

Price Elasticity of Demand

AS Economics Presentation
2005

Applications of the idea of elasticity of demand

- Has the London congestion charge reduced traffic flows and congestion?
- Will most people still fly if there is a new aviation fuel tax?



Elasticity of demand



- Why is elasticity of demand important for Stelios?

Elasticity of Demand



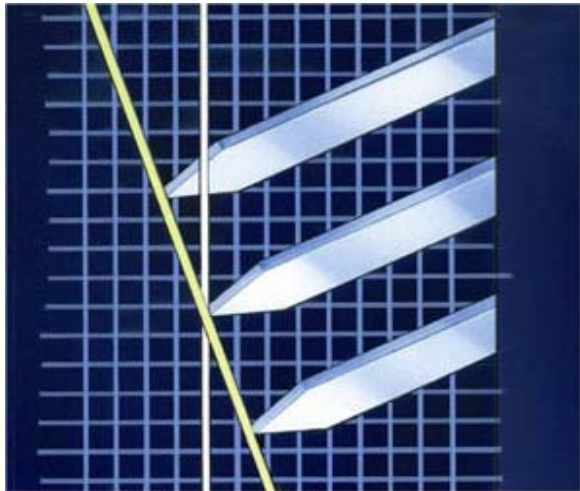
- Why do hotels lower room-rates at weekends and why do car rental firms charge lower prices at weekend?

Cut-throat competition?



Gillette – the manufacturers of the Mach 3 razor - controls 72 per cent of the world's wet shave razor market and takes 90 per cent of the \$1.5 billion annual global profits

If the price of Mach3 razors went up by 20% - would you still buy them?



Definition of Price Elasticity

- Price elasticity (P_{ed}) measures responsiveness of demand to change in price of good itself
- The basic formula for calculating P_{ed} is
 - $P_{ed} = \% \text{ change in } Q_{dx} / \% \text{ change in } P_x$
- (i) When price falls we expect to see an expansion of demand
- (ii) When price rises we expect to see a contraction of demand
- Therefore an inverse relationship between price and demand (giving a negative value for P_{ed})
- We ignore the sign but focus instead on the coefficient of elasticity

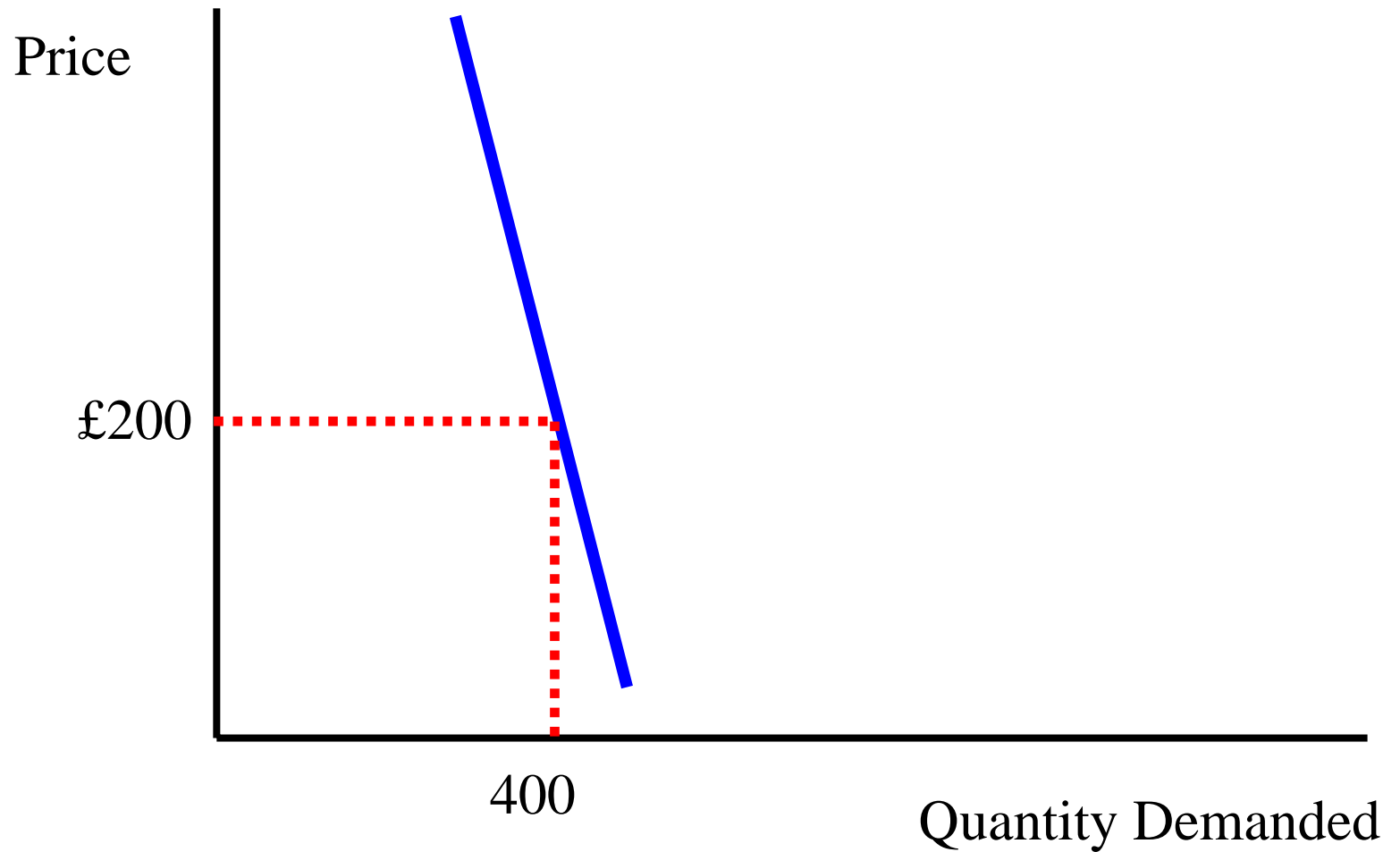
Values for elasticity of demand

- If $P_{ed} = 0$ then demand is perfectly inelastic - demand does not change at all when the price changes
- If P_{ed} is between 0 and 1 then demand is inelastic
- If $P_{ed} = 1$ then demand is said to unit elastic
- If $P_{ed} > 1$, then demand responds more than proportionately to a change in price – i.e. demand is elastic

