Discussion of:

Aggregate Bank Capital and Credit Dynamics

by

Nataliya Klimenko, Sebastian Pfeil

Jean-Charles Rochet, and Gianni De Nicolo

Discussant: Dimitri Vayanos

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This Paper

- Dynamic equilibrium model with banks.
- Four types of agents: firms, banks, central bank, households.
- Key state variable: aggregate equity capital of banks.
- Key mechanism:
  - Lower capital $\Rightarrow$ Banks can lend less $\Rightarrow$ Equilibrium lending rates increase.
  - Lending rates feedback into dynamics of capital $\Rightarrow$ Self-correcting dynamics.
- Normative analysis (in addition to positive one):
  - Constrained-efficient lending policy of banks.
  - Effect of capital requirements.
- Beautiful and tractable framework!

Agents

- Firms:
  - Heterogeneous productivities.
  - Consume profits before borrowing again in next period. $\Rightarrow$ Short lived (OLG).
- Banks:
  - Liabilities: Debt (deposits) and equity from households.
  - Assets: Loans to firms and reserves in central bank.
  - Households maximize bank value by choosing lending, dividend, and recapitalization policy.
  - Recapitalization involves an exogenous proportional cost.
- Central bank:
  - Pays an exogenous rate r on reserves.
  - No constraint on reserves (can be negative).
- Households:
  - Receive a non-monetary utility flow from deposits.
  - Discount future at rate $\rho > r$.

Comments

- Is model really about intermediation?
- Analogies with asset market models.
- Empirical validity.
- Welfare analysis.

Is Model Really About Intermediation?

- Opportunity cost of bank funding is rate r on reserves.
  - Reserves are unconstrained and can be negative.
- Deposits play no major role and can perhaps be taken out of the model.
  - They are constant over time.
- Model is equivalent to one where:
  - There are no banks.
  - Households:
    - Lend to firms from their own wealth ("bank capital").
    - Can exchange their wealth into consumption ("dividends").
    - Can exchange consumption into wealth ("recapitalization") at a proportional cost.
    - Can borrow or lend at rate r.

Analogies with Asset Market Models

- Kondor-Vayanos (working paper).
- Arbitrageurs trade with hedgers.
- Arbitrageurs:
  - Infinitely lived.
  - CRRA preferences (risk-neutral to match this paper).
  - Can exchange their wealth into consumption, but not vice-versa (infinite cost of recapitalization).
  - Can borrow or lend at rate r.
- Hedgers:
  - Short lived (OLG).
  - Random endowment generates hedging motive.
- Assets:
  - Short-lived contingent claims or long-lived assets.
- Close analogies:
  - Key state variable: aggregate wealth of arbitrageurs.
  - Key mechanism: Low wealth $\Rightarrow$ High risk premia $\Rightarrow$ Self-correcting dynamics.
  - Closed-form solutions for $r = 0$, as in this paper.
  - Closed-form solutions include stationary distribution of wealth $\Rightarrow$ Should be possible to also derive in this paper?

Empirical validity

- Two empirical predictions:
  - Lending rate is a decreasing function of bank capital.
  - Market-to-book ratio for banks is a decreasing function of bank capital.
- First prediction sounds plausible, but I have doubts about second.
- Example: Greek banks.
  - Market-to-book ratio is at a historic low.
  - Capital is also low.
- How to generate an increasing relationship between market-to-book ratio for banks and bank capital?
  - Persistent shocks to distribution of firms productivity.

Welfare Analysis

- Welfare function adds utility of households/banks and firms.
  - Firms in a given period are added with equal weights.
  - Firms across periods are discounted at ρ.
  - Why use those particular welfare weights?

- Externality 1: If banks lend less, rates increase, and this increases welfare because banks become richer.
  - Why not transfer funds from firms to banks directly?
  - Is it possible to show Pareto improvements?

- Externality 2: Individual bank has different risk aversion than social planner.
  - Underlying mechanism is unclear. Why do risk aversions differ?
  - Is it because if banks lend less, this affects their aggregate capital in subsequent states?
  - Why does effect depend on aggregate capital of banking system?
    - Too much lending when capital is low.
    - Too little lending when capital is high.

Relationship to Literature

- Large literature – mention just two papers.

- Gromb-Vayanos (2002).
  - Arbitrageurs take too much risk when their leverage is high and vice-versa.
    - High leverage $\Rightarrow$ Fire-sales if bad shock $\Rightarrow$ If take more risk, depress price at which other arbitrageurs are selling following bad shock $\Rightarrow$ Too much risk.
    - Low leverage $\Rightarrow$ Buy if bad shock $\Rightarrow$ If take more risk, depress price at which other arbitrageurs are buying following bad shock $\Rightarrow$ Too little risk.
  - Inefficiencies in Pareto sense.

- He-Kondor (forthcoming).
  - Firms hold too much capital relative to cash in booms and vice-versa.
    - Price of capital affects redistribution between firms, about which social planner does not care.
    - Booms $\Rightarrow$ Price of capital is high $\Rightarrow$ Firms convert cash into capital to benefit from high price in case they need to sell capital.
  - Ex-ante identical firms.

- What are sources of market incompleteness in this paper?
  - Related to comment on intermediation.
  - Would there be inefficiencies if firms were infinitely-lived?

Conclusion

- Elegant and tractable framework to study dynamics of bank capital.
- Main comment 1: Is intermediation an essential element of the model?
  - Can map to asset market models without explicit intermediation.
  - To strengthen intermediation role of banks may need to:
    - Introduce a real role for deposits.
    - Lessen role of reserves.
- Main comment 2: What is driving welfare results?
  - What are exact mechanisms?
  - Is it possible to show Pareto improvements?