



# Introdução à Economia/Introductory Economics

## 1. Markets, efficiency and the role of the Government

(adapted from CORE, The Economy.

Based on Units 1, 2, 3, 4, 5, 8)

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# Economic systems

- **Economic system:** a way of organizing the economy.
- Economic systems of the past and present include:
  - central economic planning (e.g., the Soviet Union in the 20<sup>th</sup> century)
  - feudalism (e.g., much of Europe in the early Middle Ages)
  - slave economy
  - capitalism (market-based economies) (most of the world's economies today).

# Market-based economies

- Economic system in which
  - the main form of economic organization is **the firm**;
  - the private owners of capital goods hire **labour** to produce **goods and services** for sale on **markets** with the intent of making a **profit**.
- The main economic institutions are **private property, markets, and firms**.

# Market-based economies

- Economists refer to market-based economies simply as **market economies**.
- Among the limitations of this economic system, inequality and environmental sustainability stand out as the most significant.
- The importance of **CSR (Corporate Social Responsibility)** and **ESG (Environmental, Social and Governance)** practices.

# Key Concepts: Firms

- Other forms of economic organization coexist with firms in a market-based economy, but they are **not** firms:
  - Family or individual production (they do not hire others)
  - Nonprofit organizations (they do not seek to make profit or sell their output on a market)
  - Cooperatives (labour is not hired, work is done by members)
  - Government bodies (they do not seek profit; capital goods are not privately owned)

# Key Concepts: Private Property & Markets

**Private property** = something is private property if the person possessing it has the right to exclude others from it, to benefit from the use of it, and to exchange it with others.

**Capital goods** = the durable and costly non-labour inputs used in production (machinery, buildings)

**Markets** = a way that people exchange goods and services by means of directly reciprocated transfers, for mutual benefit (unlike theft, taxation)

# Market-based economies

Market-based economies have led to growth in living standards because of:

- impact on technology: firms competing in markets had strong incentives to adopt and develop new technologies
- specialization: the growth of firms and the expansion of markets linking the entire world allowed specialization in tasks and production

This increased worker productivity.

# The gains from specialization

**Specialization** increases productivity of labour because we become better at producing things when we each focus on a limited range of activities

- learning by doing
- taking advantage of natural differences in skill and talent
- economies of scale

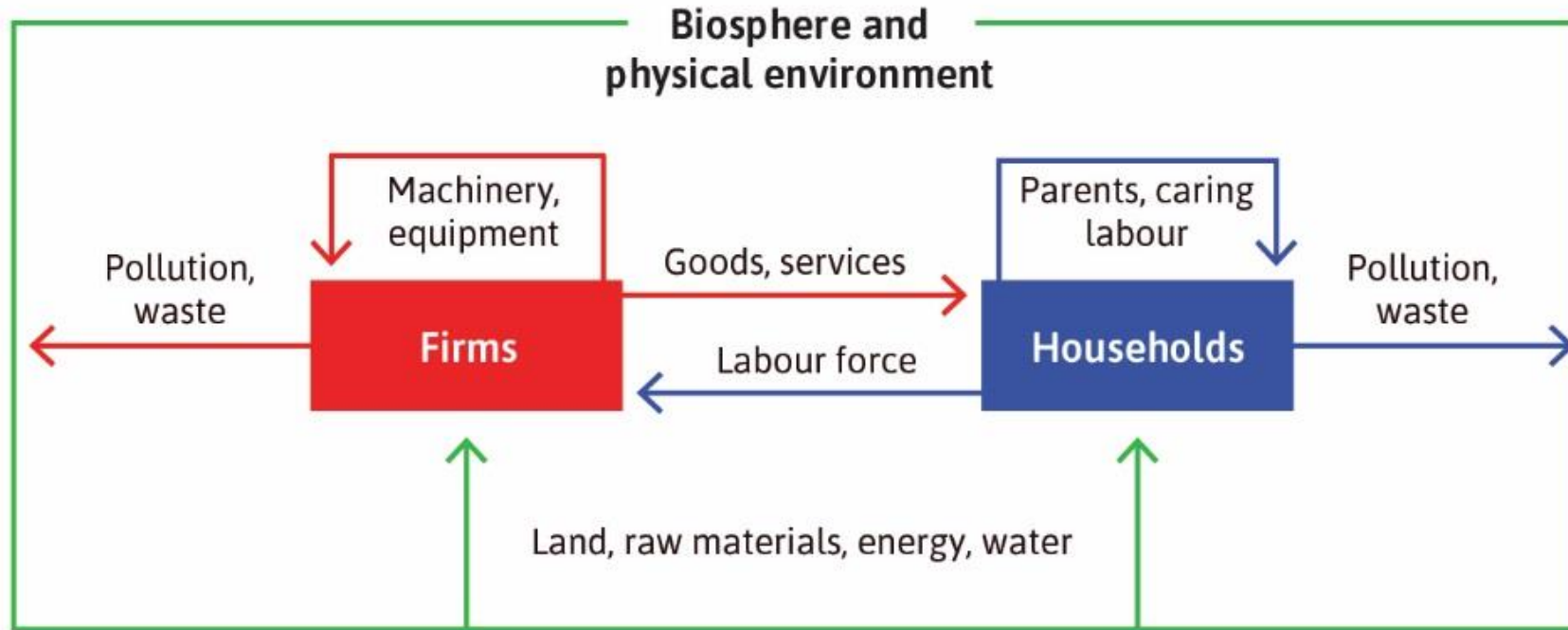
People can only specialize if they have a way to acquire the other goods they need. This is done via markets.



# Market-based economies

- Market-based economies coexist with different political systems, democratic (where individual rights of citizens like for instance freedom of speech are supposed to be respected, there are fair elections, etc) or not.