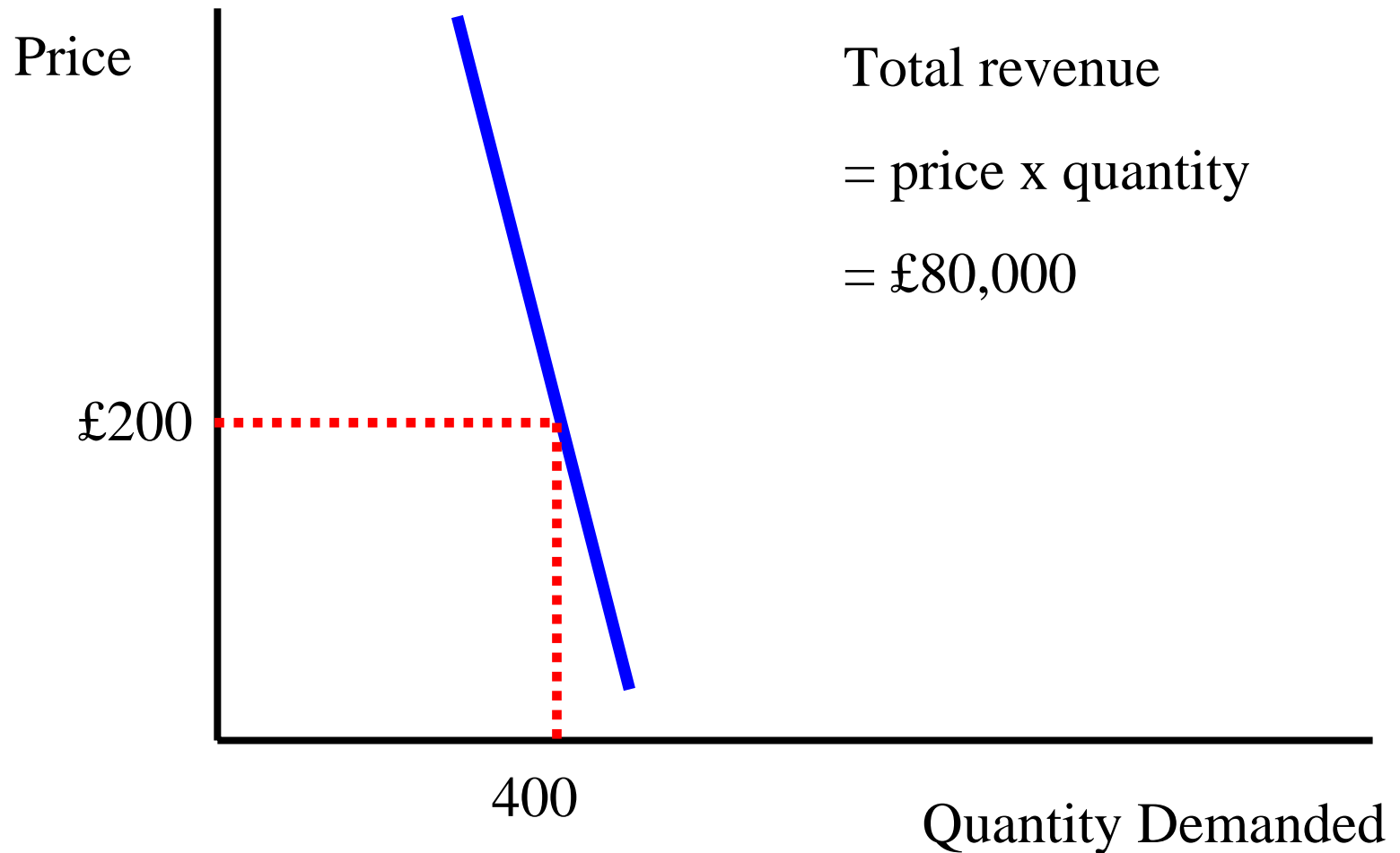
An inelastic demand



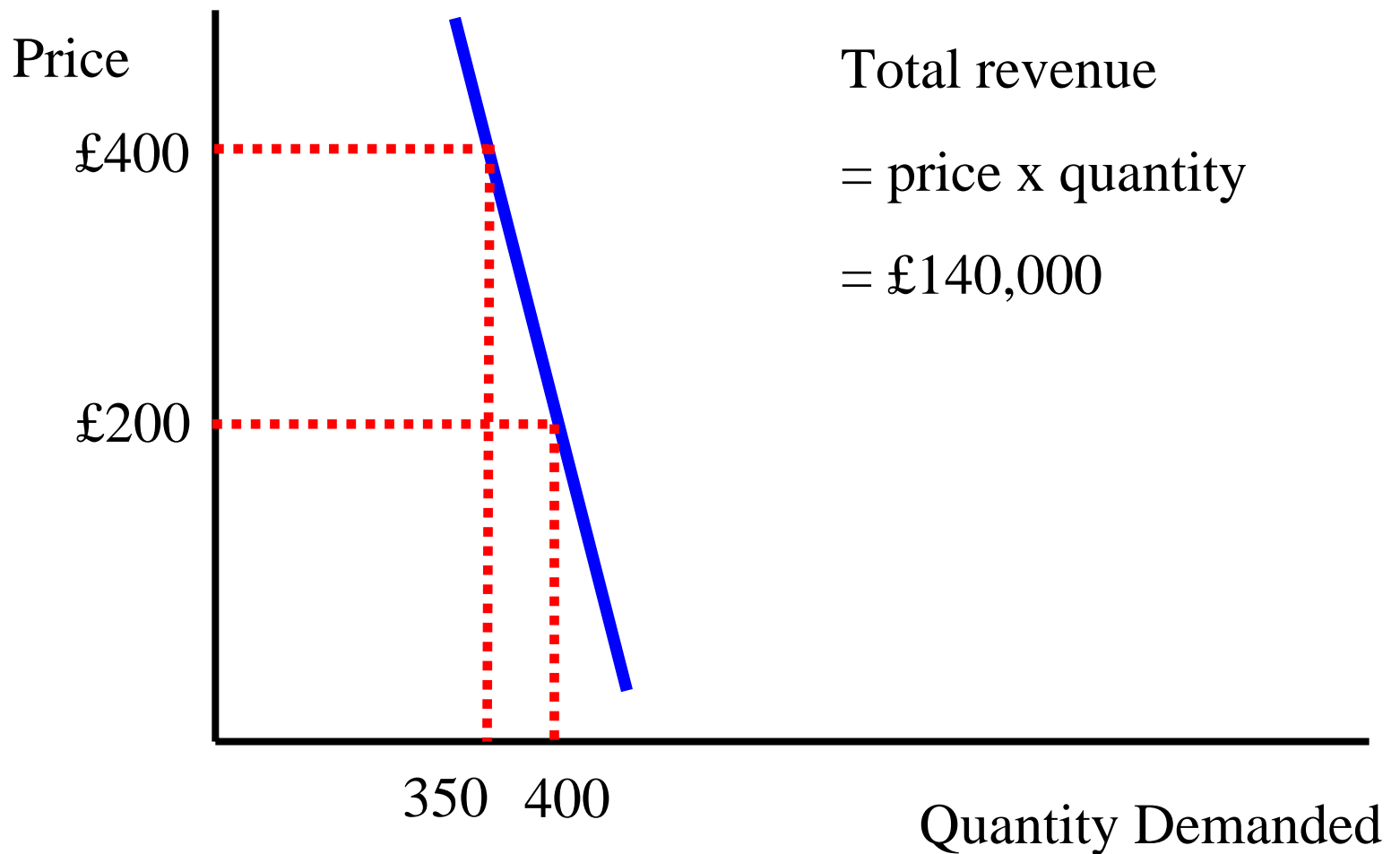
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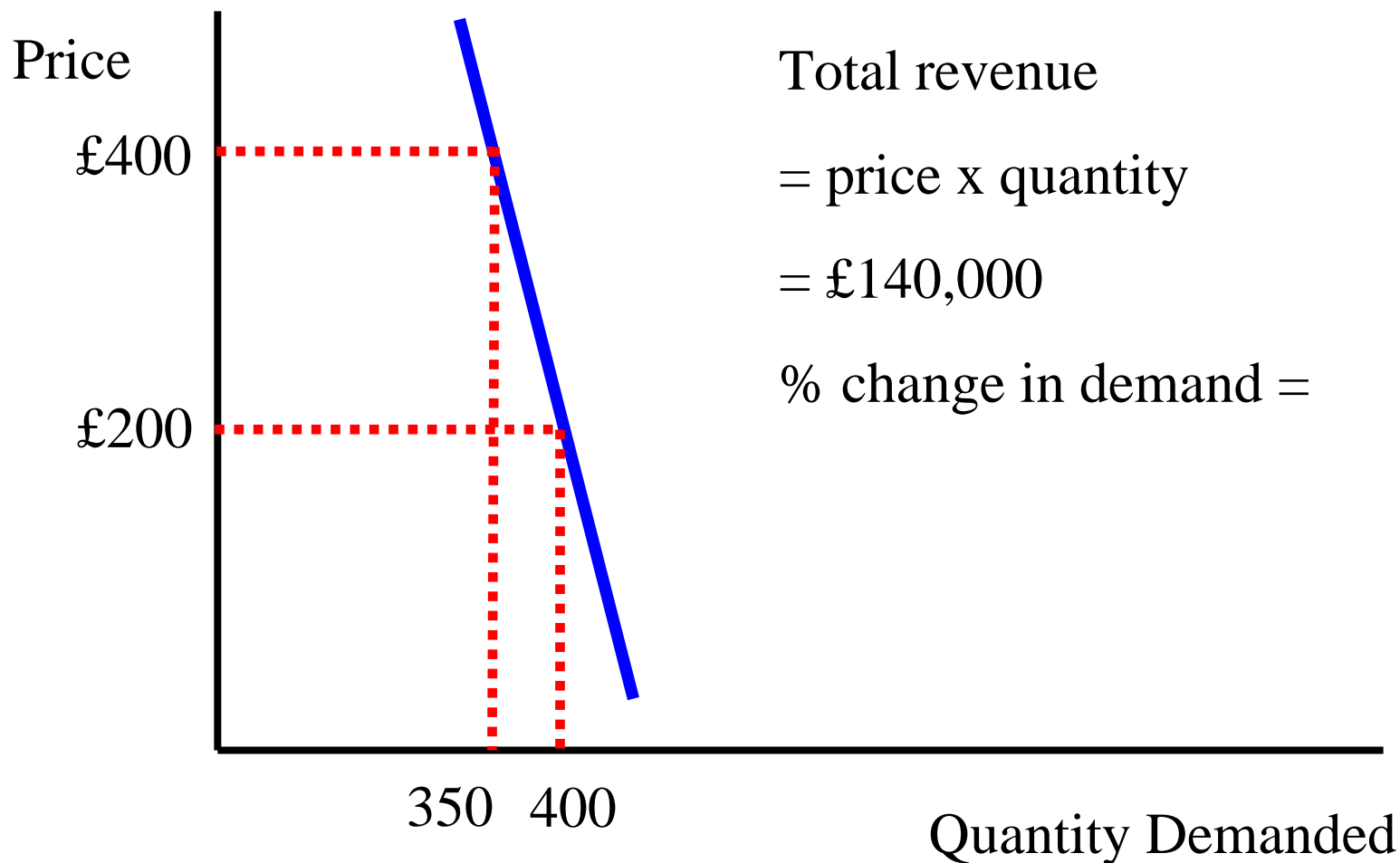
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