## Price Elasticity of Demand

## 1 Formula

- Price elasticity of demand (e) $=\frac{\% \text { change in quantity demanded }}{\% \text { change in price }}$
- This elasticity shows how quantity demanded and total revenue are affected by changes in price. Question: Should prices be increased or decreased in order to maximize total revenue?
- Absolute values are used although the price elasticity of demand is actually negative if the demand curve is downward sloping.
- Demand is elastic, if $\mathrm{e}>1$, and inelastic, if $\mathrm{e}<1$.

| 2 Elasticity and total revenue |  |  |
| :---: | :---: | :---: |
| elastic demand (e>1) | inelastic demand (e<1) | unit elastic demand (e=1) |
|  <br> (3 and 7 are midpoints) <br> Total revenue (= $\mathrm{P}^{*} \mathrm{Q}$ ): <br> Price 8: $\quad 8 * 2=16$ <br> Price 6: $\quad 6 * 4=24$ <br> $\Rightarrow$ A lower price results in a higher total revenue. |  $e=\frac{2 / 7}{2 / 3}=0.43$ <br> ( 7 and 3 are midpoints) <br> Total revenue (= $P$ * $Q$ ): <br> Price 2 2* $8=16$ <br> Price 4: $\quad 4^{*} 6=24$ <br> A higher price results in a higher total revenue. |  $e=\frac{2 / 5}{2 / 5}=1$ <br> (5 and 5 are midpoints) <br> Total revenue (= $P^{*} Q$ ): <br> Price $4 \quad 4 * 6=24$ <br> Price 6: $6 * 4=24$ <br> A change in price does not affect total revenue. |


| $3 \quad$ Effect of changes in price on total revenue (TR) |  |  |  |
| :--- | :---: | :---: | :---: |
|  | Price Elasticity of Demand |  |  |
|  | $\mathbf{e}>\mathbf{1}$ | $\mathbf{e}<1$ | $\mathbf{e}=\mathbf{1}$ |
| Price increase | TR falls | TR rises | TR unchanged |
| Price decrease | TR rises | TR falls | TR unchanged |

4 Elasticity, demand curve, marginal revenue (MR) and total revenue (TR)

|  |  |  |
| :---: | :---: | :---: |


| 5 Measuring the pric | y of demand |
| :---: | :---: |
| Demand is a straight line. | Demand is a curve. |
|  |  |



| Effects of a (per unit) tax |  |  |
| :---: | :---: | :---: |
| Perfectly inelastic demand | Perfectly elastic demand | (in)elastic demand |
|  |  |  |
| Price rises from P1 to P2, quantity remains unchanged. $P 1$ is the net receipt ( $=$ Price 2 minus tax) of the seller after tax which is equal to the price before tax. | Price remains unchanged, quantity falls from Q1 to Q2. $R$ is the net receipt of the seller after tax which is less than the price (and receipt) before tax. | Price rises from P1 to P 2 , quantity falls from Q1 to Q2. R is the net receipt of the seller after tax. |
| The tax is carried completely by the buyer. | The tax is carried completely by the seller. | The tax is carried by both the buyer (= P2 minus P1) and the seller (= P1 minus R). |

[^0]
[^0]:    Link to Youtube videos on "Price Elasticity of Demand, part 1 and 2 ". Click here.

