

ECO101: Introduction to Microeconomics

Lectures 8-9

Economic welfare

- How do we measure welfare implications of actions taken by consumers and producers?
- Do economic agents in the pursuit of self-interest also serve social interest?
- Fundamental tools of Normative Economics

Marginal Benefit & Willingness to Pay

- Marginal benefit is the benefit that a person receives from consuming one more unit of a good/service.
- Marginal benefit is measured as the maximum amount that a person is willing to pay for one more unit of a good/service.
- As quantity increases, the marginal benefit from consuming one additional unit of a good decreases – principle of decreasing marginal benefit.

Marginal Benefit & Willingness to Pay

Consider the following example:

If you are a Chillox lover and are extremely hungry after attending three hours of lectures, your marginal benefit from consuming a burger is high – you may be willing to pay as high as TK 500 to get one burger. Luckily, at Chillox you can get a burger for only TK 250. After devouring the first burger, you still feel you have some room left for another one but you are not willing to spend as high as TK 500 this time because you are not as hungry anymore. You are willing to pay TK 300 only this time and you easily get another burger at a price which is still below your willingness to pay. After finishing your second burger, you are enticed to get a third burger to spend more time at the restaurant with your friends but your willingness to pay for a third burger has gone down to Tk 100 by now which is above the price for the burger.

Marginal Benefit & Demand

- How much you *value* a burger depends on your marginal benefit from consuming one additional unit of a burger – it is not the same as the *price* you pay for a burger
- Price is set by the market – we do not have any control over price individually
- Value or marginal benefit depend on the willingness to pay for an additional unit of a good or a service which in turn determines the demand for a good/service.
- An individual's marginal benefit curve is an individual's demand curve.
- The market demand curve is the horizontal sum of the individual demand curves and is formed by adding the quantities demanded by all the individuals at a particular price.

Consumer Surplus

- We do not always have to pay what we are actually willing to pay
- When people buy something for less than it is worth to them, they receive a consumer surplus.

Consumer Surplus: The benefit that a consumer gets from consuming a good above and beyond the actual price of the good – a measure of normative economics.

Consumer Surplus

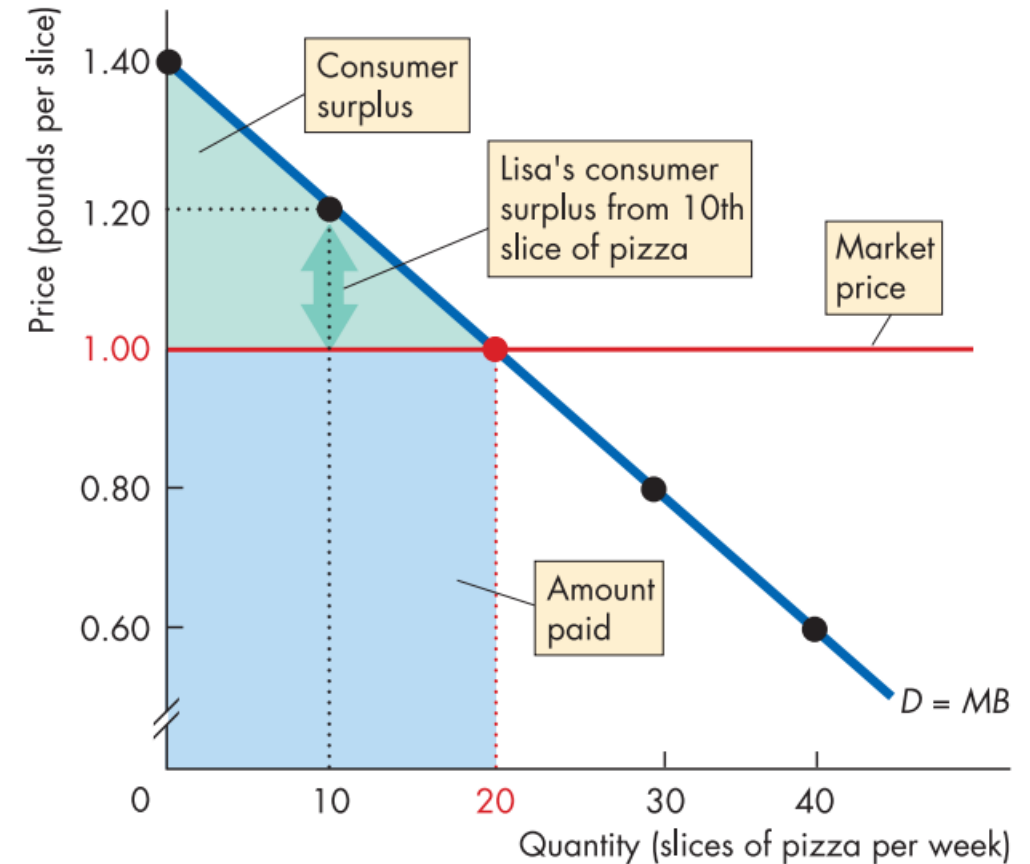
How do we calculate consumer surplus?

