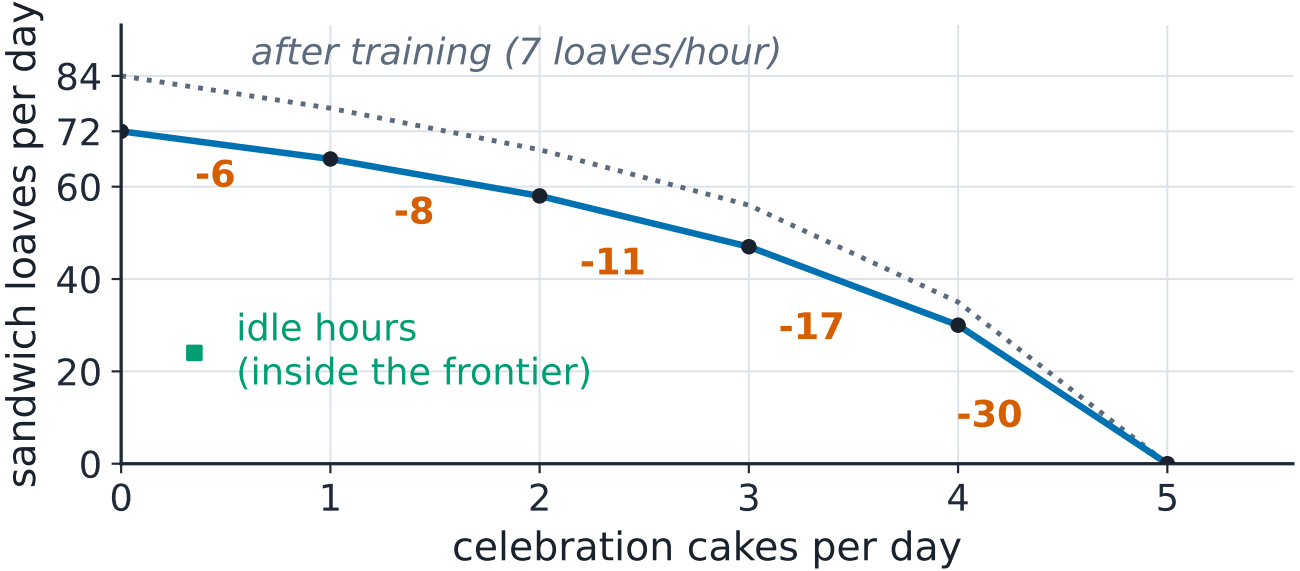
Exercise walk-through

3.4
Production and costs

University Business

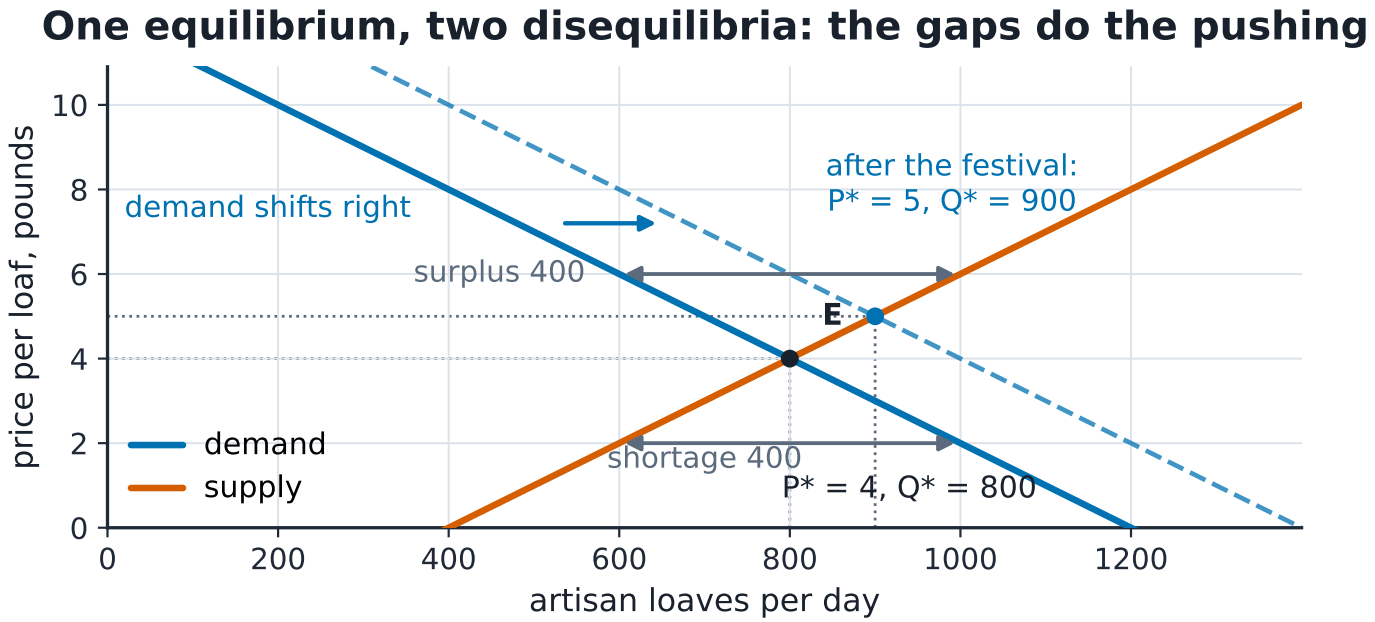
Scarcity and opportunity cost: the frontier

