

MICROECONOMICS

(Chapter 1 → 6)

Chapter 1: the foundations of economics

- Microeconomics → examines the behaviour of individual decision-making units in the economy
→ uses consumers and firms
- Macroeconomics → examines the economy as a whole to obtain a broad overall picture
→ uses aggregates (collections of many individual units)

The four factors of production:

- Land → all natural resource
- Labour → the physical and mental effort that people contribute to the production of goods
- Capital → physical capital → a man-made factor of production used to produce goods
- Entrepreneurship → organises the other three factors of production and takes on the risks

Other meanings of capital:

- Physical capital
- Human capital → skills, abilities and knowledge acquired by people
- Natural capital → refers to an expanded meaning of the factor of production “land”
- Financial capital → investments in financial instruments

Opportunity cost and scarcity:

- Opportunity cost → the value of the next best alternative that must be sacrificed for a good
- Scarcity → resources are finite whereas wants are infinite
- Economics → the study of choices leading to the best use of scarce resource to best satisfy the unlimited human needs and wants
- Sustainability → the environment and the economy can produce needs and wants in the future
- Free good → a good that is not scarce and so has zero opportunity cost
- Economic good → any good that is scarce and has an opportunity cost bigger than zero

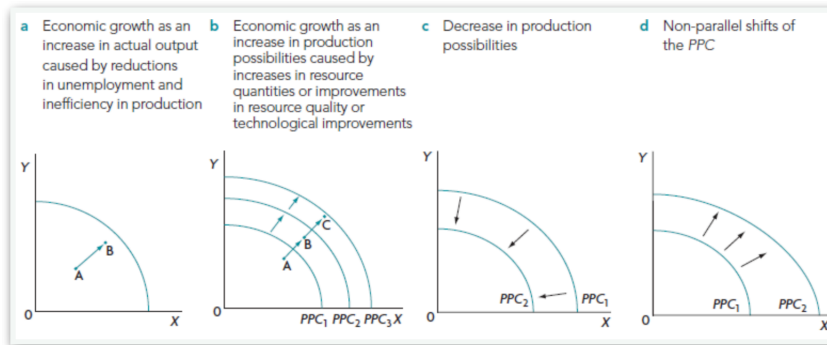
The basic economic questions:

- 1) What / how much to produce
 - 2) How to produce
 - 3) For whom to produce
- Resource allocation → assigning resources to specific uses, chosen among many alternatives
 - Government intervention changes the allocation of resources

Production Possibilities curve:

- Represents all combinations of the max. amounts of two goods that can be produced by an economy (production possibilities → points on curve)
- All resources must be fully employed to be on the line
- All resources must be used efficiently

- Because of scarcity the economy cannot produce outside the PPC
- The economy must make a choice on what combination of goods will be produced
- Choices involve opportunity costs



- Economic growth \rightarrow increase in the quantity of output produced in an economy over a time
- Actual growth \rightarrow caused by a reduction in unemployment and increases in the efficiency of production

Chapter 2: competitive markets (demand and supply)

2.1 Introduction to competitive markets

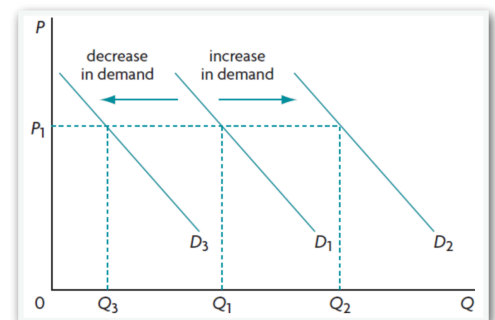
Markets:

- market → where buyers and sellers of goods, services and resources carry out an exchange
 - can be local, national and international
 - goods and services are sold in product markets while resources in factor markets
- Competition → a process in which rivals compete in order to achieve some objective
- The greater the market power of a firm, the greater is the control over price
- Competitive market → composed of large numbers of sellers and buyers acting independently
 - no one individual seller has the ability to control the price of the product
 - price determined by interactions of many sellers and buyers

2.2 Demand

The law of demand and the demand curve:

- Individual demand → indicates the various quantities of a good the consumer is willing and able to buy at different possible prices, *ceteris paribus*
- Law of demand → negative causal relationship between the price of a good and its quantity demanded (inversely proportional), *ceteris paribus*
- Market demand → sum of all individual demands for a good



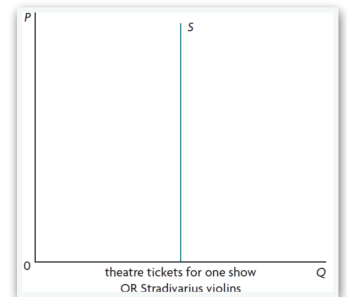
Non-price determinants of demand (shift) + price:

