MICROECONOMICS III

CLASS 12

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GENERAL EQUILIBRIUM

Partial equilibrium

- equality of demand and supply in a single market (an assumption: actions in one market do not influence, or have negligible influence, on other markets)

General equilibrium

- equality of demand and supply in all markets at the same time (including interactions between markets)

GENERAL EQUILIBRIUM

Example: Two interdependent markets and adjustment to the equilibrium

- Cinema tickets and subscription to an online streaming service
- Substitutes

A change of a price in one market will influence the other market.

- What happens when the government imposes a tax on streaming services?

GENERAL EQUILIBRIUM

With no analysis of interactions between the markets (as in the limited case of partial equilibrium analysis), the influence of the tax on the market for streaming services will be underestimated.

For a similar situation but in the market for goods which are complements, the tax influence would be overestimated.

PURE EXCHANGE MODEL

Simplified model of pure exchange:

- Each consumer has an endowment of goods at her disposal
- Consumers can exchange these goods between themselves
- A production process is omitted
- We will simplify it even further with only 2 goods and 2 consumers

PURE EXCHANGE MODEL

Initial endowments: $\omega^A = (\omega_X{}^A, \omega_Y{}^A)$ and $\omega^B = (\omega_X{}^B, \omega_Y{}^B)$

- For example, $\omega^A = (7,1)$ means that consumer A has 7 units of good X and 1 unit of good Y.
- When $\omega^A = (7,1)$ and $\omega^B = (3,5)$, there is in total $7 + 3$ units of good X in the market and $1 + 5$ units of good Y in the market.
- What are feasible allocations of 10 units of good X and of 6 units of good Y?

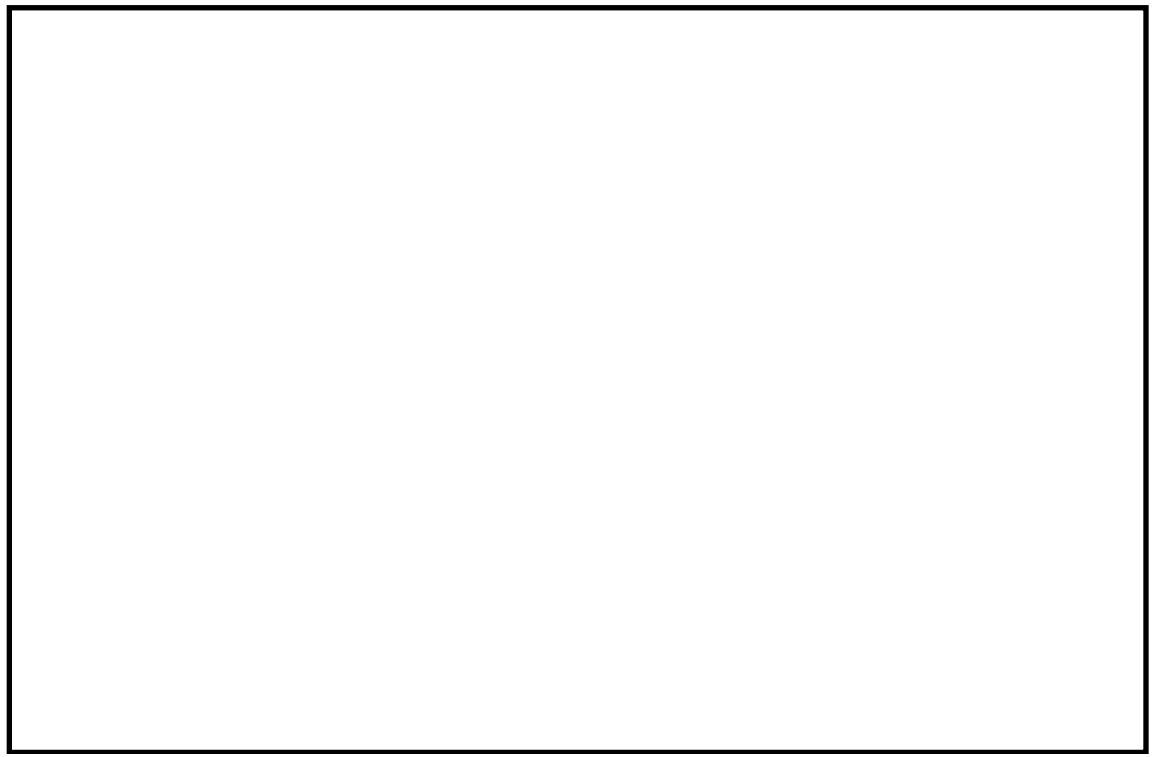
A feasible allocation – the total amount of each good consumed is equal to the total amount available

The **Edgeworth box** allows us to depict all feasible allocations of two goods between two consumers in a single diagram

