Ulster University

BEN130
Built Environment Economics

Week 5 – Market Equilibrium & The Free Market System

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Module Content

- Introduction to economic concepts, scarcity, choice and opportunity cost.
- Macro and micro economic theory and how it influences development projects.
- Real estate market forces, demand and supply, price elasticity, market equilibrium, free market system.
- Government intervention, control and regulation and how it impacts on market prices and costs.

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1. Market equilibrium

Markets and equilibrium

- So far we have considered the separate concepts of demand and supply.

- This first part of the lecture will examine the ***price mechanism (also known as market mechanism),*** how this brings about ***equilibrium*** and the effects of changes in supply and demand on the market price and quantity.

- This will enable us to examine how the free market solves the basic economic problems and draw a comparison with a planned economy.

Markets and equilibrium

- A **market** occurs when buyers and sellers interact to exchange goods and services (whether physical or online).

- **Equilibrium** (Gillespie p. 125) occurs in a market when the quantity supplied equals the quantity demanded (Demand = Supply) and there is no incentive for this position to change.

Equilibrium in a Free Market

- In a **free market** equilibrium is reached by changes in the **price**.
- Decisions of producers and consumers are made independently of each other; the price mechanism acts to bring these decisions together and to equate the quantity supplied and demanded.
- As demand or supply conditions change the price will adjust to bring about a new equilibrium price and quantity.

- So, how does this work?

Price mechanism in the Free Market

In the free market the price mechanism is acting as:

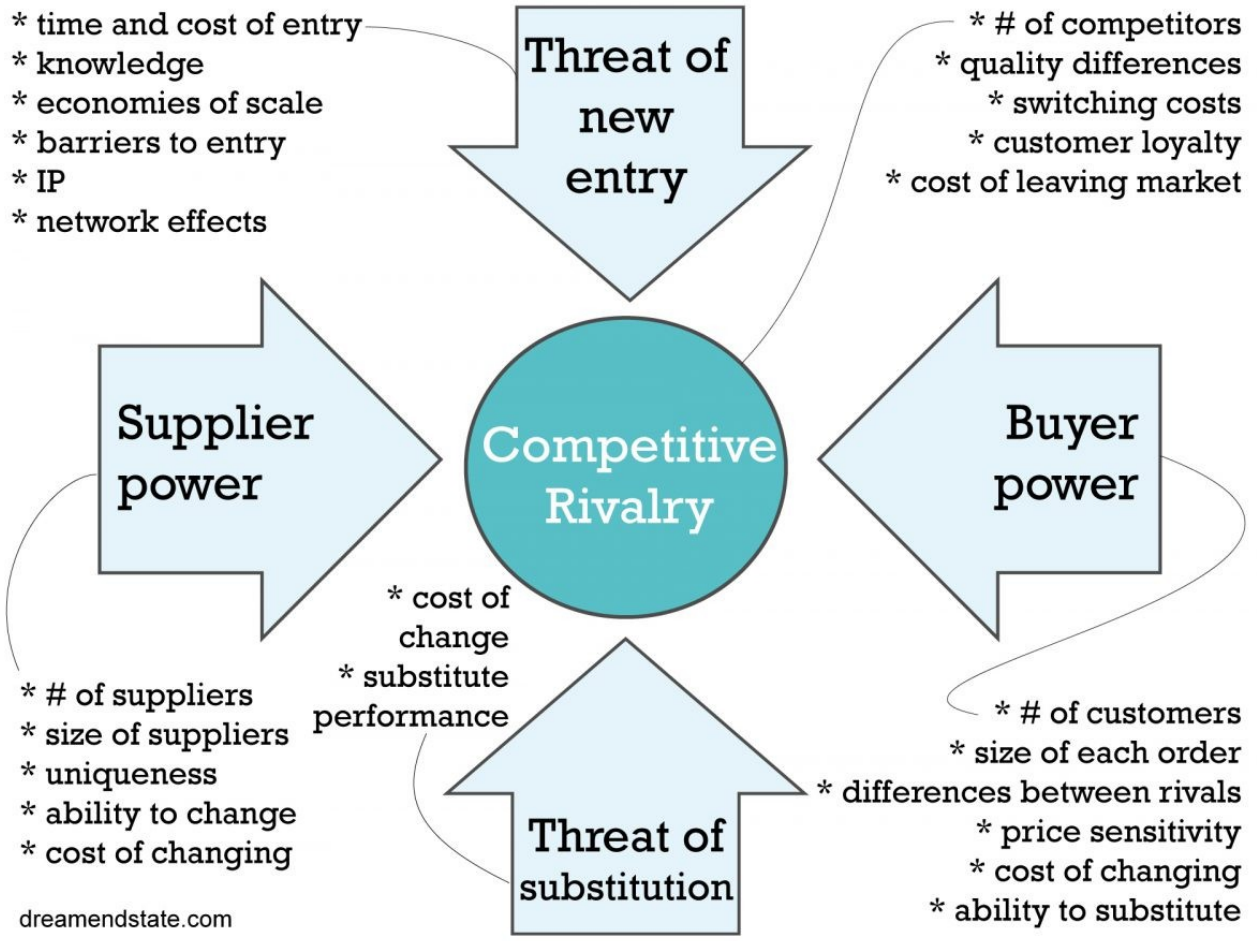
A signal and incentive; as the price rises this acts as a signal to other producers (on the supply side of an industry) that this is an industry they might want to enter to earn high or higher profits (*e.g. residential housing market during a peak period*), and

A rationing device; as the price increases it reduces the quantity demanded until it equals the quantity supplied.

i.e. Due to *Price Mechanism* & *Law of Market Forces*:

- When there is a shortage of goods, the price rises.
- When there is a surplus of goods, the price falls.

Porter's Five Forces



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Shortage

- **Shortage** occurs when the quantity demanded exceeds the quantity supplied:

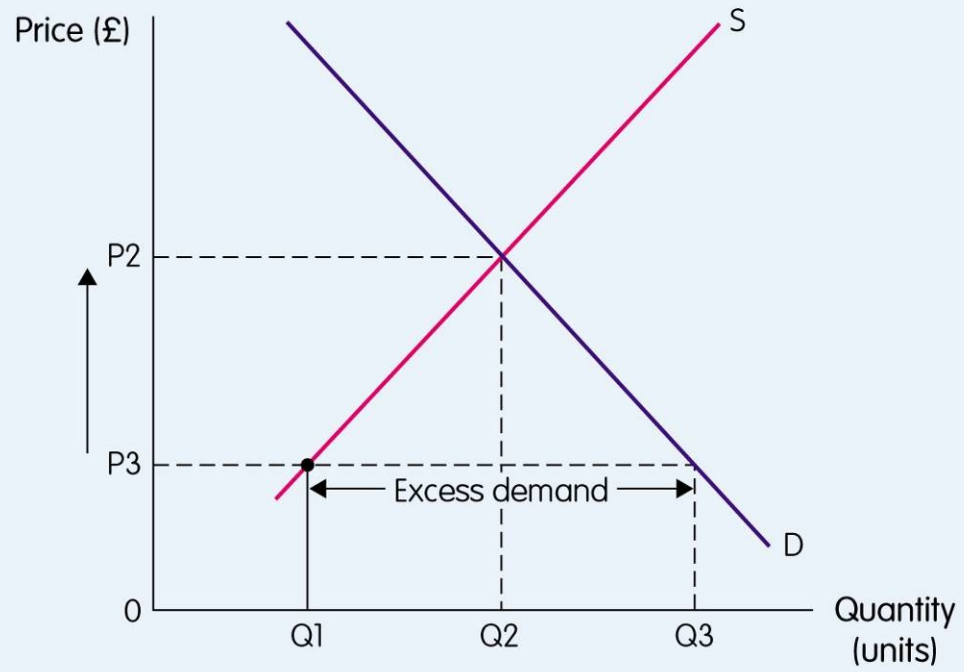

Figure 6.2 At prices below equilibrium there is excess demand.

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Surplus

- **Surplus** occurs when the quantity supplied exceeds the quantity demanded:

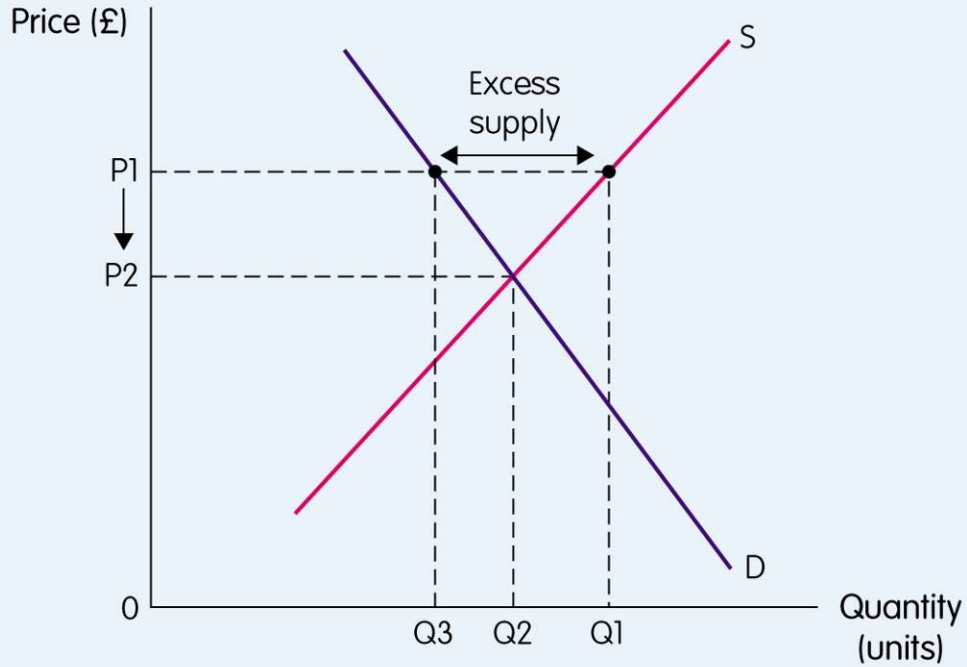

Figure 6.1 At prices above equilibrium there is excess supply.

