

Welfare Economics and Efficiency

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Michaelmas
2010



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The Role of Government

- What is the Government?
- Who are in the government?
- What is expected for governments to do?
- Whose interests are defended by governments?
- Why economics care about governments?

The Case for Policy Intervention

- Efficiency
- Equity

Brief Contents

- The Pareto Principle: improvements and Optimality
- The Fundamental Theorems of Welfare Economics
- Analysing Economic Efficiency

Public Economics

- Public economics is the study of economic policy.
- The subject encompasses topics as diverse as responses to market failures and the determination of optimal social security policies.
- The current concern has broadened its scope to include all aspects of government intervention.

Controversies I

- ‘Economics of welfare, or economics of public policy, is too unscientific in character to be part of economic science’

Controversies II

- Positive economics can be, and ought to be, the same for all means.
- One's welfare economics will inevitably be different according as one is a liberal or a socialist, a nationalist or an internationalist, a Christian or a pagan'

Welfare Economics

- We ought to examine how far economic activities are effective in achieving the ends for which they are designed,
- to be able to examine the efficiency of any particular economic system as a means of adjusting means to ends.

Interpersonal Comparisons

- Although the economic system can be regarded as a mechanism for adjusting means and ends, the ends in question are ordinarily not a single system of ends, but as many independent systems as there are individuals in the community
- Is it possible to compare the impact of gains and losses upon the well-being of different individuals?

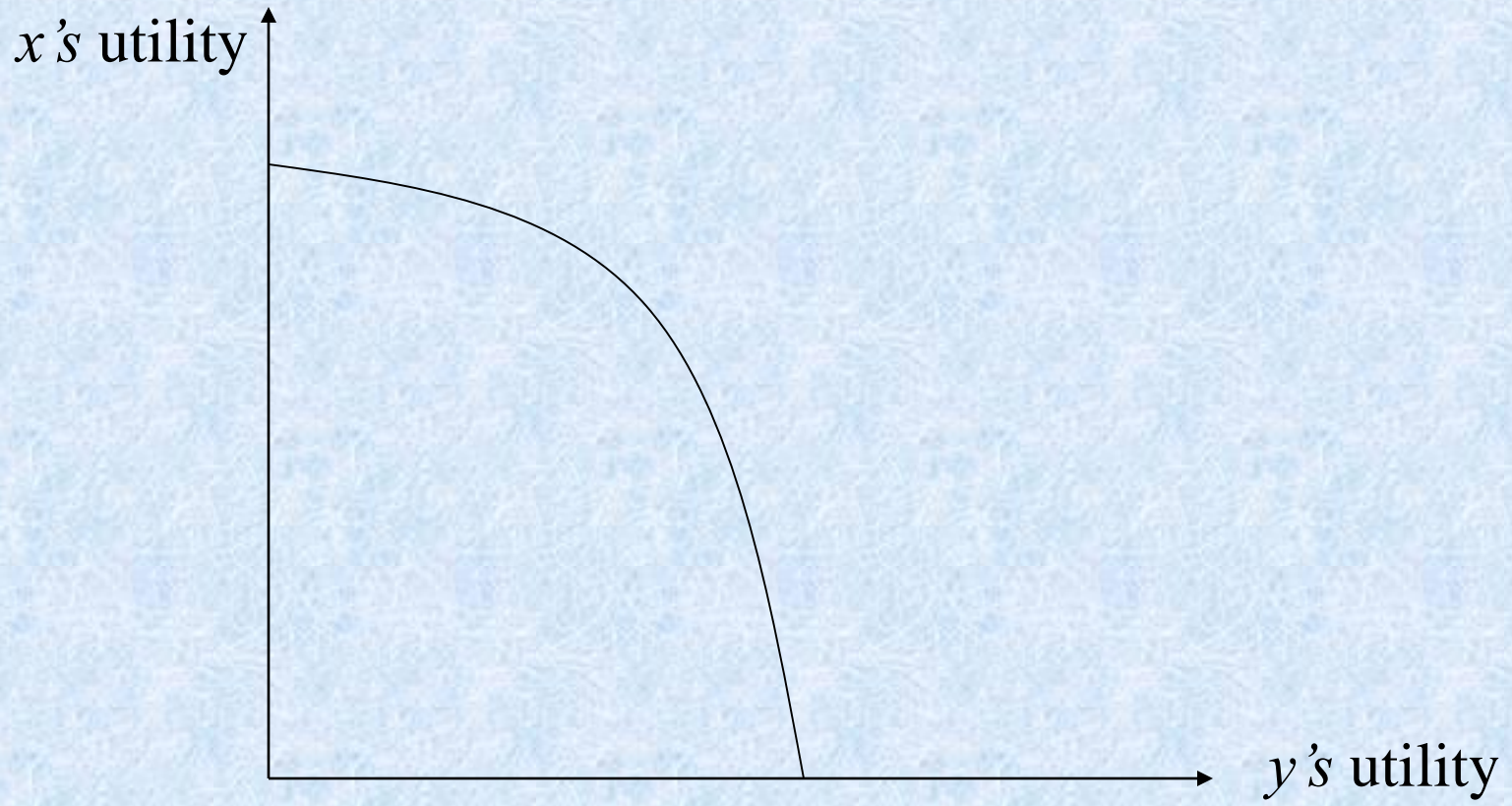
Pareto Optimum and Efficiency

- Vilfredo Pareto (1848-1923)
- ‘Resource allocations that have the property that no one can be made better off without someone being made worse off are said to be **Pareto efficient** or **Pareto optimal**’.
- Efficiency in economics is usually Pareto efficiency.

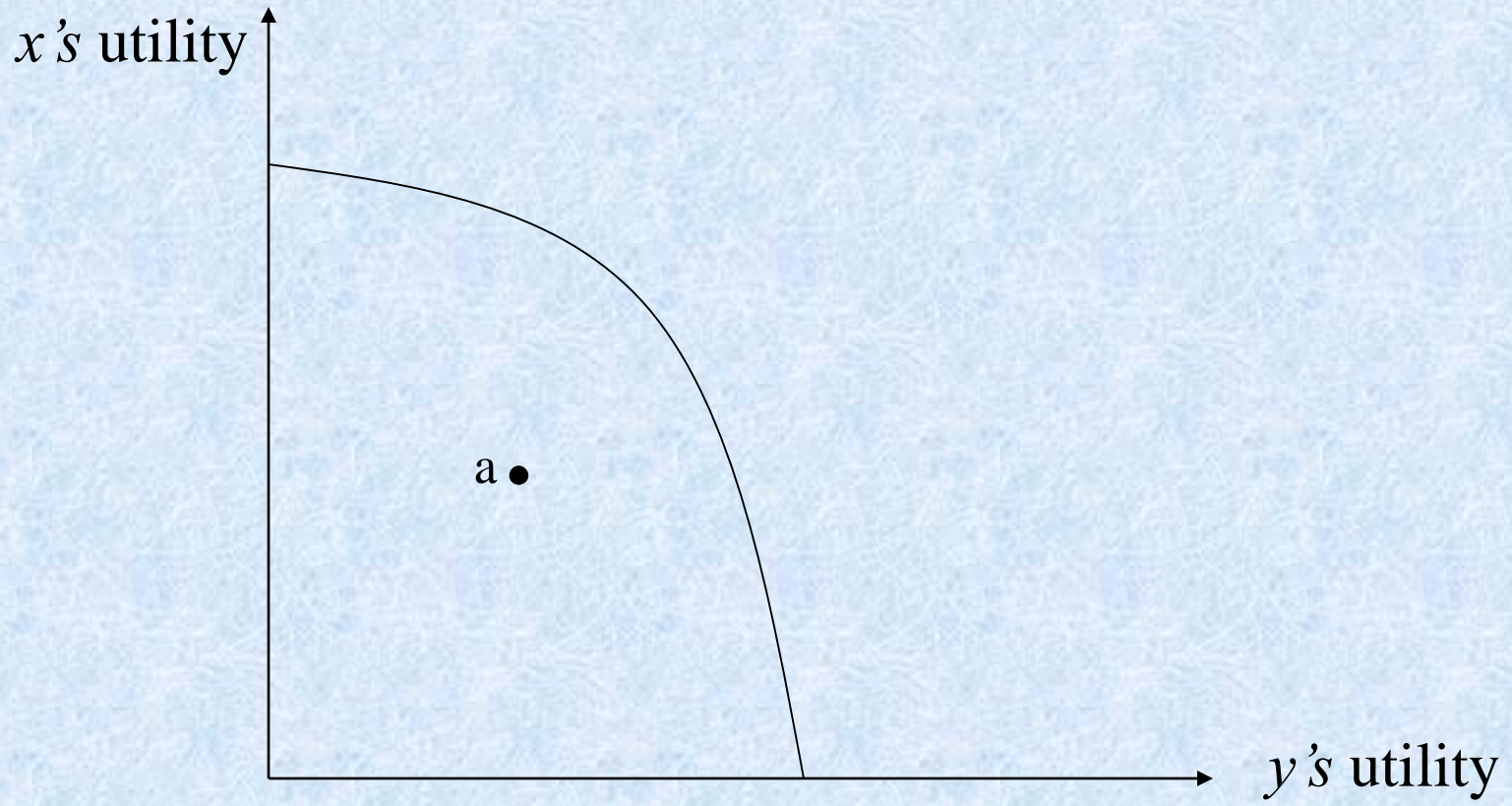
Pareto Improvement

- A change in resource allocation is called a **Pareto improvement** if it can make some individuals better off without making anyone worse off.

