Lecture 4: Supply and Demand

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EC566 | Macroeconomics for Business

Environment

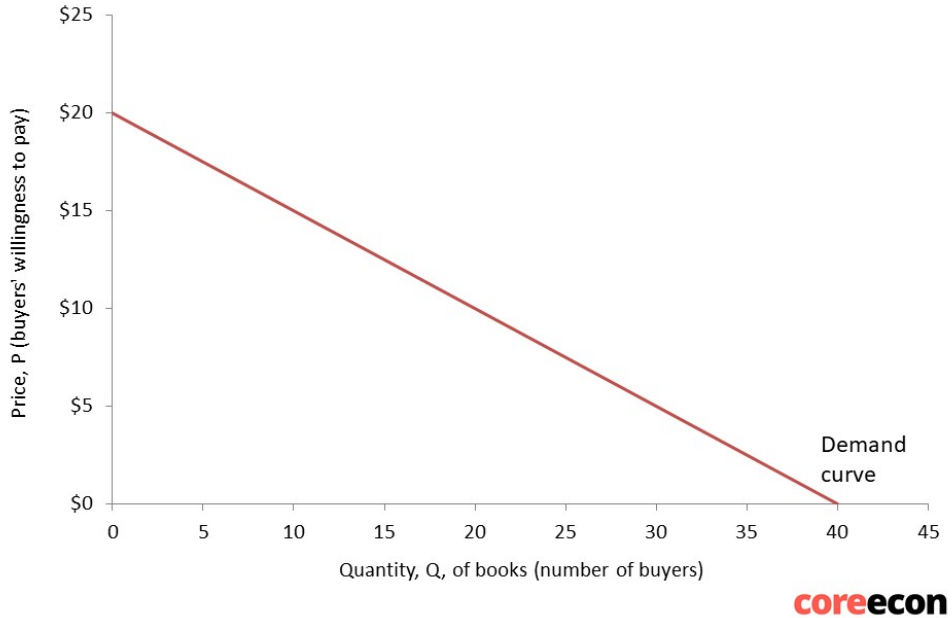
- There are many firms producing the **same** product
- There are many buyers
- Each firm's decisions are affected by behavior of competing firms
- Each firm cannot invidually affect the decisions of the othe firms
- Participants in the market are price takers
  - If a seller asks a price higher than the market, no one will buy from them
  - If a buyer offers a price lower than the market, no one will sell to them

> **Competitive equilibrium:** "A market outcome in which all buyers and sellers are price-takers, and at the prevailing market price, the quantity supplied is equal to the quantity demanded". – Core the Economy

Market demand

- **Demand curve:** represents the total quantity that all consumers are willing to buy at a given price
    - *Be careful:* The graph reads as that given the price, what is the amount that consumers demand, not the other way around.
- Represents the **willingness to pay (WTP)** of buyers
- Example: secondhand textbook market

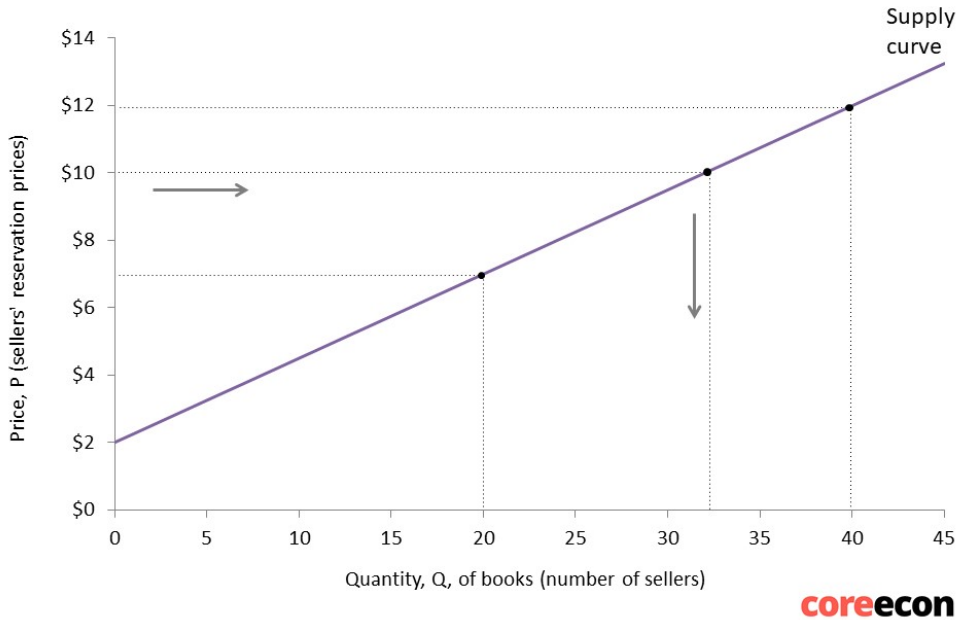
Figure 8.1. The market demand curve for books.



Market supply

- **Supply curve:** represents the total quantity that all firms together are willing to sell at a given price
    - *Be careful:* The graph reads as that given the price, what is the amount that producer supply to the market, not the other way around.
- Represents the **willingness to accept (WTA)** of sellers
- Sellers may have different **reservation prices.**

Figure 8.2. The supply curve for books.

