Chapter 11

The Economics of Financial Intermediation

Learning Objectives

1. Discuss the role of financial intermediaries and how they promote efficiency.
2. Explain asymmetric information, the problems it causes, and solutions to these problems.
3. Describe how moral hazard and adverse selection are managed by intermediaries and how they influence business finance.

Introduction

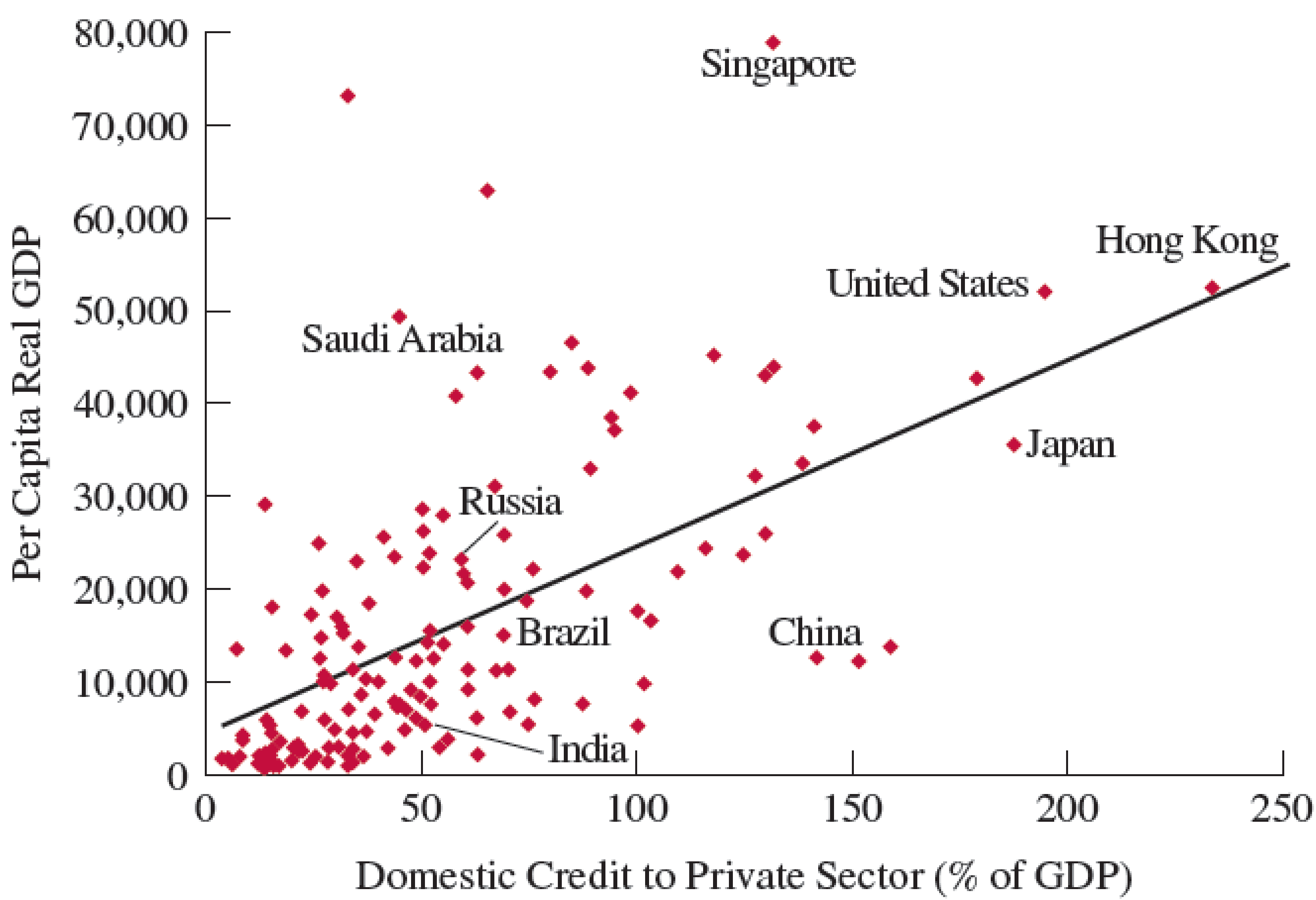
- Intermediaries investigate the financial condition of the individuals and firms who want financing to figure out which have the best investment opportunities.
- Intermediaries increase investment and economic growth at the same time that they reduce investment risk and economic volatility.