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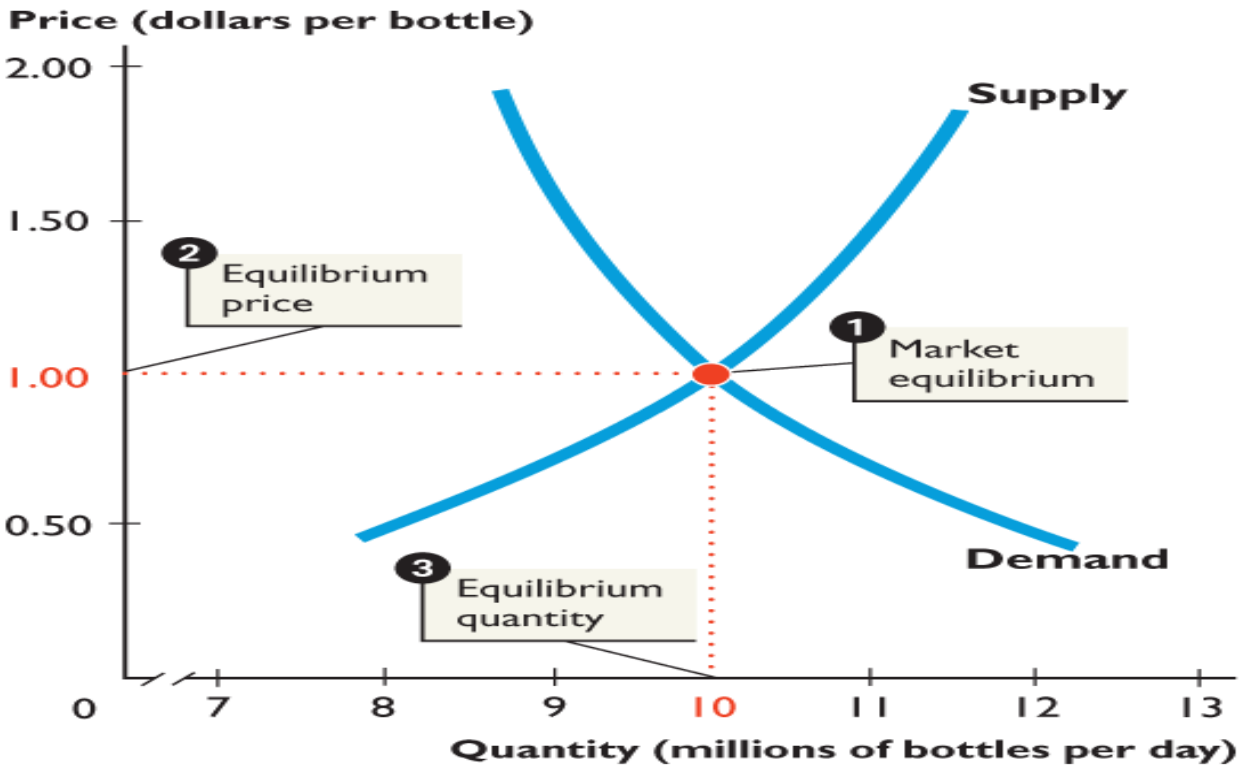
Example of Equilibrium

- Consider the following simple example:
- The demand and supply for bottled water is as follows:



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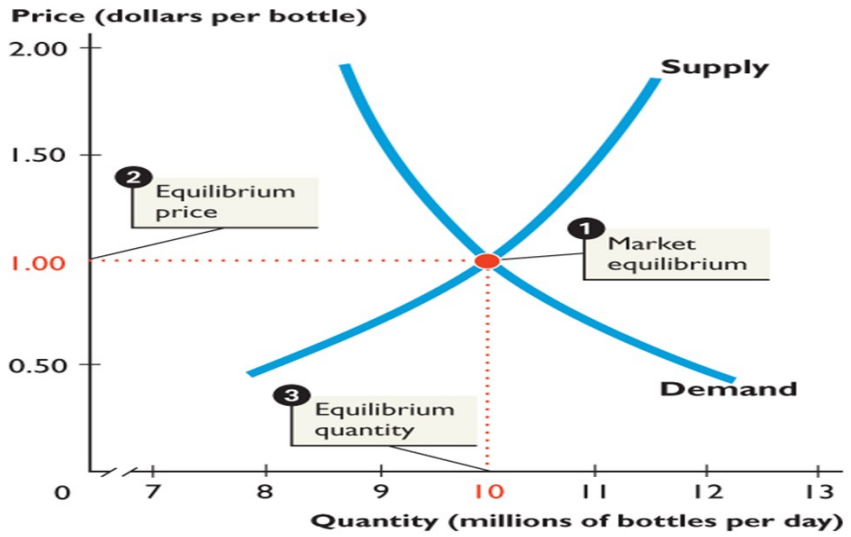
Example of Equilibrium

- Market equilibrium occurs at the intersection of the demand curve and the supply curve (where D=S) at Point 1
- We can identify the equilibrium price & quantity demanded at this point:
  - The equilibrium price is $1 a bottle
  - The equilibrium quantity is 10 million bottles (per day)



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Effect of Increase in Demand

- Imagine now that a new study shows that drinking tap water is unsafe. How do you think this might affect the Equilibrium price & quantity?
- - There will be a change in demand for bottled water (a shift in the demand curve)
- - How do we show this on the Demand & Supply graph?
- Demand will increase at each and every price, thus the curve will shift to the right, resulting in an increase in the price and the quantity supplied.

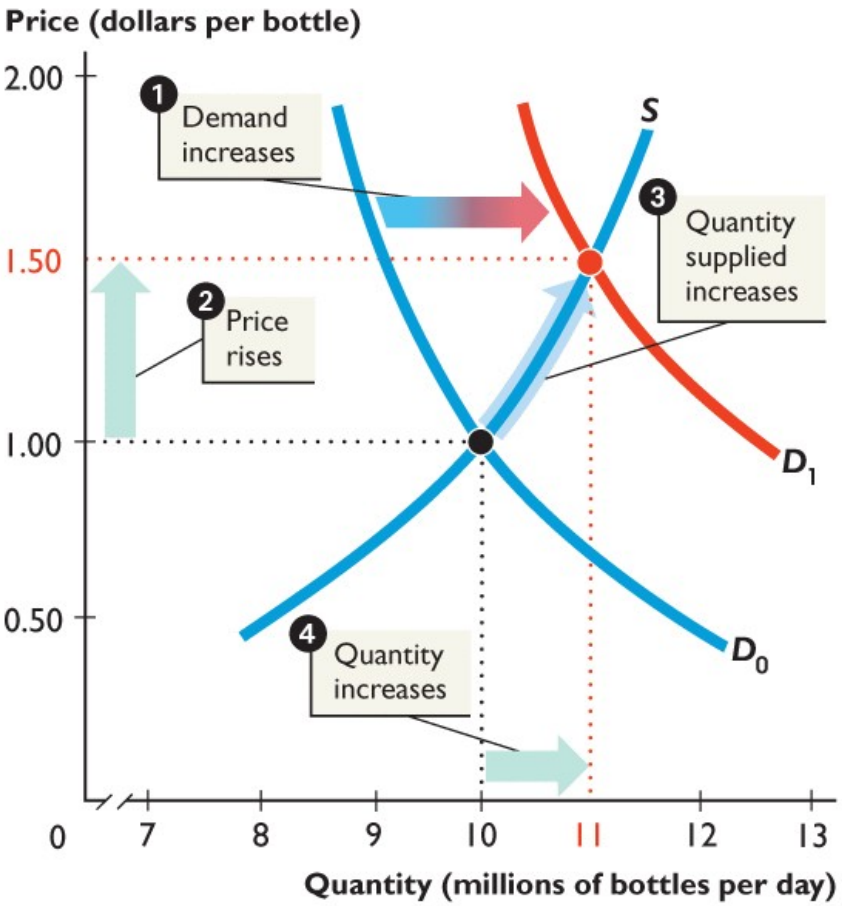
Increase in Demand

1. An increase in demand shifts the demand curve rightward (from D0 to D1).

2. At $1.00 a bottle, there is a shortage, so the price rises to $1.50.

3. The quantity supplied increases along the supply curve.

4. Equilibrium quantity now increases to 11m bottles per day.



(a) An increase in demand

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Fall in Demand

- Now imagine that a new zero calorie sports drink is invented.
- - How will this affect the demand for bottled water?
- - The sports drink is a substitute for water so you would expect a fall in demand; demand curve shifts to the left.

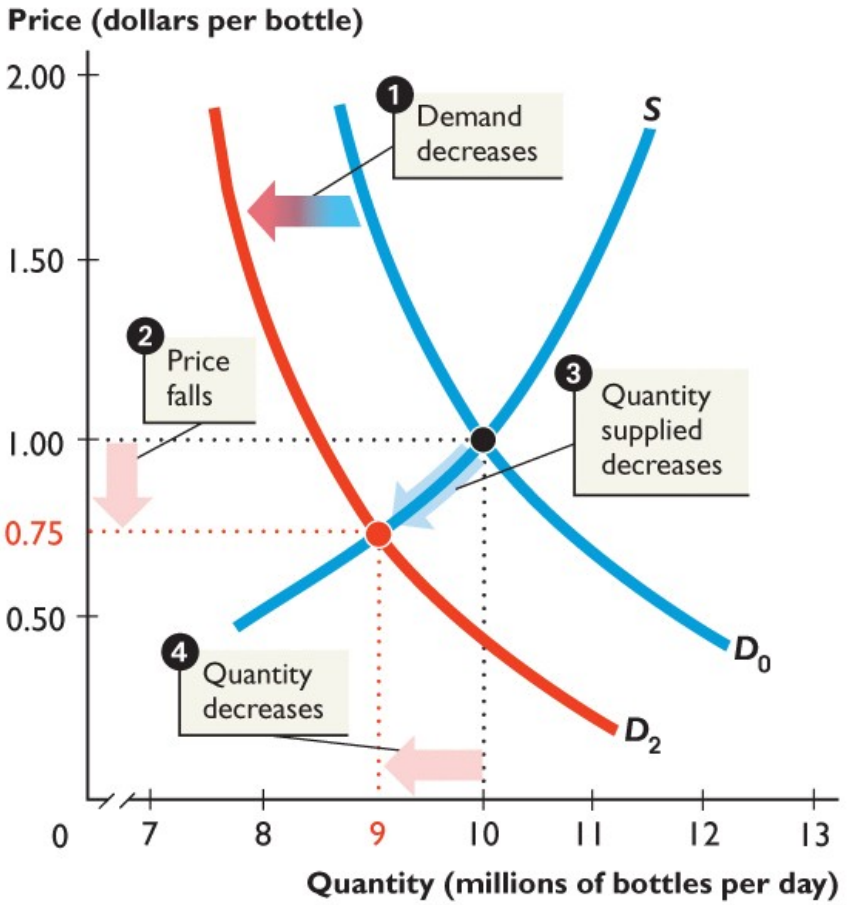
Fall in Demand

1. A decrease in demand shifts the demand curve leftward (D0 to D2).

2. At $1.00 a bottle, there is a surplus, so the price falls to $0.75.

3. Quantity supplied decreases along the supply curve.

4. Equilibrium quantity decreases to 9m bottles per day.



(b) A decrease in demand

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A Change in Supply

- Now consider the effect of a change in supply.
- Imagine that a number of European producers of bottled water buy springs and open plants in the US.
- This will increase the supply of bottled water in the US, thus the curve shifts to the right.

