

Competitive Market

“Public Economics”, 13 July, 2014

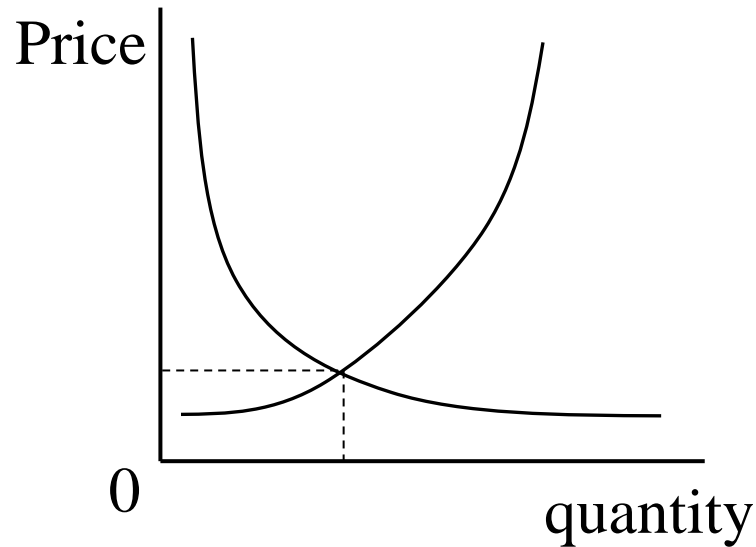
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Type of Market

- **Pure Competitive Market** (完全競争市場)
 - There are many small competitors.
- **Oligopolistic Market** (寡占市場)
 - There are several competitors in the market, but not so many as to regard each of them as having a negligible effect on price.
- **Pure Monopoly Market** (独占市場)
 - There is only one large firm in the market.

Pure Competitive Market

- All of the households and the firms in market are price-taker.



Is this system **efficient**?

Efficiency

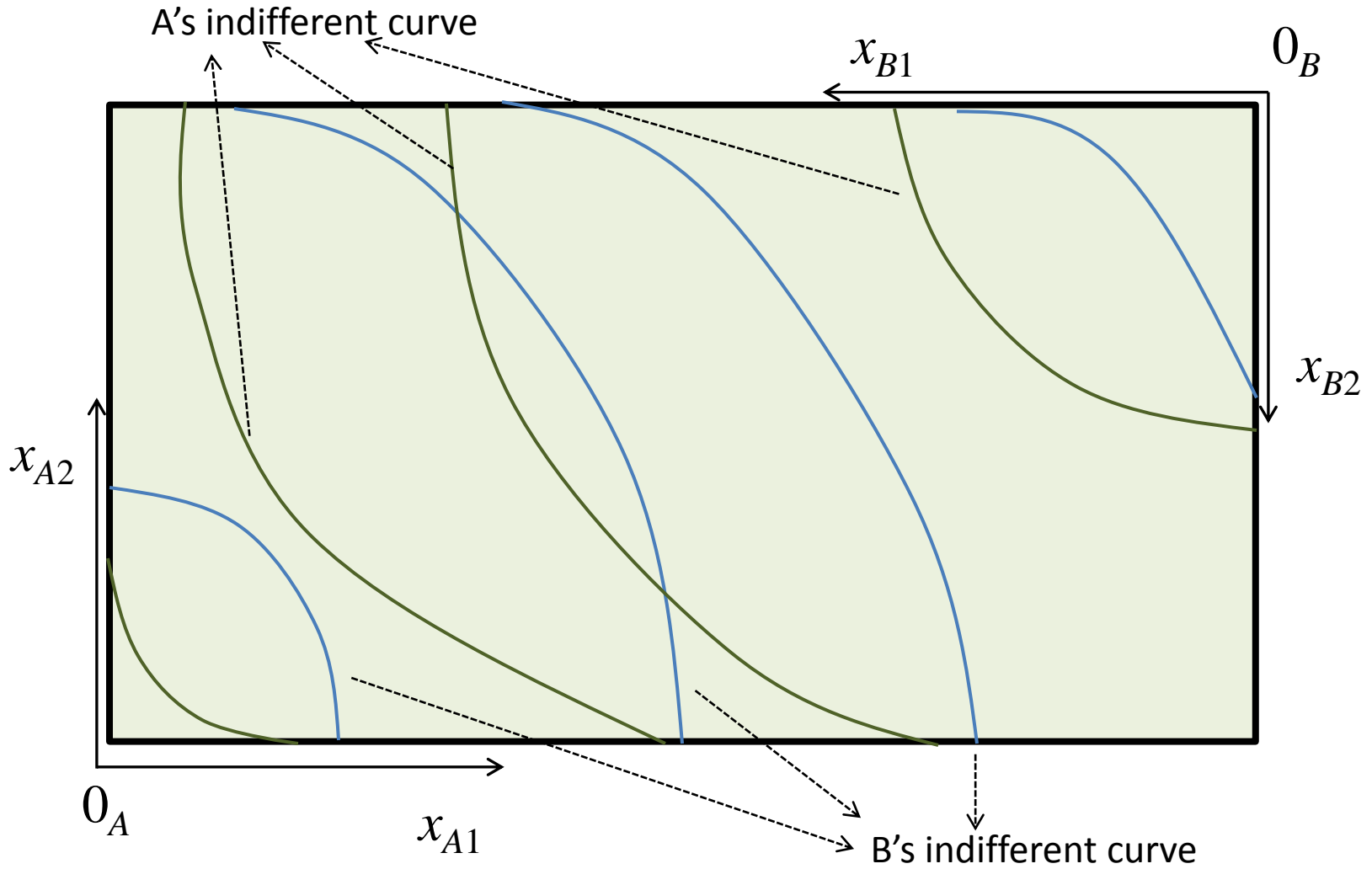
- **Pareto Efficient Allocation** (パレート効率的配分)

A Pareto efficient allocation can be described as an allocation where;

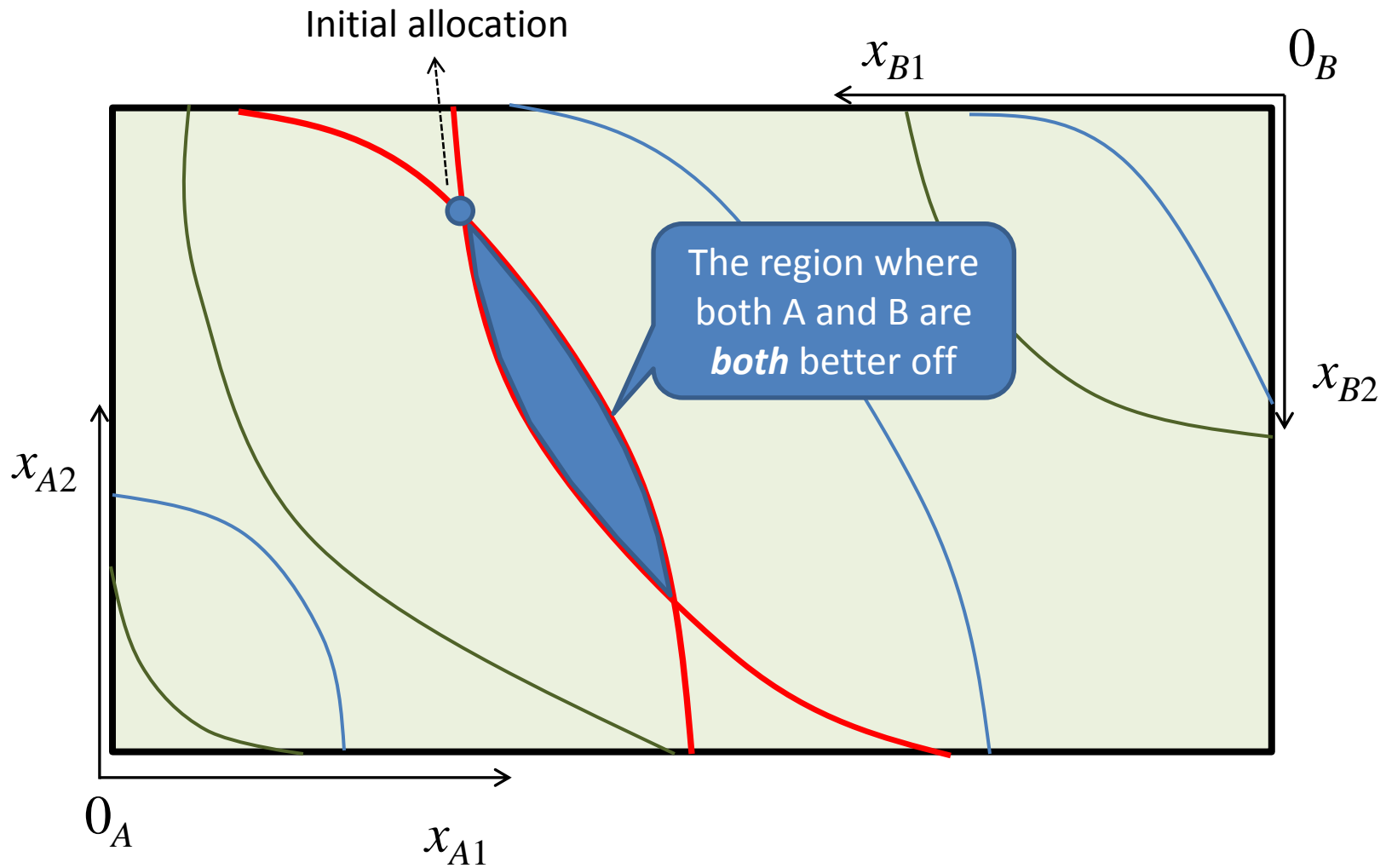
1. there is no way to make all the agents involved better off; or
2. there is no way to make some individual better off without making someone else worse off; or
3. all of the gains from trade have been exhausted; or
4. there are no mutually advantageous trades to be made.