EDGEWORTH BOX

Box height $= \omega_Y^A + \omega_Y^B$

- a number of units of Y available in the market



Box width $= \omega_X^A + \omega_X^B$

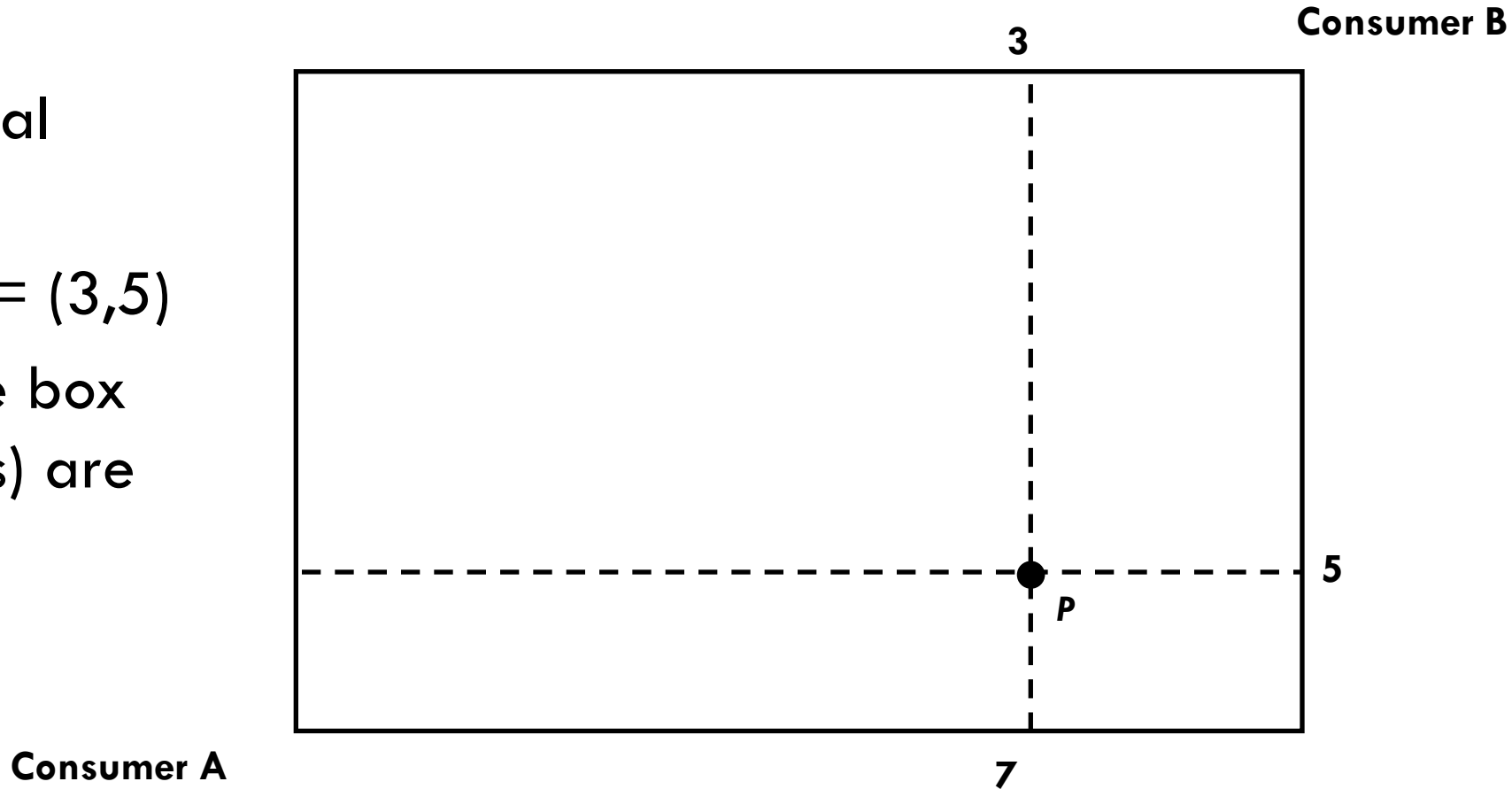
- a number of units of X available in the market

