ECON 202 - MACROECONOMIC PRINCIPLES

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Chapter 12 - Investment and Financial Markets

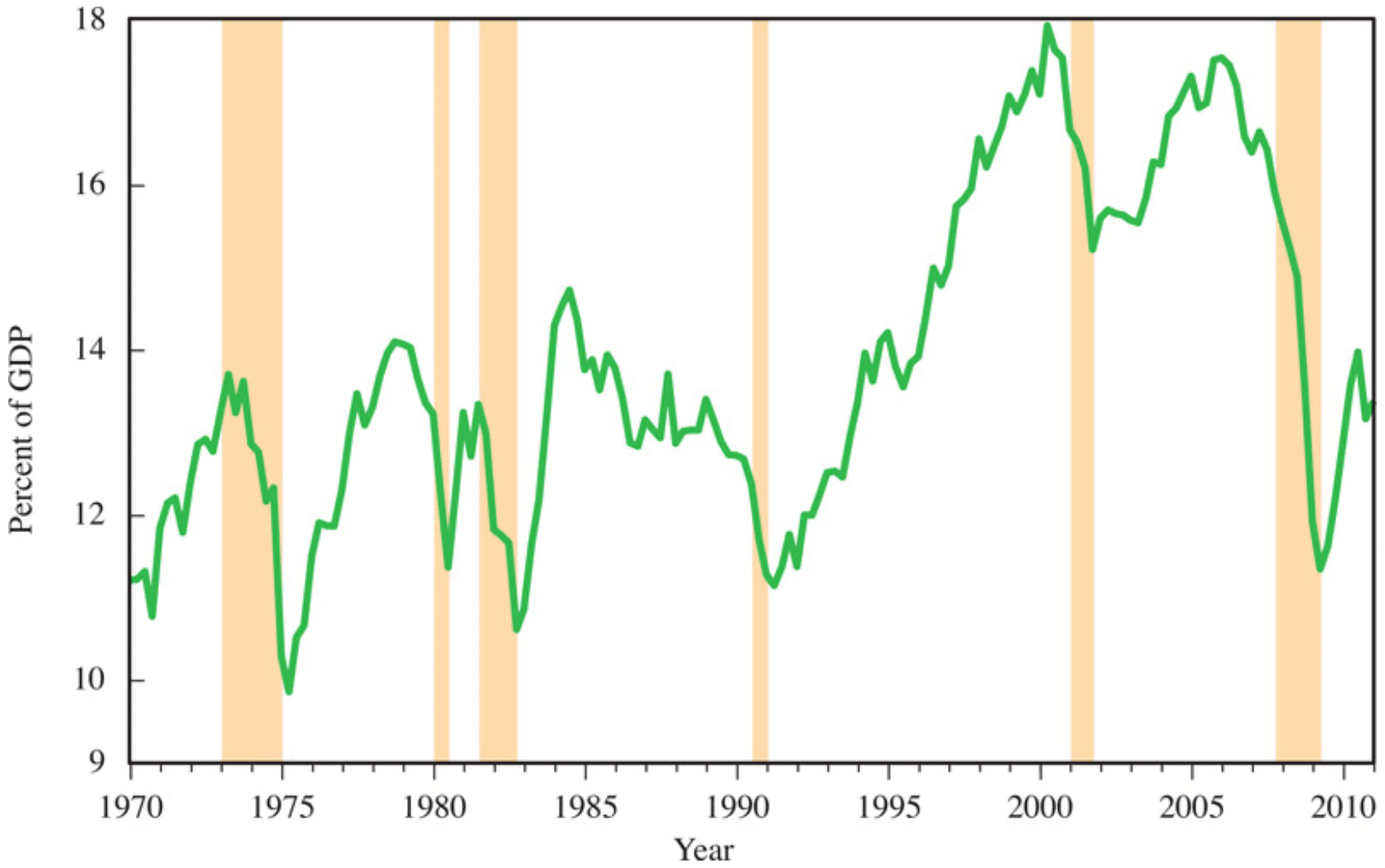
Investment and Financial Markets- Topics

1. Explain why investment spending is a volatile component of GDP
2. Discuss the concept of present value
3. Describe the role of interest rates in making investment decisions
4. List the ways that financial intermediation can facilitate investment