Introduction

- Without a stable, smoothly functioning financial system, no country can prosper.
- Figure 11.1 plots a commonly used measure of financial activity--the ratio of credit extended to the private sector and to gross domestic product--against real GDP per capita.
- We can see that there are not any rich countries with very low levels of financial development.

Introduction

Figure 11.1 Financial and Economic Development



The Role of Financial Intermediaries

- Financial markets are important because they price economic resources and allocate them to their most productive uses.
- Intermediaries, including banks and securities firms, continue to play a key role in both direct and indirect finance.

The Role of Financial Intermediaries

Table 11.1 The Relative Importance of Financing Channels (Averages for 1990–2013)

Country	Securities Markets: Stock Market Capitalization as a Percent of GDP (A)	Securities Markets: Outstanding Domestic Debt Securities as a Percent of GDP (B)	Loans: Credit Extended by Banks and Other Financial Institutions as a Percent of GDP (C)	Ratio of Loans to Securities C/(A+B) (D)
Advanced Economies				
France	60.7	45.2	95.0	0.90
Germany	39.1	44.3	106.8	1.28
Italy	30.1	30.5	79.9	1.32
Japan	75.9	59.0	182.5	1.35
United Kingdom	118.8	15.1	133.5	1.00
United States	107.3	92.6	157.2	0.79
Emerging Market Economies				
Argentina	24.3	4.2	16.7	0.59
Brazil	34.6	15.4	40.1	0.80
China	41.6	14.0	100.3	1.80
India	44.5	1.5	31.8	0.69
Russia	36.0	4.6	23.8	0.59

The Role of Financial Intermediaries

- From the table we can see:
  - To make comparisons across countries of vastly different size, we measure everything relative to GDP.
  - There is no reason that the value of a country's stock market, bonds outstanding, or bank loans cannot be bigger than its GDP.
- When you add up all the types of financing, direct and indirect, as a percentage of GDP, the numbers will generally sum to more than 100 in an advanced economy.

The Role of Financial Intermediaries

- The importance of intermediaries.
  - Banks are still critical providers of financing around the world.
  - Intermediaries determine which firms can access the stock and bond markets.
  - Banks decide the size of a loan and interest rate to be charged.
  - Securities firms set the volume and price of new stocks and bond issues when they purchase them for sale to investors.

The Role of Financial Intermediaries

- Financial intermediaries are important because of information.
- Lending and borrowing involves both transactions costs and information costs.
- Financial institutions exist to reduce these costs.

The Role of Financial Intermediaries

In their role as financial intermediaries, financial institutions perform five functions:

1. Pooling the resources of small savers,
2. Providing safekeeping and accounting services, as well as access to payments system,
3. Supplying liquidity by converting savers' balances directly into a means of payment whenever needed,
4. Providing ways to diversify risk, and
5. Collecting and processing information in ways that reduce information costs.

The Role of Financial Intermediaries

Table 11.2 A Summary of the Role of Financial Intermediaries

1. *Pooling savings*	Accepting resources from a large number of small savers/lenders in order to provide large loans to borrowers.
2. *Safekeeping and accounting*	Keeping depositors' savings safe, giving them access to the payments system, and providing them with accounting statements that help them to track their income and expenditures.
3. *Providing liquidity*	Allowing depositors to transform their financial assets into money quickly, easily, and at low cost.
4. *Diversifying risk*	Providing investors with the ability to diversify even small investments.
5. *Collecting and processing information services*	Generating large amounts of standardized financial information.

Pooling Savings

- The most straightforward economic function of a financial intermediary is to pool the resources of many small savers.
  - By accepting many small deposits, banks empower themselves to make large loans.
- In order to do this, the intermediary:
  - Must attract substantial numbers of savers, and
  - Must convince potential depositors of the institution's soundness.

Safekeeping, Payments System Access, and Accounting

- Banks:
  - Are a place for safekeeping.
  - Provide access to the payments system -- the network that transfers funds from the account of one person or business to the account of another.
  - Specialize in handing payments transactions, allowing them to offer these services relatively cheaply.
- Financial intermediaries reduce the costs of financial transactions.