- By calculating the area below the demand curve and above the price level i.e. the area of the triangle between price, demand curve and the y-axis.
- Since the demand curve gives us the willingness to pay and the price line gives us what we actually have to pay for the good, the gap between them is essentially our consumer surplus.

Lisa's consumer surplus = area of green triangle

$$\begin{aligned} &= \frac{1}{2} \times 0.40 \times 20 \\ &= \text{£ } 4 \end{aligned}$$

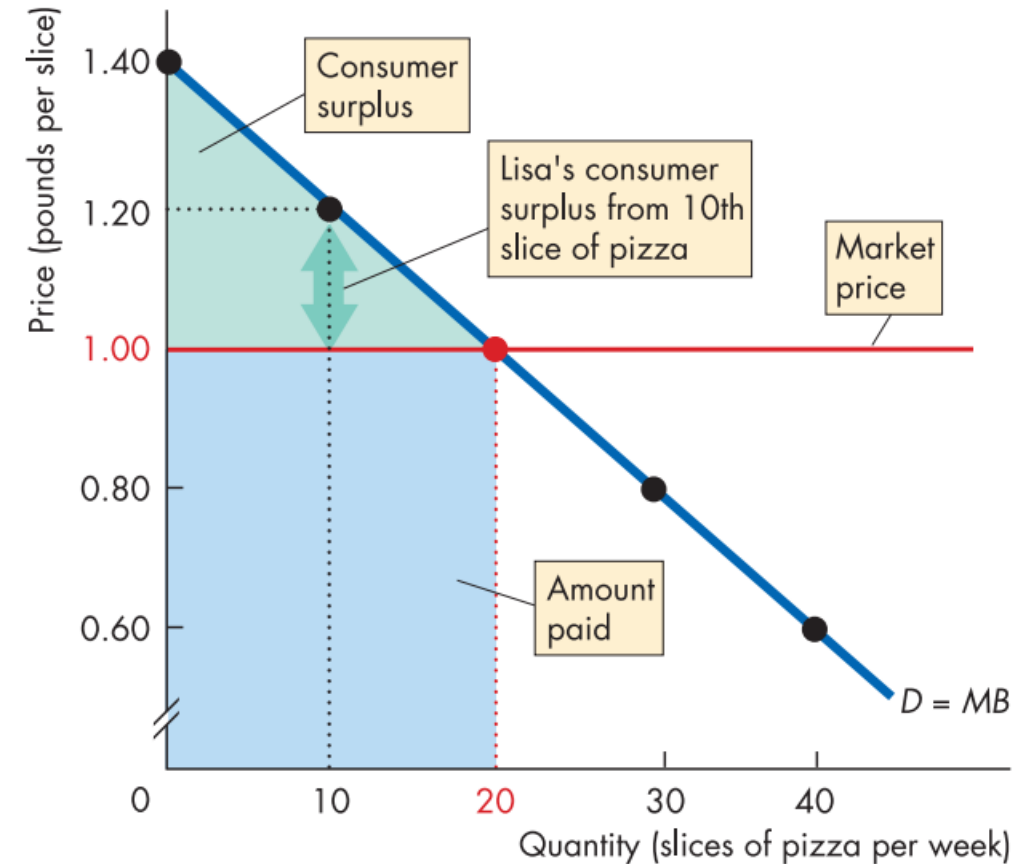
A Consumer's Demand and Consumer Surplus



Consumer Surplus

- If the demand curve is perfectly inelastic, what would be the consumer surplus?
- If the demand curve is perfectly elastic, what would be the consumer surplus?
- What happens to consumer surplus if price changes from 1.00 to 1.10?
- Think intuitively!

A Consumer's Demand and Consumer Surplus



Marginal Cost

- Marginal cost is the cost of producing one more unit of a good/service (includes production costs, opportunity costs and so on).
- Cost is what the producer gives up – price is what the producer receives.
- Marginal cost is the **minimum price** that a producer must receive to produce or sell another unit of a good/service.
- If price is lower than the marginal cost of production, producers will not produce the good.