- Non-price determinants of demand → the variables other than price that can influence demand and bring to a shift of the demand curve to the right or to the left
- Non-price determinants of demand → income in the case of normal goods
 - income in the case of inferior goods
 - Preferences and tastes
 - Prices of substitute goods
 - Prices of complementary goods
 - Number of consumers
- Price → whenever the price of a good changes, *ceteris paribus*, it leads to a movement along the demand curve

2.3 Supply

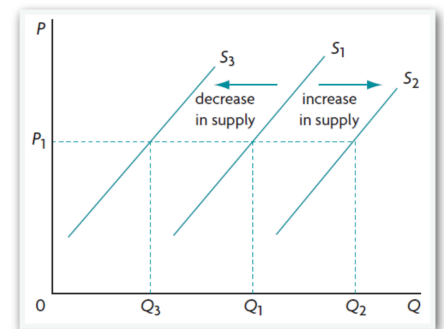
The law of supply and the supply curve:

- Individual supply → the various quantities of a good a firm is willing and able to produce and supply to the market for sale at different possible prices, *ceteris paribus*
- Law of supply → positive causal relationship between the price of a good and its quantity supplied (proportional), *ceteris paribus*
- Market demand → sum of all individual supplies for a good
- The vertical supply curve (fixed quantity)
 - no time to produce more of it
 - no possibility of ever producing more of it



Non-price determinants of supply (shift) + price:

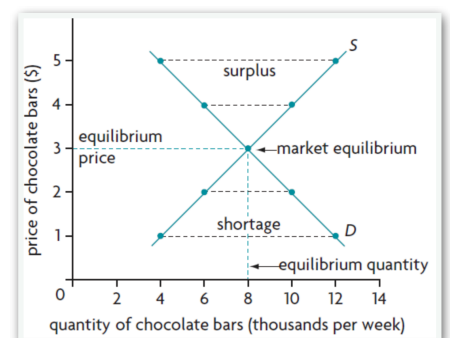
- Non-price determinants of supply → the variables other than price that can influence supply and bring to a shift of the supply curve to the right or to the left
- Non-price determinants of supply
 - Costs of factors of production
 - Technology
 - Prices of related goods: competitive supply
 - Prices of related goods: joint supply
 - Producer (price) expectation
 - Taxes or subsidies
 - Number of firms
 - Shocks or sudden unpredictable events
- Price → whenever the price of a good changes, *ceteris paribus*, it leads to a movement along the supply curve



2.4 Competitive Market Equilibrium

Market equilibrium:

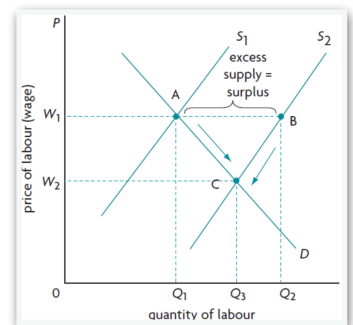
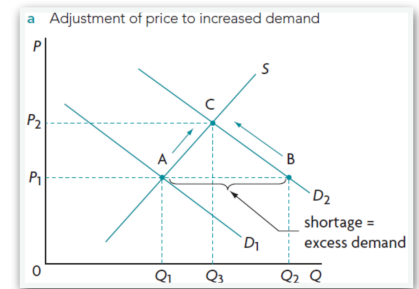
- Market equilibrium → quantity demanded is equal to quantity supplied
- Equilibrium price → the price at market equilibrium
- Equilibrium quantity → the quantity at market equilibrium
- Market disequilibrium → excess in supply or demand which cause the price to change until the market reaches equilibrium
- Excess in demand → shortages
- Excess in supply → surplus
- Changes in market equilibrium are due to shifts of the demand and the supply curve



2.5 The role of the price mechanism and market efficiency

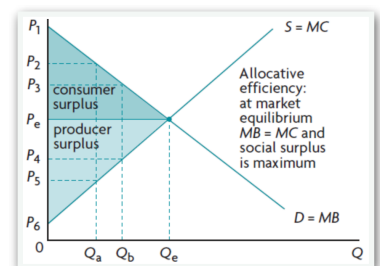
Functions of the price mechanism:

- Signals → prices communicate information to decision-makers
- Incentives → prices motivate decision-makers to respond to the information
- Market demand and market supply determine equilibrium prices and quantities for goods
- What to produce → firms produce only those goods consumers are willing and able to buy
- How to produce → factors of p. that the firm is willing and able to pay
- Price rationing → whether or not a consumer will get a good is determined by the price of it
- Non-price rationing → planned economies or non-price rationing systems



Allocative efficiency in competitive markets:

- Allocative efficiency → producing the quantity of goods mostly wanted by society
- Marginal benefit → the extra benefit that you get from each additional unit of something bought
- Demand curve = Marginal benefit curve
- Marginal cost → the extra cost of one more unit of output
→ typically increases as units of output produced increase
- $MB = MC$ → allocative efficiency
- $MB > MC$ → greater value on the last unit of the good produced than it costs to produce it
- $MB < MC$ → costing society more to produce the last unit of the good than the value it has



