Principles of Economics

ECON F211

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Capital – An Introduction

Goods produced by the economic system that are used as inputs to produce other goods and services in the future

- Tangible capital
- Social capital
- Intangible capital

Measuring Capital

Capital Stock

- For a single firm, the current market value of the firm's plant, equipment, inventories, and intangible assets
- Capital is measured in terms of money, or value at a point in time

Investment and Depreciation

Investment

- New capital additions to a firm's capital stock. Although capital is measured at a given point in time (a stock), investment is measured over a period of time (a flow). The flow of investment increases the capital stock

Depreciation

- The decline in an asset's economic value over time

Investment and Depreciation

TABLE 11.1 Private Investment in the U.S. Economy, 2009

GDP = $14,256.3 billion

	Billions of Current Dollars	As a Percentage of Total Gross Investment	As a Percentage of GDP
Nonresidential structures	480.0	29.5	3.4
Equipment and software	908.8	55.8	6.4
Change in private inventories	−120.9	−7.4	−0.8
Residential structures	361.0	22.2	2.5
Total gross private investment	1,628.9	100.0	11.4
− depreciation	−1,538.8	−94.5	−10.8
Net investment = gross investment − depreciation	90.1	5.5	0.6

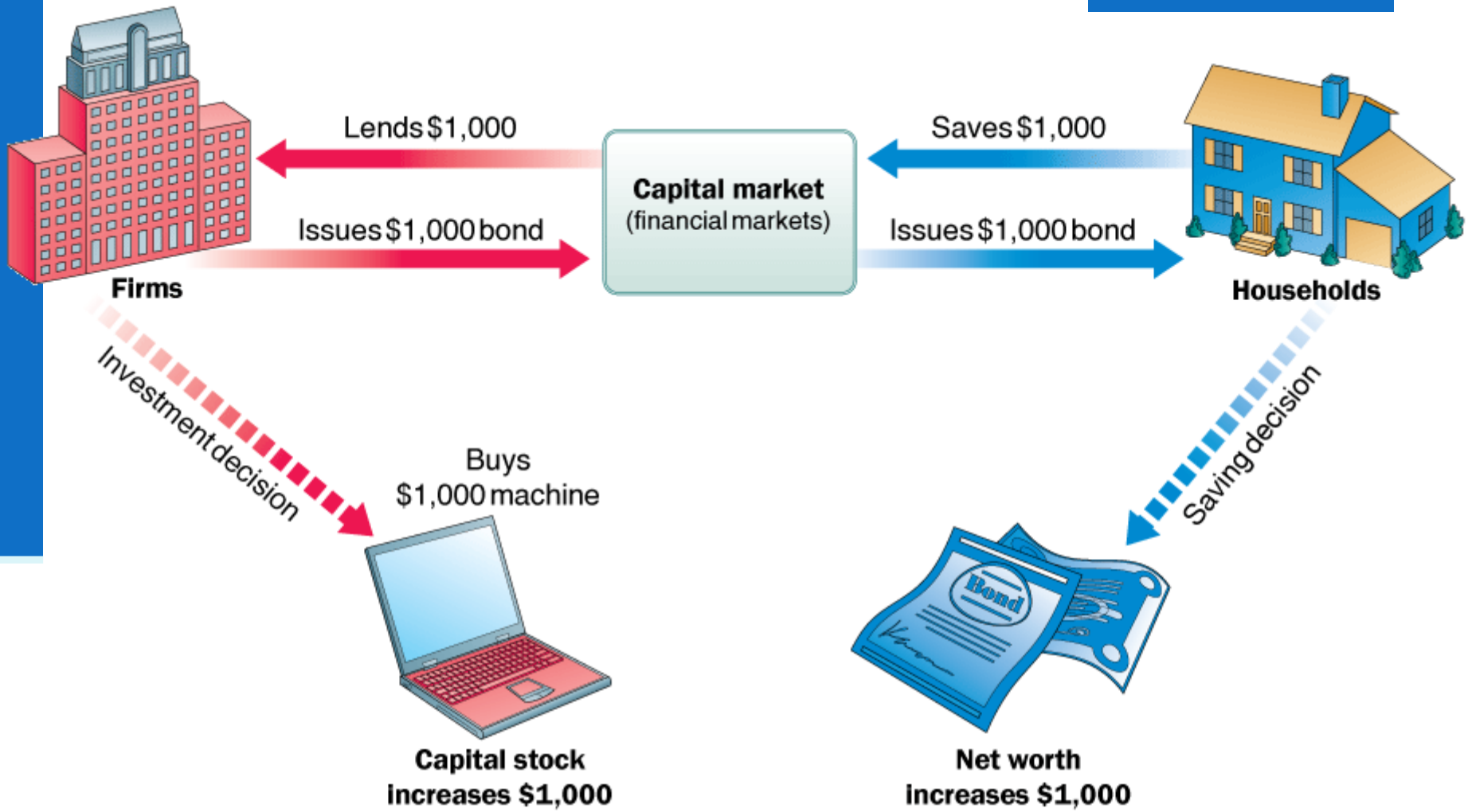
Source: Chapter 11, Text Book mentioned in the course handout