Marginal Cost & Supply

- Marginal cost is also the supply curve.
- The market supply curve is the horizontal sum of the individual supply curves and is formed by adding the quantities supplied at each price level.

Producer Surplus

- If price received by producers is greater than the costs they incur, they earn a producer surplus.

Producer Surplus: The benefit that a producer gets from producing a good at a cost below the actual price of the good.

Producer Surplus

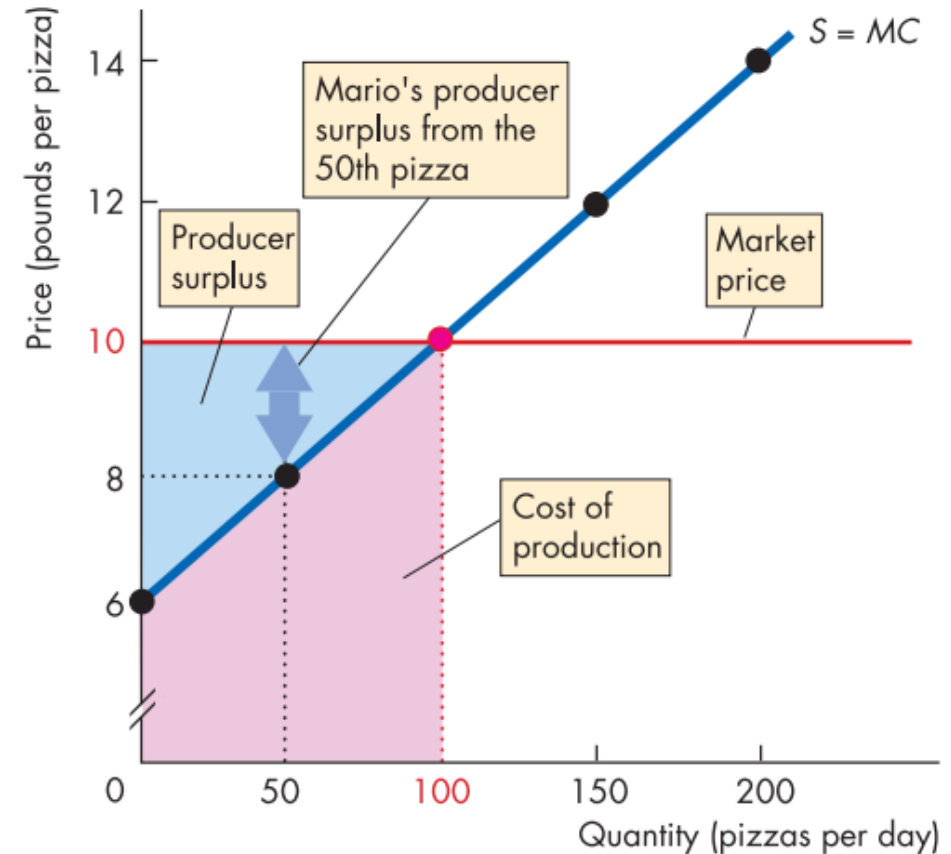
How do we calculate producer surplus?

- By calculating the area above the supply curve and below the price level i.e. the area of the triangle between price, supply curve and the y-axis.
- Since the supply curve gives us the marginal cost incurred by the firm and the price line gives us what producers actually get for the good, the gap between them is essentially the producer surplus.