Consumer and Producer surplus:

- Consumer surplus → the highest price consumers are willing to pay for a good minus the price actually paid (the area)
→ $((P \text{ intercept of } D \text{ curve} - P \text{ of consumers}) * Q \text{ purchased}) / 2$
- Producer surplus → the price received by firms for selling their good minus the lowest price that they are willing to accept to produce the good (the area)
→ $((P \text{ of producers} - P \text{ intercept of } S \text{ curve}) * Q \text{ sold}) / 2$
- Social/community surplus → sum of consumer and producer surplus
- Welfare → the amount of consumer and producer surplus (when $MB = MC$)
- Governments should intervene because:
 - efficiency can only arise under a number of very strict and highly unrealistic conditions
 - competitive market is unable to answer the *for whom question*
 - to counteract the failing of markets → helps realise their potential advantages

Chapter 3: Elasticities

The use of percentages for elasticities:

- Independent of units (cars, oranges, ...)
- Independent of currencies (different currencies across countries)
- Allows to express elasticities in common terms
- Allows to put responsiveness into perspective

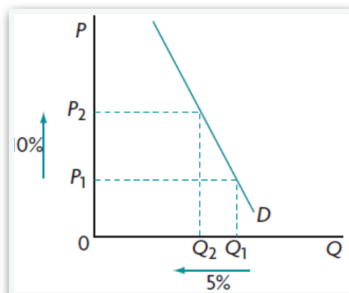
3.1 Price elasticity of demand

Price elasticity of demand:

- A measure of the responsiveness of the quantity of a good demanded to changes in its price
- The minus sign is always dropped
- Steeper the demand curve, the less elastic the demand. Flatter the demand curve the more elastic
- Price elastic \rightarrow quantity demanded is highly responsive to a change in price
- Price inelastic \rightarrow quantity demanded is not very responsive to a change in price
- The formula for PED \rightarrow (% change in Quantity)/(% change in Price)
 \rightarrow (change in quantity / initial quantity) / (change in price / initial price)

Ranges of value of PED:

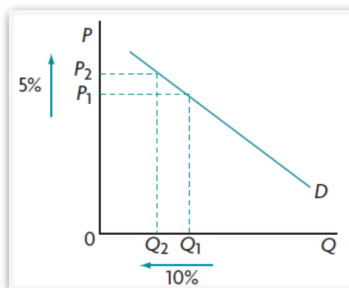
- PED < 1 \rightarrow Price inelastic



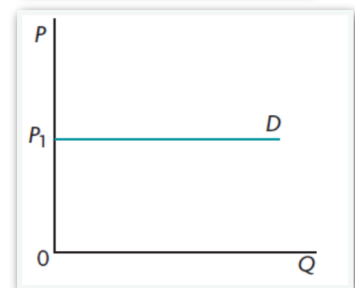
- PED = 0



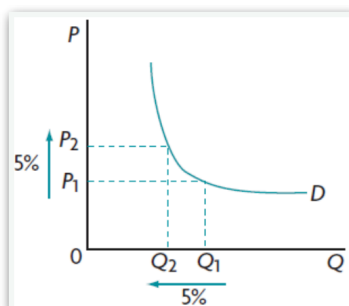
- PED > 1 \rightarrow Price elastic



- PED = infinity



- PED = 1 \rightarrow Unitary elastic



Determinants of PED:

- Number and closeness of substitutes → the more substitutes, the more elastic is the demand
→ the closer the substitute, the greater the elasticity
- Necessities versus luxuries → the more necessary a good, the less elastic the demand
→ the greater the degree of addiction, the more inelastic the demand
- Length of time → the longer the period, the more elastic the demand

PED and total revenue:

- Total revenue → the amount of money receive by firms when they sell a good (Price * Quantity)
- When $PED > 1$ → total revenue increases if there is a price decrease
- When $PED < 1$ → total revenue decreases if there is a price decrease
- When $PED = 1$ → total revenue remains constant to changes in price

PED and firm pricing decisions and taxes:

- Business must take PED into account when considering changes in the price of their product
- If governments are interested in increasing their tax revenues, they must consider the PED because the lower the PED for the taxed good, the greater the tax revenue.

3.2 (YED) income elasticity of demand**Income elasticity of demand:**

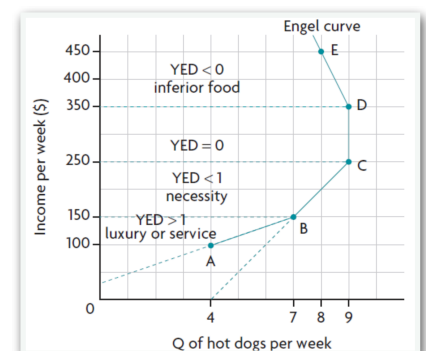
- A measure of the responsiveness of demand to changes in income, involves demand curve shifts
- Formula for YED → $(\text{change in quantity} / \text{initial quantity}) / (\text{change in income} / \text{initial income})$
- YED → can be both positive or negative

