

Percentage changes make responses comparable

A change of ten units means different things in a market selling twenty units and one selling ten thousand. Percentages express a change relative to a base. Elasticity compares percentage changes in two variables. All data in this lesson are illustrative. Distinguish a percentage change in a rate from a percentage-point change.

Demand elasticity is a conditional response

Price elasticity of demand is the percentage change in quantity demanded divided by the percentage change in own price, along an unchanged demand relationship. Ordinary downward-sloping demand gives a negative signed elasticity. We usually classify its absolute magnitude: above one is elastic, below one is inelastic, and exactly one is unit elastic.

Worked example: use the midpoint method

Price rises from £10 to £12 and quantity falls from 100 to 80 units on one demand curve. Average price is £11; average quantity is 90. Midpoint changes are $2/11 = 18.18\%$ and $-20/90 = -22.22\%$. Signed elasticity is -1.222 approximately; its magnitude exceeds one, so this interval is elastic.

Revenue connects price and quantity

Total revenue equals price multiplied by quantity sold. In the preceding example, revenue changes from £1,000 to £960. The price rise is outweighed by the quantity response. Along unchanged demand, an elastic interval makes price and revenue move in opposite directions; an inelastic interval makes them move in the same direction.

Worked example: an inelastic price cut

Price falls from £20 to £18 while quantity rises from 50 to 54. Average price is £19 and average quantity is 52. The midpoint elasticity is $(4/52)$ divided by $(-2/19)$, approximately -0.731 . Revenue falls from £1,000 to £972: the percentage quantity gain is too small to offset the price reduction.

A straight line can have changing elasticity

Slope compares changes in units; elasticity compares proportional changes. For $Q = 200 - 10P$, the slope is always minus ten units per pound. Point elasticity is $-10P/Q$. At $P = £5$ and $Q = 150$ its magnitude is one-third; at $P = £15$ and $Q = 50$ it is three.

Substitution and time influence responsiveness

Demand often responds more when close substitutes are available, when spending represents a larger budget share, or when buyers have time to adjust. These are tendencies to investigate, not universal numerical laws. A narrowly defined product can face more substitutes than a broad category. Essential uses do not make every quantity completely unresponsive.

Supply has an elasticity too

Price elasticity of supply compares the percentage change in quantity supplied with the percentage change in the price received by sellers, other supply conditions unchanged. It is often positive. Capacity, inventories, input availability and time to expand matter. Demand responsiveness and supply responsiveness jointly determine how a market adjusts to a disturbance.

Other elasticities answer other questions

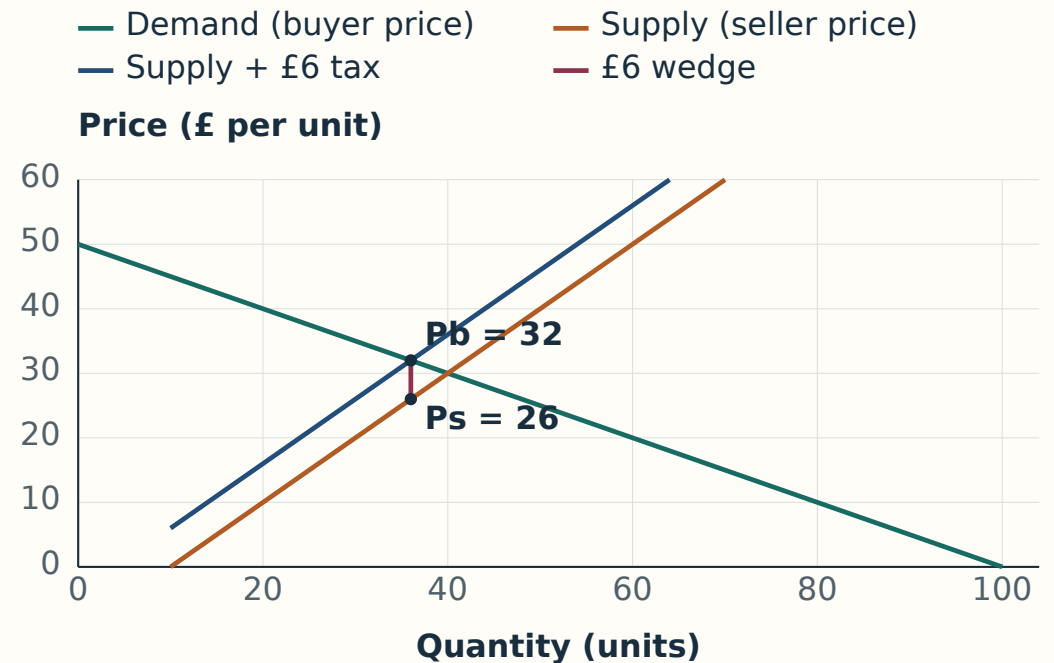
Income elasticity relates quantity demanded to income. A positive value describes a normal good; a negative value describes an inferior good over the relevant range. Cross-price elasticity relates demand for one good to another good's price. Positive responses can indicate substitutes; negative responses can indicate complements, with relevant conditions held fixed.

A tax introduces a price wedge

For a per-unit tax, distinguish the price buyers pay, P_b , from the net price sellers receive, P_s . With a £6 tax, $P_b = P_s + 6$. Our illustrative schedules are $Q_d = 100 - 2P_b$ and $Q_s = 10 + P_s$. Without the tax, one common price is £30 and quantity is forty.

Worked example: calculate tax incidence

Substitute $P_b = P_s + 6$ into demand:
 $100 - 2(P_s + 6) = 10 + P_s$. This
simplifies to $78 = 3P_s$, so $P_s = £26$
and $P_b = £32$. Quantity is thirty-six.
Compared with the untaxed price,
buyers pay £2 more and sellers
receive £4 less per unit.



Legal payment and economic burden can differ

Who sends a tax payment to the authority need not determine who bears its economic cost. In the simple competitive model, the less responsive side generally bears more of a small tax's price burden. At the untaxed equilibrium here, supply elasticity is 0.75 and demand's magnitude is 1.5, consistent with sellers bearing more.

A correlation is not a demand experiment

A hot weekend can increase both cold-drink prices and sales. That does not establish an upward-sloping demand curve; demand may have shifted. To estimate a causal price response, isolate a price change from other influences. Randomised prices or credible quasi-experimental variation can help, but each design needs assumptions, appropriate permissions and careful interpretation.

Calculate, interpret, then qualify

Name the response being measured. Use consistent percentage bases and report whether elasticity is signed or absolute. Check revenue directly when relevant, and separate revenue from profit. For incidence, distinguish buyer and seller prices. Finally, ask whether other conditions were genuinely controlled and whether the estimate applies to the decision at hand.