

Relationship Between Competition and Risk

General consensus is that more competition leads banks to increase their riskiness:

- see for example Keeley (1990), Suarez (1994), and Matutes and Vives (1996)
- to see this, consider a bank that is able to choose the riskiness σ of loan portfolio
- assume that when σ increases, loans become more risky (in a soso sense)
 - this means that gross expected returns on loans are constant: $E[r_L|\sigma] = \mu$
 - but that the dispersion of returns increases so that $E[h(r_L)|\sigma]$ increases with σ for any convex function h
- risk-less rate is normalized to zero

The bank's assets and liabilities are as follows:

- the bank's assets consist of a volume L of loans
- the bank's liabilities consist of a volume D of deposits issued at the rate $r_D(\sigma)$
- returns on deposits may or may not depend on the risks taken by depositors
- there is no equity so budget balance implies

$$L = D$$

The bank can fail if it's losses are too big:

- the bank fails when the realized return on loans r_L is less than $r_D(\sigma)$
- we denote by $p(\sigma) = \text{Prob}(r_L > r_D(\sigma) | \sigma)$ the probability of success

The charter value V of the bank is equal to the discounted value of its expected future profits:

- in a perfectly competitive environment this value equals zero because banks do not need any capital
- when there are barriers to entry or restrictions on interest rates, this value can be positive

Assume that σ is observed by depositors:

- assume also that r_D is set after σ is chosen by the bank
- then depositors will require an interest rate on deposits $r_D(\sigma)$ that provides them with (at least) a zero expected return
- given limited liability, depositors know that the bank defaults whenever $r_L < r_D(\sigma)$
 - in this case they seize the banks' assets and obtain a return r_L
- so depositors participate only if $E[\min(r_L, r_D(\sigma)|\sigma)] \geq 1$

Expected bank profits $\Pi(\sigma)$ are:

$$\Pi(\sigma) = D \cdot E[\max(0, r_L - r_D(\sigma)|\sigma)]$$

- the bank will choose σ so as to maximize $\Pi(\sigma) + p(\sigma)V$ subject to the participation constraint of depositors
- since $\max(0, r_L - r_D) + \min(r_L, r_D) = r_L$ by taking expectations we have:

$$\Pi(\sigma) + D = E(r_L)D = \mu D$$

- which means that $\Pi(\sigma) = (\mu - 1)D$ is independent of σ !
- thus whenever $V > 0$, the risk of losing the charter value will be enough to discipline the bank: it will choose the minimum level of risk
- in the limit, if the bank faces a competition settings, $V = 0$, and the level of risk σ is indeterminate

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