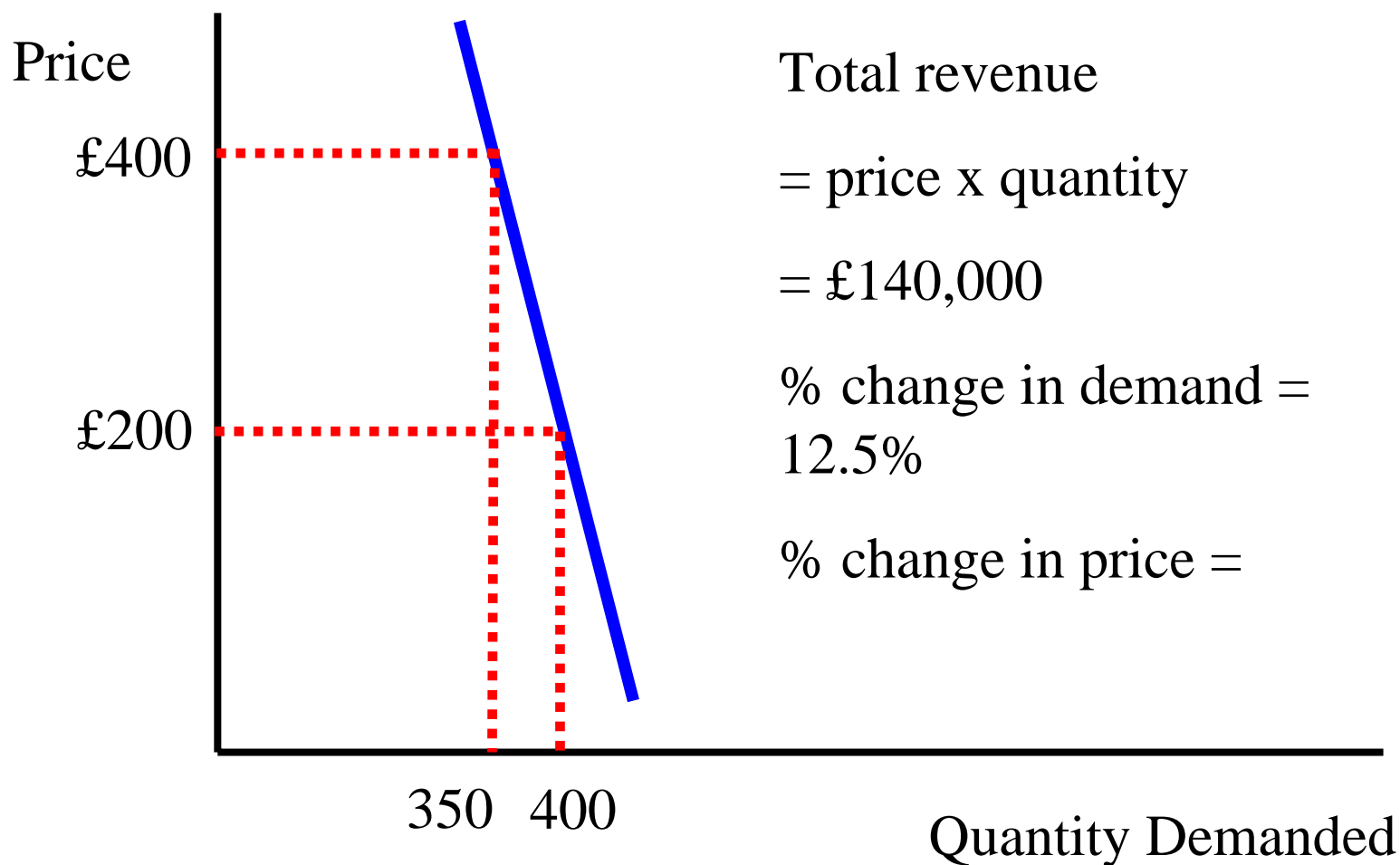
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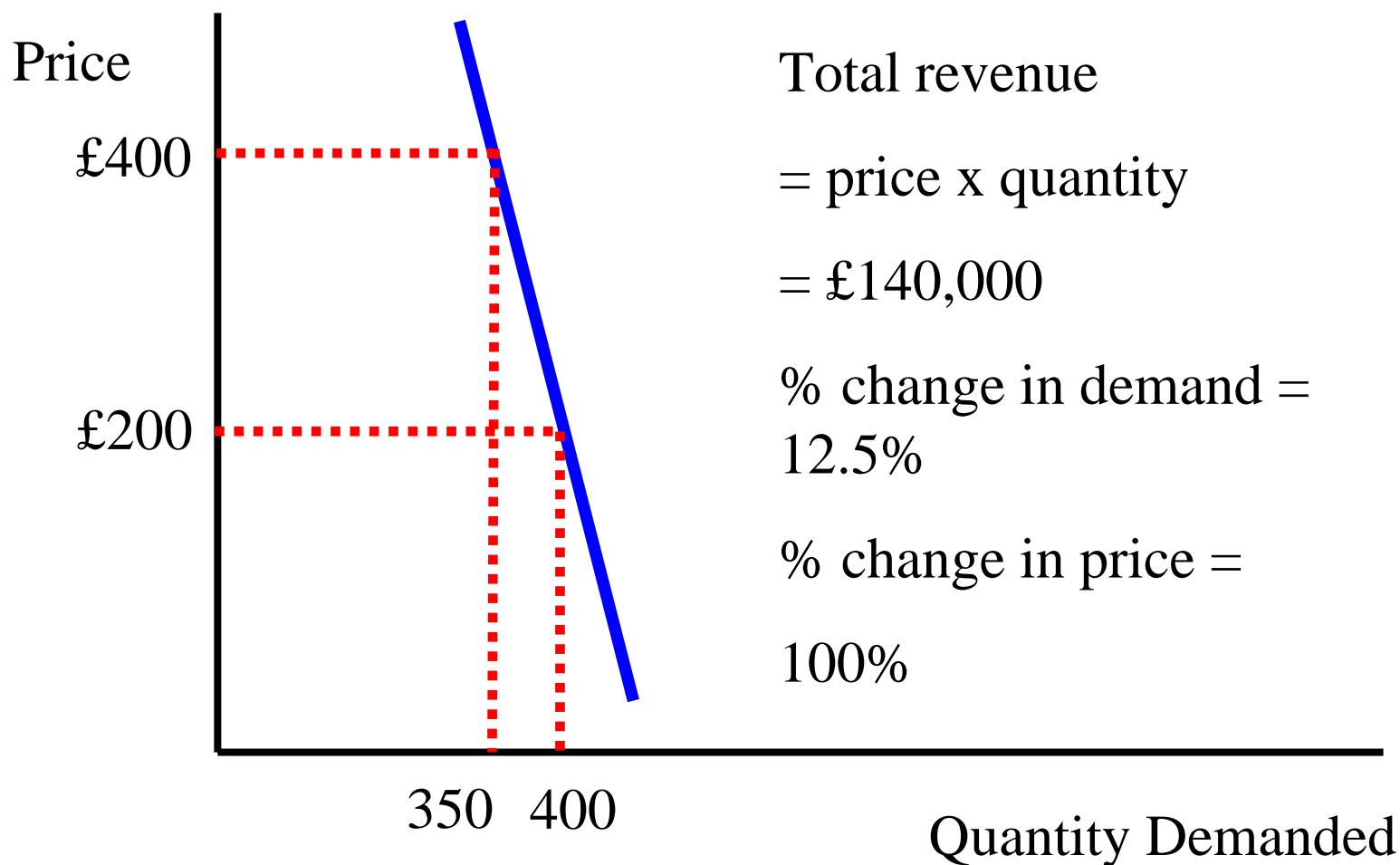
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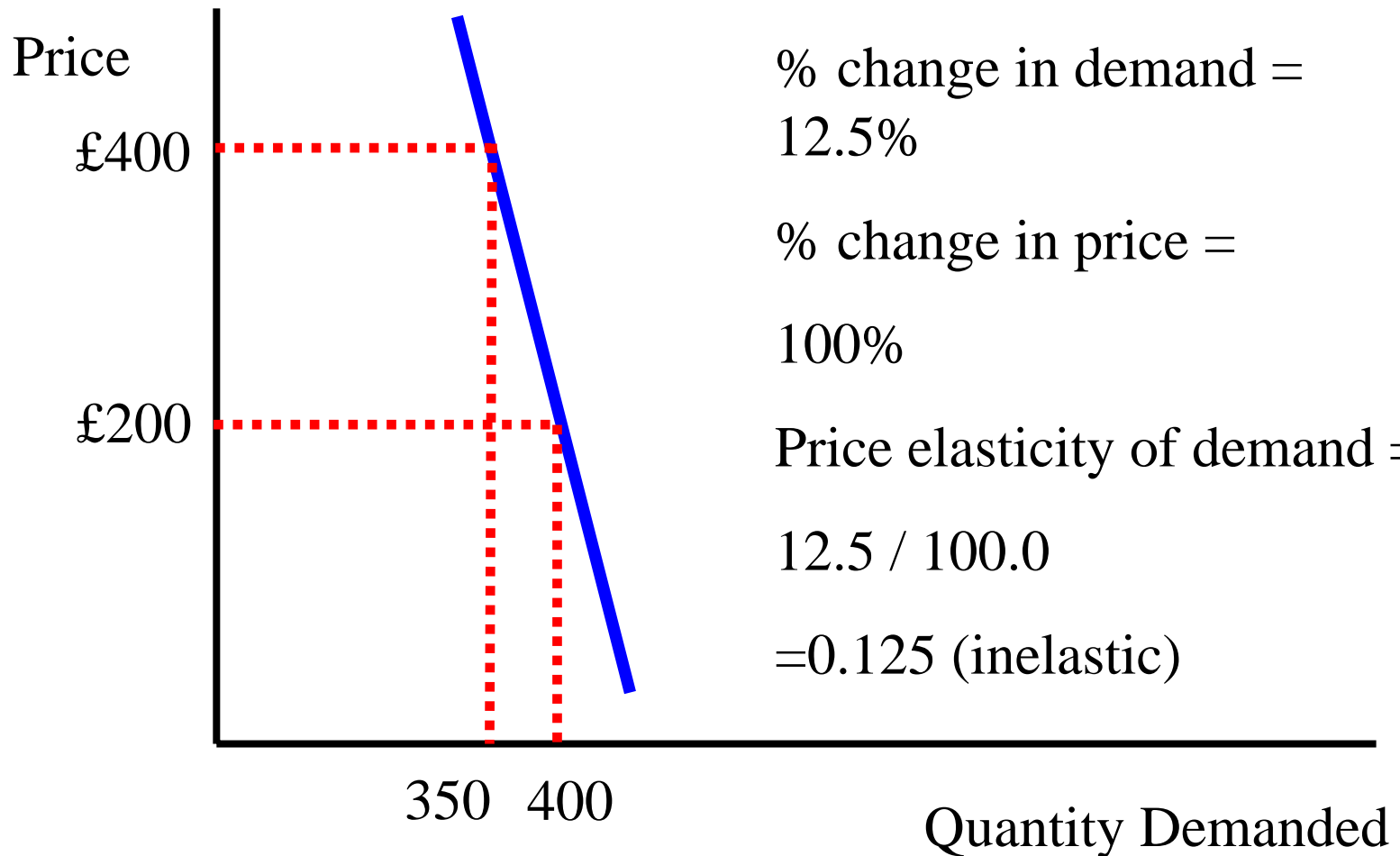
An inelastic demand