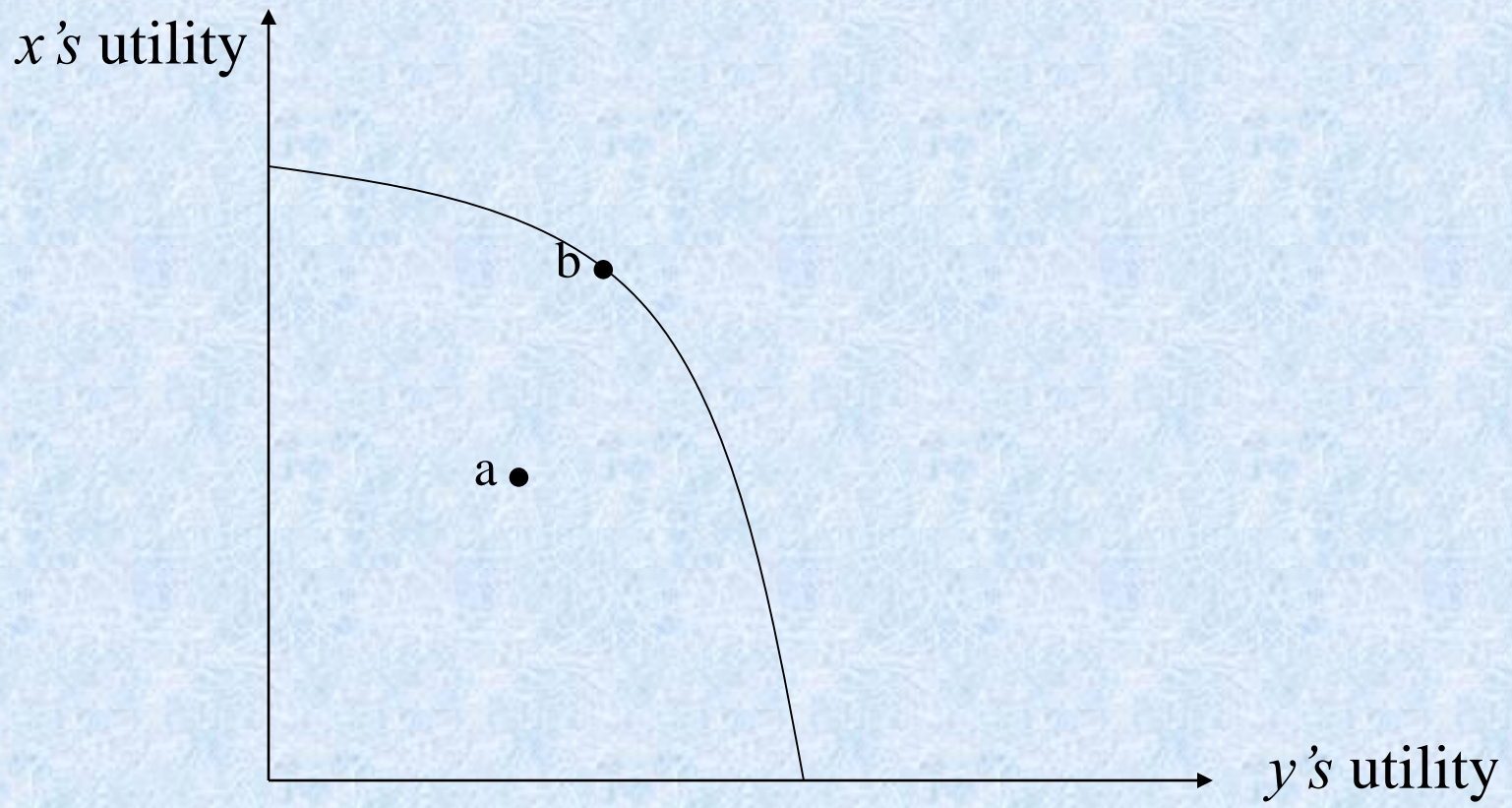
Utility Possibility Curve



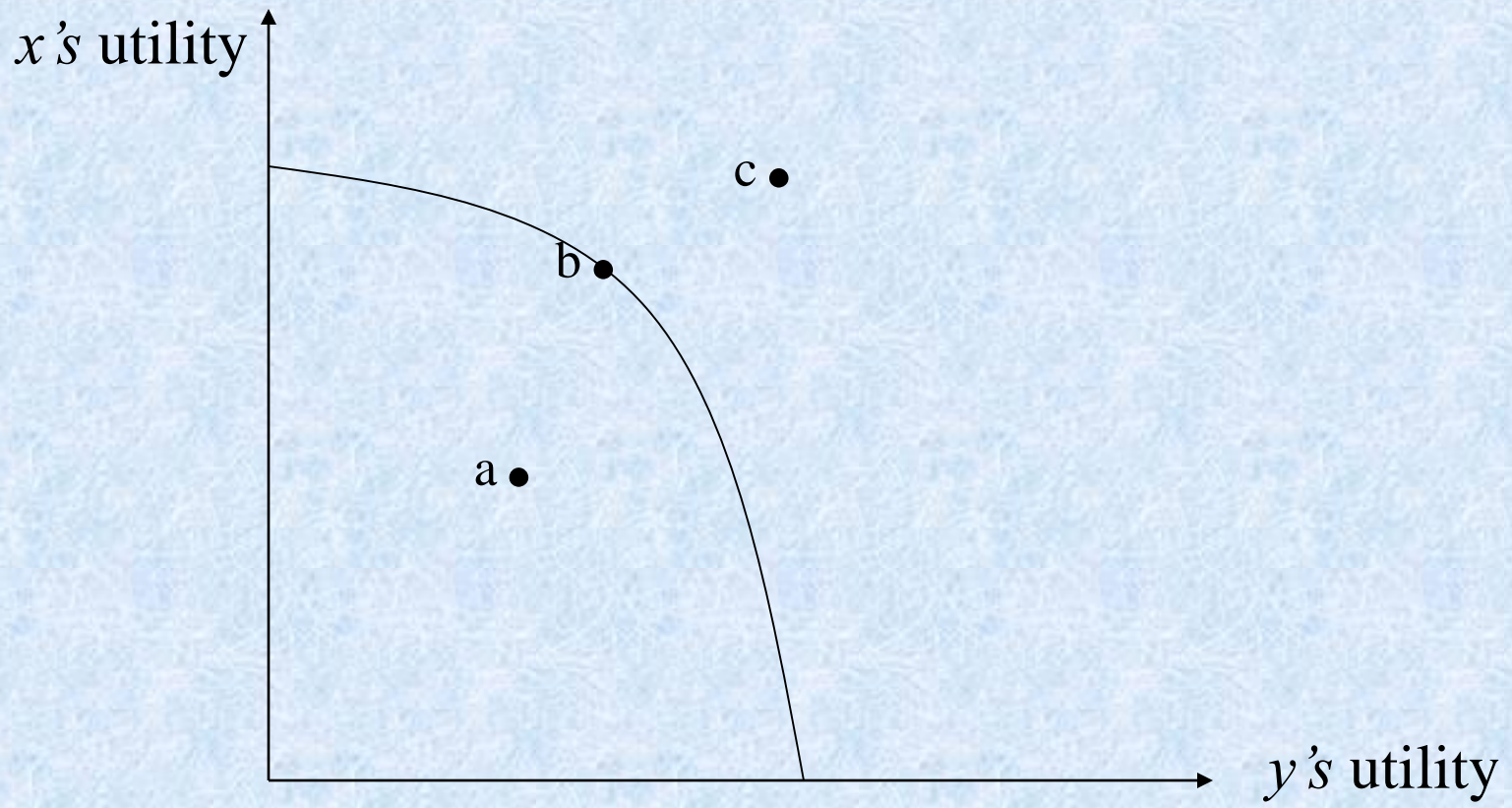
Utility Possibility Curve



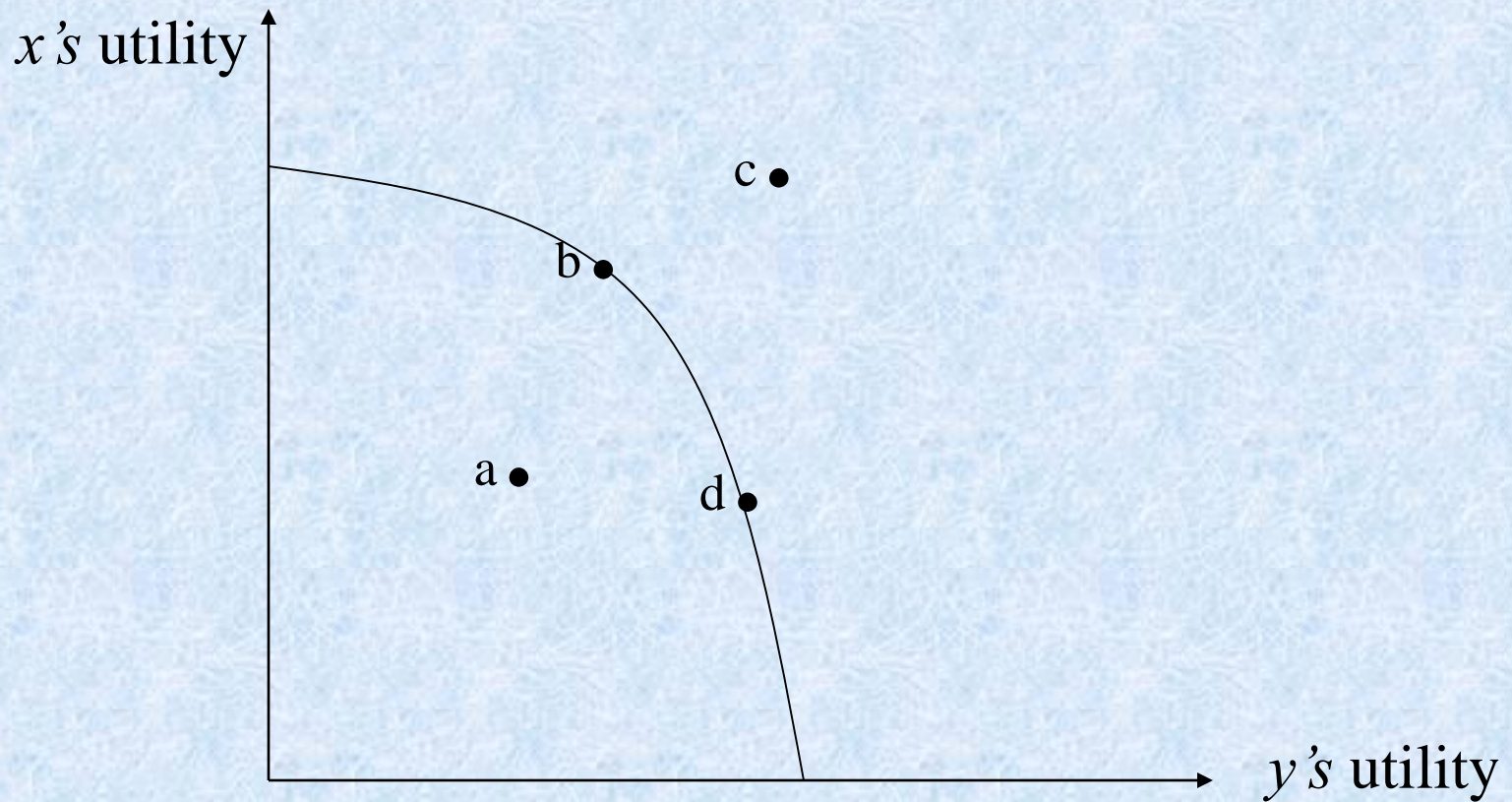
Utility Possibility Curve



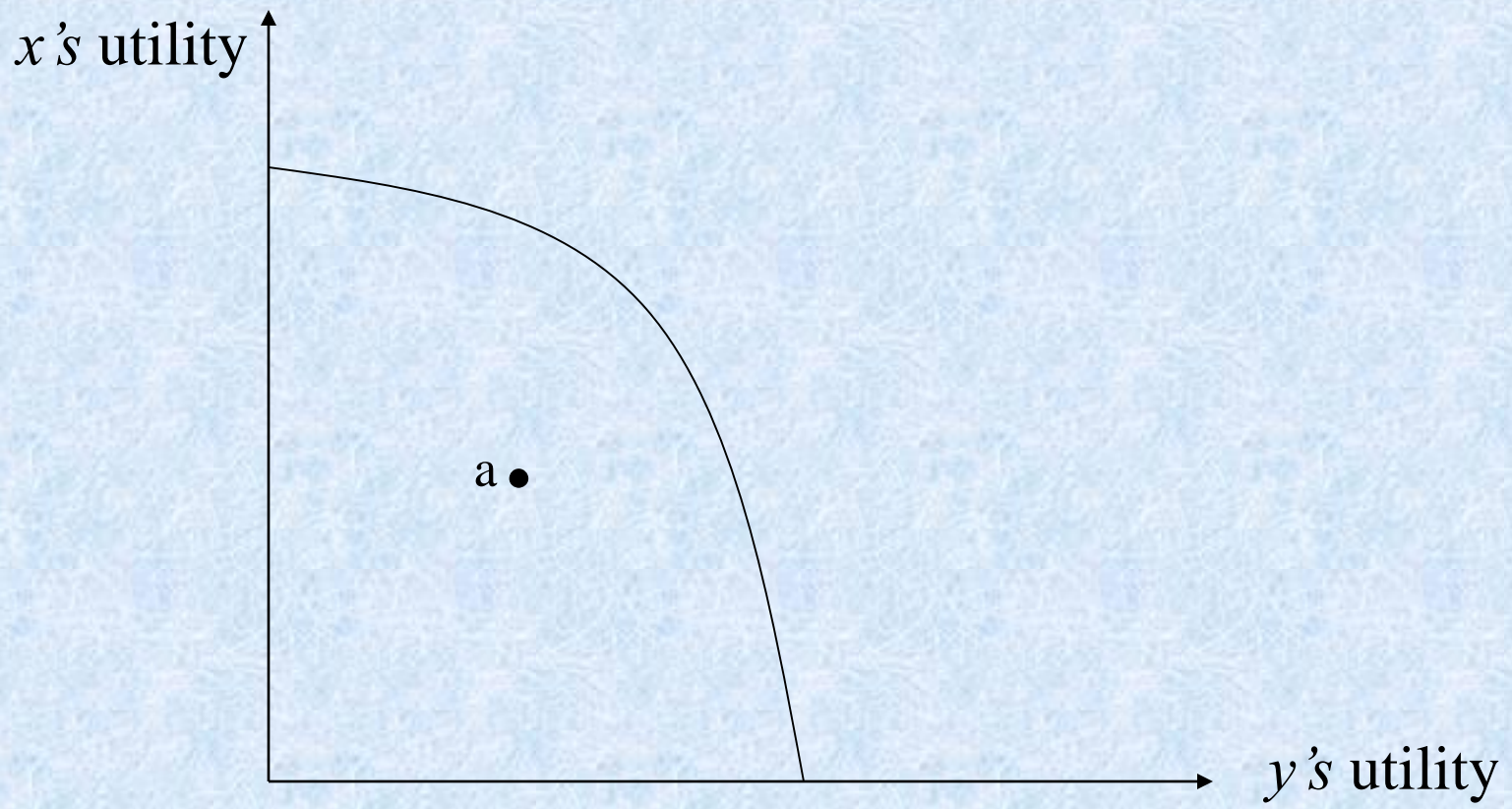
Utility Possibility Curve



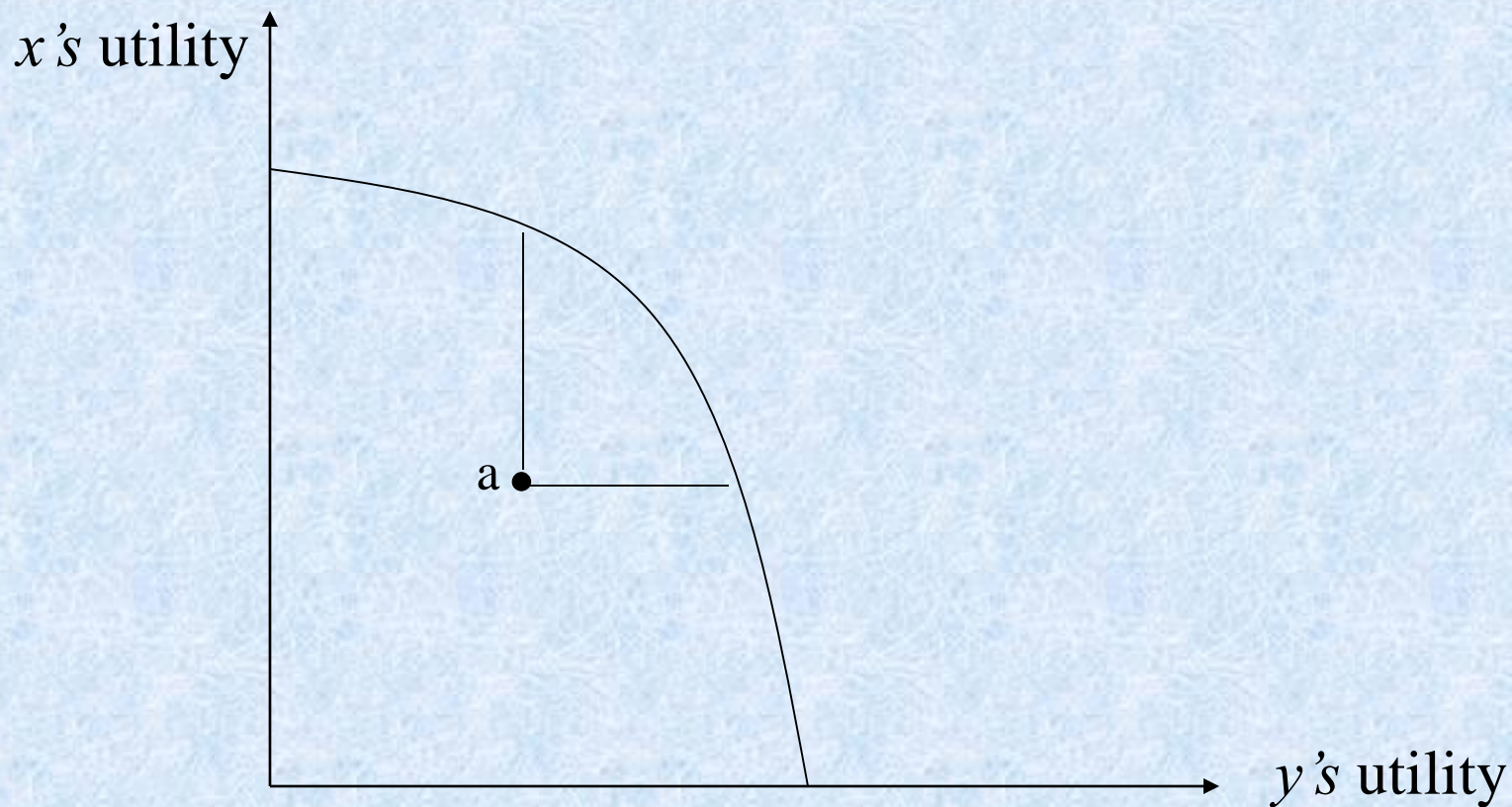
Utility Possibility Curve



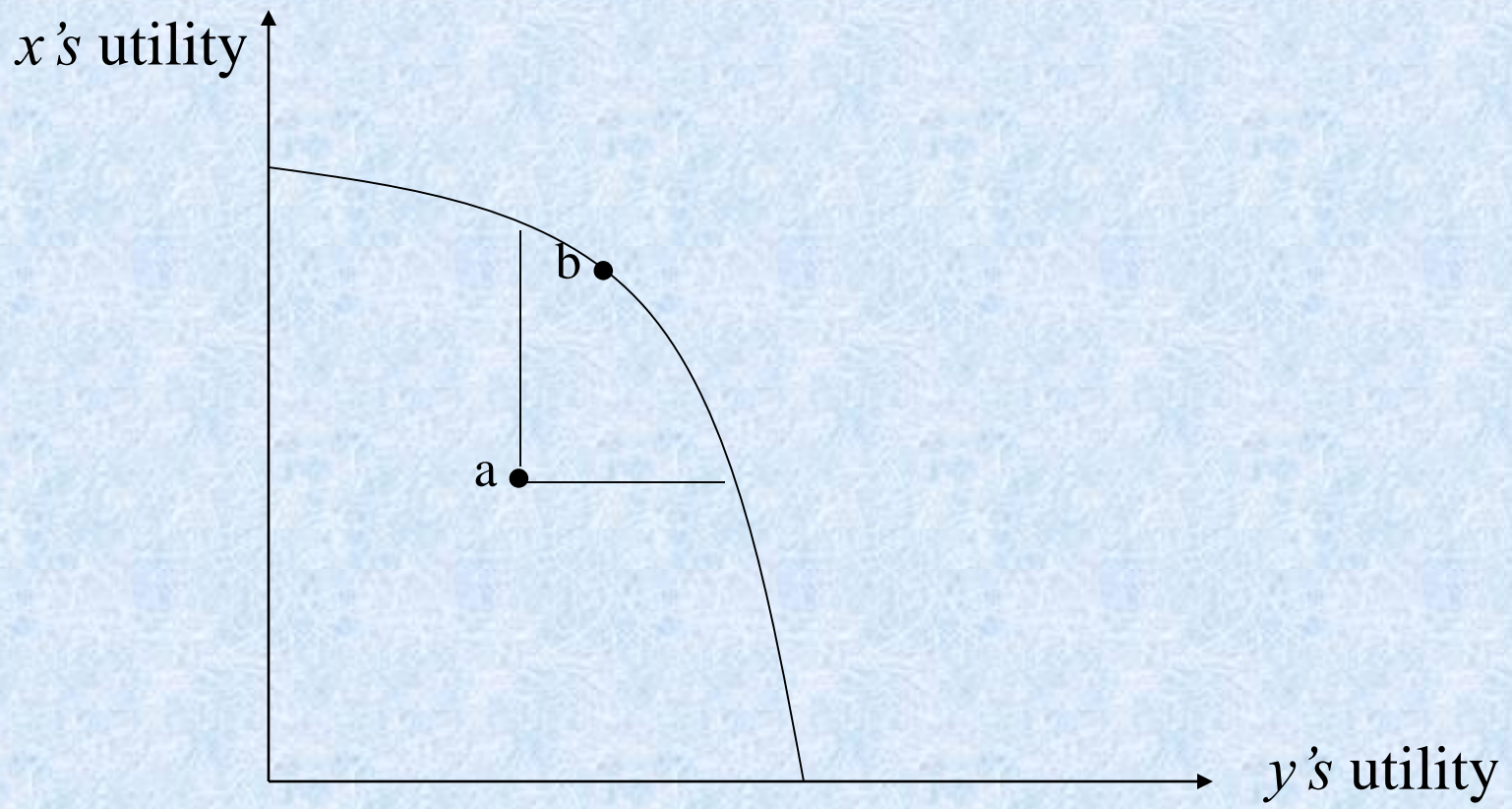
Pareto Improvement



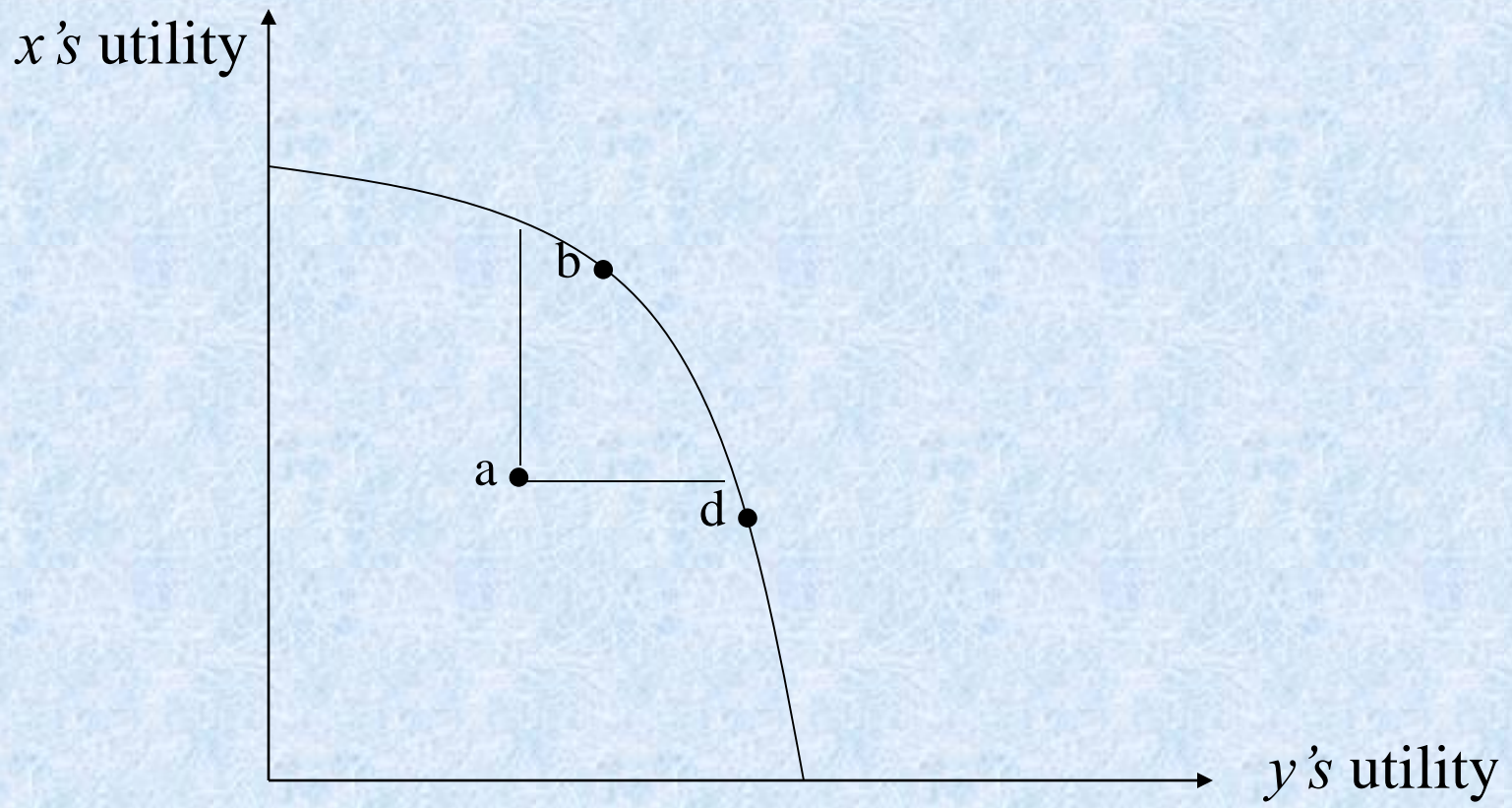
Pareto Improvement



Pareto Improvement



Pareto Improvement



Distribution

- Pareto efficiency is concerned only with each individual's welfare, not with the relatively well-being of different individuals.
- It is not concerned explicitly with inequality
- There are virtually infinite situations that are Pareto efficient in a particular market economy

Individualism

- The criterion of Pareto efficiency holds that individuals are the best judge of their own needs and wants, of what is in their own best interests

Fundamental Theorems of Welfare Economics

- The First Theorem:

‘Every economy operating under perfect competition is Pareto efficient in equilibrium’

Fundamental Theorems of Welfare Economics

- The second theorem:

‘Every Pareto efficient resource allocation can be attained through competitive market mechanism, with appropriate initial redistribution of endowments’

Perfect Competition

Assumptions

- Large number of small producers
- Large number of small consumers
- Complete information
- Homogenous good
- No externalities