EDGEWORTH BOX

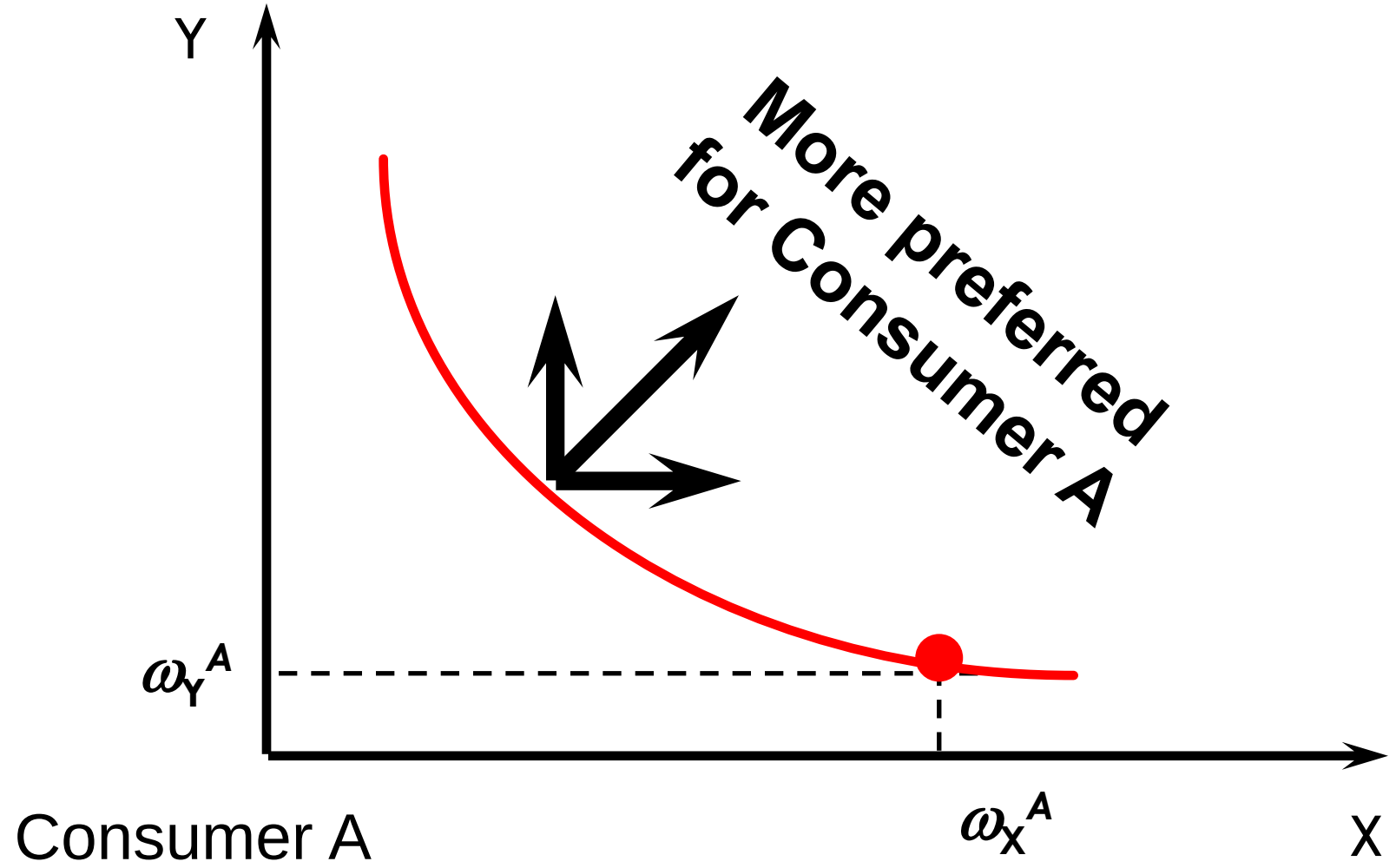
P represents the inital allocation when:

$\omega^A = (7,1)$ and $\omega^B = (3,5)$

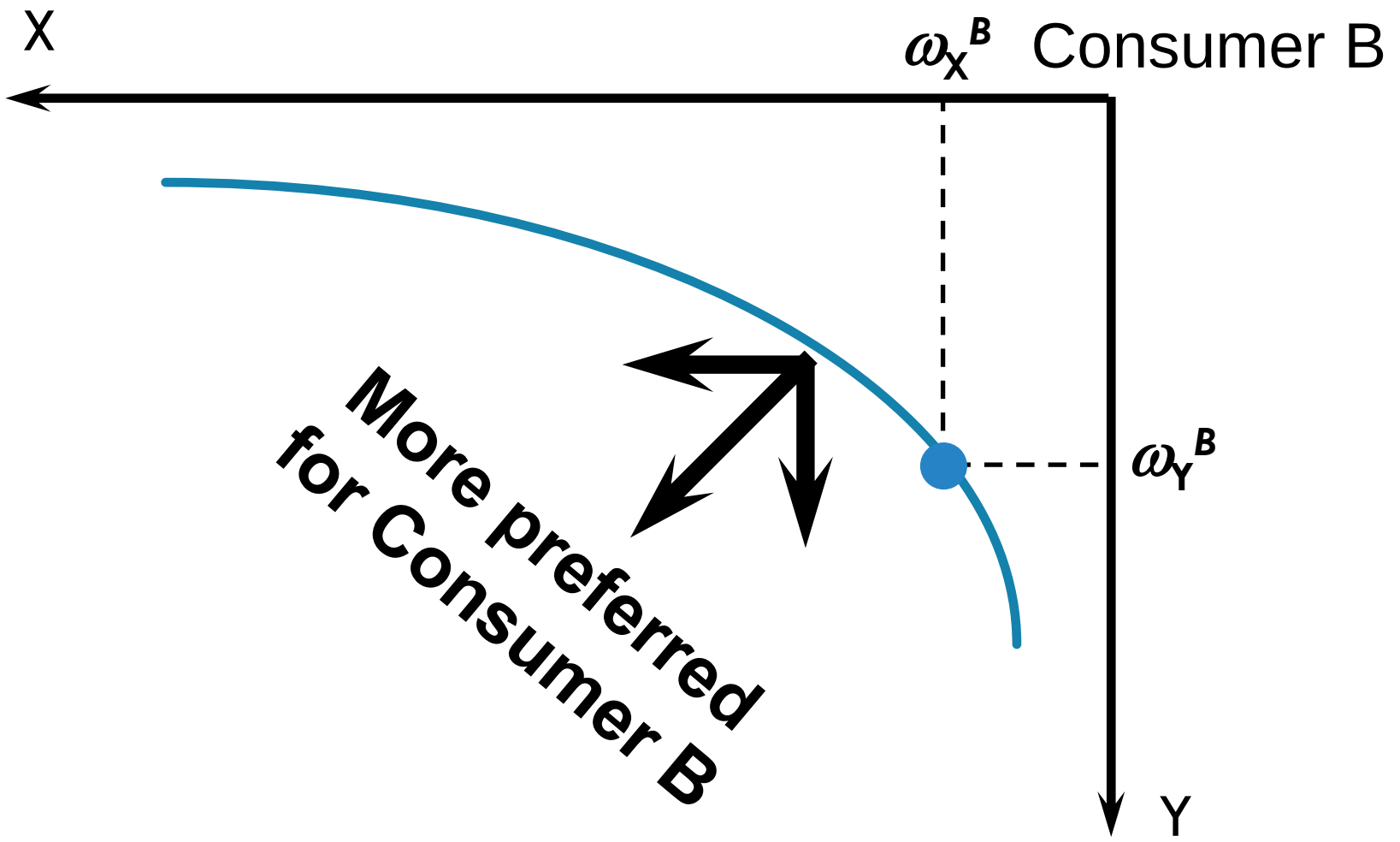
All allocations in the box (including the edges) are feasible