Edgeworth box

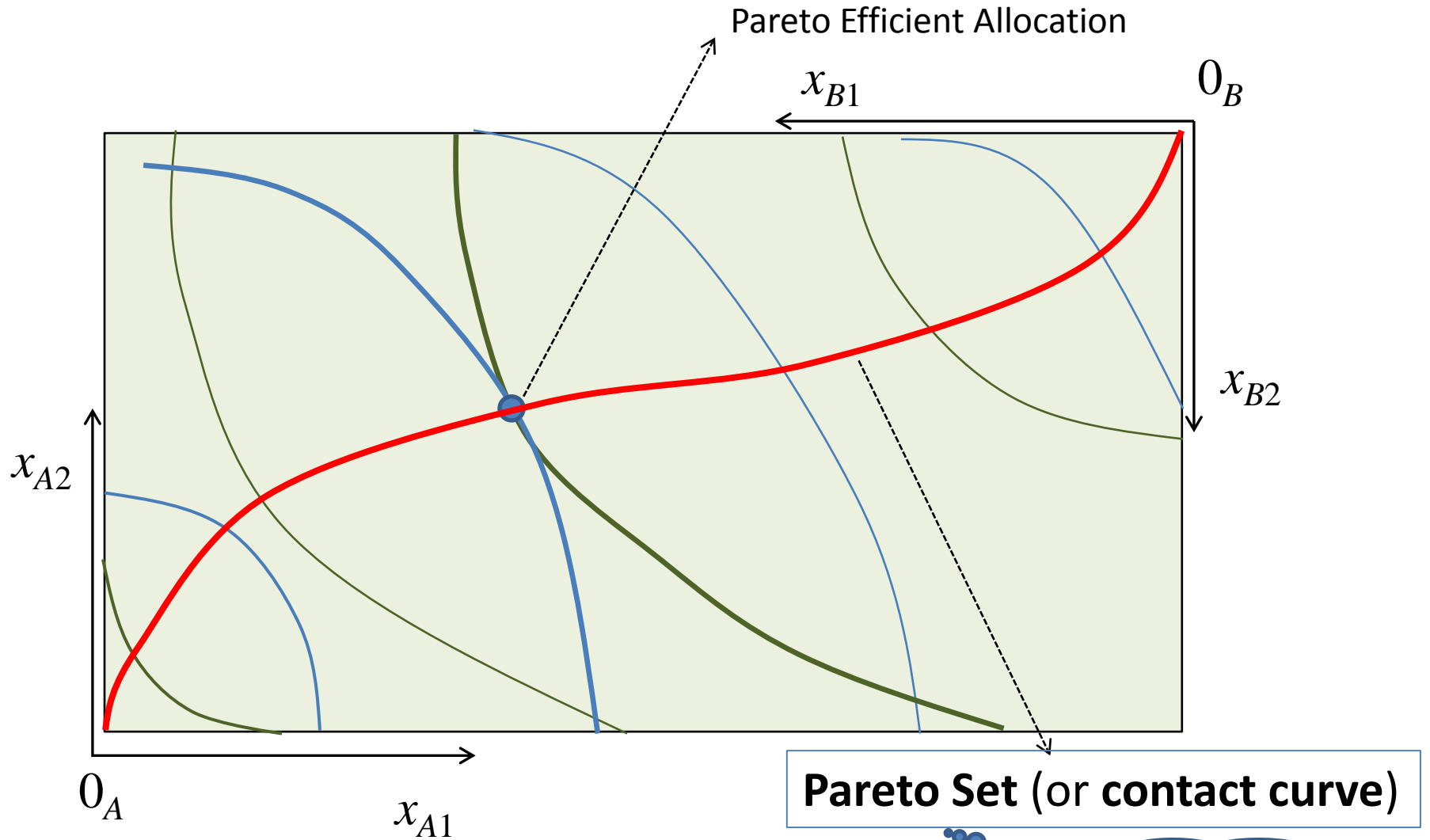
(エッジワース ボックス)



Edgeworth box



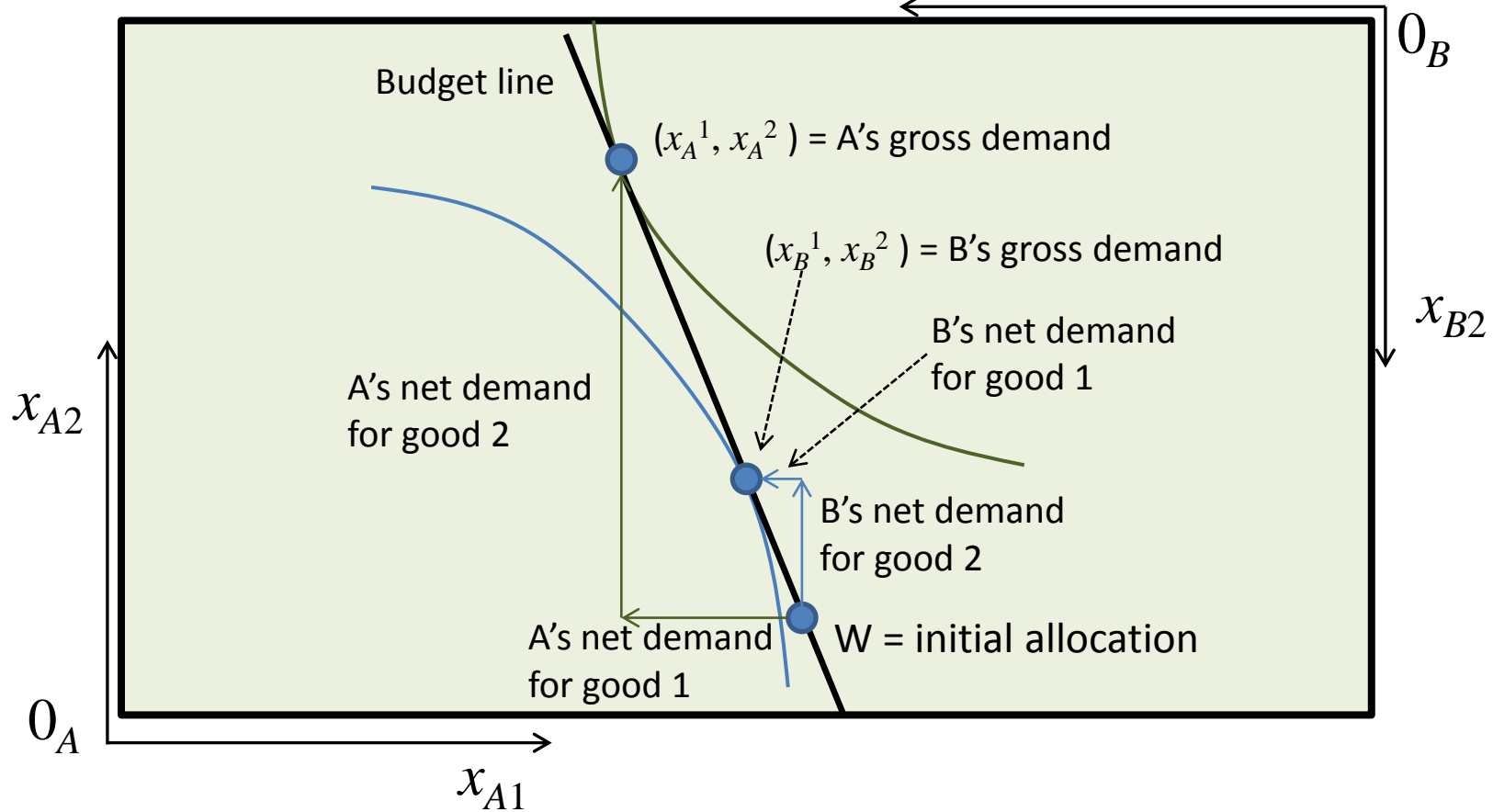
Pareto Set



Which one among Pareto Set is realised?