The Capital Market

The market in which households supply their savings to firms that demand funds to buy capital goods

- Bond (Without intermediary)
  - A contract between a borrower and a lender, in which the borrower agrees to pay the loan at some time in the future, along with interest payments along the way
- Financial Market (including intermediary)
  - The part of the capital market in which savers and investors interact through intermediaries

The Capital Market



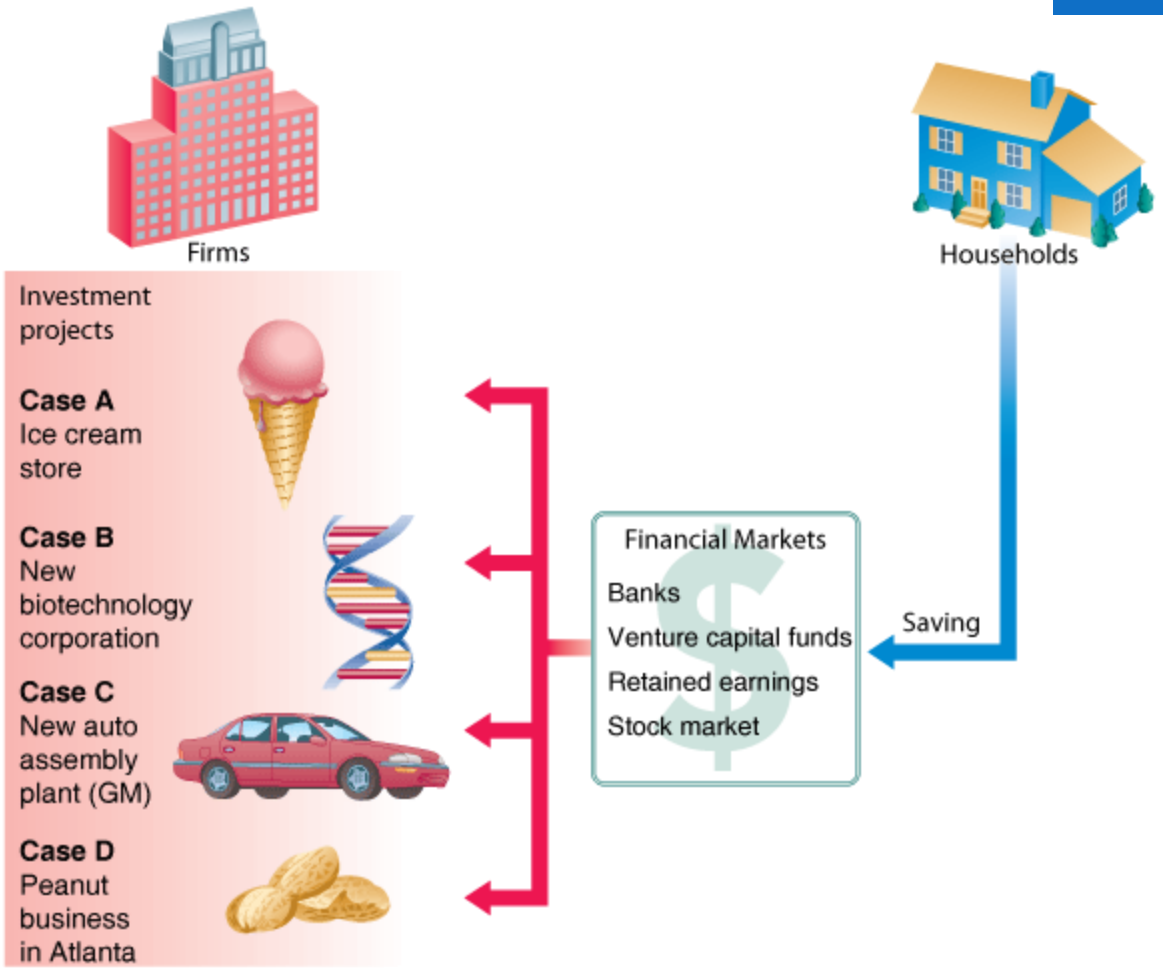
▲ FIGURE 11.1 **$1,000 in Savings Becomes $1,000 of Investment**