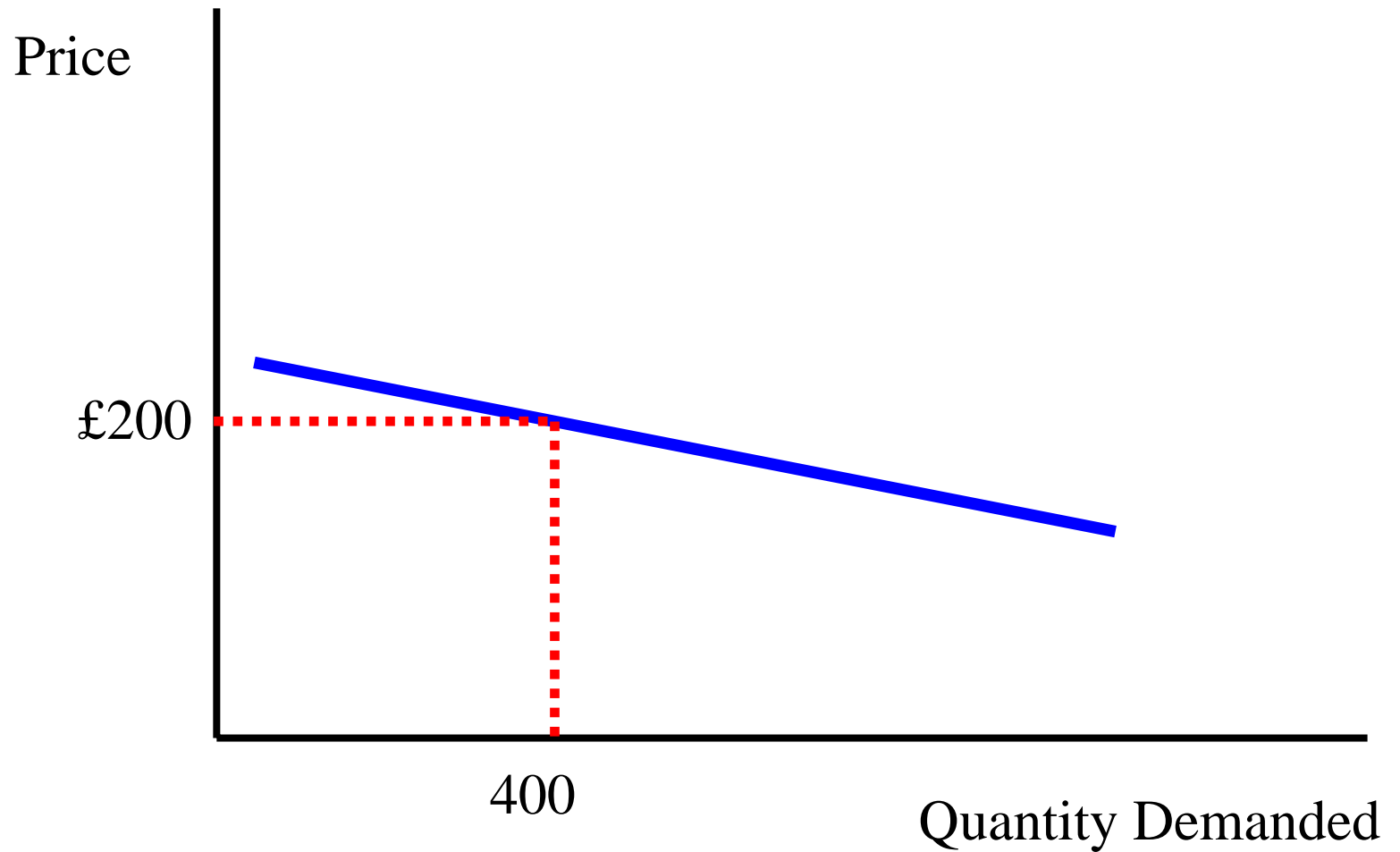
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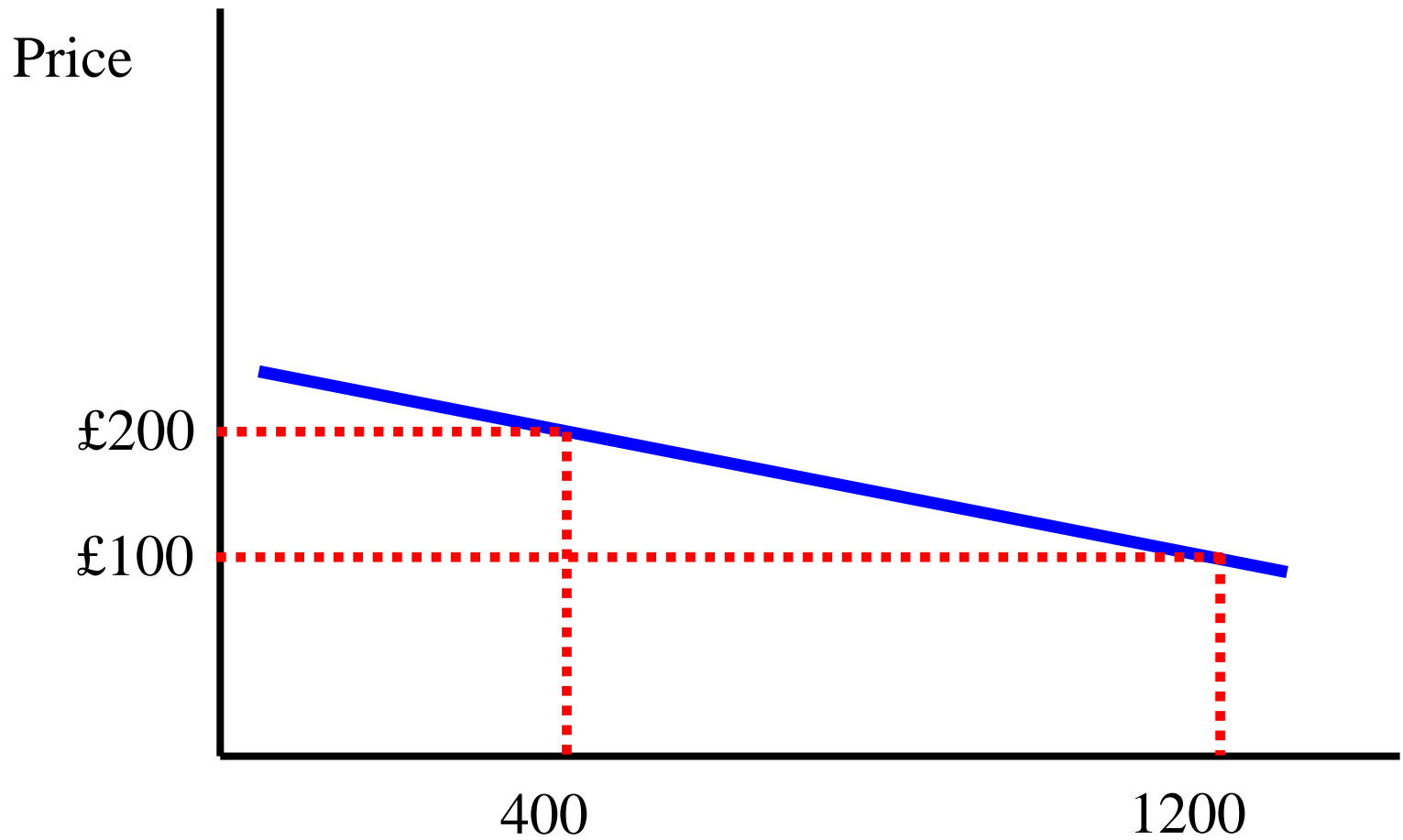
An inelastic demand



