


Investment, the Capital Market, and the Wealth of Nations

Full Length Text — Part: 5 Chapter: 26
Micro Only Text — Part: 3 Chapter: 14


To Accompany “Economics: Private and Public Choice 12th ed.”
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Why People Invest

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Capital and Investment

- Types of **capital**:
 - physical capital
 - human capital
- **Investment**: purchase or development of a capital resource
- **Savings**: income not spent on current consumption

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Savings and Investment

- **Investment** and **savings** are closely linked:
 - **Savings** is income minus consumption.
 - **Investment** is the use of unconsumed income to produce a capital resource.
 - **Saving** is required for **investment**
 - someone must save in order to free resources for investment.

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Investment and Consumption

- Often, more consumption goods can be produced by:
 - using scarce resources to produce more physical and human capital today, and,
 - then use this capital to produce more consumption goods in the future.
- Consumption in the future is valued less than consumption now because people have a **positive rate of time preference** – they prefer to consume goods and services sooner rather than later.

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Interest Rates

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Interest Rate

- The **interest rate** is the price of earlier availability of goods and services.
- It is the **premium** that borrowers must pay lenders in order to acquire purchasing power now rather than later.
 - These funds may be used for either consumption or investment.

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Determination of Interest Rates

- Interest rates are determined by the **supply** and **demand** for **loanable funds**.
- The **demand** for **loanable funds** comes from:
 - productivity of capital resources**
-- investment demand
 - positive rate of time preference**
-- consumers' desire for earlier availability
- Interest rewards lenders who curtail current consumption (**supply loanable funds**) so that others can buy now rather than later.
- The **market interest rate** brings the quantity of funds demanded by borrowers into balance with the quantity supplied by lenders.


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Determination of the Interest Rate

- The **demand for loanable funds** stems from consumers' desire for earlier availability and the productivity of capital.
- As the interest rate rises, current goods become more expensive in comparison with future goods. Therefore, borrowers will **demand** fewer loanable funds.
- On the other hand, higher interest rates stimulate lenders to **supply** additional funds to the market.
- In equilibrium, the quantity of loanable funds **demand** equals the quantity **supplied**. The "price" is the interest rate i .


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Money Rate vs. Real Rate

- During inflation, the **nominal interest rate** – or **money interest rate** – is a misleading indicator of the true cost of borrowing.
- The **money interest rate** will include an **inflationary premium** reflecting the expected rate of inflation.
- The **real rate of interest** is the **money interest rate** minus the **inflationary premium**.
 - The **real interest rate** is a far better measure of the true cost of borrowing.


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Interest Rates and Risk

- More than one interest rate exists in the **loanable funds market**.
 - **Examples:**
 - mortgage rate
 - credit card rate
 - short-term loan rate
 - Riskier loans will have higher interest rates.
 - Long-term loans are generally riskier.

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Components of the Money Interest Rate

- The **money interest rate** reflects three components:
 - **Risk Premium:**
 - reflects probability of default
 - large when the probability of borrower default is substantial
 - **Inflationary Premium:**
 - reflects expectations that the loan will be paid back with dollars of less purchasing power
 - large when decision makers expect a high rate of inflation during the period in which the loan is outstanding
 - **Pure rate of interest:**
 - price of earlier availability

Risk Premium
Inflationary Premium
Pure Interest

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The Present Value of Future Income and Costs

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Present Value

- The interest rate connects the value of dollars today with the value of dollars in the future.
- The **present value** (PV) of a single payment to be received **one** year from now is:

$$PV = \frac{\text{Receipts 1 year from now}}{\text{interest rate} + 1}$$

where i = 6 %

$$PV = \frac{\$ 100}{1 + .06} = \frac{\$ 100}{1.06} = \$ 94.34$$

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Present Value *n* Years in the Future

- The **present value** (PV) of a single payment to be received **n** years from now is:

$$PV = \frac{\text{Receipts } n \text{ years from now}}{(\text{interest rate} + 1)^n}$$

where i = 6 % and n = 2

$$PV = \frac{\$ 100}{(1 + .06)^2} = \frac{\$ 100}{(1.06)^2} = \$ 89.36$$

- The **present value** of a future payment is inversely related to:
 - the interest rate, and,
 - how far in the future the payment will be received.