Mario's producer surplus = area of blue triangle

$$\begin{aligned} &= \frac{1}{2} \times 100 \times 4 \\ &= £ 200 \end{aligned}$$

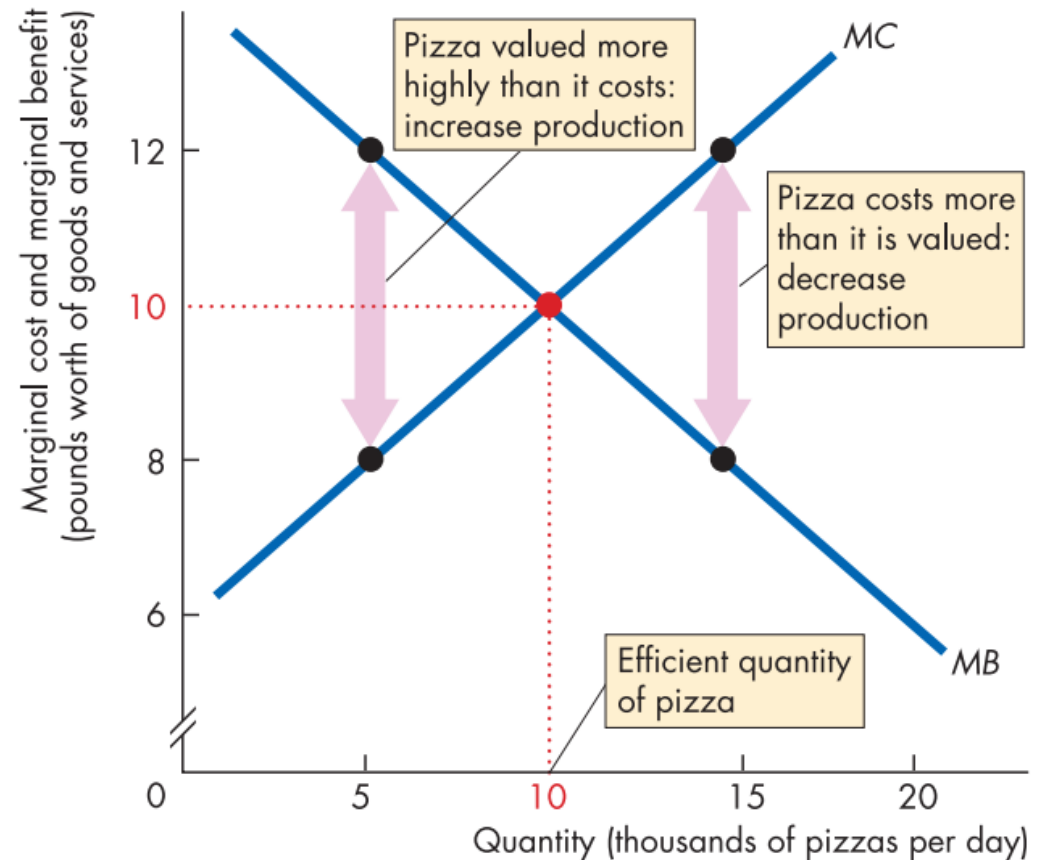
A Producer's Supply and Producer Surplus



Market Efficiency

- Is the free-market equilibrium an efficient outcome?
- Is there any other outcome at which producers and consumers are better off?
- We know equilibrium occurs at a point where demand = supply
- In other words, at equilibrium $MB = MC$
- If marginal benefit $>$ marginal cost, producers have an incentive to increase production.
- If marginal benefit $<$ marginal cost, producers should decrease production