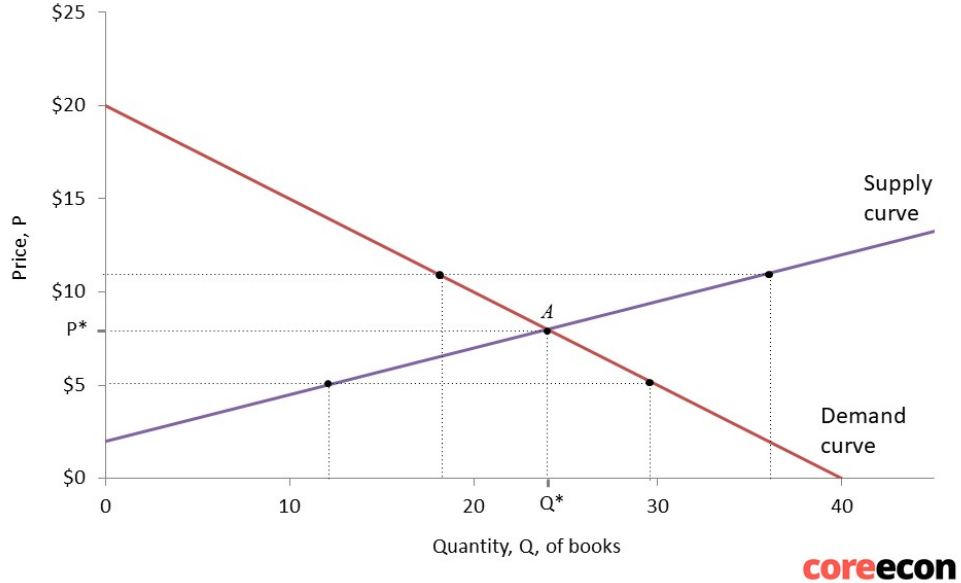


Equilibrium

- The market clears at the equilibrium price
  - At the equilibrium price,

  quantity demanded = quantity supplied
- Any other point is not Nash equilibrium.
  - At $P > P^*$, there will be excess supply
  - Some sellers will benefit from charging lower prices
  - At $P < P^*$, there will be excess demand
  - Sellers knows that price will go up, they will wait and not sell at $P < P^*$.

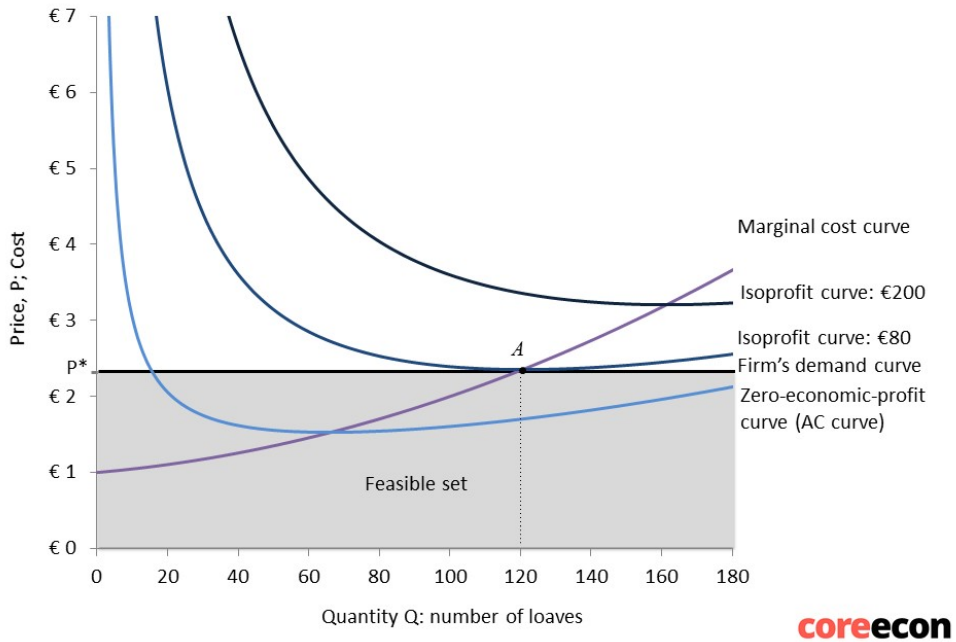
Figure 8.3. Equilibrium in the market for second-hand books.



Price taking firms

- Price taking firms
  - cannot benefit from charging a different price than the market price
  - cannot influence the market
- Demand curve for an individual firm is completely flat
  - Demand for a firm's product at prices greater than the market price, P^*, will be zero.

Figure 8.5. The profit-maximizing price and quantity for a bakery.



