Principles of Microeconomics

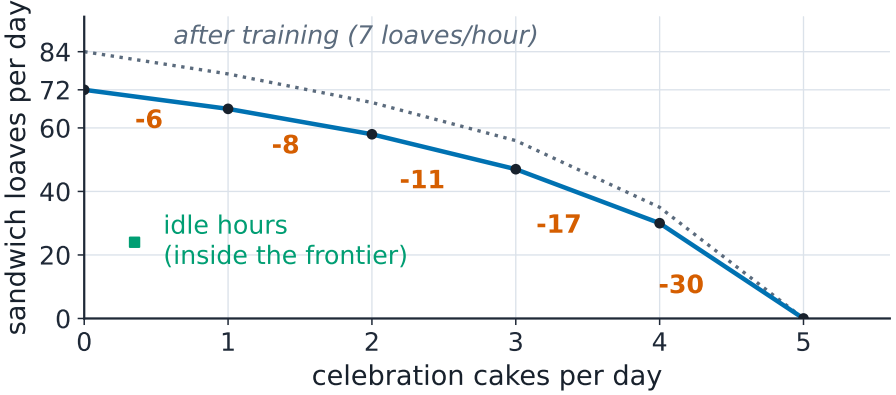
Curated undergraduate study track (not accredited, no external exam). Original explanations and practice only, following the reviewed course handout.

The market for bread, one term long

- One set of numbers runs the whole course - **the 4 pound loaf** meets the smoke of the mill.
- Every diagram carries its algebra; every worked number is machine-verified.

Scarcity and opportunity cost: the frontier

Twelve baker-hours: more cakes cost ever more loaves



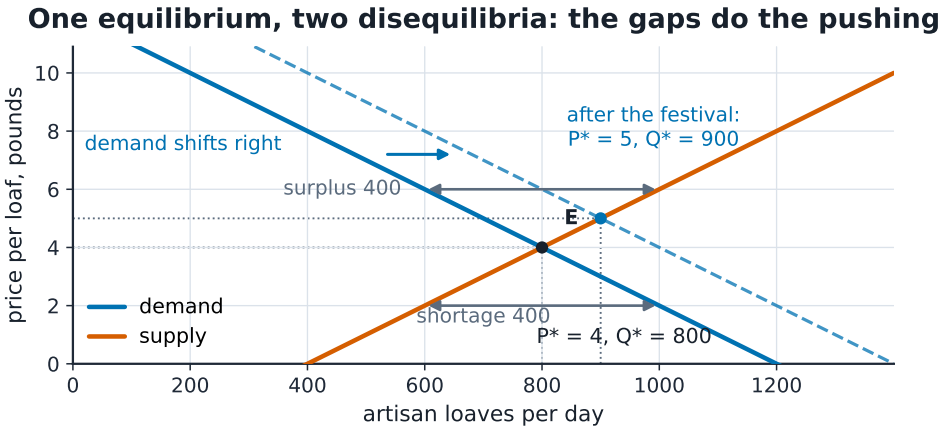
Each extra cake costs more loaves: the bow is rising **opportunity cost**.

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Scarcity and opportunity cost: price the trade-off

1. **Second** Cake 2 costs 8 loaves = 32 pounds at 4 each; a cake netting 37 pounds (45 less 8 of ingredients) is worth baking.
2. **Third** A 50 pound offer on cake 3: benefit 44 after ingredients, cost 11 loaves = 44 - exactly indifferent.
3. **Growth** Training to 7 loaves an hour shifts the frontier out; cake 3 now costs 12 - the menu grew, choosing remains.

Demand and supply: one equilibrium, two signatures

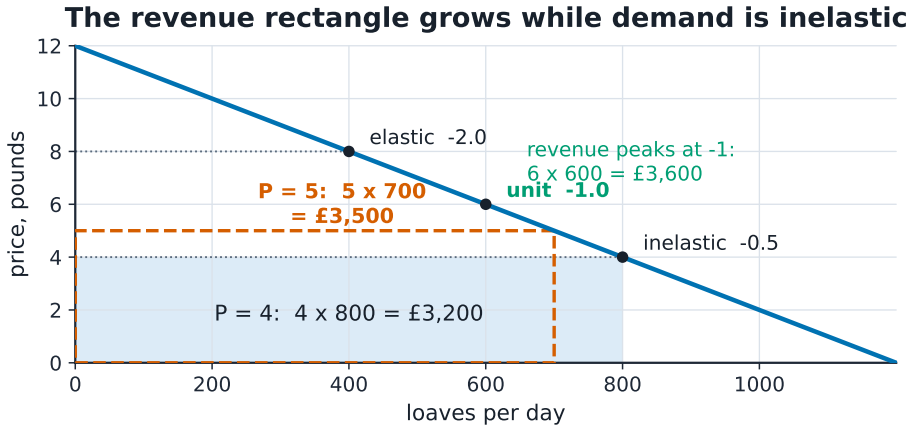


Equilibrium at 4 pounds, 800 loaves; the festival moves it to 5 and 900.

Demand and supply: comparative statics in one line

1. **Festival** 1400 - 100P = 400 + 100P gives 5 pounds, 900 loaves - price and quantity rose together.
2. **Flour** 1200 - 100P = 600 + 100P gives 3 pounds, 900 loaves - price fell, quantity rose.
3. **Both** 1400 - 100P = 600 + 100P gives 4 pounds, 1000 loaves - price effects cancel, quantities add.

Elasticity: the percentage ruler



Revenue rises from 3,200 to 3,500 while demand is inelastic.