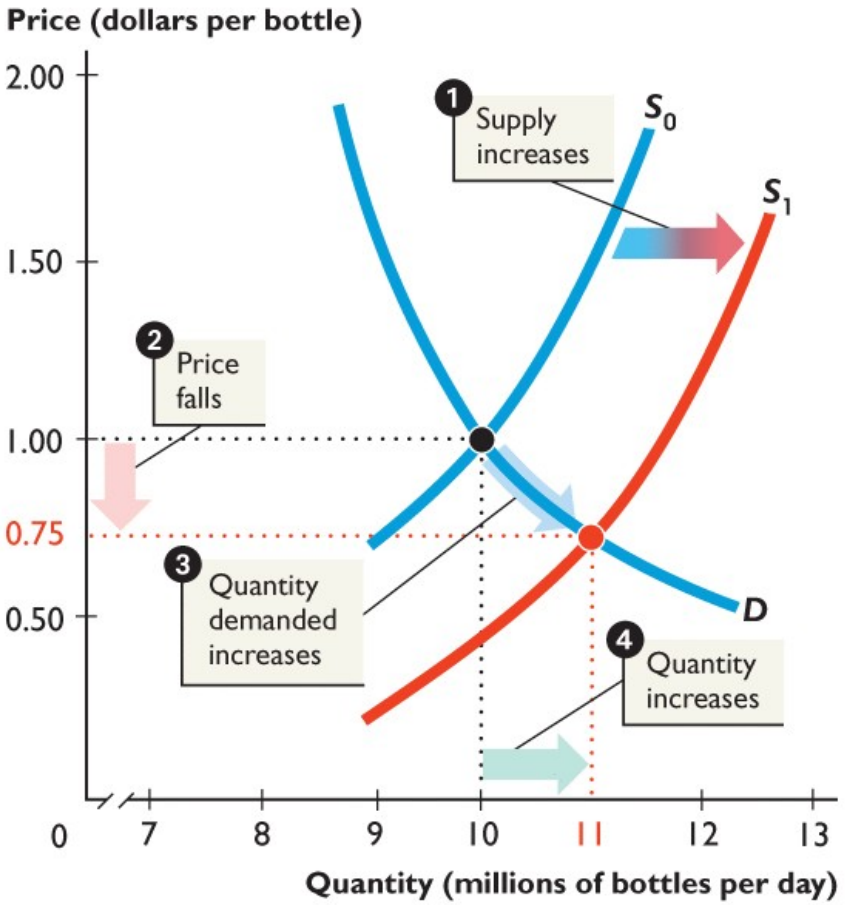
Increase in Supply

1. An increase in supply shifts the supply curve rightward (S0 to S1).

2. At $1 a bottle, there is a surplus, so the price falls to $0.75.

3. Quantity demanded increases along the demand curve.

4. Equilibrium quantity increases to 11m.



(a) An increase in supply

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Growing Supply in the 'Real World'

- 'Expectations of future oil supply key to explaining drop in price' (June 2015)
- Between June 2014 and January 2019, the price of crude oil fell by nearly 60%, one of the three largest falls since the 1970s. Even after the recovery in recent months, oil prices remain around 50% lower.

There are three potential explanations for the fall in prices:

- Rapid increase in the actual supply of oil due to the resumption of Libyan production and the ongoing US shale-oil production boom,
- Higher future supply of oil due to the decision by OPEC in November not to cut production despite plummeting prices. Many market participants saw this as a signal that the OPEC was willing to tolerate lower prices, perhaps in an effort to undercut high-cost oil production like shale-oil.
- Slowing prospects for global growth, suggesting a weaker outlook for oil demand.

http://bankunderground.co.uk/2015/06/26/oil-is-not-as-it-seems-expectations-of-future-oil-supply-key-to-explaining-drop-in-price/

Decrease in Supply

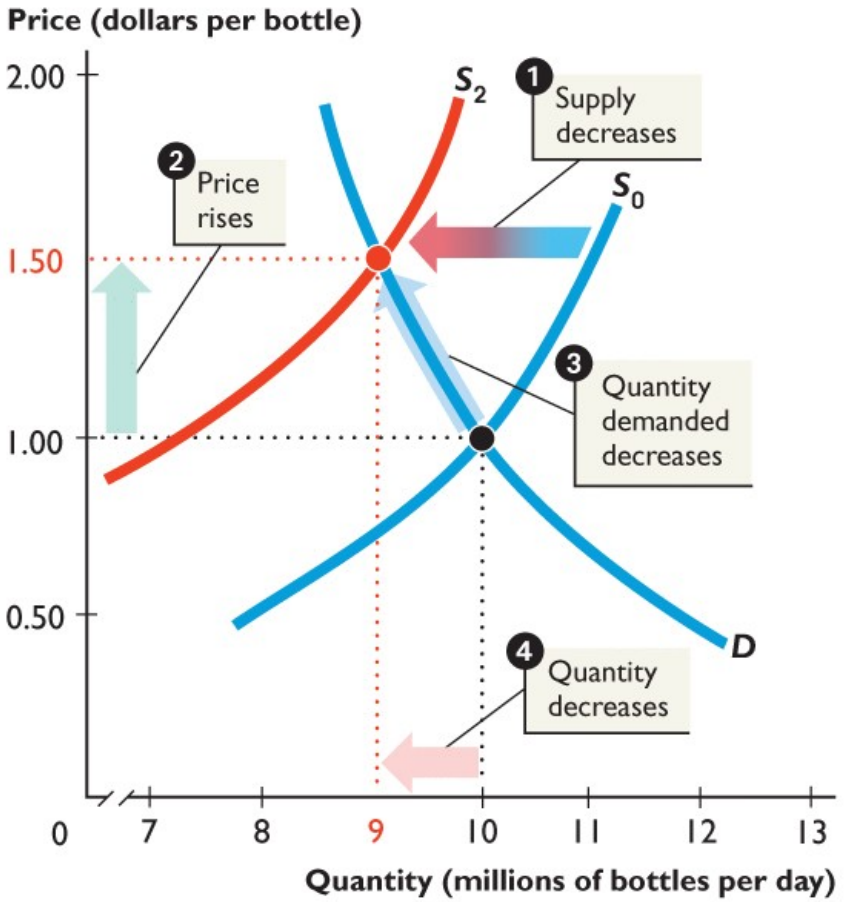
Finally, consider the case where there is a drought and supply curve shifts to the left:

1. A decrease in supply shifts the supply curve leftward (S0 to S2).

2. At $1.00 a bottle, there is a shortage, so the price rises to $1.50.

3. Quantity demanded decreases along the demand curve.

4. Equilibrium quantity decreases to 9m



(b) A decrease in supply

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Summary

Assuming a downward sloping demand curve and upward sloping supply curve:

- An **outward shift in demand** increases the equilibrium price and quantity
- An **inward shift in demand** decreases the equilibrium price and quantity
- An **outward shift in supply** decreases the equilibrium price and increases the equilibrium quantity
- An **inward shift in supply** increases the equilibrium price and decreases the equilibrium quantity

Effect of indirect taxes & subsidies

- *Indirect Taxes,* e.g. VAT, increase the prices paid by buyers and lower the prices received by sellers (Gillespie pp. 137-8).
- So, taxes decrease the quantity produced and lead to underproduction.
- *Subsidies,* on the other hand, lower the prices paid by buyers and increase the prices received by sellers (Gillespie pp. 139-40).
- So, subsidies increase the quantity produced and lead to overproduction.

Effect of indirect tax

- An **indirect tax** must be paid by the supplier
- The imposition of an indirect tax increases the equilibrium price and reduces the quantity
- If demand is more price inelastic than supply the incidence of an indirect tax falls mainly on consumers
- If supply is more price inelastic than demand the incidence of an indirect tax falls mainly on producers
- Two examples of indirect tax? Per Unit & % of Unit.