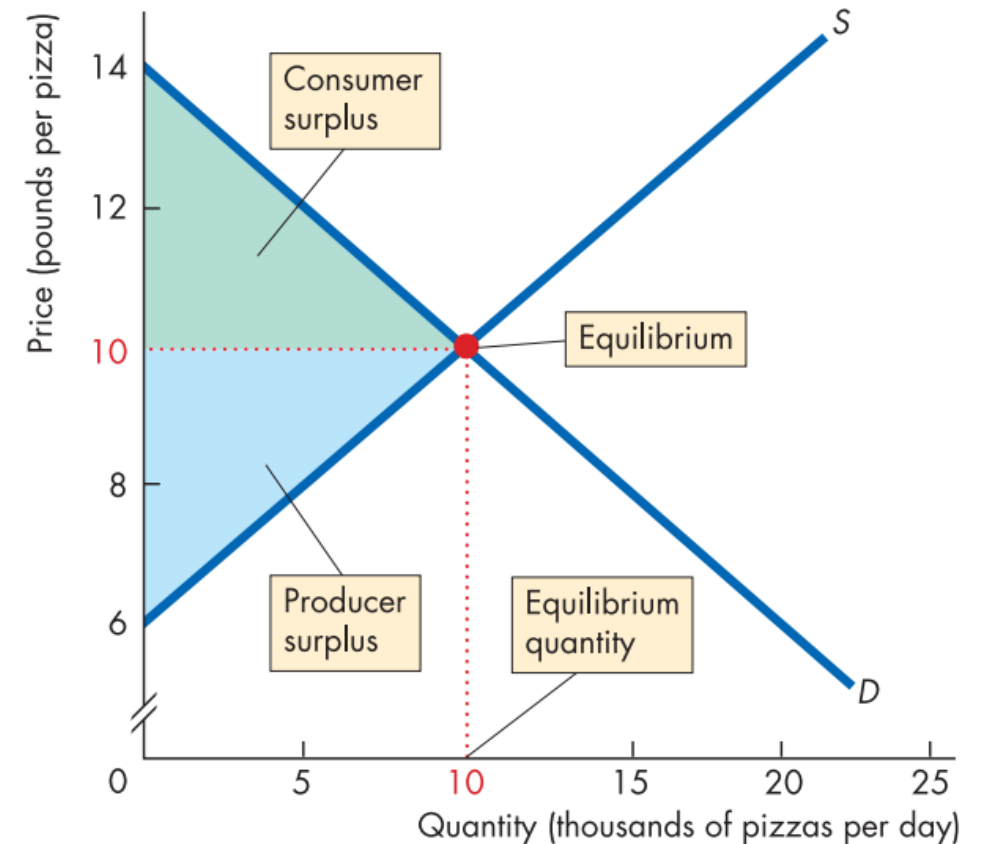
The Efficient Quantity of Pizza



Market Efficiency

- Is the free-market equilibrium an efficient outcome?
- Another approach is to evaluate total surplus.
- The total surplus or economic surplus is the net benefit achieved from the transaction.
- **Total surplus = consumer surplus + producer surplus**
- Economic efficiency is achieved when total surplus is maximized.
- In other words, the competitive equilibrium where demand = supply is the point that maximizes social welfare.

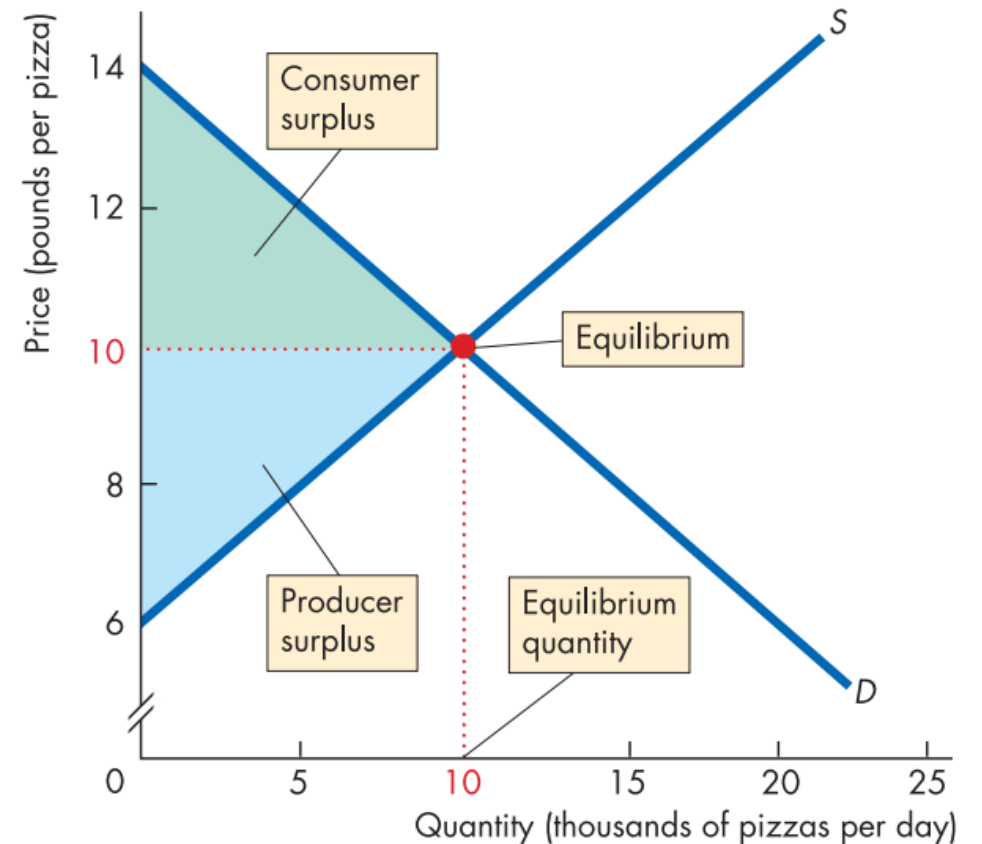
An Efficient Market for Pizza



Market Efficiency

- The competitive market pushes the quantity of pizza produced to its efficient level of 10,000 a day.
- If production is less than 10,000 pizzas a day, a shortage raises the price, which increases production.
- If production exceeds 10,000 pizzas a day, a surplus lowers the price, which decreases production.
- How does the competitive market bring about the most efficient outcome?
- Adam Smith's "Invisible Hand" theory: Each individual working in their own self-interest bring about the best social outcome

An Efficient Market for Pizza



Market Efficiency: Example

Demand for a good X is given by:

$$P = 2000 - 50Q$$

Supply for good X is given by:

$$P = 500 + 10Q$$

1. Find the equilibrium price and quantity
2. On a graph, draw the demand and supply curve and show the equilibrium price and quantity
3. Calculate consumer surplus & producer surplus
4. Calculate the total economic surplus
5. What is the efficient quantity of good X? Why?

