National Income II

Where It Comes From and Where it Goes

A Static, Model Economy

- Supply Side
  - A production function ✓
  - How factor markets operate (supply, demand, price) ✓
  - Determination of output/income and the distribution of income ✓
- Demand Side
  - Demand for consumption
  - Demand for investment

Demand for goods and services

- Components of Aggregate Demand
  - C = consumer demand for goods and services
  - I = demand for investment goods.
  - G = government demand for goods and services
- For now assume a closed economy, NX = 0.

Consumption

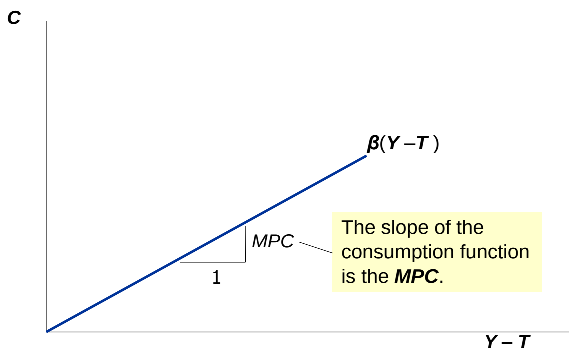
- Disposable income is total income (Y) minus taxes (T): $Y - T$
- The **consumption function** maps disposable income into consumption.

  For today (and most of course) a simple consumption function

  $$C = \beta \times (Y - T), \quad \text{where} \quad \beta \in (0, 1).$$

  - Notation note: Mankiw uses a generic function C.
- The Marginal Propensity to Consume (MPC) is how much C changes when disposable income increases by one unit.
  - Given our consumption function, what is the MPC?

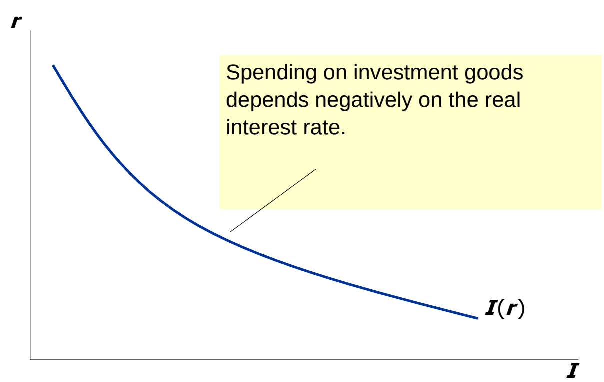
Consumption Function



Investment

- Investment function is: $I = I(r)$
  - Where r = real interest rate (nominal interest rate adjusted for inflation).
- The real interest rate is,
  - the cost of borrowing,
  - the opportunity cost of using ones own funds to finance investment spending.
- So $\uparrow r$ implies that $\downarrow I$.

Investment Function



Government

- G = govt spending on goods and services
  - G excludes transfer payments (e.g., Social Security benefits, unemployment insurance benefits), just purchases of new goods and services.
- Assume government spending and total taxes are exogenous:

$$G = \bar{G} \qquad T = \bar{T}$$

Equilibrium #1: Goods Market

- Aggregate Demand:

$$\underbrace{\beta(\bar{Y}-\bar{T})}_{C}+I(r)+\bar{G}.$$

- Aggregate Supply:

$$\bar{Y}=\mathrm{F}(\bar{K},\bar{L}).$$

- Equilibrium:

$$\bar{Y}=\beta(\bar{Y}-\bar{T})+I(r)+\bar{G}.$$

- The real interest rate adjusts to equate supply with demand.

Equilibrium #2: Loanable Funds Market

- Equilibrium:

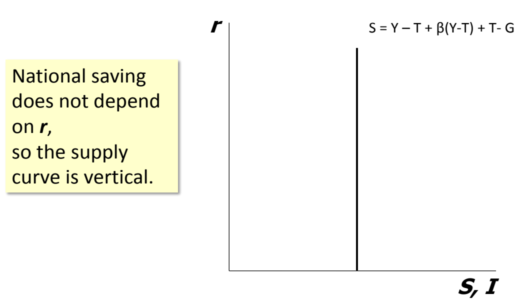
$$\bar{Y}=\beta(\bar{Y}-\bar{T})+I(r)+\bar{G}.$$

- Rearranging

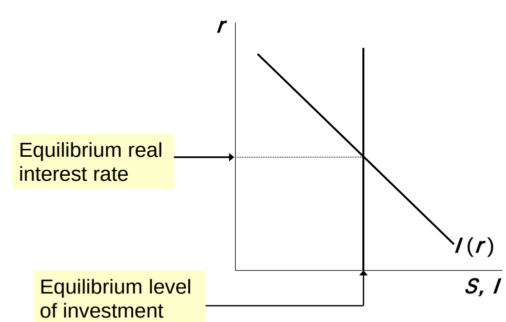
$$S=\underbrace{\underbrace{\bar{Y}-\bar{T}-\beta(\bar{Y}-\bar{T})}_{\text{Private Savings}}+\underbrace{\bar{T}-\bar{G}}_{\text{Public Savings}}}_{\text{National Savings}}=I(r)$$

- The real interest rate adjusts to equate savings with investment!
  - This is called "loanable funds" market condition. Financial intermediation plays a role here, i.e. connects households who save with firms who investment.

Supply of Savings



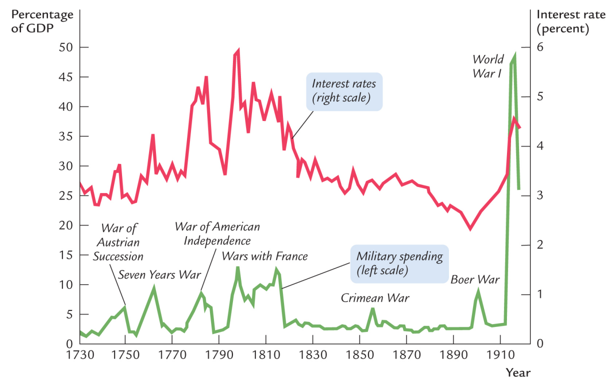
Demand for Investment and Savings



Interest Rates and Government Spending

- Question:
  - Suppose the government starts to spend more on goods and services. For example, military spending in response to a war.
  - What will happen to national savings? Real interest rates?
  - Does it matter if it is deficit neutral. That is higher G is financed through increased taxes?

Interest Rates and Government Spending



Changes in Investment Demand

- Things that shift (increase) the investment curve: Anything that increases the marginal product of capital.
  - More labor? Yes.

    Why? Need more capital to go along with labor, thus the demand for investment increases.
  - Better Technology (A)? Yes.

    Why? Capital is now more productive, thus the demand for instatement increases.
- At home: Holding savings fixed, how will these scenarios affect r?

Chapter 3 Takeaways

- Total output/value added is determined by:
  - The economys quantities of capital and labor,
  - The level of technology (total factor productivity).
- Income payments to labor and capital are determined by
  - The economys quantities of capital and labor
  - Competitive firms hire each factor until its marginal product equals its price.
- Allocation of output to (C, I, G) determined by
  - The real interest rate adjusts to equate the demand and supply of savings/investment.