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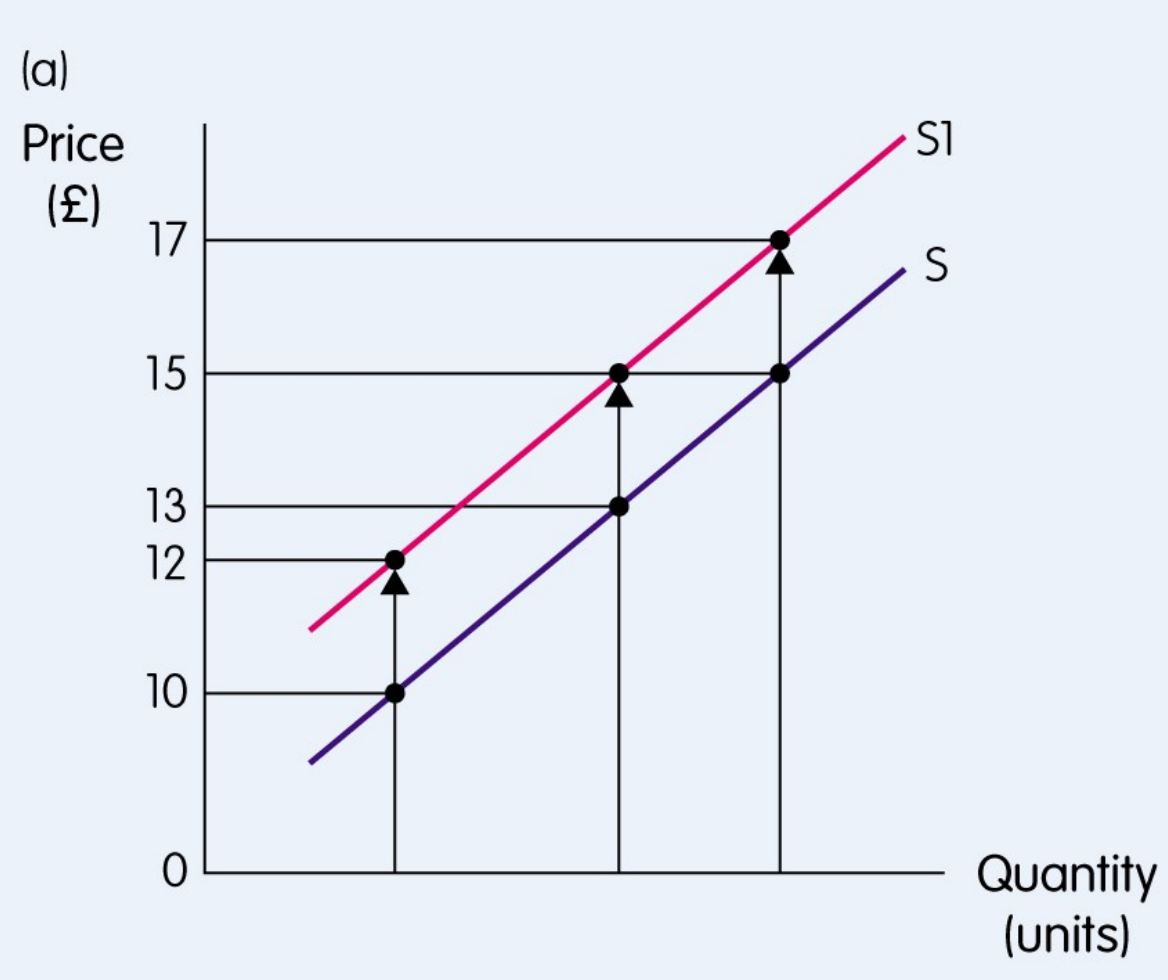
The effect of a per unit indirect tax being imposed



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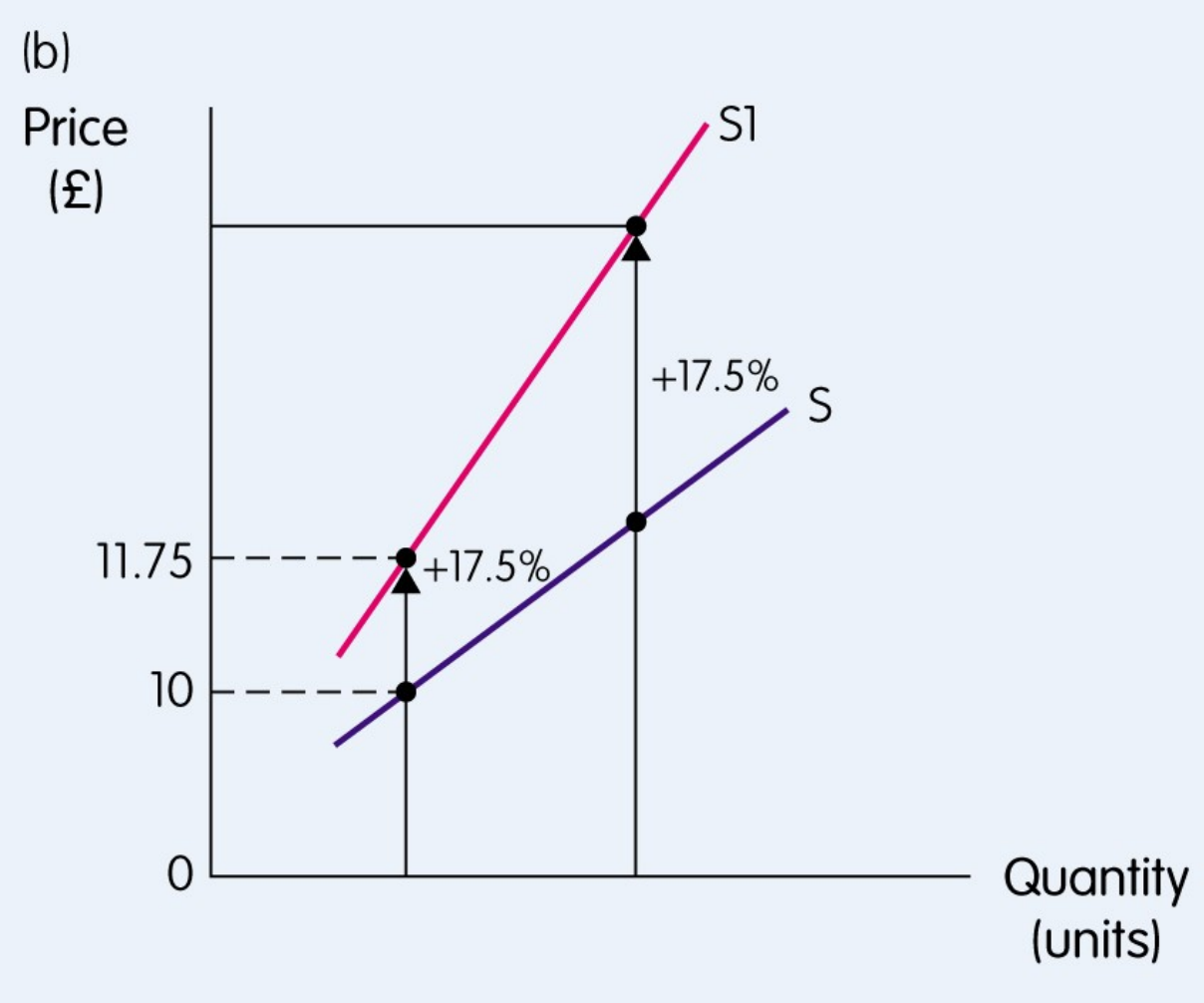
The effect of a percentage indirect tax being imposed



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The incidence of indirect tax on producers and consumers

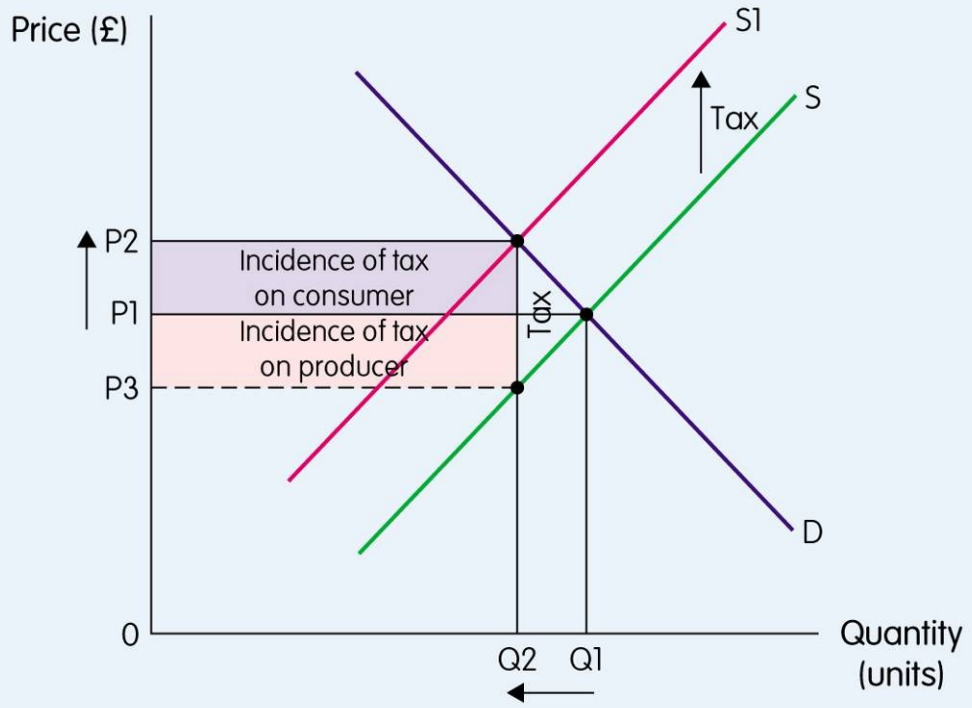

Figure 6.6 The incidence of an indirect tax on consumers and producers.

