

Exercise walk-through

1.3

Supply and price elasticity of supply (1.3.3)

Pearson Edexcel · International A-Level · Economics

1. Topic 1 at a glance

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WEC11 first half: spec sections 1.3.1 to 1.3.4 in full - introductory concepts (six rows), consumer behaviour and demand (three rows), supply (two rows) and price determination (four rows). One original model runs through everything: demand $Q_d = 140 - 2P$ and supply $Q_s = 20 + 4P$, so equilibrium is $P = 20$, $Q = 100$ and every printed number cross-checks.

Must-know: ceteris paribus models; scarcity and opportunity cost; the PPF; rationality and its six limits; PED, YED, XED and PES formulae with their threshold tables; total revenue $= P \times Q$ maximised where $|PED| = 1$; consumer and producer surplus triangles; the rationing, incentive and signalling functions; tax and subsidy incidence by relative elasticity.

5. Supply

Supply

Supply is willingness AND ability to sell; own-price changes move along, and costs, technology, indirect taxes (specific per unit, ad valorem as a percentage), subsidies and natural disasters shift (1.3.3.1).

$PES = \frac{\% \text{change in quantity supplied}}{\% \text{change in price}}$: on the model at 20 to 24, quantity 100 to 116, $PES = +0.8$, inelastic (1.3.3.2a-b). Its five influences: time period, stock and perishability, factor mobility, legal constraints, capacity (1.3.3.2c). The short run has a fixed factor; the long run frees them all - supply elasticity grows with time (1.3.3.2d).

7. Indirect taxes and subsidies

Indirect taxes and subsidies

A specific tax of 6 shifts supply up: $Q_s = 4P - 4$ in consumer prices, so $P_c = 24$, $Q = 92$, producers keep 18. Consumers pay 4 more, producers receive 2 less; revenue = $6 \times 92 = 552$ per day (1.3.4.4a-b). Incidence follows relative elasticity: here PED -0.4 versus PES +0.8, so the inelastic side - consumers - bears 4 of the 6.

A subsidy of 6 shifts supply down: $P_c = 16$, $Q = 108$, producers receive 22; consumers gain 4, producers 2, taxpayers pay $6 \times 108 = 648$ per day (1.3.4.4c-d). The same incidence logic: the more inelastic side gains less and bears more.

Exercises 2.1·2.3

2.1 For each event, state movement along or shift (and direction) of the supply curve:
(a) the market price of wheat rises; (b) fertiliser costs rise. [2]

2.2 Name any three of the five shift causes of the supply curve. [3]

2.3 Distinguish a specific tax from an ad valorem tax with one example of each. [2]

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(a) the market price of wheat rises; (b) fertiliser costs rise. [2]

2.1 (a) Movement along the supply curve (a higher price raises quantity supplied). (b) Shift of the supply curve left – higher costs cut supply at every price.

2.2 Name any three of the five shift causes of the supply curve. [3]

2.2 Any three of: costs of production, new technology, indirect taxes, subsidies, natural disasters.

2.3 Distinguish a specific tax from an ad valorem tax with one example of each. [2]

2.3 Specific: a fixed amount per unit (6 currency units per item of a carbon-neutral fuel).
Ad valorem: a percentage of price (20% VAT on the item's price).

Exercises 2.4·2.6

2.4 On $Q_s = 20 + 4P$, price rises from 20 to 24. Calculate PES and interpret it. [3]

2.5 State the short-run and long-run factor conditions, and link them to PES. [2]

2.6 A firm holds large stocks of a durable good. What does this imply for its price elasticity of supply, and why? [2]

Exercises 2.4·2.6

2.4 On $Q_s = 20 + 4P$, price rises from 20 to 24. Calculate PES and interpret it. [3]

2.4 At $P = 20$, $Q_s = 100$; at $P = 24$, $Q_s = 116$. $\% \Delta Q = 16\%$, $\% \Delta P = 20\%$, so PES = +0.8: inelastic supply (quantity responds less than proportionately).

2.5 State the short-run and long-run factor conditions, and link them to PES. [2]

2.5 Short run: at least one factor fixed; long run: all factors variable. Supply response is limited in the short run, so PES rises over time.

2.6 A firm holds large stocks of a durable good. What does this imply for its price elasticity of supply, and why? [2]

2.6 More elastic supply: stocks can be released immediately when price rises, so quantity supplied responds strongly even in the short run (perishable goods cannot do this).

Exercise 3.1

3.1 (*Original.*) A technology improvement means sellers offer 24 more items per day at every price, so supply becomes $Q_s = 4P + 44$. With demand $Q_d = 140 - 2P$, find the new equilibrium price and quantity, and explain the adjustment from the old equilibrium (20, 100). [5]

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3.1 Set $Q_d = Q_s$: $140 - 2P = 4P + 44$, so $96 = 6P$ and $P = 16$, $Q = 108$. At the old price 20, supply now exceeds demand ($100 \rightarrow$ supply = 124 at 20 vs demand 100), so excess supply pushes price down from 20 towards 16; quantity traded rises from 100 to 108 as the market moves along both curves to the new equilibrium.

Exercise 3.2

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3.2 Picking day: supply is nearly fixed by the planted crop – highly inelastic (perfectly inelastic at the crop limit); stock is perishable, so it cannot be stored to answer price changes. Two years later: planting can fully adjust (all factors variable), new capacity and entry are possible, so supply is far more elastic. Factors named: time period (the dominant one) and availability of stock/perishability.

Local review guidance: percentage changes before dividing with the sign convention stated; the disequilibrium at the old price identified BEFORE the new equilibrium is solved; PES factors named from the specification list, not paraphrased. This is authored classroom guidance.