Safekeeping, Payments System Access, and Accounting

- Financial intermediaries facilitate the exchange of goods and services.
- This principal of *comparative advantage* leads to specialization so that each of us ends up doing just one job and being paid in some form of money.
- Financial intermediaries help our economy to function more efficiently.

Safekeeping, Payments System Access, and Accounting

- Financial intermediaries also help us manage our finances.
- They provide us with bookkeeping and accounting services, noting all our transactions for us
- These force financial intermediaries to write legal contracts - but one can be written and used over and over again - reducing the cost of each.
- Much of what financial intermediaries do takes advantage of *economies of scale*

YOUR FINANCIAL WORLD

Your First Credit Card

- As a student, you usually have no credit history.
  - A credit card company will assume the worst.
- Issuers charge high interest rates as compensation for the risk they are taking.
- Remember that with a high interest rate, borrowing is very expensive.

Providing Liquidity

- *Liquidity* is a measure of the ease and cost with which an asset can be turned into a means of payment.
- Financial intermediaries offer us the ability to transform assets into money at relatively low cost
- Banks can structure their assets accordingly, keeping enough funds in short-term, liquid financial instruments to satisfy the few people who will need them and lending out the rest.

Providing Liquidity

- By collecting funds from a large number of small investors, the bank can reduce the cost of their combined investment, offering each individual investor both liquidity and high rates of return.
- Intermediaries offer both individuals and businesses lines of credit, which provides customers with access to liquidity.
- A financial intermediary must specialize in liquidity management.
- It must design its balance sheet so that it can sustain sudden withdrawals.

Diversifying Risk

- Financial institutions enable us to diversify our investments and reduce risk.
- Banks take deposits from thousands of individuals and make thousands of loans with them.
  - Each depositor has a very small stake in each one of the loans.
- All financial intermediaries provide a low-cost way for individuals to diversify their investments.

Collecting and Processing Information

- The fact that the borrower knows whether he or she is trustworthy, while the lender faces substantial costs to obtain that information, results in an *information asymmetry*.
  - Borrowers have information that lenders don't.
- By collecting and processing standardized information, financial intermediaries reduce the problems that information asymmetries create.

Information Asymmetries and Information Costs

- Information plays a central role in the structure of financial markets and financial institutions.
- If the cost of information is too high, markets cease to function.
- Issuers of financial instruments know more about their business prospects and willingness to work than potential lenders/investors.

Information Asymmetries and Information Costs

Asymmetric information poses two important obstacles to the smooth flow of funds from savers to investors:

1. Adverse selection arises before the transaction occurs.
   – Lenders need to know how to distinguish good credit risks from bad.
2. Moral hazard occurs after the transaction.
   – Will borrowers use the money as they claim?

APPLYING THE CONCEPT
TRUTH OR CONSEQUENCES: PONZI SCHEMES AND OTHER FRAUDS

- Fraud is the most extreme type of moral hazard
- *Ponzi scheme* : Fraud in which an intermediary collects funds from new investors, but instead of investing them, uses the funds to pay off earlier investors.
  - Bernie Madoff is a recent example

- The Madoff scandal was a classic *Ponzi scheme*:
  - Fraud in which an intermediary collects funds from new investors, but instead of investing them, uses the funds to pay off earlier investors.
- Investors fail to screen and monitor the managers who receive their funds.

Adverse Selection

- Used cars and the market for lemons:
  - Used car buyers can't tell good cars from bad.
  - Buyers will at most pay the expected value of good and bad cars.
  - Sellers know if they have a good car, so they won't accept less than the true value.
  - If buyers are only willing to pay average value, good car sellers will withdraw cars from the market.
  - Then the market has only the bad cars.

Adverse Selection

- Some companies have been created to try and solve the asymmetrical information problem.
  - Consumer Reports has long published information on particular models
  - More recently CARFAX provides potential buyers with detailed history on any car.
  - You can also hire a mechanic to look over a car for you before you buy it.
  - Finally, many car manufacturers are beginning to offer “certified” used cars, which usually come with warranties.