Gross demands and net demands

(粗需要と純需要(超過需要)) x_{B1}

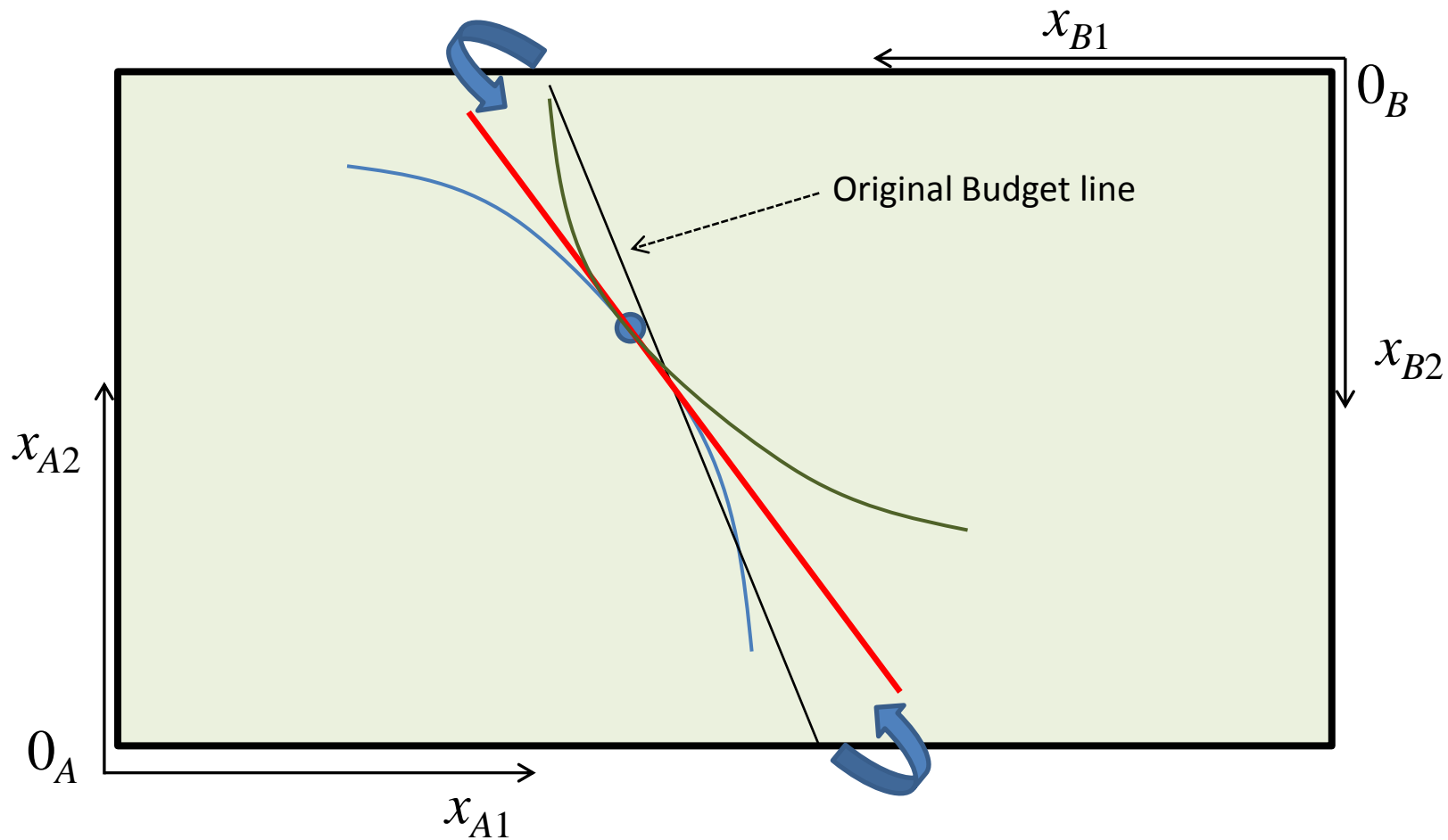


Gross demands : the amounts the person wants to consume

Net demands (or excess demands)

: the amounts the person wants to purchase

How to get equilibrium point?



An auctioneer will change the prices in order to reach to a equilibrium point

Walrasian Equilibrium

(ワルラス均衡)

Definition

A set of prices such that each consumer is choosing his or her most-preferred affordable bundle, and all consumer's choices are compatible in the sense that demand equals supply in every market

- Note that at the equilibrium, the combination of prices make **all the excess demands equals to zero.**

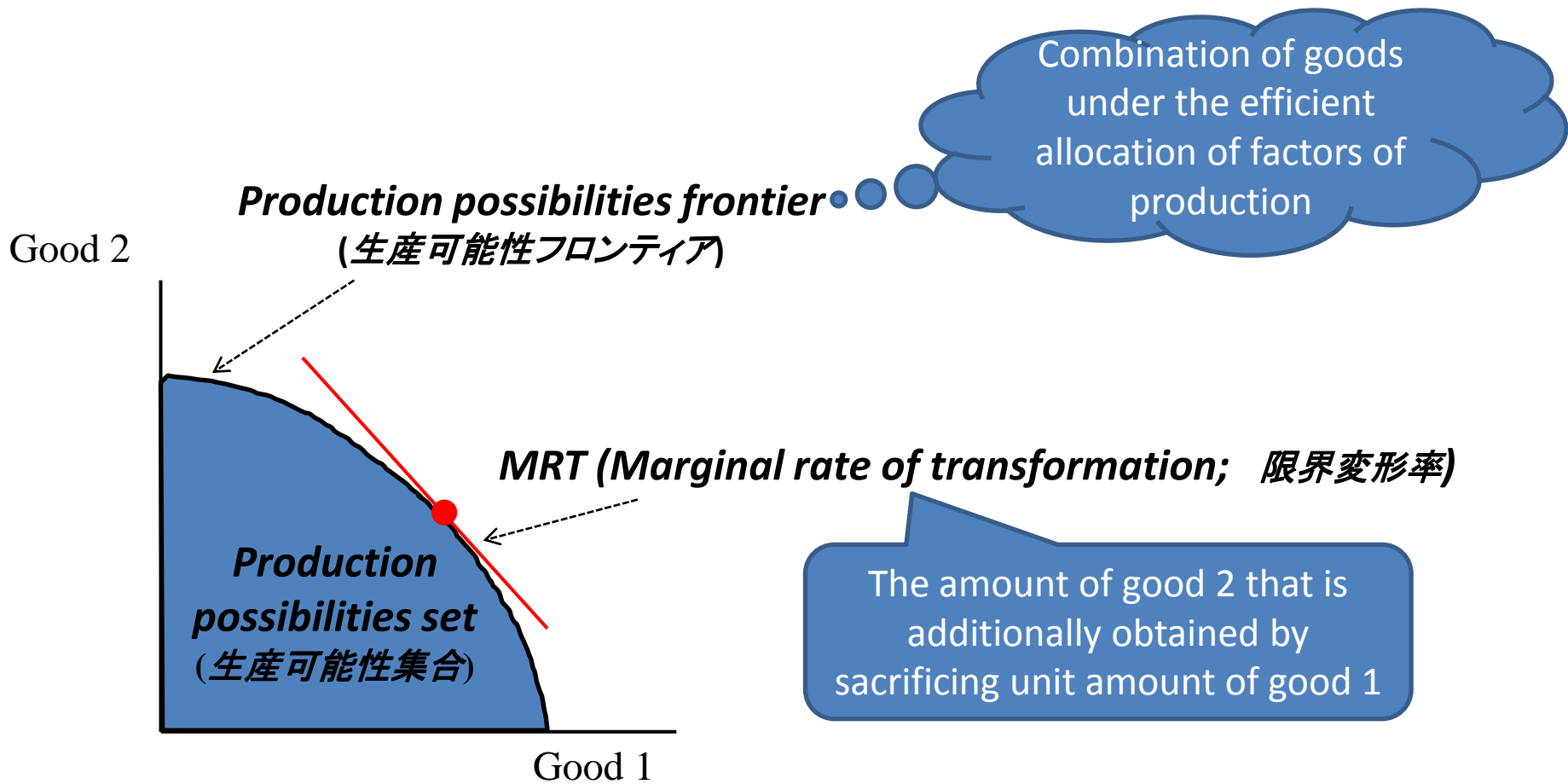
Walras' Law (ワルラスの法則)