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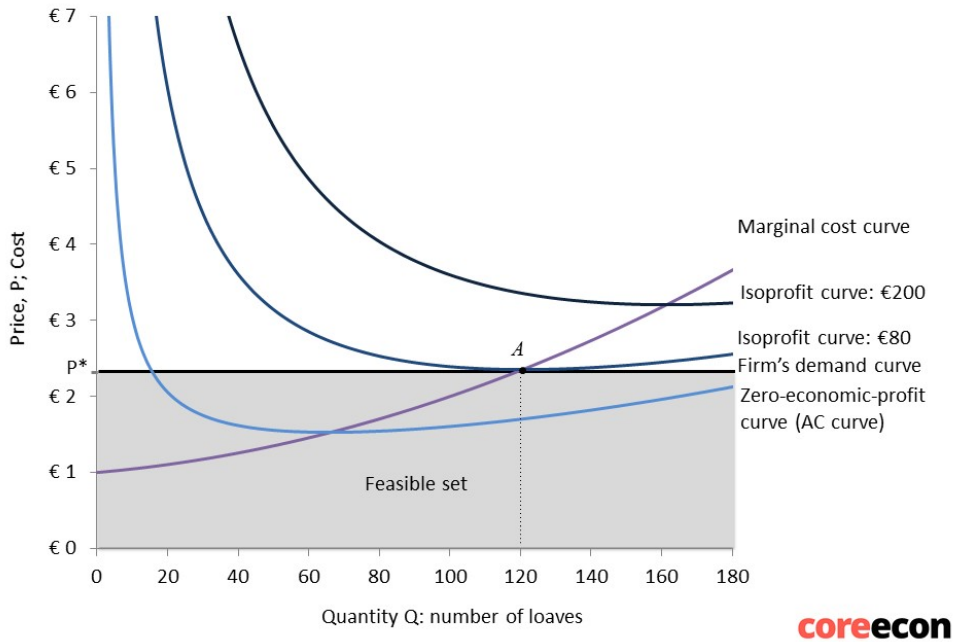
Price taking firms, profit maximizatin

- Given price, the firm will chose the quantity
  - Firm will produce at the highest isoprofit curve in the feasible set
  - Highest feasible isoprofit curve is tangent to the demand curve
  - Marginal cost curve intersects with the isoprofit curves at their lowest point
  - MC passes through the tangency point of highest feasible isoprofit curve and the demand curve

Figure 8.5. The profit-maximizing price and quantity for a bakery.



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A firm's supply curve

- Supply curve = Marginal cost curve
- For a given price, profit maximizing quantity is where the highest feasible isoprofit curve is tangent to feasible set.
    - The tangency points is where MC intersects with the isoprofit curve
- If you trace out profit maximizing quantities for each price, you get the marginal cost curve
- *Be careful:* The correct interpration of supply curve = MC is that given a price level, firms will produce the amount at which marginal cost is equal to price.
- Firms might be making a loss in the short run
    - They will remain in the market if future profit perspectives are better.

Figure 8.6. The firm's supply curve.

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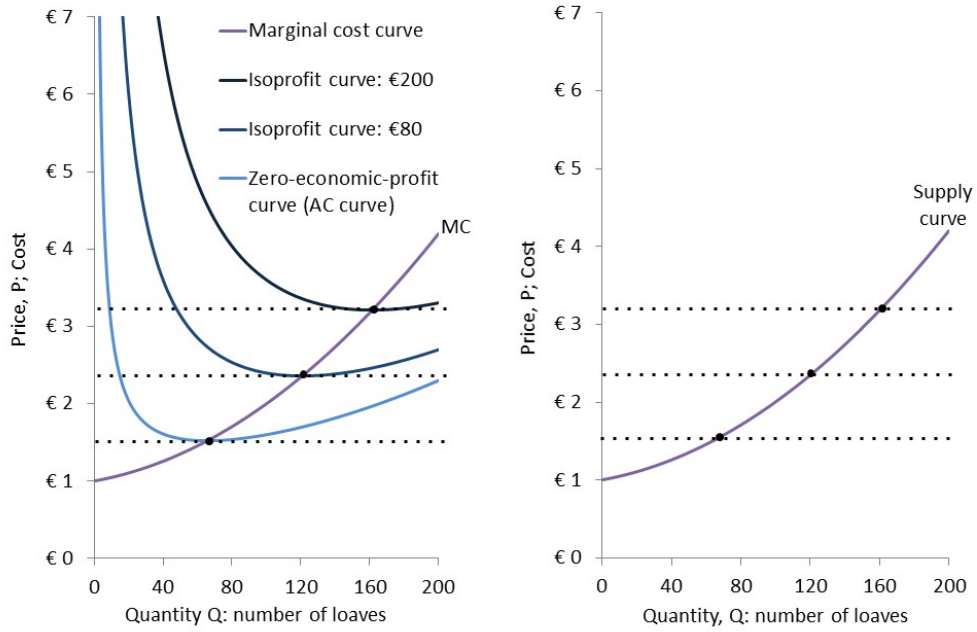
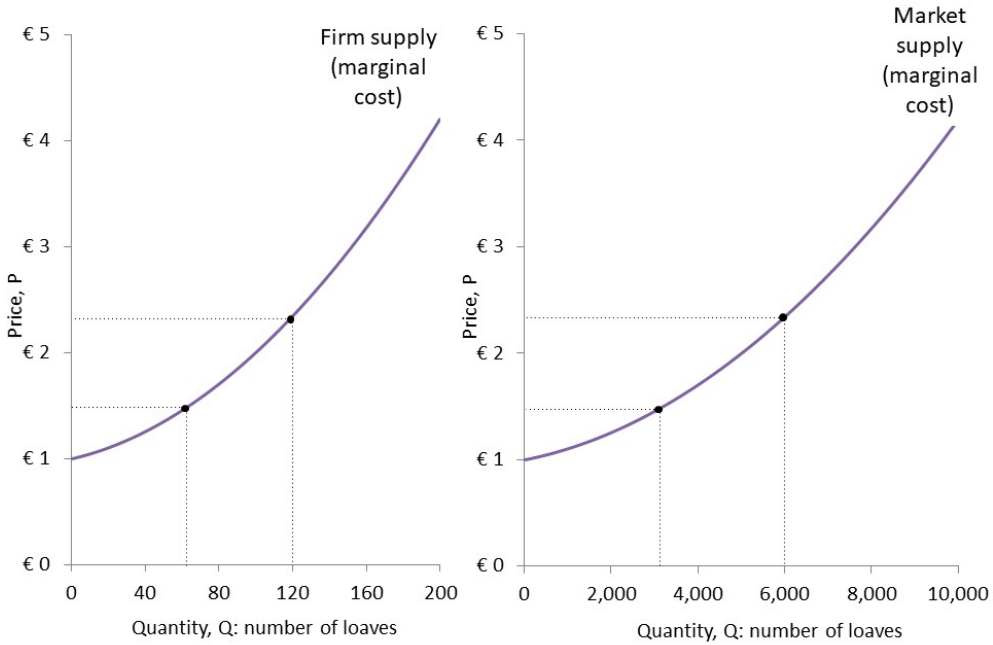