- No barriers to entry or exit
- Other assumptions regarding functional forms of objective functions and preferences (convexity, returns to scale)

Fundamental Theorems of Welfare Economics

- Implication:
- The SFT suggests that the only thing the government needs to do is redistribute initial wealth.
- If there is something wrong with income distribution there is no need to abandon the use of competitive market mechanism.

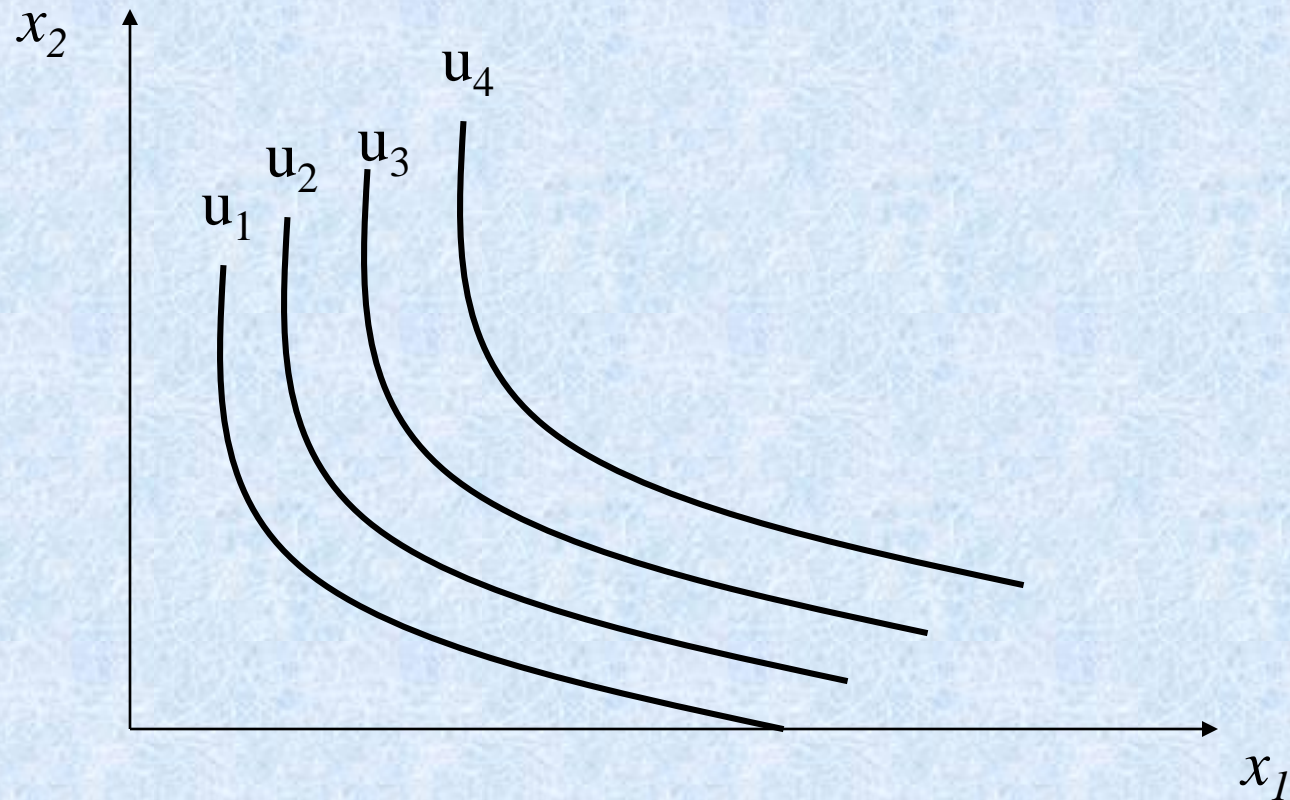
Exchange Efficiency

- EE concerns the distribution of goods
- EE means that goods are distributed so no one can be made better off without someone else being worse off.
- EE means that there is no scope for additional trade between individuals

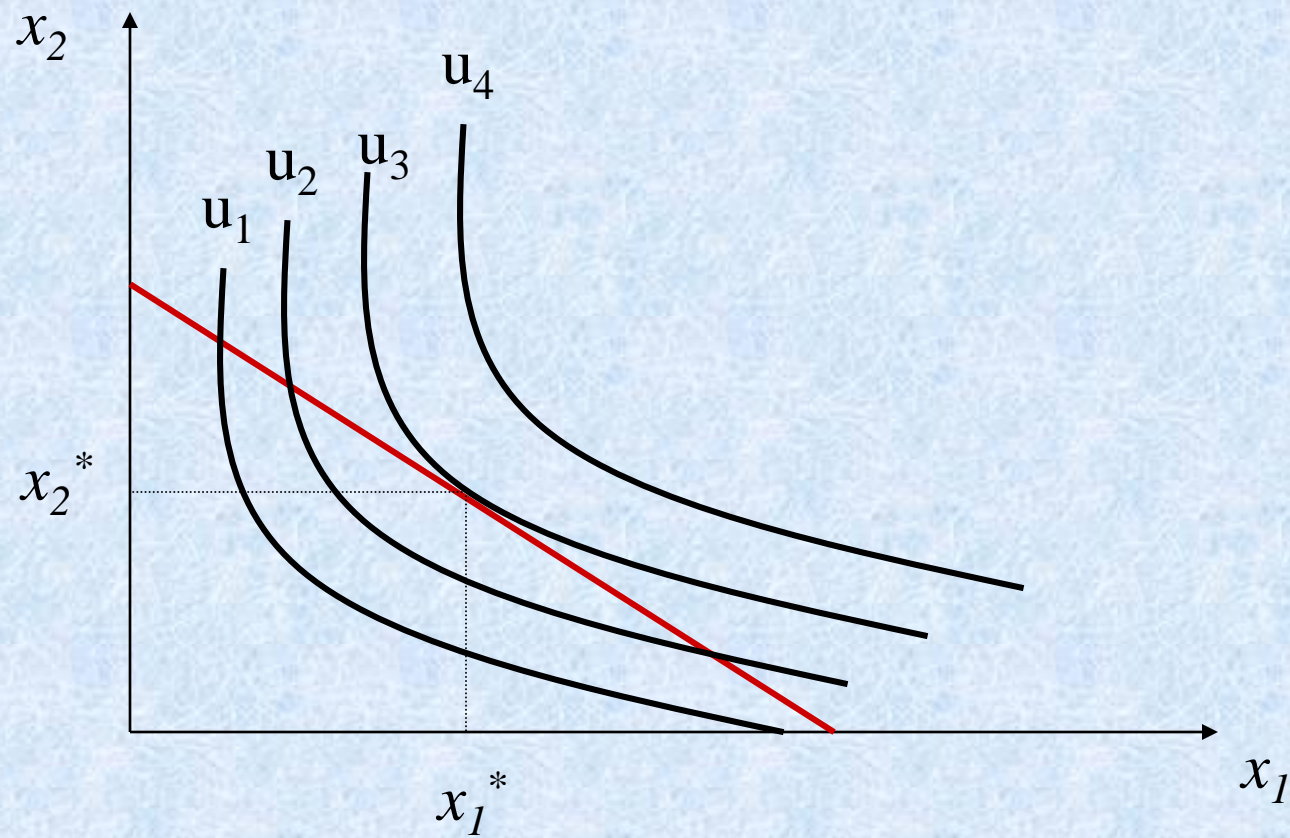
Marginal Rate of Substitution

- The amount of one commodity which an individual is willing to give up in exchange for a unit of another commodity
- If MRS differ among individuals there is room for trade.
- EE requires that all individuals have the same MRS (equilibrium condition)

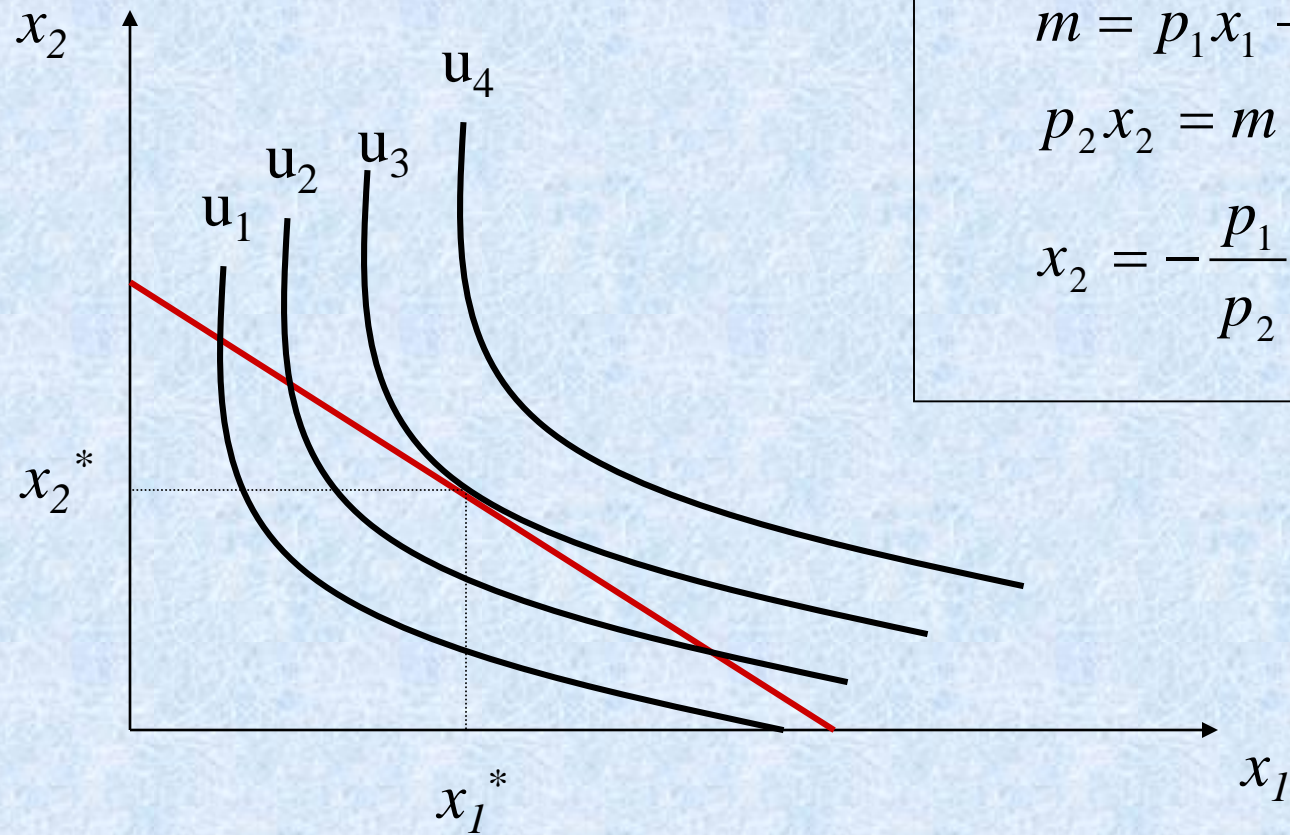
Indifference Curves



Consumer Equilibrium



Consumer Equilibrium



$$m = p_1 x_1 + p_2 x_2$$

$$p_2 x_2 = m - p_1 x_1$$

$$x_2 = -\frac{p_1}{p_2} x_1 + \frac{m}{p_2}$$

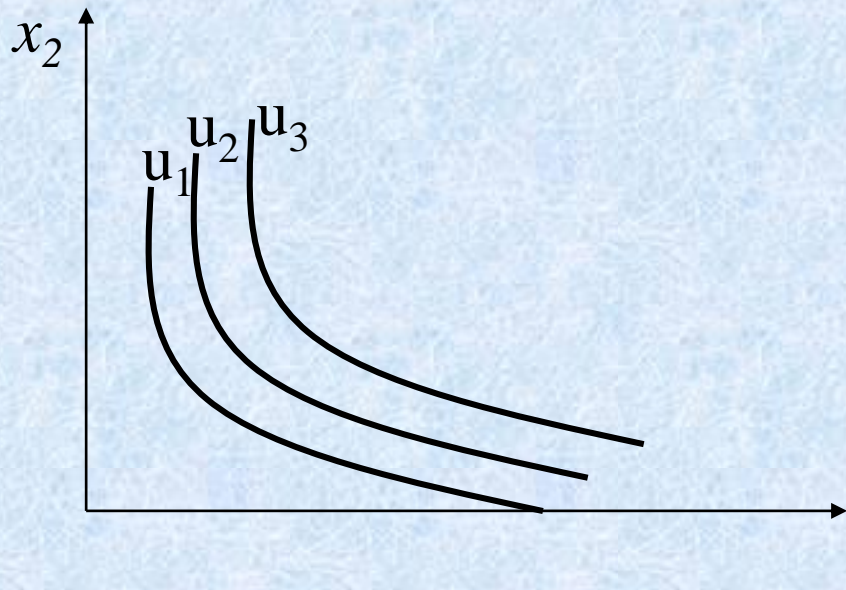
Consumer Equilibrium

- Each consumer sets his/her MRS equal to the price ratio
- All consumers face the same prices
- Result: all consumers have the same MRS
- So, a market economy in equilibrium have exchange efficiency