# What is Economics?



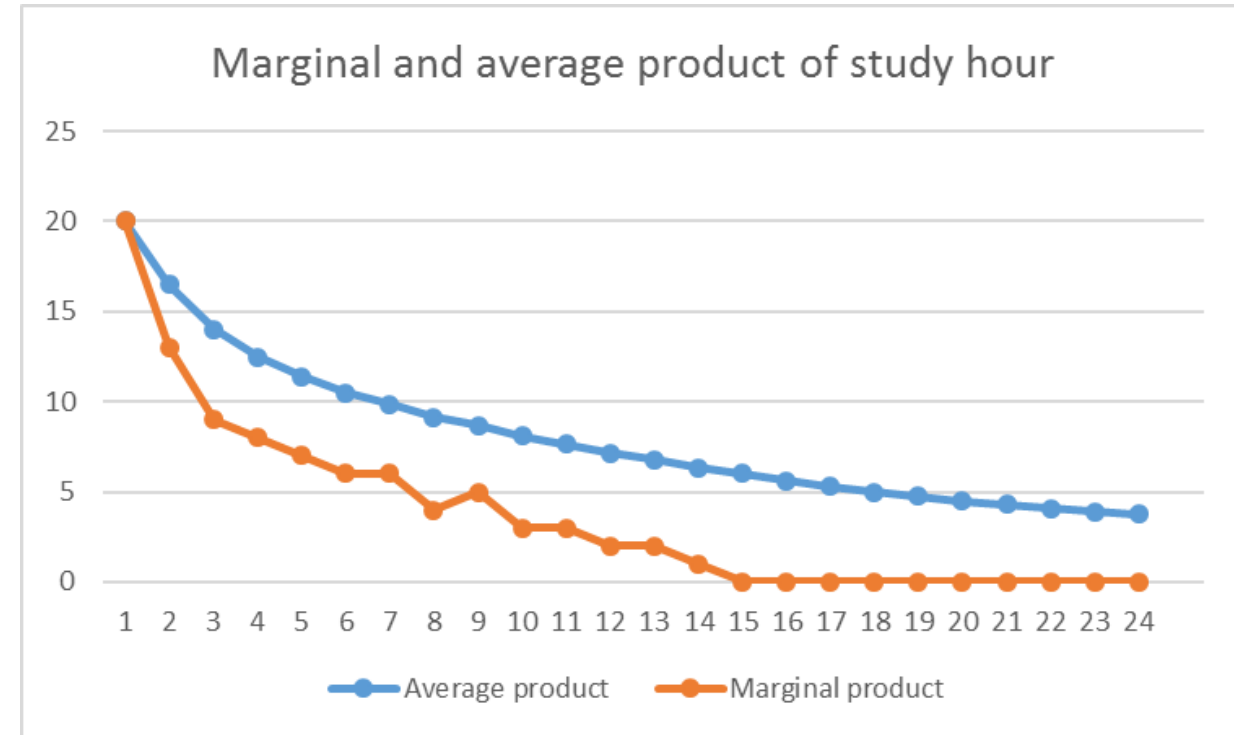
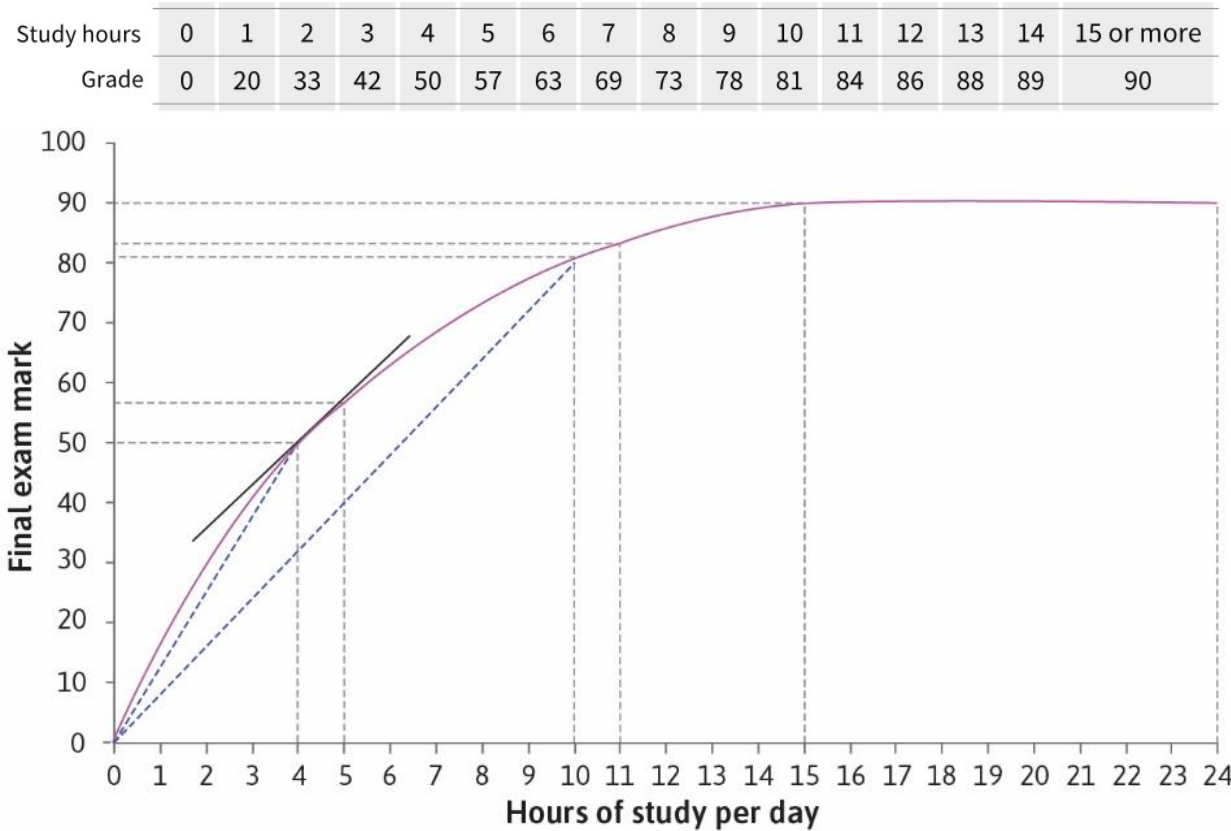
**Economics** is the study of how people interact with each other and with their natural surroundings in producing their livelihoods.

# Scarcity and choice

## Example: Grades and study hours

- Students choose how many hours to study, which affects their grade.
- We assume a positive relationship between grade and the number of hours studied (which is true, *ceteris paribus*).

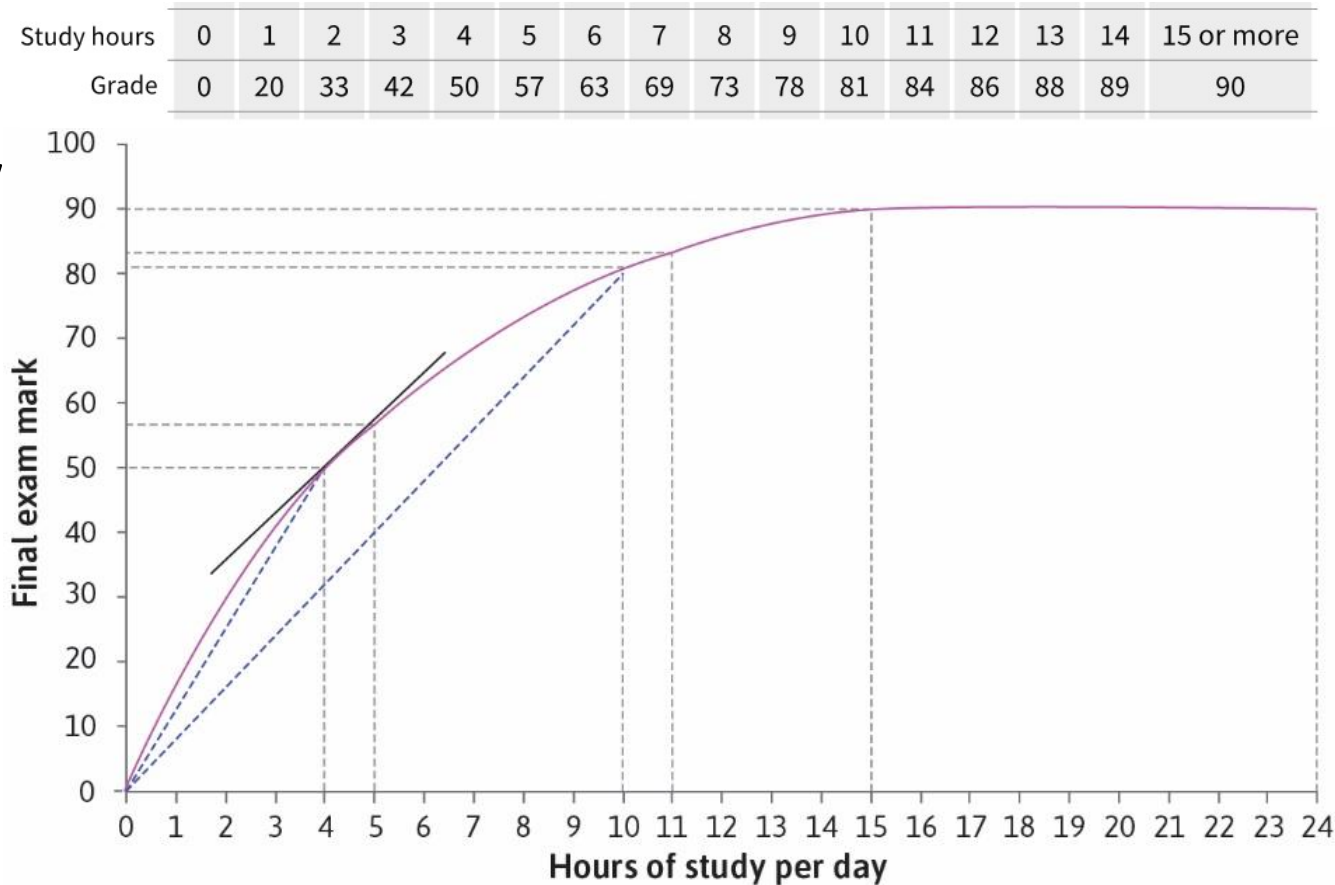
# Studying example



**Diminishing marginal product:** Studying becomes less productive, the more you study.

# Production function

**Production functions** show how **inputs** (e.g., labour) translate into **outputs** (e.g., goods and services), holding other factors constant (e.g., production environment)