Firm and market supply curve

- By horizontally summing the firm market supply curve, we will get the market supply curve
- Market supply curve is the market marginal cost curve

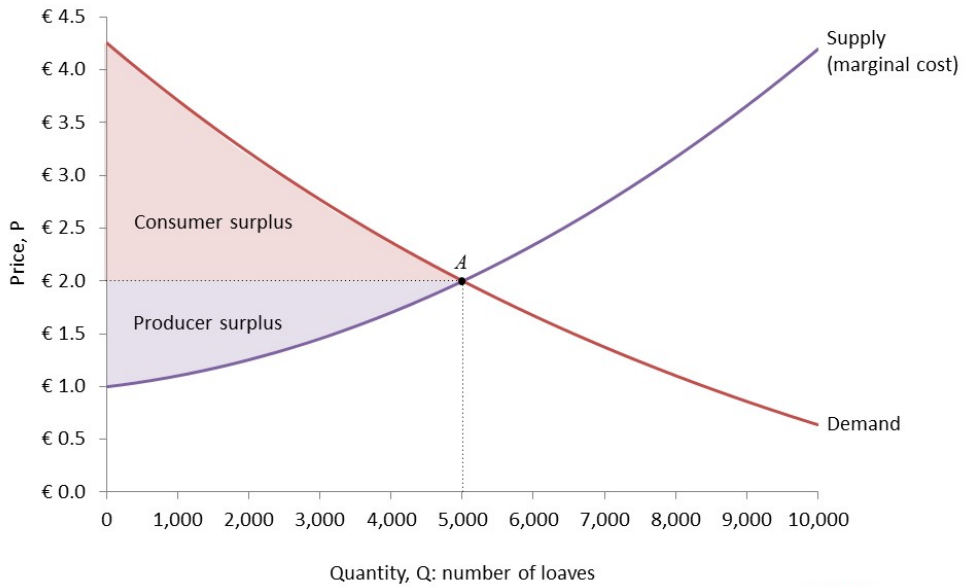
Figure 8.7. The firm and market supply curves.



Gains from trade

- Consumer surplus = the difference between what consumers are willing to pay and what they actually pay
- Producer surplus = the differnece between what producers are willing to accept and they they are actually paid
- Gains from trade = consumer surplus + producer surplus

Figure 8.9a. Equilibrium in the bread market: Gains from trade.



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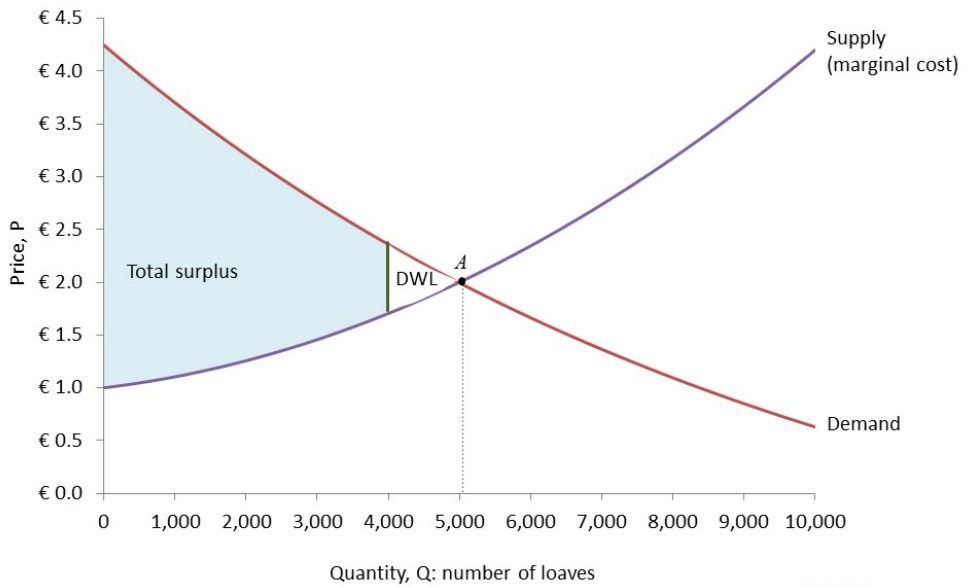
Deadweight loss

- Suppose the total quantity sold is less than competitive equilibrium level
- The reduction in the total surplus is called deadweight loss

Figure 8.9b. Deadweight loss.