$$p_1 z_1(p_1, p_2) + p_2 z_2(p_1, p_2) = 0$$

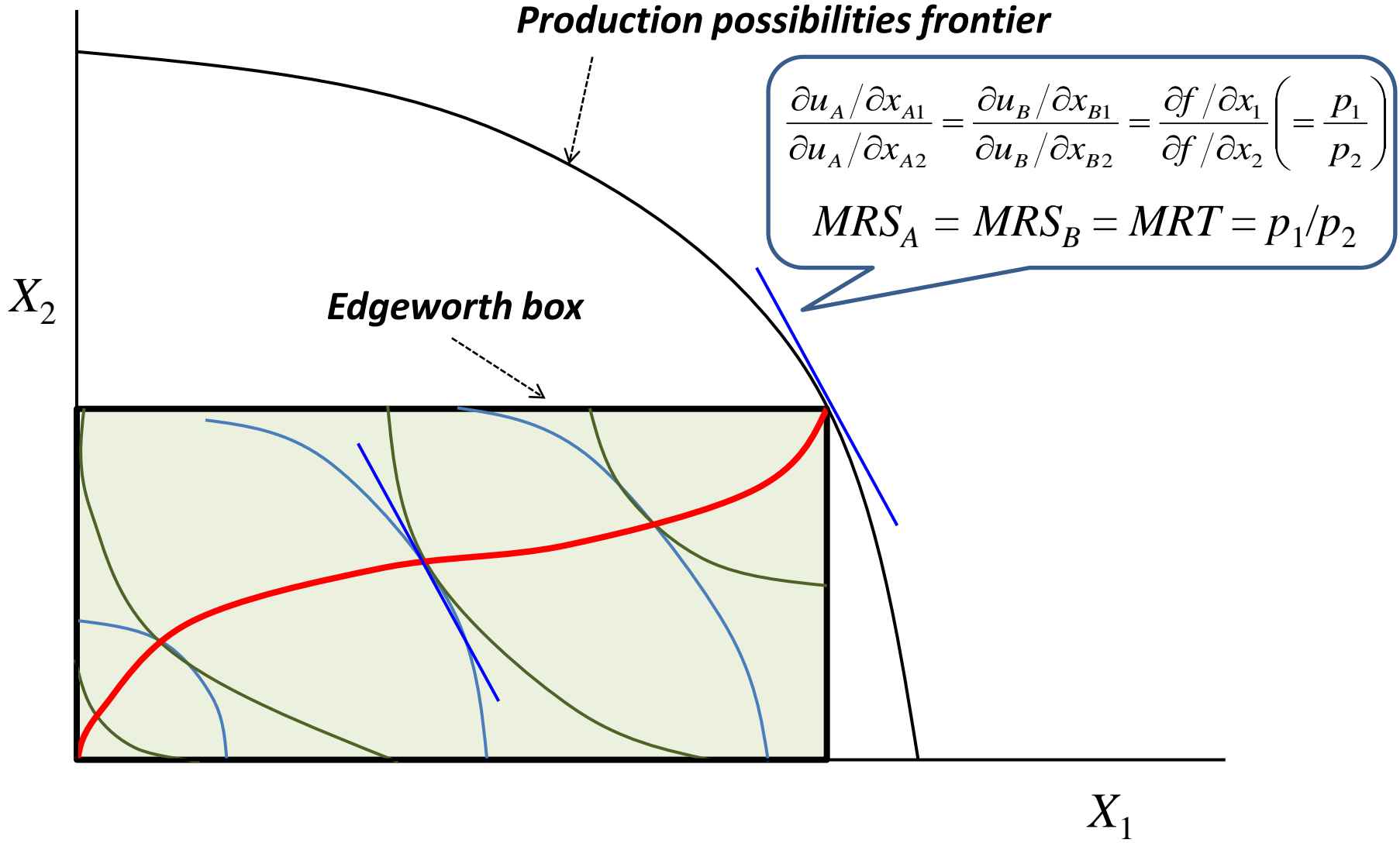
where

$$z_1(p_1, p_2) = x_A^1(p_1, p_2) + x_B^1(p_1, p_2) - \omega_A^1 - \omega_B^1 \text{ (aggregate excess demand)}$$

Efficiency of Production



Efficiency of Market



Fundamental Theorem of Welfare Economics

(厚生経済学の基本定理)

- **First Fundamental Theorem of Welfare Economics**

The equilibrium allocation in pure competitive market is Pareto efficient.

$$(MRS_A = MRS_B = MRT)$$

- **Second Fundamental Theorem of Welfare Economics**

If economy has **convex environment**, then there exists a price vector such that **any Pareto efficient allocation is a market equilibrium** under an appropriate assignment of endowments.

Consumer's Surplus (消費者余剰)

- Evaluation of Benefit

 Cost-benefit analysis (費用便益分析)

- Consumer's Surplus

- The difference between the maximum price a consumer is willing to pay and the actual price they do pay

Consumer's Surplus

(消費者余剰)



Suppose you have three computers and your friends are willing to pay following amount of money to get the computer. How much do you price your computer?

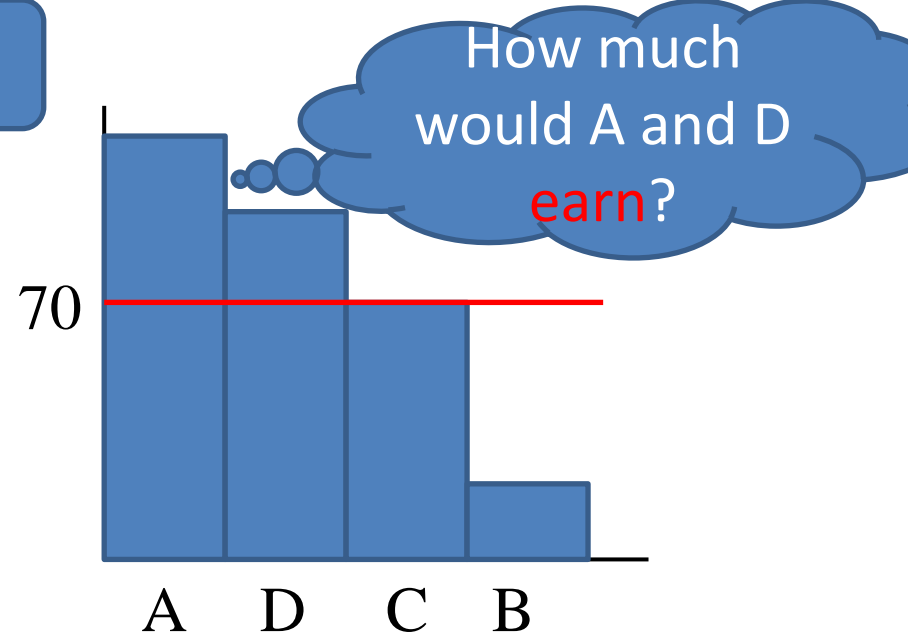
Answer: ¥70 thousands !

