a general equilibrium model with an occasionally binding capital requirement and a bank capital channel, and...

• Macroprudential and monetary policy.

• No explicit rationale for capital regulation, so no welfare analysis.

• Solving is numerically challenging.

• The model has a lot going on.

• Some parts are still missing from the paper.
Advice

• Dig deeper into the mechanism.
• Show returns (first moments and response) and the second moments of the model.
• Consider a stripped down version for exposition?
Technical Comment

• Bank maximization problem

$$\max E_t \left[ \frac{R_{t+1}L_t - R_{F,t}(L_t - E_t) - \nu L_t \chi_{t+1}}{R_{E,t+1}} \right] - E_t$$

with $$\chi_{t+1} = I\{R_{t+1}L_t - R_{F,t}F < \gamma R_{t+1}L_t\}$$

• Discounting by alternative return on equity is correct only in a nonstochastic environment.

• Use instead HH IMRS, adjusted for equity adjustment cost.