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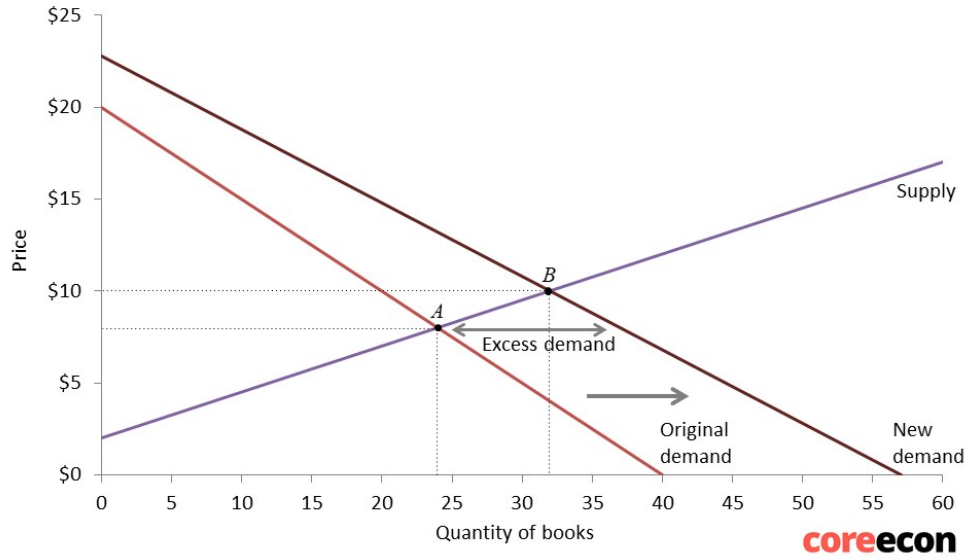
Positive demand shock

- Suppose the incoming class size went up
- Demand will shift to the right
- Excess demand will drive up the prices
- New equilibrium will be on point B
  - Price and quantity will go up
- Movement along the supply curve
  - Quantity supplied will increase
  - No change in the supply

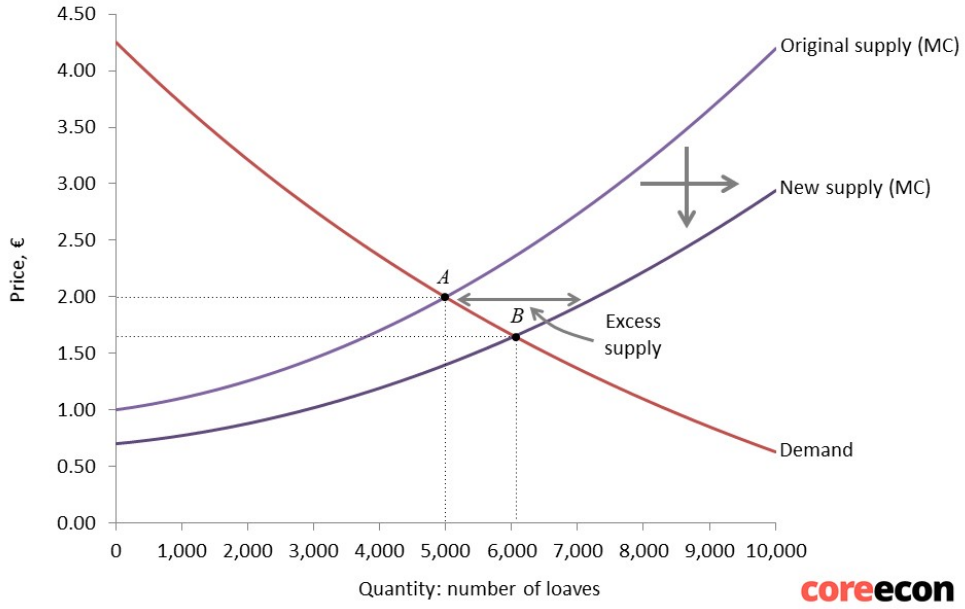
Figure 8.11. An increase in the demand for books.



