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Price Elasticity of Demand & Supply

A. Price elasticity of demand

- **Elastic demand (Ed > 1)**
  - % change in quantity demanded > % change in price

- **Inelastic demand (Ed < 1)**
  - % change in quantity demanded < % change in price

- **Unitary elastic demand (Ed = 1)**
  - % change in quantity demanded = % change in price
  - The demand curve is a rectangular hyperbola.

- **Perfectly inelastic demand (Ed = 0)**
  - The quantity demanded is not affected by the price.
  - The demand curve is a vertical line, which violates the law of demand.

- **Perfectly elastic demand (Ed = ∞)**
  - A slight rise in price will cause the quantity demanded to fall to zero.
  - The demand curve is a horizontal line.
I. Factors affecting price elasticity of demand

- Proportion of income spent
  The greater the proportion of income spent on a good, the higher its price elasticity of demand is.

- Substitutes
  The more substitutes & the more similar they are, the higher the elasticity is.

- Time
  The longer it is after a change in price, the higher the elasticity is.

- Necessities & luxuries
  Elasticity is lower for necessities & higher for luxuries.

II. The relationship between price elasticity of demand & total revenue

- Elastic demand
  - Price ↑ ⇒ Total revenue ↓
  - Price ↓ ⇒ Total revenue ↑

- Inelastic demand
  - Price ↑ ⇒ Total revenue ↑
  - Price ↓ ⇒ Total revenue ↓

- Unitary elastic demand
  - Any change in price does not affect total revenue.
## B. Price elasticity of supply

<table>
<thead>
<tr>
<th>Types</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Elastic supply (Es > 1)** | - % change in quantity supplied > % change in price  
- The supply curve is a straight line extended from the vertical axis. |
| **Inelastic supply (Es < 1)** | - % change in quantity supplied < % change in price  
- The supply curve is a straight line extended from the horizontal axis. |
| **Unitary elastic supply (Es = 1)** | - % change in quantity supplied = % change in price  
- The supply curve is a straight line extended from the origin. |
| **Perfectly inelastic supply (Es = 0)** | - The quantity supplied is not affected by the price.  
- The supply curve is a vertical line. |
| **Perfectly elastic supply (Es = ∞)** | - A slight fall in price will cause the quantity supplied to fall to zero.  
- The supply curve is a horizontal line. |
Factors affecting price elasticity of supply

**Factors of production**
1. Industries relying on non-specialized factors of production have a higher price elasticity of supply.
2. The lower the adjustment cost of factors of production, the higher the elasticity of supply is.
3. When the information in the factor market is more perfect, the reserve capacity of production equipment is higher, or there are more idle resources in the economy, the elasticity of supply is higher.

**Nature of products**
The price elasticity of supply is higher for more durable goods.

**Market structure & entry barriers**
Restrictions on output or entry will lower the price elasticity of market supply.

**Time**
The longer it is after a change in price, the higher the price elasticity of supply is.
1. Price elasticity of demand: Measures the responsiveness of quantity demanded to a change in price.

2. \[ \text{Price elasticity of demand} = \frac{\% \text{ change in quantity demanded}}{\% \text{ change in price}} \]

3. When the price elasticity of demand is higher, the responsiveness of quantity demanded to a price change is greater.

4. The slope of a demand curve does not equal the elasticity of. The elasticity of a flatter demand curve may not be greater.

5. If the demand curve is a downward sloping straight line, the elasticity will differ in different price ranges.

6. \[ \text{Total revenue} = \text{Total expenditure} = \text{Total market value} = \text{Price} \times \text{Quantity transacted} \]
7. The table below shows the relationship between price and total revenue when quantity demanded changes:

<table>
<thead>
<tr>
<th>Relationship between price &amp; total revenue</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elastic demand (Ed &gt; 1)</td>
<td>Inverse relationship</td>
</tr>
<tr>
<td>Price ↑ ⇒ Total revenue ↓</td>
<td>% change in price &lt;</td>
</tr>
<tr>
<td>Price ↓ ⇒ Total revenue ↑</td>
<td>% change in quantity</td>
</tr>
<tr>
<td></td>
<td>demanded</td>
</tr>
<tr>
<td>Inelastic demand (Ed &lt; 1)</td>
<td>Positive relationship</td>
</tr>
<tr>
<td>Price ↑ ⇒ Total revenue ↑</td>
<td>% change in price &gt;</td>
</tr>
<tr>
<td>Price ↓ ⇒ Total revenue ↓</td>
<td>% change in quantity</td>
</tr>
<tr>
<td></td>
<td>demanded</td>
</tr>
<tr>
<td>Unitary elastic demand (Ed = 1)</td>
<td>Any change in price does not affect total revenue.</td>
</tr>
<tr>
<td></td>
<td>% change in price =</td>
</tr>
<tr>
<td></td>
<td>% change in quantity</td>
</tr>
<tr>
<td></td>
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</table>

8. A change in supply will cause the price and quantity transacted to change in opposite directions, so the change in total revenue depends on the price elasticity of demand.

9. A change in demand will lead to a simultaneous rise or fall in price and quantity transacted, so the change in total revenue is unrelated to the price elasticity of demand. If demand increases, total revenue rises. If demand decreases, total revenue falls.

10. Price elasticity of supply: Measures the responsiveness of quantity supplied to a change in price.

11. \[
    \text{Price elasticity of supply} = \frac{\% \text{ change in quantity supplied}}{\% \text{ change in price}}
\]

12. When the price elasticity of supply is higher, the responsiveness of quantity supplied to a price change is greater.
13. An upward sloping supply curve is the market rule, but the supply of some goods is fixed. That is, the price has no effect on the quantity supplied, which includes the following situations:

(a) Goods or services which have reached the limit of capacity within a specific period of time.

(b) The quantity supplied of goods and services provided by the government or non-profit making bodies is not affected by price changes.

(c) The quantity supplied cannot be adjusted according to price change due to government control.

(d) The quantity of land is generally fixed, which will not increase as the price rises.

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**Major Terms**

<table>
<thead>
<tr>
<th>Price elasticity of demand</th>
<th>需求價格彈性</th>
<th>Perfectly elastic demand</th>
<th>完全彈性需求</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price elasticity of supply</td>
<td>供應價格彈性</td>
<td>Inelastic supply</td>
<td>低彈性供應</td>
</tr>
<tr>
<td>Inelastic demand</td>
<td>低彈性需求</td>
<td>Elastic supply</td>
<td>彈性供應</td>
</tr>
<tr>
<td>Elastic demand</td>
<td>彈性需求</td>
<td>Unitary elastic supply</td>
<td>單一彈性供應</td>
</tr>
<tr>
<td>Unitary elastic demand</td>
<td>單一彈性需求</td>
<td>Perfectly inelastic supply</td>
<td>完全無彈性供應</td>
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**Online Learning**

EconExperiments
http://iface.econ.cuhk.edu.hk/

Education Bureau, HKSAR — Economics references and resources