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AS Economics

# Price Elasticity of Demand and Supply

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## Revision Focus on Price Elasticity of Demand and Supply

### AS Syllabus Requirements

#### Price elasticity of demand

Candidates should be able to calculate price elasticity of demand and understand the factors that influence elasticities of demand. They should also understand the relationship between price elasticity of demand and total revenue.

#### Price elasticity of supply

Candidates should be able to calculate elasticity of supply and understand the factors that influence elasticity of supply.

### Price Elasticity of Demand (Ped)

**Ped** measures the **responsiveness of demand** for a product following **a change in its own price**.

The formula for calculating the co-efficient of elasticity of demand is:

*Percentage change in quantity demanded divided by Percentage change in price*

Since changes in price and quantity nearly always move in opposite directions, economists usually do not bother to put in the minus sign. We are more concerned with the **co-efficient** of price elasticity of demand.

### Different values for price elasticity of demand

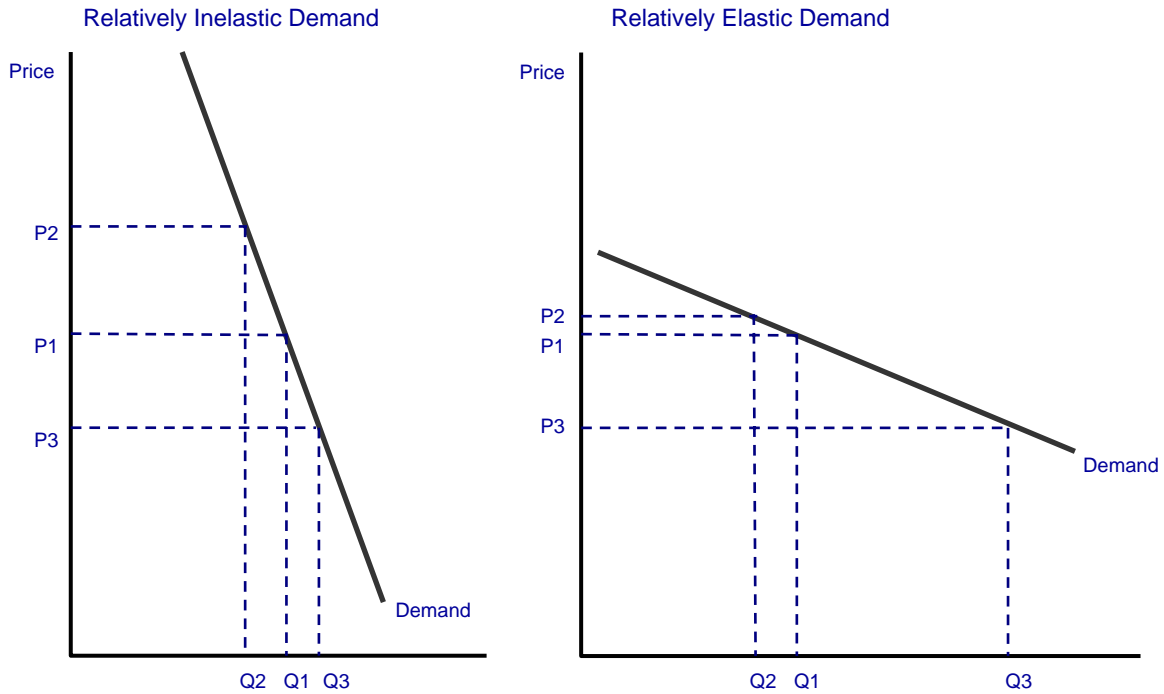
1. If  $Ped = 0$  then demand is said to be **perfectly inelastic**. This means that demand does not change at all when the price changes – the demand curve will be vertical
2. If  $Ped$  is between 0 and 1 (i.e. the percentage change in demand from A to B is smaller than the percentage change in price), then **demand is inelastic**. Producers know that the change in demand will be proportionately smaller than the percentage change in price
3. If  $Ped = 1$  (i.e. the percentage change in demand is exactly the same as the percentage change in price), then demand is said to be **unit elastic**. A 15% rise in price would lead to a 15% contraction in demand leaving total spending by the same at each price level.
4. If  $Ped > 1$ , then demand responds more than proportionately to a change in price i.e. **demand is elastic**. For example a 20% increase in the price of a good might lead to a 30% drop in demand. The price elasticity of demand for this price change is  $-1.5$

