

Chapter 8: An Economic Analysis of Financial Structure

1 Roles of the Government and Institutions

See the Lecture Note on Roles of the Government and Institutions.

1.1 The Roles of the Markets in Promoting Efficiency

- *homo oeconomicus* only cares about his consumption, forgetting about the other people's welfare.
- Available resources (physical assets, goods and services, time, etc.) are allocated to consumption and production of consumers and business firms.

- There are many ways to allocate resources: market transactions and a central planning.
- An allocation is *economically efficient* if there is no way to change it so that everyone gains or so that some people gain while no one else loses.
- Mary likes oranges and Irving likes apples. If Mary has an apple and Irving has an orange, then the allocation is economically inefficient.
- After they trade, Mary has an orange and Irving has an apple. This situation is economically efficient.

- In an ideal situation (to be discussed later), an allocation obtained by an equilibrium in all markets (demand is equated with supply in each market) is economically efficient. This is called the *Invisible Hand Theorem*.
- In this ideal situation, there is no need for institutions such as financial intermediaries.
- In this ideal situation, there is no need for the government to regulate the economy to promote economic efficiency. The government should leave everything to the markets to obtain an efficient allocation.

1.2 The Roles of the Government and Institutions in Promoting Efficiency

1.2.1 Conditions for Markets to Work Well

In reality, the government and institutions such as financial intermediaries have roles in promoting efficiency because some conditions for the ideal situation are not met.

The ideal situation where the market allocation is efficient satisfy the following four conditions:

- **Market trading and private ownership are well established.**

Markets themselves do not establish private ownership, so the government should provide a legal system, police, etc.

- **Competition is perfect.**

A monopolist of a good (or a service) tends to produce a smaller quantity of the good than would be economically efficient in order to raise the price of the good and to make more profits. The government should promote competition to avoid this.

- **There are no transaction costs.**

When there are transaction costs, market transactions are discouraged, and markets may fail to produce economically efficient outcome.

- **There are no external economies or diseconomies.**

A beautiful garden

An extreme example of a good with external economies is one which affects everyone in an economy and is called a *public good*. National defense is an example of a public good.

Information has external economies

The market equilibrium produces a smaller quantity of goods with external economies than would be efficient because each person who purchases (or produces) these goods does not take into account of the benefits of others.

Another way to see this is to say that there is a *free-rider problem* when external economies exist.

1.2.2 The Financial Sector

- In the financial sector, the last two conditions for markets to work well are violated in important ways. This has two effects that we will study in Chapters 8-12.
- Because markets fail in some dimensions, we have financial institutions such as financial intermediaries.
- The government heavily regulates the financial sector.

2 Basic Facts about Financial Structure Throughout the World

See Figure 1 in Mishkin's textbook.

Stylized facts about financial structure

- 1. Stocks are not the most important source of external financing for businesses.**
- 2. Issuing marketable debt and equity securities is not the primary way in which businesses finance their operations.**

3. Indirect finance, which involves the activities of financial intermediaries, is many times more important than direct finance, in which businesses raise funds directly from lenders in financial markets.

4. Financial intermediaries, particularly banks, are the most important source of external funds used to finance businesses.

5. The financial system is among the most heavily regulated sectors of the economy.

6. Only large, well-established corporations have easy access to securities markets to finance their activities.

7. Collateral is a prevalent feature of debt contracts for both households and businesses. *Collateral* is property that is pledged to a lender to

guarantee payments in the event that the borrower is unable to make debt payments. In contrast with collateralized debt (*secured debt*), debts such as credit card debt are not collateralized and called *unsecured debt*).

8. Debt contracts typically are extremely complicated legal documents that place substantial restrictions on the behavior of the borrower. bond or loan contracts typically are long legal documents with provisions (called *restrictive covenants*) that restrict and specify certain activities that the borrower can engage in.

3 Transaction Costs

3.1 How Transaction Costs Influence Financial Structure

- Because of transaction costs such as brokerage commission, many people decide not to buy securities such as stocks and bonds that are issued by corporations.
- Because of transaction costs, it is not easy for a typical investor to diversify when she buys securities such as stocks and bonds that are issued by corporations.

3.2 How Financial Intermediaries Reduce Transaction Costs

- Economies of Scale
- Expertise

4 Asymmetric information: Adverse Selection and Moral Hazard

Adverse selection is an asymmetric information problem that occurs *before* the transaction.

Moral hazard is an asymmetric information problem that occurs *after* the transaction.

5 The Lemons Problem: How Adverse Selection Influences Financial Structure

Lemons problem: Used car markets do not work well because of adverse selection.

Buyers have less information than sellers about the quality of used cars.

