Introduction to Microeconomics

Elasticity - 04

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Income Elasticity of Demand

- Income Elasticity of Demand (YED) measures the percentage change in Quantity demand (Q_D) due to 1% change in **Income** (Y)

$$\text{YED } (\eta) = \frac{\frac{Q_2 - Q_1}{\frac{(Q_1+Q_2)}{2}}}{\frac{Y_2 - Y_1}{\frac{(Y_1+Y_2)}{2}}} \text{ .... } (1)$$

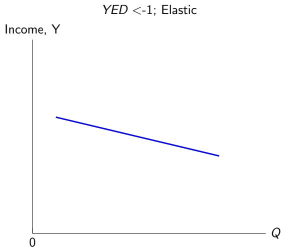
- Here, Q_2 and Q_1 represents new quantity and old quantity respectively. Y_2 and Y_1 represents new Income and old income respectively.

Normal Goods and Inferior Goods

- Giffen goods/normal goods: Demand increases with price decrease, demand falls as price rises; Quantity demand increases with a rise in income.
  Normal goods: necessary goods and luxury goods
  Necessary goods: When η is between 0 and 1
- Luxury goods: When η is greater than 1
- Inferior goods: Demand declines with an increase in income and vice versa
- Inferior goods: When η is less than 0

Graphs - Positive YED

Negative YED



Cross Price Elasticity of Demand (CPED)

Measures the change in **quantity** of one good (Good A) due to change in **price** of another good (Good B)

$$CPED = \frac{\frac{(Q_{A2}-Q_{A1})x100}{(Q_{A2}+Q_{A1})/2}}{\frac{(P_{B2}-P_{B1})x100}{(P_{B2}+P_{B1})/2}}$$

Price change of Good B affecting Quantity

Demand for Good A

If CPED >0 then Good A and Good B are substitute goods (e.g. tea and coffee)
If CPED <0 then the goods are complementary goods (e.g. tea and milk)
If CPED $=0$ then the goods are neutral

1. CPED $\Rightarrow$ elastic when CPED $>$ 1
2. CPED $\Rightarrow$ inelastic when 0 $<$ CPED $>$ 1
3. CPED $\Rightarrow$ inelastic when -1 $<$ CPED $<$ 0
4. CPED $\Rightarrow$ elastic when CPED $<$ -1

Price Elasticity of Supply

- Price Elasticity of Supply ($\mathrm{P}ES$) measures the percentage change in Quantity supplied (Q_S) due to 1% change in **price** (P)

$$\eta = \frac{\frac{Q_2 - Q_1}{\frac{(Q_1 + Q_2)}{2}}}{\frac{P_2 - P_1}{\frac{(P_1 + P_2)}{2}}} \;........\; (1)$$

- Here, Q_2 and Q_1 represents new quantity and old quantity respectively. P_2 and P_1 represents new Income and old income respectively.