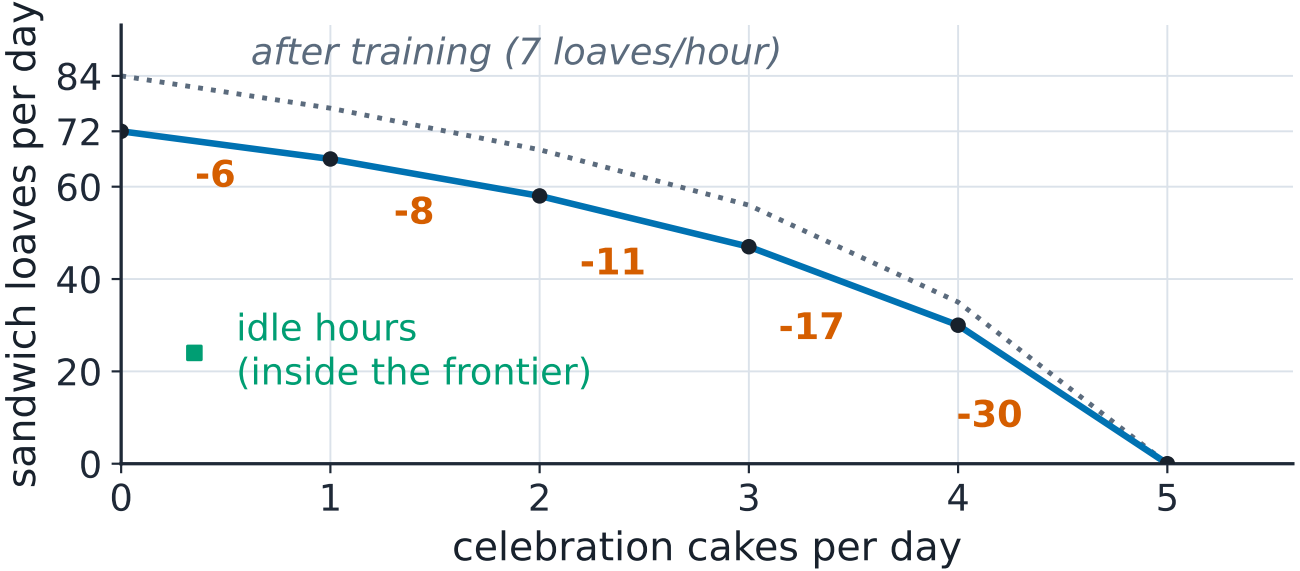
Exercise walk-through

3.6
Market failure and intervention

University Business

Scarcity and opportunity cost: the frontier

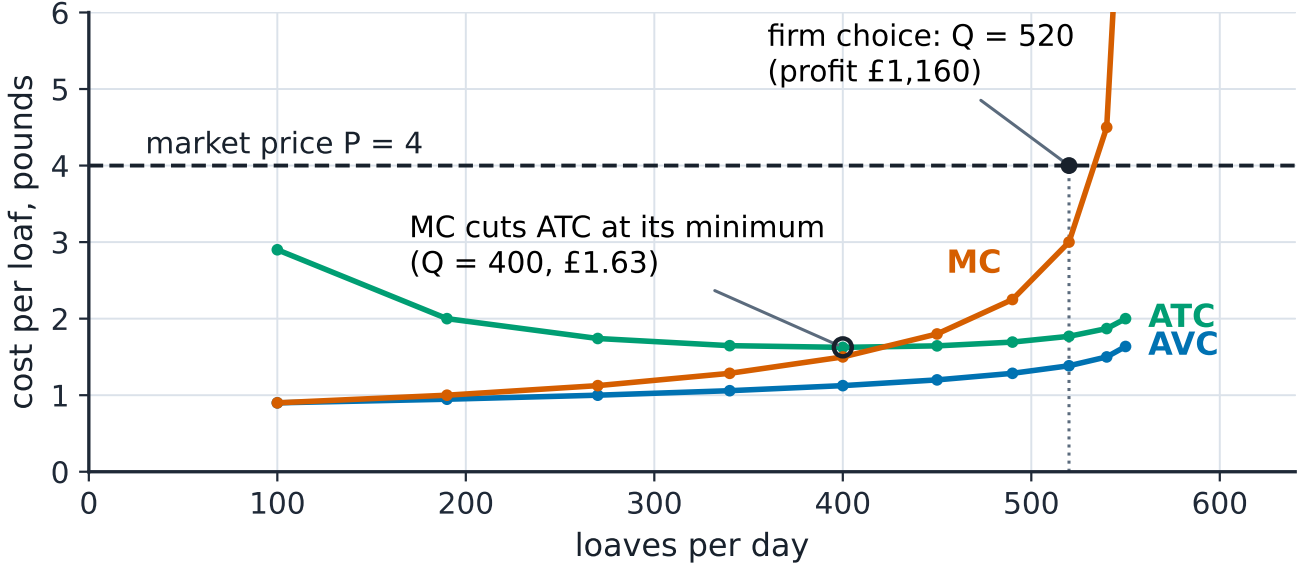
Twelve baker-hours: more cakes cost ever more loaves