The Capital Income

Income earned on savings that have been put to use through financial capital markets

- Interests – The payments made for the use of money
- Profits – Profit serves as a reward for innovation and risk taking

Financial Markets in Action



▲ **FIGURE 11.2** **Financial Markets Link Household Saving and Investment by Firms**

Capital Accumulation and Allocation

- In modern industrial societies, investment decisions (capital production decisions) are made primarily by firms
- Households decide how much to save, and in the long run, savings limit or constrain the amount of investment that firms can undertake
- The capital market exists to direct savings into profitable investment projects.

Demand for New Capital

- Firms have an incentive to expand in industries that earn positive profits—that is, a rate of return above normal—and in industries in which economies of scale lead to lower average costs at higher levels of output. Positive profits in an industry stimulate the entry of new firms.

- The expansion of existing firms and the creation of new firms both involve investment in new capital.

- A perfectly competitive firm invests in capital up to the point at which the marginal revenue product of capital is equal to the price of capital.

Forming Expectations

- Capital produces useful services over *some period of time*

The Expected Benefits of Investments

- The investment process requires that the potential investor evaluate the expected flow of future productive services that an investment project will yield

The Expected Costs of Investments

- The ability to lend at the market rate of interest means that there is an *opportunity cost* associated with every investment project

The evaluation process involves not only estimating future benefits but also comparing them with the possible alternative uses of the funds required to undertake the project

Comparing Costs & Expected Returns

- The expected rate of return is the annual rate of return that a firm expects to obtain through a capital investment

- The expected rate of return on an investment project depends on the price of the investment, the expected length of time the project provides additional cost savings or revenue, and the expected amount of revenue attributable each year to the project

Calculating Present Value

TABLE 11A.1 Expected Profits from a $1,200 Investment Project	
Year 1	$100
Year 2	100
Year 3	400
Year 4	500
Year 5	500
All later years	0
Total	1,600

Calculating Present Value

In general, the present value (PV), or present discounted value (PDV), of R dollars to be received in t years is:

$$PV = \frac{R}{(1+r)^t}$$

TABLE 11A.2 Calculation of Total Present Value of a Hypothetical Investment Project (Assuming r = 10 Percent)

END OF…	$(R)	DIVIDED BY $(1 + r)^t$	=	PRESENT VALUE ($)
Year 1	100	(1.1)		90.91
Year 2	100	$(1.1)^2$		82.64
Year 3	400	$(1.1)^3$		300.53
Year 4	500	$(1.1)^4$		341.51
Year 5	500	$(1.1)^5$		310.46
Total present value				1,126.05

