SV151, Principles of Economics
K. Christ
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Empirical regularity #1: Okun’s law – output and unemployment

\[ \Delta \text{URATE} = 1.32 - 0.44 \Delta \text{GDP} \]

1983:4 to 1984:3
Empirical regularity #2: Phillips Curve – inflation and unemployment

Mankiw’s Principle #10: Society faces a short-run trade-off between inflation and unemployment.
A Little Aggregate Income Accounting …

\[ Y = C + I + G \]

For a closed economy ...

\[ Y - C - G = I \]

\[ S = I \]

National Savings
Investment Demand

Adding in taxes …

\[ S = (Y - T - C) + (T - G) \]

\[ S = S_P + S_G \]

A Little Aggregate Income Accounting …

\[ Y = C + I + G \]

For an open economy …

\[ Y - C - G = I + X \]

\[ S - I = X \]

\[ \text{Net Foreign Investment} = X \]

If \( X > 0 \), Then \( S > I \)

If \( X = 0 \), Then \( S = I \)

If \( X < 0 \), Then \( S < I \)

The economy “exports” its excess savings to the rest of the world.

The economy “imports” excess savings from the rest of the world.
The Market for Loanable Funds

Examining three types of policy:
1. Saving Incentives
2. Investment Incentives
3. Government Budget Deficits and Surpluses
To compare sums from different times, we use the concept of present value.

- The **present value** of a future sum: the amount that would be needed today to yield that future sum at prevailing interest rates.

- Related concept:
  - The **future value** of a sum: the amount the sum will be worth at a given future date, when allowed to earn interest at the prevailing rate.
Deposit $100 in the bank at 5% interest. What is the future value (FV) of this amount?

- In one year …
- In two years …
- In three years …
- In $N$ years …

In general, $FV = PV(1 + r)^N$ and $PV = FV/(1 + r)^N$
Example 2: An Investment Decision

Present Value Formula: $PV = \frac{FV}{(1 + r)^N}$

Suppose $r = 0.06$. Should General Motors spend $100$ million to build a factory that will yield $200$ million in ten years?

Suppose $r = 0.09$. Should General Motors spend $100$ million to build a factory that will yield $200$ million in ten years?
If you buy a share of stock in company X today,

– you will be able to sell it in 3 years for $30.
– you will receive a $1 dividend at the end of each of those 3 years.

If the prevailing interest rate is 10%, what is the value of a share of company X’s stock today?
Example 4: Valuation of Financial Assets (Bonds)

Suppose the current price of a Ford, Triple-A rated corporate bond ("par" value = $1,000), with a 6% "coupon rate" and maturity date of February 4, 2014 is $850. If your discount rate is 10%, is this bond underpriced or overpriced?

Suppose the current price of a Ford, Triple-A rated corporate bond ("par" value = $1,000), with a 6% "coupon rate" and maturity date of February 4, 2014 is $850. If your discount rate is 12%, is this bond underpriced or overpriced?
Measuring Risk

S&P 500 – Level and Daily Percentage Change
For economically meaningful decisions, most people are risk averse – *ceteris paribus*, they prefer outcomes with less variability.

Economists model risk aversion by assuming that our “utility” (or level of well-being) can be thought of as a function of wealth:
Diversification reduces risk by replacing a single risk with a large number of smaller, unrelated risks.

A diversified portfolio contains assets whose returns are not strongly related:

- Some assets will realize high returns, others low returns.
- The high and low returns average out, so the portfolio is likely to earn an intermediate return more consistently than any of the assets it contains.
Reducing or Managing Risk Through Diversification

Constructing Portfolios

- Diversification can reduce **firm-specific risk**, which affects only a single company.

- Diversification *cannot* reduce **market risk**, which affects all companies in the stock market.
Increasing the number of stocks reduces firm-specific risk.

But market risk remains.
The Tradeoff Between Risk and Return

<table>
<thead>
<tr>
<th>Risk (standard deviation)</th>
<th>No stocks</th>
<th>25% stocks</th>
<th>50% stocks</th>
<th>75% stocks</th>
<th>100% stocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return (percent per year)</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

- No stocks: Low risk, low return
- 25% stocks: Moderately low risk, slightly higher return
- 50% stocks: Moderate risk, moderate return
- 75% stocks: Moderately high risk, higher return
- 100% stocks: High risk, high return
Efficient Market Hypothesis

- **Efficient Markets Hypothesis (EMH):** The theory that each asset price reflects all publicly available information about the value of the asset.

1. **Stock market is informationally efficient:** Each stock price reflects all available information about the value of the company.

2. **Stock prices follow a random walk:** A stock price only changes in response to new information ("news") about the company’s value. News cannot be predicted, so stock price movements should be impossible to predict.

3. **It is impossible to systematically beat the market.** By the time the news reaches you, mutual fund managers will have already acted on it.