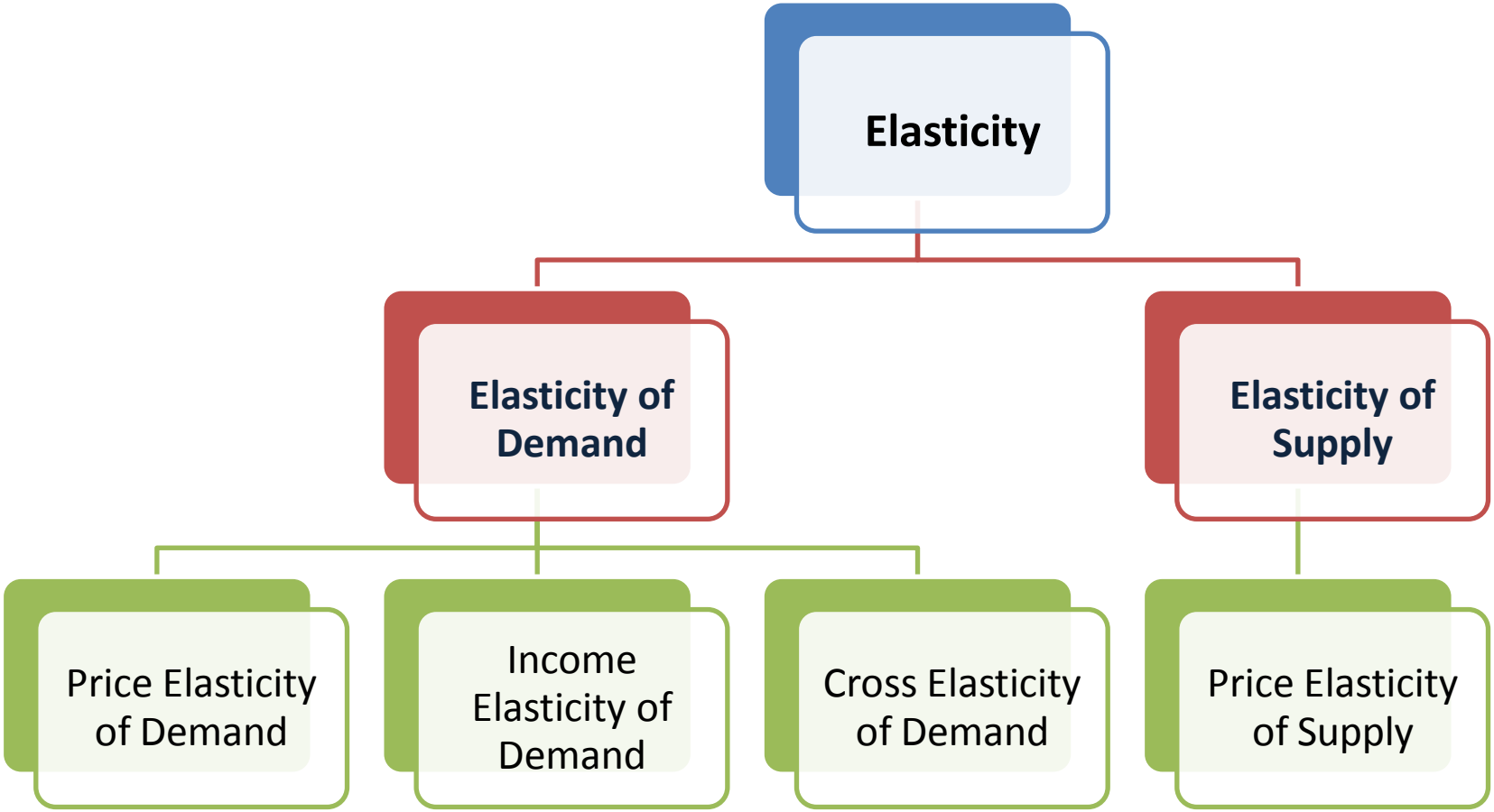

PUNJAB UNIVERSITY COLLEGE OF INFORMATION TECHNOLOGY
INTRODUCTION TO ECONOMICS
Module 4
FIZZA AFTAB
Reference Book : Economics by Paul A. Samuelson

Supply and Demand: Elasticity and Applications

Module 4 Lesson1

Module Overview



Elasticity

"It measures responsiveness of one variable to changes in another variable."

$$E = \frac{\text{Percentage change in dependant variable}}{\text{Percentage change in independent variable}}$$