EDGEWORTH BOX



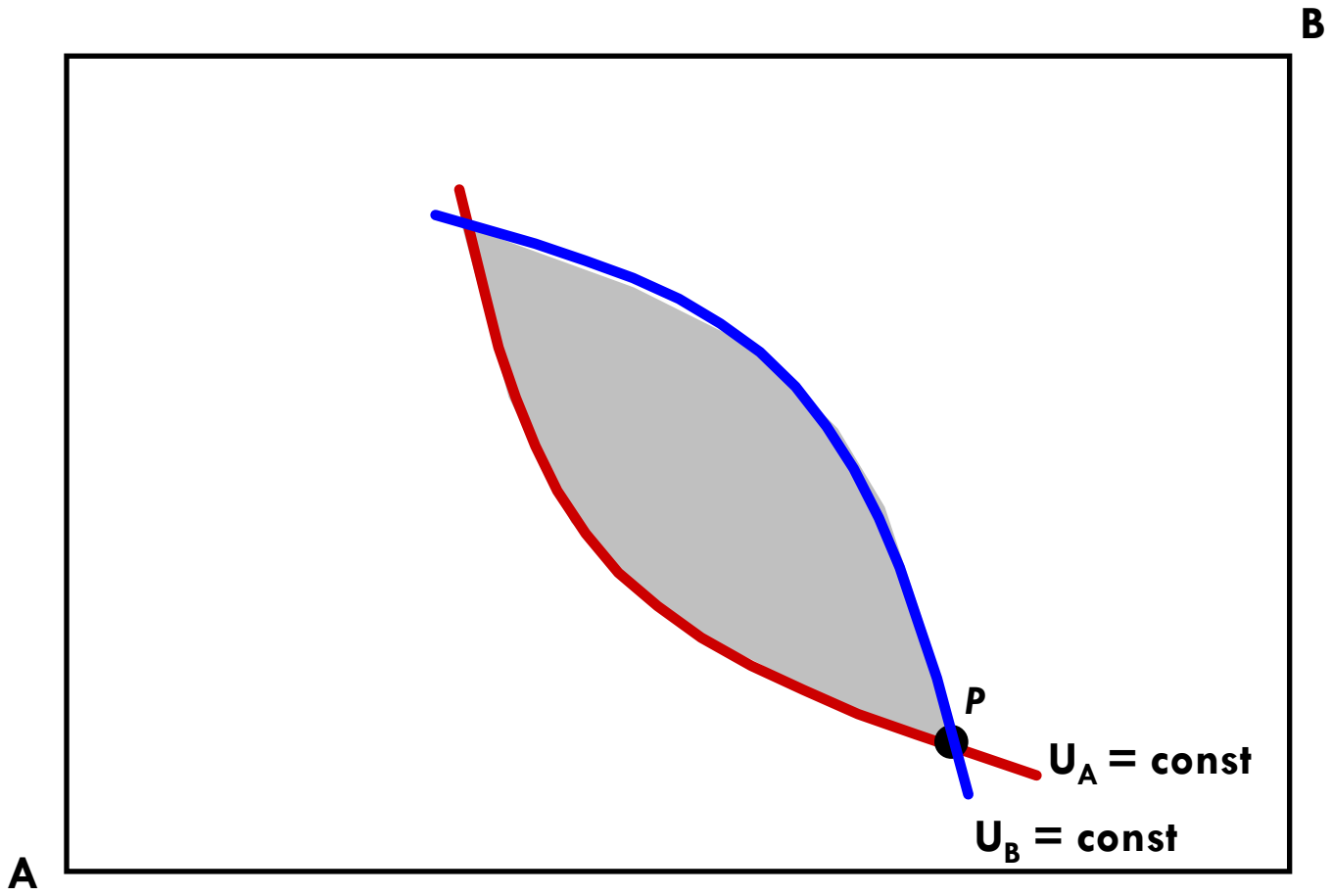
EDGEWORTH BOX



EDGEWORTH BOX

Grey area represents benefits from exchange

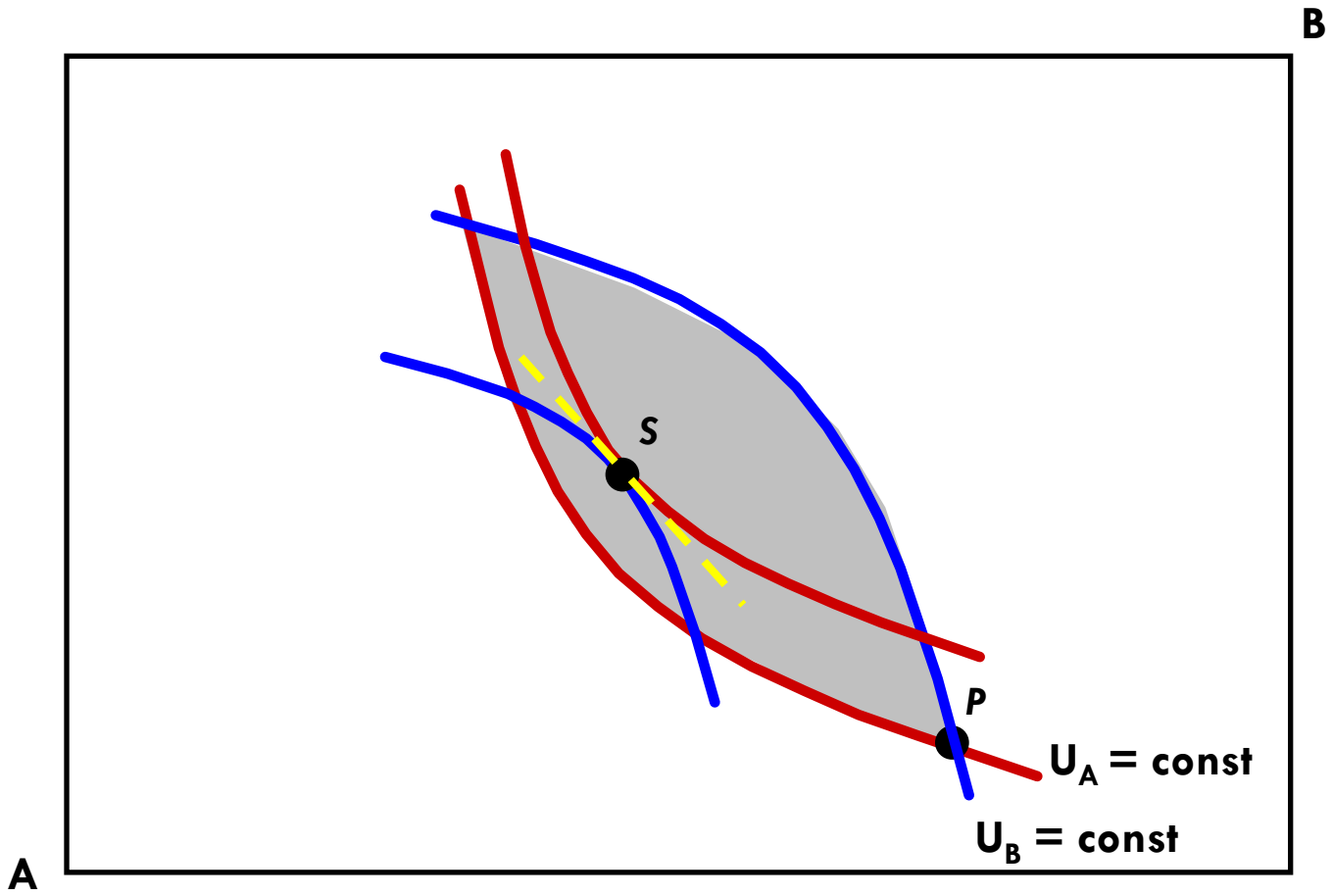
- Beneficial for both consumers



EDGEWORTH BOX

In point S: $MRS_A = MRS_B$