Mr. A : **¥130** thousands

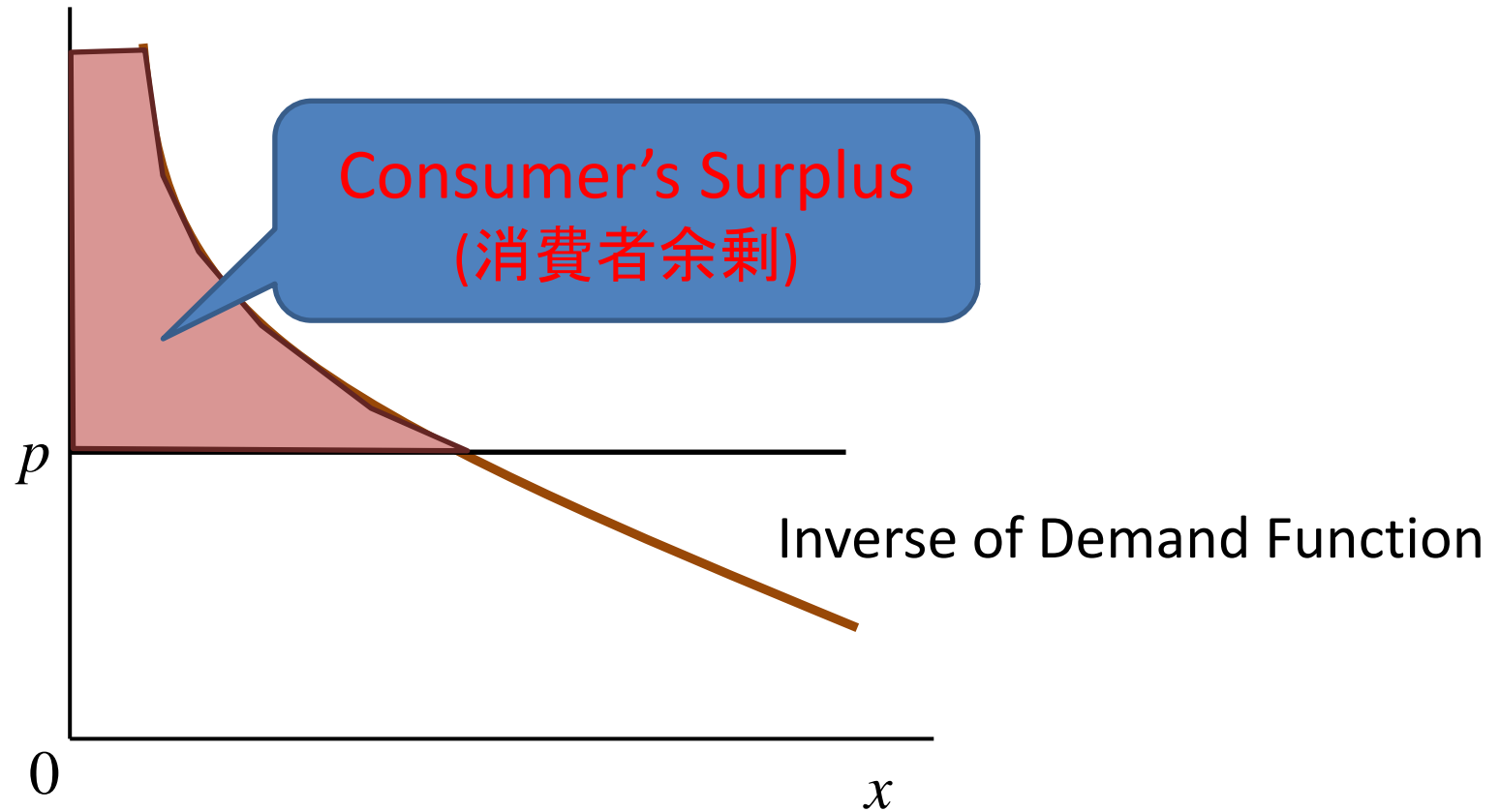
Mr. B : **¥20** thousands

Ms. C : **¥70** thousands

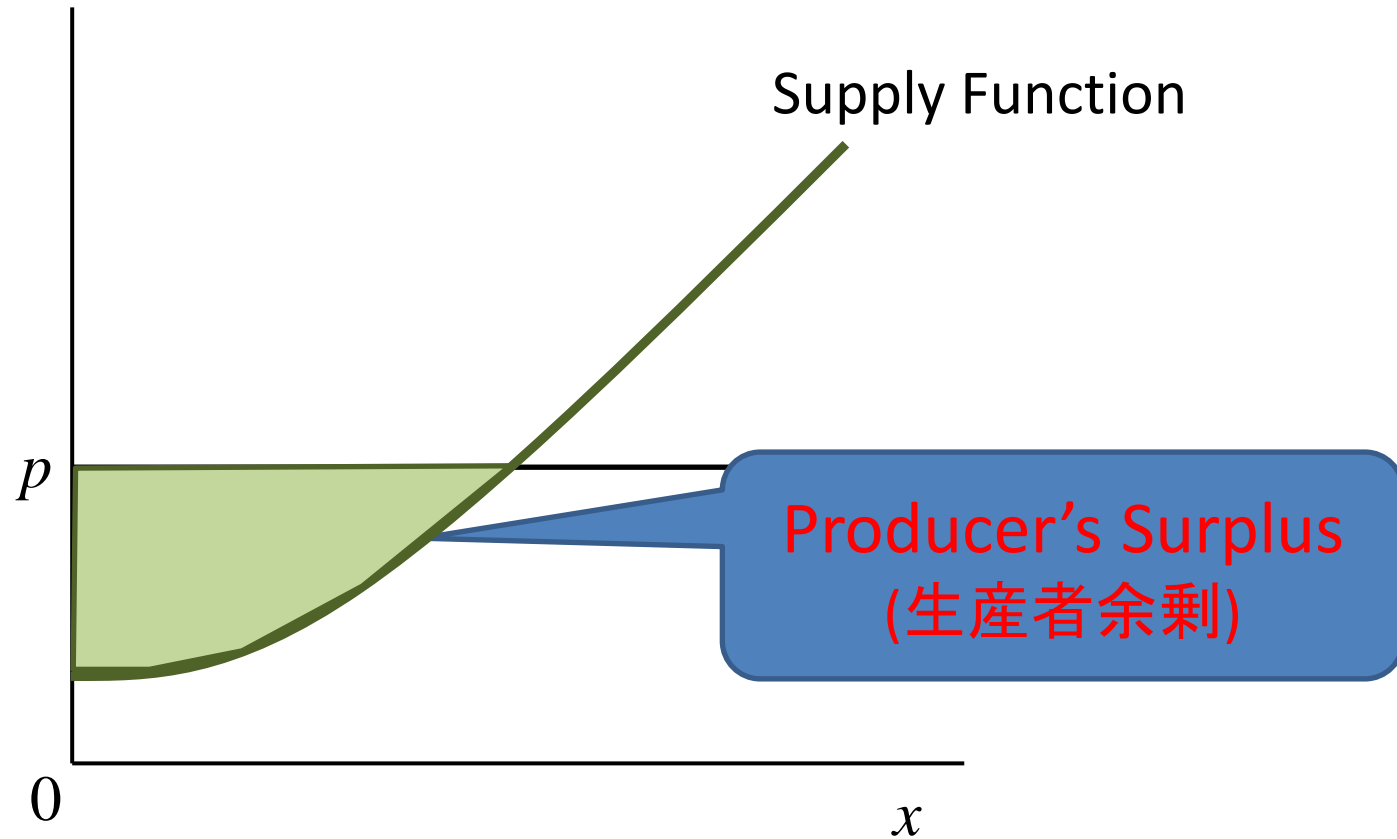
Ms. D : **¥100** thousands



Consumer's Surplus (消費者余剰)