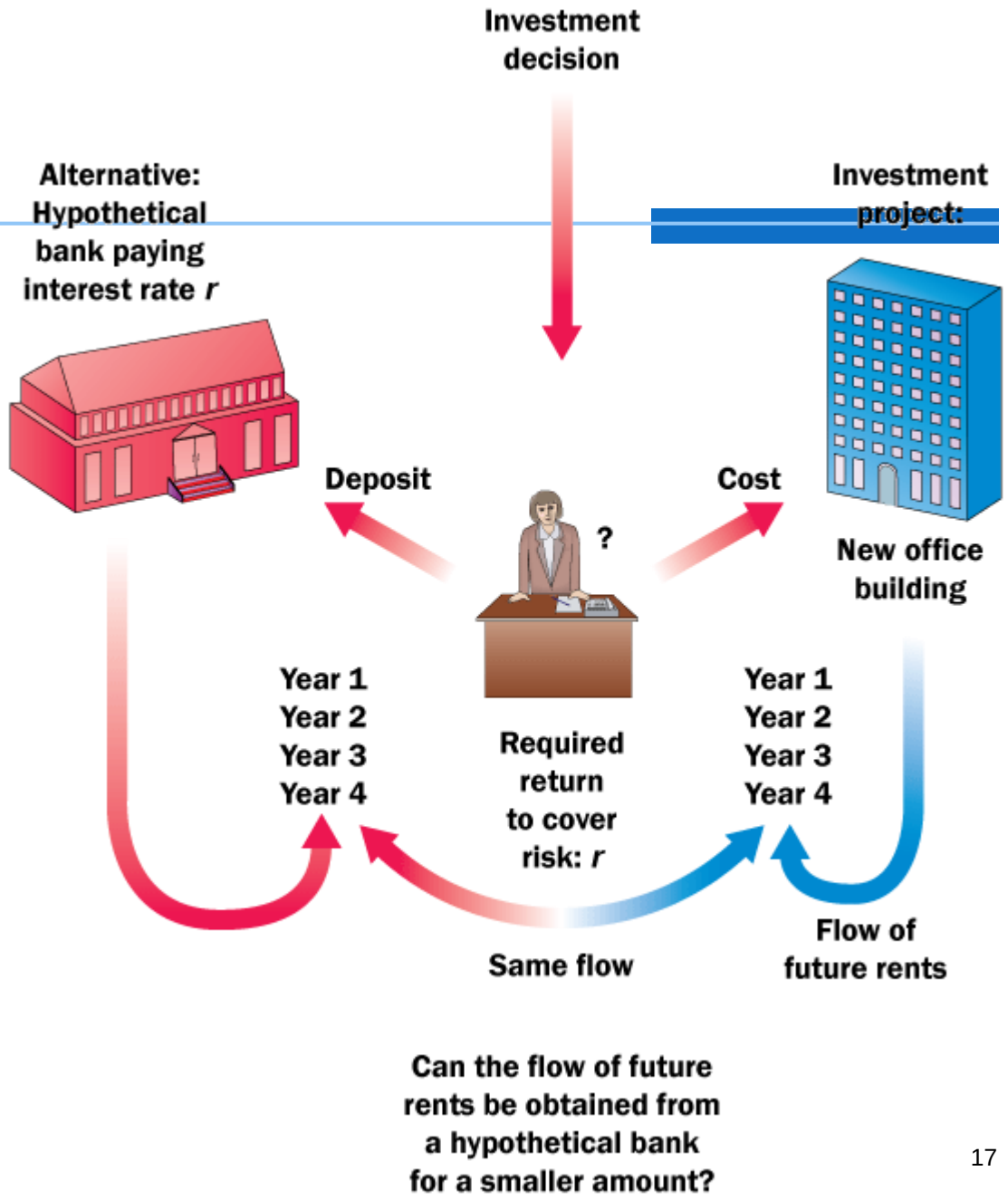
Present Value with lower interest rate

TABLE 11A.3 Calculation of Total Present Value of a Hypothetical Investment Project (Assuming r = 5 Percent)

END OF…	$(*R*)	DIVIDED BY $(1 + r)^t$	=	PRESENT VALUE ($)
Year 1	100	(1.05)		95.24
Year 2	100	$(1.05)^2$		90.70
Year 3	400	$(1.05)^3$		345.54
Year 4	500	$(1.05)^4$		411.35
Year 5	500	$(1.05)^5$		391.76
Total present value				1,334.59

The present discounted value (*PDV*), *or* present value (*PV*) The present discounted value of *R* dollars to be paid *t* years in the future is the amount you need to pay today, at current interest rates, to ensure that you end up with *R* dollars *t* years from now. It is the current market value of receiving *R* dollars in *t* years.

Investment Project: Go or No? Thinking Map



Reference

Case, K.E., Fair, R.C., & Oster, S.E. (2018). *Principles of Economics*. 12th Edition, Pearson India Education Services Pvt. Ltd.