Uncertainty and Accelerator Theory

- Investment projects are uncertain, since they concern future payoffs
- Accelerator Theory
  - Current investment spending depends positively on the expected future growth of real GDP
  - Investment spending is highly pro-cyclical and more volatile than GDP

Investment: A Plunge into the Unknown



Present Value and Interest Rates

- Present value definition:

$$PV = \frac{K}{(1+i)^t}$$

  - K = amount of money you would get at some point in the future
  - t =amount of time, or years, in the future you're going to get the money
  - i =interest rate you are going to earn

- The present value of a given payment in the future decreases as the interest rate increases
- When interest rates fall, the present value of a given payment in the future increases

Example 1

- Future payment one year from now: $K = \$400$
- $t = 1$
- $i = 3\%$
- Present value definition:

$$PV = \frac{400}{(1 + 0.03)^1} = 388.35$$

Example 2

- Future payment two years from now: $K = \$400$
- $t = 2$
- $i = 3\%$ for both years
- Present value definition:

$$PV = \frac{400}{(1 + 0.03)^2} = 377.04$$

Example 3

- Two future payments: \$400 one year from now and \$450 two years from now
- $i = 3\%$
- $t = 2$
- Present value definition:

$$PV = \frac{400}{(1+0.03)} + \frac{450}{(1+0.03)^2} = 812.52$$

Example 4

- Future payment two years from now: $K = \$400$
- $i_1 = 3\%$ in year one and $i_2 = 5\%$ in year two
- Present value definition:

$$PV = \frac{400}{(1 + 0.03) \times (1 + 0.05)} = 369.86$$

Example 5

- Two future payments: \$400 one year from now and \$450 two years from now
- $i_1 = 3\%$ in year one and $i_2 = 5\%$ in year two
- Present value definition:

$$PV = \frac{400}{(1+0.03)} + \frac{450}{(1+0.03)\times(1+0.05)} = 804.44$$

Example 6

- Investment project with initial setup cost of: \$600
- Two future payments: \$400 one year from now and \$450 two years from now
- $i_1 = 3\%$ in year one and $i_2 = 5\%$ in year two
- Present value definition:

$$NPV = -600 + \overbrace{\frac{400}{(1+0.03)} + \frac{450}{(1+0.03)\times(1+0.05)}}^{PV} = 204.44$$

- This is often referred to as the net-present value (NPV)
- Investment rule: if NPV $> 0 \rightarrow$ make investment!