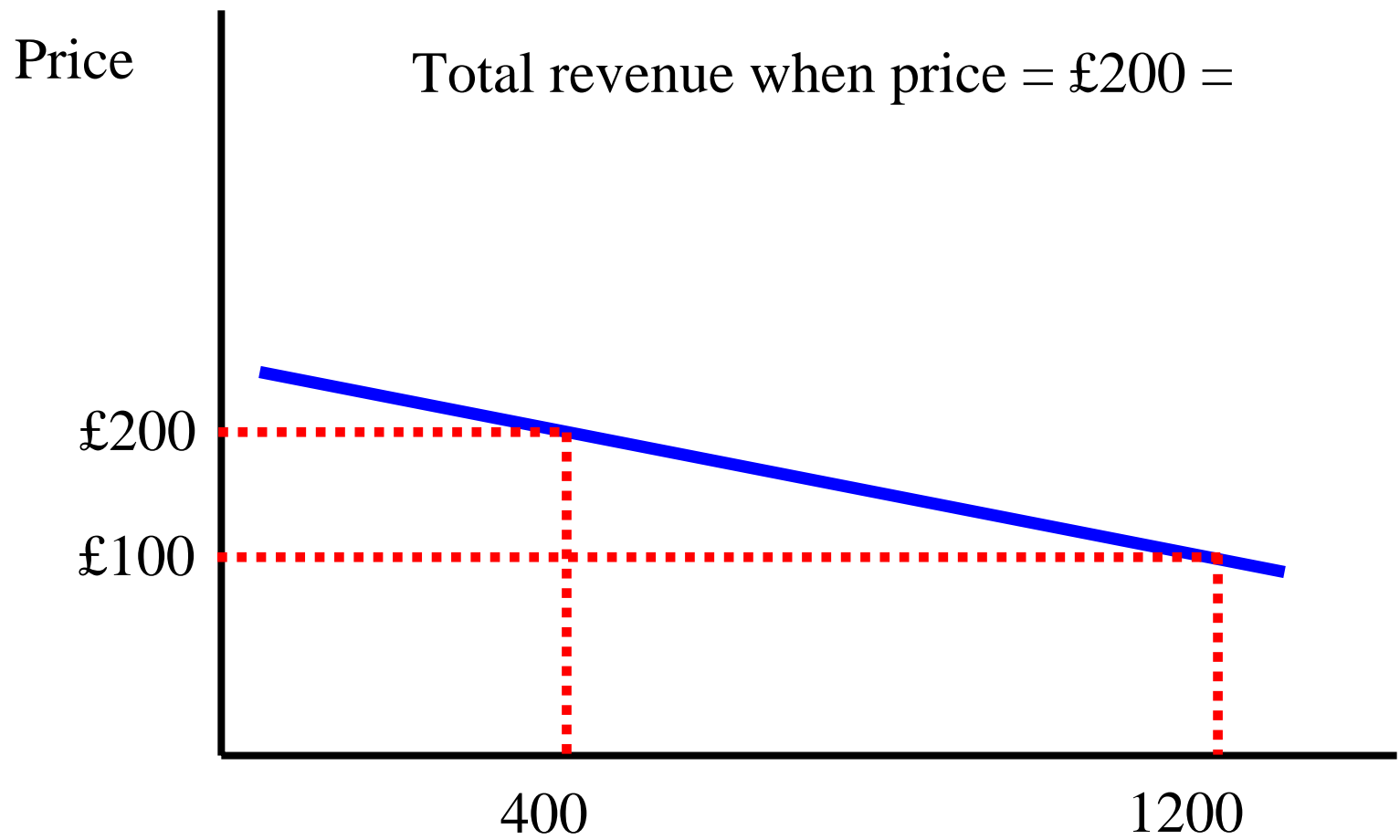
An elastic demand curve



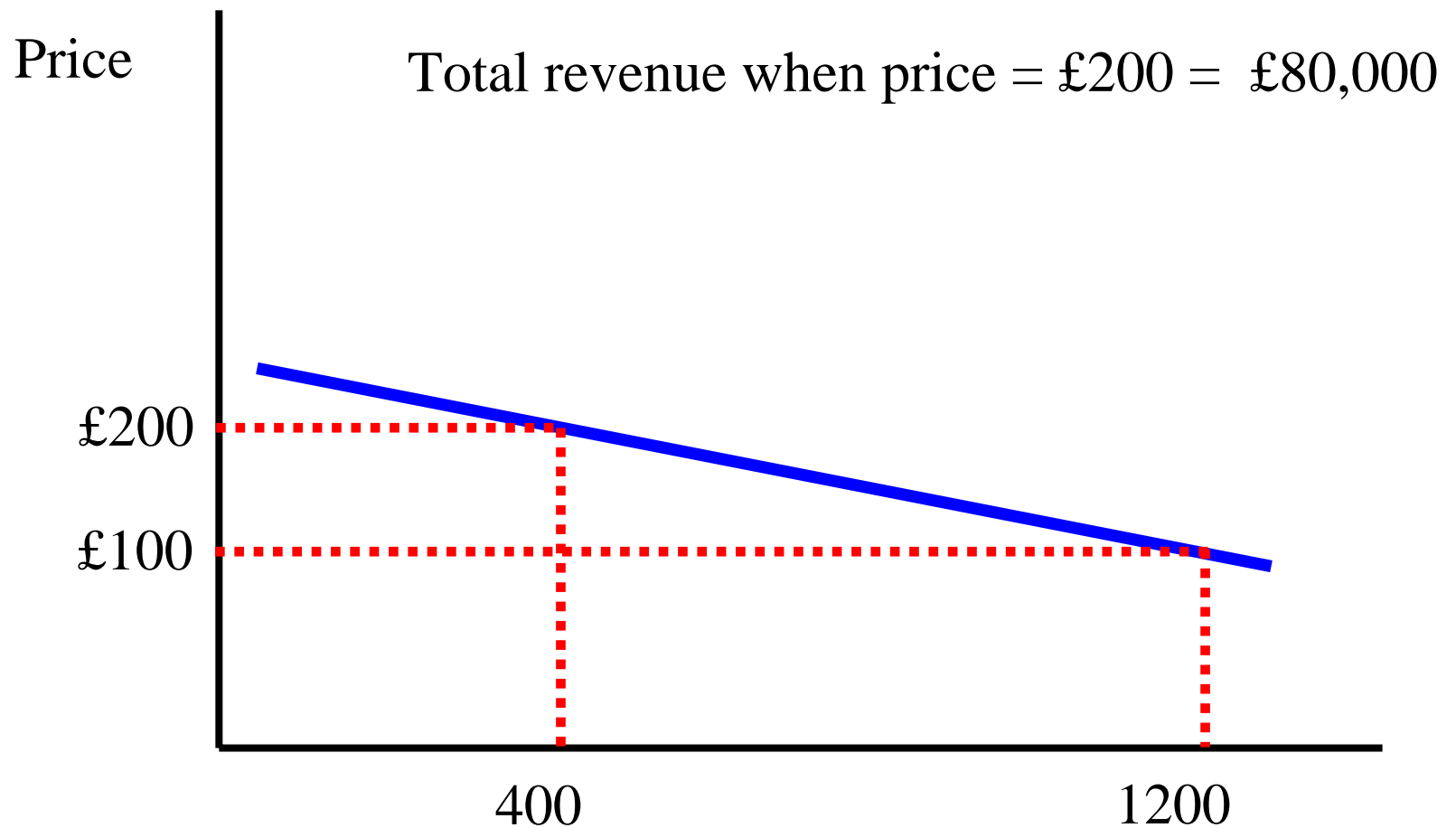
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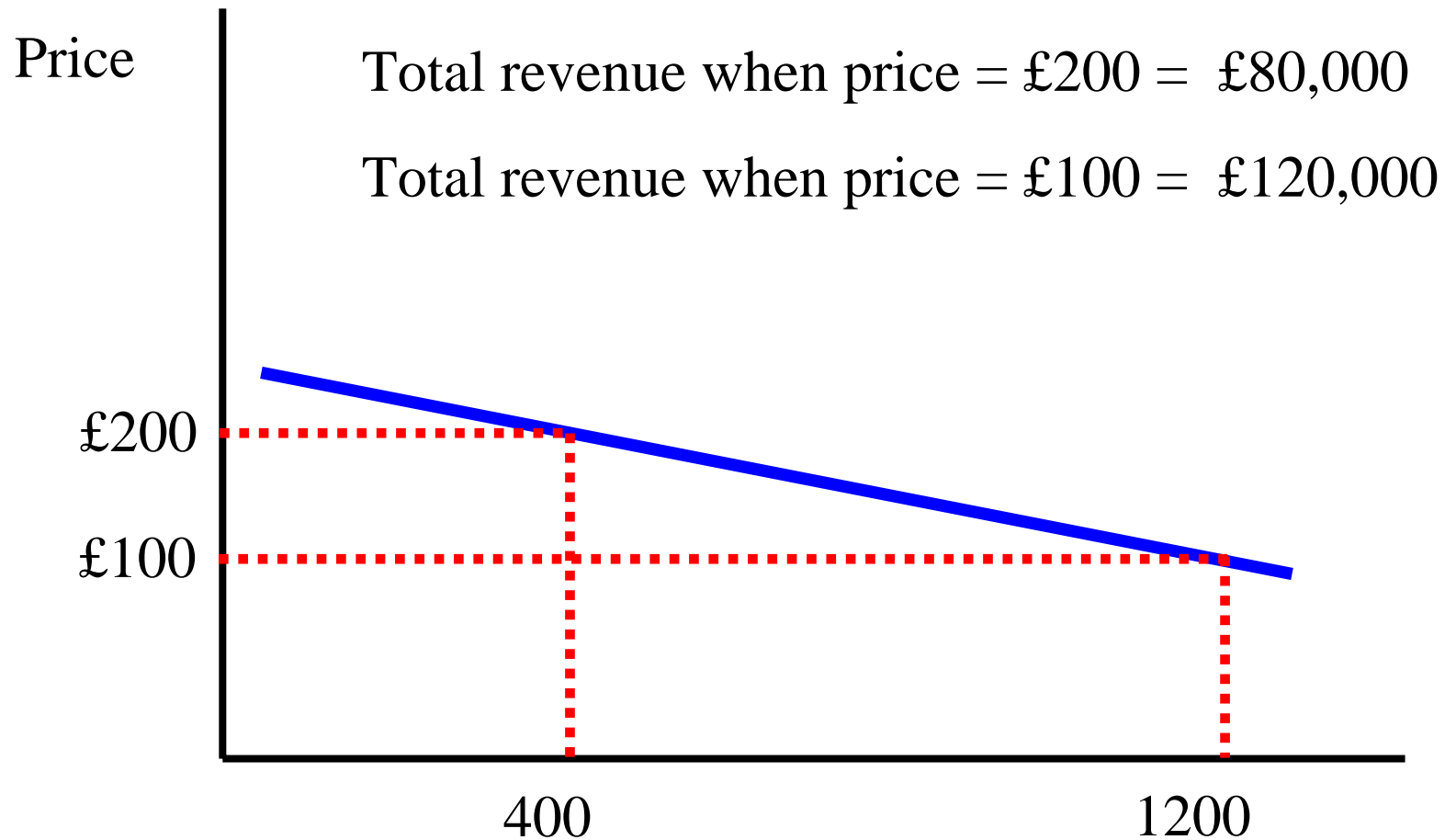
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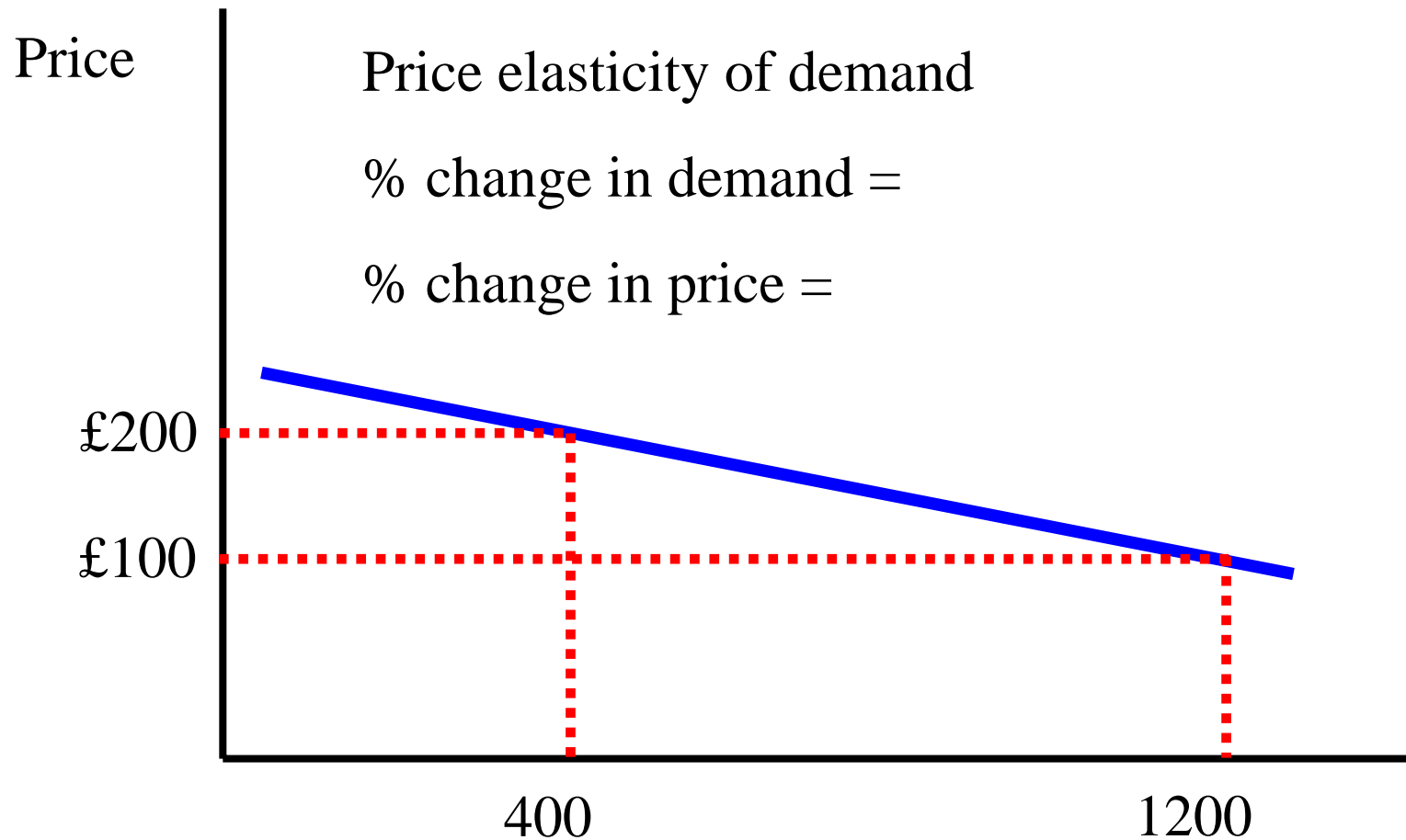
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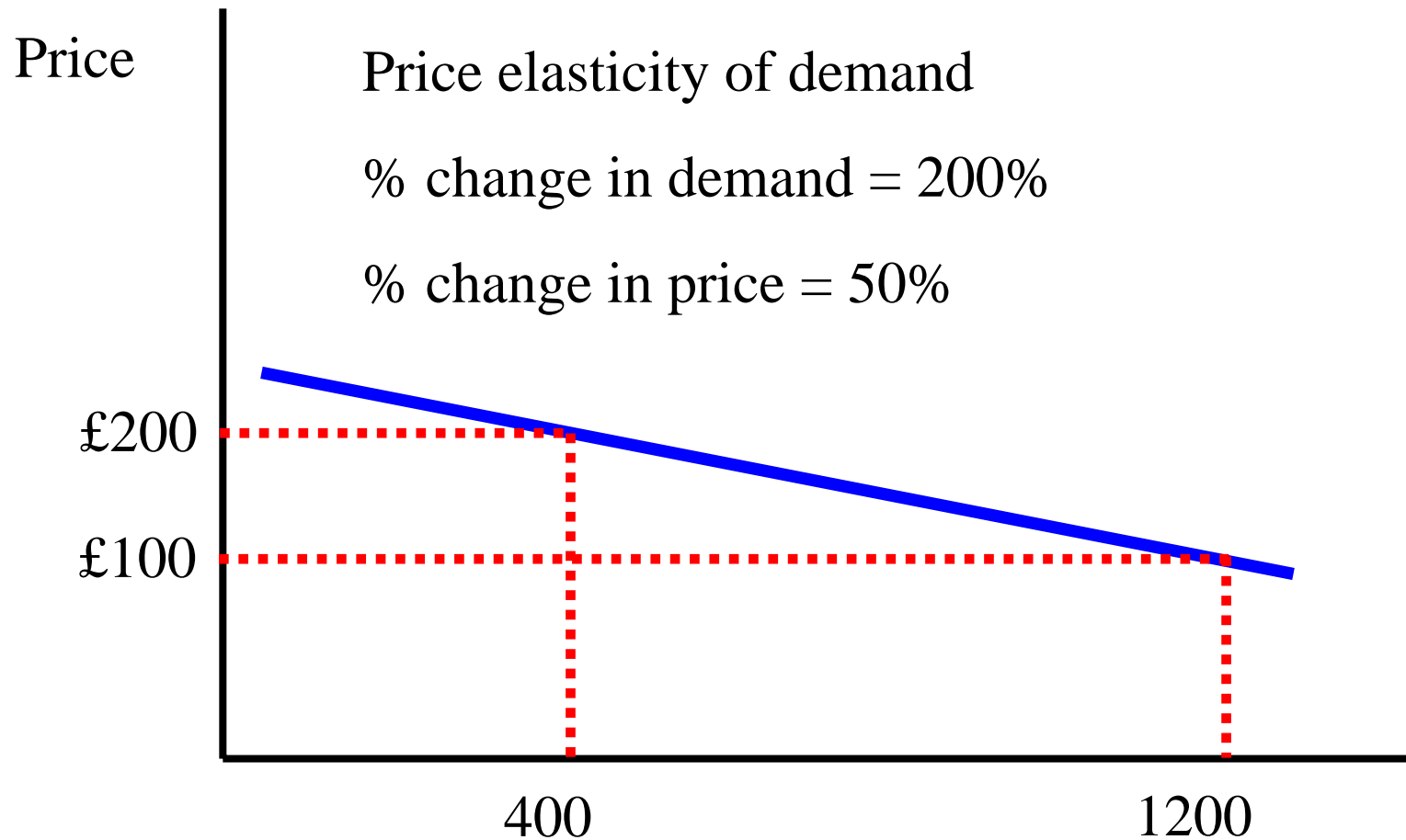
An elastic demand curve



