

Note: Because of the law of demand quantity demanded will always move in the opposite direction to that of price change so the price elasticity of demand will always be negative. It is common to ignore the negative sign and report only the absolute number.

What determines Price Elasticity of Demand?

- Availability of Close Substitutes (Breakfast Cereal vs. Sunscreen)
 - o Goods with close substitutes have more elastic demand (because consumers can easily switch goods)
- Necessities vs. Luxuries (Insulin vs. Caribbean Cruises)
 - o Necessities have inelastic demand
 - o Luxuries have elastic demand
- Definition of the Market (blue Jeans vs. Clothing)
 - o narrowly defined markets have elastic demand
 - o broadly defined markets have inelastic demand
- Time Horizon (Gasoline in the SR vs. Gasoline in the LR)
 - o longer periods of time have elastic demand, with time more substitutes become available

What do these numbers mean?

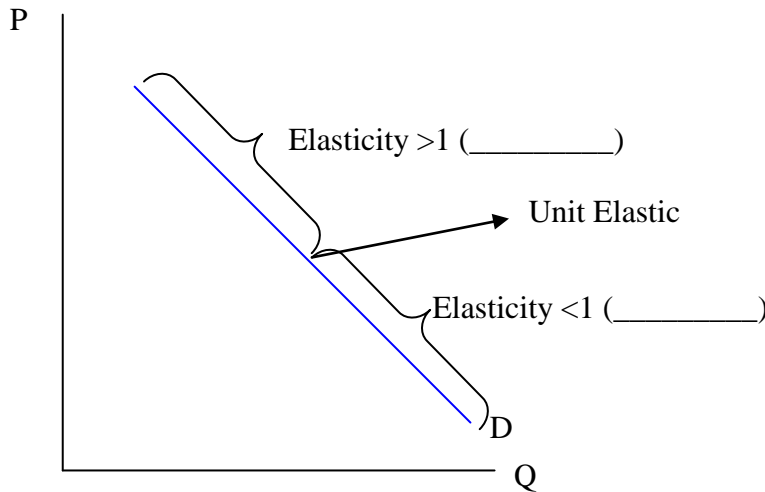
- PERFECTLY INELASTIC if $\epsilon=0$
- INELASTIC if $\epsilon<1$
- UNIT ELASTIC if $\epsilon=1$
- ELASTIC if $\epsilon>1$
- PERFECTLY ELASTIC if $\epsilon=\text{infinity}$

Graphs

Elasticity of a Linear Demand Curve

Even though the slope (change in y/change in x) is constant, the elasticity (ratio of % changes) is not

- Low price & high Qd inelastic demand
- High price & low Qd elastic.



Application: Price Elasticity of Demand and the Total Revenue

total revenue: the amount paid by buyers and received by sellers of a good

- **TR = P*Q**
- Example: our scenario, \$200 to \$250
- More revenue? Sell fewer units?
- It depends on the price elasticity of demand.

Relationship between TR & Elasticity

- Demand elastic $\rightarrow E > 1 \rightarrow \% \Delta Qd > \% \Delta P$
 - Price $\uparrow \rightarrow Qd \downarrow \rightarrow TR \downarrow$
 - $\downarrow P \rightarrow Qd \uparrow \rightarrow \uparrow TR$
 - Demand inelastic $\rightarrow E < 1 \rightarrow \% \Delta P > \% \Delta Qd$
 - Price $\uparrow \rightarrow Qd \downarrow \rightarrow TR \uparrow$
 - $\downarrow P \rightarrow Qd \uparrow \rightarrow \downarrow TR$
- Example: A. Pharmacies raise the price of insulin by 10%. Does total expenditure on insulin rise or fall?
- B. As a result of a fare war, the price of a luxury cruise falls 20%. Does luxury cruise companies' total revenue rise or fall?

PRICE ELASTICITY OF SUPPLY

price elasticity of supply: a measure of how much the quantity supplied of a good responds to a change in the price of that good.

$$\varepsilon_s = \frac{\% \Delta Q_s}{\% \Delta P}$$

Same as Demand:

Perfectly inelastic: $E=0$

Inelastic: $E < 1$

Unit elastic: $E=1$

Elastic: $E > 1$

Perfectly elastic: $E=\text{infinity}$

The determinants of supply curve

- More easily change the Q sellers produce, greater price elasticity of supply
- Greater in the LR

Elasticity changes along the supply curve.

Other Elasticities:

Income Elasticity of Demand: a measure of how much the quantity demanded of a good responds to a change in consumers' income

Income elasticity of demand = Percent change in Qd / % change in Income

$$\epsilon_d = \frac{\% \Delta Q_d}{\% \Delta Y}$$

- Normal goods have positive income Elasticities
- Inferior goods have negative income elasticities

Example: Jessica's income increases from \$1500/mo to \$2000/mo. Her consumption of Jamba Juices increases from 20/mo to 27/mo. Is Jamba a normal or inferior good for Jessica? What is her income elasticity?

Cross-Price Elasticity of Demand: a measure of how much the quantity demanded of a good responds to a change in the price of another good

Cross-Price elasticity of demand = Percent change in Qd good 1 / % change in P good 2

$$\epsilon_d = \frac{\% \Delta Q_d^1}{\% \Delta P_2}$$

- Substitutes have positive cross-price Elasticities
- Complements have negative cross-price elasticities

Example: The price of a burrito falls from \$23 to \$17. As a result, Mansour's quantity demanded of beer falls from 3 to 2. Are these goods complements or substitutes? What is the cross-price elasticity?

Suggested Problems: Problems and Applications – 1, 2, 5