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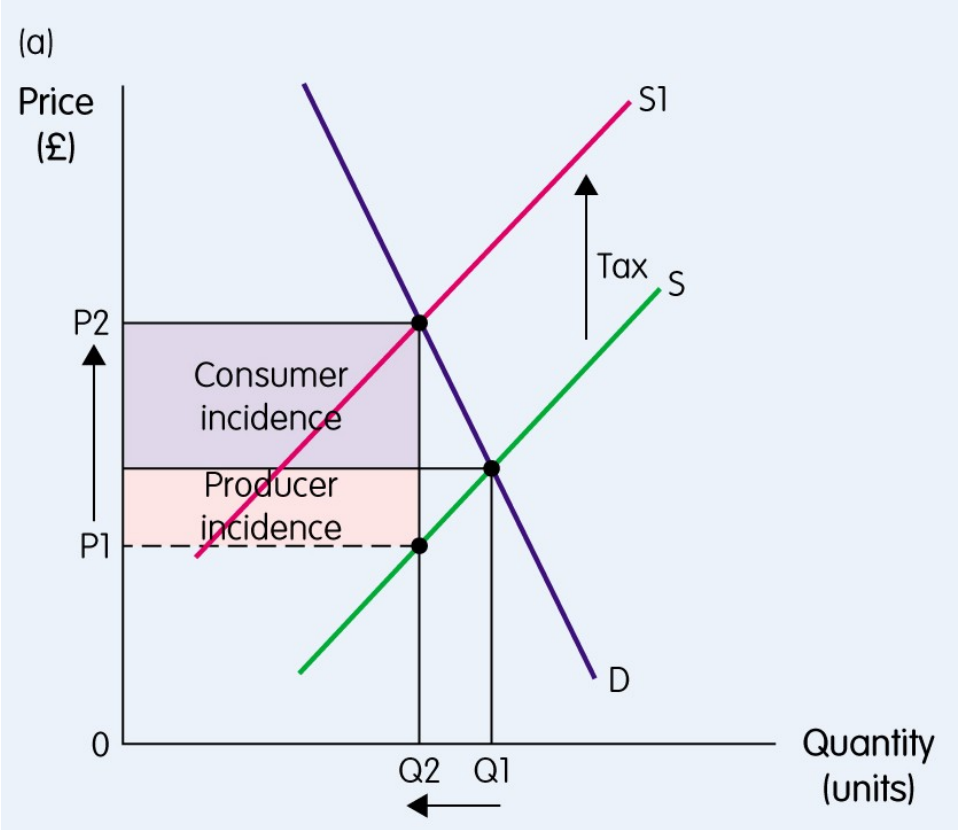
The incidence of an indirect tax

- The incidence of an indirect tax on consumers is greater when demand is more price inelastic than supply



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The effect of a subsidy

- The subsidy is equal to P1-P3. The price for consumers in this case falls from P1-P2. P2-P3 is the amount of the subsidy per unit retained by the firm.

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2. The Free Market System

Advantages of the free market system

- In a free market, decisions about what to produce are determined by supply and demand (Gillespie p. 149).

- In theory, i.e. based on "strong assumptions", the free market **maximises social welfare** (social marginal benefit = social marginal cost) i.e. maximises community surplus (Gillespie pp. 150-3)

Advantages of the free market system

- **Consumer surplus** measures the difference between what a consumer is willing to pay for a product and what he or she actually pays

- **Producer surplus** measures the difference between the price producers are willing to sell at and the price they actually receive

- **Community surplus** = consumer surplus + producer surplus

Consumer surplus

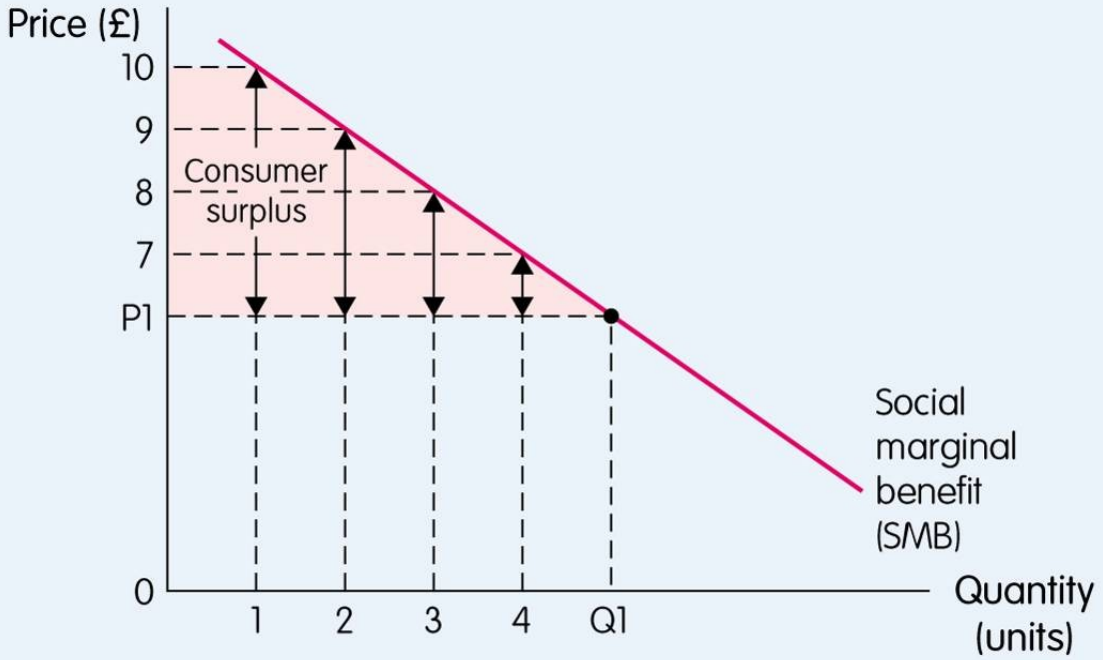

Figure 7.2 Consumer surplus.

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Producer surplus

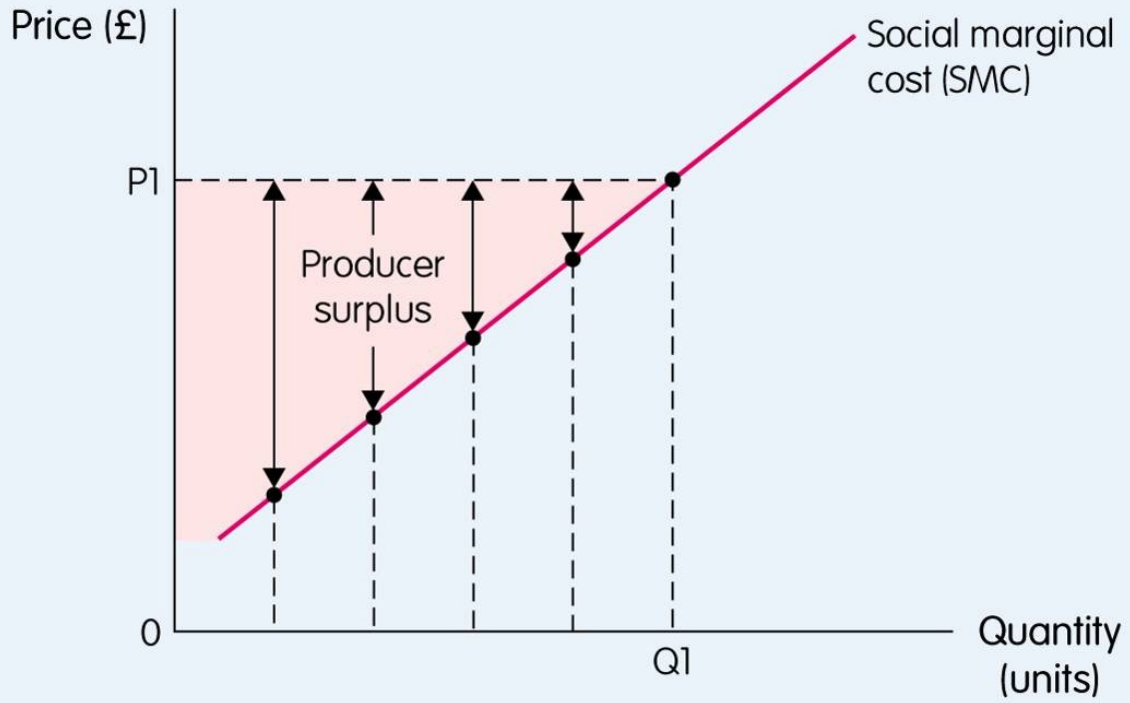
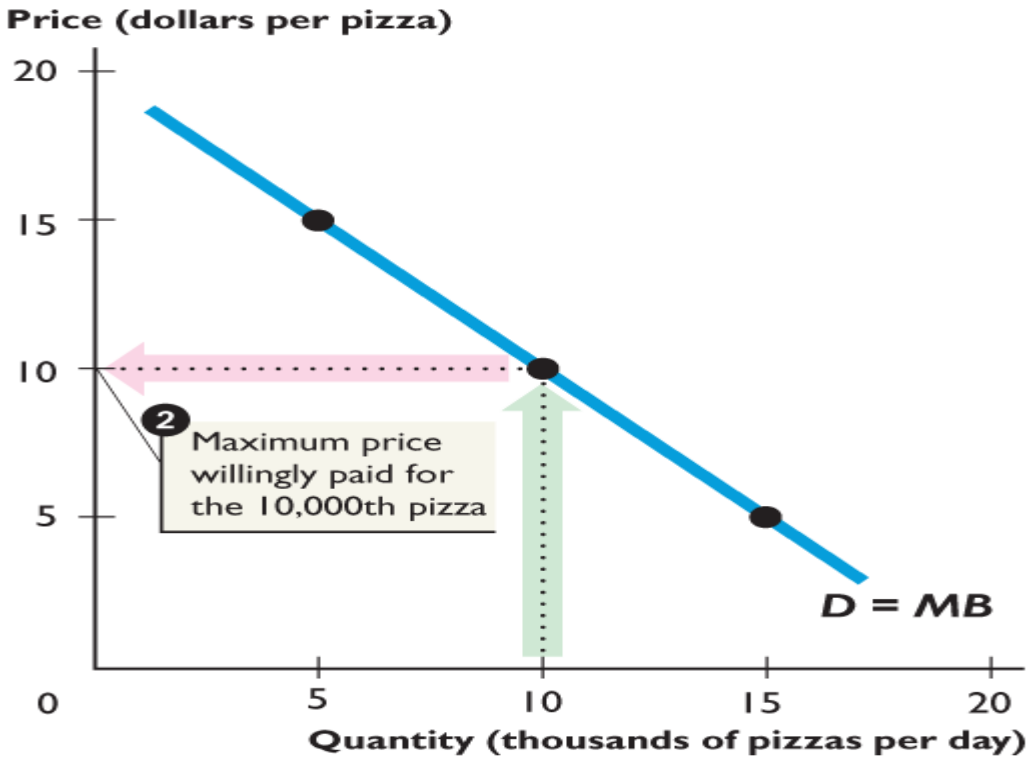


Figure 7.3 Producer surplus.