### What Determines Price Elasticity of Demand?

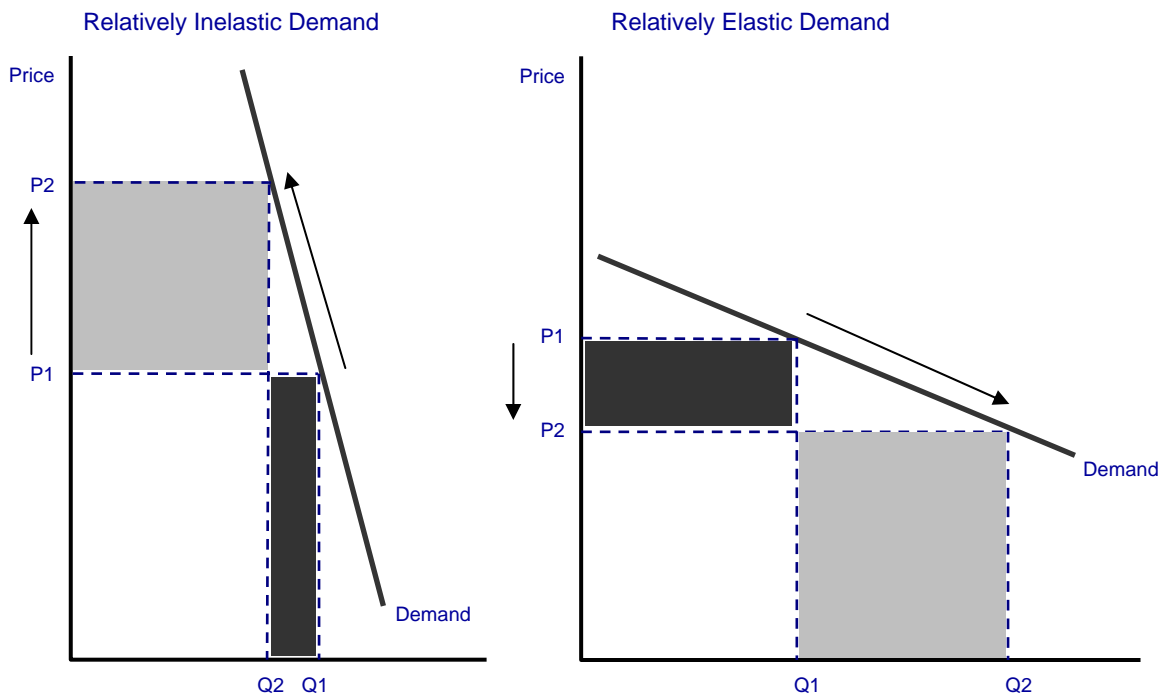
1. **The number of close substitutes for a good / uniqueness of the product** – the more close substitutes in the market, the more elastic is the demand for a product because consumers can more easily switch their demand if the price of one product changes **relative** to others in the market. The huge range of package holiday tours and destinations make this a highly competitive market in terms of pricing – many holiday makers are price sensitive

2. **The cost of switching between different products** – there may be significant **transactions costs** involved in switching between different goods and services. In this case, demand tends to be relatively inelastic. For example, mobile phone service providers may include penalty clauses in contracts or insist on 12-month contracts being taken out
3. **The degree of necessity or whether the good is a luxury** – goods and services deemed by consumers to be necessities tend to have an inelastic demand whereas luxuries will tend to have a more elastic demand because consumers can make do without luxuries when their budgets are stretched. I.e. in an economic recession we can cut back on discretionary items of spending
4. **The % of a consumer's income allocated to spending on the good** – goods and services that take up a high proportion of a household's income will tend to have a more elastic demand than products where large price changes makes little or no difference to someone's ability to purchase the product.
5. **The time period allowed following a price change** – demand tends to be more price elastic, the longer that we allow consumers to respond to a price change by varying their purchasing decisions. In the short run, the demand may be inelastic, because it takes time for consumers both to notice and then to respond to price fluctuations
6. **Whether the good is subject to habitual consumption** – when this occurs, the consumer becomes much less sensitive to the price of the good in question. Clearly, examples such as cigarettes and alcohol and other drugs can come into this category
7. **Peak and off-peak demand** - demand tends to be price inelastic at peak times – a feature that suppliers can take advantage of when setting higher prices. Demand is more elastic at off-peak times, leading to lower prices for consumers. Consider for example the charges made by car rental firms during the course of a week, or the cheaper deals available at hotels at weekends and away from the high-season
8. **The breadth of definition of a good or service** – if a good is broadly defined, i.e. the demand for petrol or meat, demand is often fairly inelastic. But specific brands of petrol or beef are likely to be more elastic following a price change