Which represents the Pareto efficient allocation



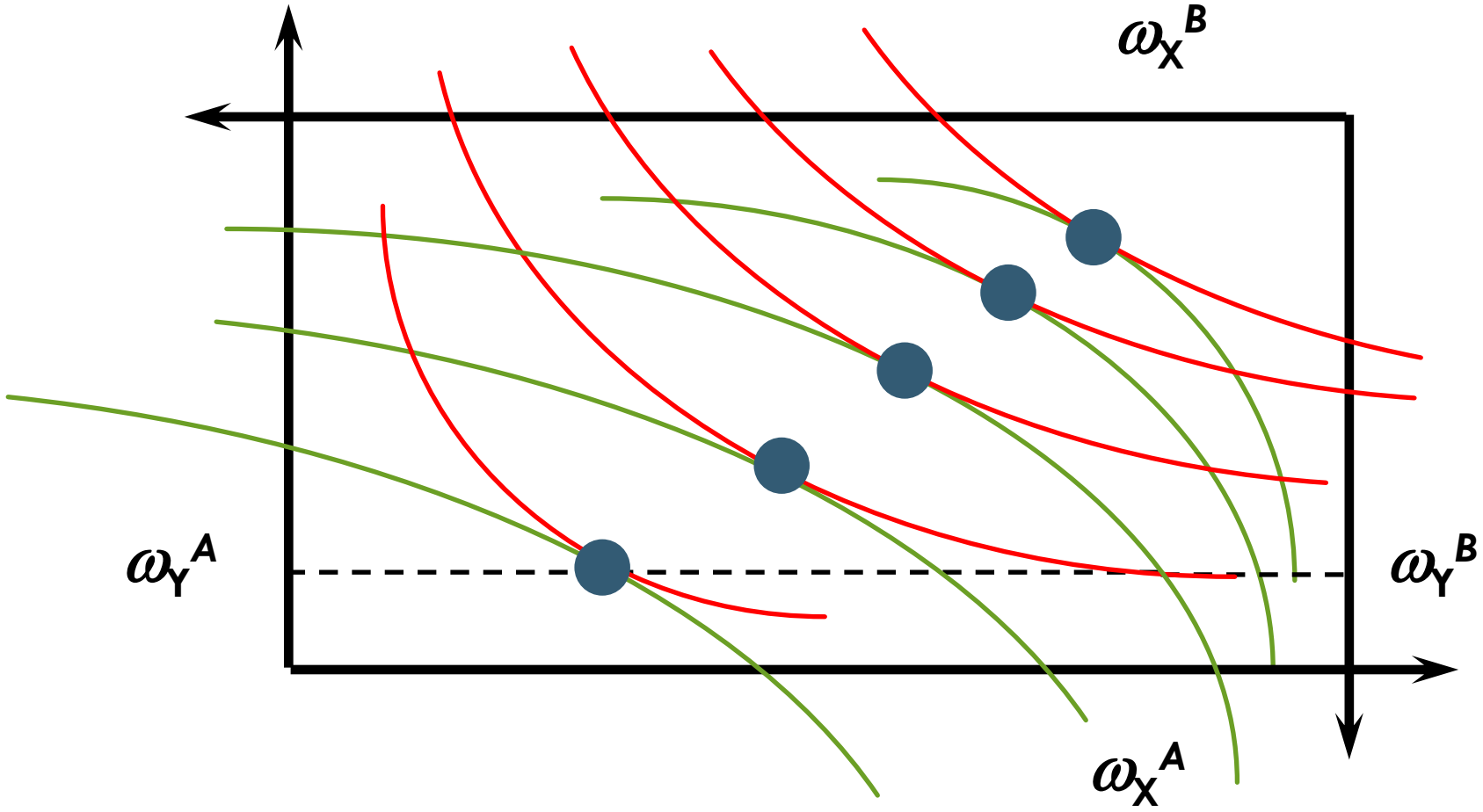
EDGEWORTH BOX

In a **Pareto efficient allocation,** it is not possible to improve the situation of any participant of the exchange