Examples

- These concepts are best explained with reference to an example. Consider the following demand curve for pizza:



(b) Quantity determines willingness to pay

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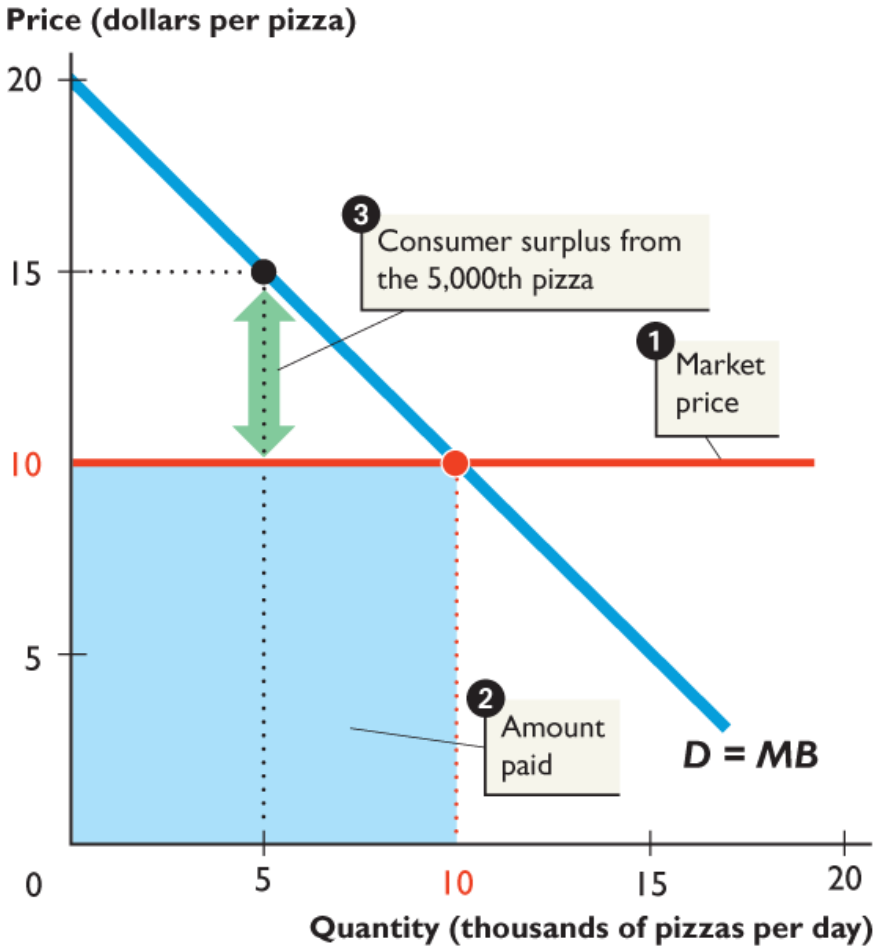
Consumer Surplus

1. The market price of a pizza is $10.

2. At this price people buy 10,000 pizzas

3. But people are willing to pay $15 for the 5,000th pizza, so consumer surplus from that pizza is $5.

4. People are also willing to pay $17.5 for the 2,500th pizza, etc. etc.. We need to add the whole area to which this applies…



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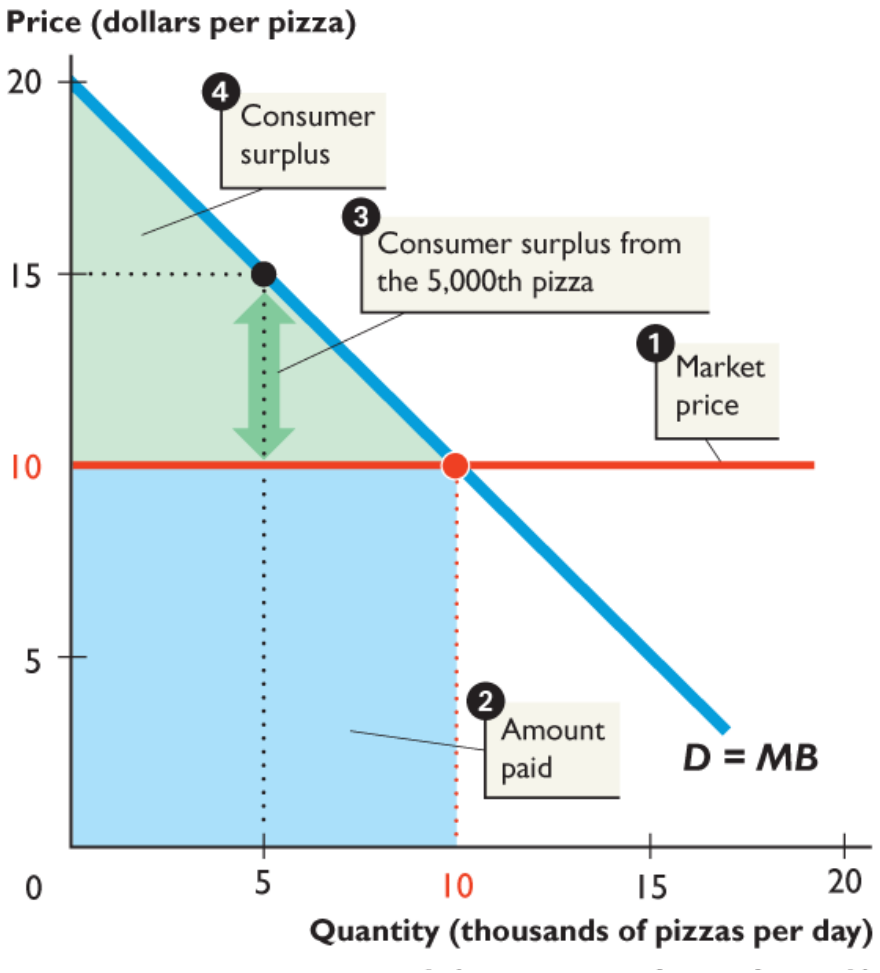
Total Consumer Surplus

Total consumer surplus from the 10,000 pizzas that people buy is the area of the green triangle.

(This relates to all the pizzas that people would have been willing and able to buy at prices above $10 per pizza, yet did not have to. Hence the term consumer surplus)



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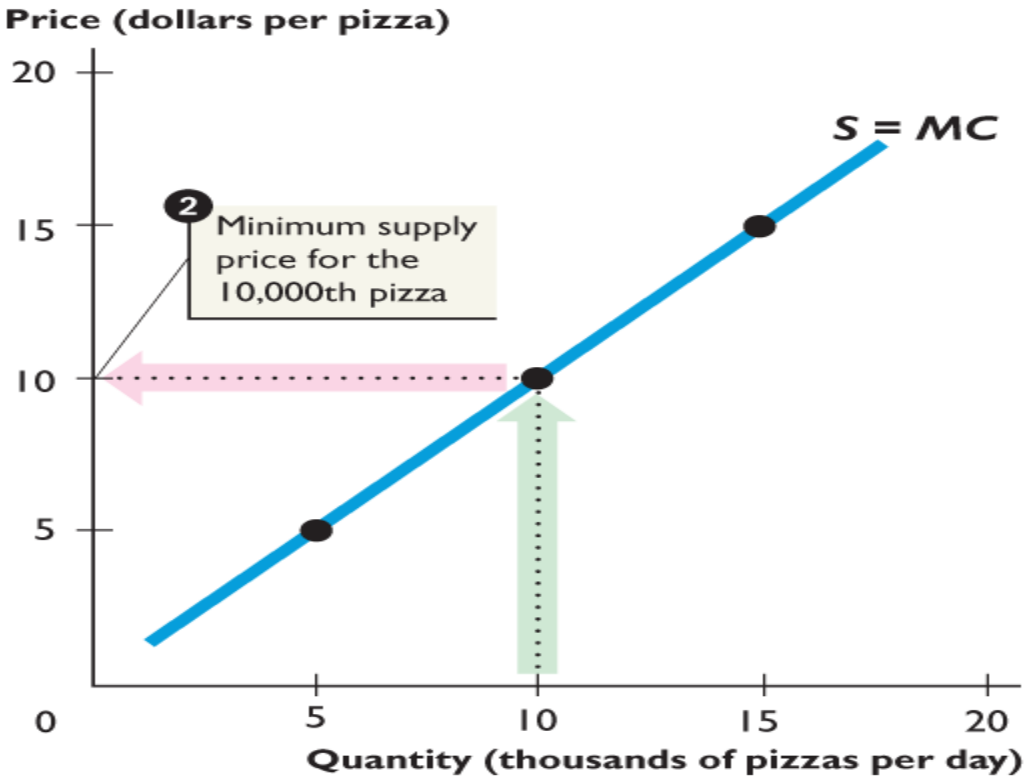
Producer Surplus

- To demonstrate ***producer surplus*** now consider the following supply curve for pizza:



(b) Quantity determines minimum supply price

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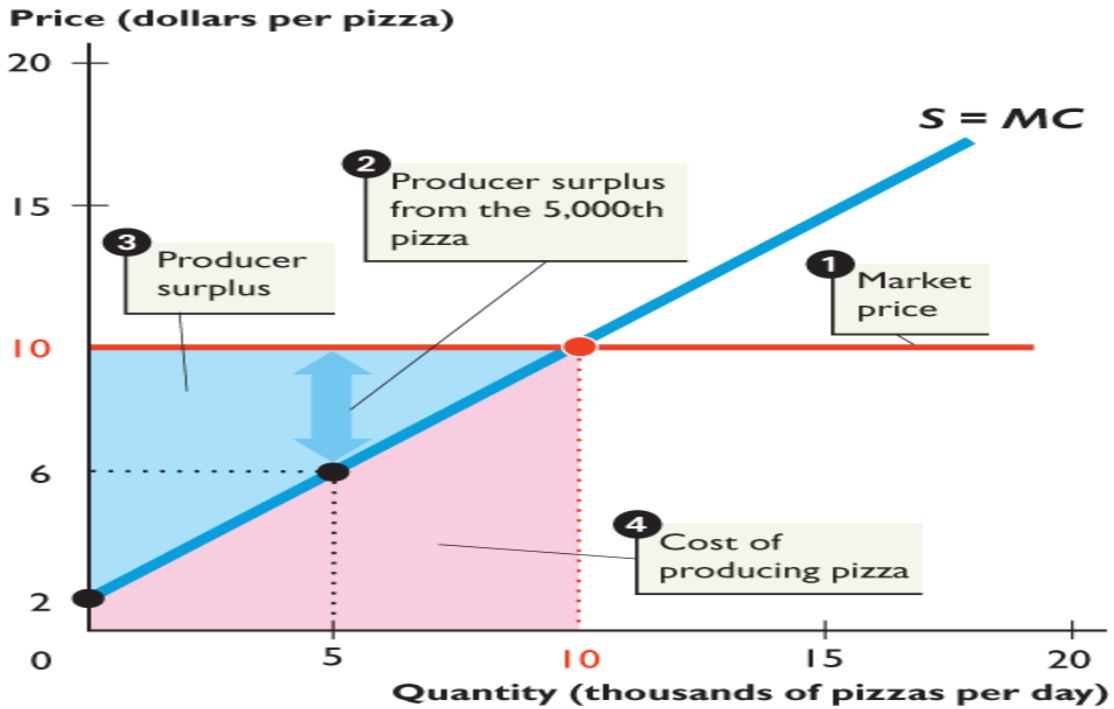
Producer Surplus