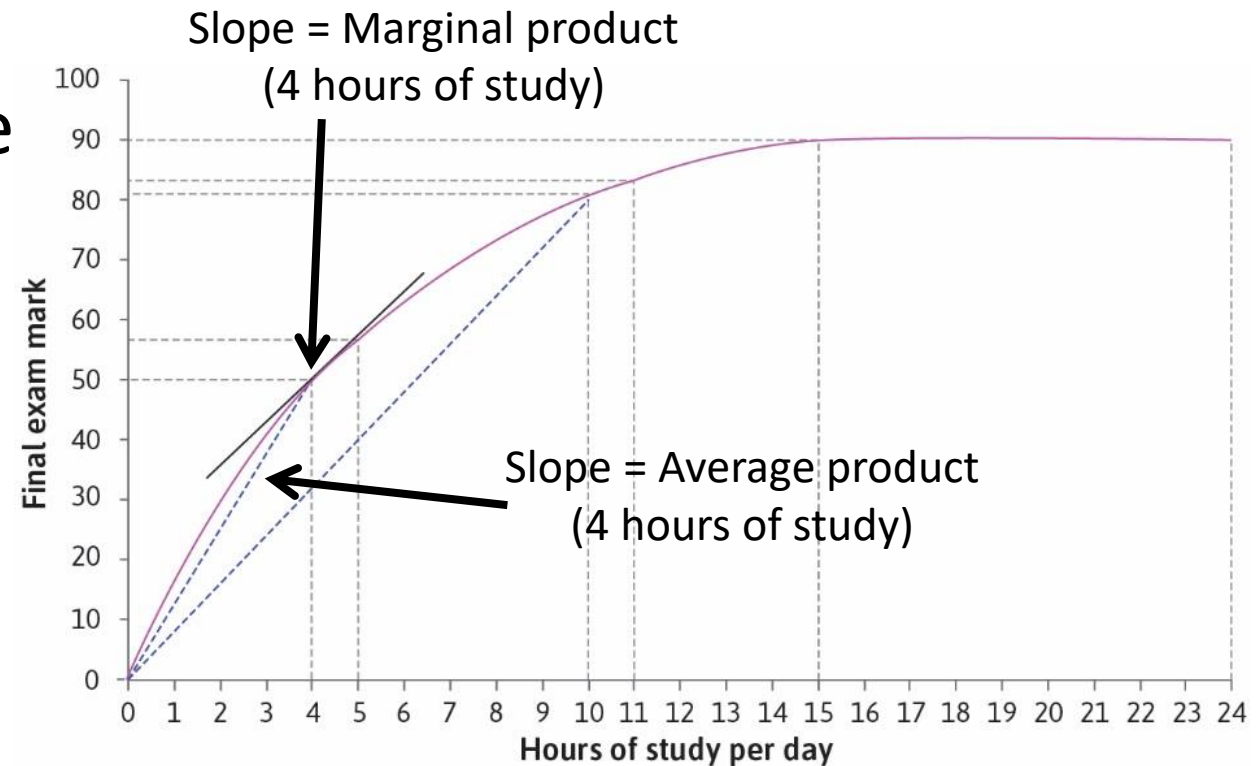
# What can production functions tell us?

## 1. Marginal product

Change in output per unit change in input (evaluated at a given point, holding other inputs constant)

## 2. Average product

Average output per unit of input



# Opportunity cost

- Choices are limited by constraints and involve tradeoffs (Studying example: higher grades vs. more free time)
- The **opportunity cost** of an action is the benefit of the next best alternative action
- Compare actions based on **economic cost**  
Economic cost = monetary costs (e.g., transport)  
+ opportunity cost

If the benefit from an action exceeds its economic cost, you can choose it.

# Constrained choice problem

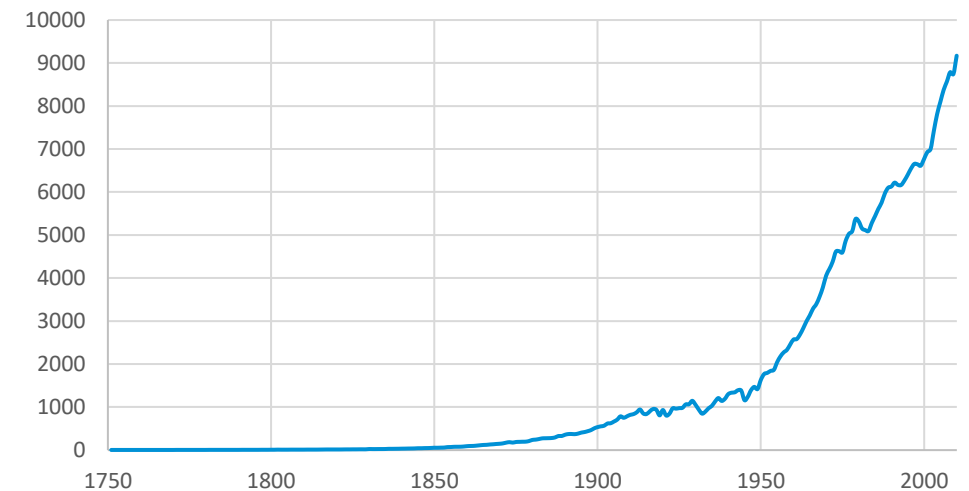
Model how individuals choose, given their preferences and the constraints they face.

## Social dilemmas

**Game theory** allows to model social interactions and explain **social dilemmas**

**Social dilemma** = a situation in which actions taken independently by self-interested individuals result in a socially suboptimal outcome (e.g., traffic jams, climate change)

Carbon emissions from fossil fuels





# Social dilemmas

Social dilemmas occur when people do not fully account for the effects of their actions on others.

- **Tragedy of the Commons:** Common property or common resources are often overexploited
- **Free riding:** One person/party bears all the costs while everyone enjoys the benefits

How can **altruism** and government policy resolve social dilemmas?

# Social preferences: Altruism and other types

- Social dilemmas arise when players only care about their own payoffs.
- However, in experiments, many players show **altruism**.
- **Inequality aversion**: Disliking outcomes in which some individuals receive more than others.
- **Reciprocity**: Being kind/helpful to others who are kind/helpful, and vice versa.

# Peer Punishment

- In public goods experiments, people were happy to contribute as long as others reciprocate. Contributions differ according to social norms.
- The ability to identify and punish free-riders also increases individual contributions.

# Pareto Efficiency

**Allocation:** outcome of an economic interaction.

An allocation is **Pareto efficient** if nobody can be better off without making somebody worse off.

Often there is more than one Pareto efficient allocation. Pareto criterion does not help us choose among these allocations.

Pareto efficiency is unrelated to fairness. Many allocations that could be unfair are Pareto efficient (e.g., giving to your friend 1 cent of the \$100 you found on the street).

# Fairness and Economics

Economics does not provide judgements about what is fair.

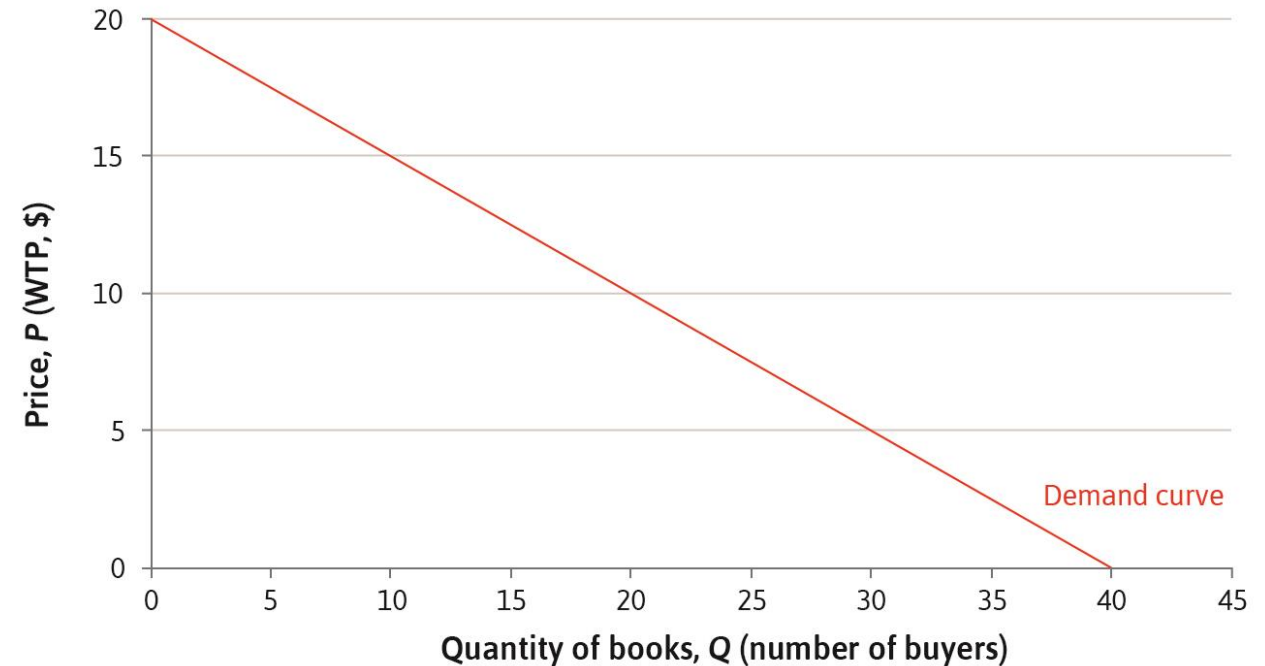
But economics can clarify:

- How **institutions** (rules of the game) affect inequality
- Tradeoffs in the fairness of outcomes
- Which public policies can address unfairness, and how