Elastic

Inelastic

Price Elasticity of Demand

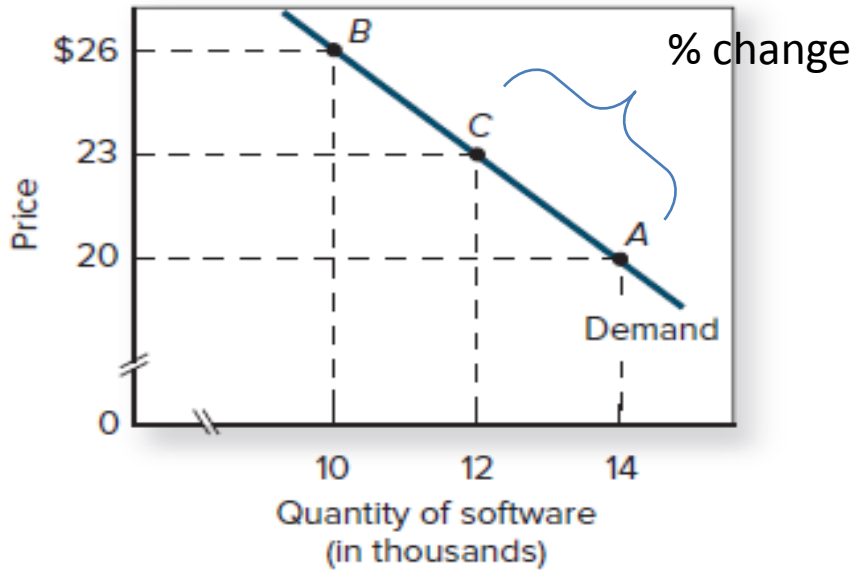
Price elasticity of demand is *the percentage change in quantity demanded divided by the percentage change in price:*

$$E_{pD} = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price}}$$

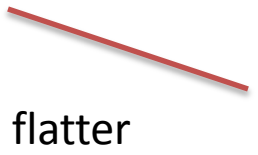
$$\%\ \text{change in quantity} = \frac{Q_2 - Q_1}{(Q_2 + Q_1) \div 2} \times 100$$