Ranges of value of YED:

- $YED > 0$ → normal good
- $YED < 0$ → inferior good
- $YED < 1$ → Necessities good
- $YED > 1$ → Luxuries and services

Engel curve:

- If the lines' projection touches the vertical axis (luxury or service)
- If the lines' projections doesn't touch the vertical axis (necessity)
- At very low incomes a good may be luxury, as income increases it becomes necessity, and at high income level it becomes inferior

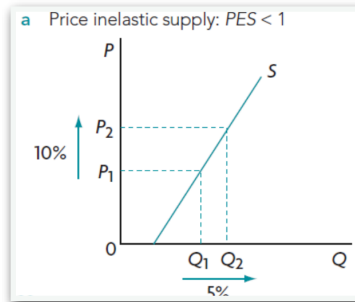
**3.3 Price elasticity of supply (PES)****Price elasticity of supply:**

- PES → is a measure of the responsiveness of the quantity of a good supplied to changes in price
- Steeper the demand curve, the less elastic the demand. Flatter the demand curve the more elastic

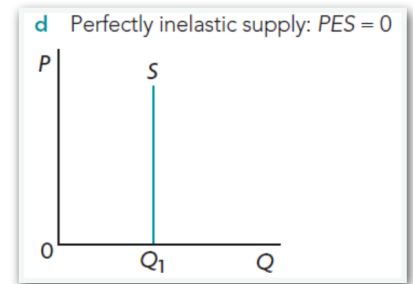
- Price elastic \rightarrow quantity supplied is highly responsive to a change in price
- Price inelastic \rightarrow quantity supplied is not very responsive to a change in price
- The formula for PES \rightarrow $(\% \text{ change in Quantity}) / (\% \text{ change in Price})$
 \rightarrow $(\text{change in quantity} / \text{initial quantity}) / (\text{change in price} / \text{initial price})$

Ranges of value of PES:

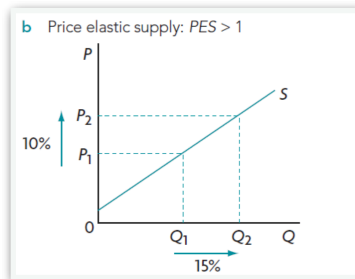
- PES < 1 \rightarrow Price inelastic



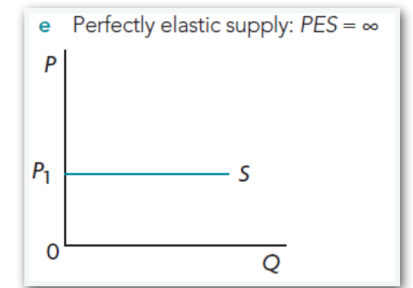
- PES = 0



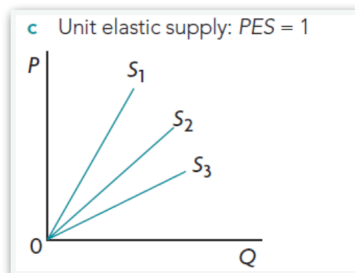
- PES > 1 \rightarrow Price elastic



- PES = infinity



- PES = 1 \rightarrow Unitary elastic



Determinants of PES:

- Length of time \rightarrow over a very short time, the firm may be unable to increase or decrease any of its inputs to change the quantity it produces
- Mobility of factors of production \rightarrow the more easily and quickly resources can be shifted out of one line of production and into another, the greater the PES
- Spare capacity of firms \rightarrow the greater the spare capacity, the higher the PES
- Rate at which costs increase \rightarrow if the costs of producing extra output increase rapidly, the supply will be inelastic and viceversa

Chapter 4: Government intervention in microeconomics

4.1 Government intervention in markets

Why governments intervene in markets:

- Earn revenue for the government → indirect taxes
- Provide support to firms → with subsidies, trade protection measures (tariffs, quotas,...)
- Provide support to households on low incomes → subsidies, price ceilings, direct provision
- Influence the levels of production of firms
- Influence levels of consumption of consumers
- Correct market failure (failures to achieve allocative efficiency in markets)
- Promote equity

How governments intervene in markets:

- Price controls → price ceilings and price floors
- Indirect taxes
- Subsidies
- Direct provision of services
- Command and control regulation and legislation
- Consumer nudges

4.2 Price controls

Fixed prices → prices are fixed at a particular level (ticket prices, ...)