# Demand curve

**Demand curve** = total quantity that consumers want to buy at any given price.

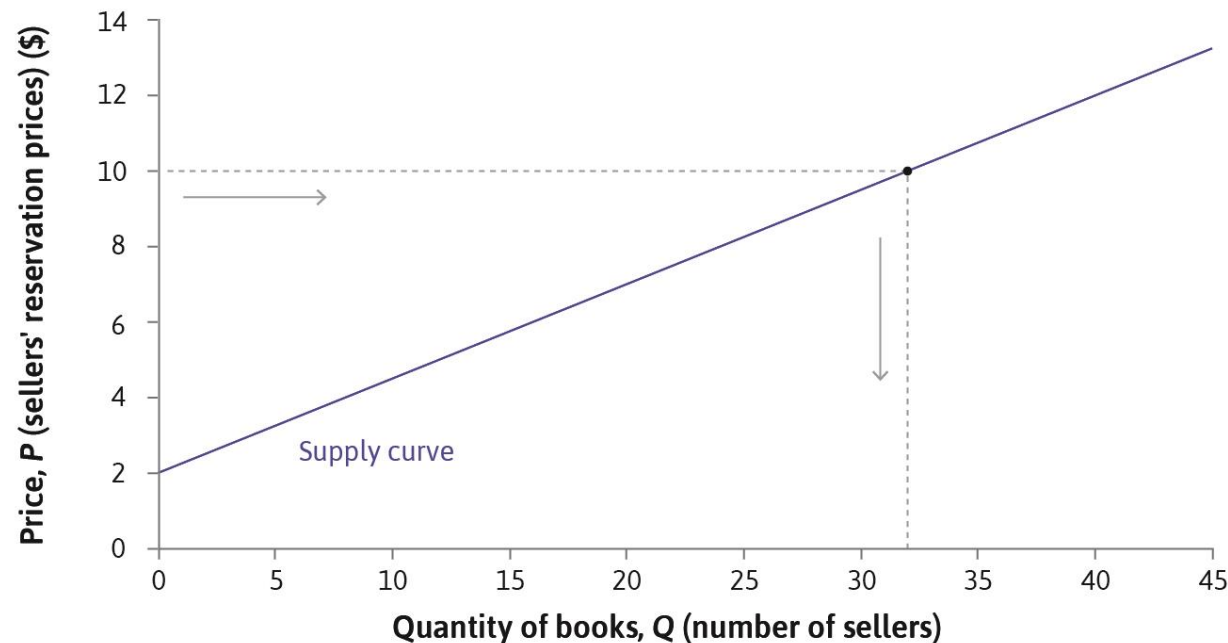
- Represents the **willingness to pay (WTP)** of buyers.



# Supply curve

**Supply curve** = total quantity that firms would produce at any given price.

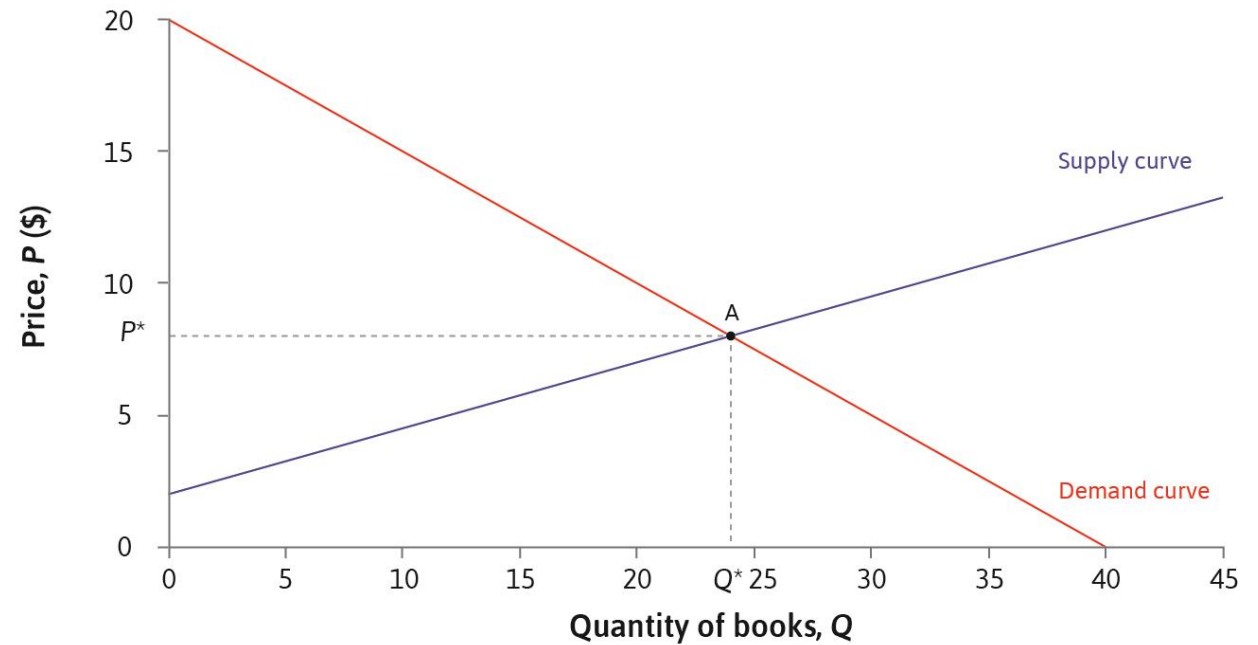
- Represents the **willingness to accept (WTA)** of sellers.



# Equilibrium price

At the **equilibrium (market-clearing) price**, supply equals demand.

- Any other price is not an **equilibrium** (e.g., if price was above  $P^*$ , then there would be **excess supply**).





# Measuring Surplus

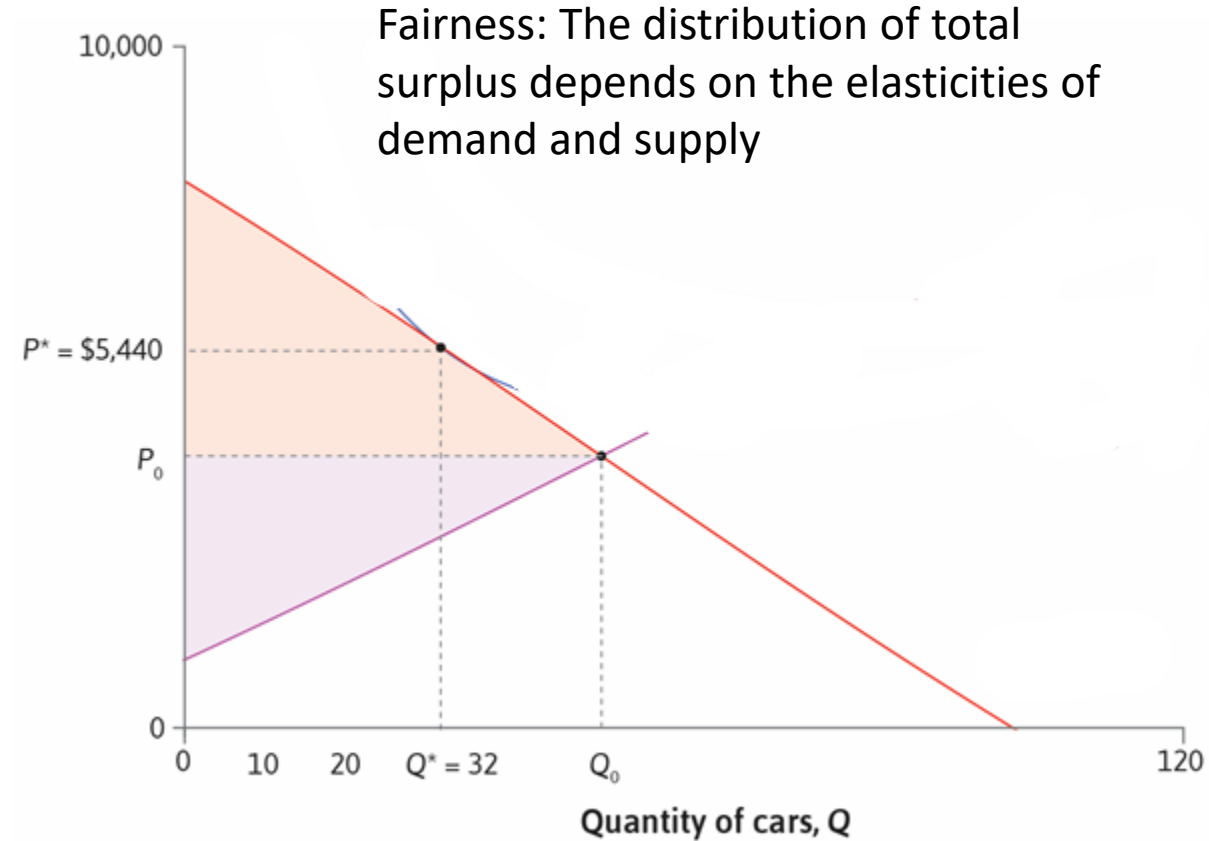
**Consumer surplus (CS)** = the total difference between willingness-to-pay and purchase price

**Producer surplus (PS)** = the total difference between price and marginal cost (the minimum price suppliers accept)

Marginal cost = cost of an additional unit.