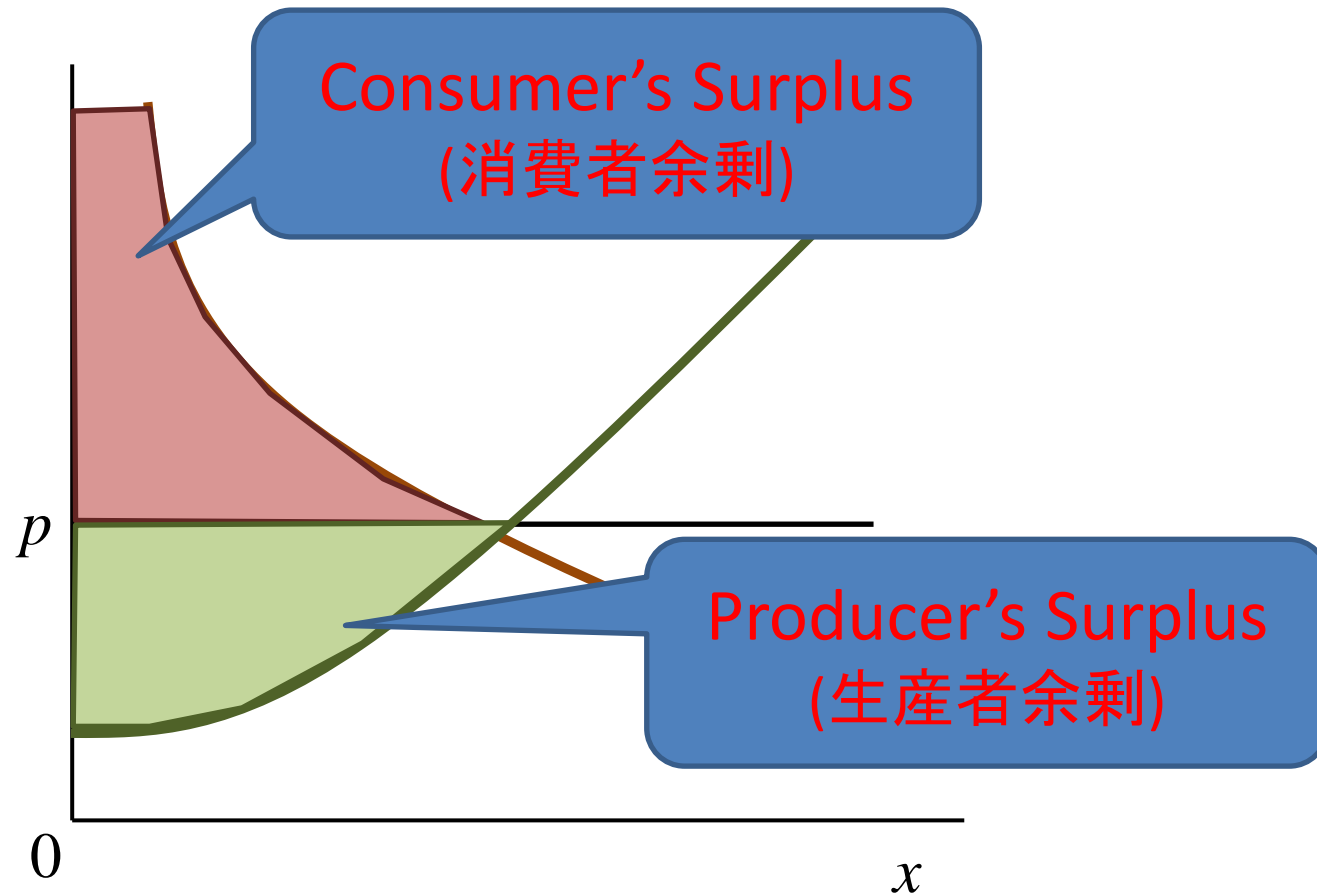


Producer's Surplus (生産者余剰)

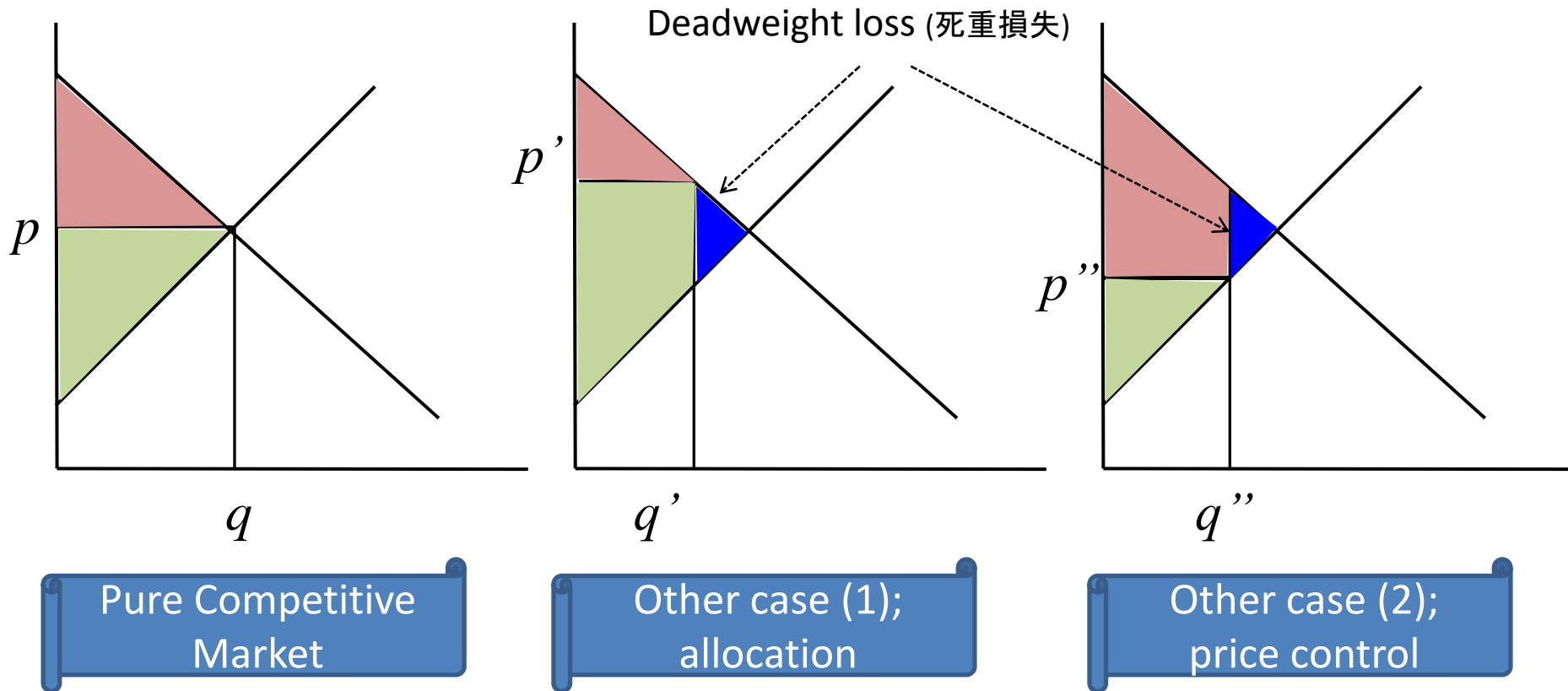


Social Surplus

(社会的余剩)



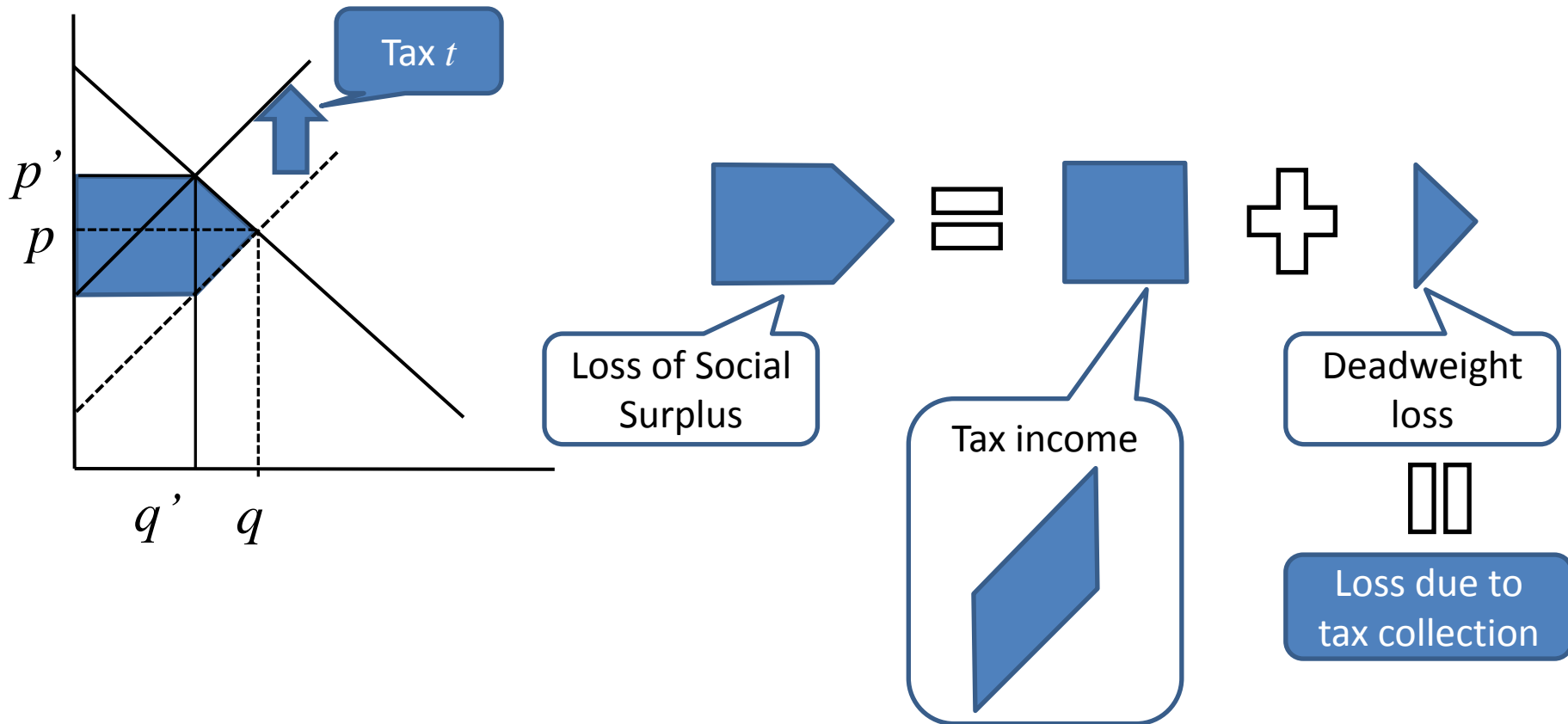
Efficiency at Pure Competitive Market



- Efficiency is measured by Social Surplus

How to achieve efficient situation?