Nominal and Real Interest Rates

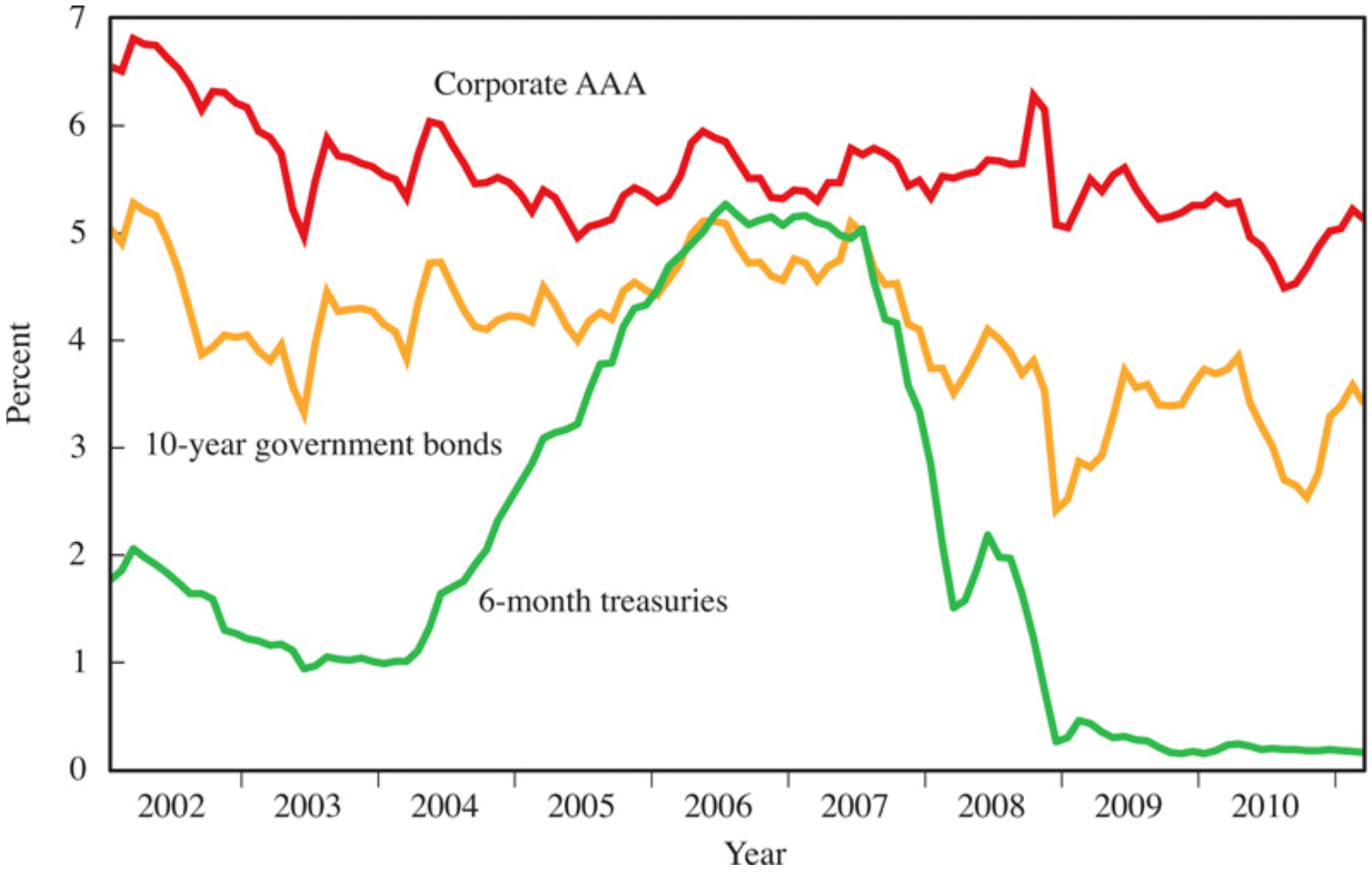
- A bond is a promise or IOU to pay money in the future in exchange for money now
- Money is paid back including an interest payment
  - Real interest rate: r
  - Nominal interest rate: i
  - Inflation rate: π so that

$$r = i - \pi$$

Expected Inflation

- When individuals borrow or lend, they do not know what the rate of inflation, π will be like
- Hence they form expectations, π^e
- Expected real interest: $r^e = i - \pi^e$
- The expected real interest rate is the rate at which borrowers or lenders expect to make transactions in the future

