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EE431 Economics of Financial Markets and Institutions, 1/2013

Problem Sets 8 : Theory of Financial Intermediation

Please submit at the BE office, 5th floor department of Economics building.

Deadline of submission : November 27, 2013 before 15.00 hrs.

Late submission will not be accepted.

1. Financial Intermediation as Delegated Monitoring in Diamond (1996)

- Consider an economy in which n identical firms seek to finance projects.
- Each entrepreneur owns a firm and each firm requires an investment of m = 100 units of capital.
- The returns of each firm are identically independently distributed.
- Each entrepreneur does not have any initial funds. They have to borrow from lenders.
- The total number of lenders is $100n$, each lender owns 1 unit of capital to lend out.
- The project's realized value is a random variable with realization denoted by Y. Y = 150 with probability 0.9 and 90 with probability 0.1.
- All entrepreneurs and all lenders know the distribution of Y.
- The entrepreneur observes the realization of actual Y freely.
- The other cannot observe the total output of the project without paying a cost.
- f denotes total loan repayment (principal + interest) promised by each firm for a loan of 100.

(a) Is an entrepreneur willing to speak the truth about the output of his/her project? Describe the moral hazard problem in this economy.

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(b) If we impose a punishment system such that the entrepreneur will be forced liquidation if he/she pays equal to or lower than a specified amount, f. Assume that liquidating gives no proceeds to the lenders and the entrepreneurs. Calculate the specified amount, which will lead to payments with an expected value of 108 on a loan of 100. Describe how the punishment system in this question helps solving the moral hazard problem.

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(c) From question (b), when the entrepreneur claims that the entrepreneur does not have enough funds to repay, could a lender accept a repayment less than the specified amount and why?

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(d) From (b) and (c), calculated the expected deadweight loss liquidation cost per one borrower.

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(e) Suppose that a lender observe the entrepreneur's output by paying a monitoring cost. Then, in stead of liquidating when less than f is paid, the lender who monitors can use the threat of liquidation and offer to refrain from liquidation as long as the borrower repays as much as possible. Monitoring cost is paid ex ante. Lenders must learn in advance about the borrower's business to properly interpret any data about the project returns. Let K be the cost of monitoring a borrower's project and K= 1.5.

Calculate total cost of monitoring entrepreneurs in this economy for the two financial system (i) direct finance and (ii) indirect finance. Discuss the benefits of economies of scale and diversification in the banking sector.

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(f) Suppose that the economy choose the intermediated financing. The bank charges their borrowers 11.67% loan rate. In other words, face value $f = 111.67$ units per one borrower. What is the maximum amount the bank can repay each depositor?

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(g) Explain why one loan bank (a bank lend to one borrower) is not more cost efficient than direct financing.

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2. "... Michael Dell, the founder of the world's third-largest PC-maker, announced that he planned to take his company private. ... Why does Mr. Dell, who took Dell public in a stock market in 1988, want to buy his company back again? ... ... Mr Dell's optimism is not shared by investors. Dell's share price fell from around \$30 in late 2007 to less than \$10 five years later ... Mr. Dell's calculation is that the shares are now undervalued. He is deciding to buy them back and take Dell private. ... "
The Economist, February 6, 2013
In the context of theory of financial intermediation, explain possible benefits Mr. Dell would get by buying shares back and taking Dell private.

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