Origination and Sale of Loans, and Bank Capital Regulation

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Motivation

- The prominence of the originate-to-sell model in bank credit creation
- Effect of bank capital regulation on incentives to sell loans
- Basel III:
  - a mix of risk-sensitive and insensitive capital regulation
  - addresses pro-cyclicality
- A model in which we study
  - how risk sensitivity of bank capital regulation affects banks' incentives to sell and originate loans
- Main results - risk sensitivity matters
  - for existence of pro-cyclicality
  - for riskiness of the banks

Setup

- One period and three dates t: 0, 1 and 2.
- A bank:
  - shareholder-managed, with $E = 1$ of initial equity
  - issues and sells loans, holds cash reserves
  - finances with insured deposits and inside equity (no outside equity)
  - maximizes its return at $t = 2$
  - subject to capital requirements on its loans
- Risk neutral investors=buyers of loans
- Passive insured depositors

Setup (2)

- The loans originated at $t = 0, 1$ and maturing at $t = 2$ can be thought as projects

$$\begin{cases} R_t \text{ with prob. } p_t \\ 0 \text{ with prob. } 1 - p_t \end{cases} \quad \text{and } p_t R_t \geq 1.$$

- Cash reserves and insured deposits pay 0 net return
- Two kinds of (exogenously given) bank capital regulation
  - risk insensitive and sensitive

Timing

0. Bank raises D of insured deposits, issues loans L and holds cash reserves B.
1.
   - A signal about performance of existing loans: Only bank knows whether the loans will pay at $t = 2$
   - New lending opportunities arrive
   - The market for loans opens:
     - The bank sells $S \in [0; L]$ of the existing loans, issues new loans L_1, new deposits D_1 and cash reserves
     - The investors pay P for the loans sold by the bank.
2. Loans mature and payments are made.

Constraints faced by the bank

$t = 0$

$$L + B = E + D, \text{ where } E = 1$$

$$\alpha_0 E \geq L, \alpha_0 \geq 1$$

$t = 1$

$$\beta_1 L_1 + \beta_0 (L - S) \leq E_1, \beta_0, \beta_1 \in [0; 1],$$

where

$$E_1 = 1 + S(P - 1) = L_1 + (L - S) + B + SP + D_1 - L_1 - (D + D_1)$$

$$L_1 \leq B + SP + D_1, D_1 \geq -D, S \in [0; L]$$

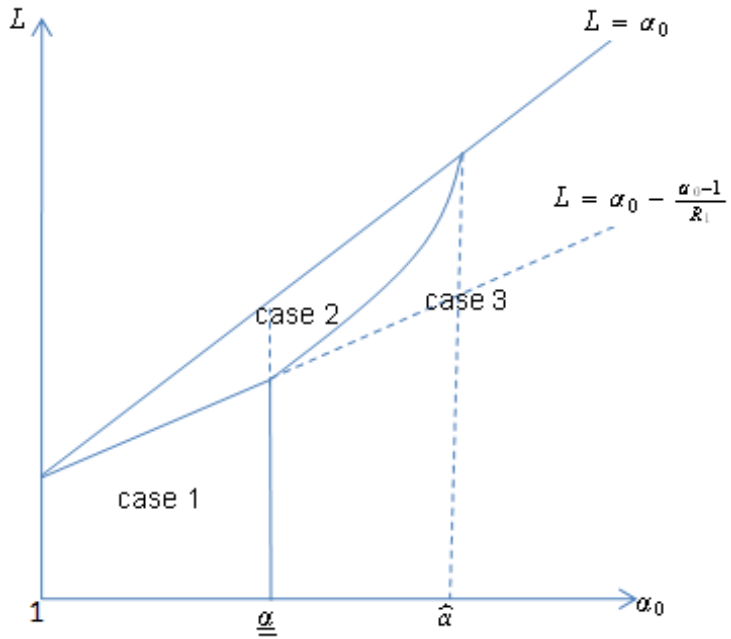
Risk insensitive capital requirements

- $\alpha_0 = \frac{1}{\beta_0} = \frac{1}{\beta_1}$
- We solve the model backwards
- Date $t = 1$
  - only the bank knows its type
  - investors offer screening contracts $(P; S; L_1; D_1)$

Proposition 1 - t=1

There are three cases:

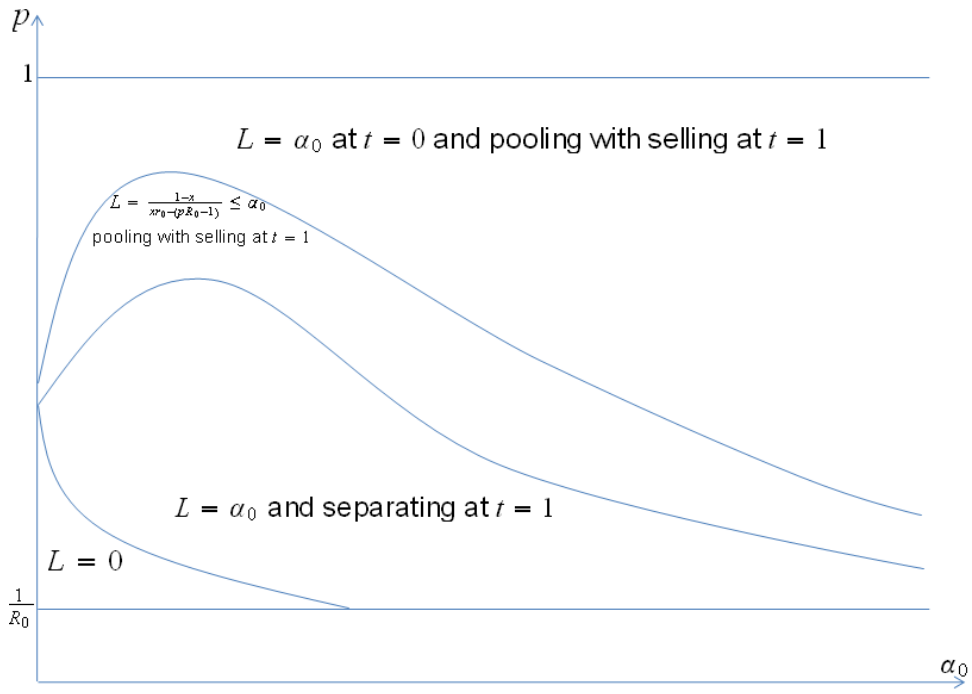
1. High CR and low L: no loans traded and $L_1 = \alpha_0 - L$.
2. Intermediate CR and high L: separating on the loan market and $L_1 = \frac{(\alpha_0 - 1)(1 + L r_0)}{R_0 + r_1(1 + \alpha_0 r_0)}$
3. Low CR and high L: pooling with $P = pR_0 L$ and $L_1 = \alpha_0 \left(1 + L(pR_0 - 1)\right)$.



Intuition - Proposition 1:

- Trade is limited or breaks down due to adverse selection
  - the bad bank, if solvent at $t = 1$, mimics the good bank always (for lower L)
    - the good bank sells only if gets compensated for the discount
  - when the bad bank is insolvent at $t = 1$, separating may arise for low S
- Trade occurs for sufficienlty low CR compensating for the discount
- Trade allows to access increase equity and issue new loans

Proposition 2 - t=0



Main result:

- lower CR lead to more risky loans being sold and more creation of new credit

Risk sensitive capital requirements

- A function from each private signal into a CR β_0
- Adverse selection disappears
  - assumption: truthful implementation is possible
- Increases in CR for existing loans have a different effect than under insensitive approach
  - Reason: different CR for different types of loans
  - Increase of CR for existing loans at $t = 1$ leaves little equity for new lending, making bank more willing to sell

Impact of capital requirements on credit supply

- Channel studied here: *distribution of existing loans*
- If insensitive: their decrease $\Longrightarrow$ more trade and higher credit supply
- If sensitive: slope of the function matters
  - increase of CR for existing loans $\Longrightarrow$ more trade and higher capital supply
- Important under uncertainty about the reason for loan trade
  - if insensitive any changes in existing CR are always subject to an error if loans are traded only on private information
  - no such issue under risk sensitive CR

Conclusion

- The effect of risk-sensitivity of capital regulation on incentives to originate and distribute loans
- Implications for the reform addressing the presumed pro-cyclical effect of risk sensitive capital regulation
- Result:
  - in general pro-cyclical effect only under risk-insensitive capital regulation
- More to be done:
  - overall riskiness (endogenizing the capital requirements)