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Present Value of Stream of Payments

- The **present value** (PV) of a stream of payments (each of nominal magnitude R) to be received each year for n years is:

$$PV = \frac{R_1}{(1+i)} + \frac{R_2}{(1+i)^2} + \frac{R_3}{(1+i)^3} + \dots + \frac{R_n}{(1+i)^n}$$

where $i = 6\%$ and $n = 3$ and $R = \$100$

$$PV = \frac{\$100}{(1.06)} + \frac{\$100}{(1.06)^2} + \frac{\$100}{(1.06)^3} = \$267.30$$

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Present Value

Present value of \$100 to be received n years in the future at interest rates r

n	2%	6%	12%	20%
1	\$ 98.04	\$ 94.34	\$ 89.29	\$ 83.33
2	\$ 96.12	\$ 89.00	\$ 79.72	\$ 69.44
3	\$ 94.23	\$ 83.96	\$ 71.18	\$ 57.87
4	\$ 92.39	\$ 79.21	\$ 63.55	\$ 48.23
5	\$ 90.57	\$ 74.73	\$ 56.74	\$ 40.19
10	\$ 82.03	\$ 55.84	\$ 32.20	\$ 16.15
15	\$ 74.30	\$ 41.73	\$ 18.27	\$ 6.49
20	\$ 67.30	\$ 31.18	\$ 10.37	\$ 2.61
30	\$ 55.21	\$ 17.41	\$ 3.34	\$ 0.42
50	\$ 37.15	\$ 5.43	\$ 0.35	\$ 0.01

- The columns indicate the present value of \$100 to be received n years in the future at different interest rates r .
- Note that the present value of \$100 declines as either the interest rate or the number of years in the future increases.

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Questions for Thought:

- Why are investors willing to pay interest to acquire loanable funds? Why are lenders willing to loan these funds?
- If the current interest rate is 8%, what is the present value of three \$1,000 payments to be received at the end of each of the next 3 years? Would the present value increase or decrease if the interest rate were higher, say 10%?
- A lender made the following statement to a borrower, "You are borrowing \$1,000, which is to be repaid in 12 monthly installments of \$100 each. Your total interest charge is \$200, which means your interest rate is 20% percent." Is the effective interest rate on the loan really 20%?

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Questions for Thought:

4. The interest rate charged on outstanding credit card balances is generally higher than the interest rate that banks charge customers with a good credit rating. Why?

Should the government impose an interest rate ceiling of, for example, 10%? If it did, who would be hurt and who would be helped? Discuss.

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Present Value, Profitability, and Investment

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Discounted Present Value

Discounted *PV* of \$12,000 Truck Rental for 4 Years
(Interest Rate = 8 Percent)

Year	Expected future income (received at years-end)	Discounted value (8% rate)	Present value of income stream
1	\$ 12,000	0.926	\$ 11,112
2	\$ 12,000	0.857	\$ 10,284
3	\$ 12,000	0.794	\$ 9,528
4	\$ 12,000	0.735	\$ 8,820
			<u>\$ 39,744</u>

- Suppose a truck rental firm is considering the purchase of a \$40,000 truck. Experience dictates that the firm can rent out the truck for net revenues of \$12,000 per year. The truck has an expected life of 4 years (it then has \$0 value).
- As the firm can borrow and lend the funds at an interest rate of 8 %, we discount the future expected income at 8%. How much is this 4 year stream of income worth today?
- Because the *present value* of the future income stream is less than the cost of the endeavor (\$39,744 < \$40,000), the project should not be undertaken.

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Expected Future Earnings and Asset Value

- The current value of an asset is determined by the present value of its expected future net earnings.
- An increase (*decline*) in the expected future earnings derived from an asset will increase (*reduce*) the market value of that asset.

