課 程 簡 介

1. Course Introduction

- Title:
  - Public finance
  - Public economics
  - Public-sector economics
- Focus of economic analysis:
  - Resource allocation: *efficiency*
  - Income distribution: *equity*
- Govt intervention due to *market failure*:
  - Government expenditures/spendings
  - Government revenues: taxation

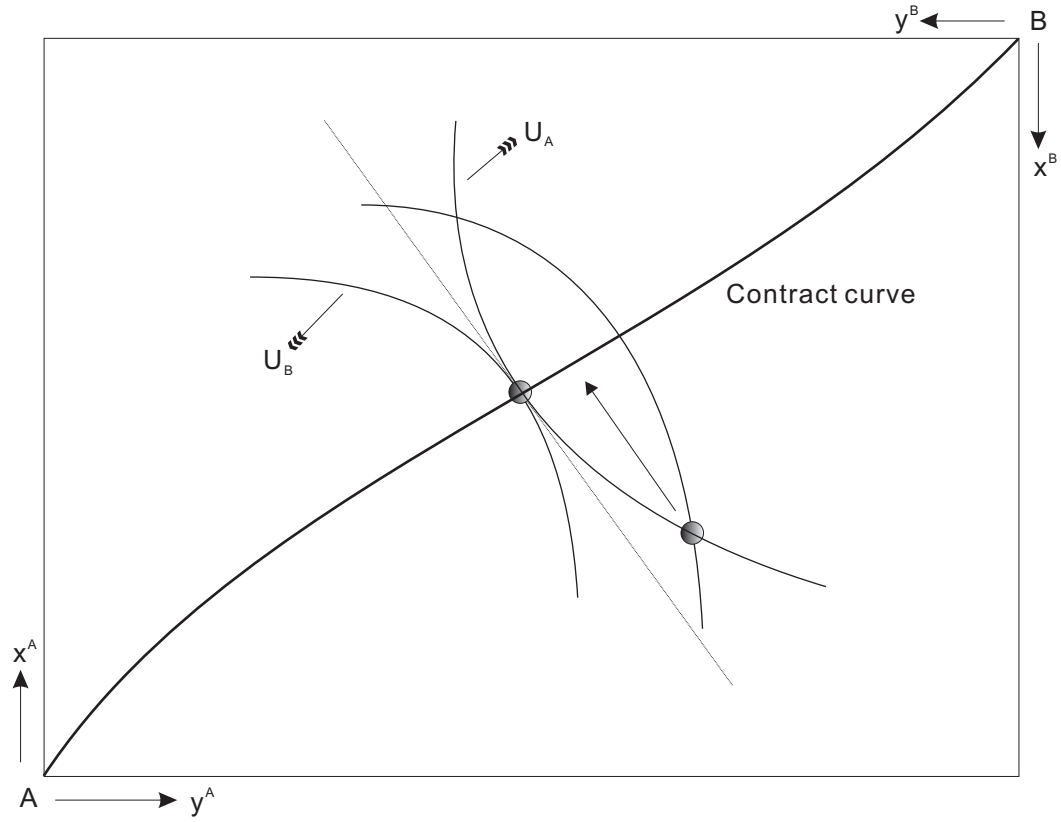
2. Neo-classical Arrow-Debreu Analysis

2.1. Consumer exchange economy: 2 goods (x, y)

- Edgeworth box: feasible allocations of fixed total endowment

$$x_A + x_B = X$$

$$y_A + y_B = Y$$



- Indifference curves (IC): <u>diminishing MU</u>

- Bargaining process: based on mutual consent

  ▷ Contract curve

- MRS (marginal rate of substitution): slope of IC

$$\text{MRS}_i^{y,x}$$

  ▷ How many x are you willing to give up for one more y?

  ▷ How many x is a y worth?

- Market equilibrium:

$$\text{MRS}_A^{y,x} \;=\; \text{MRS}_B^{y,x}$$

- Competitive economy: many consumers, complete info

  – Exchange rates (prices) between goods are fixed

  – All consumers are price takers: no market power

    ▷ Consumers take prices (P_x, P_y) as given/fixed

  – Consumer utility max:

$$\text{MRS}_i^{y,x} \;=\; \frac{P_y}{P_x}, \;\; \forall\, i$$

  – Adjustment process:

    ∗ Buy more y if:

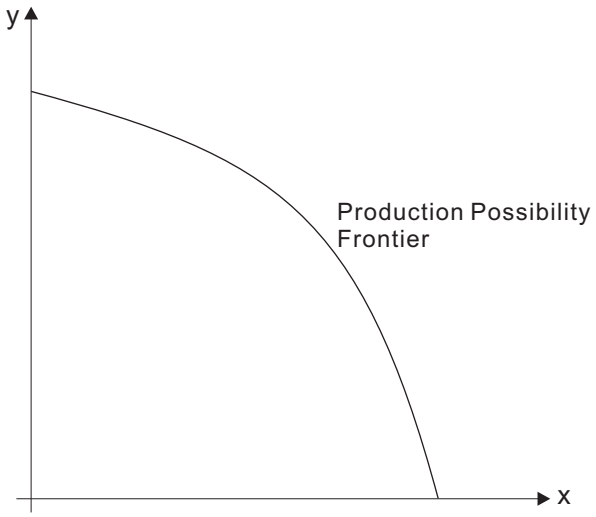
$$\text{MRS}^{y,x} \;>\; \frac{P_y}{P_x}$$

    ∗ Buy more x if:

$$\text{MRS}^{y,x} \;<\; \frac{P_y}{P_x}$$

2.2. Producer Economy

- Convex production technology: increasing MC
- PPF (production possibility frontier):



- MRT (marginal rate of transformation): slope of PPF

$$\text{MRT}_j^{y,x}$$

  ▷ How many x do we have to give up for one more y?