- The producer surplus is shown by the blue shaded area; this is the difference between the price producers are willing to sell at (a shown by supply curve) and the price they actually receive (market price)



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Maximising Social Welfare

- It is sometimes said that social welfare is maximised in a free market (though this is based on strong assumptions):
- At equilibrium, the quantity supplied = the quantity demanded
- This means that the extra benefit to society of the last unit produced and sold = the extra cost to society of that unit:

Social marginal benefit = Social marginal cost

- Therefore, the welfare of society will not change if an extra unit is produced – this means welfare must be maximised.

The free market may maximise social welfare

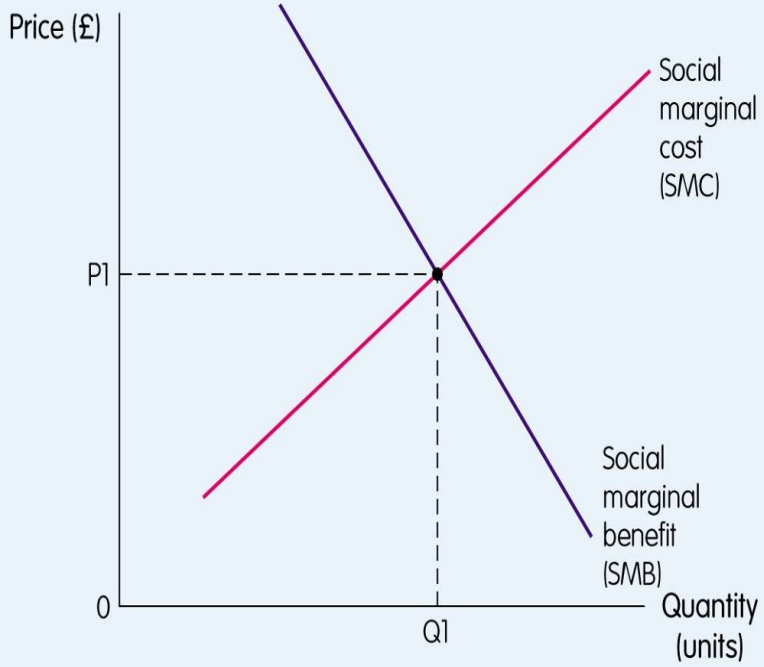

Figure 7.1 The socially optimal output is where the social marginal cost equals the social marginal benefit.

On all units up to the point Q1 the extra social benefit is greater than the extra social cost of providing it:
SMB > SMC
Therefore society as a whole will gain from these units being produced and consumed.
On all units beyond Q1, SMB < SMC therefore society would lose out if these units were produced.
Hence equilibrium occurs at SMC = SMB and the welfare to society is maximised.

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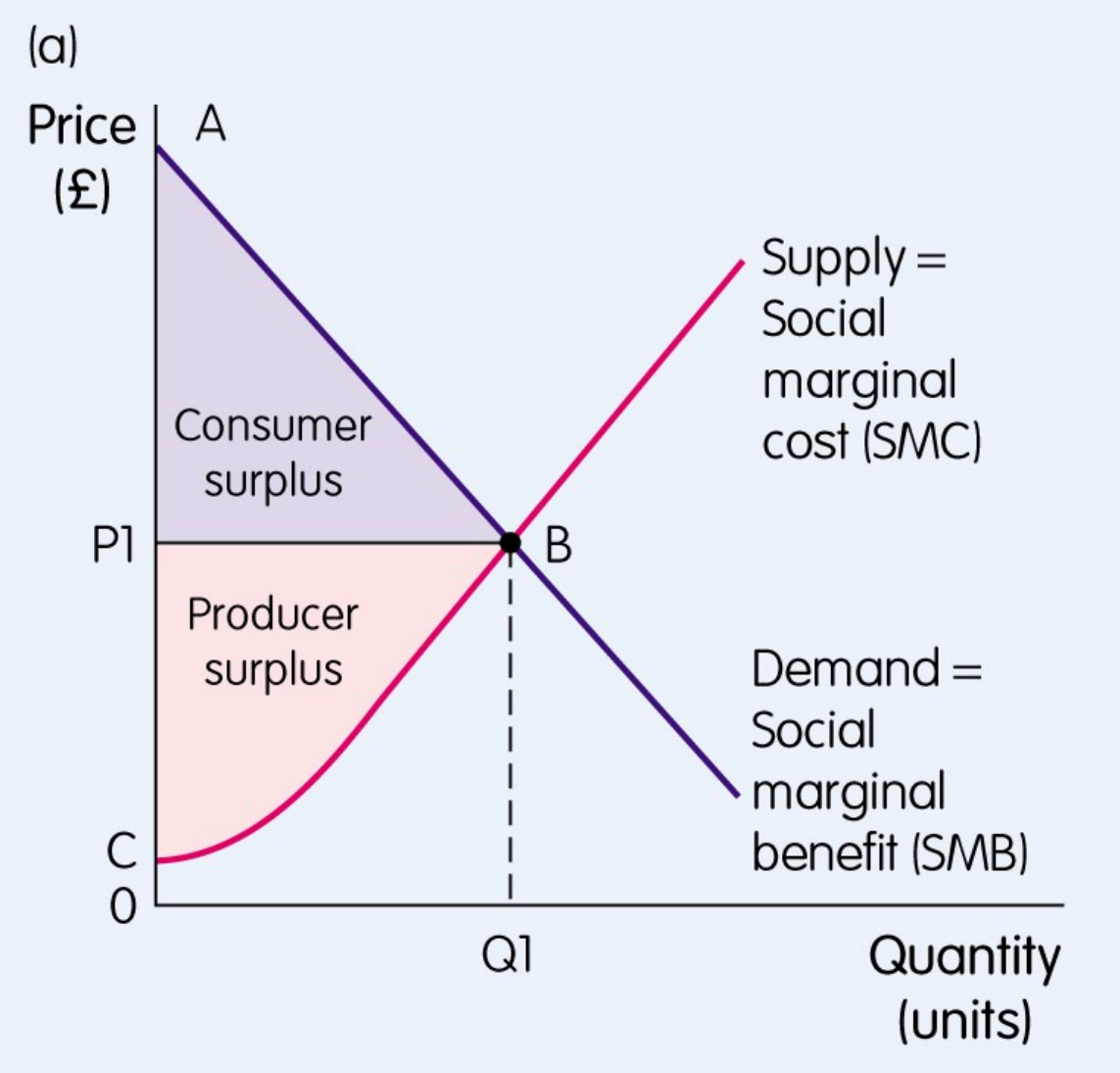
The free market may maximise social welfare



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Disadvantages of the market system

(Gillespie pp. 154-70)

- **Monopoly power:** a firm dominates a market
- **Externalities:** divergence between private and social costs and benefits
- **Merit goods:** society believes is more beneficial than individuals do.
- **Public goods:** non-diminishable and non-excludable - once produced available to everyone
- **Income inequality**

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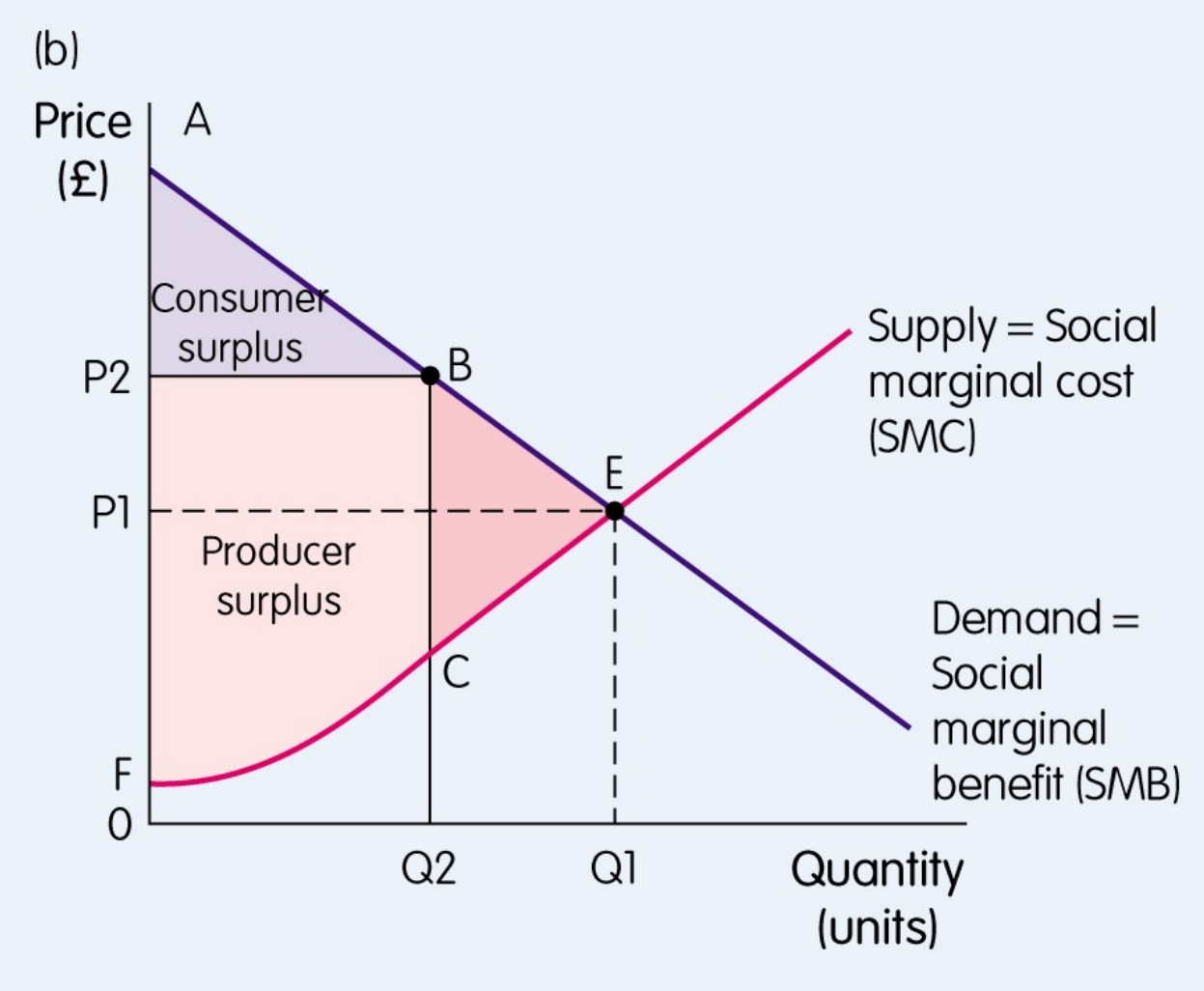
Monopoly power

