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Chapter 2

Elasticities

2.1 The Elasticity of Demand

2.1.1 The Price Elasticity of Demand

- A good's price elasticity of demand measures how much the quantity demanded responds to a change in price.
- Demand for a good is elastic if the quantity demanded responds a lot to changes in price.
- Demand is inelastic if the quantity demanded doesn't respond a lot to changes in price.

Determinants of Price Elasticity of Demand

1. Availability of Substitutes: Goods with close substitutes are more elastic.
2. Necessities v. Luxuries: Necessities are more inelastic and luxuries are more elastic.
3. Market Definition: Goods in narrowly defined markets are more elastic, and goods in broadly defined markets are more inelastic.
4. Time Horizon: Goods are more elastic in the long term than the short term.

2.1.2 Computing the Price Elasticity of Demand

- Price elasticity of demand is

$$\eta = \left| \frac{\% \Delta Q_D}{\% \Delta P} \right|$$

- Ex. The price of ice-cream increases by 10%, and the quantity bought decreases by 20%. The price elasticity of demand is:

$$\eta = \left| \frac{-20\%}{10\%} \right| = 2$$

2.1.3 The Midpoint Method

- Problem: The typical percent change calculation depends on the initial point.
- Ex.

Point A : $P_A = \$4$, $Q_A = 120$

Point B : $P_B = \$6$, $Q_B = 80$

$$\% \Delta P_{A \rightarrow B} = \frac{P_B - P_A}{P_A} = \frac{6 - 4}{4} = \frac{1}{2}$$

$$\% \Delta P_{B \rightarrow A} = \frac{P_A - P_B}{P_B} = \frac{4 - 6}{6} = -\frac{1}{3}$$

- Solution: The midpoint method calculates percent change by using the midpoint of the two values in the denominator.
- Ex.

$$\% \Delta P = \frac{P_B - P_A}{\frac{P_A + P_B}{2}} = \frac{6 - 4}{\frac{4 + 6}{2}} = \frac{2}{5} = 40\%$$

- To calculate elasticities, use the midpoint method.
- Ex.

$$\eta = \left| \frac{\% \Delta Q}{\% \Delta P} \right|$$

$$\% \Delta Q = \frac{Q_A - Q_B}{\frac{Q_A + Q_B}{2}} = \frac{120 - 80}{\frac{120 + 80}{2}} = \frac{2}{5}$$

$$\% \Delta P = \frac{P_A - P_B}{\frac{P_A + P_B}{2}} = \frac{4 - 6}{\frac{4 + 6}{2}} = -\frac{2}{5}$$

$$\eta = 1$$