Each extra cake costs more loaves: the bow is rising **opportunity cost**.

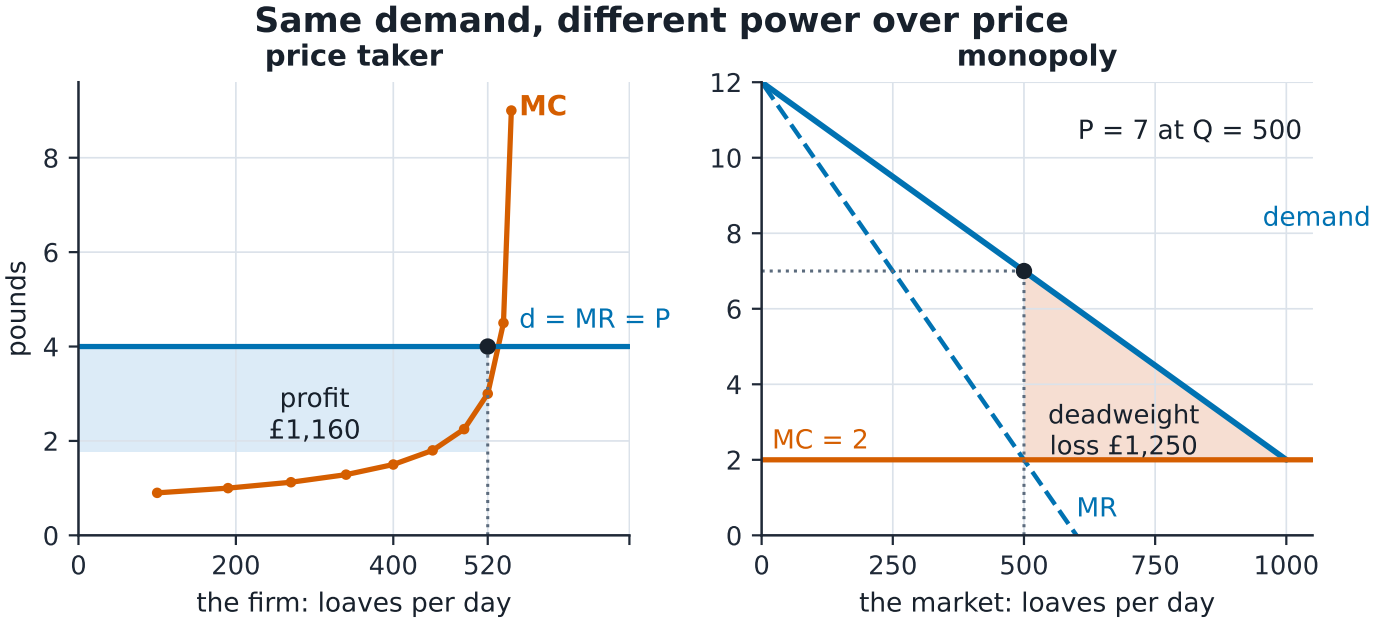
Production and costs: one table, every curve

Diminishing returns pull MC up; the averages follow the marginal



MC cuts ATC at its minimum, Q = 400; at P = 4 the firm makes 520.

