

Exercise walk-through

1.4

Price determination, taxes and subsidies (1.3.4)

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 Find the equilibrium price and quantity of the shared model. [3]

2.2 At $P = 15$, calculate the excess demand and describe the pressure on price. [2]

2.3 The demand curve's vertical intercept is 70. Calculate consumer surplus at equilibrium. [3]

Exercises 2.1·2.3

2.1 Find the equilibrium price and quantity of the shared model. [3]

2.1 $140 - 2P = 20 + 4P$ gives $120 = 6P$, so $P^* = 20$ currency units and $Q^* = 100$ items/day.

2.2 At $P = 15$, calculate the excess demand and describe the pressure on price. [2]

2.2 $Q_d(15) = 110$, $Q_s(15) = 80$: excess demand = 30 items/day; buyers bid the price up towards 20.

2.3 The demand curve's vertical intercept is 70. Calculate consumer surplus at equilibrium. [3]

2.3 $CS = \frac{1}{2} \times Q \times (70 - 20) = \frac{1}{2} \times 100 \times 50 = 2500$ currency units/day.

Exercises 2.4·2.6

2.4 The supply curve reaches price zero at a quantity of 20. Calculate producer surplus at equilibrium. [3]

2.5 Name the three functions of the price mechanism. [2]

2.6 Demand shifts right while supply shifts left. State the one variable whose direction is certain, and why. [2]

Exercises 2.4·2.6

2.4 The supply curve reaches price zero at a quantity of 20. Calculate producer surplus at equilibrium. [3]

2.4 $PS = \frac{1}{2} \times (100 - 20) \times (20 - 0) = \frac{1}{2} \times 80 \times 20 = 800$ currency units/day – the supply curve only begins at $Q = 20$, so the triangle's base is 80.

2.5 Name the three functions of the price mechanism. [2]

2.5 Rationing, incentive, signalling.

2.6 Demand shifts right while supply shifts left. State the one variable whose direction is certain, and why. [2]

2.6 Price rises with certainty – both shifts are price-raising; quantity is indeterminate because the demand rise raises it and the supply fall lowers it, so the outcome depends on relative magnitudes.

Exercises 3.1·3.2

3.1 (*Original.*) The government imposes a specific tax of 6 currency units per item on this market. Calculate the new consumer price, the price producers receive, the quantity traded, the government's revenue, and how the 6-unit burden splits between consumers and producers. [5]

3.2 (*Original.*) Instead, the government pays a subsidy of 6 per item. Calculate the new consumer price, producer price, quantity and the total cost to the government. [4]

Exercises 3.1·3.2

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3.1 Supply in consumer prices becomes $Q_s = 4P - 4$. Equilibrium: $140 - 2P = 4P - 4$, so $P_c = 24$, $Q = 92$; producers receive $24 - 6 = 18$. Revenue = $6 \times 92 = 552$ currency units/day. Burden: consumers pay $24 - 20 = 4$ more; producers receive $20 - 18 = 2$ less – a 4:2 split.

3.2 (*Original.*) Instead, the government pays a subsidy of 6 per item. Calculate the new consumer price, producer price, quantity and the total cost to the government. [4]

3.2 Supply becomes $Q_s = 4P + 44$: $140 - 2P = 4P + 44$ gives $P_c = 16$, $Q = 108$; producers receive $16 + 6 = 22$. Consumers gain 4 ($20 - 16$), producers gain 2 ($22 - 20$); government cost = $6 \times 108 = 648$ currency units/day.

Exercises 3.3·3.4

3.3 (*Original.*) Explain, using elasticities, why consumers bear more of the 6-unit tax in this market, and state one condition under which producers would bear more. [3]

3.4 (*Original.*) A publicity campaign raises demand while input costs rise. Explain why the new equilibrium quantity cannot be predicted from these two facts alone. [3]

Exercises 3.3-3.4

3.3 (*Original.*) Explain, using elasticities, why consumers bear more of the 6-unit tax in this market, and state one condition under which producers would bear more. [3]

3.3 At the original equilibrium $PED = -2 \times (20/100) = -0.4$ while $PES = +4 \times (20/100) = +0.8$: demand is relatively inelastic, so consumers cannot easily leave the market and bear 4 of the 6. If demand were more elastic than supply (e.g. close substitutes arrive), producers would bear the larger share.

3.4 (*Original.*) A publicity campaign raises demand while input costs rise. Explain why the new equilibrium quantity cannot be predicted from these two facts alone. [3]

3.4 The demand shift right raises equilibrium price AND quantity; the supply shift left raises price but LOWERS quantity. Price rises under both, but the quantity effects oppose each other: only the relative size of the two shifts determines whether quantity rises or falls, so no prediction is possible without magnitudes (draw both new curves and compare).

Local review guidance: the tax treated as a vertical supply shift with the new curve written out; burden split from the two price gaps, not asserted; surplus triangles with the formula shown; (R1 3.4) both shifts' effects stated separately before the indeterminacy claim. This is authored classroom guidance.