Positive supply shock

- Suppose firms became more productive as a result of technological progress
- Supply curve will shift to the right
- Excess supply will push down the prices
- Price will go down, quantity wil go up
- Movement along the demand curve

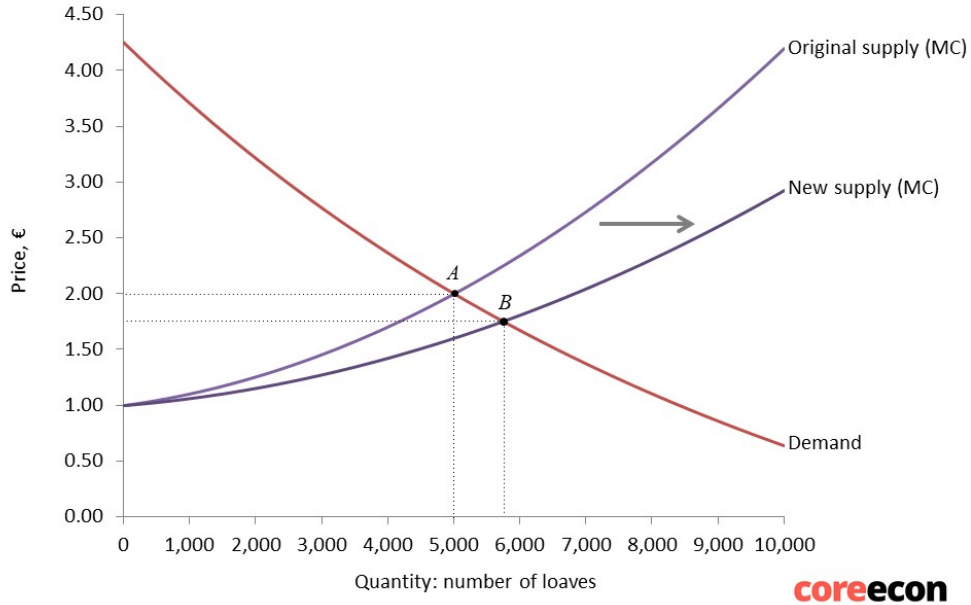
Figure 8.12. An increase in the supply of bread: A fall in MC.



Firm entry

- Suppose more firms enter to the market
- Supply will shift to the right

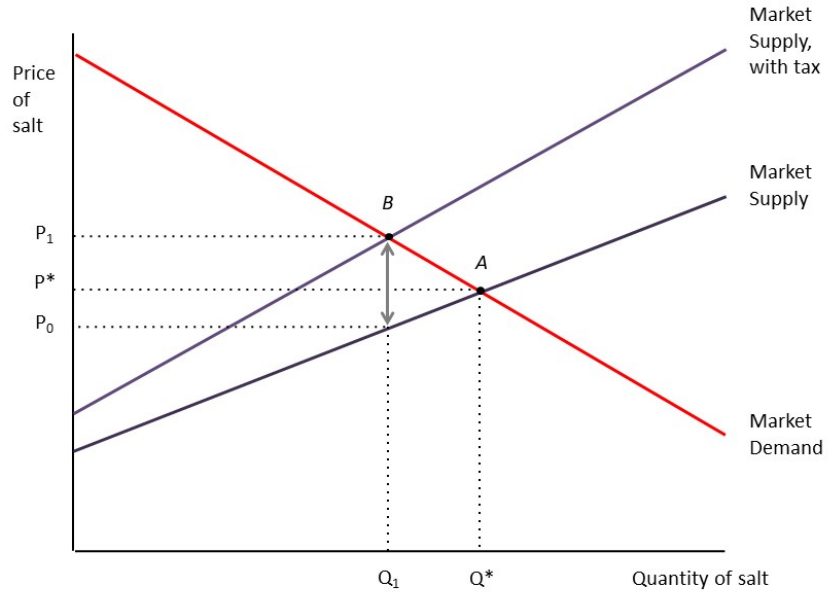
Figure 8.13. An increase in the supply of bread: More firms enter.



Tax

- Suppose the government imposes a proportional tax on a product
- This will shift up (left) the supply curve
  - What matters for the sellers is what remains to them, not what consumers pay
- The new equilibrium point is B
  - The difference between P_1 and P_0 is the amount of tax.
  - Consumers pay higher than what they used to pay
  - Seller receive less than what they used to receive

Figure 8.14. The effect of a 30% salt tax.



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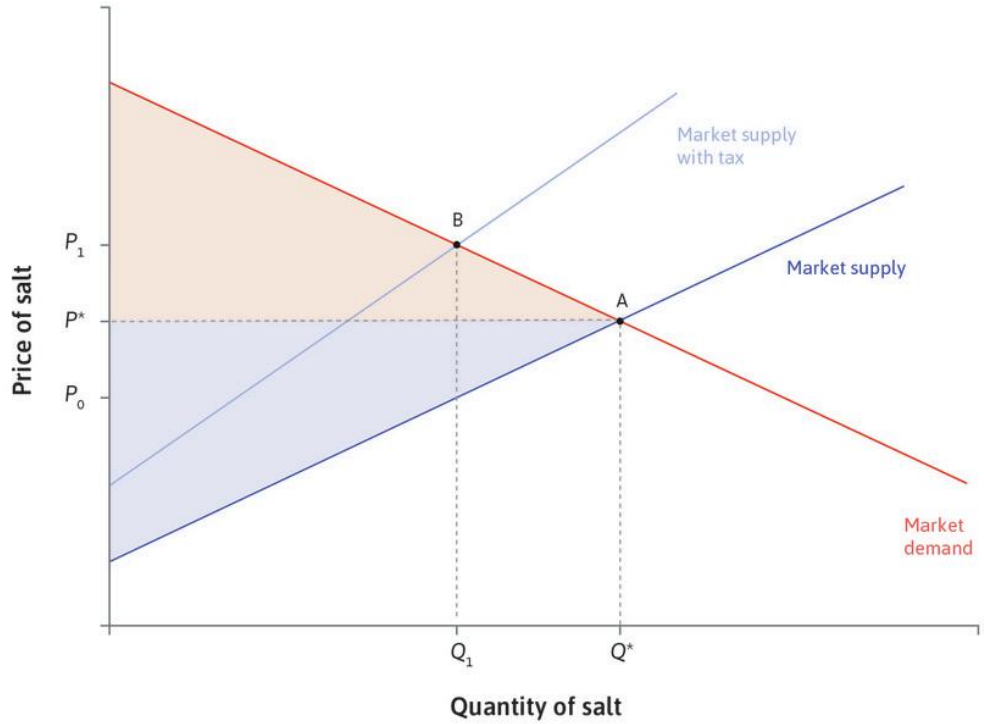
Tax