Buyers are only willing to pay the price that reflects the *average* quality of the cars in the market.

Sellers with good cars with more information are not willing to sell their cars at the market price.

Only sellers with bad cars are selected by the market.

5.1 Lemons in the Stock and Bond Markets

- Good firms with high expected profits and low risk

- Bad firms with low expected profits and low risk

Investors have less information than firms about the quality of the firms.

Fact 2 is explained by the adverse selection problem.

5.2 Tools to Help Solve Adverse Selection Problems

- **Private Production and Sale of Information** Companies such as Standard and Poor's and Moody's gather information on firms' balance sheet positions and investment activities, publish these data, and sell them to subscribers. The system of private production does not completely solve the adverse selection problem because of *free rider problem*.

- **Government Regulation to Increase Information**

Fact 5.

The Securities and Exchange Commission (SEC) requires firm selling securities to have independent audits.

- **Financial Intermediation**

Experts in producing information

Facts 3, 4, and 6.

- **Collateral and Net Worth** *Net worth* (also called *equity capital*), the difference between a firm's assets (what it owns) and its liabilities (what it owes), can perform a similar role to collateral.

6 How Moral Hazard Affects the Choice Between Debt and Equity Contracts

6.1 Moral Hazard in Equity Contracts: The Principal-Agent Problem

Equity contracts, such as common stock, are claims to a share in the profits and assets of a business.

Stockholders (called the *principals*) own the firm's equity.

Managers (called the *agents*) typically own only a small fraction of the firm.

The separation of ownership and control.

The managers have less incentives to maximize profits than the stockholders do.

Example 1 Imagine that you invest \$5,000 and Steve invest \$5,000 to open an ice-cream store. Steve manages the store. If Steve works hard, the store will have \$50,000 in profits per year. You will receive 50% (\$25,000), and Steve receives 50%(\$25,000). Steve has similar incentive as you do for him to increase profits in this case.

Example 2 You invest \$9,000 and Steve invest \$1,000 to open the store. If Steve works hard, you will receive 90% of the profits (\$45,000), and Steve

will receive 10%(\$5,000). Steve has less incentive than you to increase profits.

Managers have incentives to pursue personal benefits (buying expensive pictures, furniture, office, airplanes, etc.).

Managers even have incentives to commit fraud of hiding and stealing profits.

Managers have incentives to enhance their personal power (e.g., the acquisition of other firms)

This principal-agent problem exists because a manager has more information than the stockholders do.

6.2 Tools to Help Solve the Principal-Agent Problem

- **Production of Information: Monitoring**

Auditing the firm frequently and checking on what the management is doing.

The monitoring process can be expensive in terms of time and money.

If you know other stockholders are paying to monitor the activities of the managers of the company, you would rather free ride on their activities. This causes a free-rider problem.

- **Government Regulation to Increase Information** Laws for standard accounting principles. Laws against the fraud of hiding and stealing profits.

- **Financial Intermediation**

If only one bank is making a loan to a firm, there is no free rider problem for the bank to monitor the firm.

venture capital firms provides the funds to help budding entrepreneurs start new business and receives an equity share. The equity in the firm is not marketable to anyone except the venture capital firm. Hence there is no free rider problem.

- *Debt Contract* The principal-agent problem from the separation of ownership and management arises with an equity contract. Debt contracts are not subject to this principal-agent problem

Example 3 You lend \$9,000 for Steve to open an ice-cream store and charge an interest of 10%.

The lender does not care if the managers are hiding profits or pursuing personal benefits as long as debt payments are made on time.

Less frequent need to monitor the firm with debt contracts.

Fact 1.

7 How Moral Hazard Influences Financial Structure in Debt Markets

Debt contracts have advantages over equity contracts, but are still subject to moral hazard.

Borrowers have incentives to take on investment projects that are riskier than the lenders would like.

In Example 3, Steve has an incentive to use your money for purposes other than you intended.

Steve might use your \$9,000 to buy a chemical research equipment because he thinks that he has a 1-in-10 chance of inventing a diet ice cream that tastes as good as regular ice cream. If he succeeds, he becomes a millionaire. If he fails, you pay the cost.

7.1 Tools to Help Solve Moral Hazard in Debt Contracts

7.1.1 Net Worth and Collateral

When borrowers have more at stake because their net worth is high or the collateral is valuable, then the risk of moral hazard is reduced.

Imagine that the cost of opening the ice-cream store is \$100,000 instead of \$1,000. If Steve has put \$91,000 of his own money to open the store in addition to the \$9,000 supplied by your loan, he is less likely to engage in risky investment. He has a lot to lose if he fails.

7.1.2 Monitoring and Enforcement of Restrictive Covenants

Fact 8.