Adverse Selection in Financial Markets

- If you can’t tell good from bad companies
  - Stocks of good companies are undervalued, and
  - Owners will not want to sell them.
- If you can’t tell good from bad bonds
  - Owners of good companies will have to sell bonds for too low a price, so
  - Good bonds won’t be sold want to do it.

Solving the Adverse Selection Problem

- From a social perspective, the problems of adverse selection are not good.
  - Some companies will pass up good investments.
  - Economy will not grow as rapidly as it could.
- We must find ways for investors and lenders to distinguish well-run firms from poorly run firms.

Disclosure of Information

- An obvious way to solve the *hidden attributes* problem is to provide more information.
- In most advanced economies, *public companies* are required to disclose voluminous amounts of information.
  - Public companies are those that issue stock and bonds that are bought and sold in pubic financial markets.
  - For example, in the U.S., the Securities and Exchange Commission (SEC) requires firms to produce public financial statements that are prepared according to standard accounting practices.

Disclosure of Information

- Although accounting practices have changed, information problems persist.
- In a limited sense, there is private information collected and sold to investors.
  - Research services like Moody’s, Value Line, and Dun and Bradstreet collect information directly from firms and produce evaluations.
  - To be credible, companies cannot pay for this research, so investors have to.

Disclosure of Information

- Private information services face a free-rider problem.
  - A free-rider is someone who doesn't pay the cost to get the benefit of a good or service.

APPLYING THE CONCEPT
DEFLATION, NET WORTH, AND INFORMATION COSTS

- Deflation is harmful because it aggravates information problems in ways that inflation does not - it reduces a company's net worth.
- When prices fall,
  – The dollar value of the firm's liabilities remains the same, but
  – The value of the firm's assets fall with the price level.
- Deflation drives down a firm's net worth, making it less trustworthy as a borrower.

Collateral and Net Worth

- Collateral is something of value pledged by a borrower to the lender in the event of the borrower's default.
  - It is said to *back* or *secure* a loan.
- Unsecured loans, like credit cards, are loans made without collateral.
  - Because of this they generally have very high interest rates.

Collateral and Net Worth

- The net worth is the owner's stake in a firm - the value of the firm's assets minus the value of its liabilities.
  - Net worth serves the same purpose as collateral
  - If a firm defaults on a loan, the lender can make a claim against the firm's net worth.
- From the perspective of the mortgage lender, the homeowner's equity serves exactly the same function as net worth in a business loan.

Collateral and Net Worth

- The importance of net worth in reducing adverse selection is the reason owners of new businesses have so much difficulty borrowing money.
- Most small business owners must put up their homes and other property as collateral for their business loans.
  - Only after establishing a successful business and built up net worth, can they borrow without personal property.

LESSONS FROM THE CRISIS
INFORMATION ASYMMETRY AND SECURITIZATION

- A key source of the financial crisis of 2007-2009 was insufficient screening and monitoring in the securitization of mortgages.
- *Originators* eased standards and reduced screening to increase volume and short-term profitability.
- The firms that assembled the mortgages for sale, the *distributors*, could have required originators to demonstrate a high level of net worth.

LESSONS FROM THE CRISIS
INFORMATION ASYMMETRY AND SECURITIZATION

- When lending standards decline, securitization becomes a game of “hot-potato”.
- The game ends when defaults soar and someone is left with the loss.
- Ratings agencies could have halted the game early, but instead gave their highest ratings to a large share of mortgage-backed securities.
- Many investors and government officials assumed agencies’ ratings were accurate - they were free riders.

Moral Hazard: Problem and Solutions

- The phrase *moral hazard* originated when economists who were studying insurance noted that an insurance policy changes the behavior of the person who is insured.
- Moral hazard arises when we cannot observe people's actions and therefore cannot judge whether a poor outcome was intentional or just a result of bad luck.

Moral Hazard: Problem and Solutions

- A second information asymmetry arises because the borrower knows more than the lender about the way borrowed funds will be used and the effort that will go into a project.
- Moral hazard affects both equity and bond financing.

Moral Hazard in Equity Finance

- If you buy stock in a company, how do you know your money will be used in the way that is best for you, the stockholder?
- It is more likely that the manager will use the funds in a way that is most advantageous to them, not you.
- The separation of your ownership from their control creates what is called a *principal-agent problem*.