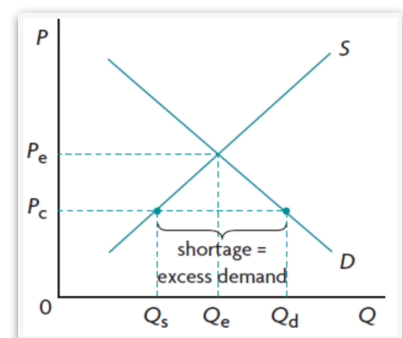
Price controls → the setting of minimum or maximum prices by the government

Price ceilings:

- Legal maximum price set below the equilibrium price, in order to make goods more affordable to people on low incomes
- Used to make certain goods more affordable to people on low incomes

Consequences for markets:

- Shortages
- Non-price rationing of goods and services
- Underground (or parallel) markets
- Underallocation of resources and allocative inefficiency
- Negative welfare impacts



Consequences for stakeholders:

- Consumers → partly gain and partly lose (some buy at lower price, some can't buy, not enough)
- Producers → sell a smaller quantity at a lower price
- Workers → some workers are likely to be fired
- Governments → may gain political popularity

Price floors:

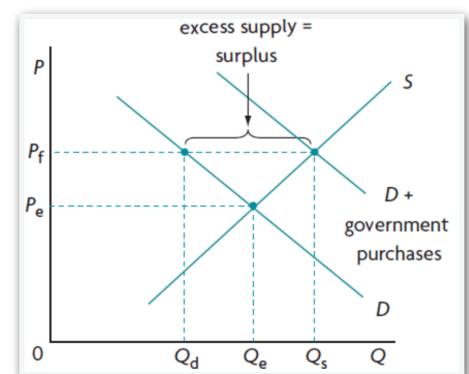
- A minimum price set below the equilibrium price, in order to provide income support to farmers or to increase the wages of low-skilled workers

Consequences for markets:

- Surpluses → the government will buy the excess supply generated by price floors
- Government measures to dispose of surpluses → store it or export the surplus
- Firm inefficiency → firms with price floors do not face incentives to cut costs
- Overallocation of resources to the production and allocative inefficiency
- Negative welfare impacts

Consequences for stakeholders:

- Consumers → must now pay a higher price for the good
- Producers → gain as they receive a higher price and produce a larger quantity
- Workers → gain as employment increases
- Government → less government funds to spend on other desirable activities in the economy
- Stakeholders in other countries → waste of resources



Minimum wages:

- the minimum price of labour that an employer must pay
- Labour surplus and unemployment
- Illegal workers at wages below the minimum wage
- Misallocation of labour resources (they cost more)
- Misallocation in product markets (increase in costs of production)
- Workers → some gain because higher wage, some lose because they lose their job
- Consumers → leads to a decrease in supply of products

4.3 indirect taxes

- are imposed on spending to buy goods and services and are paid partly by consumers, but are paid to the government by producers
- Excise taxes → imposed on particular goods and services (specific taxes → fixed amount of tax per unit, or ad valorem taxes → fixed percentage of the price)

Why governments impose indirect taxes:

- Are a source of government revenue
- Are a method to discourage consumption of goods that are harmful for the individual
- Can be used to redistribute income → can focus on luxury goods
- A method to improve allocation of resources by correcting negative externalities

Consequences of indirect taxes for various stakeholders

- Consumers → are receiving less of the good and paying more for it
- Producers → fall in price they receive and fall in the quantity of output they sell
- Government → positive for the government budget as more revenue
- Workers → a lower amount of output means that fewer workers will be needed
- Society → underallocation of resources to the production of the good

4.4 Subsidies

- Refers to assistance by the government to individuals or groups of individuals
- Specific subsidies → consist in payments by the government to firms

Uses of subsidies:

- Can be used to increase revenues of producers
- Can be used to make certain goods affordable to low-income consumers
- Can be used to encourage production and consumption of goods that are desirable for consumers
- Can be used to support the growth of particular industries in an economy
- Can be used to encourage exports of particular goods
- A method to improve the allocation of resource by correcting positive externalities

Consequences of subsidies for various stakeholders:

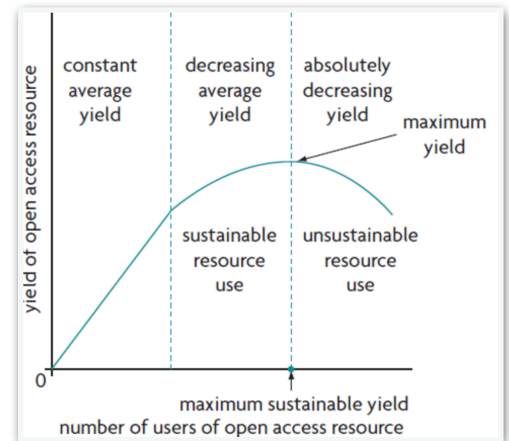
- Consumers → fall in price and increase in quantity
- Producers → they receive a higher price and produce a larger quantity
- Government → government's budget is negative as it pays the subsidies
- Workers → firms are likely to hire more worker to produce the extra output
- Society → overallocation of resource to the production of a good
- Foreign producers → negative for producers of other countries as may be unable to compete

Chapter 5: Common pool resources and negative externalities

5.1 The meaning of common pool resources

Common pool resources:

- Resources not owned by anyone, do not have a price and are available for anyone to use without payment or any other restriction. They are rivalrous and non-excludable
- Rivalrous → its consumption by one person reduces its availability for someone else
- Excludable → it is possible to exclude people by using the good or charging a price
- Unsustainable production → using resources unsustainably, depleting or degrading them
- Non-renewable resources → resources that do not last indefinitely as they have a finite supply
- Renewable resource → resources that can last indefinitely if they are managed properly



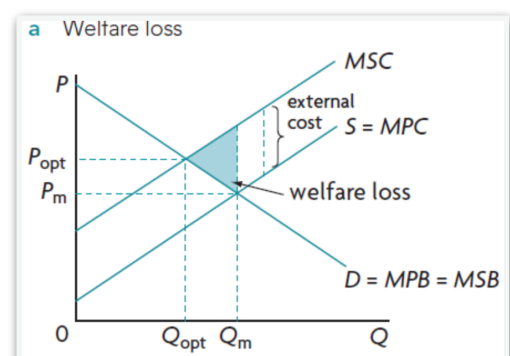
5.2 Diverging private and social benefits and costs

Externalities:

- Occurs when the actions of consumers or producers give rise to negative or positive side-effects on third parties, and whose interests are not considered
- Positive externality → benefits to third parties
- Negative externality → negative side-effects to third parties
- Consumption externality when results from consumption activities, and production externalities when results from production activities
- Marginal private cost (MPC) → the costs to producers of producing one more unit of a good
- Marginal social cost (MSC) → the costs to society of producing one more unit of a good
- Marginal private benefits (MPB) → benefits to consumers from consuming one more unit
- Marginal social benefits (MSB) → benefits to society from consuming one more unit of a good

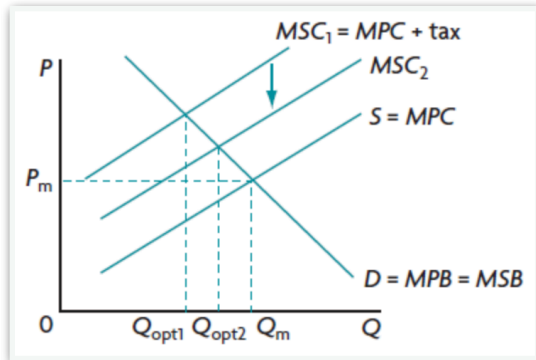
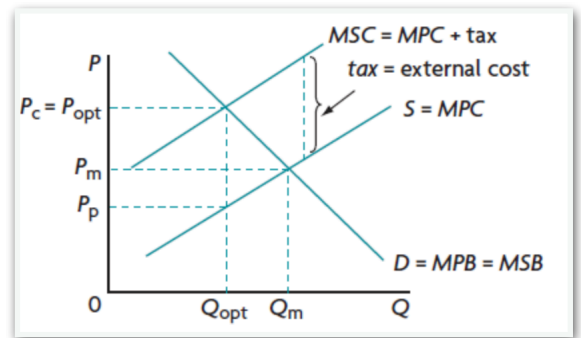
5.3 Negative production externalities

- the external costs created by producers
- It causes a welfare loss, involving a reduction in social benefits due to misallocation of resources
- $Q_m > Q_{opt}$ and $MSC > MSB$



Market-based policies 1 - Indirect (Pigouvian) taxes:

- Work by changing the incentives firms face
- The optimal tax policy is to impose a tax that is exactly equal to the external cost
- In this way the MPC curve shifts upward until it overlaps with the MSC curve

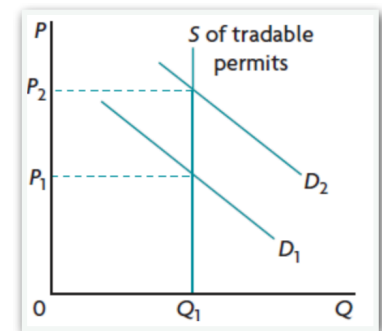


Market-based policies 2 - Carbon taxes

- Is a tax per unit of carbon emissions of fossil fuels
- The more carbon emitted, the higher the tax
- As a result firms switch to alternative, less polluting resources

Market-based policies 3 - Tradable permits:

- A policy involving permits to pollute issued to firms by a government or an international body
- They can be bought and sold among interested firms
- Provide incentives to producers to switch to less polluting resources for which is not necessary to buy permits



Advantages of market-based policies:

- Both taxes and tradable permits have the effect of internalising the externality
- Taxes on pollutants emitted provide incentives to firms to economise on the use of polluting resources and use production methods that pollute less
- Taxation leads to lower pollution levels at a lower overall cost to society

Disadvantages of market-based policies:

- Taxes —> Designing a tax equal in value to the amount of the pollution is very difficult
 - > Usually set to low to make a significant impact
 - > What production methods produce pollutants?
 - > Which pollutants are harmful?
 - > What is the value of the harm?
 - > What is the appropriate amount of tax?
 - > How will consumers be affected?
- Tradable permits —> Face the technical limitations as for taxes
 - > governments has to set a maximum acceptable level of pollutants “cap”
 - > Political favouritism may come into play and unlikely to achieve

