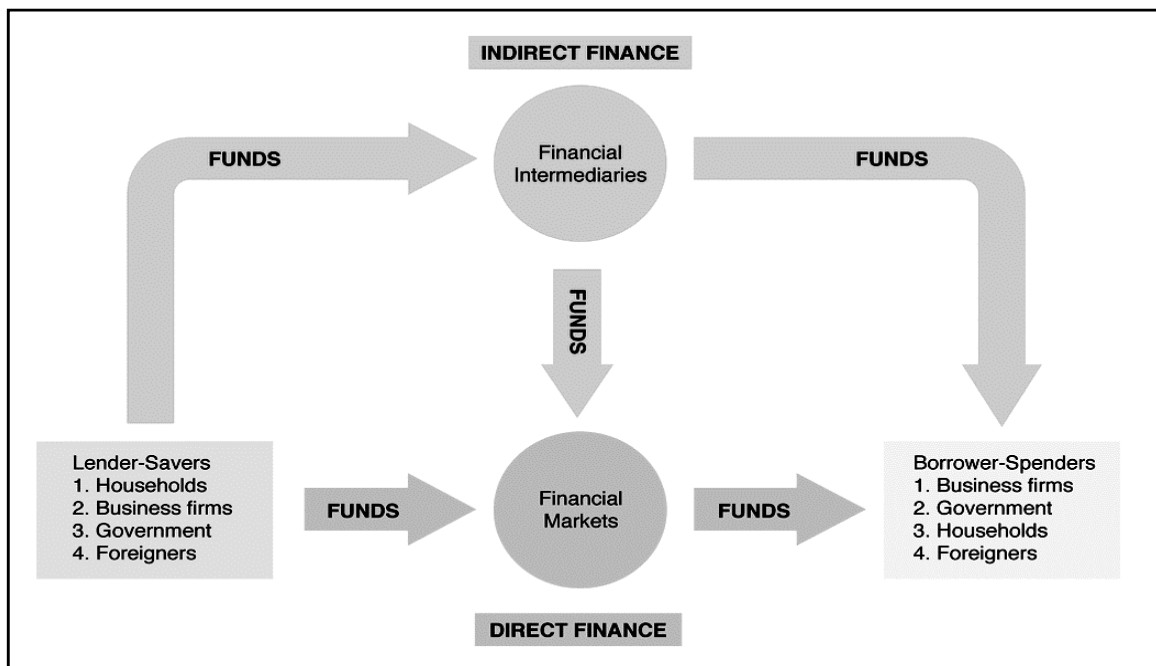


Economic Analysis of Financial Structure
Notes to Complement Chapter 8 of Mishkin

1. Mishkin begins by setting out eight puzzling facts about financial structure in the United States and developed world. They are:
 - a. Stocks are not the most important source of external financing for businesses.
 - b. Issuing marketable debt and equity securities is not the primary way for businesses to finance their operations.
 - c. Indirect finance is far more important than direct finance for businesses.
 - d. Banks are the most important source of external funds for businesses
 - e. The financial system is among the most heavily regulated sectors of the economy.
 - f. Only large, well-established corporations have easy access to securities-market funding.
 - g. Collateral is a prevalent feature of debt contracts for both households and businesses.
 - h. Debt contracts typically place substantial restrictions on the behavior of the borrowers.

2. The distinction between direct and indirect finance (Chapter 2) is important.

Function of Financial Markets



3. Mishkin explains how these puzzling facts can be explained once one understands the effects of making economic decisions in the presence of asymmetric information.
 - a. Asymmetric information is said to occur when one party in a transaction has substantially more relevant knowledge than another.
 - i. The person buying life or health insurance has more complete and accurate knowledge about his life style than the seller of insurance.
 - ii. The seller of a car has more complete knowledge about the car than the buyer. In a famous paper (“The Market for ‘Lemons’: Quality, Uncertainty, and the Market Mechanism,” George Akerlof introduced the lemons problem using the example of used car sales.
 - iii. The borrower of funds has more complete knowledge about how the funds will be used than the lender.
 - b. There are two types of problems that fall under the heading of asymmetric information.
 - i. Adverse selection occurs before the transaction. As the name suggests, the existence of asymmetric information often selects participants into a market in a perverse way. The example on the next page makes this clear.
 - ii. Moral hazard occurs after the transaction. The existence of asymmetric information provides one party with an incentive to behave differently after the transaction than they promised to behave before the transaction.
 - c. Moral hazard influences the choice between equity and debt contracts.
 - i. Firm managers (agents) may face weak incentives to manage their firms in ways that make maximum profits for shareholders (principals).
 - ii. Once a lender has approved a loan, the borrower has an incentive to take greater risks with the funds than indicated on the loan application. If the borrower is fortunate, the extra returns are his. If the borrower is unfortunate, the lender suffers the loss.
4. Some financial market remedies for asymmetric information.
 - a. Private firms produce and sell information pertaining to the profitability and credit worthiness of firms and other borrowers. Unfortunately, those who do not pay for this information can often benefit from it by observing the behavior of those who do pay. When those who do not pay for information nevertheless benefit from it, a “free rider” problem is said to occur. Because of free rider problems, too little information about firms and their credit worthiness is made available in the market place.
 - b. Financial firms obtain relief from asymmetric information problems by designing