$$\%\ \text{change in price} = \frac{P_2 - P_1}{(P_2 + P_1) \div 2} \times 100$$

$$\textbf{EpD} = \frac{Q2 - Q1}{P2 - P1} * \frac{P1 + P2}{Q1 + Q2}$$



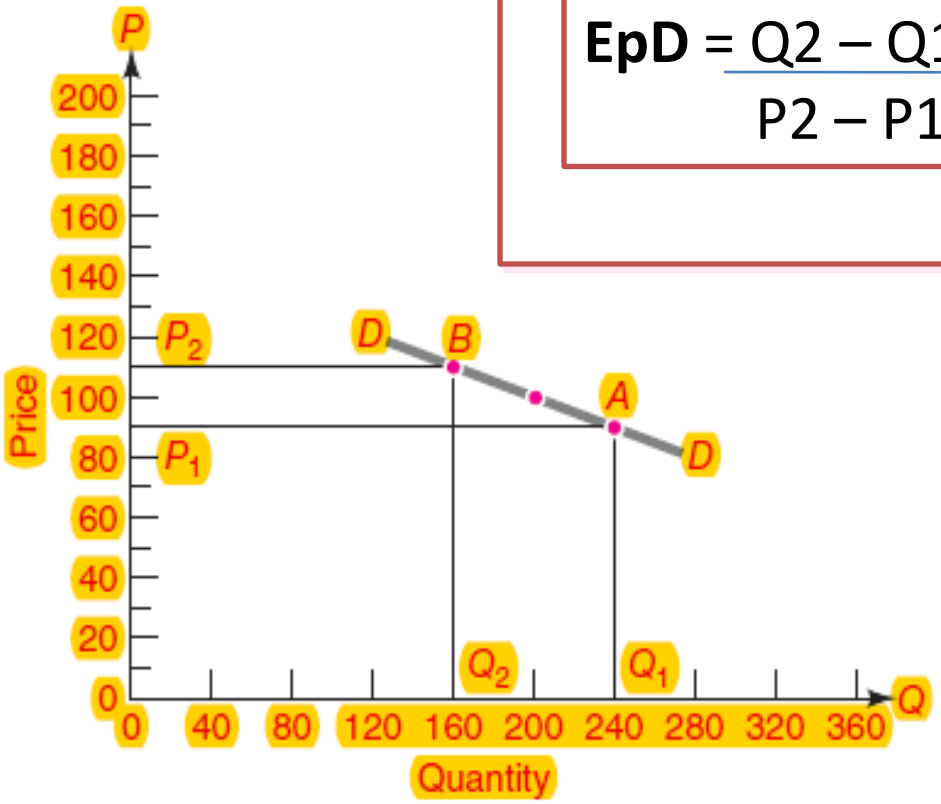
Types of Price Elasticity of Demand

IF……	Then……	Type…..	Example…	Curve
1. % change in Qd > % change in Price	EpD >1	Relative Elastic	Comfort/luxury	 flatter
2. % change in Qd < % change in Price	EpD <1	Relative Inelastic	Necessities	 steeper
3. % change in Qd = % change in Price	EpD =1	Unitary Elastic	Accessories	 Normal
4. % change in price brings no change in Qd	EpD =0	Perfectly Inelastic	Life saving drugs/medicines	
5. Small % change in price brings infinite change in Qd	EpD =∞	Perfectly Elastic	No real life example	

Case A: Price = 90 and quantity = 240

Case B: Price = 110 and quantity = 160

$$\textbf{EpD} = \frac{Q2 - Q1}{P2 - P1} * \frac{P1 + P2}{Q1 + Q2}$$



ELASTICITY AND REVENUE

Many businesses want to know whether raising prices will raise or lower revenues.