Government legislation and regulation:

- Legislations and regulations intended to reduce the effects of production externalities and limit environmental damage typically involve emissions standards, quotas, license, ..., restrictions
- Maximum level of pollutants permitted
- Install smokestack scrubbers to reduce emissions
- Banning the use of harmful substances

Advantages:

- Simple to put into effect and oversee
- Easier to implement compared to market-based policies and with no technical difficulties
- Quite effective

Disadvantages:

- Do not offer incentives to reduce emission by using alternative fuels
- Pollution is reduced at a higher overall cost
- Lack of sufficient technical information on types and amount of pollutants emitted
- Possible violations, and possible problems with enforcement
- Can only attempt to partially correct the problem

Collective self-governance:

- An approach to manage resources undertaken by communities of resource users by themselves, as they realise that it is in their own best interests to work collectively for the preservation of res.
- Concept by Elinor Ostrom
- Advantages —> people do not always act in the self-interest
—> solutions can be achieved in the absence of private ownership of resources
- Disadvantages —> people must be able to communicate with each other to create rules
—> difficult to apply to vast resources such as the oceans

Education and awareness creation:

- Education of the public and provision of information —> firms are forced to take consumers' opinions into consideration and change their production methods to reduce the externality
- Advantages —> firms are very much influenced by the opinions of their costumers
- Disadvantages —> only make a small difference as only on one industry (needed a broader scale)

International agreements:

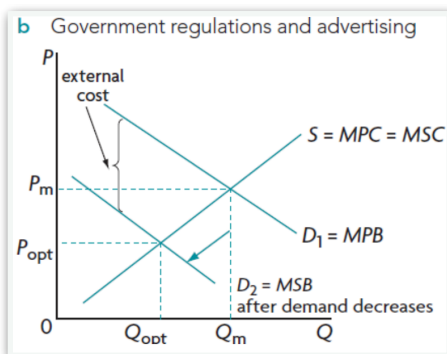
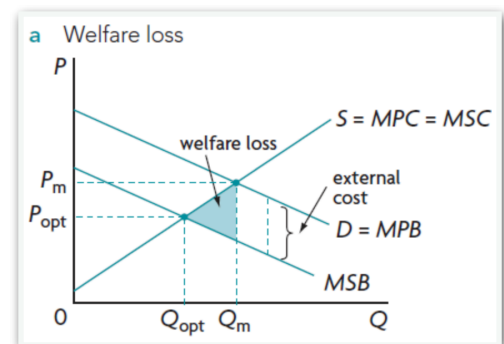
- Co-operation among governments and international agreements are crucial to control and prevent negative consequences on certain resources
- Important as for development and diffusion of new technologies to deal with global environmental issues

5.4 Negative consumption externalities

- The external costs created by consumers
- There is welfare loss because of the reduction in benefits for society due to the overallocation of resources to the production of the good
- $MSC > MSB$ and $Q_m > Q_{opt}$
- Demerit goods \rightarrow goods considered to be undesirable for consumers, but are overprovided by the market (alcohol,...)

Market-based policies:

- Indirect taxes can be imposed on the good whose consumption creates external costs
- When such a tax is imposed, there is a decrease in supply
- The tax therefore permits allocative efficiency to be achieved
- Advantage \rightarrow the good that is taxed becomes relatively more expensive so consumption is less
- Disadvantages \rightarrow difficulties in measuring the value of the external costs
 - \rightarrow difficulties involved in trying to assess who and what is affected
 - \rightarrow some goods have an inelastic demand, so tax won't change consumption



Government legislation and regulation:

- Regulations can be used to prevent or limit consumer activities that impose costs on third parties
- Advantages \rightarrow regulation can be very effective \rightarrow restricting smoking in public places
- Disadvantages \rightarrow difficult to regulate consumption of certain good such as fuel

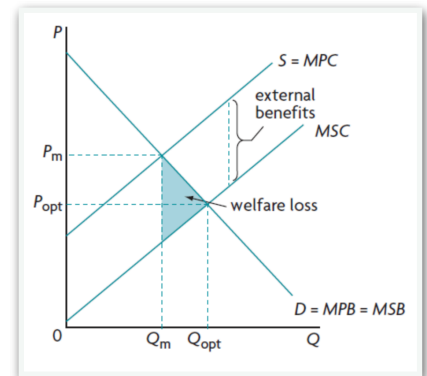
Education and awareness-creation:

- Educating the public and creating awareness by the government can be used to try to persuade consumers to buy fewer good with negative externalities
- Advantages \rightarrow simpler than other methods
- Disadvantages \rightarrow government campaigns founded with tax funds, so less funds available for use elsewhere in the economy