### Demand curves with different price elasticity of demand



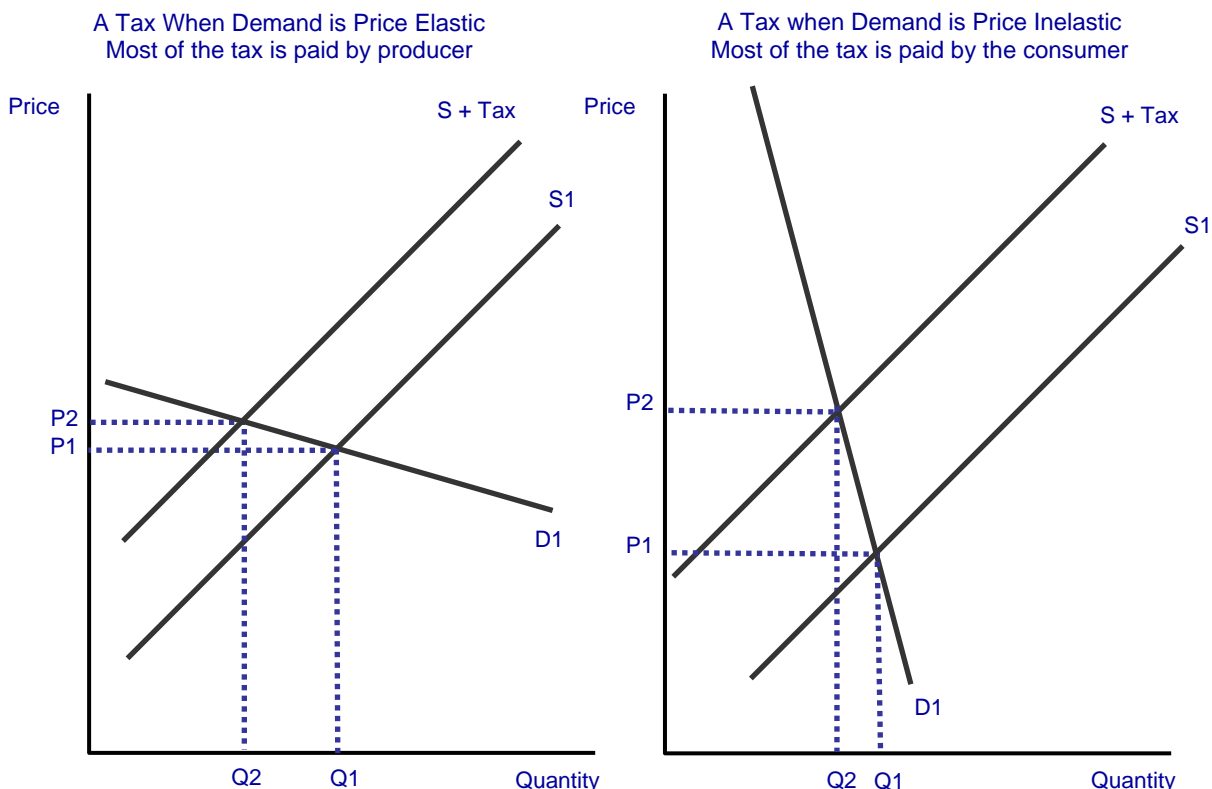
### Elasticity of demand and total revenue for a producer



- When demand is inelastic – a rise in price leads to a rise in total revenue – for example a 20% rise in price might cause demand to contract by only 5% ( $P_{ed} = -0.25$ )

- When demand is elastic – a fall in price leads to a rise in total revenue - for example a 10% fall in price might cause demand to expand by only 25% ( $P_{ed} = +2.5$ )

### Elasticity of demand and the effects of an indirect tax



### Price elasticity of supply (Pes)

Price elasticity of supply (Pes) measures the relationship between change in quantity supplied and a change in price.

- If supply is elastic, producers can increase production without a rise in cost or a time delay
- If supply is inelastic, firms find it hard to change production in a given time period.