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Investing in Human Capital

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Investing in Human Capital

Annual earnings or costs

Earnings w/ college

Earnings w/o college

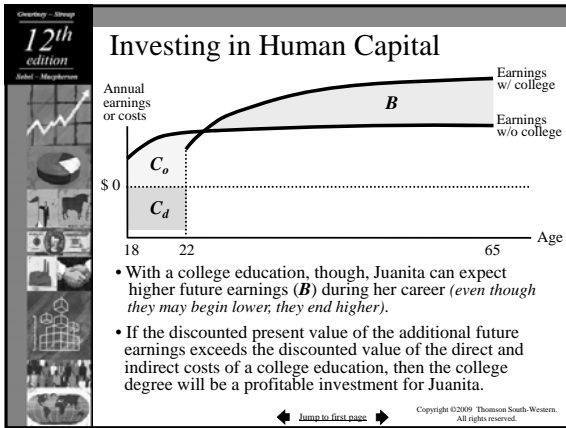
C_o

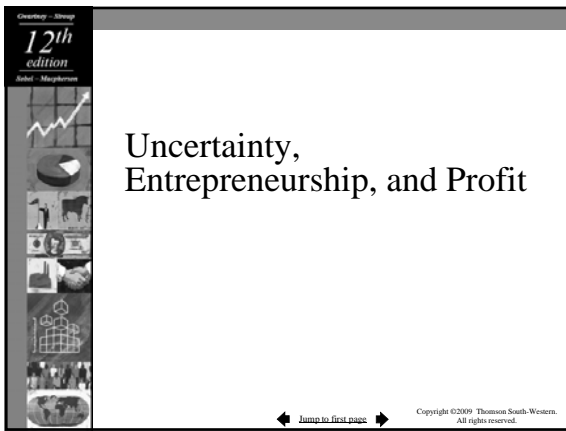
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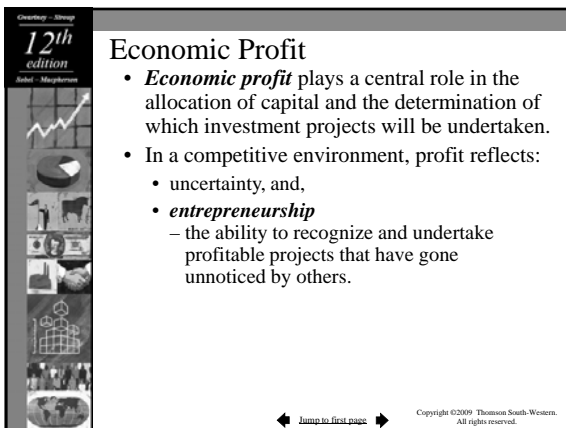
18 22 65 Age

- Consider the human-capital investment decision facing Juanita, an 18-year old who just finished high-school.
- We have graphed Juanita’s expected earnings both with ... and without college. Should Juanita attend college or not?
- If Juanita chooses to attend college, she will incur both the direct cost of a college education (tuition, books, etc) C_d ... and the opportunity cost of earnings forgone while in college C_o .

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Income Shares of Physical & Human Capital Productivity and Earnings

Share (%) of national income

Year	Employee compensation (%)	Self-employment income (%)	Income from physical capital (%)
1950	~55	~15	~30
1960	~55	~15	~30
1970	~55	~15	~30
1980	~55	~15	~30
1990	~55	~15	~30
2000	~55	~15	~30

Employee compensation

Income from physical capital (interest, rents, & corp. profits)

Self-employment income

- Employee compensation and self-employment income primarily represent returns to human capital.
- These two components have comprised approximately 80% of total national income in the U.S. for several decades.

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The Capital Market and the Wealth of Nations

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Capital Market and the Wealth of Nations

- To grow and prosper, a nation must have a mechanism that attracts savings and channels it into investment projects that create wealth.
- The capital market performs this function in a market economy.
- When property rights are defined and securely enforced, productive investments will also be profitable.

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Capital Market and the Wealth of Nations

- Investment in both physical and human capital is an important source of growth in productivity (*and income*).
- Economies that invest more and channel their investment funds into more productive projects generally grow more rapidly.

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Questions for Thought:

1. How are human- & physical-capital investment decisions similar? How do they differ? Do human-capital investors make profits? If so, what is the source of the profit?
2. In a market economy, investors have a strong incentive to undertake profitable investments. What makes an investment profitable? Do profitable investments create wealth? Why or why not? Do all investments create wealth?
3. Some countries with very low incomes per capita are unable to save much. Are people in these countries helped or hurt by people in high-income countries with higher savings rates?

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Questions for Thought:

4. The owner of a lottery ticket paying \$2 million dollars (\$100,000 each year for the next 20 years) is offering to sell the ticket for \$1.2 million. Why would anyone be willing to sell an income stream of \$2 million for only \$1.2 million?

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