- Firm j: profit maximization

$$\text{MRT}_j^{y,x} = \frac{P_y}{P_x}, \ \forall\, j$$

- Production adjustment process:
  - Produce more y if: $\text{MRT}^{y,x} < P_y/P_x$
  - Produce more x if: $\text{MRT}^{y,x} > P_y/P_x$

2.3. Complete Market

- Equilibrium: *consumer MRS equals producer MRT*

$$\text{MRS}_i^{y,x}\ (\forall\, i) \quad = \quad \frac{P_y}{P_x} \quad = \quad \text{MRT}_j^{y,x}\ (\forall\, j)$$

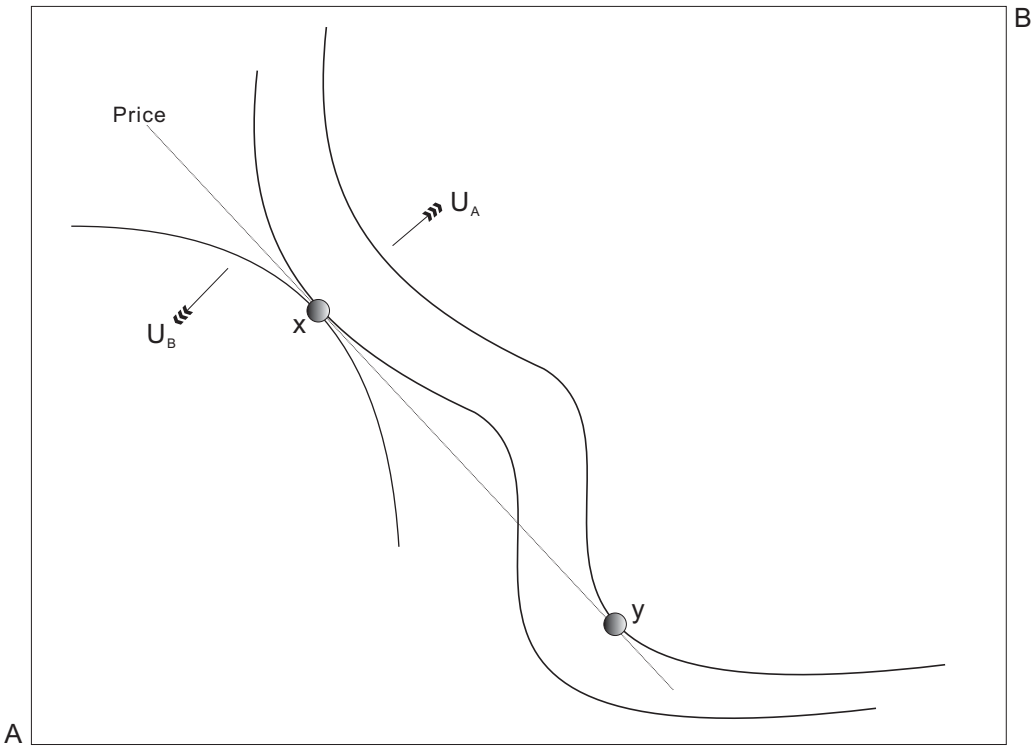
- Overall efficiency

2.4. Fundamental Theorems of Welfare Economics

- 1st Theorem: CE $\Rightarrow$ PO
- 2nd Theorem: PO $\Rightarrow$ CE (with proper prices and transfer)

3. Market Failure: Possible Causes

3.1. Non-convex Preferences: MU not Diminishing



$\triangleright$ x is Pareto optimal, but not a competitive equilibrium.[1]

[1] At given price, consumer B wants bundle x, but consumer A prefers y to x.

3.2. Market imperfection: government Regulatn

E x market: competition

y market: monopoly

$$P_x = \mathrm{MC}_x, \quad P_y > \mathrm{MR}_y = \mathrm{MC}_y$$

$\triangleright$

$$\mathrm{MRS}_i^{y,x} = \frac{P_y}{P_x} > \frac{\mathrm{MC}_y}{\mathrm{MC}_x} = \mathrm{MRT}_j^{y,x}$$

$\triangleright$ Inefficient, should have more y and less x $\square$

3.3. Public Goods

- Public goods:

$$U_A = U_A(x_A, y)$$

$$U_B = U_B(x_B, y)$$

- Externality: smoking, driving, littering

$$U_i(x_i, s_i, S), \quad S = \sum_j s_j$$

- Altruism:

$$U_R(x_R, x_J), \quad U_J(x_J, x_R)$$