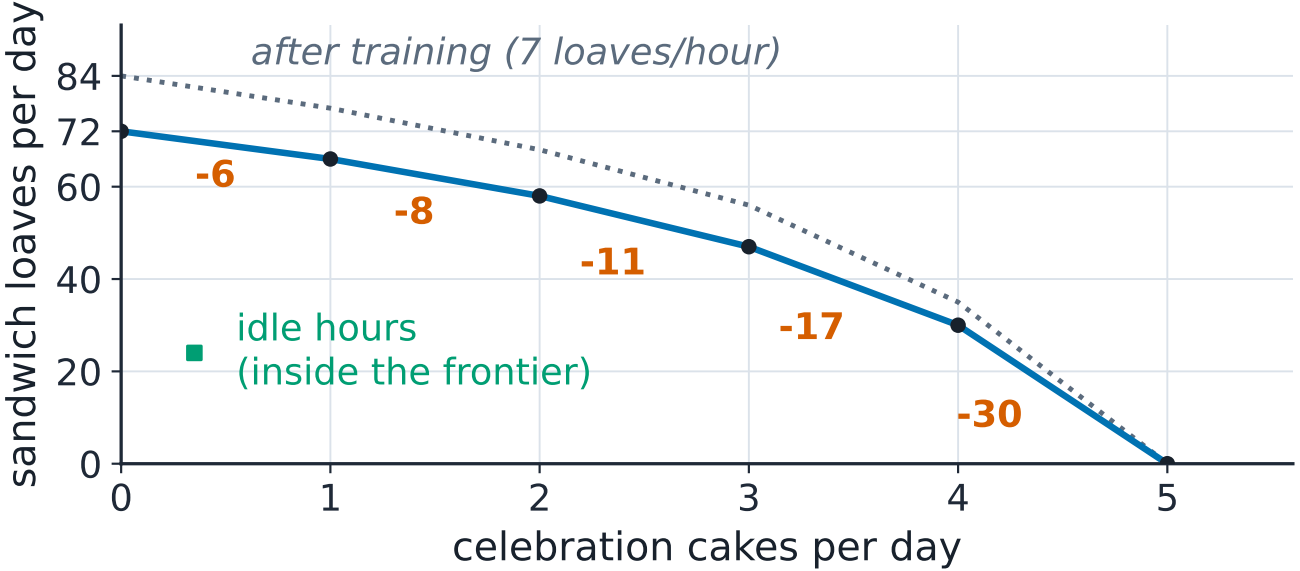
Exercise walk-through

3.3 Elasticity

University Business

Scarcity and opportunity cost: the frontier

Twelve baker-hours: more cakes cost ever more loaves



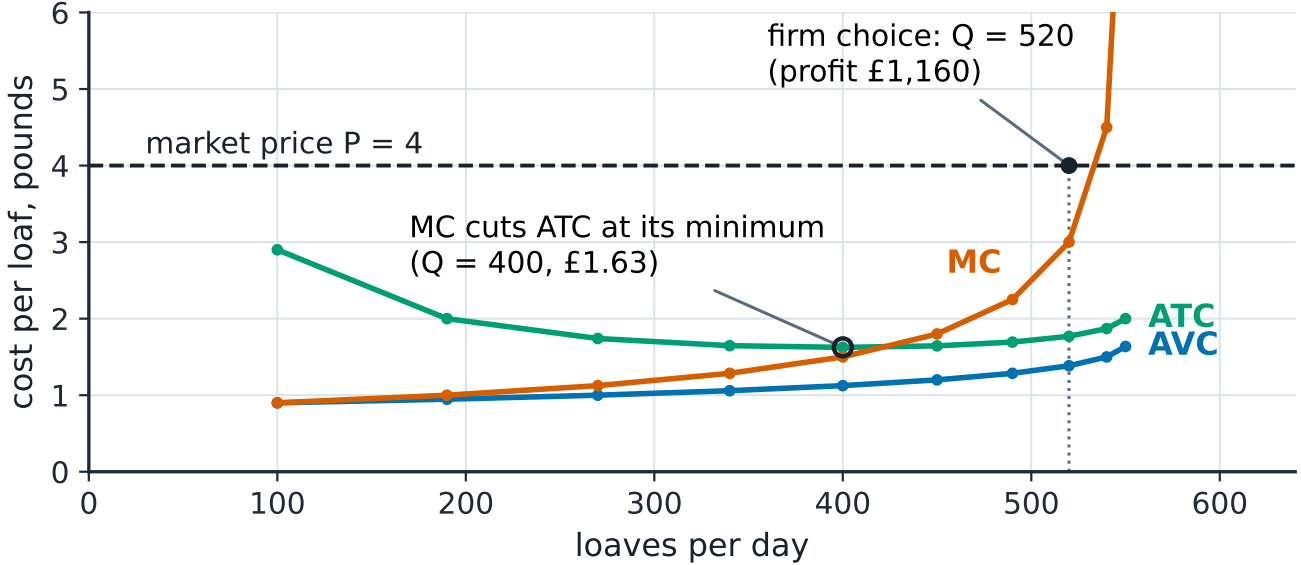
Each extra cake costs more loaves: the bow is rising **opportunity cost**.