Differs from total cost = cost of all units

(Profit = PS – fixed costs)



**Total surplus = Consumer surplus + Producer surplus**  
= Total gains from trade (shaded area)

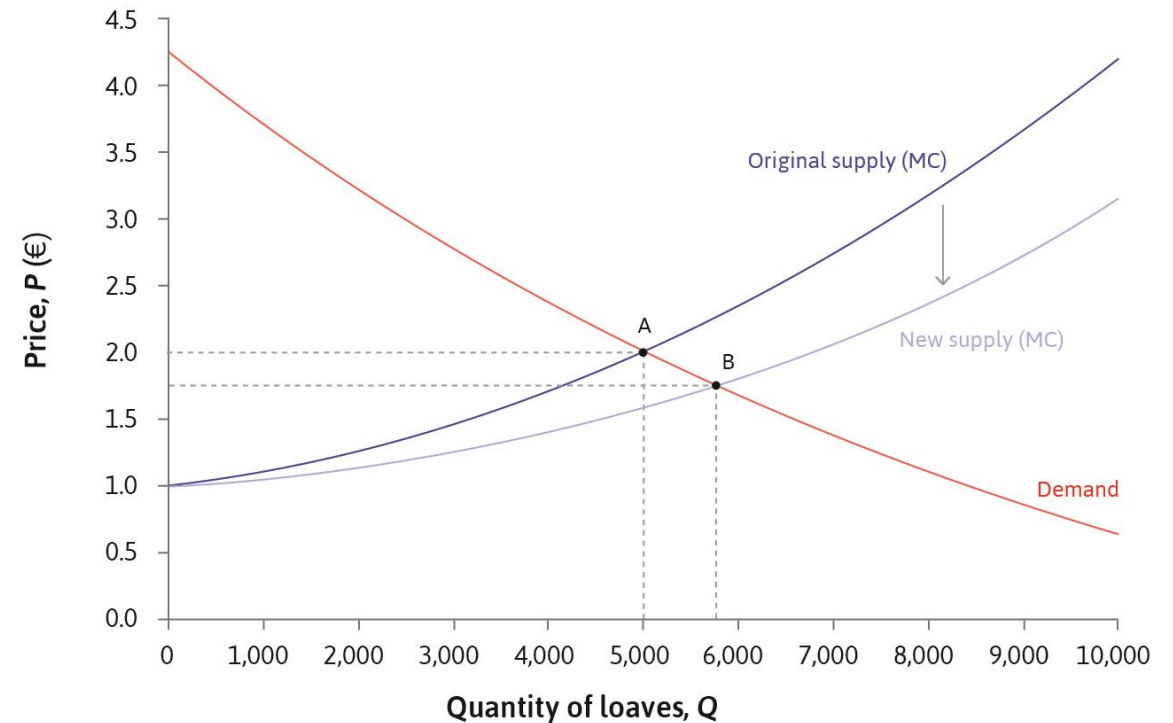
# Changes in supply and demand

The entire supply or demand curve can shift due to **exogenous shocks** (e.g., technological change, popularity)

Then buyers and sellers adjust their behaviour so that the market clears.

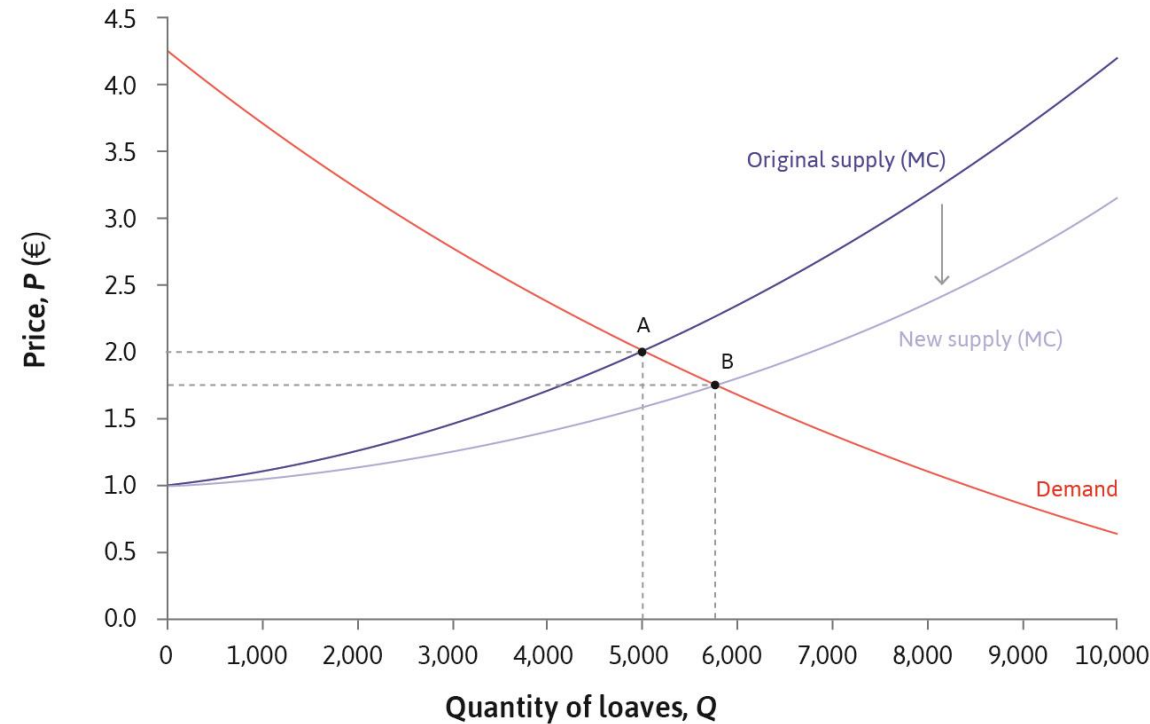
E.g., Improved baking technology =>

1. Supply of bread increases at every price (supply curve shifts)
2. Excess supply at the going market price
3. Price falls to a new equilibrium



# Market Entry

The supply curve can also shift due to market entry/exit.



If existing firms are earning **economic rents** and **costs of entry** are not too high, other firms may enter the market.

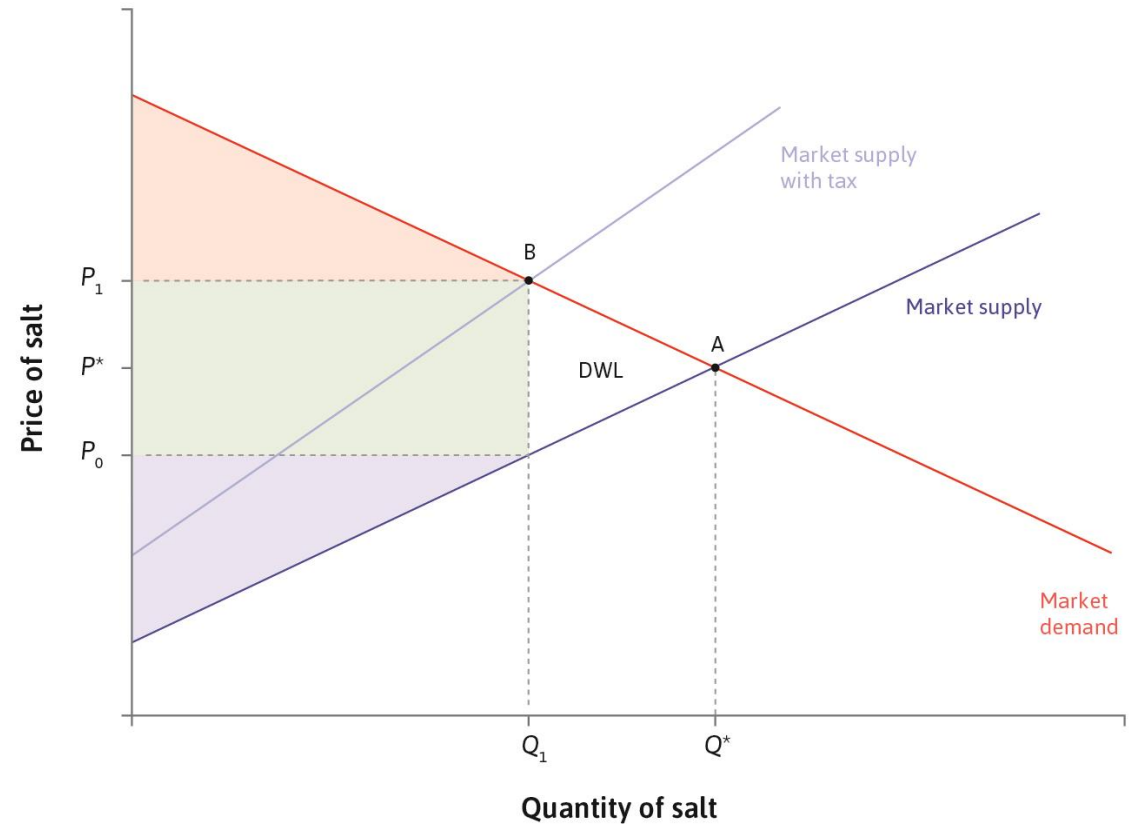
# Taxes

Throughout history, governments have used taxes to raise revenue.