without worsening the situation of the other one.

- In other words, a mutually advantageous exchange of goods is not feasible.

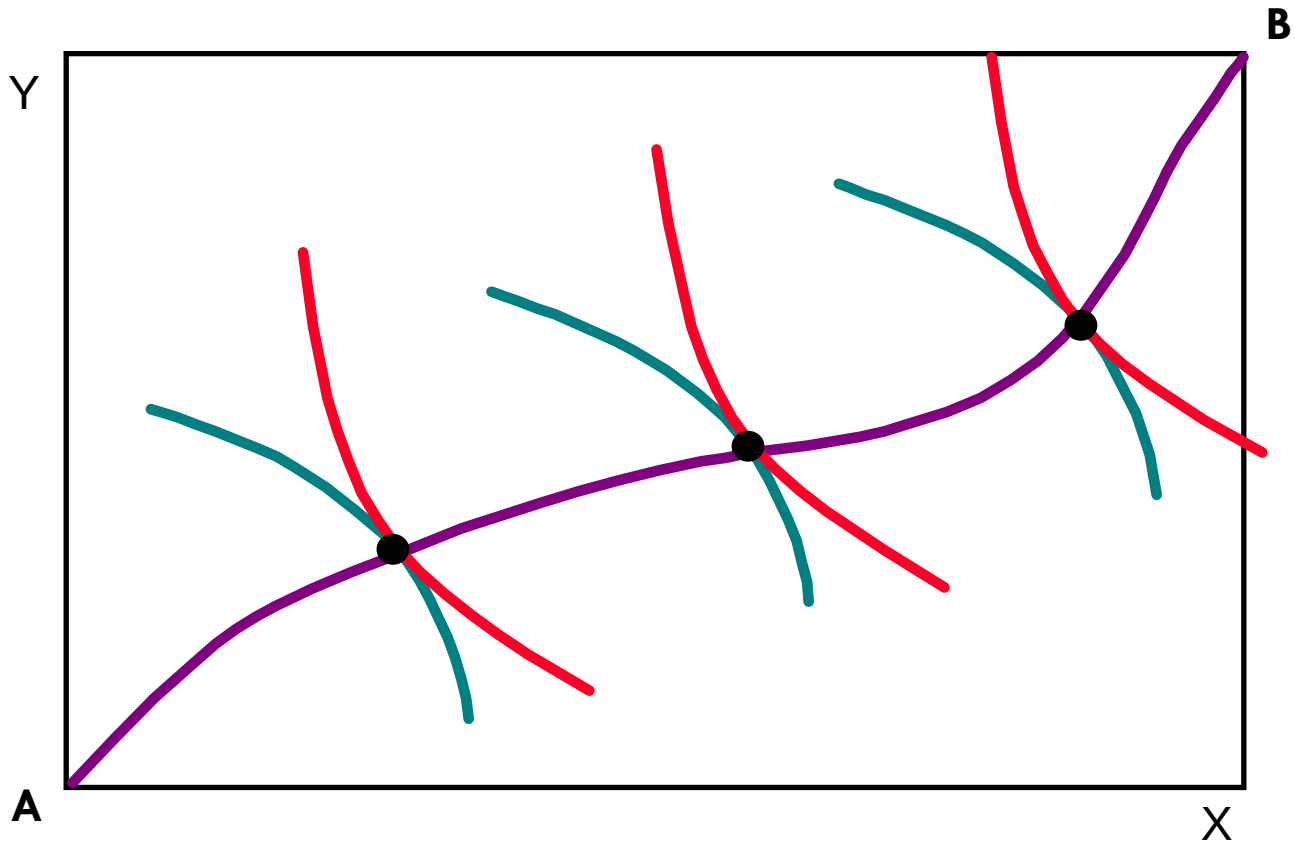
Within the Edgeworth box, there are numerous Pareto efficient allocations.