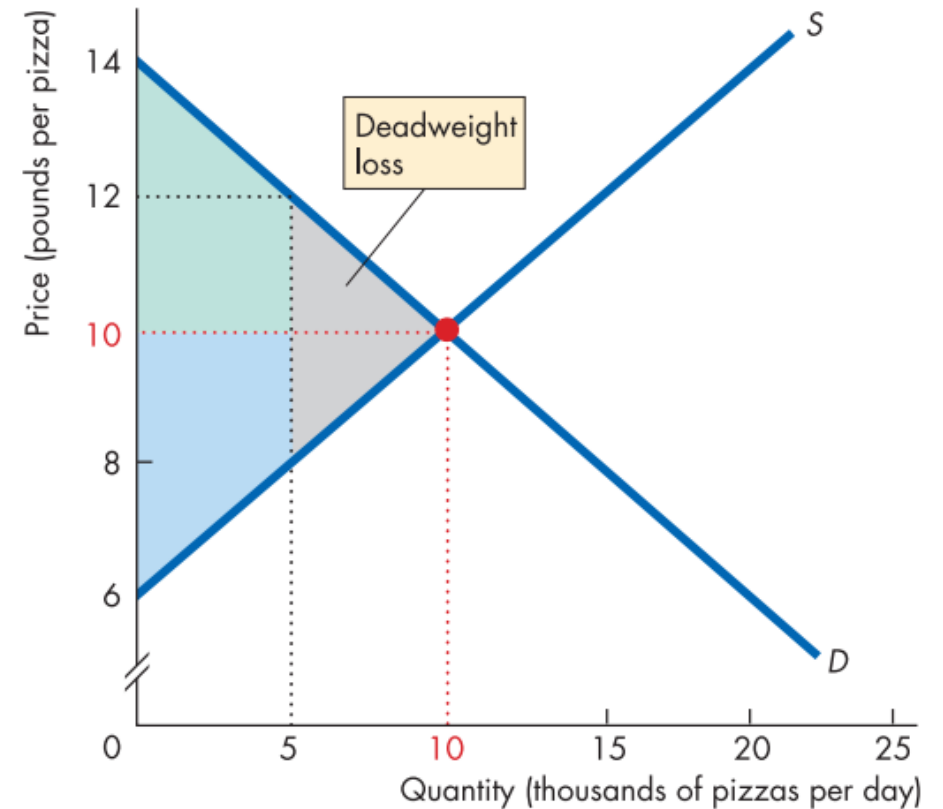
Market failures & Deadweight loss

- Sometimes markets fail to achieve an efficient outcome – this is called a **market failure**
- Market failure can occur because
 - Too little of a good is produced (underproduction)
 - Too much of a good is produced (overproduction)
- **Deadweight loss** is the decrease in total surplus that results from producing an inefficient quantity of the good.

Market failures & Deadweight loss

Underproduction

- At equilibrium, 10,000 pizzas are produced in a day – the efficient outcome
- If pizza production is reduced to 5000 pizzas in a day, there is underproduction and a deadweight loss arises.
- The deadweight loss equals the loss in total surplus i.e. the grey area
- This loss is borne by the entire society – both consumers and producers