Taxes on suppliers/consumers shift the supply/demand curve because the price is higher at each quantity.

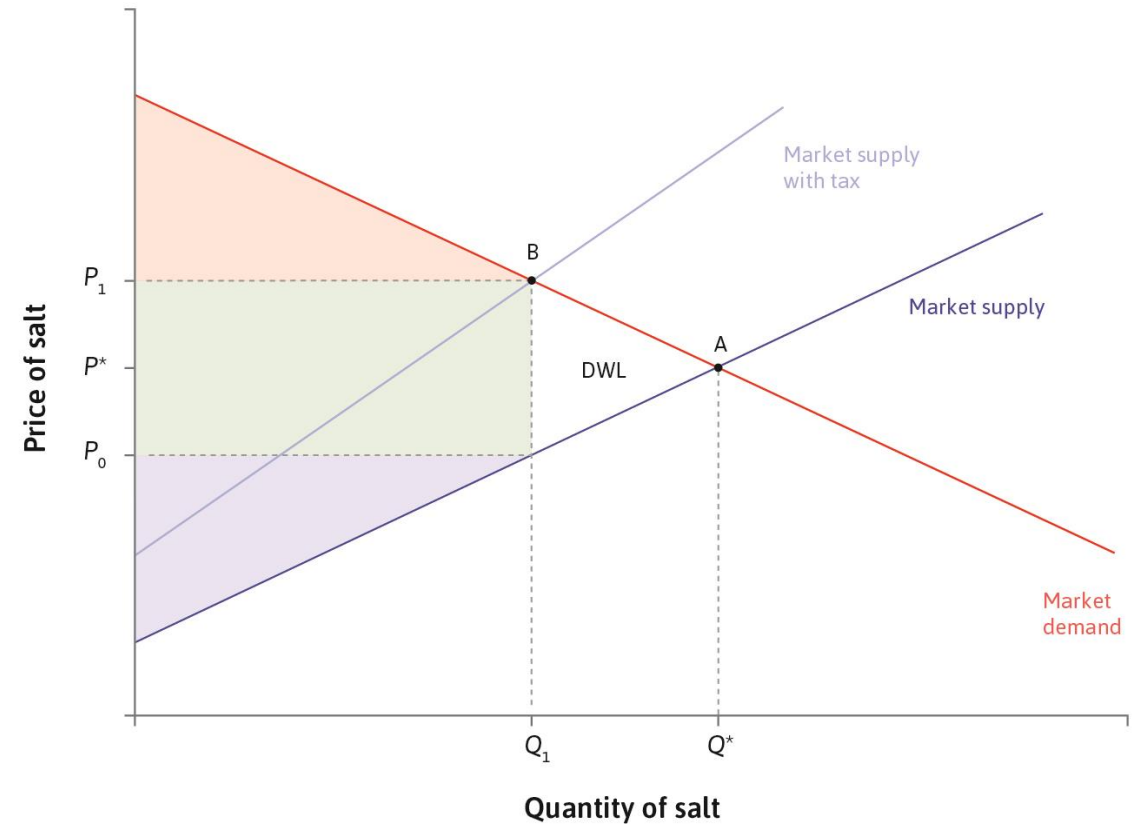
Taxes lower surplus:

- Consumer surplus – red
- Producer surplus – purple
- Government revenue – green
- **Deadweight loss** – white triangle



# Taxes: Welfare effects

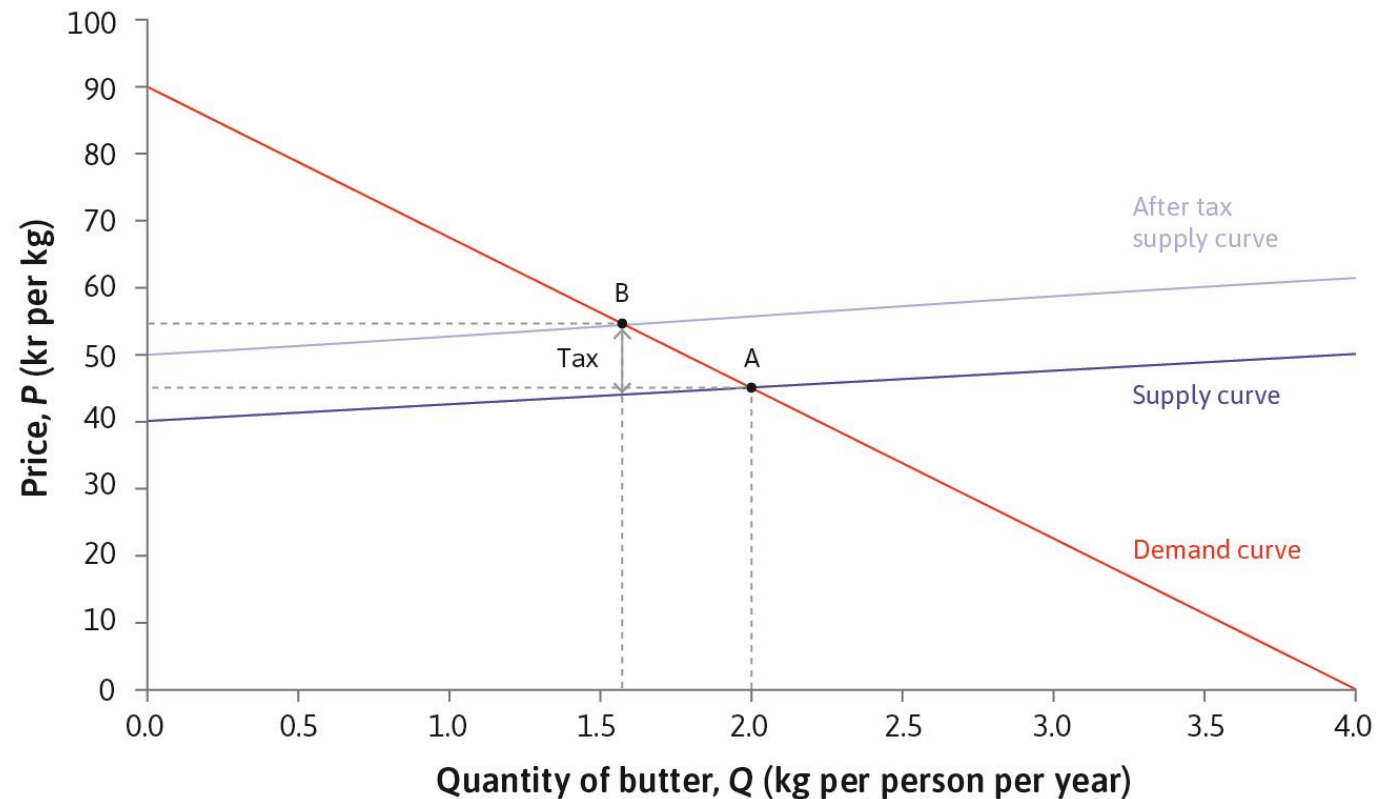
- Fall in total surplus is positively related to elasticity of demand
- **Tax incidence** depends on relative elasticity of consumers and producers. The less elastic group bears more of the tax burden.
- Taxes can still raise welfare if governments use tax revenue to provide beneficial goods/services.



# Example: Denmark's butter tax

In 2011, Denmark introduced a tax (per kg) on saturated fat, which was equivalent to 22% of the average butter price.

- Consumption of butter and related products fell by 15-20%.



# Market failures

- In reality, markets may allocate resources in a Pareto-inefficient way (**market failure**).

What are the sources of these inefficiencies?

How can governments solve the problem?

# Examples of market failure

## 1. Pesticides in the Caribbean

- Banana plantation owners used harmful pesticides to reduce costs and increase their profits.
- The chemicals leaked into the rivers and contaminated the local seafood, causing residents to fall seriously ill.

## 2. Overuse of antibiotics

- People often overuse antibiotics when other treatments would be better, which creates bacteria-resistant pathogens.



# Some reasons for markets to fail

Conditions for markets to work well:

- **Private property** - the rights to the thing bought/sold
- Institutions (e.g., government) - enforce **property rights**
- **Social norms** – respecting property rights
- Ability to write complete and enforceable contracts that can be evaluated in a court of law

When property rights are missing, incomplete, or are difficult to enforce with a contract, markets fail.