The formula for price elasticity of supply is:

**Percentage change in quantity supplied divided by the Percentage change in price**

1. When  $P_{es} > 1$ , then supply is price elastic
2. When  $P_{es} < 1$  then supply is price inelastic
3. When  $P_{es} = 0$ , supply is perfectly inelastic
4. When  $P_{es} = \text{infinity}$ , supply is perfectly elastic following a change in demand

### Factors that Affect Price Elasticity of Supply

Many factors can influence the elasticity of supply for a product in a given time period. They will vary in importance from good to good – but the main factors are discussed below:

#### (1) Spare production capacity

If there is plenty of spare capacity, a business should be able to increase its output without a rise in costs and therefore supply will be elastic in response to a change in demand. The supply of goods and services to a market is often most elastic towards the end of a recession, when there is plenty of spare labour and capital resources available to step up output as the economy recovers. In contrast during a boom, resources used in production may become scarce and these shortages will reduce elasticity of supply.

### **(2) Stocks of finished products and components**

If stocks of raw materials and finished products are at a high level then a firm is able to respond to a change in demand quickly by supplying these stocks onto the market - supply will be elastic. Conversely when stocks are low, dwindling supplies force prices higher and unless stocks can be replenished, supply will be inelastic in response to a change in demand.

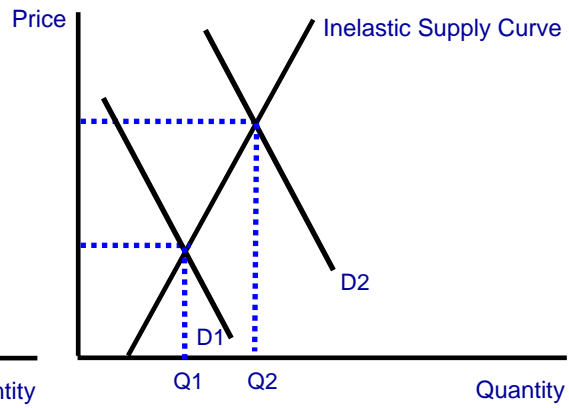
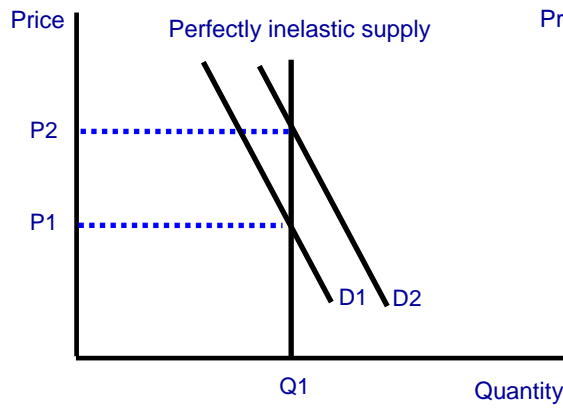
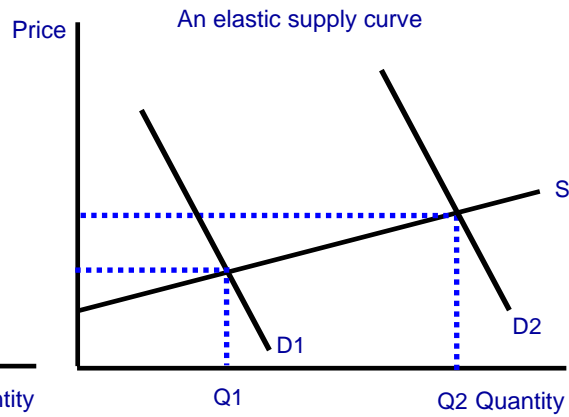
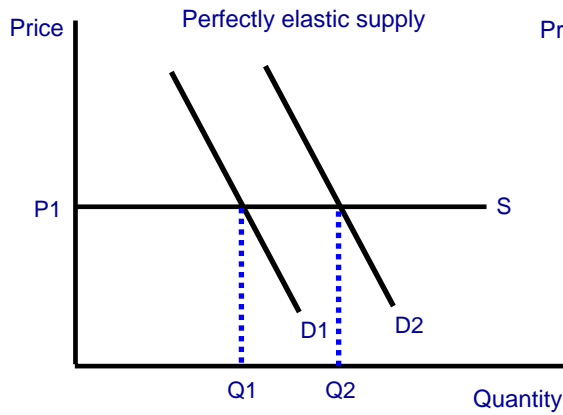
### **(3) The ease and cost of factor substitution**

If both capital and labour resources are occupationally mobile then the price elasticity of supply for a product is higher than if capital and labour cannot easily and quickly be switched to producing something different and the production process is therefore inflexible in response to changes in demand for goods and services.