Total Revenue = P * Q

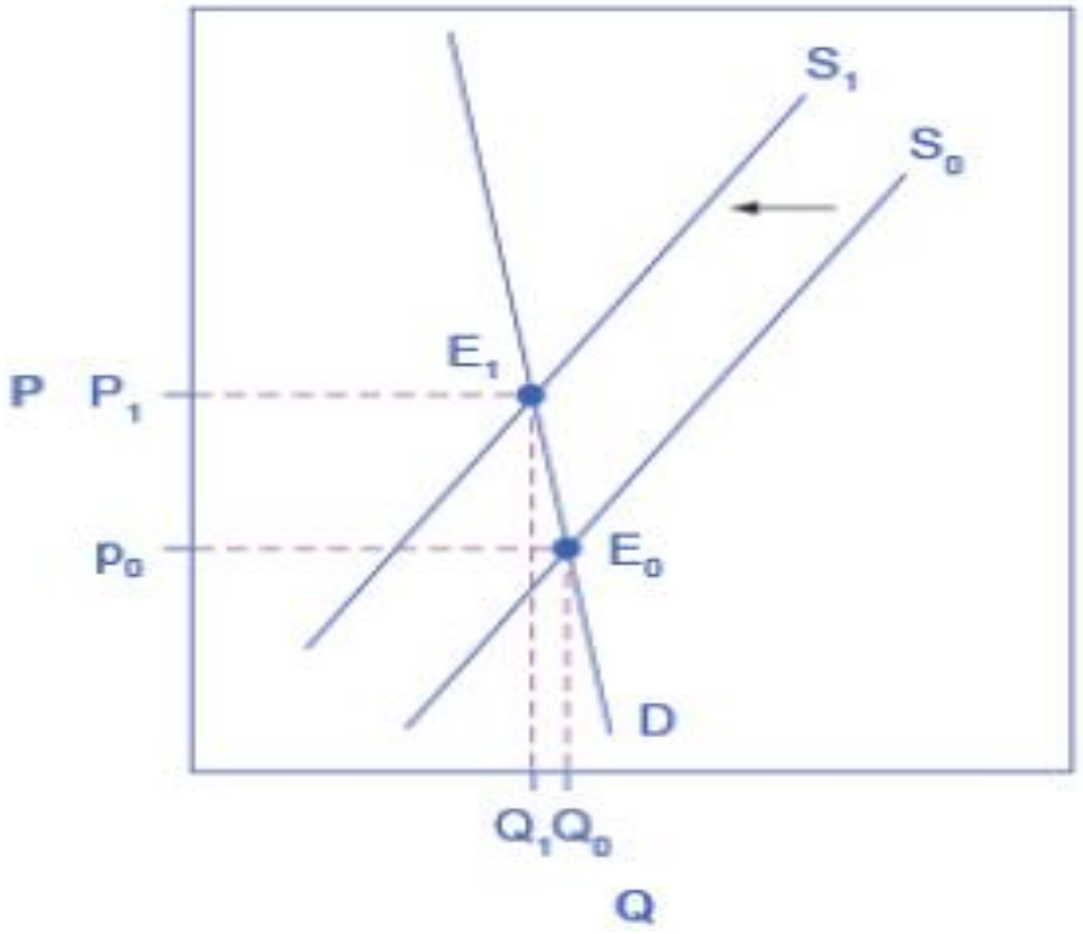
ELASTICITY AND REVENUE

1. When demand is price-inelastic, a price decrease reduces total revenue.

2. When demand is price-elastic, a price decrease increases total revenue

3. In the borderline case of unit-elastic demand, a price decrease leads to no change in total revenue.

Example: Higher cost with Inelastic Demand



Factors Determining Price Elasticity of Demand

a. Availability of Substitutes.

b. Proportion of the Income Spent on the Good.

c. Time Period.

Supply and Demand: Elasticity and Applications

Module 4 Lesson2

Income Elasticity of Demand

Income elasticity of demand is defined as *the percentage change in demand divided by the percentage change in income.*

$$E_{ID} = \frac{\text{Percentage change in demand}}{\text{Percentage change in income}}$$

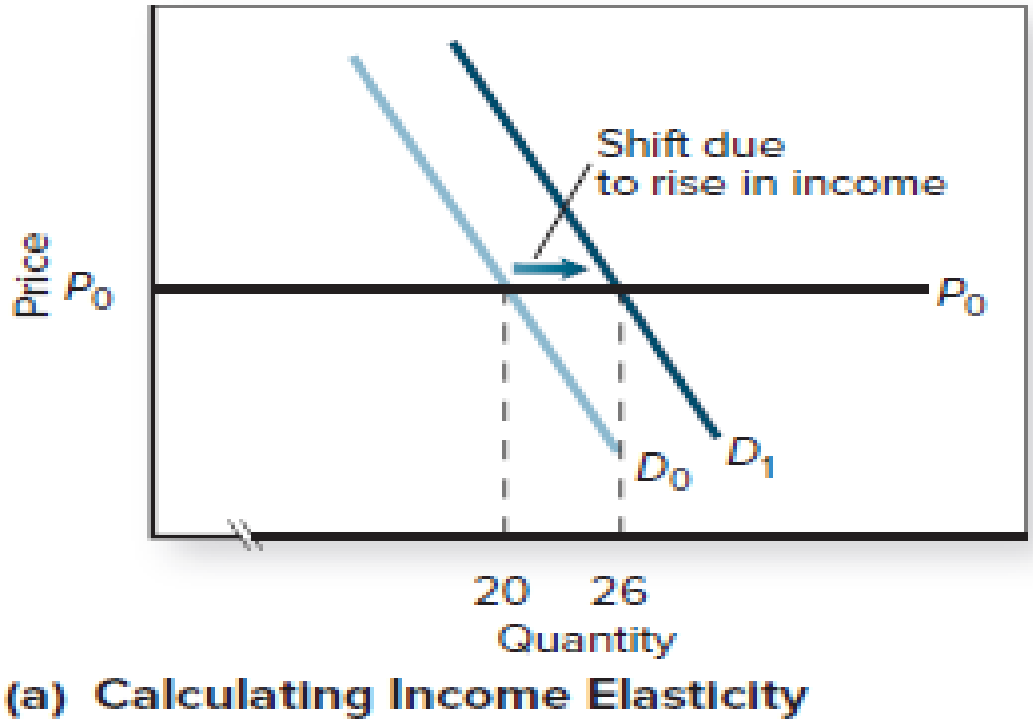
It tells us the responsiveness of demand to changes in income.

⇒If goods are Normal : EDI > 0 (Positive)

⇒ If goods are Inferior : EDI <0 (Negative)

$$E_{ID} = \frac{D2 - D1}{Y2 - Y1} * \frac{Y1 + Y2}{D1 + D2}$$

Income (Y)	Demand (D)
100	20
150	26



(a) Calculating Income Elasticity

Ans:

Knowledge Check

Label each of the following goods as a luxury, necessity, or inferior good. Income elasticity is given for each.