# Market failures

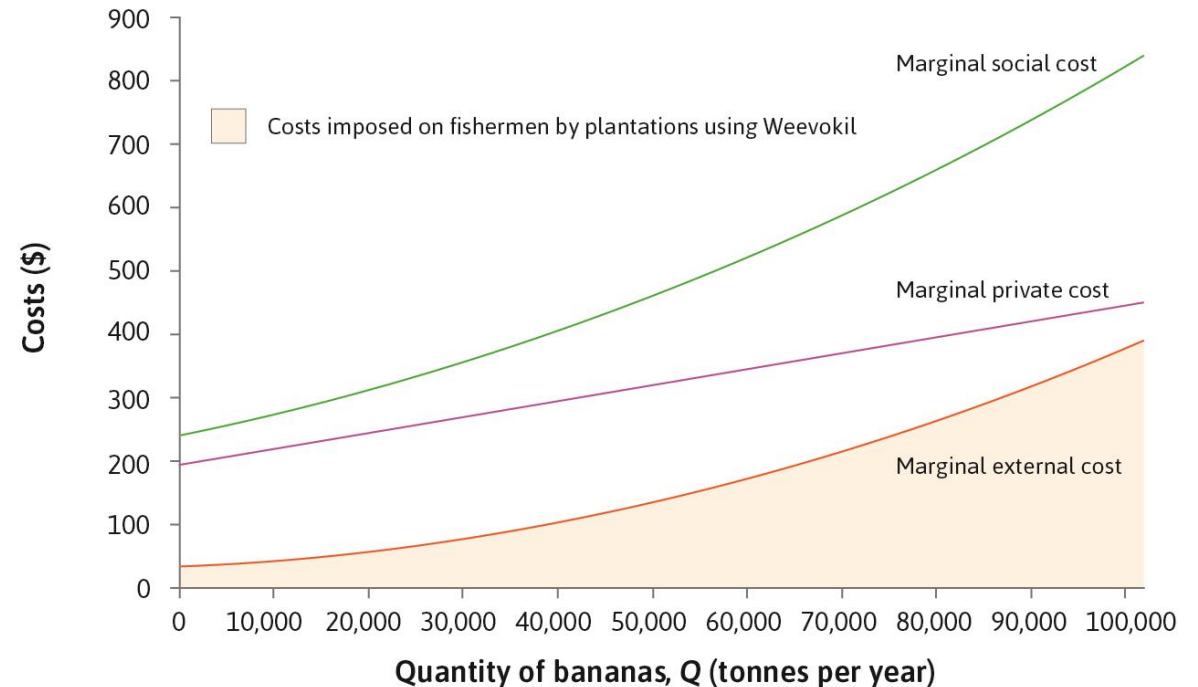
- Causes of market failure: a) **external effects**, b) **asymmetric information**, c) **incomplete contracts**
- Possible solutions: private bargaining, government policies
- The limits of markets: should all goods be allocated via markets?

# a) External effects

**External effect (externality)** = an effect of an economic decision that is not specified as a benefit or liability in the contract

Pesticide pollution example:

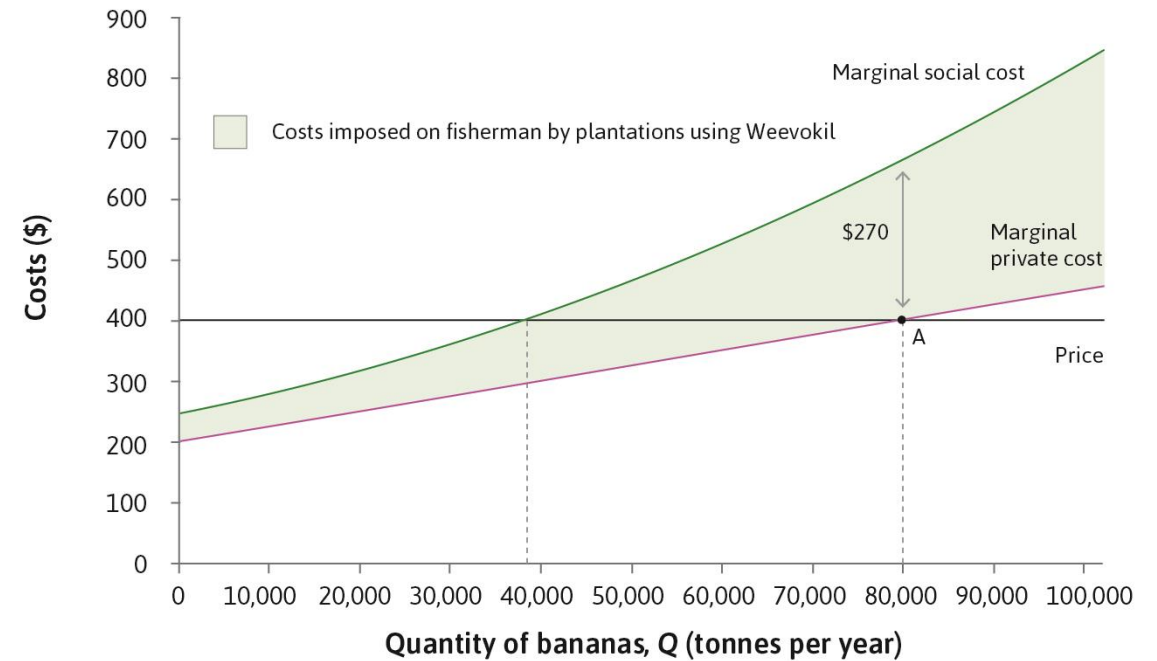
- **Marginal private cost (MPC)** = marginal cost to decision-maker
- **Marginal external cost (MEC)** = costs imposed by decision-maker on society (fishermen)
- **Marginal social cost (MSC)** =  $MPC + MEC$  (full cost to society)



Negative external effect  
( $MSC > MPC$ )

# Result: Pareto inefficiency

- Plantations produce where  $\text{Price} = \text{MPC}$ .
- However, Pareto-efficient level is where  $\text{Price} = \text{MSC}$ .
- Negative external effect leads to overproduction and overuse of pesticides.



Outcome is not Pareto efficient

At point A, fishermen could pay plantation owners up to \$270 to reduce production by one unit.

# Solution #1: Bargaining

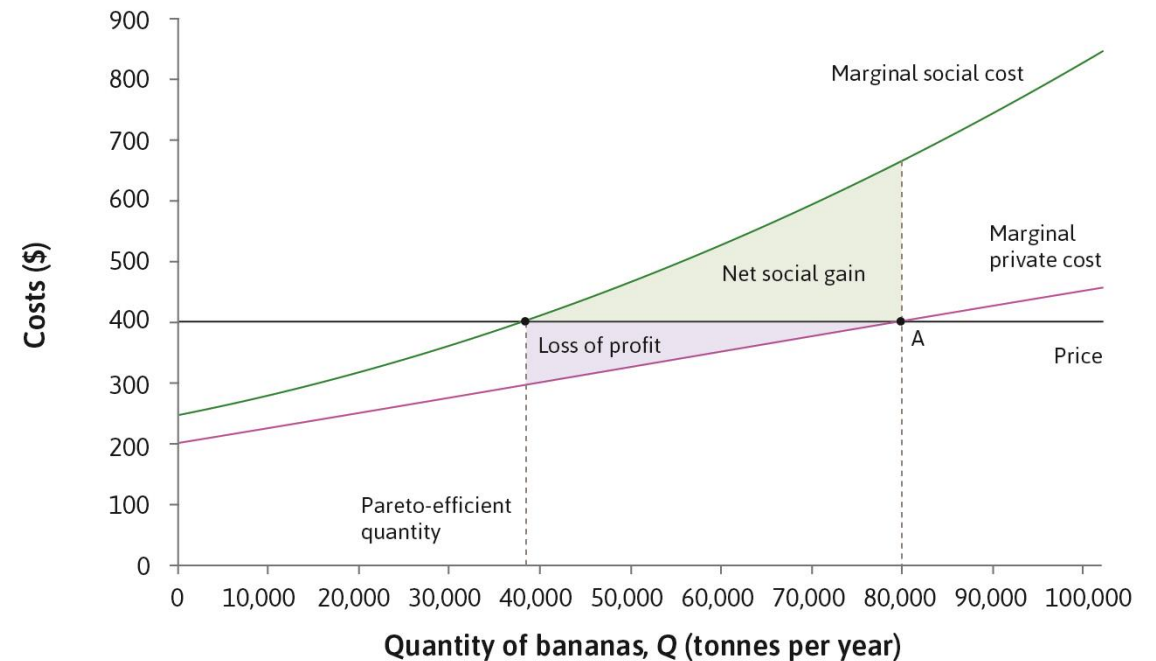
- Legally assign property rights to the externality (e.g., the right to pollute, the right to clean air)
- Private bargaining between parties involved will result in a Pareto-efficient allocation regardless of which party has the property rights, in the absence of transaction costs.
- Private bargaining may be more effective than government intervention because private parties have more of the necessary information.
- In reality, however, **transaction costs** (costs of acquiring information, enforcing the contract, or collective action) can be a major obstacle.