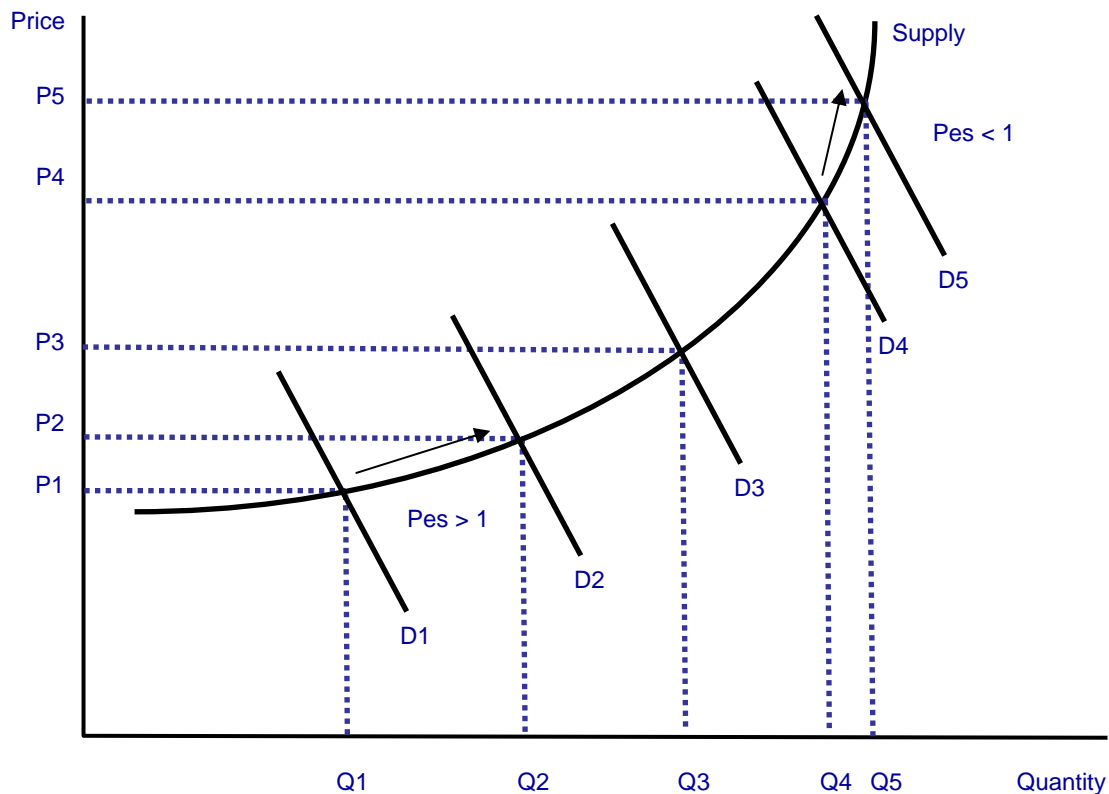
### **(4) Time period involved in the production process**

Supply is more price elastic the longer the time period that a firm or the market as a whole is allowed to adjust its production levels. In the short run, a firm may not be able to change many of its factor inputs. In some agricultural markets for example, the momentary supply is fixed and is determined mainly by planting decisions made months before, and also climatic conditions, which affect the overall production yield.

### Supply curves with different price elasticity of supply



### The non-linear supply curve





## **Useful applications of price elasticity of demand and supply**

Elasticity of demand and supply is tested in virtually every area of the Unit 1 AS syllabus. The key is to understand the main factors that determine the responsiveness of consumers and producers to changes in price. The elasticity will affect the ways in which price and output will change in a market. And elasticity is also significant in determining some of the effects of changes in government policy when the state chooses to intervene in the price mechanism.

Some relevant issues that directly use elasticity of demand and supply include:

1. The effects of indirect taxes and subsidies on the level of demand and output in a market e.g. the effectiveness of the congestion charge in reducing road congestion; or the impact of higher duties on cigarettes on the demand for tobacco and associated externality effects
2. The impact of changes in the exchange rate on the demand for exports and imports
3. The extent to which a firm or firms with monopoly power can raise prices in markets to extract consumer surplus and turn it into extra profit (producer surplus)
4. The effects of the government introducing a minimum price (price floor) or maximum price (price ceiling) into a market

Elasticity of demand and supply also affects the operation of the price mechanism as a means of rationing scarce goods and services among competing uses and in determining how producers respond to the incentive of a higher market price

Changing your assumptions about the value of elasticity (high / low etc) can be a useful way of building evaluation into your answer. Certainly a comment about elasticity is expected in most answers.