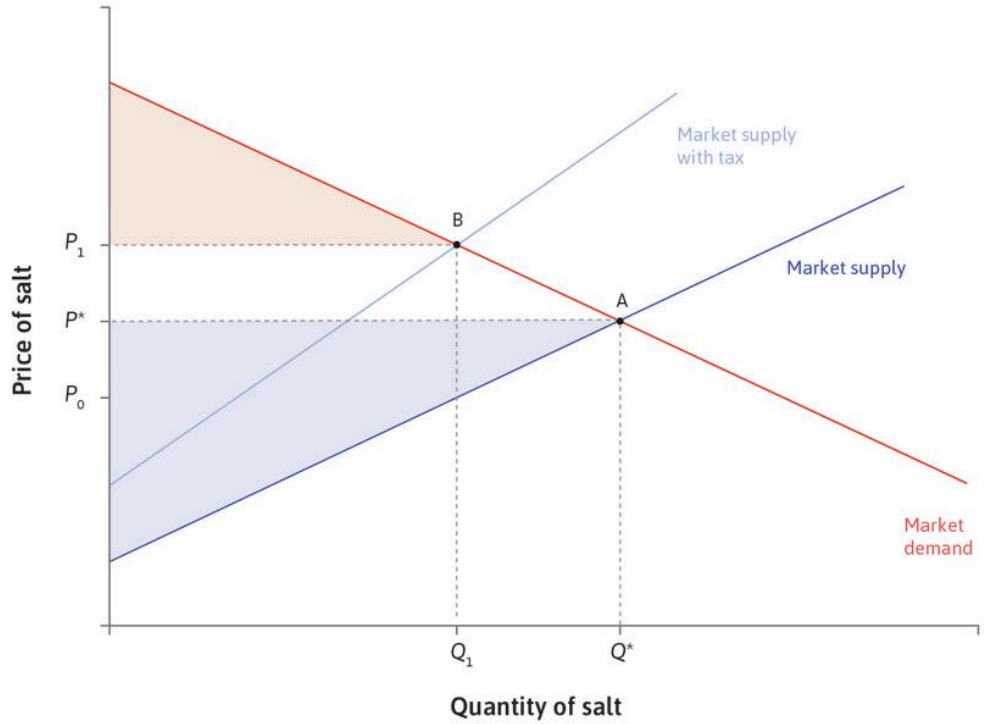
> **Tax incidence:** The effect of tax on welfare of consumers and producers – Core the Economy



Tax

> **Tax incidence:** The effect of tax on welfare of consumers and producers – Core the Economy