Chapter 6: Positive externalities and public goods

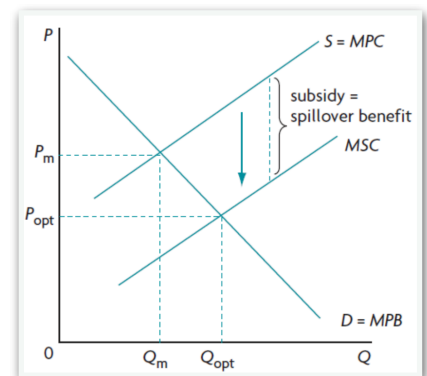
6.1 Positive production externalities

- Refer to external benefits created by producers
- $Q_m < Q_{opt}$ and $MSC < MSB$
- Welfare loss \rightarrow the underallocation of resources to the production of a good with a positive production externality leads to welfare loss

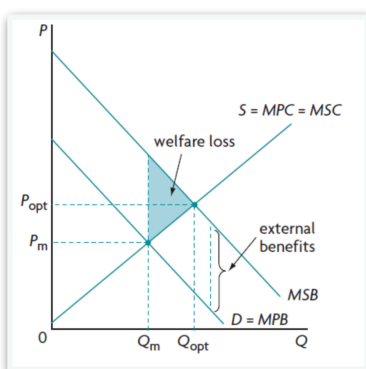


Correcting positive production externalities:

- Shifting the MPC curve downward toward the MSC curve
- Quantity produced and consumed must increase to Q_{opt} as price falls to P_{opt}
- **Direct government provision** \rightarrow government provides goods and service by itself
- **Subsidies** \rightarrow price of good falls from MPC to MSC
- Direct government provision and subsidies have the same outcome



6.2 Positive consumption externalities



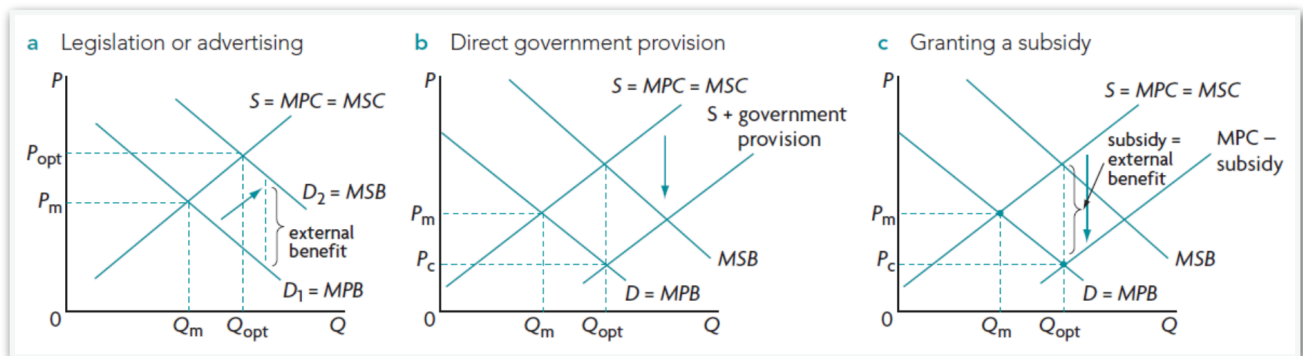
- External benefits are created by consumers
- The free market underallocates resources to the production of the good so too little of it is produced relative to the social optimum
- $MPB < MSB$ and $Q_m < Q_{opt}$
- Loss of welfare due to the underproduction of the good

Merit goods:

- goods that are held to be desirable for consumers, but which are under provided by the market
- Many reasons for which underprovision could happen:
 - The good may have positive externalities \rightarrow too little is provided
 - Low levels of income and poverty \rightarrow people cannot afford to buy them
 - Consumer ignorance \rightarrow people ignorant of the benefits

Correcting positive consumption externalities:

- Government legislation and regulation → legislation can be used to promote greater consumption of goods with positive externalities (ex. Education)
- Education and awareness creation → persuade consumers to buy more goods with positive ext.
- Direct government provision → Government provides certain goods and services (ex. Health)
- Subsidies → has the same effects as direct government provision
- Problems → use of government funds (opportunity costs), which goods should be supported and how much, high political nature

**6.3 Market failure and public goods**

- A public good is non-excludable and non-rivalrous
- Free rider problem → when people can enjoy the use of a good without paying for it
 - A type of market failure because private firms do not produce these goods so the market fails to allocate resources to their production

Government intervention:

- Direct government provision
- Contracting out to the private sector:
 - when a gov. makes an agreement with a private firm to carry out an activity
 - financed out of tax revenues
 - accompanied by detailed specifications on the activity, so better quality control
 - provides access to a border range of skills and technology
 - private firm may be more flexible and innovative than the government
 - better quality and less costly
- gov. becomes less accountable for the public goods it provides
- gov. loses control over the services it has contracted out
- risk of making a poor contract so higher costs and lower quality
- contracting out needs to be monitored by the gov. so adds costs