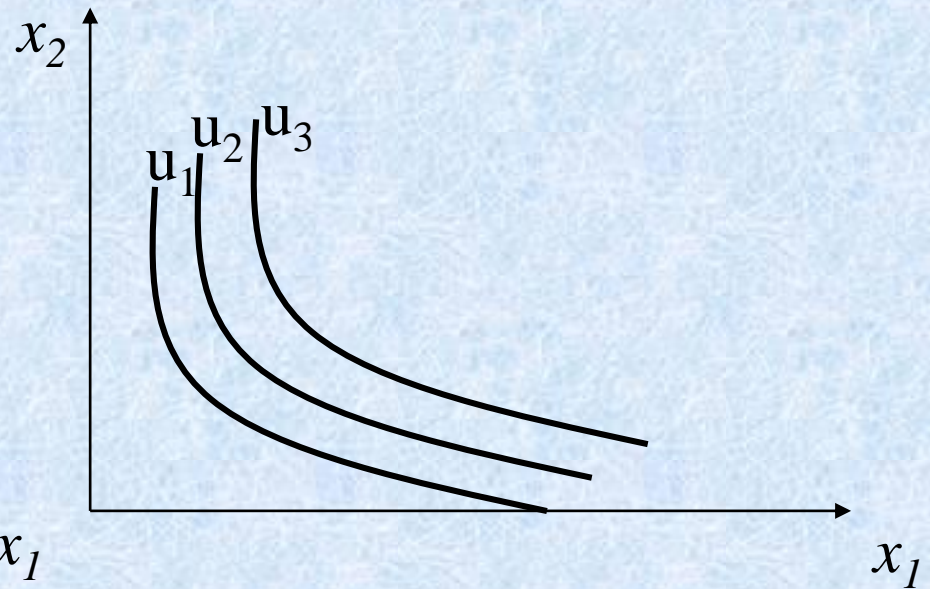
Edgeworth Box

- Let's hold John's utility level constant
- Then find what is the maximum utility level that Mary can achieve given John's level
- The result will be the market equilibrium allocation which is also Pareto efficient