# Bargaining: Example

In the pesticides example, there is a net social gain that parties could share by reducing production, because the fall in plantations' profit (loss of profit area) is smaller than the gain for the fishermen (distance between the MSC and the MPC curves, between the social optimum quantity and the privately optimum quantity).

Net social gain = gain for the fishermen - profit loss

- Plantation owners' **minimum acceptable offer** (minimum compensation) = lost profits.



Actual compensation depends on relative bargaining power.

# Practical limits of bargaining

- Impediments to collective action – finding a representative and agreeing on how to split the gains within each party
- Missing information – calculating the exact costs imposed on each fisherman and each plantation's contribution to pollution.
- Enforcement – it may be difficult for a court to determine whether plantations have complied or not.
- Limited funds – fisherman may not have enough money to pay plantations the compensation required.

# Solution #2: Government policies

1) Regulation of production - cap at socially optimal amount

May be difficult to determine and enforce the right quota for each polluter

2) **Pigouvian tax/subsidy**: tax/subsidy on firms generating negative/positive external effects, in order to correct an inefficient market outcome.

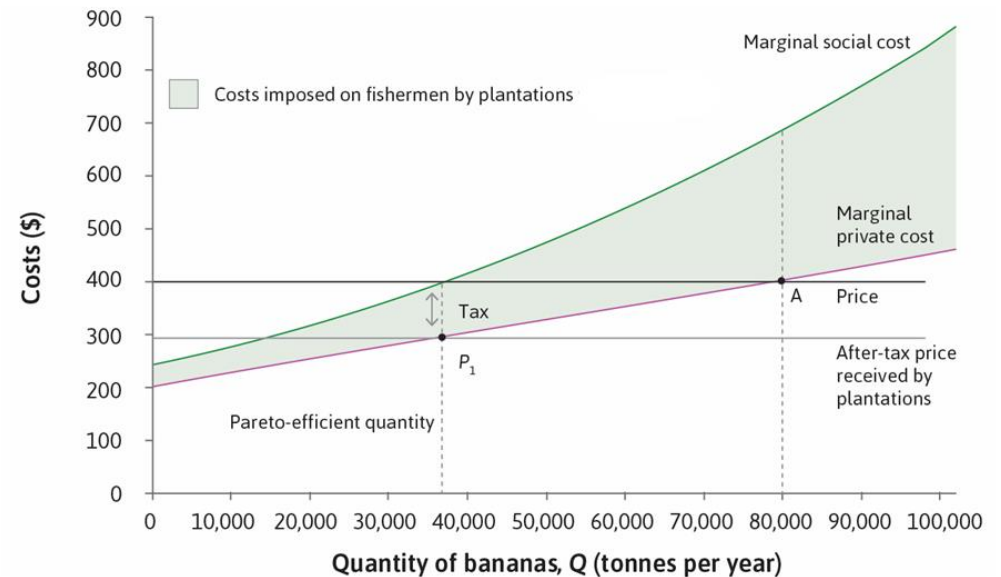
3) Enforcing compensation for affected parties.



# Example: Pollution tax

Government puts a per-unit tax on output, equal to the MEC.

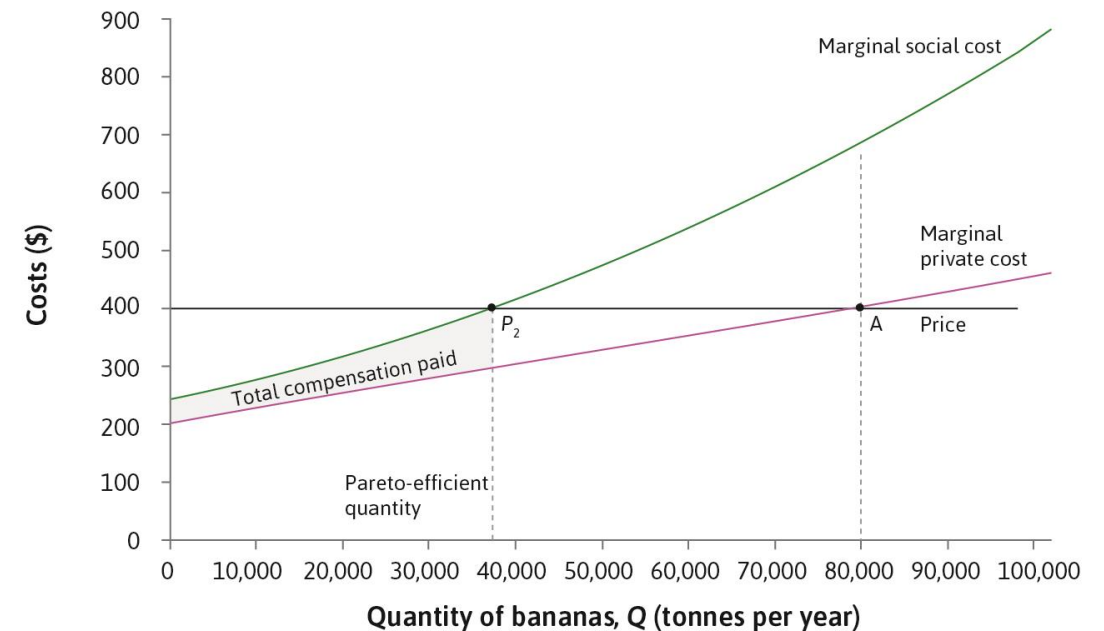
- Profit-maximizing producer chooses output where  $MPC =$  after-tax price, which is the socially optimal output.
- The tax forces producers to face the full cost of their decisions.



# Example: Compensation

Government requires plantation owners to pay fishermen compensation for each ton produced.

- Required compensation is equal to the difference between the MSC and the MPC (grey area).
- Fishermen are fully compensated, and producers choose the socially optimal level of output.



Compared to the tax, fishermen are better off (receive payment instead of the government).

# Practical limits of policies

Similar limitations to those for private bargaining:

- Missing information – government may not know the exact compensation needed to correct the problem.
- Measurement – Marginal social costs are difficult to measure.
- Lobbying - The government may favour the more powerful group in which case it could impose a Pareto-efficient outcome that is unfair.

## b) Information problems

### Example: The banking system

Borrowing and lending is another problem in which the borrower's decisions have external effects on the lender.

- For this reason, poor borrowers are often credit-constrained or credit-excluded, which is a form of credit market failure (chapter 4).

Another form of credit market failure is the banks themselves:

- If they take risks and go bankrupt, other banks (whom they have borrowed from) will bear some of the costs (external effect).
- Governments will also rescue banks that are '**too big to fail**', which incentivizes risk-taking behaviour.

## c) Incomplete contracts

External costs cause market failure due to **incomplete contracts**.

- Incomplete contracts do not specify, in an enforceable way, every aspect of the exchange that affects the interests of all affected parties.
- Contracts that include external costs/benefits are not enforceable because the relevant information is not **verifiable** or **asymmetric** (not known by the decision-maker).
- Therefore, in reality it is impossible to use contracts or property rights so that all social costs/benefits are included in the decision-making process.

# Other Market failures

## 1. Public goods

**Public good = Non-rival; non-excludable**

Public good: if it is available to one person it can be available to everyone at no additional cost.

**Non-rival:** use by one person does not reduce its availability to others. **Non-excludable:** impossible to exclude anyone from having access

# Other Market failures

## 1. Public goods

	<b>Non rival</b>	<b>Rival</b>
<b>Non excludable</b>	Public good (or public bad; ex: air pollution)	Common good
<b>Excludable</b>	Artificially scarce good or club good (still charge a fee, although it is not crowded; ex: knowledge subject to intellectual property rights)	Private good

# Other Market failures

## 2. Market power: Price > Marginal Cost

Firms may set price above marginal cost because of:

- Limited competition (e.g., selling differentiated product)
- Decreasing long-run average costs due to economies of scale (e.g., natural monopoly)

These are **market failures**.

- Deadweight loss can be eliminated via price discrimination (allocation 'unfair' because firms may capture entire surplus) or competition policy.



# Gaining market power

Firms can increase their market power by:

- Innovating – Technological innovation can allow firms to differentiate their products from competitors' (e.g., hybrid cars). Firms that invent a completely new product may prevent competition through **patents** or **copyright laws**.
- Advertising/CSR activities – Firms can attract consumers away from competing products and create brand loyalty.

These tactics can shift the firm's demand curve.