Economy Microeconomics 05 Elasticity

Microeconomics Ch 05

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4. Chapter: Microeconomics 05 Elasticity

1. Microeconomics 05 Elasticity Questions

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4.1.1. From the data shown in Table 5.5 about demand for smart phones, cal...

Author: OpenStax College

From the data shown in Table 5.5 about demand for smart phones, calculate the price elasticity of demand from: point B to point C, point D to point E, and point G to point H. Classify the elasticity at each point as elastic, inelastic, or unit elastic.

[Table]

Points; P; Q

A; 60; 3,000

B; 70; 2,800

C; 80; 2,600

D; 90; 2,400

E; 100; 2,200

F; 110; 2,000

G; 120; 1,800

H; 130; 1,600

[/Table]

- From point B to point C, price rises from $70 to $80, and Qd decreases from 2,800 to 2,600. So:
  % change in quantity = 2600 - 2800 / (2600 + 2800) ÷ 2× 100 = -200/2700× 100 = -7.41
  % change in price = 80 - 70 / (80+70) ÷ 2× 100 = 10 / 75 × 100 = 13.33
  Elasticity of Demand = -7.41% / 13.33% = 0.56
  The demand curve is inelastic in this area; that is, its elasticity value is less than one. Answer from Point D to point E:
  % change in quantity = 2200 - 2400 / (2200 + 2400) ÷ 2× 100 = -200 /2300× 100 = -8.7
  % change in price = 100 - 90 / (100+90) ÷ 2× 100 = 10 /95 × 100 = 10.53
  Elasticity of Demand = -8.7% / 10.53% = 0.83
  The demand curve is inelastic in this area; that is, its elasticity value is less than one. Answer from Point G to point H:
  % change in quantity = 1600 - 1800 / (1600 + 1800) ÷ 2× 100 = -200 / 1700× 100 = -11.76
  % change in price = 130 - 120 / (130 + 120) ÷ 2× 100 = 10 / 75× 100 = 13.33
  Elasticity of Demand = -11.76% / 13.33% = 0.88

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The demand curve is still inelastic in this interval, but approaching unit elasticity.

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4.1.2. From the data shown in Table 5.6 about supply of alarm clocks, calc...

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From the data shown in Table 5.6 about supply of alarm clocks, calculate the price elasticity of supply from:

point J to point K, point L to point M, and point N to point P. Classify the elasticity at each point as elastic, inelastic, or unit elastic.

[Table]

Point; Price; Quantity Supplied

J; $8; 50

K;$9; 70

L ;$10 ;80

M ;$11; 88

N ;$12; 95

P ;$13 ;100

[/Table]

Table 5.6

- From point J to point K, price rises from $8 to $9, and quantity rises from 50 to 70. So:
  % change in quantity = (70 - 50) / ((70+50) ÷ 2) × 100 = 20 / 60× 100 = 33.33
  % change in price = ($9 - $8) / (($9+$8) ÷ 21) × 100 = 1 / 8.5× 100 = 11.76
  Elasticity of Supply = 33.33% / 11.76% = 2.83
  The supply curve is elastic in this area; that is, its elasticity value is greater than one. From point L to point M, the price rises from $10 to $11, while the Qs rises from 80 to 88:
  % change in quantity = (88 - 80) / ((88+80) ÷ 2) × 100 = 8 / 84× 100 = 9.52
  % change in price = ($11 - $10) / (($11+$10) ÷ 21)× 100 = 1 / 10.5 × 100 = 9.52
  Elasticity of Demand = 9.52% / 9.52% = 1.0
  The supply curve has unitary elasticity in this area. From point N to point P, the price rises from $12 to $13, and Qs rises from 95 to 100:
  % change in quantity = (100 - 95) / ((100+95) ÷ 25) ×100 = 5 / 97.5×100 = 5.13
  % change in price = ($13 - $12) / (($13+$12) ÷ 21) × 100 = 1 / 12.5 × 100 = 8.0
  Elasticity of Supply = 5.13% / 8.0% = 0.64
  The supply curve is inelastic in this region of the supply curve.

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4.1.3. Why is the demand curve with constant unitary elasticity concave?

Author: OpenStax College

Why is the demand curve with constant unitary elasticity concave?

- The demand curve with constant unitary elasticity is concave because at high prices, a one percent decrease in price results in more than a one percent increase in quantity. As we move down the demand curve, price drops and the one percent decrease in price causes less than a one percent increase in quantity.

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4.1.4. Why is the supply curve with constant unitary elasticity a straight...

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Why is the supply curve with constant unitary elasticity a straight line?

- The constant unitary elasticity is a straight line because the curve slopes upward and both price and quantity are increasing proportionally.

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4.1.5. The federal government decides to require that automobile manufactu...

Author: OpenStax College

The federal government decides to require that automobile manufacturers install new anti-pollution equipment that costs $2,000 per car. Under what conditions can carmakers pass almost all of this cost along to car buyers? Under what conditions can carmakers pass very little of this cost along to car buyers?

- Carmakers can pass this cost along to consumers if the demand for these cars is inelastic. If the demand for these cars is elastic, then the manufacturer must pay for the equipment.

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4.1.6. Suppose you are in charge of sales at a pharmaceutical company, and...

Author: OpenStax College

Suppose you are in charge of sales at a pharmaceutical company, and your firm has a new drug that causes bald men to grow hair. Assume that the company wants to earn as much revenue as possible from this drug. If the elasticity of demand for your company's product at the current price is 1.4, would you advise the company to raise the price, lower the price, or to keep the price the same? What if the elasticity were 0.6? What if it were 1? Explain your answer.

- If the elasticity is 1.4 at current prices, you would advise the company to lower its price on the product, since a decrease in
  price will be offset by the increase in the amount of the drug sold. If the elasticity were 0.6, then you would advise the company to
  increase its price. Increases in price will offset the decrease in number of units sold, but increase your total revenue. If elasticity is
  1, the total revenue is already maximized, and you would advise that the company maintain its current price level.

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4.1.7. What would the gasoline price elasticity of supply mean to UPS or F...

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What would the gasoline price elasticity of supply mean to UPS or FedEx?

- The percentage change in quantity supplied as a result of a given percentage change in the price of gasoline.

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4.1.8. The average annual income rises from $25,000 to $38,000, and the qu...

Author: OpenStax College

The average annual income rises from $25,000 to $38,000, and the quantity of bread consumed in a year by the average person falls from 30 loaves to 22 loaves. What is the income elasticity of bread consumption? Is bread a normal or an inferior good?

- Percentage change in quantity demanded = [(change in quantity)/(original quantity)] × 100 = [22 - 30]/[(22 + 30)/2] × 100 = -8/26 × 100 = -30.77
  Percentage change in income = [(change in income)/(original income)] × 100 = [38,000 - 25,000]/[(38,000 + 25,000)/2] × 100 = 13/31.5 × 100 = 41.27
  In this example, bread is an inferior good because its consumption falls as income rises.

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4.1.9. Suppose the cross-price elasticity of apples with respect to the pr...

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Suppose the cross-price elasticity of apples with respect to the price of oranges is 0.4, and the price of oranges falls by 3%. What will happen to the demand for apples?

- The formula for cross-price elasticity is % change in Qd for apples / % change in P of oranges. Multiplying both sides by % change in P of oranges yields: % change in Qd for apples = cross-price elasticity X% change in P of oranges = 0.4 × (-3%) = -1.2%, or a 1.2 % decrease in demand for apples.

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