Edgeworth Box

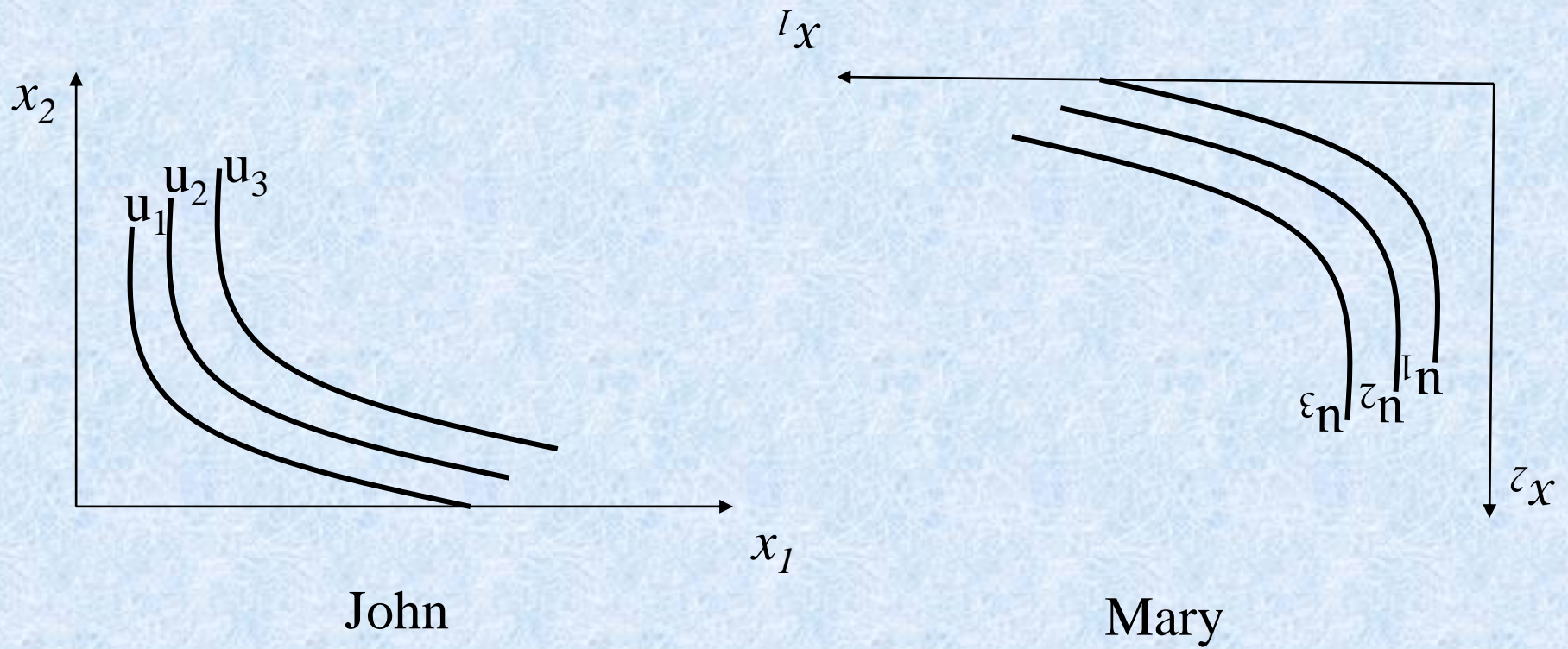


John

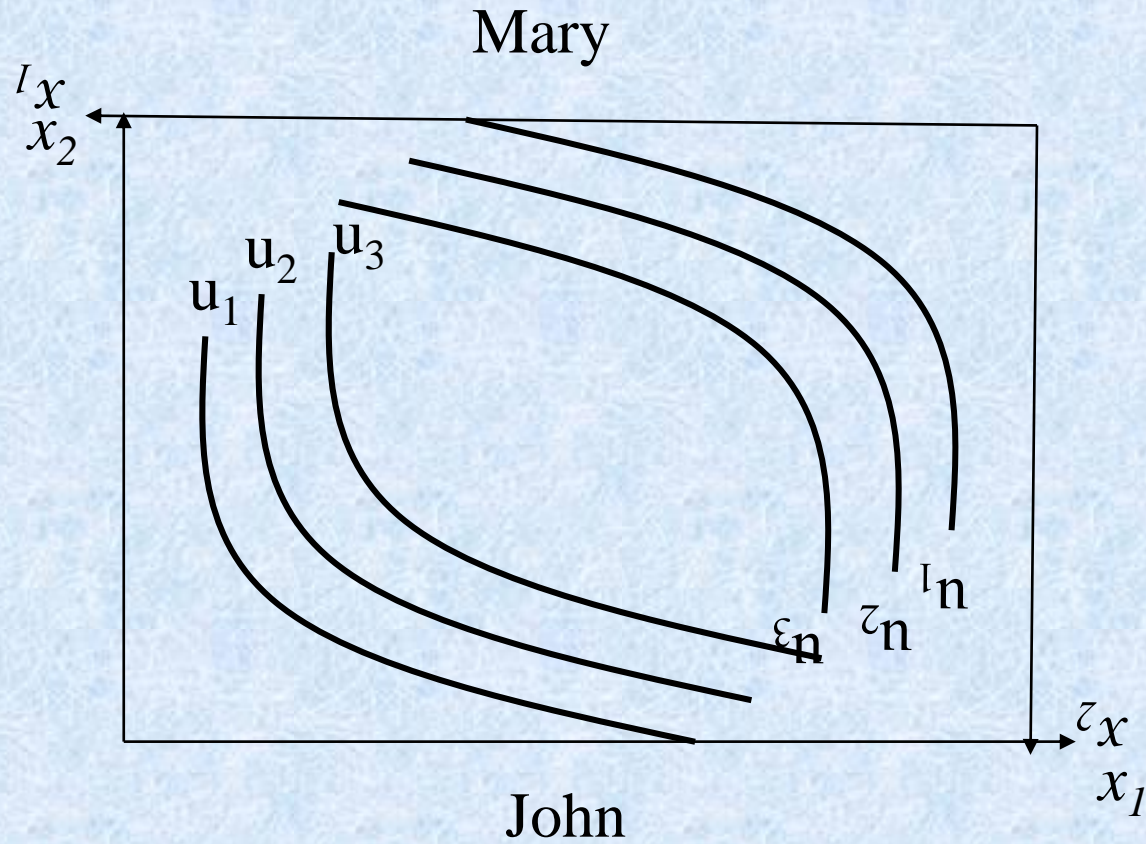


Mary

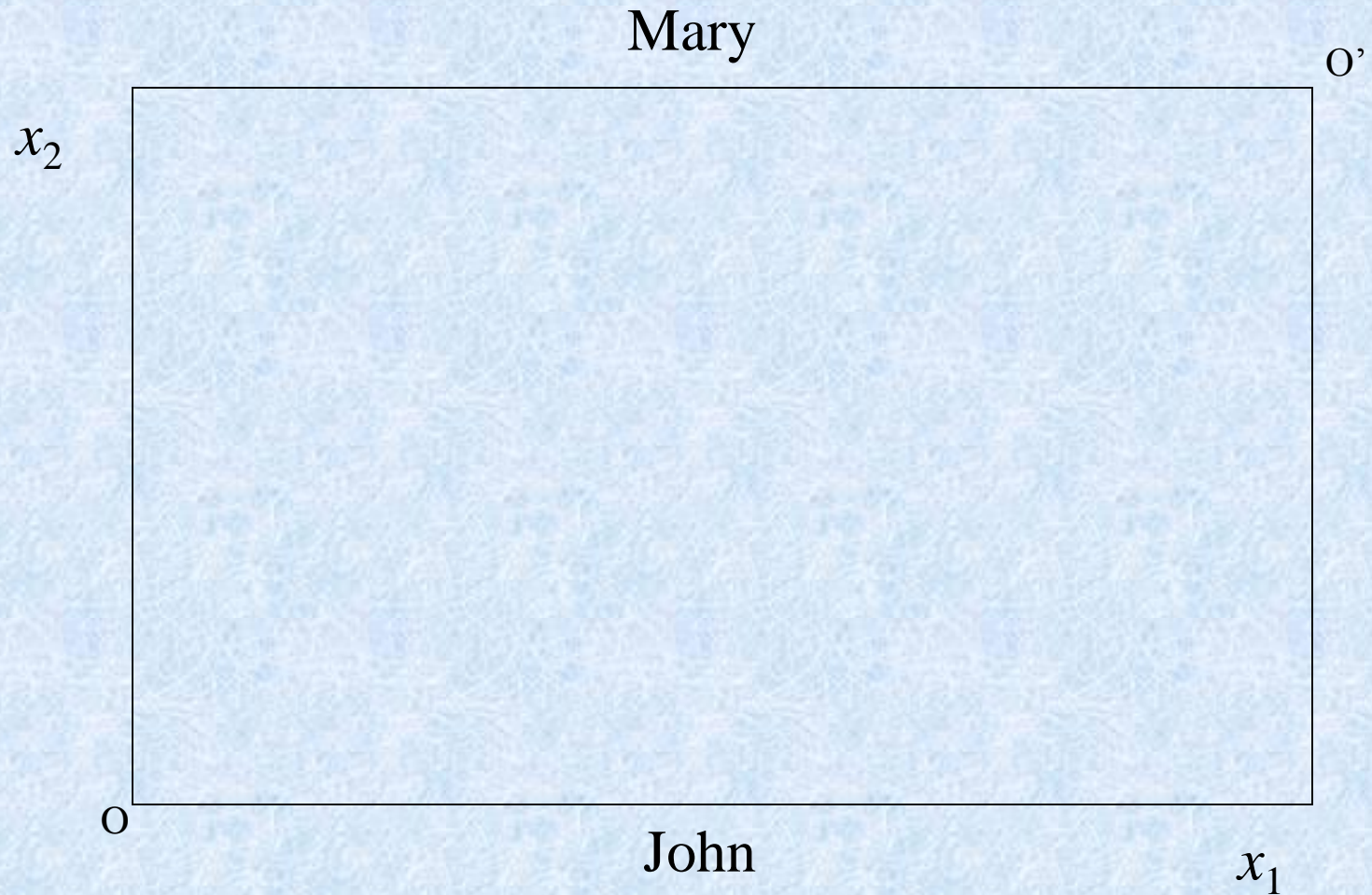
Edgeworth Box



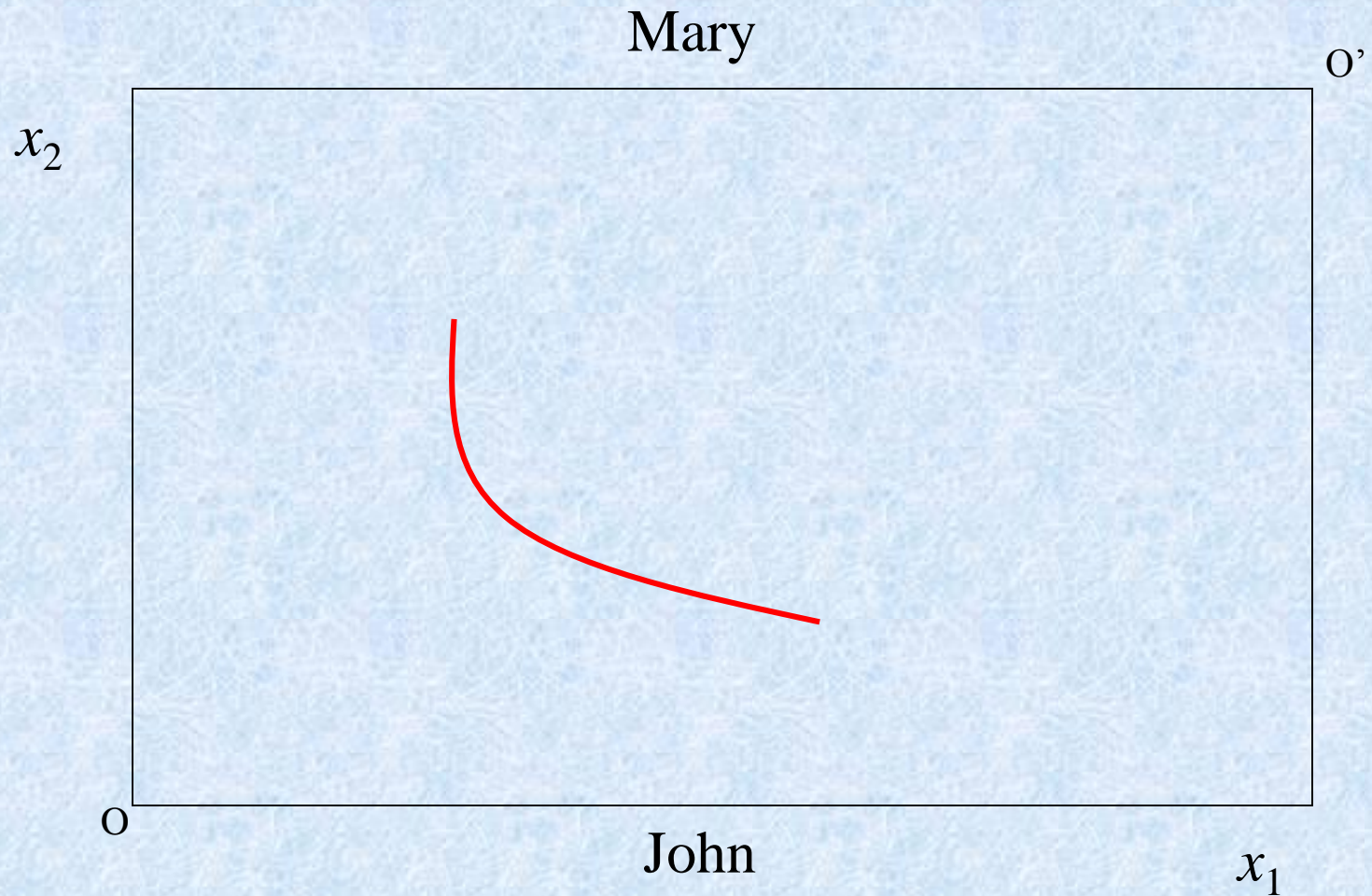
Edgeworth Box



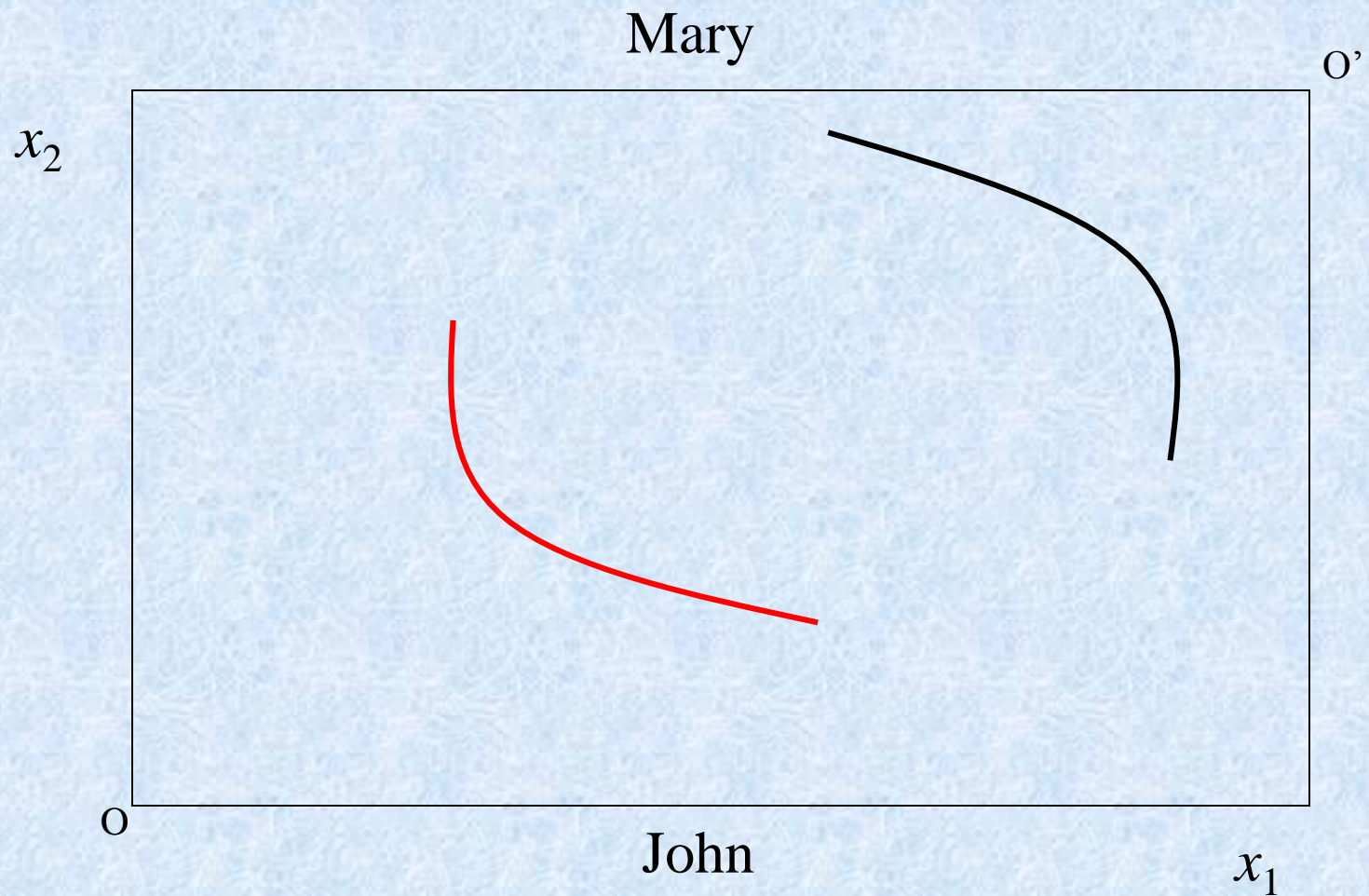
Edgeworth Box



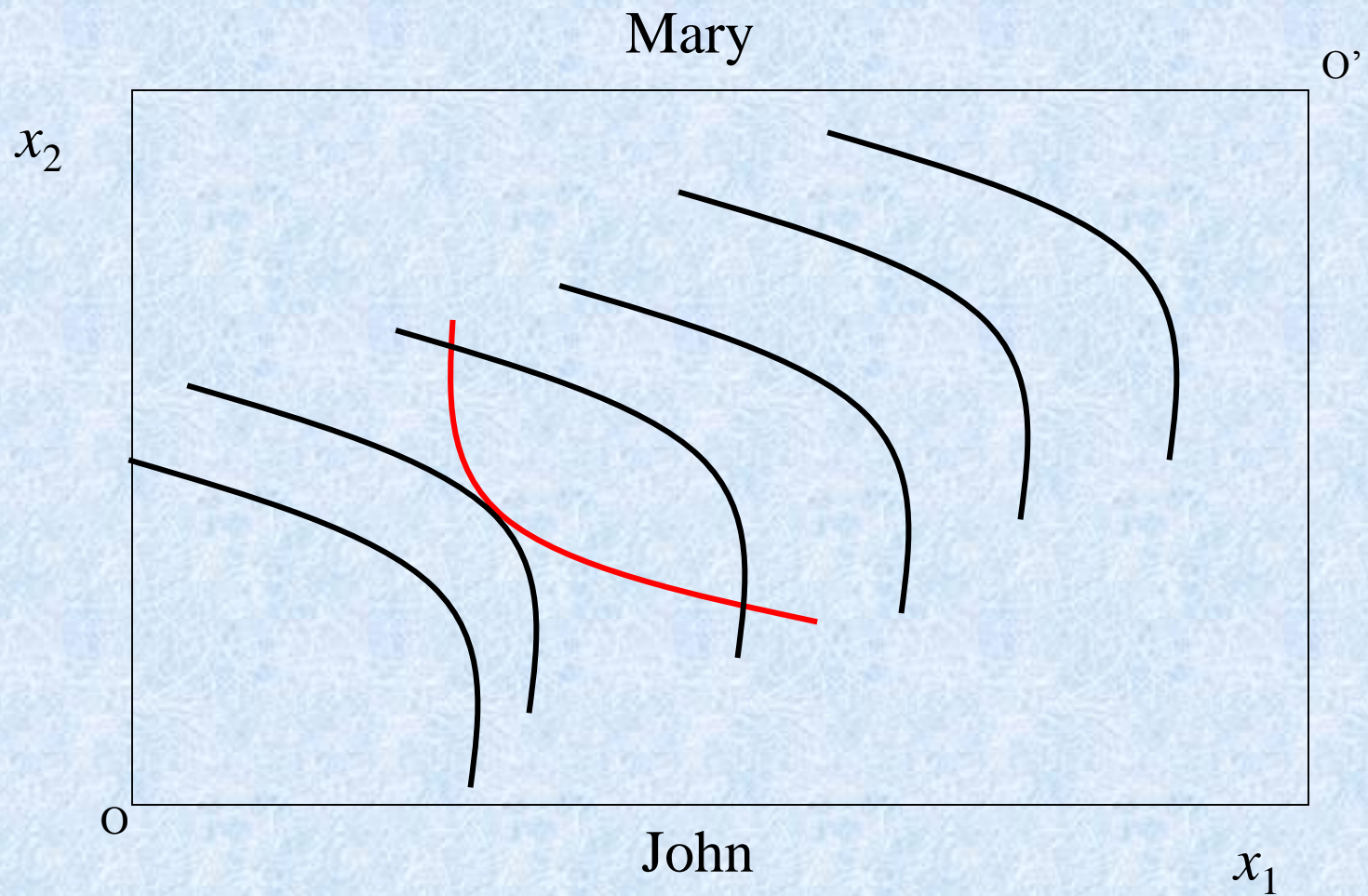
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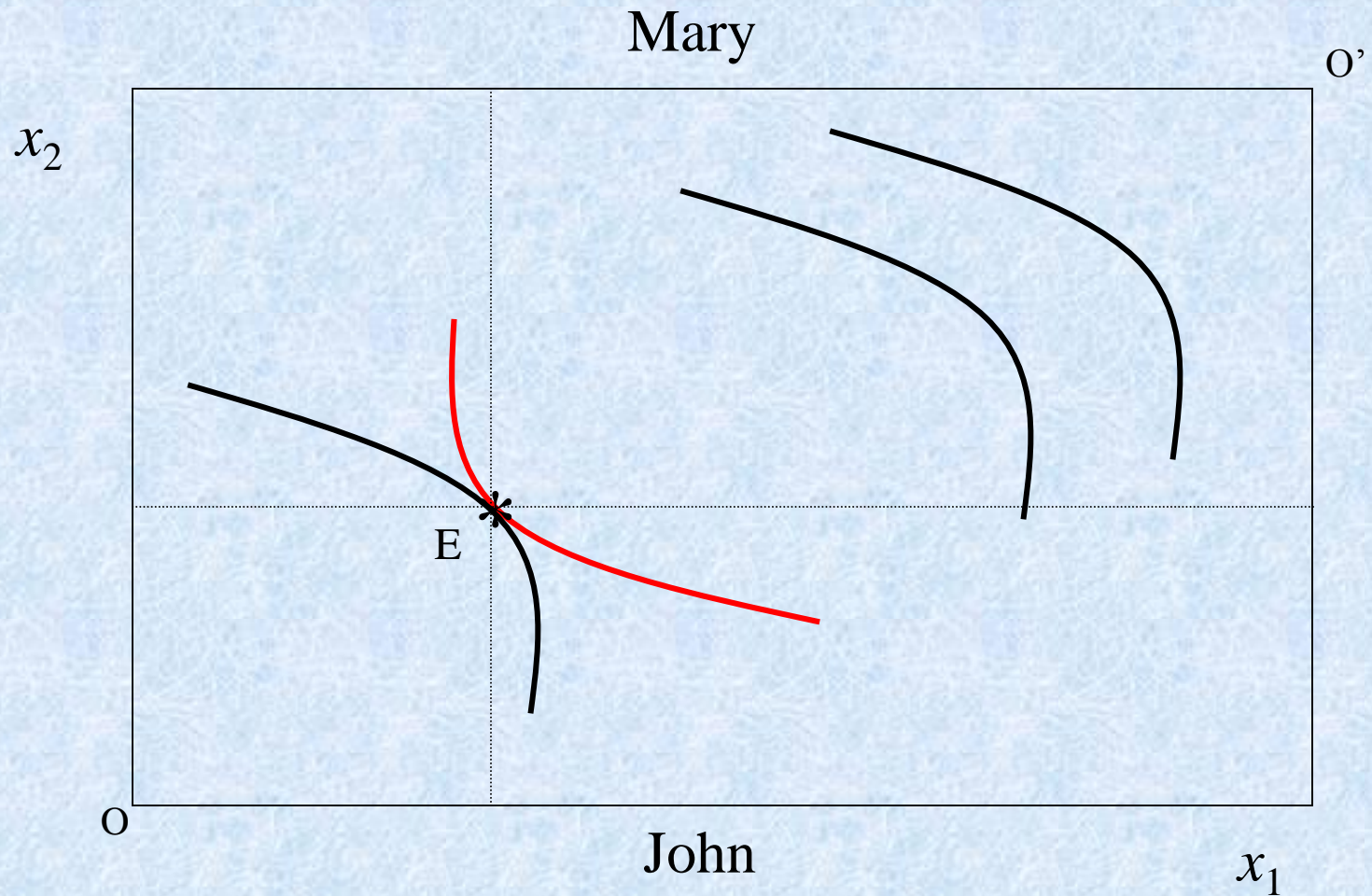
Edgeworth Box