Twelve baker-hours: more cakes cost ever more loaves



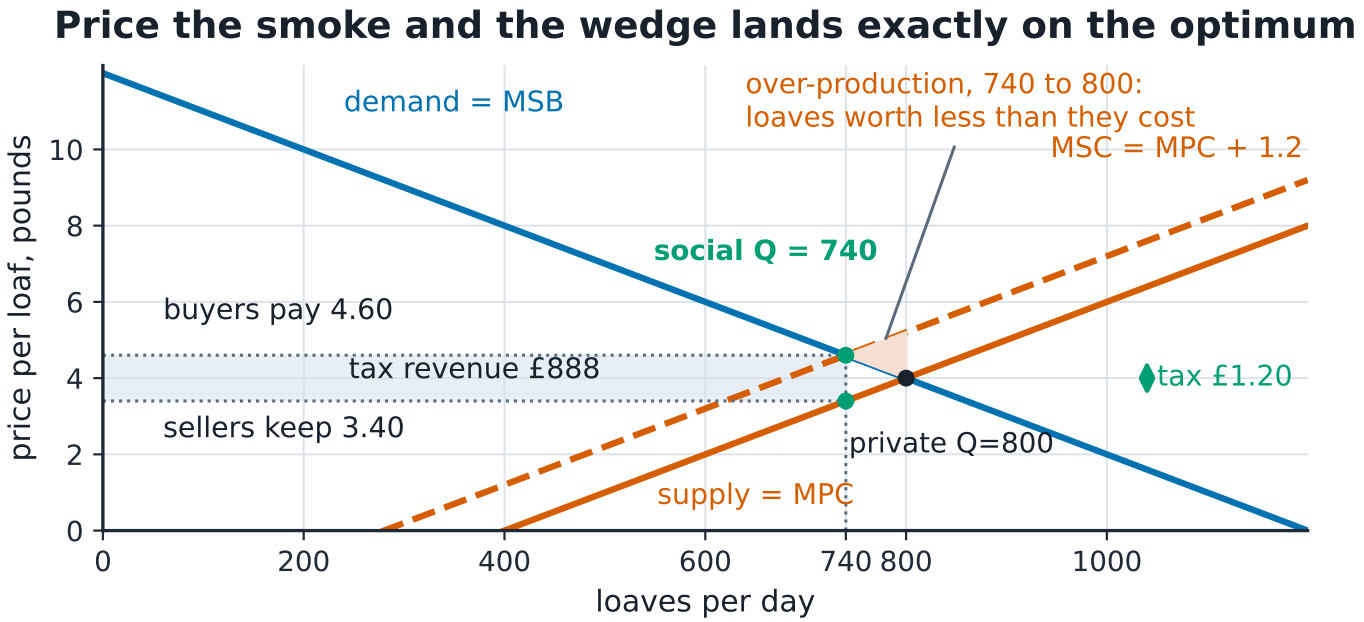
Each extra cake costs more loaves: the bow is rising **opportunity cost**.

