Class 25: Saving, Investment and the Real Rate of Interest

1. The nominal and real rates of interest.

Let:
\[
R_t = \text{Nominal rate of interest at time } t \\
\pi_t = \text{rate of inflation between time } t-1 \text{ and } t \\
\pi^*_{t+1} = \text{optimal forecast of } \pi_{t+1} \\
r_t = \text{real rate of interest at time } t
\]

Then one may define the “perfect foresight” real rate of interest as:
\[
r_t = R_t - \pi_{t+1}
\]
And the actual real rate of interest as:
\[
r_t = R_t - \pi^*_{t+1}
\]

The nominal rate is the one-year Treasury bond rate. The inflation rate is the year-to-year CPI growth rate. The perfect foresight real rate of interest is computed by assuming that the inflation rate between time \( t \) and time \( t+1 \) was predicted with perfect accuracy at time \( t \).
Irving Fisher explained that in the long run the real rate of interest is determined by the “patience of people and the productivity of capital

a. The “patience of people” explains their willingness to save.
b. The “productivity of capital” explains why firms borrow funds to build capital
c. In equilibrium, the real rate of interest balances saving and investment

Saving is the source of funds for investment (capital formation).

a. Saving of an economic unit is its income minus its spending on current needs.
b. Saving is a flow. Wealth which may be thought of as accumulated saving is a stock. Wealth increases when saving occurs or when the value of assets increases.
c. The financial reward to saving is better measured by the real rate of interest than by the nominal rate of interest. A high real interest rate is an incentive to save.
d. National saving comprises household saving, firm saving, government saving, and saving by the rest of the world.

The Saving Rate in the United States is low relative to that in other nations.

Source: Organizations for Economic Cooperation and Development (2009)
OECD Economic Outlooks: December No. 82 – Volume 2007 Issue 2

Trends in the Components of National Saving
The rest of the world has allowed the US to invest more than it could given its national saving.

![Balance of Payments as a Share of GDP](image)

4. Investment is inversely related to the real rate of interest
   a. Firms acquire new capital only when the expected benefits of that capital exceed the expected costs.
   b. Cost-benefit analysis for capital building decisions must take into account the fact that the costs and benefits are likely to occur at different times.
   c. The real rate of interest is a cost of investment.
      i. It is easy to understand why interest is a cost of investment when the investor must borrow funds to realize an investment project. The project must produce sufficient revenues to pay all project costs including interest payments.
      ii. Interest is a cost of investment even if the investor has sufficient funds for the investment project. This is so because the investor could have lent the funds to someone else and earned the market rate of interest. The cost is an opportunity cost.

5. Saving, Investment, and Financial Markets
   a. Financial markets equalize the supply of funds made available by savers and the demand for funds by firms that want to purchase or construct new capital.
   b. The demand and supply schedules each depend on the real rate of interest.
   c. In equilibrium, desired investment must equal desired national saving.
   d. The demand and supply model helps explain why interest rates change.
The real rate of interest is determined by the interaction between the patience of people in an economy and the productivity of capital in that economy. This is essentially a demand and supply story where the real rate of interest is the price and the flow of saving and investment are the quantities supplied and demanded.

The Effect of a Recession on Investment

A decrease in the demand for investment funds will, ceteris paribus, lower the real rate of interest.

The Effect of A Larger Government Budget Deficit On National Saving and Investment

A decrease in the supply of saving will, ceteris paribus, increase the real rate of interest.