Exercise walk-through

1.4
Price determination, taxes and subsidies (1.3.4)

Pearson Edexcel · International A-Level · Economics

Introductory concepts (2)

- The frontier is bowed outward because resources are not equally good at everything. Moving more resources into **capital goods** means using workers and land that are worse and worse at making them, so the **opportunity cost** of each extra unit rises.
- The whole frontier shifts **outward** with more resources, better education or new technology, and **inward** after a war or a natural disaster.
- In a **free market economy** , prices answer them. Incentives are strong, but the result can be very unequal, and markets fail to provide some goods.

Price determination, surplus and the price mechanism (3)

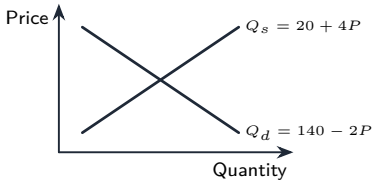
- supply shifts left (swine fever): price rises and quantity falls;
- both shift: one result is certain and the other depends on which shift is bigger. If demand rises while supply falls, price certainly rises, but quantity may go either way.
- The demand curve meets the price axis at $P = 70$ (where $Q_d = 0$). **Consumer surplus** is the triangle under demand and above the price: $CS = \frac{1}{2} \times 100 \times (70 - 20) = 2500$ yuan per day.

Price determination, surplus and the price mechanism (4)

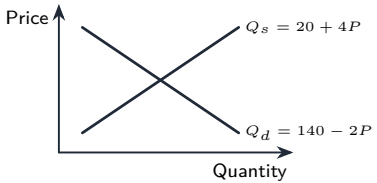
- The supply curve meets $P = 0$ at $Q = 20$: sellers would supply the first 20 items even at a price of zero. **Producer surplus** is the rectangle plus the triangle below the price and above supply:
  $PS = 20 \times 20 + \frac{1}{2} \times (100 - 20) \times 20 = 400 + 800 = 1200$ yuan per day.
- **Rationing**: a higher price limits buying to those who value pork most; others switch to chicken.
- **Incentive**: higher profits encourage farmers to restock and invest.
- **Signalling**: the price change tells everyone where resources are now most valued.

Exercises 2.1·2.2

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

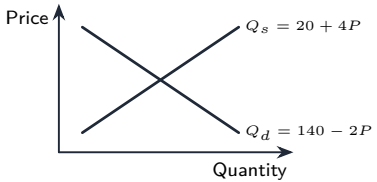


2.2 At $P = 15$, calculate the excess demand and describe the pressure on price. [2]



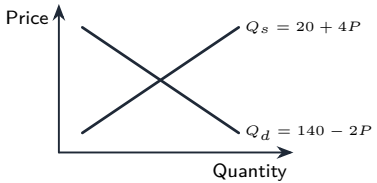
Exercises 2.1·2.2

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

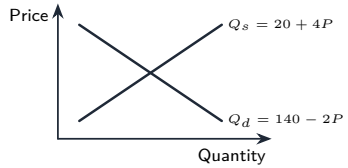
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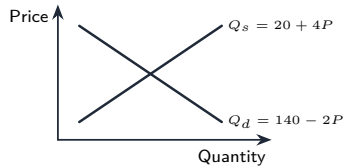
2.2 $Q_d(15) = 110$, $Q_s(15) = 80$: excess demand $= 30$ items/day; buyers bid the price up towards 20.

Exercises 2.3·2.4

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

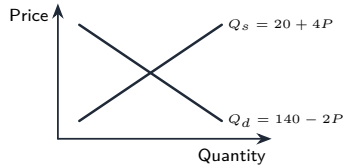


2.4 The supply curve reaches price zero at a quantity of 20. Calculate producer surplus at equilibrium. [3]



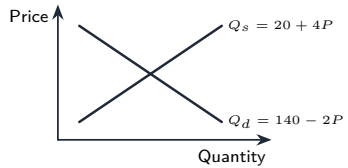
Exercises 2.3·2.4

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.

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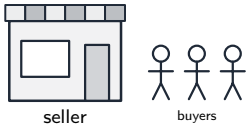


2.4 PS $= 20 \times 20 + \frac{1}{2} \times (100 - 20) \times 20 = 400 + 800 = 1200$ currency units/day – sellers offer the first 20 items even at a zero price, so each of those earns the full 20, and the triangle above the supply curve covers the other 80.

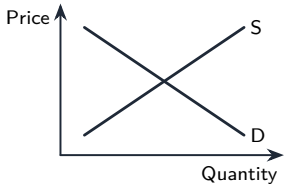
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Exercises 2.5·2.6

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

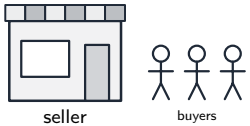


2.6 Demand shifts right while supply shifts left. State the one variable whose direction is certain, and why. [2]



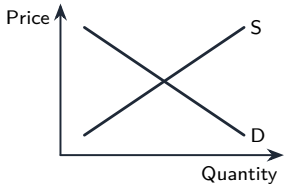
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2.5 Rationing, incentive, signalling.

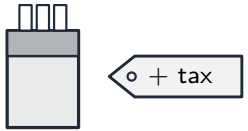
2.6 Demand shifts right while supply shifts left. State the one variable whose direction is certain, and why. [2]



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.

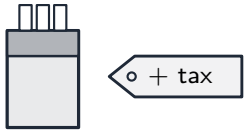
Exercise 3.1

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]



Exercise 3.1

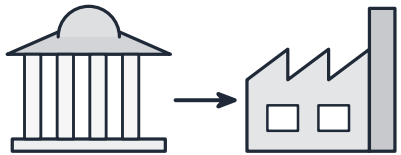
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3.1 Supply in consumer prices becomes $Q_s = 4P - 4$. Equilibrium: $140 - 2P = 4P - 4$, so $P_c = 24$, $Q = 92$; producers receive $24 - 6 = 18$. Revenue $= 6 \times 92 = 552$ currency units/day. Burden: consumers pay $24 - 20 = 4$ more; producers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

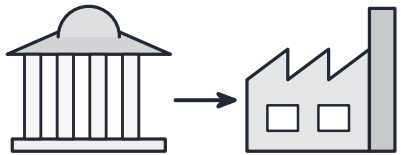
Exercise 3.2

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]



Exercise 3.2

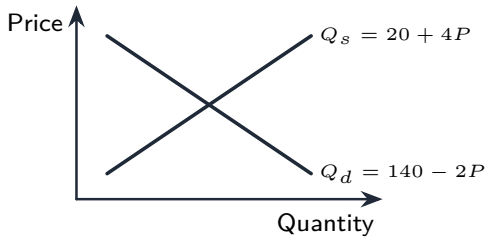
3.2 *(Original.)* Instead, the government pays a subsidy of 6 per item. Calculate the new consumer price, producer price, quantity and the total cost to the government. [4]



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.

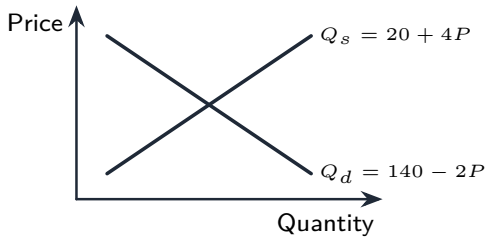
Exercise 3.3

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]



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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.

Exercise 3.4

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]



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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.