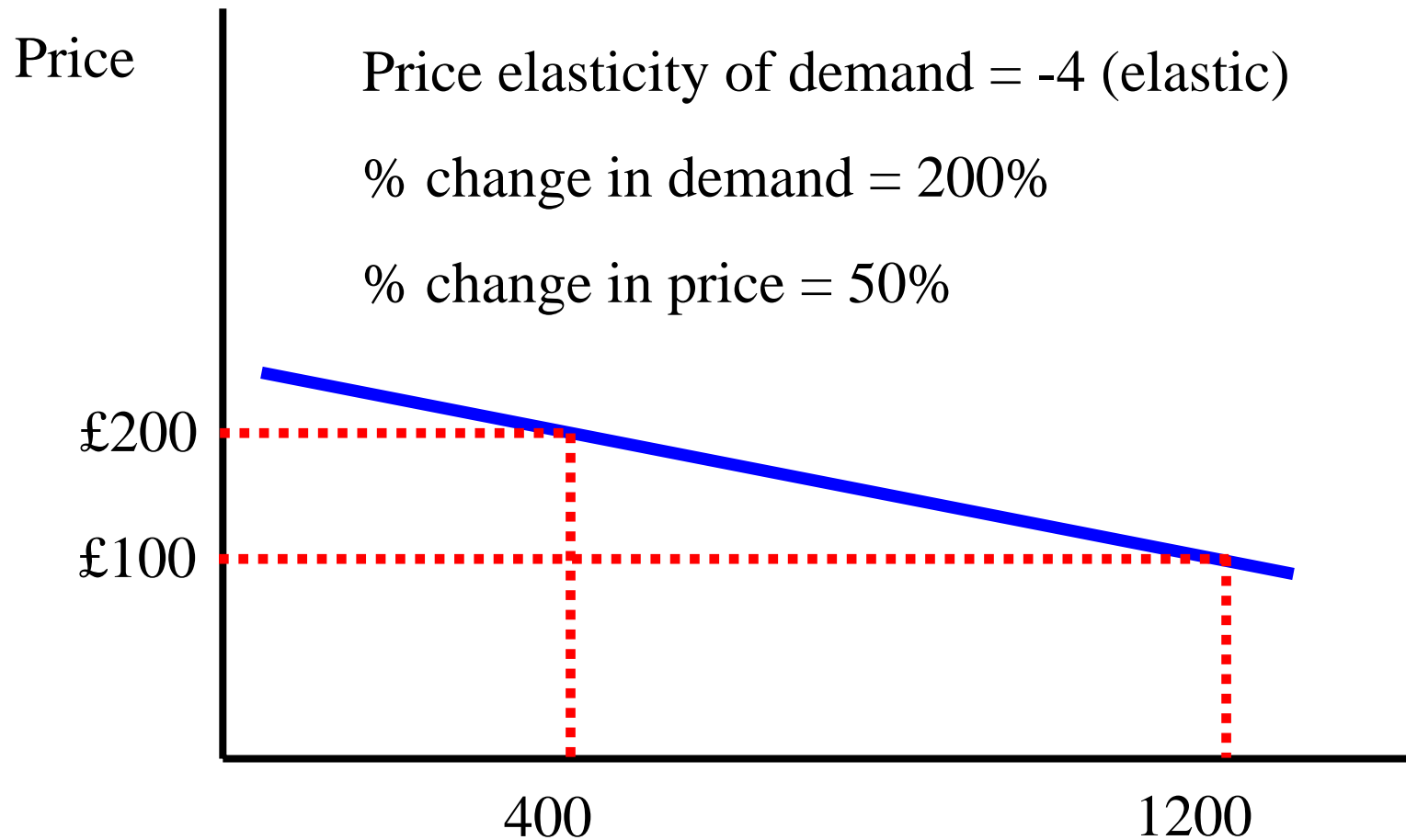
An elastic demand curve



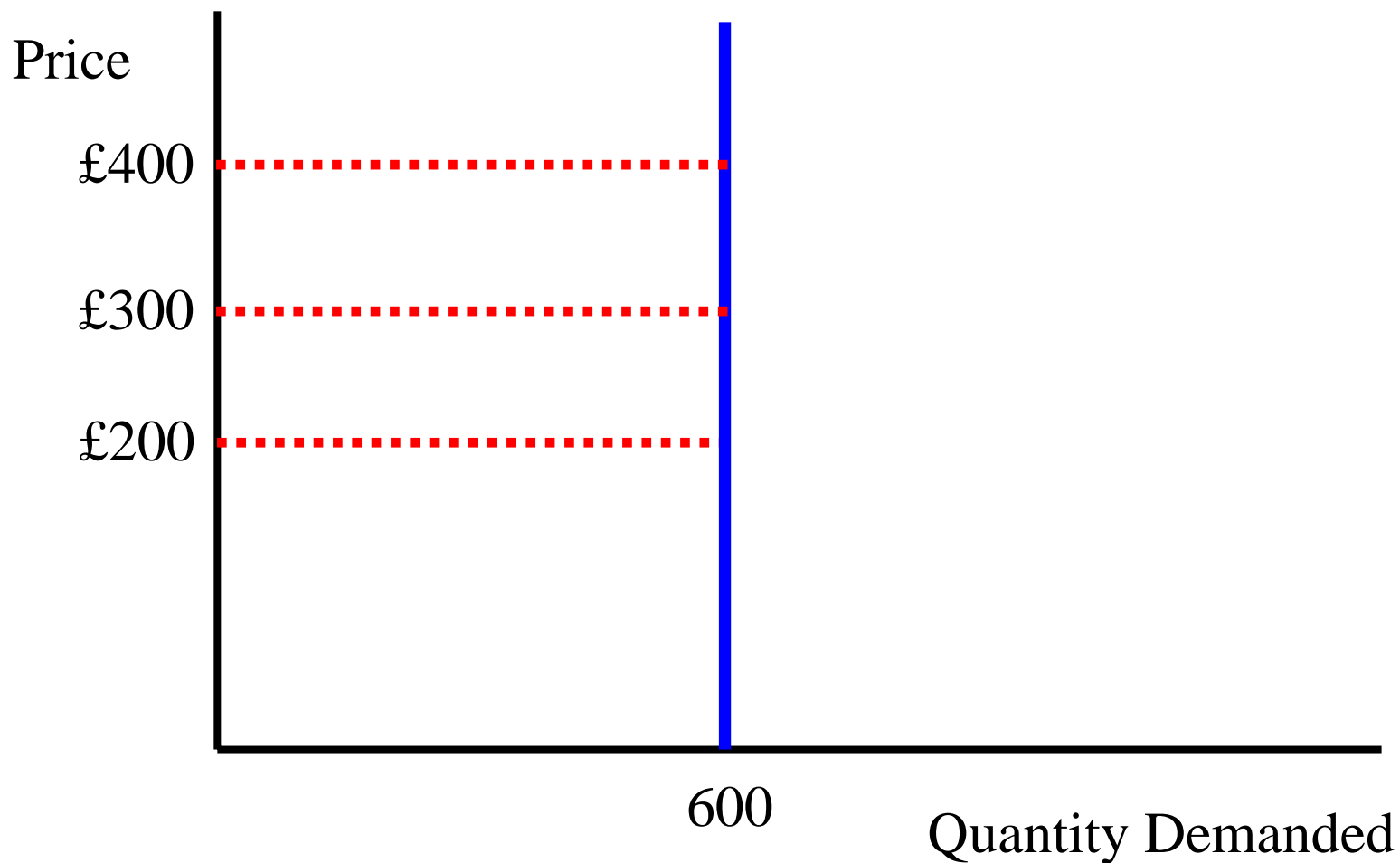
An elastic demand curve



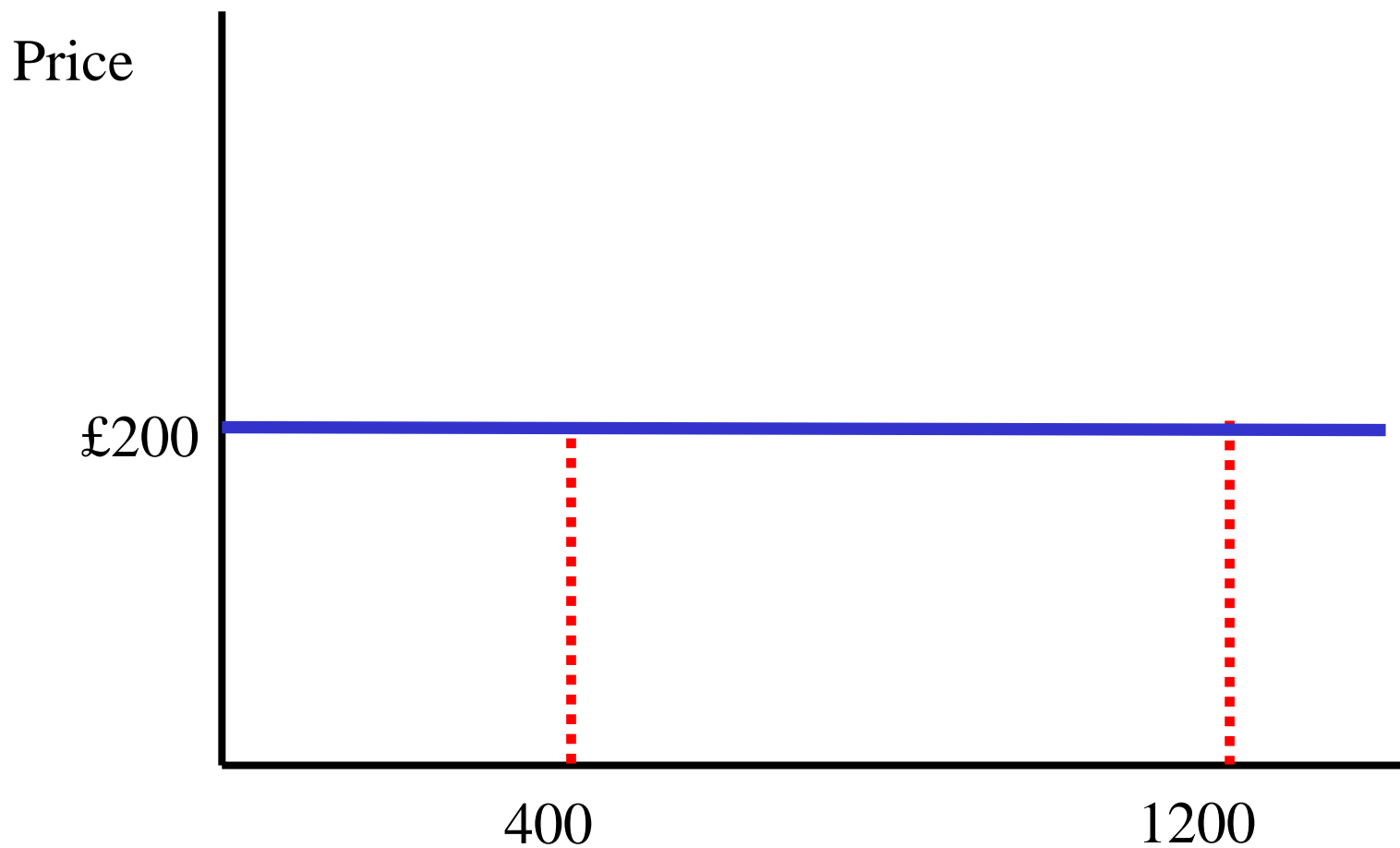
An elastic demand curve



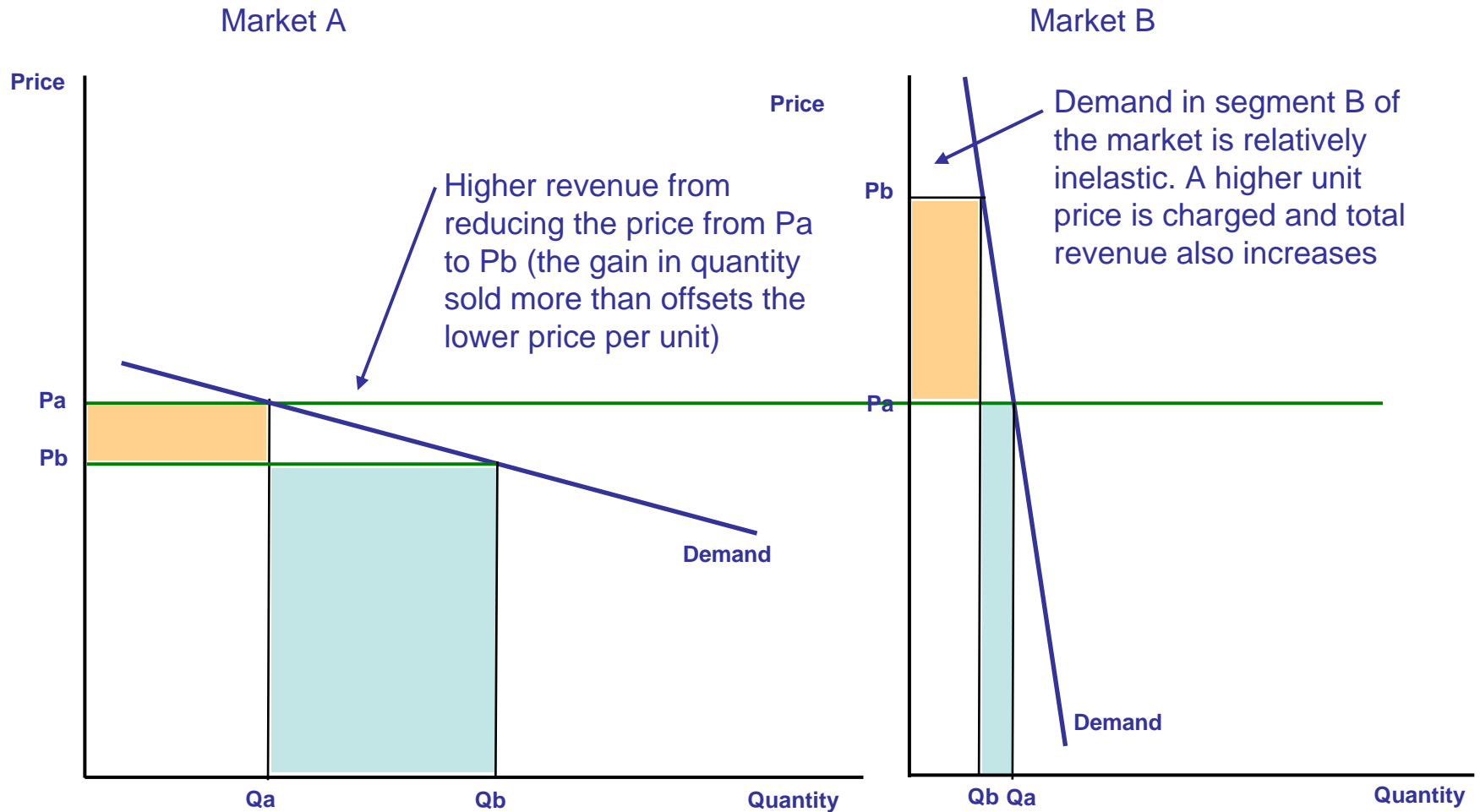
Perfectly inelastic demand curve



Perfectly elastic demand curve



Elasticity of demand and total revenue



Elasticity & total revenue

Change in the market

Ped is inelastic and a firm raises its price.

Ped is elastic and a firm lowers its price.

Ped is elastic and a firm raises price.

Ped is -1.5 and the firm raises price by 4%

Ped is -0.4 and the firm raises price by 30%

Ped is -0.2 and the firm lowers price by 20%

Ped is -4.0 and the firm lowers price by 15%

What happens to total revenue?