Dental Service 5.1
Economy class travel -0.5
Shoes 0.62

Cross Elasticity of Demand

The percentage change in demand divided by the percentage change in the price of a related good.

$$E_{CD} = \frac{\text{Percentage change in demand}}{\text{Percentage change in price of related goods}}$$

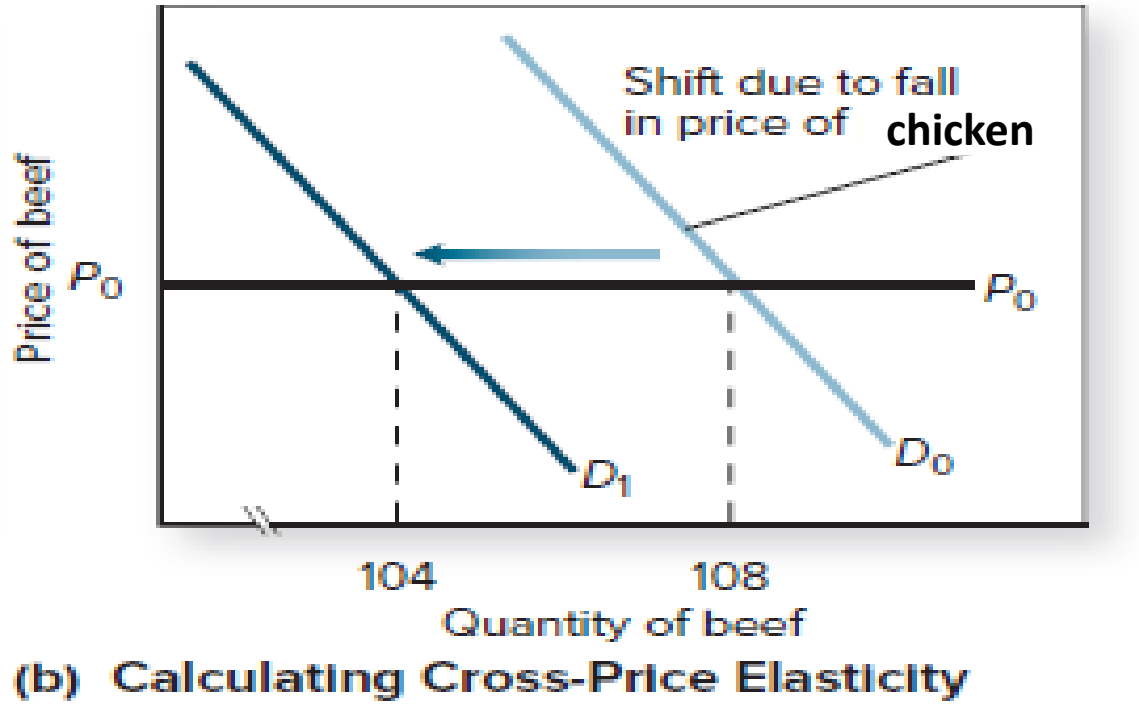
It shows the responsiveness of demand to changes in prices of related goods

⇒If goods are Substitute : EDI > 0 (Positive)

⇒ If goods are Complement : EDI <0 (Negative)

$$E_{ID} = \frac{D_{A2} - D_{A1}}{P_{B2} - P_{B1}} * \frac{P_{B1} + P_{B2}}{D_{A1} + D_{A2}}$$

Price (B)	Demand (A)
100	108
95	104



(b) Calculating Cross-Price Elasticity

Ans:

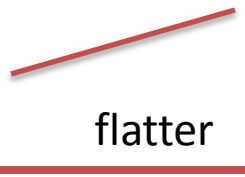
Price Elasticity of Supply

The price elasticity of supply is the percentage change in quantity supplied divided by the percentage change in price.

$$\textbf{EPS} = \frac{\text{Percentage change in quantity supplied}}{\text{Percentage change in price}}$$

$$\textbf{EpS} = \frac{Q2 - Q1}{P2 - P1} * \frac{P1 + P2}{Q1 + Q2}$$

Types of Price Elasticity of Supply

IF……	Then……	Type…..	Curve…
1. % change in Qs % >change in Price	EpS	Relative Elastic	 flatter
2. % change in Qs %< change in Price	EpS	Relative Inelastic	 steeper
3. % change in Qs= % change in Price	EpS	Unitary Elastic	 Normal
4. % change in price brings no change in Qs	EpS	Perfectly Inelastic	
5. Small % change in price brings infinite change in Qs	EpS =∞	Perfectly Elastic	

Factors Determining Price Elasticity of Supply

1. Time period

2. Ability to store output

3. Factor mobility