Evaluating the Future



Investment Spending and Interest Rates

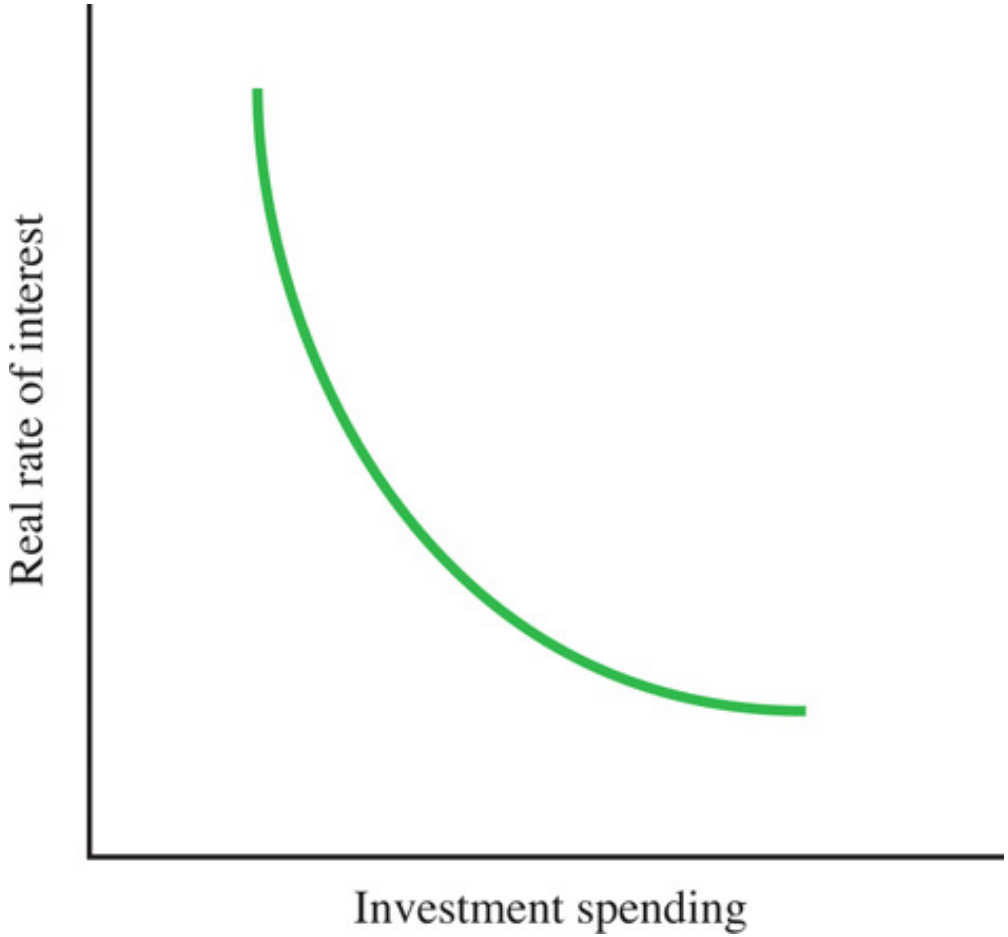
Understanding Investment Decisions

TABLE 12.1 Return on Investment by Project

Project	Cost	Return
A	$100	$101
B	100	103
C	100	105
D	100	107
E	100	109

- At a market interest rate of 2% per year, for example, only investment A is unprofitable
- All the other investments have a return greater than the opportunity cost of the funds

