Money and Banking
Lecture 5: Economic Analysis of Financial Institutions Existence

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Outline

Previous Lecture Recap

- Money is one of financial assets and functions as medium of exchange, unit of account, and store of value, and it also is the settlement of debts.

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- In the categorization of money, we see demand deposits are defined as M_1. The natural question here is whether or not banking activities related to money?
- In this lecture, we are going to explore ***why do we need financial intermediaries such as banks in the economy*** in the first place.

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- Why do they ask you so many questions? Because you know better about the business (in that case, a computer store) than most of them.
- This is an interesting economic phenomenon, known as ***asymmetric information***.
- Asymmetric information problem simply states that when one party with more private information is likely to take advantage of the information, engaging in a transaction that is adverse for the counterpart.

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- Example: Suppose there is an insurance company, Zhejiang Gongshang Insurance, selling health insurance to the public. Statistics indicate that persons who love smoking are more likely to have lung cancer.
- Zhejiang Gongshang Insurance would charge 1,000 RMB per month for persons with no smoking history, while 2,000 RMB per month for smokers.

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- If they got lung cancer, smokers are eligible to ask Insurance to cover the medicine bills.
- How about, at this time, Zhejiang Gongshang Insurance rasing the premium from 1,000 RMB to 1,500 RMB per month?

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- In 1970, George Akerlof of the University of California, Berkley, published the classical paper on adverse selection; he won the Nobel Prize in Economics in 2002.

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- Suppose there is a used Huawei cell phones trade market on campus.

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- The market would also function if *nobody* knew the quality of each cell phone. (Why?)

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- It would be a single price for all Mate 10, as in the case when nobody observes quality.
- But now there is a problem. When owners of good Mate 10 saw a price based on average quality, which is less than what they believe their cells deserve, they will hold onto the cell phones rather than selling them.

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- Then only cell phones with terrible quality are available around the market.

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- Case II: bond market. Adverse selection is a problem in bond markets when default risk is significant.

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- Once again, low-quality securities can flood the market, causing it to break down.

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- Bond investors will buy a \$100 bond with expected payment at least \$110.

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- $\frac{1}{3}\$0 + \frac{2}{3}x = \$110\,, \rightarrow x = \$165.$
- \$165 is above the profit of successful investment by the risky firm, i.e., \$150. So there is no bond issuance from the risky firm.

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- Case II: Asymmetric Information In this case, investors expected to get paid with probability of $\frac{5}{6}(\frac{1}{2} \times 1 + \frac{1}{2} \times \frac{2}{3} = \frac{1}{2} + \frac{1}{3} = \frac{5}{6})$.

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- For safe firm, \$132 exceeds its earning of \$125, so no bond issued.
- For risky firm, it has 2/3 probability to earn \$18 (\$150-\$132), so bond issued.
- However, when investors realizes that only risky firms issue bonds in the market, they would require \$165 for bond payment to get expected payment of \$110. So, in the end, there would be no bond issuance.

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- It refers to the situation when on party in an economic relationship cannot observe the actions of others.
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- Use Zhejiang Gongshang Insurance to illustrate moral hazard.

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- Zhejiang Gongshang Insurance would like Lee to behave in a way that minimizes the claims it must pay, .e.g, no smoking.
- However, once Lee has insurance, he may start smoking.
- This moral hazard hurts both insurance companies and Lee. Smoking would cause Lee to have lung cancer more likely, and also cause insurance companies to pay more.

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- The CEO's actions determine the profits that go to all shareholders. In theory, her job is to maximize profits.

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- The decoration include a shower curtain that cost $6,000, a $2,200 waste basket, and $2,900 worth of cost hanger.
- In 2001, he spent $2.1 million for his wife's extravagant birthday party.

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- Such a gamble is attractive if financed with borrowed money.

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- The expected profit from safe investment is $1 \times (\$125 - \$110) = \$15$.

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- After bond issuance, bond investors have no control of firm's decision-making. The firm has two options: (1) safe investment to earn \$125 for sure, and (2) risky investment to earn \$150 with 2/3 probability.
- The expected profit from safe investment is $1 \times (\$125 - \$110) = \$15$.
- The expected profit from risky investment is $\frac{1}{3} \times 0 + \frac{2}{3} \times (\$150 - \$110) = \$26.7$.

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- So the firm would pursue the risky investment.
- When the investors realize that the firm could only engage in risky investment, they could ask for \$165 payment to get expected payment of \$110. Such a payment exceeds \$150, therefore, no bond issued.

OUTLINE

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- Banks have several methods for reducing information asymmetries.

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- Banks reduce free-rider problem by keeping loans as private (non-tradeable) assets.

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- It is also beneficial for firms or individuals to grant loans quickly and cheaper (lower information process cost).
- It is a dynamic game theory with credible penalty.

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- The risky investment strategy generates $\frac{1}{3}(-\$50) + \frac{2}{3}\$40 = \$10$, which is less than safe investment strategy $\$125 - \$110 = \$15$.

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- Since she still has positive capital in this investment (game), she would still manage it prudently with the hope that she would increase the capital in the future.

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- Banks could use **compensating balances** (minimum checking deposit that a borrower must maintain at the bank that has lent it money) to monitor borrower's financial activities.

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- Although bidding for higher interest rates indicate higher likelihood of adverse selection, it still puts small and medium enterprises which are so dependent on bank loans to be cut off credit line and to confront with bankruptcy.

Outline

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- To be specific, banks are able to transform *information-sensitive assets* (e.g., corporation loans) into *information-insensitive liabilities* (e.g. bank deposit).
- In this perspective, banks can profit from information processing. In next lecture, we will take a close look at banking to find out more answers to the question *Why do we need banks in economic activities*?