Total revenue increases

Total revenue increases

Total revenue decreases

Total revenue decreases

Total revenue increases

Total revenue decreases

Total revenue increases

Importance of price elasticity of demand for a business

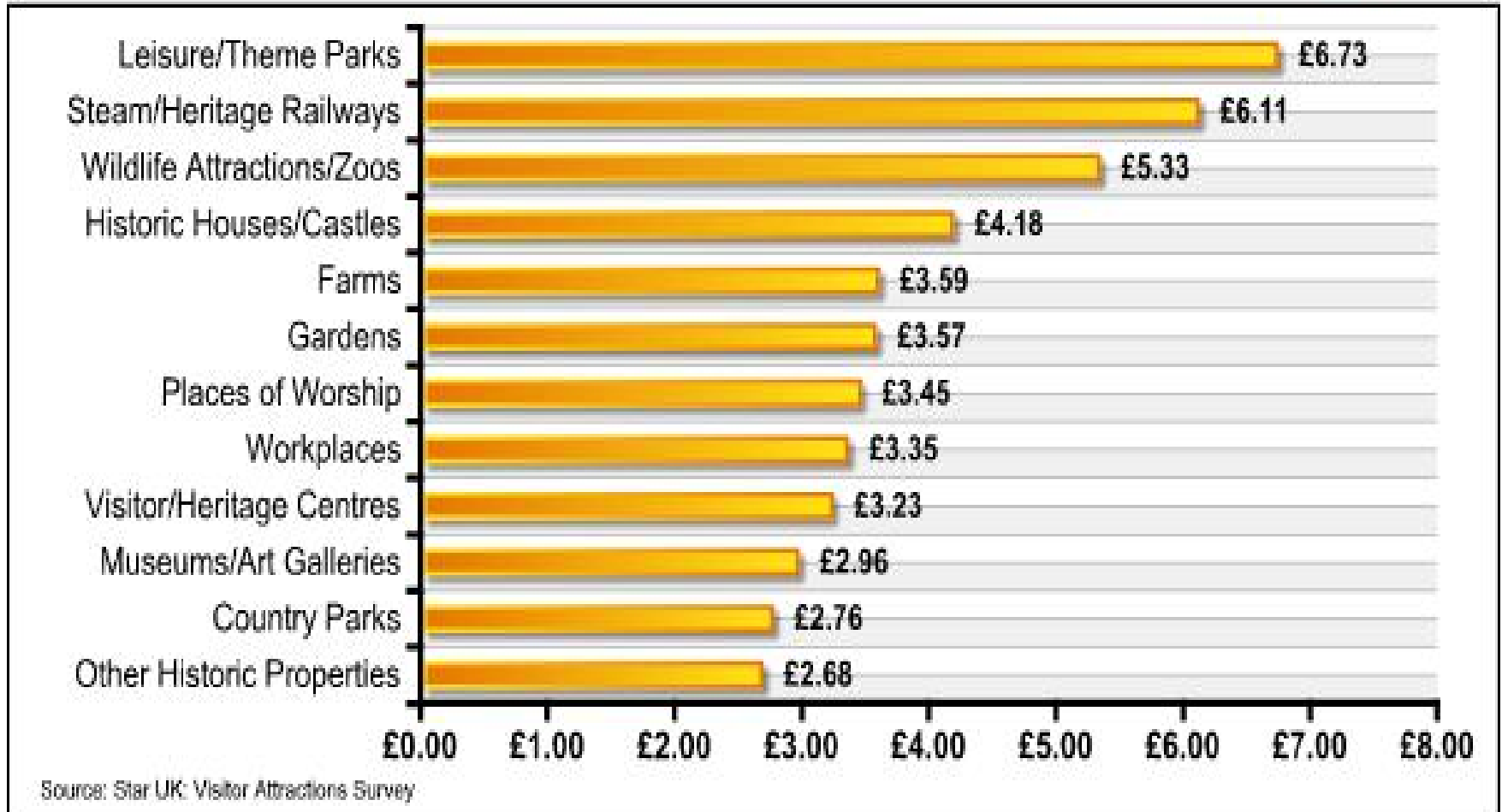
- Firms can use Ped estimates to predict:
 - The effect of a change in price on quantity demanded
 - The effect of a change in price on total revenue
 - The likely price volatility in a market following unexpected changes in supply
 - The effect of a change in indirect tax on price and quantity demanded and also whether the business is able to pass on some or all of the tax onto the consumer
 - Information on the price elasticity of demand can be utilized as part of a policy of price discrimination