Elasticity: three classifications

1. **Income** Incomes +10% (4,000 to 4,400 a month), quantity +15% (800 to 920): elasticity 1.5 - a normal good and a luxury.
2. **Cross** Bread 4 to 5 pounds, croissants 200 to 160: midpoint **cross elasticity** -1.0 - strong complements.
3. **Advise** At 5 pounds epsilon is -0.71: one more pound is affordable; the peak sits at 6 pounds and 3,600.

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.

Exercises 2.1·2.2

2.1 Compute the point elasticity at £3, at £6 and at £9, and classify each as elastic, unit or inelastic. [4]

2.2 The price moves £4 → £5: compute revenue at both prices. Then £6 → £7: compute revenue at both. Explain the contrast in one line. [4]

Exercises 2.1·2.2

2.1 Compute the point elasticity at £3, at £6 and at £9, and classify each as elastic, unit or inelastic. [4]

2.1

- At £3: $-100 \times 3/900 =$ **-0.33 (inelastic)**.
- At £6: $-100 \times 6/600 =$ **-1.00 (unit)**.
- At £9: $-100 \times 9/300 =$ **-3.00 (elastic)**.
- Elasticity steepens as you climb the curve.

2.2 The price moves £4 → £5: compute revenue at both prices. Then £6 → £7: compute revenue at both. Explain the contrast in one line. [4]

2.2

- £4 → £5: 3,200 → 3,500 – rose (inelastic step).
- £6 → £7: 3,600 → 3,500 – fell (elastic step).
- Crossing the unit point at £6 flips the revenue test's answer.
- The two steps straddle the peak, which is the whole lesson.

Exercises 2.3·2.4

2.3 City incomes rise 8% and the quantity of artisan bread bought rises from 800 to 880. Compute the income elasticity and classify the good. [3]

2.4 When the loaf price moves £4 → £5, croissant sales move 200 → 160; when the SAME move happens, sandwich-roll sales move 200 → 240. Using midpoints, compute both cross elasticities and classify each relationship. [4]

Exercises 2.3·2.4

2.3 City incomes rise 8% and the quantity of artisan bread bought rises from 800 to 880. Compute the income elasticity and classify the good. [3]

2.3

- $\%\Delta Q = 80/800 = 10\%$.
- Elasticity $= 10/8 =$ **1.25**.
- Positive (a normal good) and above 1: a **luxury** by budget share.

2.4 When the loaf price moves £4 → £5, croissant sales move 200 → 160; when the SAME move happens, sandwich-roll sales move 200 → 240. Using midpoints, compute both cross elasticities and classify each relationship. [4]

2.4

- Croissants: $(-40/180) \div (1/4.5) =$ **−1.0 – complements**.
- Rolls: $(+40/220) \div (1/4.5) = +0.82$ – **substitutes**.
- The sign does the classification.
- Size adds strength: -1.0 is a strong complement, $+0.82$ a moderate substitute.

Exercises 2.5·2.6

2.5 Nimbus currently charges £5 (quantity 700). Compute the elasticity there, and state – with the number – the revenue-maximising price and quantity on this demand. [3]

2.6 A rival baker says: ”Our slope is −100, so we are less elastic than the coffee carts at −50.” Correct the confusion in two lines. [2]

Exercises 2.5·2.6

2.5 Nimbus currently charges £5 (quantity 700). Compute the elasticity there, and state – with the number – the revenue-maximising price and quantity on this demand. [3]

2.5

- At £5: $\varepsilon = -100 \times 5/700 = \mathbf{-0.71}$.
- Revenue peaks where $\varepsilon = -1$: $P = \mathbf{£6}$, $Q = 600$.
- Revenue there is £3,600 – one more pound is affordable, one more is not.

2.6 A rival baker says: ”Our slope is -100, so we are less elastic than the coffee carts at -50.” Correct the confusion in two lines. [2]

2.6

- Elasticity is a percentage ratio, not a slope: it depends on P/Q as well as b.
- A flat-seeming slope at a high price can be more elastic than a steeper slope at a low one – compare points, not slopes.