Demand and supply: one equilibrium, two signatures



Equilibrium at 4 pounds, 800 loaves; the festival moves it to 5 and 900.

Market failure: price the smoke



A 1.20 tax moves output from 800 to the social optimum of 740.

Exercises 2.1·2.2

2.1 Compute MPL, MC, AVC and ATC for $L = 1, 2, 3$. [4]

2.2 Where does ATC bottom out on this table (compute it for the remaining rows), and why does MC pass through that minimum? [4]

Exercises 2.1·2.2

2.1 Compute MPL, MC, AVC and ATC for $L = 1, 2, 3$. [4]

2.1

- L=1: MPL 60, MC 60/60 = £1.00, AVC 60/60 = £1.00, ATC 210/60 = £3.50.
- L=2: MPL 50, MC £1.20, AVC 120/110 = £1.09, ATC 270/110 = £2.45.
- L=3: MPL 40, MC £1.50, AVC £1.20, ATC 330/150 = £2.20.
- MC rises with each worker because MPL falls.

2.2 Where does ATC bottom out on this table (compute it for the remaining rows), and why does MC pass through that minimum? [4]

2.2

- Remaining ATC: L=4: 390/180 = £2.17; L=5: 450/200 = £2.25; L=6: 510/210 = £2.43.
- The minimum is at **L = 4 (£2.17)**.
- MC there is 60/30 = £2.00, passing through from below.
- A cup cheaper than the average pulls the average down, a dearer one pushes it up, so the average can only turn where MC equals it.

Exercises 2.3·2.4

2.3 The market price of a cup is £2.00. How many workers does the cart employ, and what profit or loss does the day show? Verify the loss is smaller than shutting down would be. [4]

2.4 A price war drops the cup to £0.95. What does the cart do, and why, with numbers? [3]

Exercises 2.3·2.4

2.3 The market price of a cup is £2.00. How many workers does the cart employ, and what profit or loss does the day show? Verify the loss is smaller than shutting down would be. [4]

2.3

- Employ while $MC \le 2.00$: the fourth worker's cups cost exactly £2.00, the fifth's £3.00 – stop at $\mathbf{L = 4}$**, 180 cups**.
- Revenue £360 against cost $240 + 150 =$ £390: a **loss of £30**.
- Shutting down loses the £150 fixed cost, and £30 < £150, so operating is right.
- The price covers AVC (£1.33) and £120 of the fixed cost.

2.4 A price war drops the cup to £0.95. What does the cart do, and why, with numbers? [3]

2.4

- £0.95 is below the smallest AVC on the table (£1.00, the first worker's 60 cups).
- No scale even pays its own wages – the best candidate, one worker, brings £57 against £60.
- **Shut down** and lose only the £150.

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Exercises 2.5·2.6

2.5 The owner says: ”ATC falls from L = 1 to L = 4 – that’s our economies of scale kicking in.” Correct him in two lines. [2]

2.6 True or false with one line each: (a) the £150 machine is irrelevant to how many cups to sell; (b) MC can be computed from the change in ATC; (c) the shutdown rule compares price with ATC. [3]

Exercises 2.5·2.6

2.5 The owner says: "ATC falls from L = 1 to L = 4 – that's our economies of scale kicking in." Correct him in two lines. [2]

2.5

- The machine never changed size: that fall is the £150 fixed cost spreading over more cups, a short-run effect.
- **Economies of scale** are long-run, about changing the cart itself.

2.6 True or false with one line each: (a) the £150 machine is irrelevant to how many cups to sell; (b) MC can be computed from the change in ATC; (c) the shutdown rule compares price with ATC. [3]

2.6

- (a) True for the marginal decision (how many cups), false for shutdown.
- (b) False – MC comes from w/MPL, never from differencing ATC.
- (c) False – shutdown compares price with minimum AVC; P < ATC means loss, not closure.