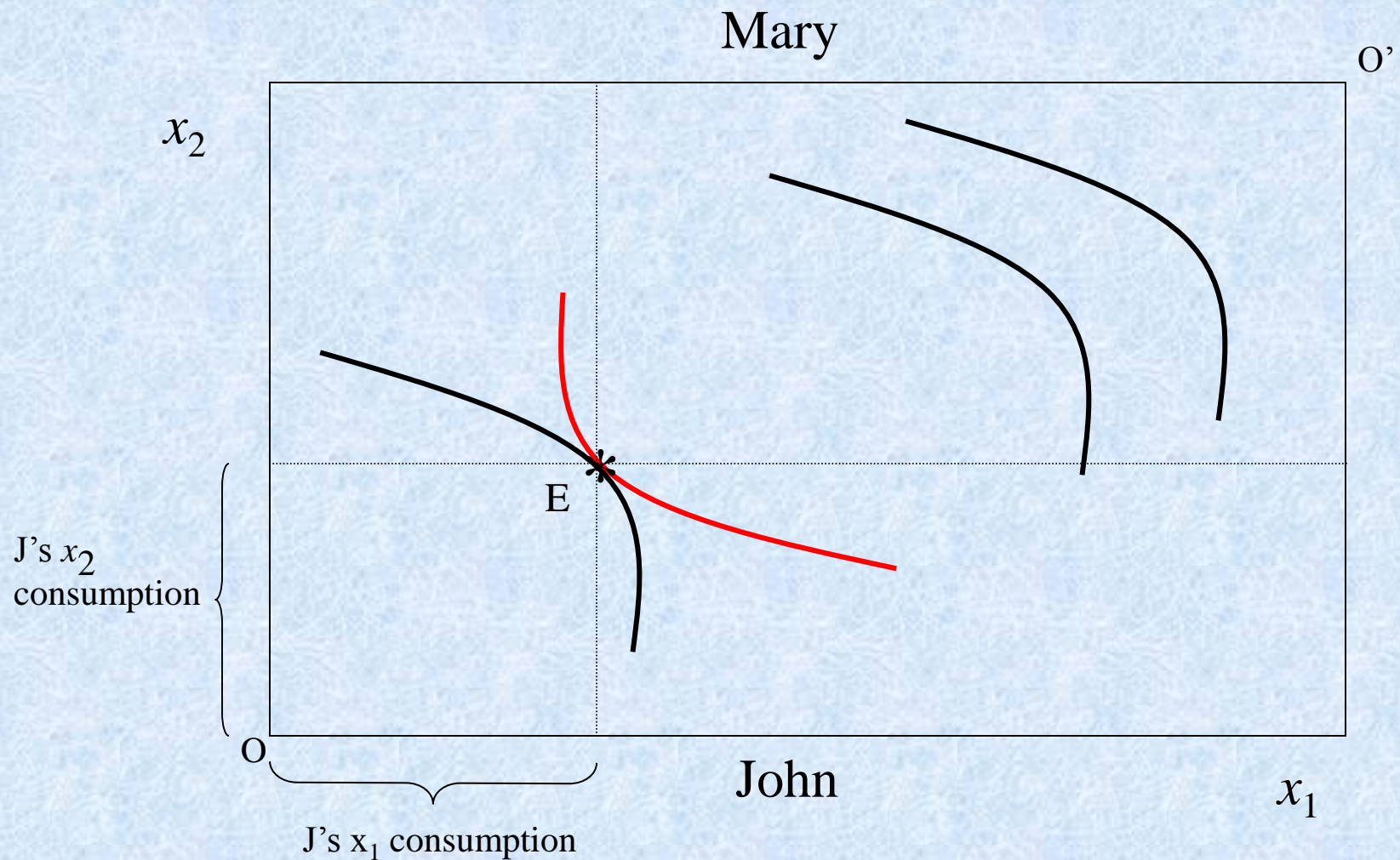
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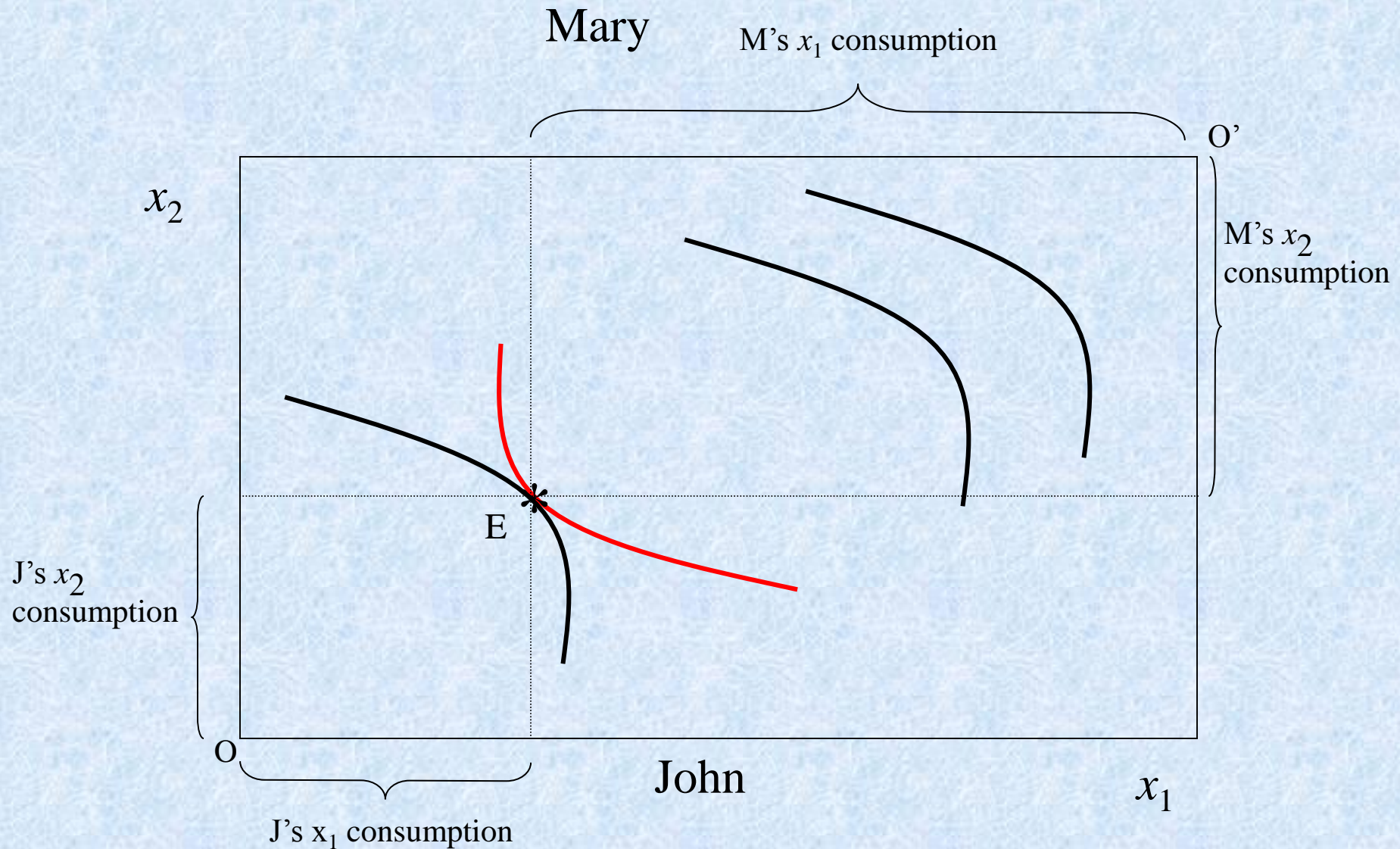
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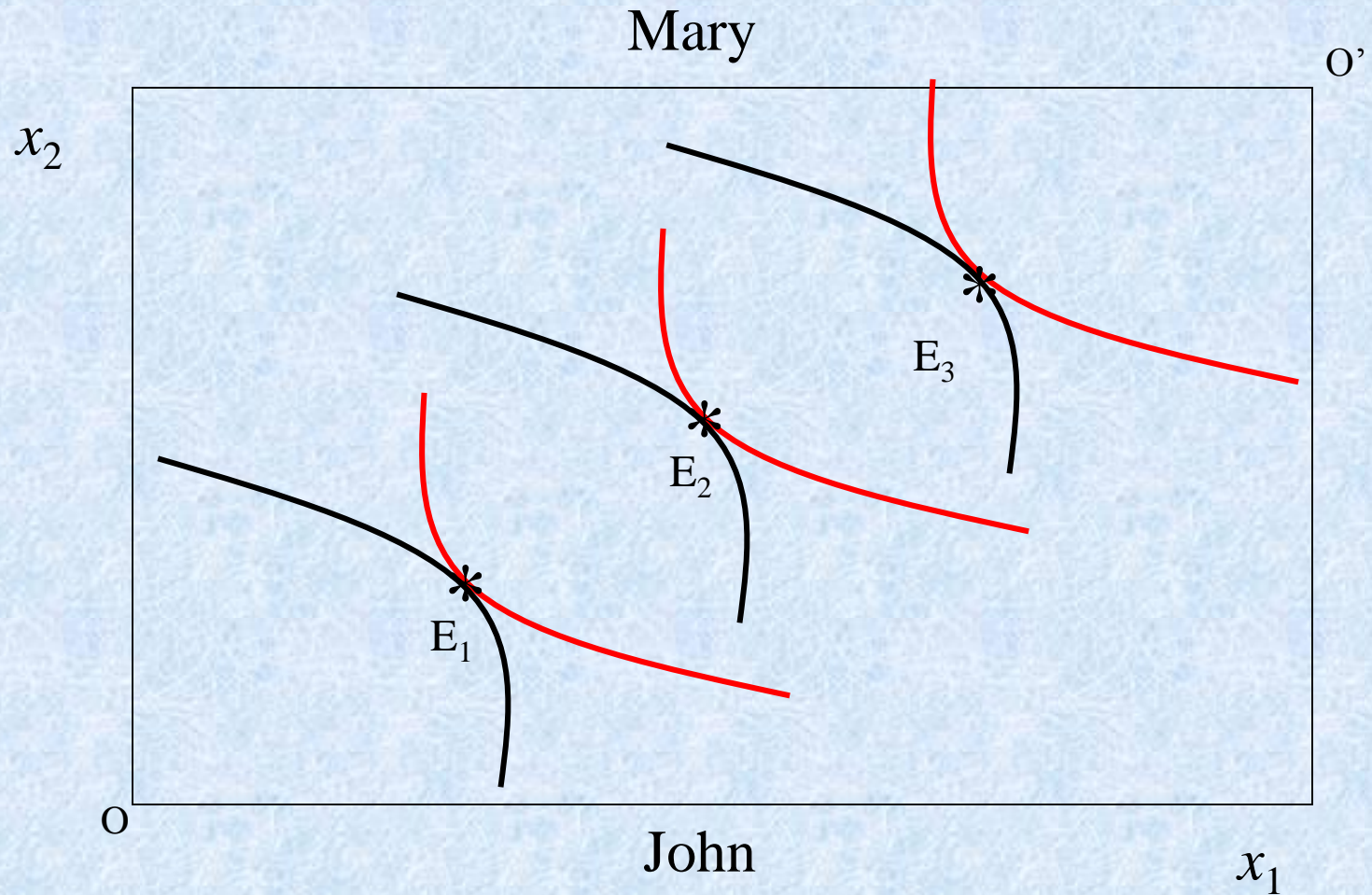
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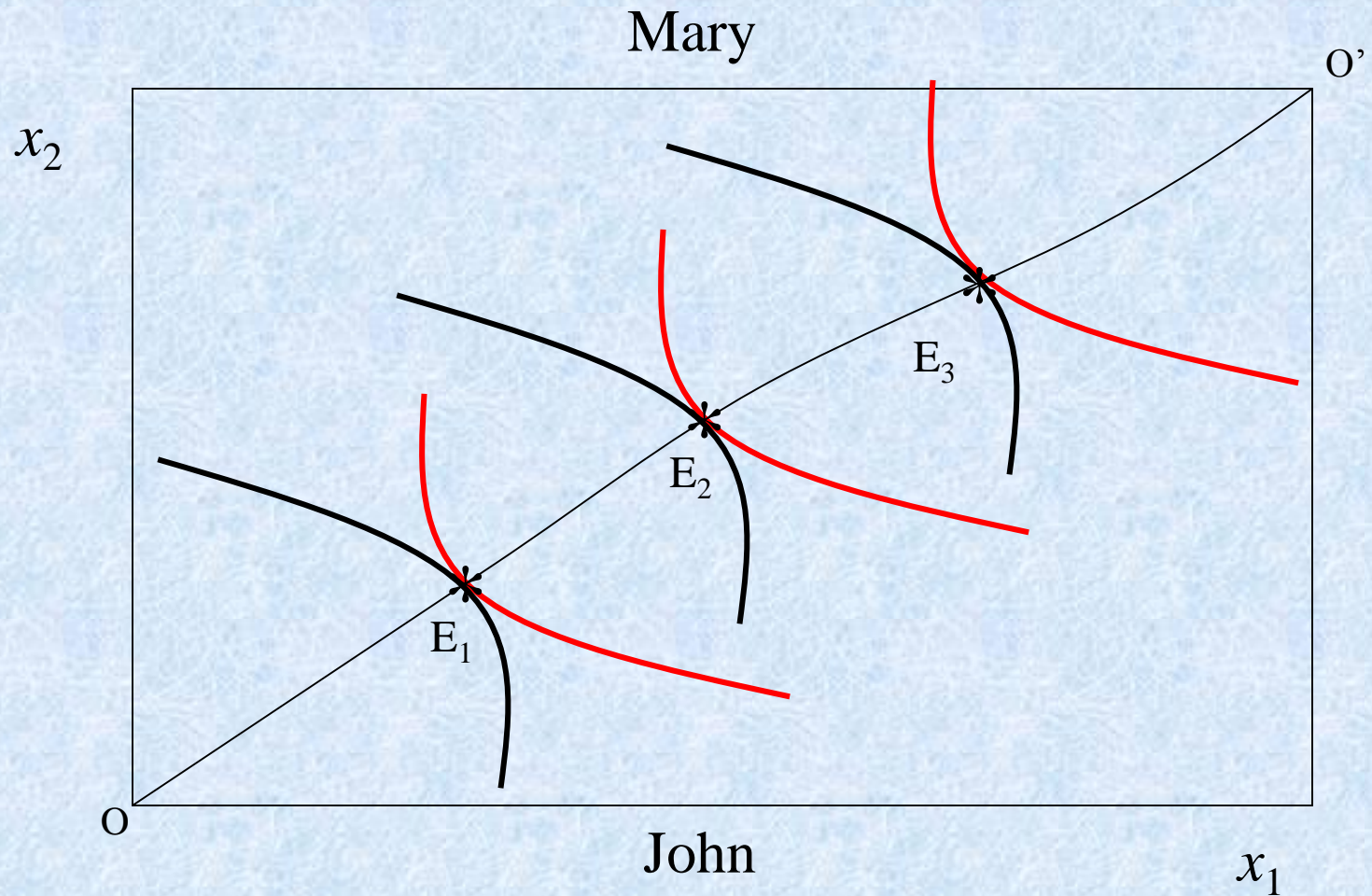
Edgeworth Box



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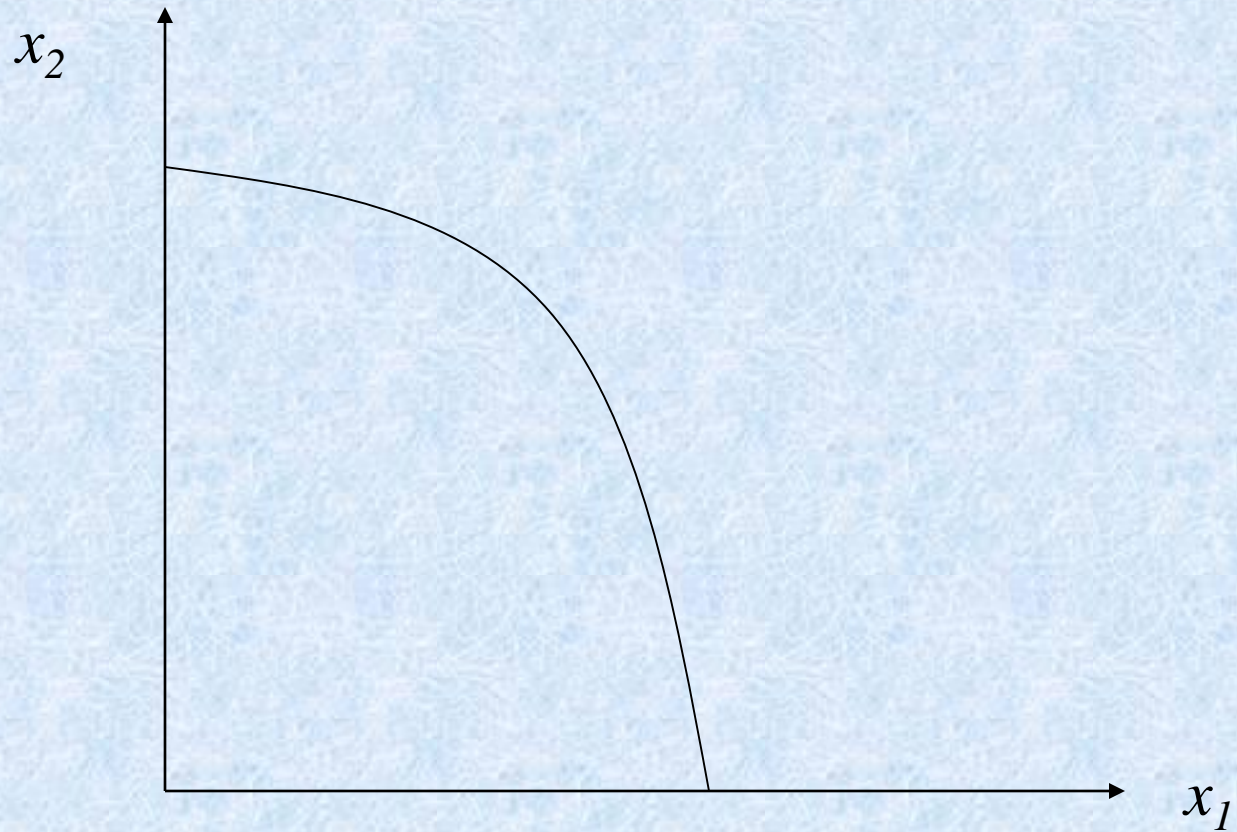
Edgeworth Box



Production Efficiency

- An economy is said productively efficient when it is not possible to produce more of one good without giving up some of another good, given a fixed amount of resources.