Pricing for visitor attractions – why is elasticity important?

UK Visitor Attractions

Average Adult Admission Charges by Kind of Attraction

business
cafe



Factors that Determine Ped

- (1) The number of close substitutes for a good and the uniqueness of the product in the market
- (2) The degree of necessity of consumption or whether the good is a luxury
- (3) The % of a consumer's income (budget) allocated to consumers' spending on the good
- (4) The time period allowed following a price change
- (5) Whether the good is subject to habitual consumption
- (6) Peak and Off Peak Demand
- (7) The breadth of definition of a good or service

Elastic or Inelastic demand?

- A fall in the price of Euro-star tickets
- An increase in the price of the Financial Times
- A taxi home from a night-club on a Friday night
- A rise in average car insurance premiums
- Motorway petrol prices rise by 5%
- Gillette increases the price of its Mach 3 razor by 15%
- The price of central heating oil rises by 20%
- A local leisure club decreases monthly charges by 15% in a bid to increase the number of members

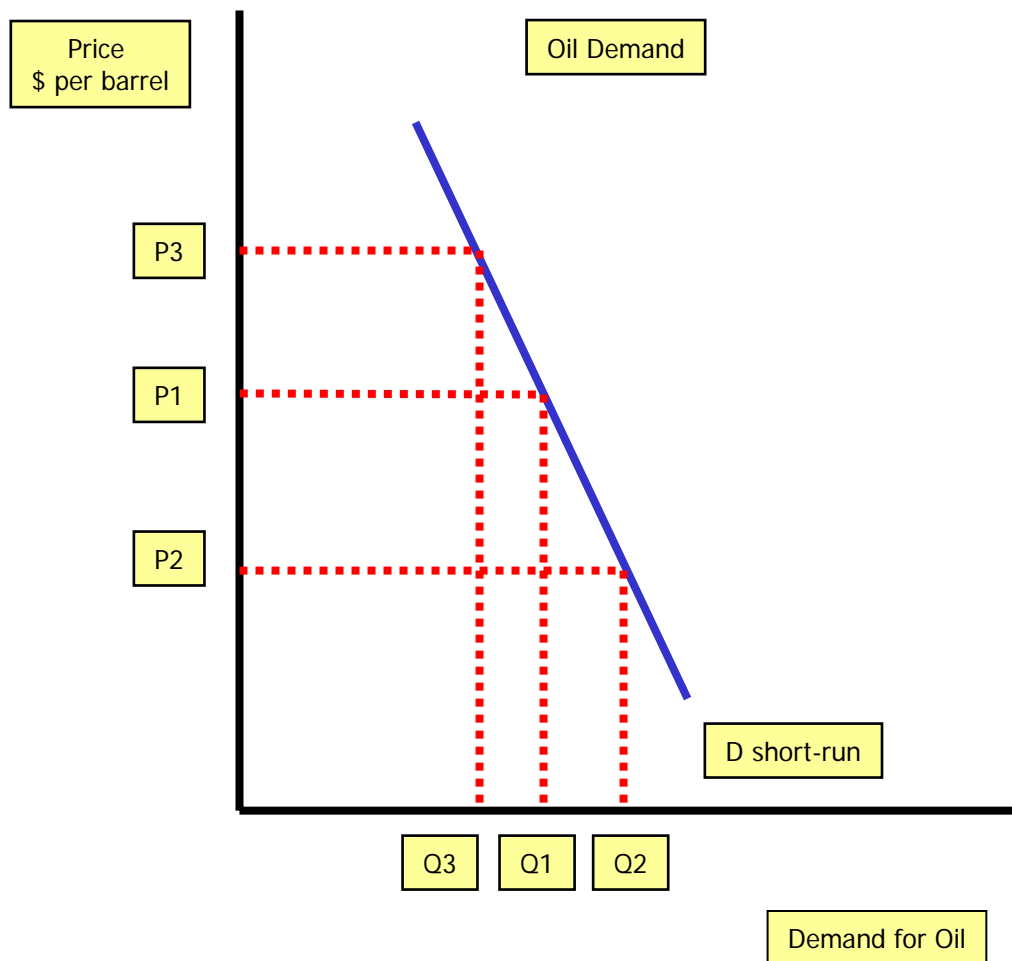
Time Frame and Price Elasticity: Oil Price Shocks

- Two World oil price shocks of the 1970s
 - Response to higher prices was modest in the immediate period
 - As time passed, people found ways to consume less petroleum and other oil products
 - Better mileage from their cars (switch to smaller vehicles)
 - Higher spending on insulation in homes and factories
 - Car pooling for commuters
 - Car manufacturers invested enormous sums in more fuel efficient vehicles seeing a long term market opportunity
 - Development of oil substitutes in the long run
 - natural gas, solar heating, nuclear energy

Short Term Demand for Oil

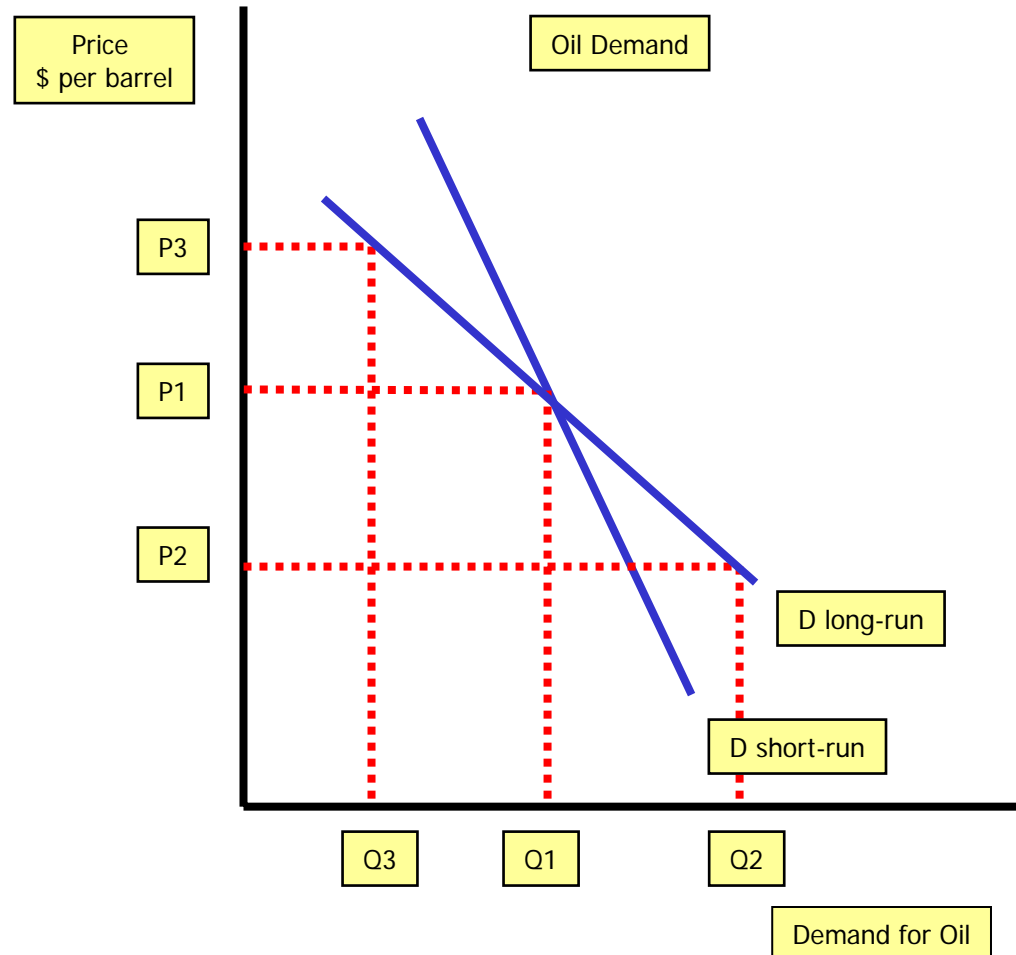
The demand for oil is inelastic in response to price changes in the short run

This is mainly because it is an essential input into many production processes



Longer Term Demand for Oil – More Price Elastic

Longer run demand is relatively more elastic if non-oil substitutes develop



Using Price Elasticity of Demand

- How much tax revenue will higher “sin taxes” on cigarettes and alcohol provide?
- Why do airlines often give discounts for advance bookings?
- What happens to our demand for foreign holidays when the exchange rate appreciates?
- Why do hotels lower room-rates at weekends and why do car rental firms charge lower prices at weekend?