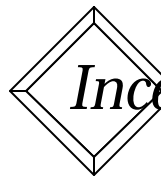


*Income Elasticity of Demand*

And

Cross-Price Elasticity of Demand



## *Income Elasticity of Demand*

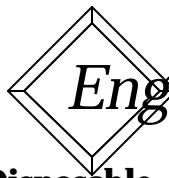
$$\mathbf{E_I = \% \mathbf{D}Q_d / \% \mathbf{D}I_d}$$

**Measures the sensitivity of DEMAND to changes in disposable income.**



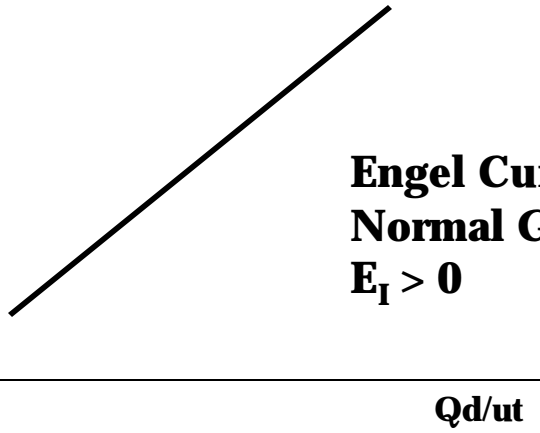
*Engel Curve:*

**Shows the relationship between quantity demanded and disposable income given a constant price.**



## *Engel Curve: Normal Good*

**Disposable  
Income**



## *Luxury Goods*

**Luxury Goods are Normal Goods but  
they have an**

$$\mathbf{E_I \geq 1}$$

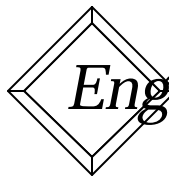
**Quantity demanded is very sensitive to  
changes in disposable income**

  
“*Necessities*”

**“Necessities” are Normal Goods but**

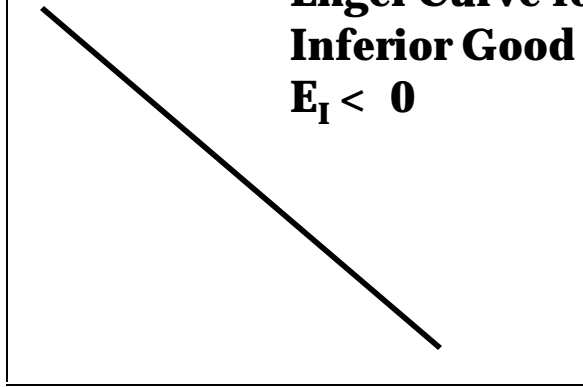
$$\mathbf{0 < E_I < 1}$$

**Quantity demand is not very sensitive to  
changes in disposable income**



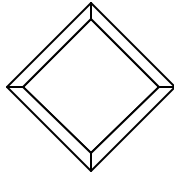
# *Engel Curve: Inferior Good*

**Disposable  
Income**



**Engel Curve for an  
Inferior Good  
 $E_I < 0$**

**Qd/ut**



❖ **Normal Goods ( $E_I > 0$ )**

– **Luxury Goods ( $E_I \geq 1$ )**

– **Necessities ( $0 < E_I < 1$ )**

❖ **Inferior Goods ( $E_I < 0$ )**



## *Some Income Elasticities*

<b>Beef</b>	<b>+.29</b>
<b>Pork</b>	<b>+.13</b>
<b>Chicken</b>	<b>+.18</b>
<b>Milk</b>	<b>+.20</b>
<b>All foods</b>	<b>+.18</b>
<b>Non foods</b>	<b>+1.25</b>



## *Cross-Price Elasticity*

**Measures how sensitive DEMAND for a commodity is to changes in the price of a substitute or compliment commodity**

## *Cross-Price Elasticity*

**$E_{cp \text{ of } x,y} =$**

$$\% \mathbf{DQ}_x / \% \mathbf{DP}_y$$



*Cross-Price Elasticity*

**$E_{cp} > 0$   $\Rightarrow$  Substitute**

**$E_{cp} < 0$   $\Rightarrow$  Compliment**

**$E_{cp} = 0$   $\Rightarrow$  Independent**

*Example:*

**The Cross-Price Elasticity of Beef and  
Pork would be calculated as:**

**$E_{cp, \text{Beef, Pork}} =$**

**$\% \Delta Q_{\text{Beef}} / \% \Delta P_{\text{Pork}}$**

*Example*

**The Cross-Price Elasticity of Pork and Beef would be calculated as:**

$$E_{cp, \text{Pork, Beef}} =$$

$$\% \mathbf{DQ}_{\text{Pork}} / \% \mathbf{DP}_{\text{Beef}}$$

*Interpretation?*

**If the**

$$\mathbf{E_{cp, Pork, Beef} = + .65}$$

**Then for every 1% increase in the price of beef, the Qd of pork would increase .65%. We also would know that pork and beef are substitutes**