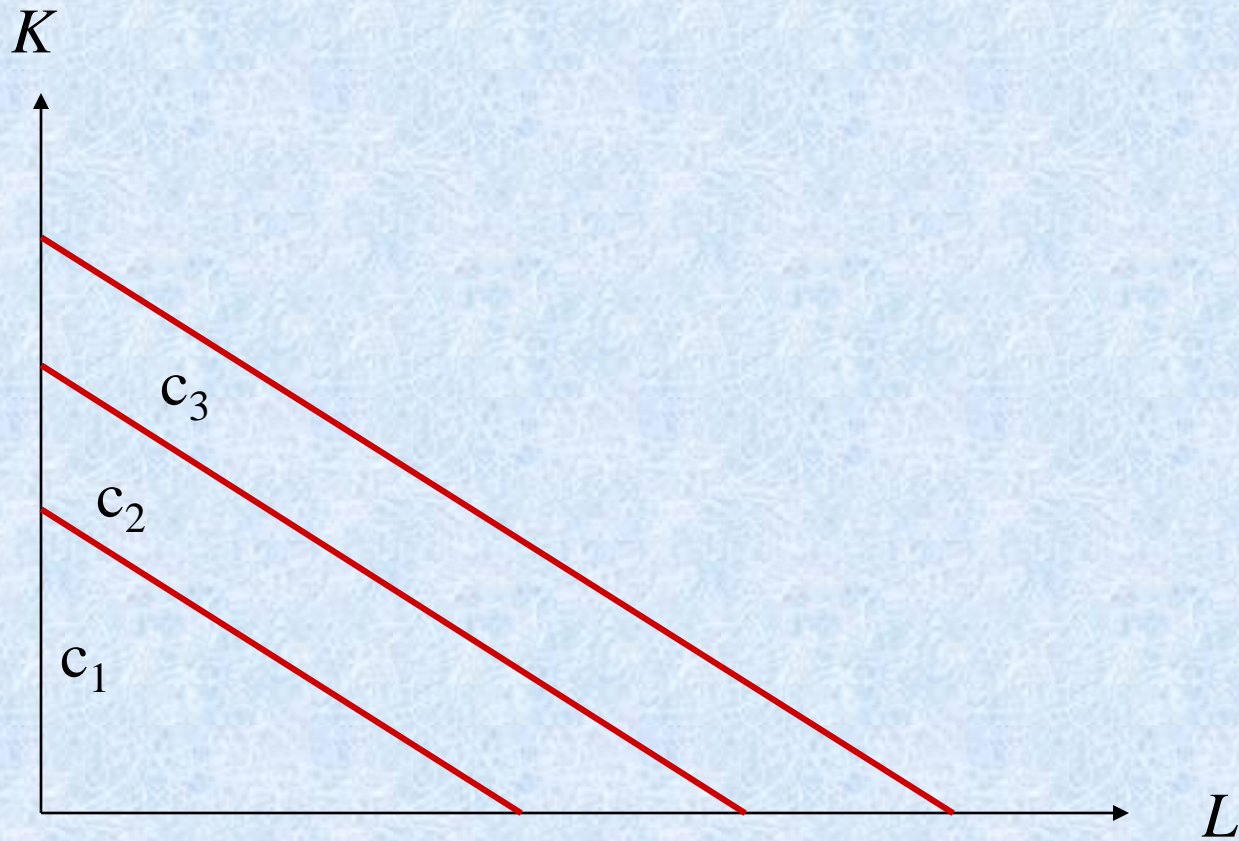
Production Possibilities Frontier



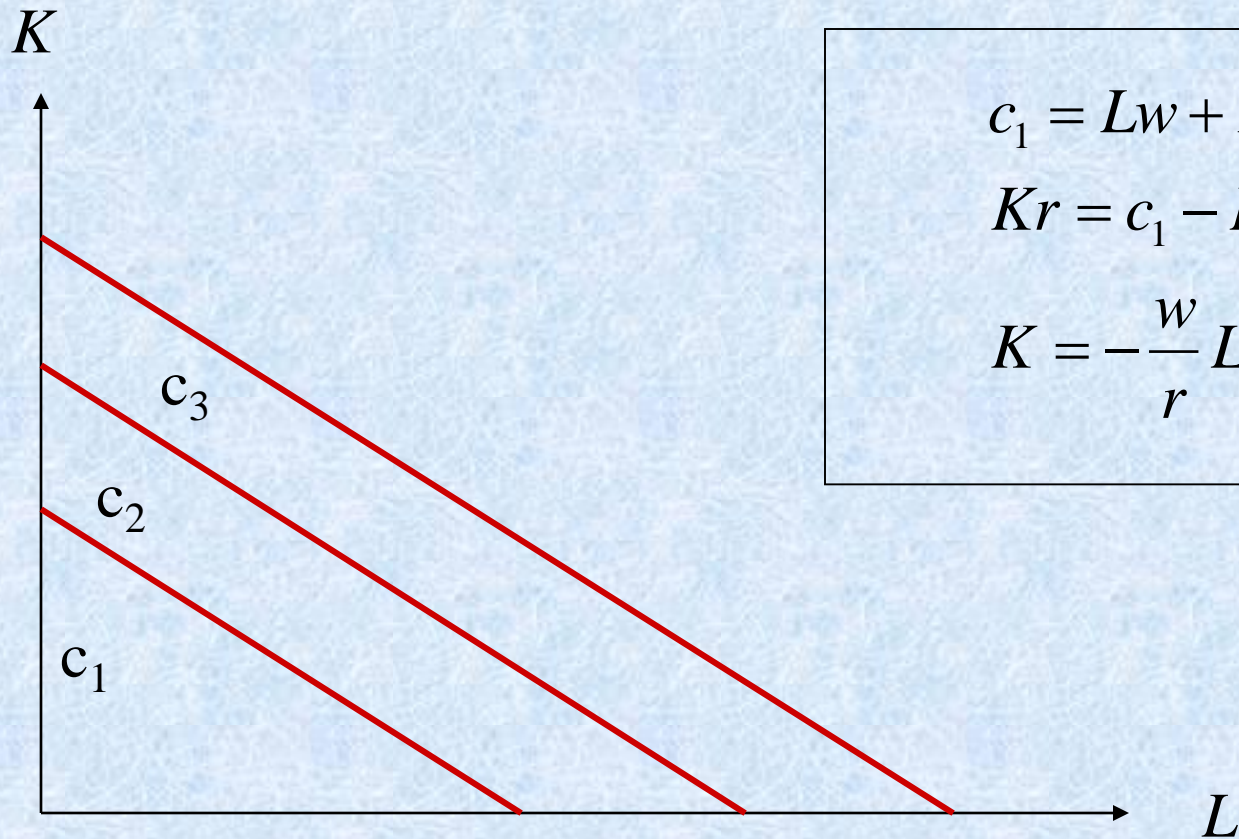
Marginal Rate of Technical Substitution

- MRTS is the amount of capital required to compensate for a decrease in the input of labour by one unit.
- Diminishing MRTS is assumed
- Production efficiency requires that MRTS is equal between any two inputs must be the same for all firms

Minimun Cost



Minimun Cost

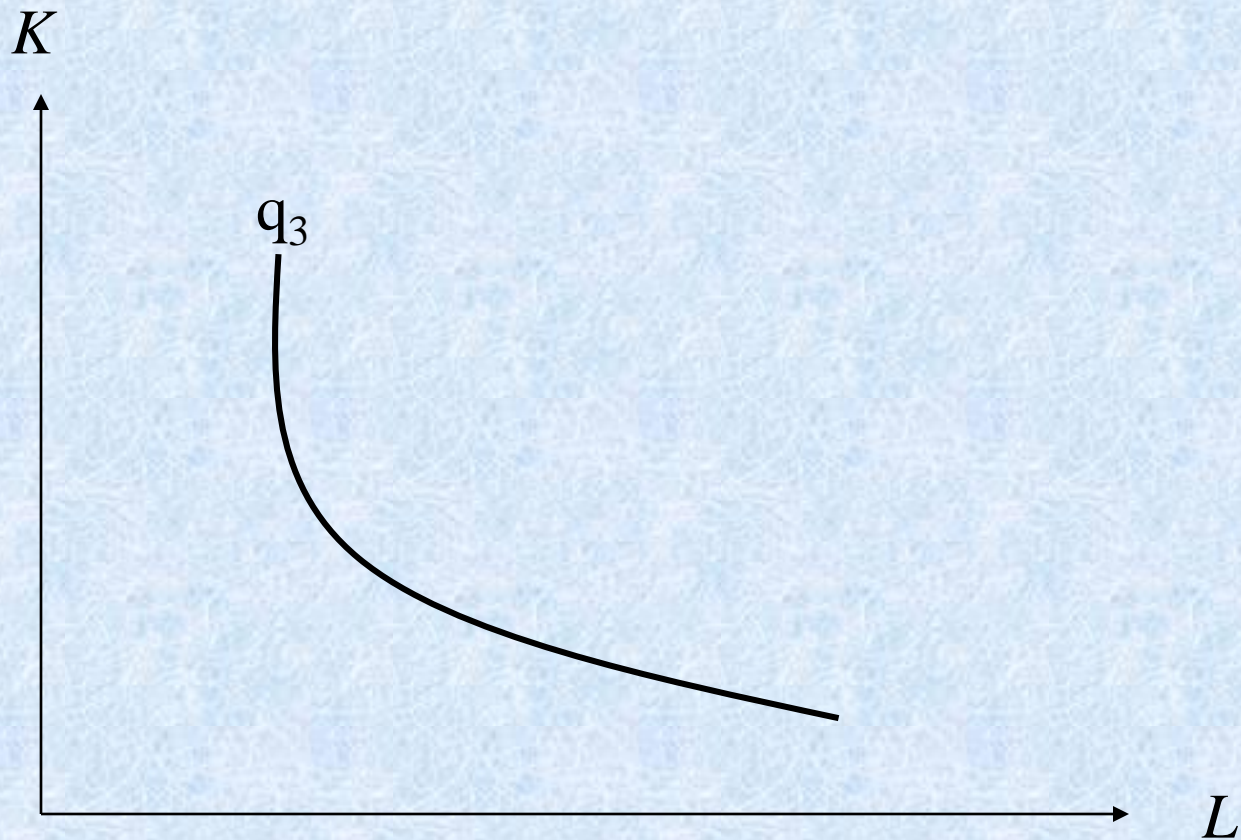


$$c_1 = Lw + Kr$$

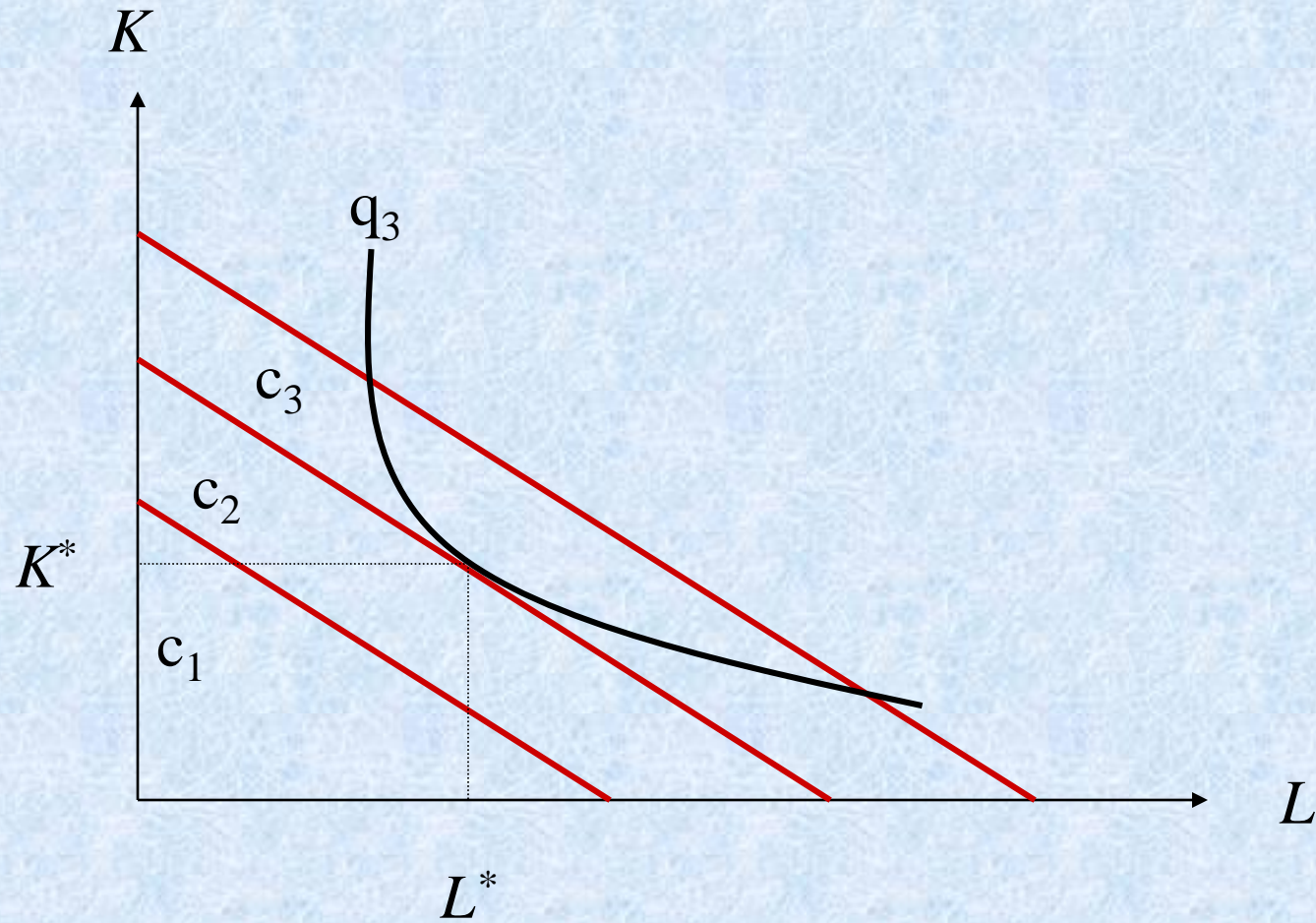
$$Kr = c_1 - Lw$$

$$K = -\frac{w}{r}L + \frac{c_1}{r}$$

Minimun Cost



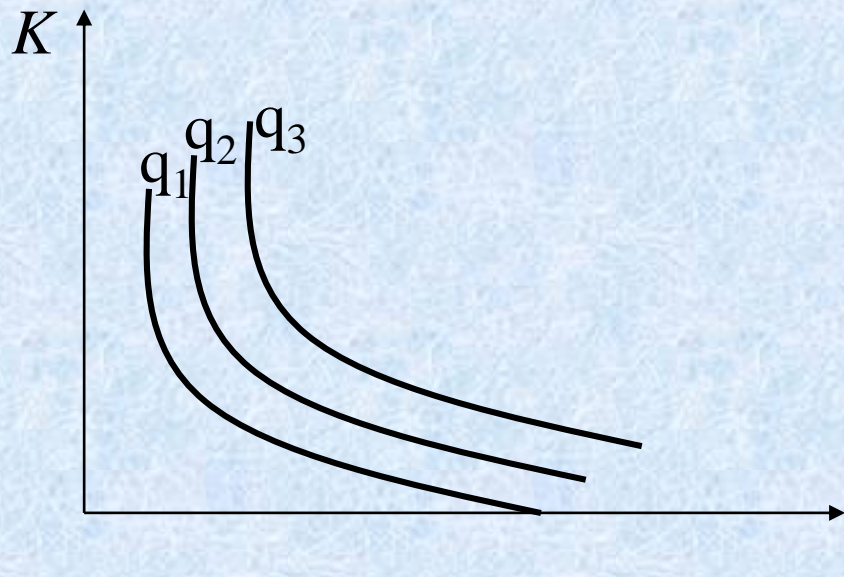
Minimun Cost



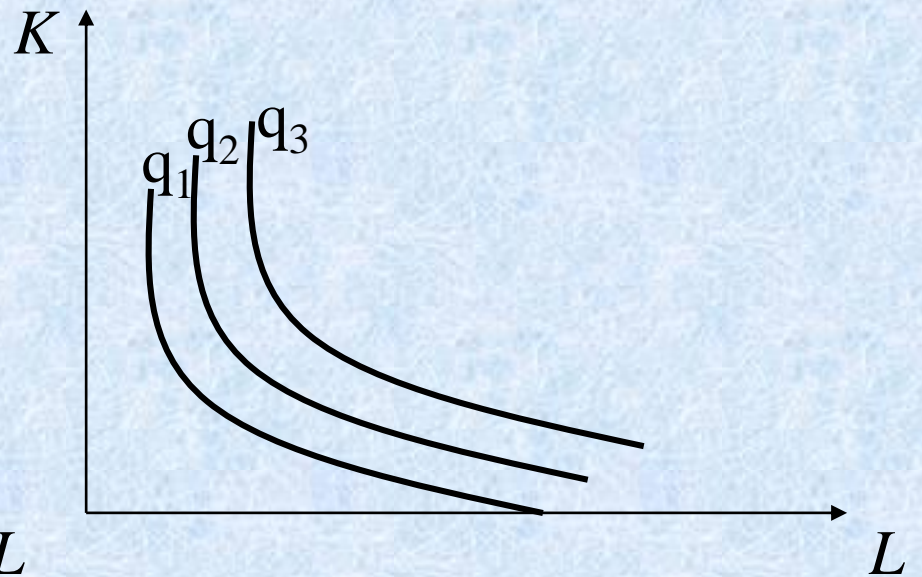
Firm Equilibrium

- Each firm sets its MRTS equal to the input cost ratio
- All firms face the same input cost
- Result: all firms have the same MRTS
- So, a market economy in equilibrium have productive efficiency

