

Exercise walk-through

2.5

Consumer and producer surplus

A-Level Economics

Market equilibrium

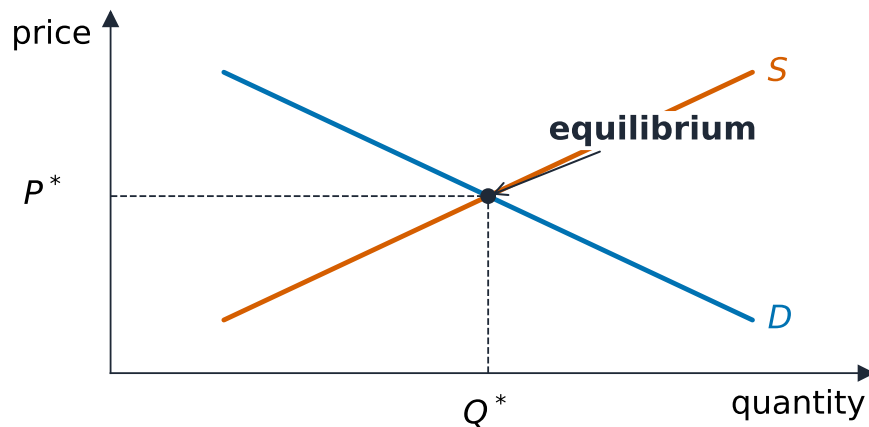
Fictional market: $Q_d = 12 - P$, $Q_s = P - 2$

Price (\$)	Q_d	Q_s	$Q_d - Q_s$
4	8	2	6
6	6	4	2
7	5	5	0
8	4	6	-2

Attempt: find equilibrium. At \$6 and \$8, identify the imbalance and the pressure on price if prices can adjust.

Equilibrium means quantity demanded equals quantity supplied at the same price; it does not mean that the whole curves are identical.

Market equilibrium, in detail



equilibrium: $Q_d = Q_s$ at (P^*, Q^*) (market clears)

$$Q_d = Q_s$$

$$12 - P = P - 2$$

$$P^* = \$7, \quad Q^* = 5$$

At \$6: **shortage** of 2 units.

At \$8: **excess supply** of 2 units.

The illustration shows the mechanism; the table gives this market's values. With other conditions fixed and flexible prices, the imbalance creates pressure towards equilibrium.

Relationships between markets

Trace the connection between markets

Joint demand

More printer purchases can raise demand for ink: complements.

Alternative demand

Dearer tea can raise coffee demand: substitutes.

Derived demand

More bread demand can raise bakeries' demand for workers.

Joint supply

More beef production also produces more hides, increasing leather supply.

Draw the curve for the market being asked about. A change in one market can shift a related market's curve; these are not all own-price movements.

Shifts and surplus

Before the cost increase: $P_D = 12 - Q$, $P_S = 2 + Q$

At equilibrium $Q^* = 5$, $P^* = \$7$. Demand's price intercept is 12; supply's is 2. Assume a competitive market with no external effects.

$$CS = \frac{1}{2} Q^* (P_{D,0} - P^*)$$

$$CS = \frac{1}{2} (5) (12 - 7) = \$12.50$$

$$PS = \frac{1}{2} Q^* (P^* - P_{S,0})$$

$$PS = \frac{1}{2} (5) (7 - 2) = \$12.50$$

Consumer surplus is below demand and above price; **producer surplus** is above supply and below price. Total surplus is \$25.

Can a higher price mean lower producer surplus?

Apply 9708/22 O/N/25, Q2(a): fictional numbers

Demand stays $P_D = 12 - Q$. Higher input costs change supply from $P_S = 2 + Q$ to $P_{S,1} = 4 + Q$. Previously $P = \$7$, $Q = 5$, $PS = \$12.50$.

Attempt: find the new equilibrium, producer surplus and total revenue. Judge the claim: “Producers always gain when price rises because costs increase.”

Use the new supply intercept when measuring producer surplus. Price is what sellers receive; production cost is also changing.

Exercises 2.1-2.3

2.1 Define the term *consumer surplus*.

[2]

2.2 State where **producer surplus** is shown on a demand and supply diagram.

[1]

2.3 State the effect on consumer surplus of a fall in the market price.

[1]

Exercises 2.1-2.3

2.1 Define the term *consumer surplus*. [2]

2.1

- the difference between the most a consumer is willing to pay and the price actually paid (2 for a clear definition; 1 for a partial idea)

2.2 State where **producer surplus** is shown on a demand and supply diagram. [1]

2.2

- the area above the supply curve and below the price line (1)

2.3 State the effect on consumer surplus of a fall in the market price. [1]

2.3

- consumer surplus rises (1)

Exercises 3.1·3.2

3.1 Consumer surplus is the area:

[1]

☐

A above the demand curve and below the price

B below the demand curve and above the price

C above the supply curve and below the price

D below the supply curve and above the price

3.2 Using a diagram, explain how an increase in supply affects consumer surplus.

[8]

Exercises 3.1·3.2

3.1 Consumer surplus is the area:

[1]

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A above the demand curve and below the price

B below the demand curve and above the price

C above the supply curve and below the price

D below the supply curve and above the price

3.1 B

- Consumer surplus is below the demand curve and above the price

3.2 Using a diagram, explain how an increase in supply affects consumer surplus.

[8]

3.2

- [8] AO1 1 + **AO3 diagram up to 4** (demand and supply, supply shifts right, price falls) + AO2/AO3 up to 3 – a rise in supply lowers the equilibrium price and raises quantity
- the area below demand and above the new lower price is larger
- consumer surplus rises

Exercise 3.3

3.3 Discuss whether a rise in the market price always reduces total welfare.

[8]

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3.3 Discuss whether a rise in the market price always reduces total welfare. [8]

3.3

- [8] AO1/AO2/AO3 up to 5 + AO4 up to 3. **Yes:** a higher price (curves fixed) cuts consumer surplus and quantity traded, lowering welfare. **But:** producer surplus rises, and if the price rise came from higher demand, total welfare can still rise as more is traded. Judgement: the effect on total welfare depends on *why* the price rose – a tax or restriction lowers welfare, but a demand-led rise need not