Topic 6 : The Theory of Financial Intermediation

EE431/438

Peter D. Spencer, Chapter 8 (available at the reserve section of the library, HG173 .S637)
Douglas W. Diamond, Financial Intermediation as Delegated Monitoring: A Simple Example. Federal Reserve Bank of Richmond *Economic Quarterly*, Volume 82/3 Summer 1996, pp 51 -66

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- Cont.
- From the example, lenders are satisfied when $r_d = r = 5\%$.
- Suppose the bank sets $r_d = 5\%$, what is the minimum loan rate the bank can charge the borrowers?
- Let r_L denote bank loan rate.
- f is the face value of the debt contract between the bank and the borrower.
- $f = (1 + r_L)m = (1 + r_L) \times 100$
- $100 < f \leq 140$. f lies between 100 (L) and 140 (H).

- Bank's income (per one loan) is equal to .....
- Bank's monitoring expense (per one loan) is equal to $K = 1.5$.
- Bank's payment to depositors (per one loan) is equal to

  .....
- Bank's net profis is equal to .....
- As long as the bank does not make a loss, it remains in the banking business.
- Hence, $0.8f + 0.2(100) - 1.5 - (1 + 0.05)(100) \geq 0$.

- We can solve for the minimum value of f.
- The minimum value of f is f that solves $0.8f + 0.2(100) - 1.5 - (1 + 0.05)(100) = 0$.

$$\begin{aligned} 0.8f + 0.2(100) - 1.5 - (1 + 0.05)(100) &= 0 \\ 0.8f + 20 - 1.5 - 105 &= 0 \\ 0.8f &= 105 + 1.5 - 20 \end{aligned}$$

$$\begin{aligned} f &= \frac{105 + 1.5 - 20}{0.8} \\ &= 108.125 \end{aligned}$$

- Direct finance : unmonitored debt has the minimum face value of 131.25, or the loan rate is 31.25%.
- Therefore, the minimum loan rate for monitored debt is equal to 8.125% which is much less than 31.25% for the unmonitored debt.

- For monitored debt,
  $f = \dfrac{(1+r)(\text{principal amount})+\text{monitoring cost-}\pi L}{(1-\pi)}$.

- For unmonitored debt,

Let $V = \begin{cases} H & \text{million with probability } (1\text{-}\pi), \\ L & \text{million with probability } \pi. \end{cases}$

The lender would receive expected payment of

$(1-\pi)f + \pi(0) = (1-\pi)f \geq (1+r) \times$ principal amount.

The minimum value of $f = \dfrac{(1+r) \times \text{the principal amount}}{(1-\pi)}$