(a) Underproduction

Market failures & Deadweight loss

At equilibrium,

Consumer Surplus = A + B + D

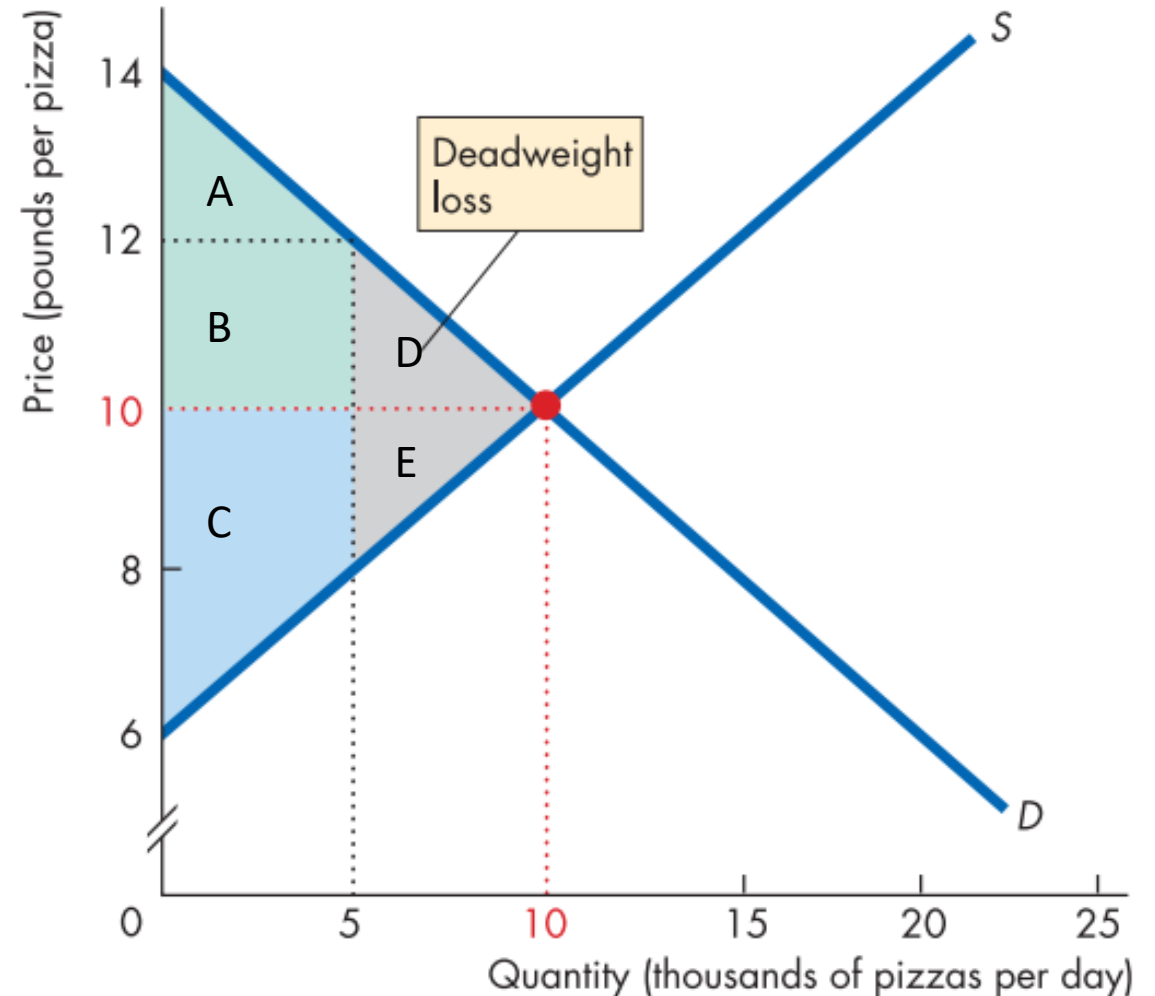
Producer Surplus = C + E

When production is limited to
5000 pizzas,

Consumer Surplus = A + B

Producer Surplus = C

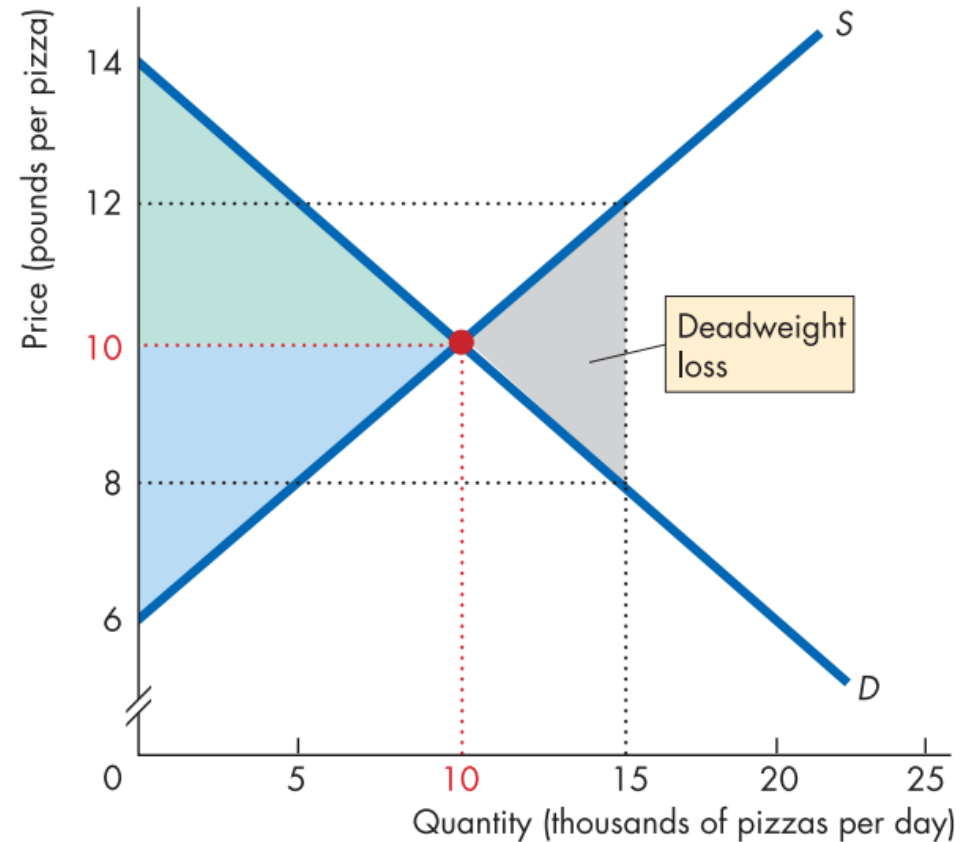
Deadweight loss = D + E



Market failures & Deadweight loss

Overproduction

- At equilibrium, 10,000 pizzas are produced in a day – the efficient outcome
- If pizza production is increased to 15000 pizzas in a day, there is overproduction and a deadweight loss arises.
- At 15000 pizzas, consumers are only willing to pay £8 for an additional pizza but marginal cost equals £12.
- The deadweight loss equals the loss in total surplus i.e. the grey area



(b) Overproduction

Sources of Market Failures

Common reasons behind market failures (underproduction or overproduction) are:

- Price and quantity regulations
- Tax and subsidies
- Externalities
- Public goods and common resources
- Monopoly

Sources of Market Failures

Price and quantity regulations

A price ceiling is a regulation that makes it illegal to charge a price higher than the specified level.

A price floor is a regulation that makes it illegal to pay a price below a specified level.

Quantity regulations limit the amount a firm is permitted to produce.



Sources of Market Failures

Tax and Subsidies

Taxes increase the prices paid by buyers and lower the prices received by sellers. Taxes decrease the quantity produced i.e. cause underproduction.

Subsidies, which are payments by the government to producers, decrease the prices paid by buyers and increase the prices received by sellers. Subsidies increase the quantity produced i.e. cause overproduction.

Sources of Market Failures

Externalities

An externality is a cost or a benefit that affects a third party i.e. someone other than the buyer or seller of a good.

A positive externality can arise when a benefit is accrued to people other than the buyer/seller of a good. A negative externality arises when a cost is borne by people other than the buyer/seller.

When an individual makes a decision regarding production/consumption, they are only concerned with their own costs and benefits and ignore the effect of their actions on others – leading to an inefficient market outcome.

Sources of Market Failures

Externalities