Investment and Prices



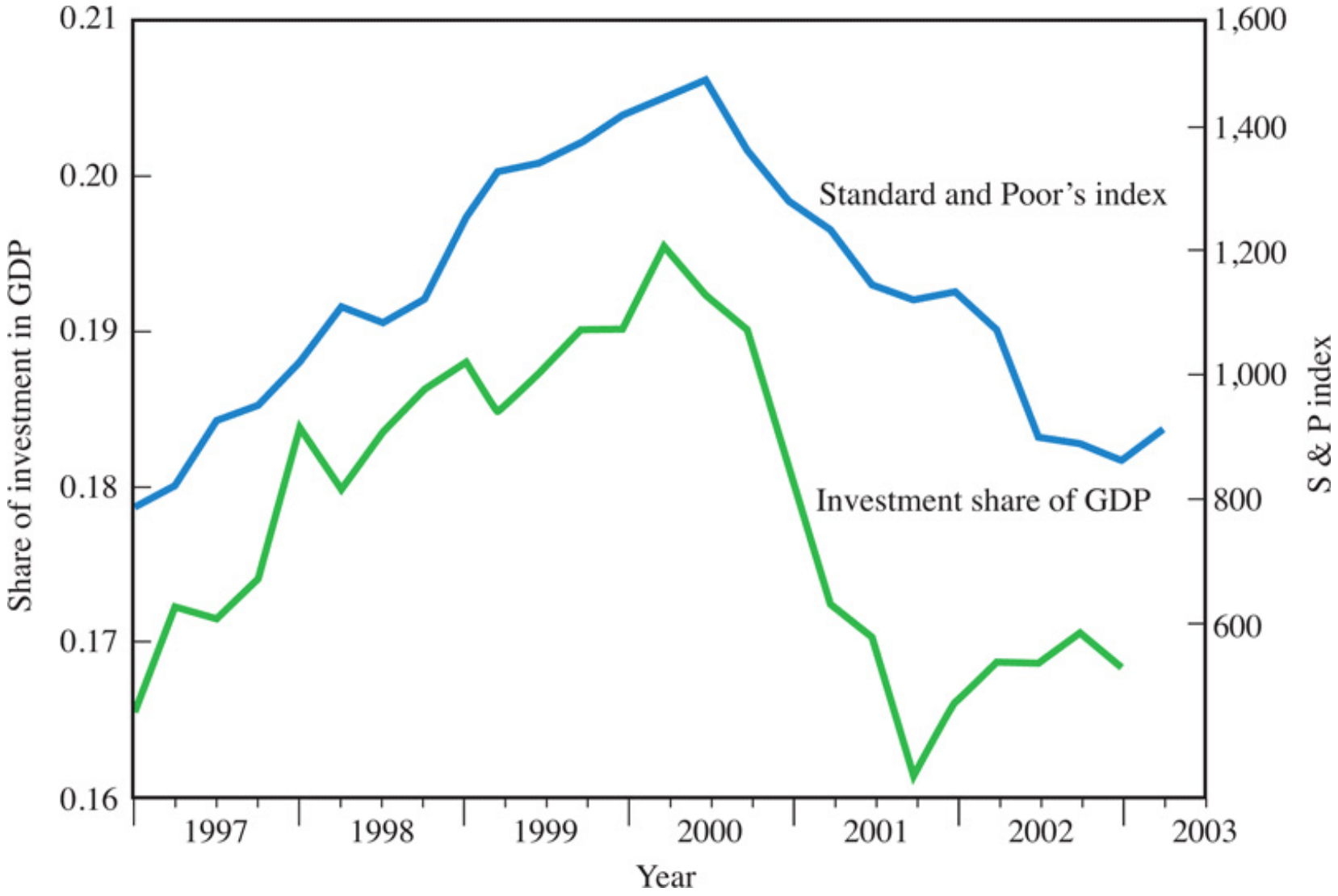
Investment Theories

- Neoclassical theory of investment
  - Real interest and taxes are the major factors determining investment (Dale Jorgenson of Harvard University)

- Q-Theory of investment
  - High stock prices, high investment
  - Price of a stock is the present value of future discounted dividend payments

$$p_{stock} = \frac{d_1}{(1+i)^1} + \frac{d_2}{(1+i)^2} + \frac{d_3}{(1+i)^3} + \dots$$

Investment and the Stock Market



Financial Intermediaries

Financial Intermediaries

- Without intermediaries entrepreneurs would have to borrow directly from households
- HH are risk averse and want ready access to their funds
- HH would ask very high interest rates to compensate them for the risk
- Hence, intermediaries pool assets and lend at a larger scale

Why Financial Intermediaries Emerge

1. Reduce costs of borrowing and lending
2. Monitor investments
3. Reduce risks via diversification
4. Provide liquidity
5. Financial intermediaries help bring savers and investors together
6. By using their expertise and the powers of diversification, financial intermediaries reduce risk to savers and allow investors to obtain funds on better terms

- Who are these financial intermediaries?

Financial Innovation and Risk

Reducing Debt Owed on Home Mortgages

- Housing boom→homeowners borrowed money to purchase their property but then saw the value of their homes fall sharply
- In 2012 approximately 12 million U.S. homeowners were "underwater"
- Many in Congress advocated for a principal reduction
- This idea is controversia:
  1. Mortgage holders (creditors) may not want to reduce the principal → think they will be repaid
  2. Would underwater homeowners (that actually do pay) stop making payments in order to obtain some principal relief?
  3. Rather than principal reduction, some lenders have allowed borrowers to postpone payments

Malfunctions

- 1930, commercial bank failures
  - Unprofitable loans to farmer or local businesses
  - Depositors panicked $\rightarrow$ Bank runs $\rightarrow$ Many banks were destroyed
  - Hence, government deposit insurance for up to \$100,000 was introduced
- 1980 in the U.S. a savings and loan crisis
- 1990 in Japan
- 2007/2008 Subprime Mortgage Crisis started in the US

Financial Innovations and New Risks

- As securitization developed, it allowed financial intermediaries to provide new funds for borrowers to enter the housing market
- As the housing boom began in 2002, lenders and home purchasers began to take increasing risks
- Lenders made "subprime" loans to borrowers with limited ability to actually repay their mortgages
- Some households were willing to take on considerable debt because they were confident they could make money in a rising housing market

Financial Innovations and New Risks (cont.)

- Lenders securitized the subprime loans and financial firms offered exotic investment securities to investors based on these loans (bundling of subprime loans to reduce (or hide?) the true risk of these financial assets)
- Many financial institutions purchased these securities without really knowing what was inside them
- When the housing boom stopped and borrowers stopped making payments on subprime loans, it created panic in the financial market
- Effectively, through securitization the damage from the subprime loans spread to the entire financial market, causing a major crisis