Market structures: pricing by power



Price taker at 4 against a monopolist at 7 with a 1,250 **deadweight loss**.

Exercises 2.1·2.2

2.1 Compute the private equilibrium. Then compute the social optimum: the price buyers pay, the price sellers keep, and the quantity. [5]

2.2 Check crate 390 explicitly: the buyer's value, the seller's private cost, and the full social cost. Should it be brewed? [3]

Exercises 2.1·2.2

2.1 Compute the private equilibrium. Then compute the social optimum: the price buyers pay, the price sellers keep, and the quantity. [5]

2.1

- Private: $800 - 100P = 100P$ gives $P = £4$, $Q = 400$ crates.
- Social: buyers pay P_c, sellers keep $P_c - 1$.
- $800 - 100P_c = 100(P_c - 1)$ gives $P_c = £4.50$, $P_p = £3.50$.
- $Q = 350$.
- Fifty crates fewer than the private market.

2.2 Check crate 390 explicitly: the buyer's value, the seller's private cost, and the full social cost. Should it be brewed? [3]

2.2

- Buyer's value at 390: $8 - 390/100 = £4.10$.
- Private cost £3.90; social cost $3.90 + 1.00 = £4.90$.
- $£4.90 > £4.10$ – **not worth brewing**, even though the private ledger shows a 20p gain. Crates 351–400 all fail this test.

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Exercises 2.3·2.4

2.3 For the £1 tax at the optimum: compute the tax revenue, and explain in one line each why the revenue is a transfer but the triangle is a gain. [4]

2.4 Classify each situation: (a) the canal damage above; (b) the towpath's new street lighting; (c) a stall selling day-old pastries as fresh; (d) beer prices rising because barley is dearer this year. [4]

Exercises 2.3·2.4

2.3 For the £1 tax at the optimum: compute the tax revenue, and explain in one line each why the revenue is a transfer but the triangle is a gain. [4]

2.3

- Revenue: $350 \times £1 = £350$.
- It is money moved from buyers and sellers to the council – nothing created: a transfer.
- The triangle $\frac{1}{2} \times 1 \times 50 = £25$ is damage that no longer happens, net of value forgone.
- The only pure gain – and small.

2.4 Classify each situation: (a) the canal damage above; (b) the towpath's new street lighting; (c) a stall selling day-old pastries as fresh; (d) beer prices rising because barley is dearer this year. [4]

2.4

- (a) Externality – an external cost on the canal.
- (b) Public good – non-rival and non-excludable, so no price can fund it.
- (c) Information failure – the seller knows what the buyer cannot.
- (d) No failure – a real cost moved, and the price tells the truth.

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Exercise 2.5

2.5 The council levies £1 per crate as ordinary revenue and leaves the brewery's outfall unpriced; separately, an engineer values the true damage at £1.40, not £1.00. In two lines each: what does each error do? [4]

Exercise 2.5

2.5 The council levies £1 per crate as ordinary revenue and leaves the brewery's outfall unpriced; separately, an engineer values the true damage at £1.40, not £1.00. In two lines each: what does each error do? [4]

2.5

- Wrong target: the wedge still cuts quantity to 350, but the outfall still pours – the quantity moved, the failure did not.
- Wrong number: a £1 tax under-prices a £1.40 damage.
- Solving with 1.4 gives Q = 330, so crates 331–350 are still brewed although they should not be.
- Measurement IS the policy.