- Introduction of tax



Failure of Market

- **Externality** (外部性)

A person's behaviour affects others' welfare.
e.g.) road congestion, air pollution

- **Public goods** (公共財)

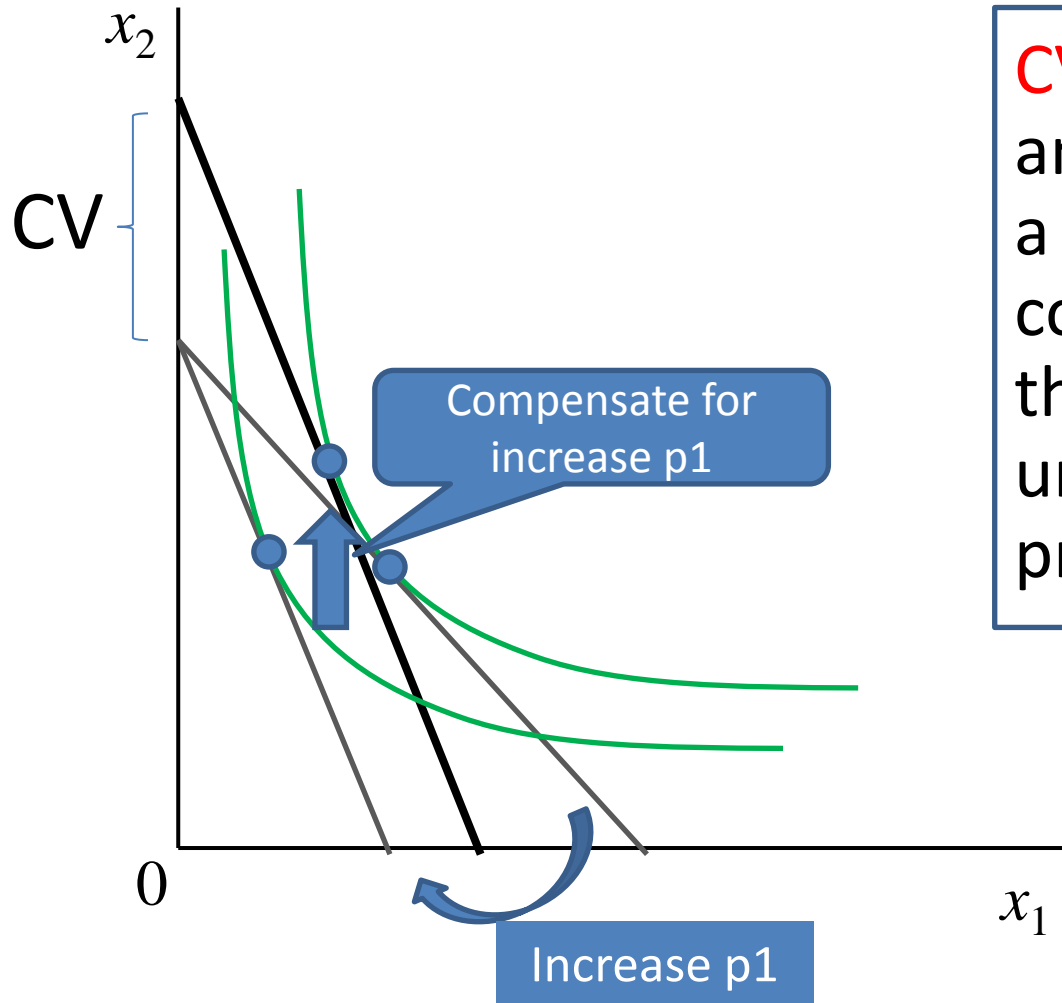
A good which is not provided at the market
e.g.) national defence, administrative service

- **Market power** (市場支配力)

A power which affects market price
e.g.) monopoly

Compensating Variations

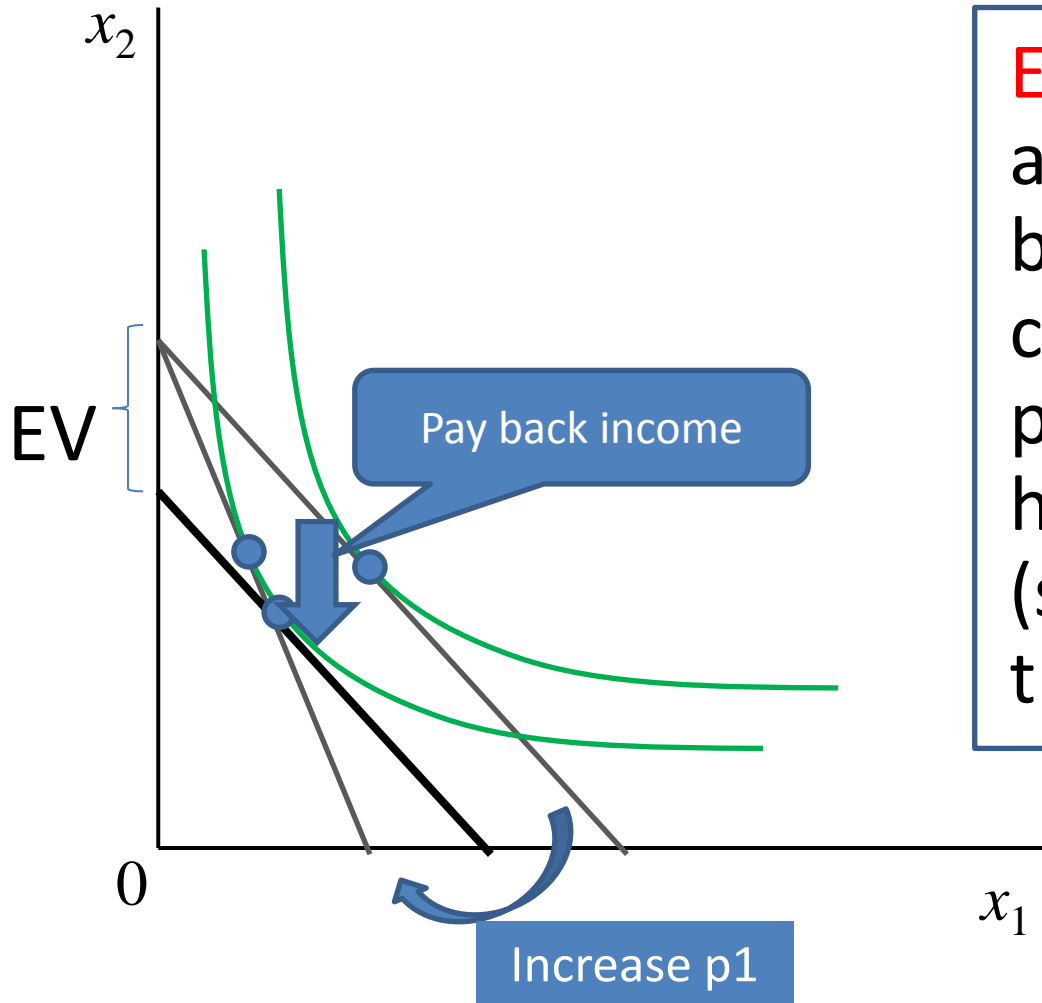
(補償変分)



CV is equivalent to the amount of income that a consumer needs to be compensated to keep the utility level unchanged after the price change.