Solving the Moral Hazard Problem in Equity Financing

- During the 1990's, a concerted attempt was made to align managers' interests with those of stockholders.
  - Executives were given stock options that provided lucrative payoffs if a firm's stock price rose above a certain level.
    - This gave managers incentives to misrepresent companies' profits.
- At this time, there is no foolproof way of ensuring managers will behave in the owner's best interest.

Moral Hazard in Debt Finance

- When the managers are the owners, moral hazard in equity finance disappears.
- Because debt contracts allow owners to keep all the profits in excess of the loan payments, they encourage risk taking.
- Lenders need to find ways to make sure borrowers don’t take too many risks.
- People with risky projects are attracted to debt finance because they get the full benefit of the upside, while the downside is limited to their collateral.

Solving the Moral Hazard Problem in Debt Finance

- Legal contracts can solve the moral hazard problem inherent in debt finance.
  - Bonds and loans carry restrictive covenants that limit the amount of risk a borrower can assume.
  - The firm may have to maintain a certain level of net worth, a minimum credit rating, or a minimum bank balance.
  - For example: home mortgages require home insurance, fire insurance, etc.

Negative Consequences of Information Costs

Table 11.3 The Negative Consequences of Information Costs

1. ***Adverse selection.*** Lenders can't distinguish good from bad credit risks, which discourages transactions from taking place.

   Solutions to the hidden attributes problem include:

   Government-required information disclosure

   Private collection of information

   Pledging of collateral to insure lenders against the borrower's default

   Requiring borrowers to invest substantial resources of their own

2. ***Moral hazard.*** Lenders can't tell whether borrowers will do what they claim they will do with the borrowed resources; borrowers may take too many risks.

   Solutions to the hidden actions problem include:

   Requiring managers to report to owners

   Requiring managers to invest substantial resources of their own

   Covenants that restrict what borrowers can do with borrowed funds

IN THE BLOG
Conflicts of Interest in Finance

- Ways to deter conflicts of interest
  - Increased transparency, improved market discipline, enhanced regulation, massive financial penalties, and criminal prosecution
- What else can be done?
  - Break up large institutions into smaller ones with restricted scope
  - Hold individuals more accountable
    - Managers face greater personal financial liability
  - Some mix of these

Financial Intermediaries and Information Costs

- Much of the information that financial intermediaries collect is used to:
  - Reduce information costs, and
  - Minimize the effects of adverse selection and moral hazard.
- To do this, intermediaries:
  - Screen loan applicants,
  - Monitor borrowers, and
  - Penalize borrowers by enforcing contracts.

Screening and Certifying to Reduce Adverse Selection

- The lender uses the number to identify you to a company that collects and analyzes credit information, summarizing it for potential lenders in a credit score.
- Every time someone requests a credit score, they have to pay, eliminating the free rider problem.
- Banks can collect information on a borrower that goes beyond their credit report and loan application.

Screening and Certifying to Reduce Adverse Selection

- Underwriters screen and certify firms seeking to raise funds directly in the financial markets.
  - Underwriters are large investment banks like Goldman Sachs, JPMorgan Chase, and Morgan Stanley.
- Without certification by one of these firms, companies would find it difficult to raise funds.

Monitoring to Reduce Moral Hazard

- Intermediaries monitor both the firms that issue bonds and those that issue stocks to reduce moral hazard.
  - Many hold significant number of shares in individual firms.
  - They may place a representative on the company's board of directors.

Monitoring to Reduce Moral Hazard

- For new companies, a financial intermediary called a *venture capital firm* does the monitoring.
  - They specialize in investing in risky new *ventures* in return for a stake in the ownership and a share of the profits.
  - They keep a close watch on the managers' actions.
- The threat of a takeover helps to persuade managers to act in the interest of the stock and bondholders.

How Companies Finance Growth and Investment

- Instead of distributing profits to shareholders, a firm can reinvest the earnings into the firm.
  - A vast majority of investment financing comes from internal sources.
- The fact that managers have superior information about the way in which their firms are and should be run makes internal finance the rational choice.

How Companies Finance Growth and Investment

Figure 11.3 Sources of Business Finance