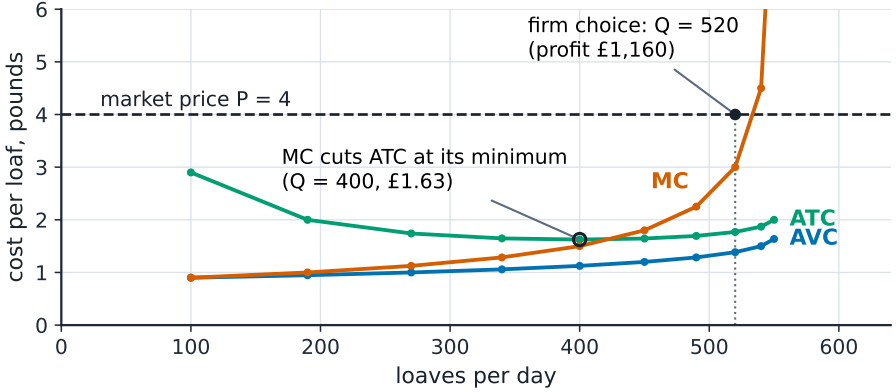
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Elasticity: three classifications

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

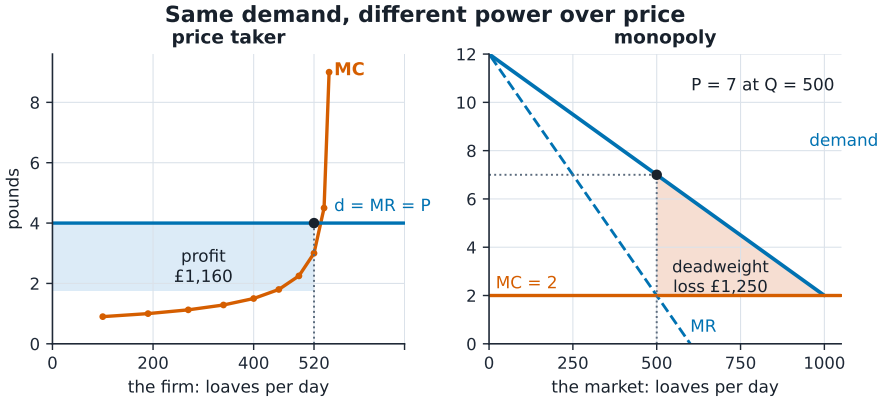


MC cuts ATC at its minimum, Q = 400; at P = 4 the firm makes 520.

Production and costs: produce or shut down

1. **Produce** At 4 pounds: eight bakers, 520 loaves, profit 4 x 520 - 920 = 1,160.
2. **War** At 0.85 the price is below minimum AVC 0.90 - no scale pays its wages; shut and lose only the 200 **fixed cost**.
3. **Boundary** At 1.00 the answer flips: two bakers lose 190, better than shutting down's 200.

Market structures: pricing by power



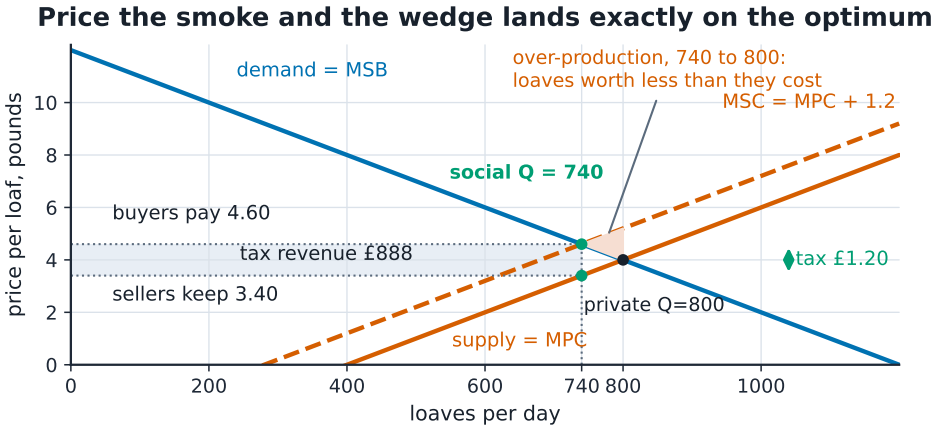
Price taker at 4 against a monopolist at 7 with a 1,250 **deadweight loss**.

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Market structures: the canal concession

1. **Choose** MR = 12 - Q/50 = 2 gives Q = 500, P = 7; profit 3,500 - 1,000 = 2,500, Lerner 5/7.
2. **Lose** Buyers from 500 to 1,000 value loaves above 2 but below 7 - the 1,250 triangle belongs to nobody.
3. **Middle** Nimbus's real world: entry competes the 1,160 to zero until P = ATC with P above MC - variety's price.

Market failure: price the smoke



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

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Market failure: the limits, stated honestly

1. **Revenue** The 1.20 tax on 740 loaves collects 888 - a transfer; the pure gain is the small triangle, about 36 a day.
2. **Wrongtool** The same 1.20 as plain revenue, mill unpriced: quantity still falls to 740 but the smoke per loaf is untouched.
3. **Measure** If the true damage is 1.40, a 1.20 tax misses the optimum - enforcement and measurement are where real policies fail.

Check yourself

- The frontier: the second cake costs? (8 loaves.)
- **Equilibrium** of 1200 - 100P and 400 + 100P? (4 pounds, 800 loaves.)
- Revenue-maximising price where ε = -1? (6 pounds, 3,600.)
- With MR = MC = 2 the monopolist sells? (500 at 7 pounds; the social optimum with the 1.20 smoke is 740 loaves.)