EDGEWORTH BOX



EDGEWORTH BOX

The set of all Pareto efficient points is called a **Pareto set** or a **contract curve.**



EDGEWORTH BOX

The equilibrium will depend on the assumed market structure and bargaining power

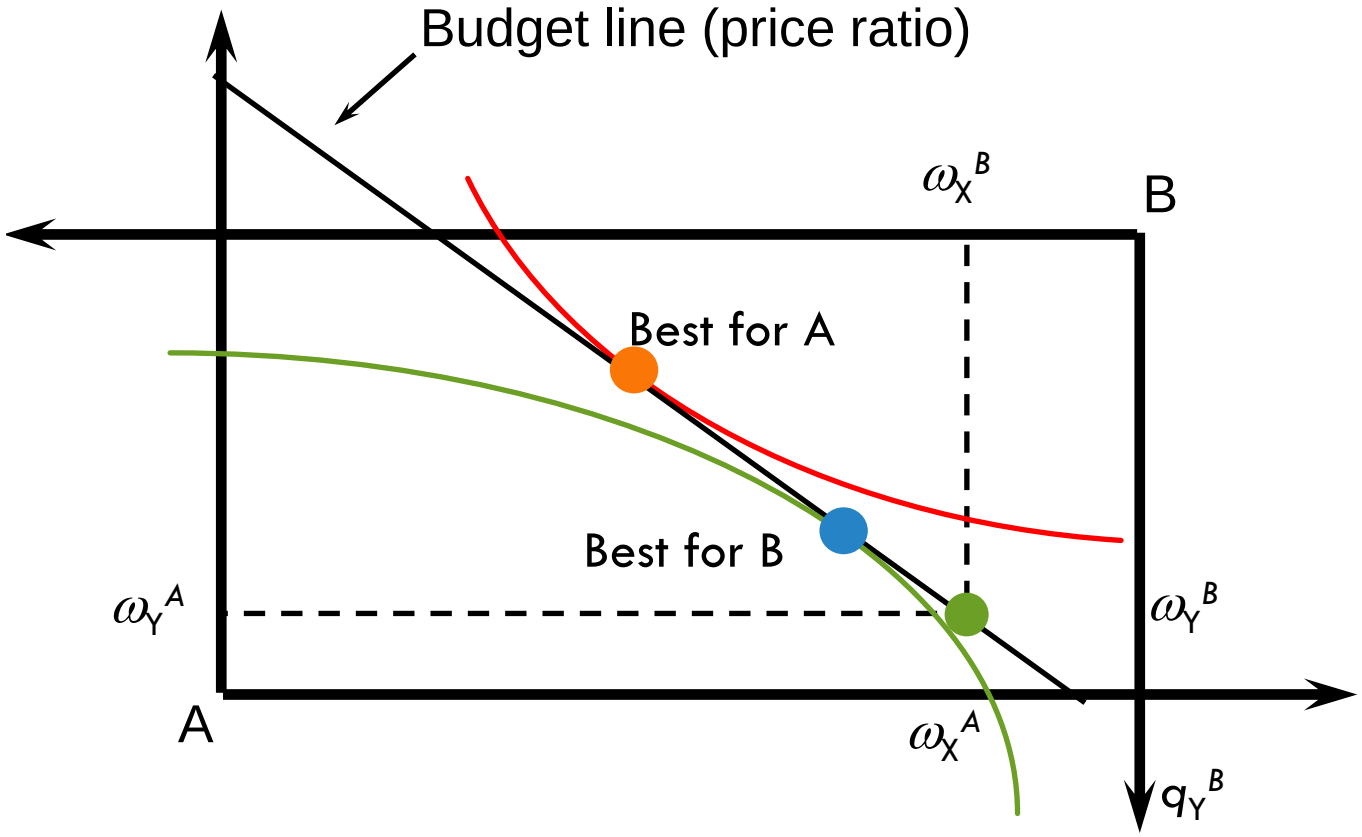
In a perfectly competitive market:

- Prices are such that each consumer is choosing his or her most-preferred affordable bundle and demand equals supply in every market.
- In the Edgeworth box, the equilibrium is in the tangency point of indifference curves.
- The slope of the tangent line in this point is equal to a negative of the equilibrium price ratio ($-p_X/p_Y$).
- $MRS_A = MRS_B = -p_X/p_Y$

EDGEWORTH BOX

In a current setting, for a given price ratio, we are out of the equilibrium. Prices need to adjust:

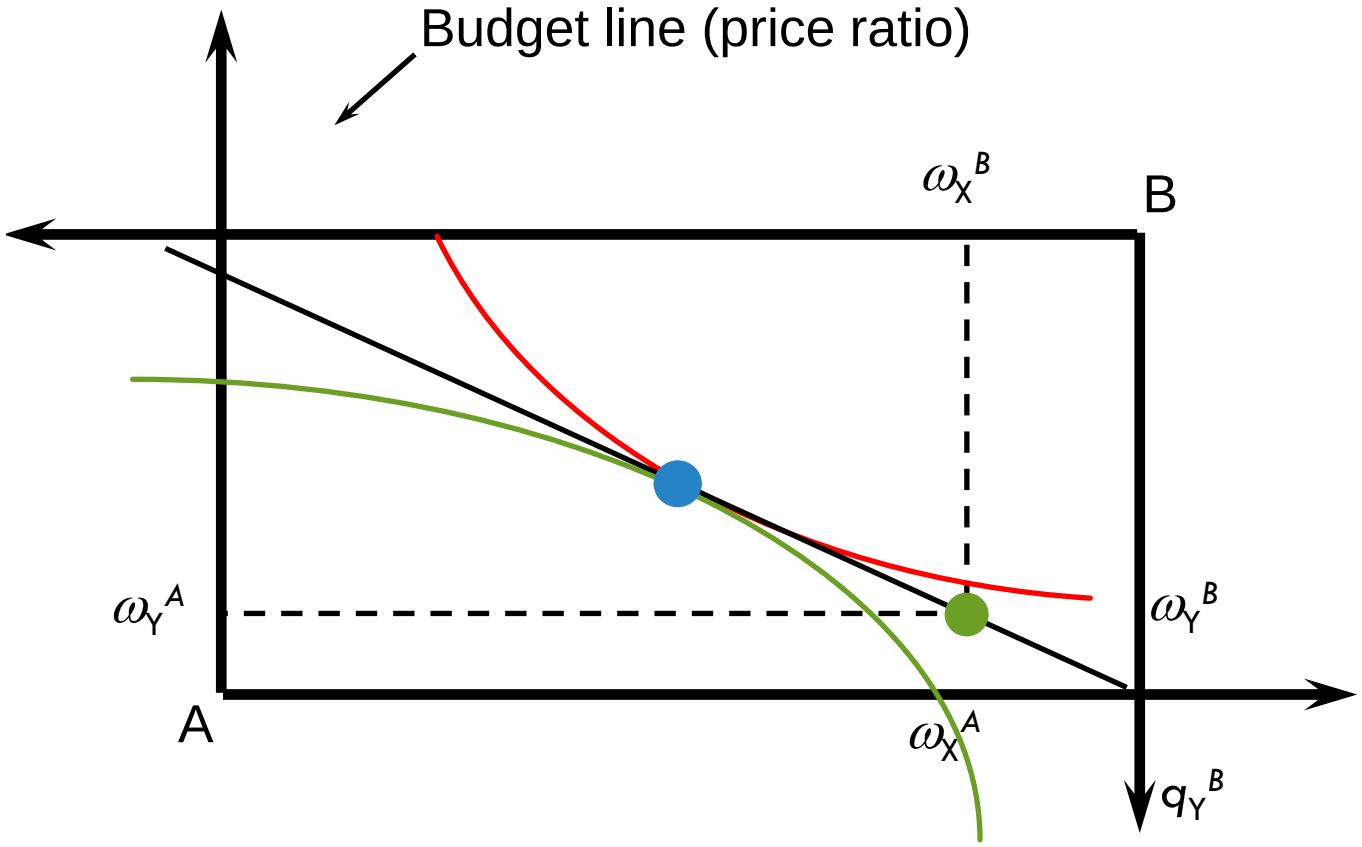
- Excess supply of X → p_X will decrease
- Excess demand of Y → p_y will increase
- The slope of the budget line ($-p_X/p_y$) will decrease
- The budget line will rotate around the initial endowment point



EDGEWORTH BOX

In the equilibrium: $MRS_A = MRS_B = -p_X/p_Y$

Individual prices cannot be identified, we can only calculate the price ratio in the equilibrium



EDGEWORTH BOX

With new prices, markets for both goods (X and Y) are balanced, so we reach the general equilibrium.

Exchange in a competitive market yields a **Pareto efficient allocation**.

- This is known as the **First Theorem of Welfare Economics**.