A classical example: Pollution

- Negative cost borne by society is not taken into consideration by the producers
- leads to overproduction



A

shfiq Mohammad Khalid, a rice farmer, has been making losses for years. His paddy fields rot from the bottom up before his crop can mature during the growing season.

For Khalid, who lives in the central district of Gazipur, and other farmers along the Balu River, farming is tough. Gazipur is just north of Dhaka, and has become a local hub of mass-produced garments in Bangladesh's sprawling textile industry. Pollution in the rivers around the capital has reached very high levels.

Farmers claim the indiscriminate release of wastewater from nearby clothing factories has turned the area's agricultural fields to tar, and causes long-term skin disease.

"I have been suffering from itching all over my body and sores developed on my hands, as I had to work in my paddy field," Khalid tells The Third Pole.

"When farmers hoe and plough land for crop cultivation, it is as if we are digging through tar. There are no fish in the river, because of pollution with toxic wastewater released from factories, mostly those manufacturing garments."

The area is also facing an acute drinking water crisis, 35-year-old Khalid adds.

Sources of Market Failures

Public Goods & Common Resources

A public good is a good or service that is consumed simultaneously by everyone, even if they don't pay for it.

Everyone wants to avoid paying for a public good i.e. the free-rider problem. This causes underproduction.

Public goods are both non-rivalrous (consumption by one person does not reduce the amount available to others) and non-excludable (costly or impossible to restrict other people from using the good)

e.g. street lights, national defense

Sources of Market Failures

Public Goods & Common Resources

Common resources are resources that no one owns and that everyone can use.

A competitive market generally leads to the overuse of such resource.

- This problem is known as the tragedy of the commons

e.g. fishing

Sources of Market Failures

Monopoly

A *monopoly* can be described as a firm that is the sole provider of a good or service or has maximum control over the market.

The self-interest of a monopoly is to maximize its profit. To do so, it produces less than the efficient quantity and raises its price.