Edgeworth Box

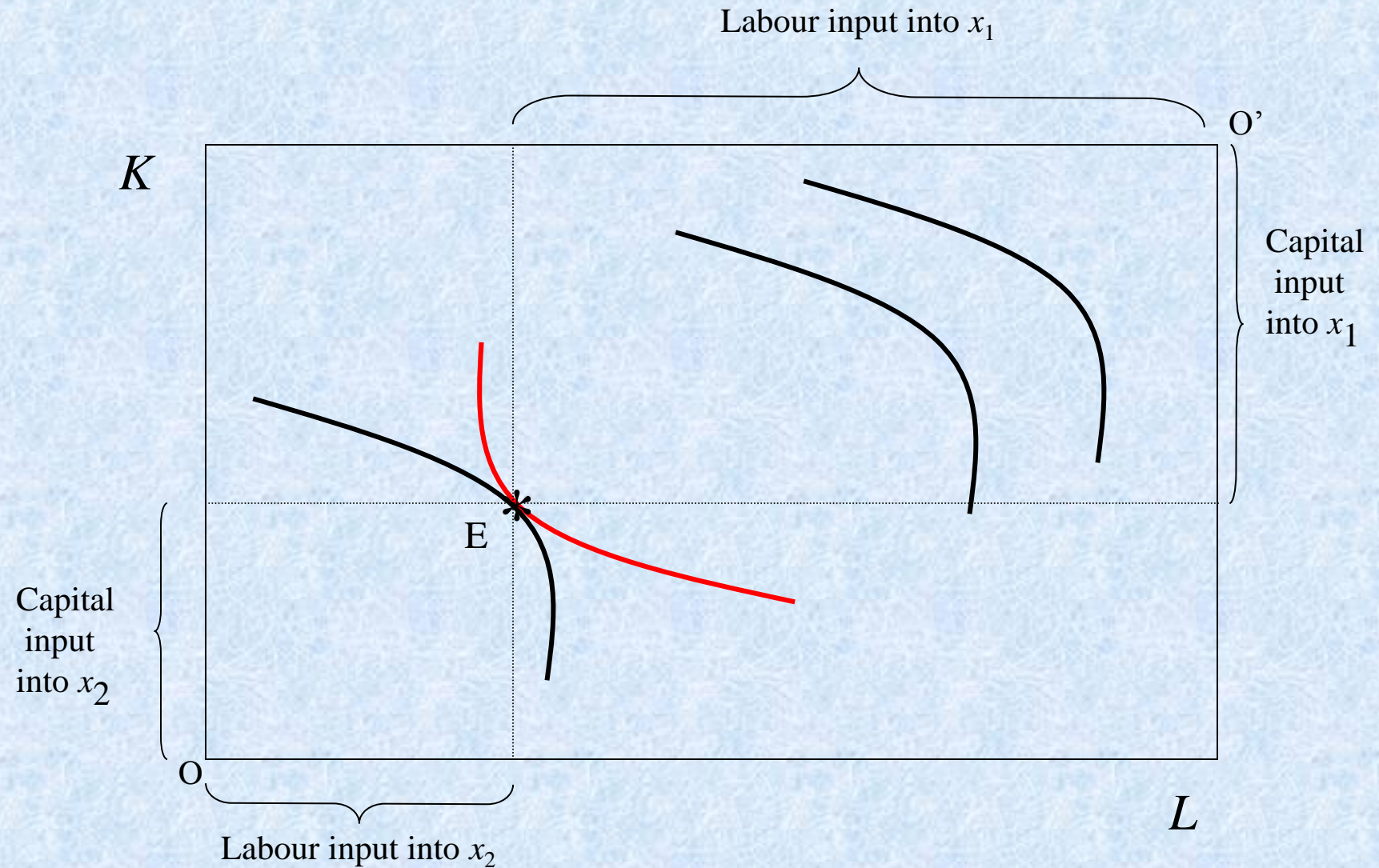


x_1



x_2

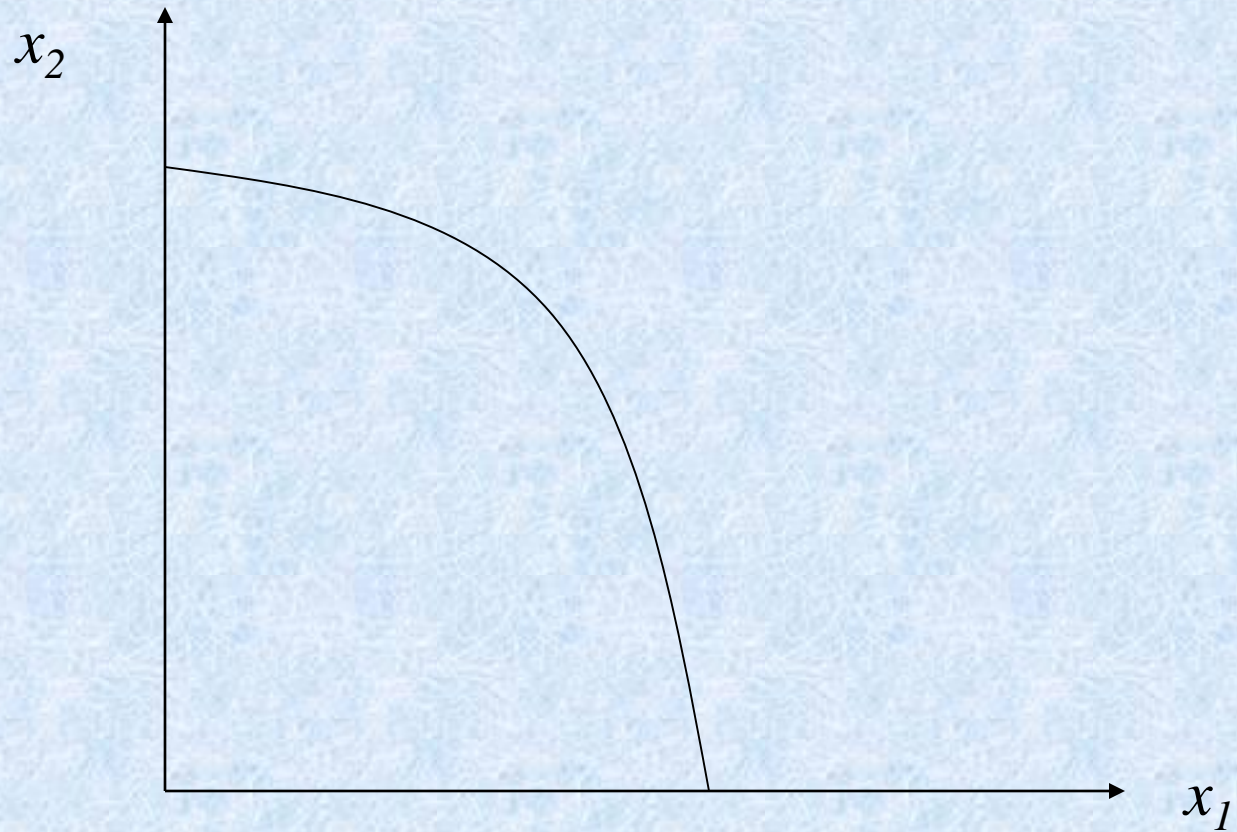
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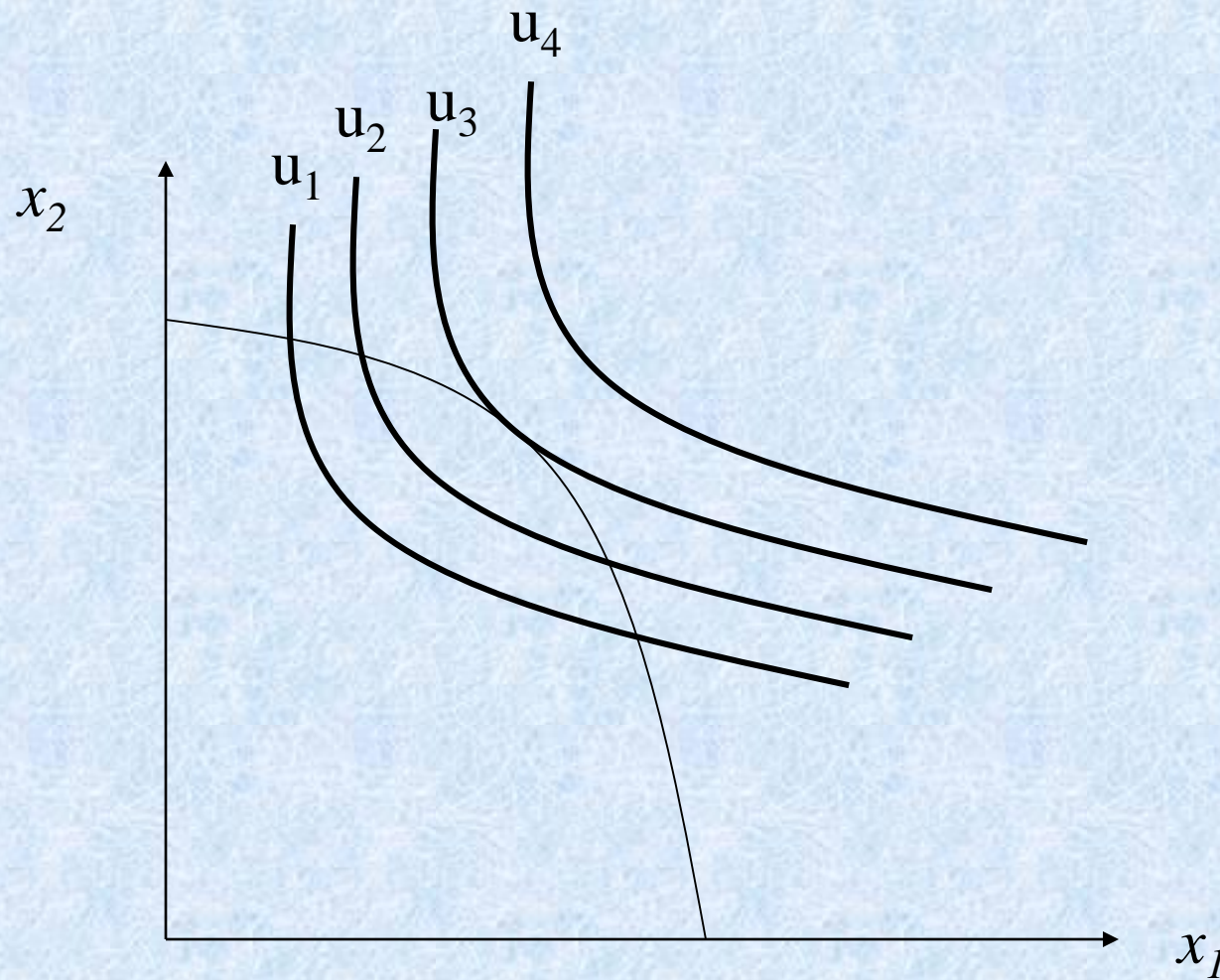
Product Mix Efficiency

- To determine the best mix of products in the economy we need to take into account technical feasibility and consumer preferences.
- **Marginal Rate of Transformation** tells us how much x_1 we get if we reduce production of one unit of x_2
- Product mix efficiency requires $MRT=MRS$

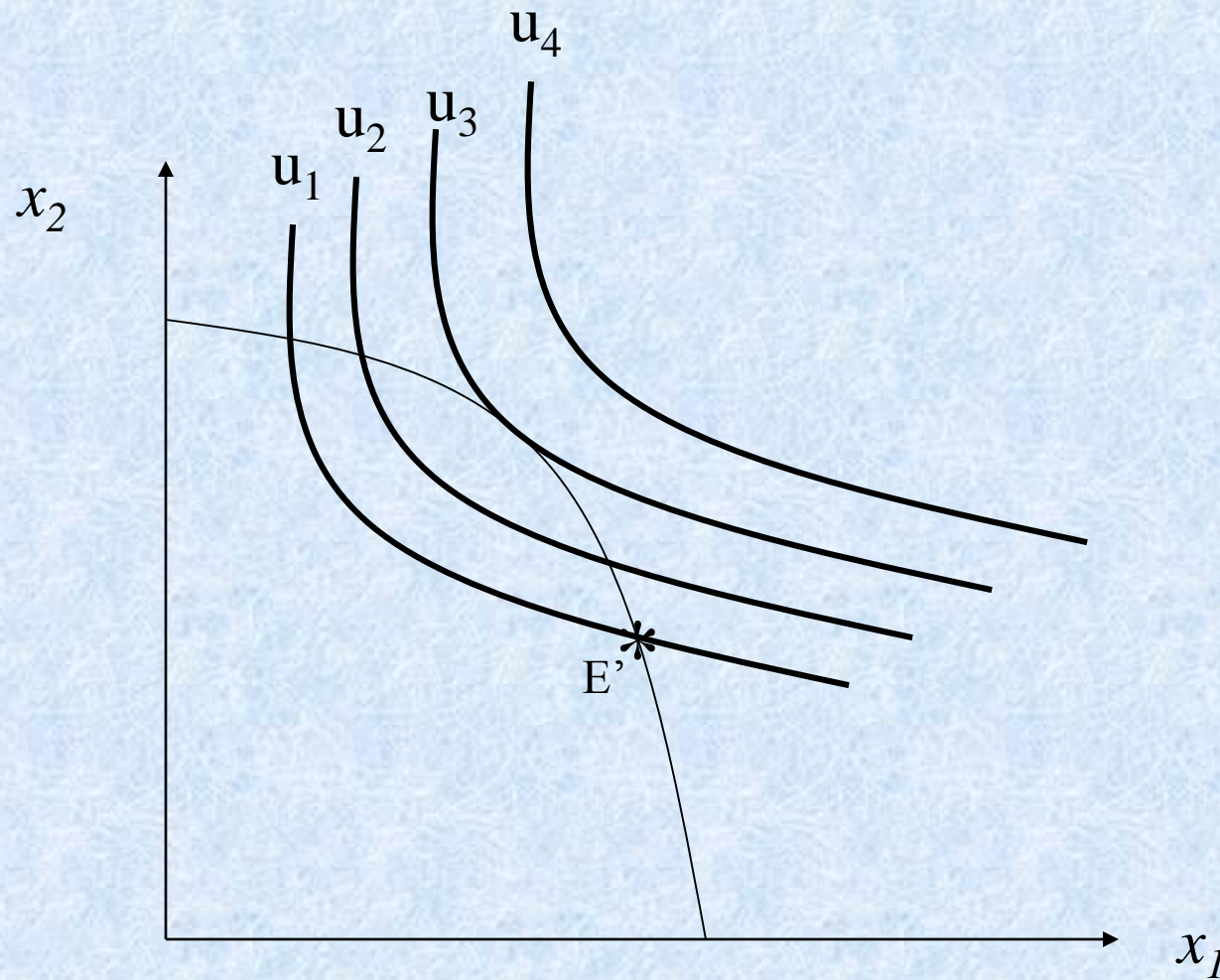
Production Possibilities Frontier



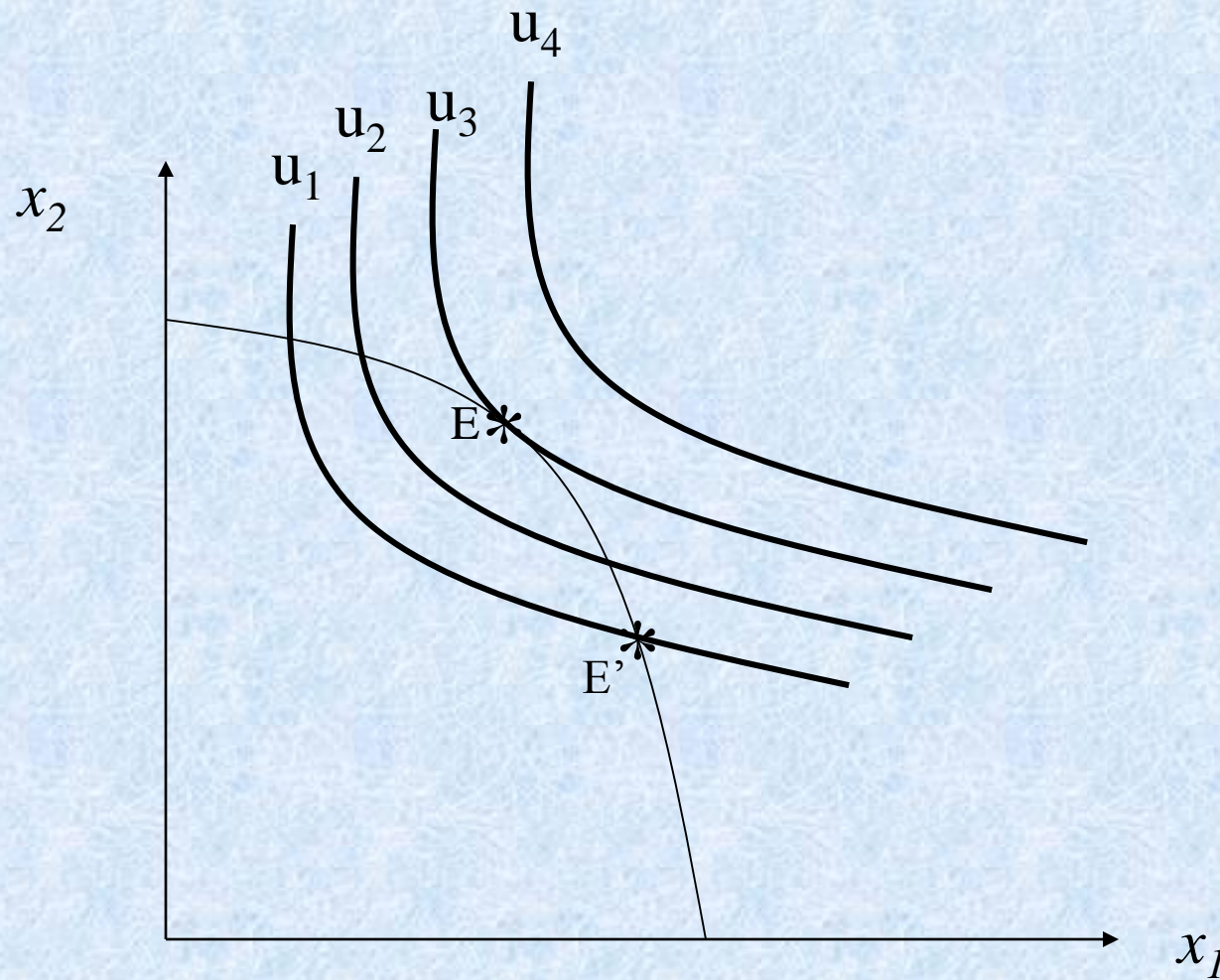
Production Possibilities Frontier



Production Possibilities Frontier



Production Possibilities Frontier



Conditions for Pareto Efficiency

- Exchange efficiency: MRS between any two goods must be the same for all individuals
- Production efficiency: MRTS between any two inputs must be the same for all firms
- Product mix efficiency: MRT must equal MRS
- Perfect competitive economies in equilibrium satisfy all three conditions

Next lecture: Market Failure

- Failure of Competition
- Externalities
- Public Goods
- Transaction Costs and Asymmetric Information
- Unemployment and Inflation
- Equity Issues