1. Covenants to discourage undesirable behavior

Some covenants mandate that a loan can be used only to finance specific activities, such as the purchase of particular equipment.

Other covenants restrict the borrowing firm from engaging in certain risky activities, such as purchasing other businesses.

2. Covenants to encourage desirable behavior

Some covenants encourage the borrowing firm to keep its net worth high by mandating the firm to maintain minimum holdings of certain assets.

3. Covenants to keep collateral valuable

Automobile contracts require the car owner to maintain a minimum amount of collision and theft insurance and prevent the sale of the car unless the car loan is paid off.

4. Covenants to provide information

Restrictive covenants often require a borrowing firm to provide information in the form of quarterly accounting and income reports.

7.1.3 Financial Intermediaries

If a bank is the only lender for the firm, then there is no free rider problem for monitoring and enforcing restrictive covenants.

Facts 3 and 4.

8 Conflicts of Interest

Financial intermediaries can lower the cost of information production for each service by applying one information resource to many different services.

A bank can make a loan to a firm and also sell the bonds of the firm to the public.

Conflicts of interest are a type of moral hazard problem that arise when a person or institution has multiple services and has conflicts between those objectives. An individual or an institution may conceal information or disseminate misleading information.

8.1 Why Do We Care About Conflicts of Interest?

A substantial reduction in the quality of information increases asymmetric information problems.

8.2 Why Do Conflicts of Interest Arise?

8.2.1 Underwriting and Research in Investment Banking

Investment banks perform two tasks: they *research* companies issuing securities, and they *underwrite* these securities.

When they underwrite securities, they take on the risk of distributing the securities. If they do not find enough investors, investment banks will end up some of the securities.

Investment banks achieve economies of scope by combining two different tasks.

Conflicts of interest arise because investment banks serve two client groups, security-issuing firms and security-buying investors.

Issuers benefit from optimistic research, whereas investors desires unbiased research.

When the potential revenues from underwriting greatly exceed the brokerage commissions from selling, the investment bank will have a strong incentive to alter the information provided to investors in favor of the issuing firm's needs.

Another common practice is *spinning*.

Spinning occurs when an investment bank allocates hot, but underpriced, *initial public offerings (IPOs)* - that is, shares of newly issued stocks - to executives of other companies in return for their companies' future business with investment banks.

8.2.2 Auditing and Consulting in Accounting Firms

An auditor has an incentive to provide an overly favorable audit to solicit or retain audit business (e.g. Arthur Anderson).

An accounting firm provides its clients with auditing services and nonaudit consulting services such as advice on taxes and business strategy.

Auditors have incentives to skew their judgment to win consulting business.

8.3 What Has Been Done to Remedy Conflicts of Interest?

8.3.1 Sarbanes-Oxley Act of 2002

It establishes a Public Company Accounting Oversight Board (PCAOB), overseen by the SEC, to supervise accounting firms and ensure that audits are independent and controlled by quality.

8.3.2 Global Legal Settlement of 2002

It requires investment banks to sever the links between research and securities underwriting. It bans spinning.

9 Financial Crises and Aggregate Economic Activity

The economic analysis of adverse selection and moral hazard can help us understand *financial crises*, major disruptions in financial markets that are characterized by sharp declines in asset prices and the failures of many financial and nonfinancial firms.

9.1 Factors Causing Financial Crises

9.1.1 Increases in interest Rates

When interest rates become very high, firms with riskiest investments may be the only ones who are willing to pay high interest rates. This causes the adverse selection problem to be more severe.

9.1.2 Stock Market Declines

When stock prices decline, the valuation of a corporation's net worth declines. This worsens the adverse selection and moral hazard problems.

9.1.3 Unanticipated Declines in the Aggregate Price Level

Debt payments are usually fixed in nominal terms.

An unanticipated decline in the aggregate price level raises the value of firms' liabilities in real terms, but does not raise the real value of firms' assets.

An unanticipated decline in the aggregate price level decreases the net worth of firms in real terms.

The decline in net worth worsens the adverse selection and moral hazard problems.

This leads to decreased lending and economic activity.

9.1.4 Problems in the Banking Sector

If many depositors simultaneously withdraw deposits, even a healthy bank fails.

Fear of a bank failure can spread from one bank to another and drive many depositors to withdraw deposits over a short period of time in many banks.

A *bank panic* is the multiple bank failures.

9.1.5 Great Depression

In the United States, the stock market crashed in October 1929. From October 1930 until March 1933, more than one-third of the banks went

out of business. the price level fell by 25 % in the 1930-1933 period. Between the August 1929 peak and the trough in the spring of 1933, real GNP fell by nearly 30%. During the same period the unemployment rate rose from about 3% to close to 25%.