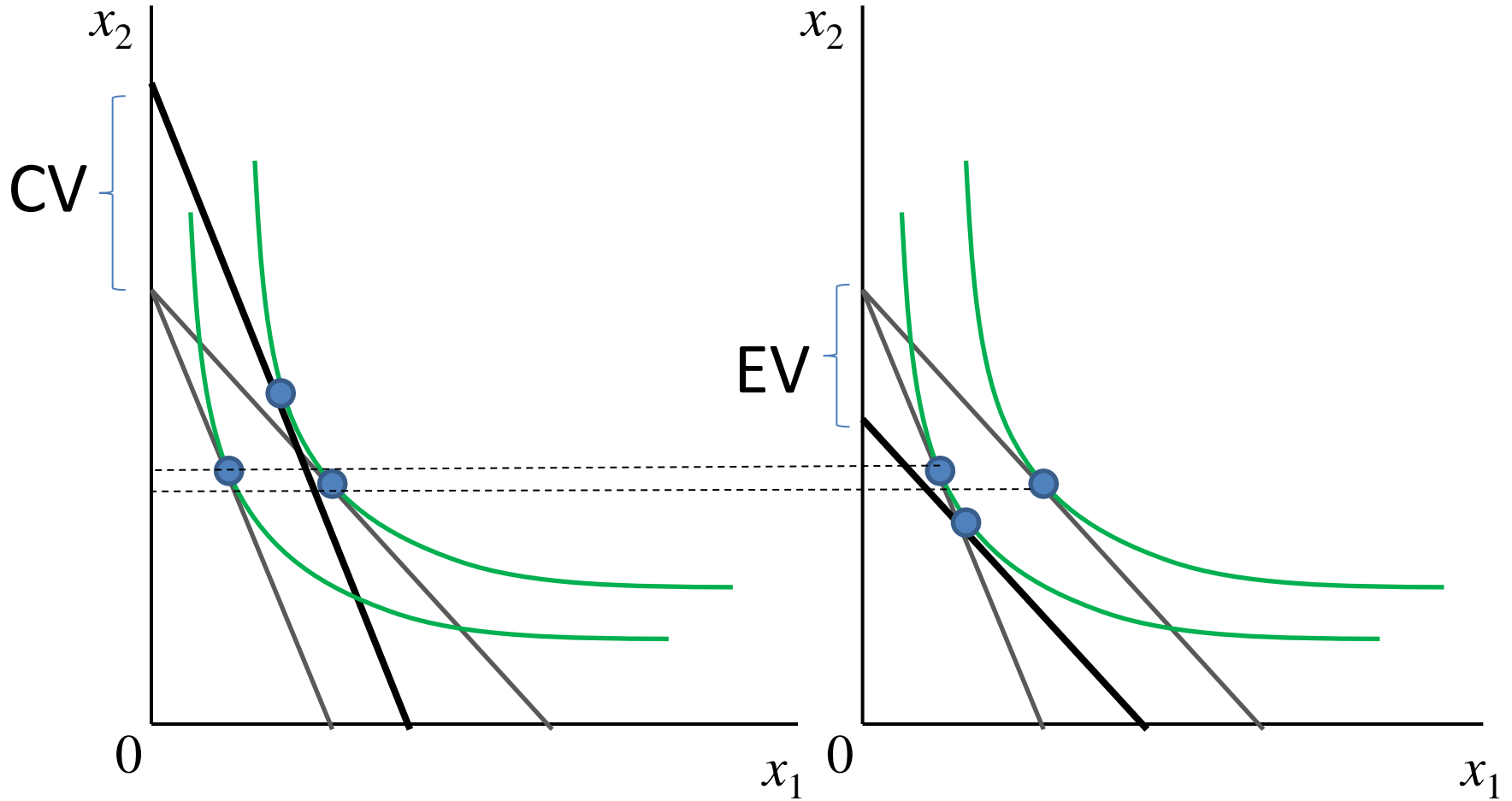
Equivalent Variations

(等価変分)



EV represents the amount of income to be taken away from a consumer before the price change to leave him/her as well off as (s)he would be after the price change.

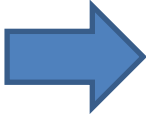
Comparison between CV and EV



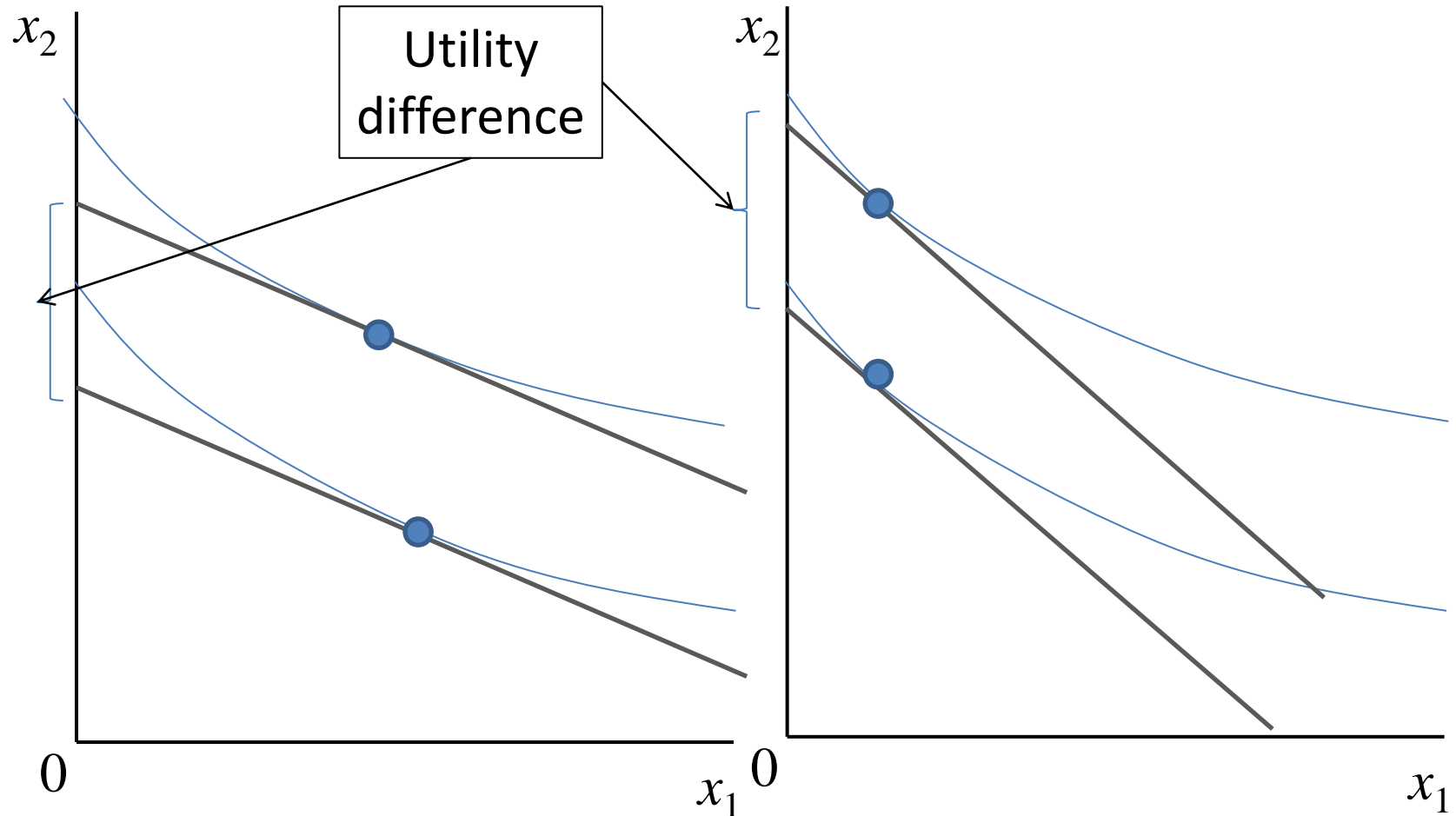
Comparison between CV and EV

- Basically, $|CV| \neq |EV|$
- However, $|CV| = |EV|$ in the case of **quasi-linear utility function** (準線形効用) where the indifference curves are parallel.

$$U(x_1, x_2) = u(x_1) + x_2$$


$$\frac{d^2 x_2}{dx_1^2} = -u''(x_1)$$

In case of Quasi-linear Utility



- Utility difference is the same regardless of initial solution