- So far we have assumed that market forces are allowed to operate, and that these will enable equilibrium at Q1 and P1 (Point E).
- However, in some markets, some firms might become dominant and exert 'monopoly power'.
- A monopolist is a price setter.
- It might decide to restrict output and push up the price (shown on next slide – movement from Point E (Q1/P1) to Point B (Q2/P2).
- This has the effect of eroding consumer surplus, with an associated increase in producer surplus.
- Thus although the community surplus (the aggregate of consumer and producer surplus) is unchanged it is now weighted in favour of the producer.

Monopoly power



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Externalities

- In a free market, individuals pursue their own self-interests.
- This means that their choices might not be those that are optimal for society as a whole.

e.g. If you are considering whether or not to have the flu vaccine, you will consider your own self interests and not the potential benefits to others if you were vaccinated.

However, in preventing the spread of infection, the social benefits of the vaccine exceed the private benefits.

- This is known as a ***positive consumption externality;*** the product is under-consumed relative to what is socially optimal:

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Positive externality

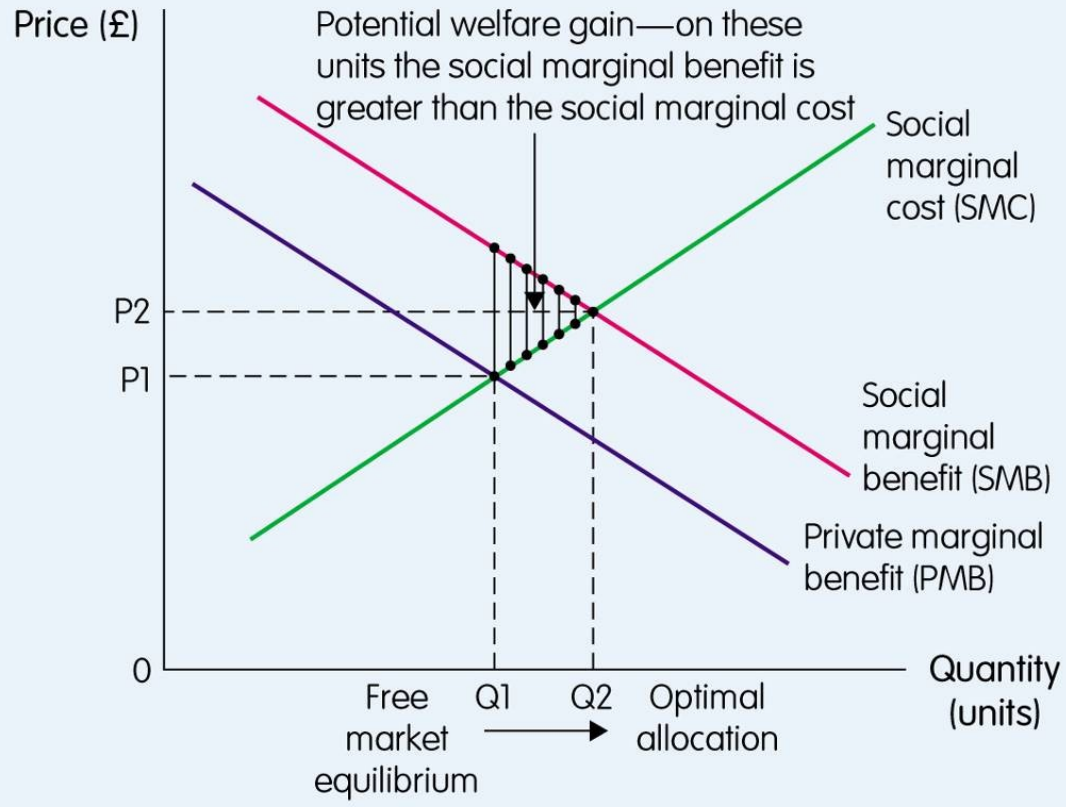

Figure 7.7 A positive externality.

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Negative Externality

- It can also be the case that the social benefits of consumption are less than the private benefits.

  For example, if a factory produces carbon emissions that are harmful to the environment. This might be the cheapest/ easiest and hence favourable means of emission for the factory but the impact on society (the cost) as a whole exceeds the benefits to the factory.

- Thus there is said to be a ***negative externality of consumption,*** meaning too much of the product is produced/consumed relative to what is optimal for society:

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Negative externality

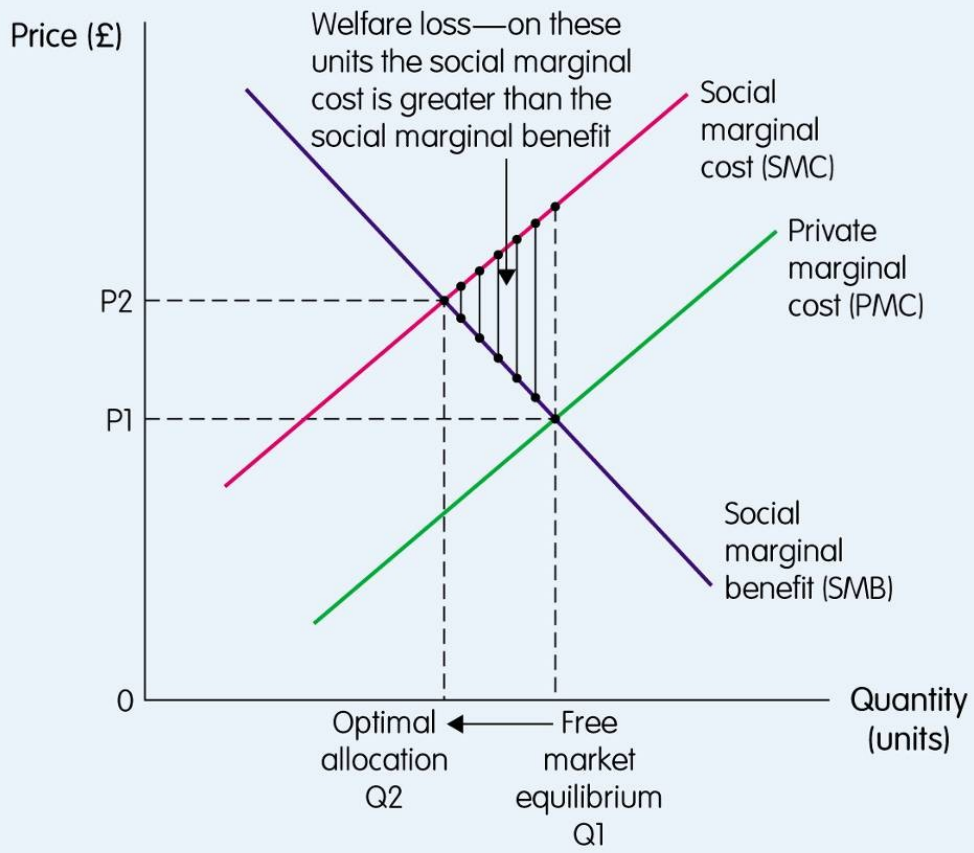

Figure 7.8 A negative externality.

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Merit Goods

- A ***merit good*** is one which society believes is more beneficial than private individuals do.
- We discussed this in Week 1 lecture when I explained that, left to their own devices, individuals would have a tendency to under-consume in areas such as education/health.
- This is similar to a positive externality, but merit goods occur specifically because the government has superior knowledge of the effects of these products.
- Examples include the government sponsoring education, health, museums, art galleries, etc. because they are deemed good for society.

- ***Demerit goods*** are products that we consume without appreciating the harm they create, for example, cigarettes, some drugs.

Public Goods

- A ***public-good*** is defined as one that is non-diminishable and non-excludable. This means that, once it is provided, regardless of how many people consume it, it will be available to everyone. Examples include traffic lights/police patrols/open wifi networks, public conveniences, parks, etc.

- The problem with public goods is that no one would be willing to pay for them since they would be provided anyway. This is known as the ***free-rider*** problem; people will wait for someone else to pay for the product, knowing that they will be able to 'free-ride' and benefit without paying.

Income Inequality

- Final disadvantage of free market system is that it may lead to income inequality.
- Some people will earn high incomes if they have products/skills which are in demand and others will earn very little e.g. QS versus others!! Others vs QSs!!
- This may well be economically efficient but is it fair?
- Society might wish the Government to do something about income distribution.
- This is why we see Governments providing specific welfare/benefits, to redress income inequalities that are arguably unjust.

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