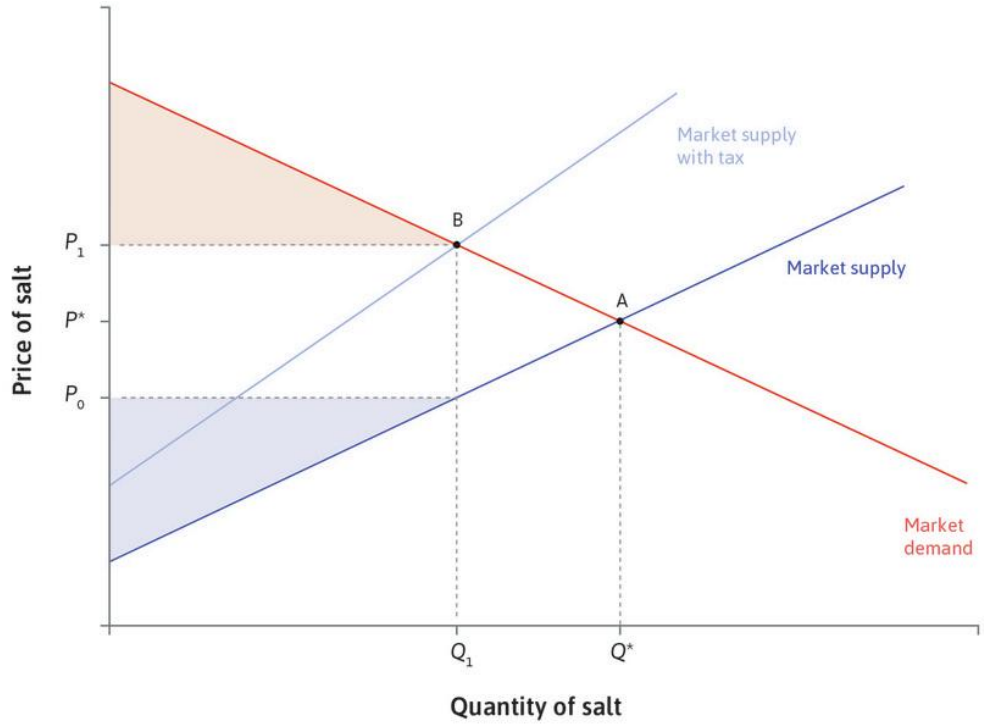
- Tax reduces the consumer surplus



Tax

> **Tax incidence:** The effect of tax on welfare of consumers and producers – Core the Economy

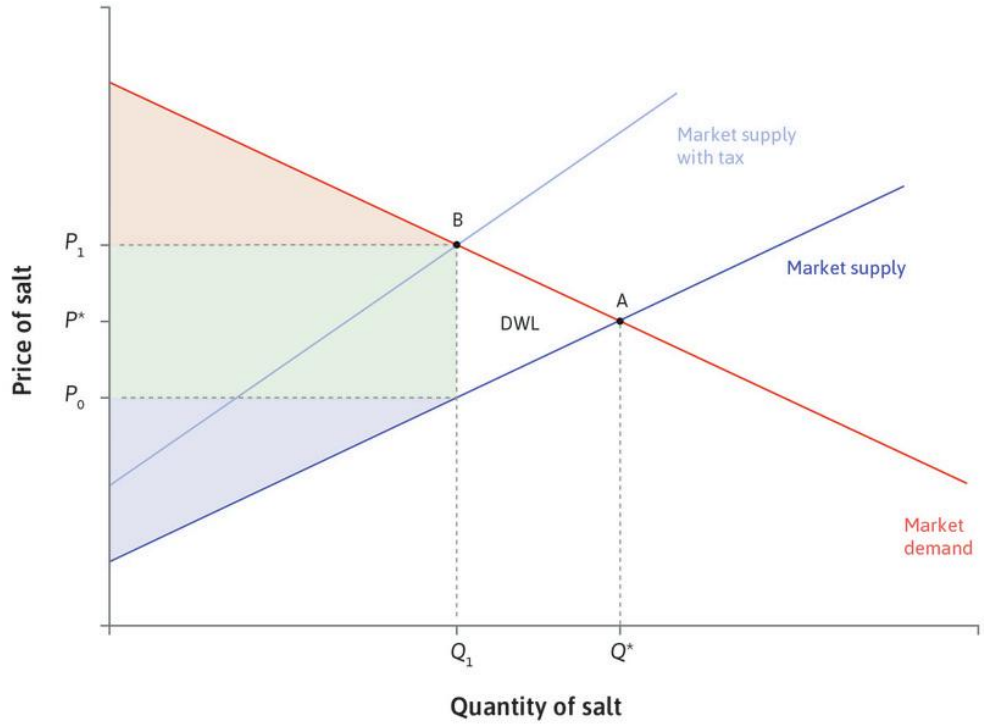
- Tax reduces the consumer surplus
- Tax reduces the producer surplus



Tax

> **Tax incidence:** The effect of tax on welfare of consumers and producers – Core the Economy

- Tax reduces the consumer surplus
- Tax reduces the producer surplus
- Reduction in consumer surplus plus the producer surplus is greater than the tax revenue
- Tax creates deadweight loss
- Total social cost of tax depends on where the tax revenue is used.



Perfect competition

A perfectly competitive market has the following properties:

- Homogeneous (identical) goods/services are exchanged.
- Very large number of potential buyers and sellers
  - Each buyer/seller is very small relative to the market
- Buyers and sellers all act independently of one another
  - No cartels / no coordination
- Price information easily available to buyers and sellers
  - If someone is selling a good at different price, everyone knows about this.

Characteristics of perfect competition

- **Law of One Price:** All transactions take place at a single price.
- At that price, the market clears (supply = demand).
- Buyers and sellers are all price-takers.
- All potential gains from trade are realized.
- Perfect competition may not hold completely in reality, but can be a good approximation to actual firm behaviour.

Evidence of perfect competition?

Economists have used two tests for competitive equilibrium:

1. Do all trades take place at the same price?
2. Are firms selling goods at a price equal to marginal cost?

It is hard to find examples of perfect competition:

- Even when consumers can easily check the price of products (online shopping sites), prices of the same product differ.
- Fulton Fish Market study – within the same market, prices of the same fish product differed for different customer types.

Price-setters vs. Price-takers

Price-setters (Monopoly)	**Price-takers (Perfect Competition)**
MC < Price	MC = Price
Deadweight losses (Pareto inefficient)	No deadweight losses (can be Pareto efficient)
Owners receive economic rents in both long- and short-run	No economic rents in the long-run
Firms advertise their unique product	Little advertising expenditure
Firms invest in R&D, seek to prevent copying	Little incentive for innovation

Next week

The labor market