contracts that are incentive compatible and individually rational. Such contracts are often called “truth telling” contracts.

- i. The standard debt contract provides some relief against the adverse selection problem. The standard debt contract allows the borrower to declare whether or not the “project” for which funds were borrowed has been successful. If the borrower declares the project a success, the lender receives a fixed fee (interest plus principal) no matter how successful the project was and the lender does not spend funds to monitor the project. If the borrower declares the project a failure, the lender monitors the project to determine how much it paid and then takes everything.
 - ii. Co-payments are a strategy used by insurance companies as remedies for asymmetric information.
- c. The existence of specialists and arrangements that allows the specialists to profit from their ability to assess risk provides relief from asymmetric information problems.
- i. Commercial banks specialize in assessing the credit worthiness or potential borrowers, and in the design of covenants and collateral arrangements that reduce moral hazard. Commercial bank loans are private so that the bank has opportunity to profit from its expertise and information.
 - ii. Venture capital firms specialize in assessing the potential of start-up companies and in creating financial arrangements that keep free riders from profiting from the venture capital firm’s expertise.
- d. Firms pay managers sufficiently large salaries and provide performance-based incentives to avoid moral hazard. The salaries and incentives help align the interests of the managers (agents) with the interests of the owners (principals).
- e. Financial institutions prefer to give loans to firms that put up collateral.
- f. Lenders frequently impose restrictive covenants on borrowers.
5. How does the existence of asymmetric information explain the eight puzzling facts?

Adverse Selection Exercise

In this exercise, students will work with the concepts of “adverse selection” and “incentive compatibility” to learn how insurance companies design insurance contracts when they are not able to identify the riskiness of potential clients before the fact.

Consider a world with many agents. Agents are alike in all respects except one. Each agent is an expected utility maximizer. Each agent has the Bernoulli state-specific utility function $\log(W/W_0)$ where W is state-specific wealth and W_0 is initial wealth. Each agent has initial wealth of \$1000. Each agent faces the risk of an accident which will cost the agent \$500. Because agents are risk averse, they are willing to buy insurance.

Type G agents are low-risk agents who have a .05 probability of an accident.
 Type B agents are high-risk agents who have a .20 probability of an accident.
 The population contains 80 percent Type G agents and 20 percent Type B agents.

1. Suppose, first, that an insurance company can identify G and B agents when they apply for insurance. What sort of contract will the company offer each type of agent? Suppose competitive forces keep the profit of the company to zero, what rate will the company charge each type of agent? Will the agents buy insurance at the competitive rates?

2. Now suppose that the insurance company can not identify G and B agents in advance. Suppose the company decides to offer a single, full-insurance contract to all agents. Suppose the company sets the price of this contract equal to the expected value of the loss payments it expects to make.

- a. What premium will the insurance company charge?
- b. Will B agents buy the insurance? Will G agents?
- c. In what sense does the insurance company face an adverse selection or “lemons” problem?

3. Insurance companies have learned to deal with adverse selection problems by designing customized contracts for different types of agents. This strategy will work for the insurance company only if the contracts are very carefully designed. Suppose that our insurance company designs a Type 1 contract for type G agents and a Type 2 contract for Type B agents.

A well designed set of contracts must be:

Individually rational in the sense that agents prefer the insurance contract designed for them to no insurance.

Incentive compatible in the sense that each type of agent prefers the contract designed for them to the contract designed for the other type of agent.

Suppose: Type-1 contract pays 50 percent of any loss and carries a premium of \$19.00
 Type-2 contract pays 100 percent of any loss and carries a premium of \$74.00.

- a. Show that this set of contracts satisfies individual rationality.
- b. Show that this set of contracts satisfies incentive compatibility.
- c. What is the expected profit associated with offering this set of contracts?