

UNIT 4 Elasticity

Unit Content:

		Understanding		
		1 (poor)	2	3 (good)
1.	Price Elasticity of Demand (P_{e_D})			
	• Describe Price Elasticity of Demand (P_{e_D})			
	• Compare Revenue to Determine Price Elasticity of Demand			
	• Calculate the Coefficient of Elasticity of P_{e_D}			
2.	Income Elasticity of Demand (Y_{e_D})			
	• Define and Calculate Income Elasticity of Demand (Y_{e_D})			
	• Describe Inferior, Normal and Luxury Goods			
	• Show Y_{e_D} on Demand Curves			
3.	Cross Elasticity of Demand (X_{e_D})			
	• Define and Calculate Cross Elasticity of Demand (X_{e_D})			
	• Describe Complements, Substitutes and Independent Goods			
	• Show X_{e_D} on Demand Curves			
4.	Price Elasticity of Supply (P_{e_S})			
	• Define and Calculate Price Elasticity of Supply (P_{e_S})			
	• Show Momentary, Short-Run and Long-Run Supply			

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Checklist:

- Have I completed all the tasks set?
- Have I got all my notes in order?
- Have I checked my understanding?

Sources of Information:

- Print:

- Digital:

- Other:

Questions I Need Answered:

The Standard:

AS 90630

Achievement Criteria:

Fully explain different markets' responses to changes.

Notes:

The description of how a market responds to change will involve a selection from:

Elasticity

- definitions of price elasticity of demand, cross elasticity of demand, income elasticity of demand and price elasticity of supply.
- calculation of price elasticity of demand, cross elasticity of demand, income elasticity of demand and price elasticity of supply.
- reasons for differing elasticities for different goods and services.
- significance for firms in their pricing decisions.
- supply responsiveness in the long term compared with the short term.

Study Notes

Elasticity

Achievement Standard 90630

Overview

This unit looks at elasticity. What is elasticity and how does it affect firms' pricing decisions?

We look at four types of elasticity . . . price elasticity of demand, income elasticity of demand, cross elasticity of demand and price elasticity of supply.

Price Elasticity of Demand (Pe_D)

Describe Price Elasticity of Demand (Pe_D)

Imagine you own a local shop that sells goods for \$10 each. Each day you sell 100 goods earning you \$1 000 revenue. If you drop your price by \$1, you will increase your sales but will earn less per good. Should you drop your price?

It depends. You will sell more but because you will earn less per sale, your revenue may fall. You need to find out whether the increase in sales is greater than the income you lose on existing sales.

Let's assume that dropping the price by \$1 would increase sales by 10% each day. *Table 1* below shows the overall effect of this on revenue.

	Price	Quantity	Revenue
Before	\$10	100	\$1 000
After	\$9	110	\$990

The increase in the quantity of sales has not compensated for the loss of income per sale. People have responded to the drop in price but not sufficiently to increase revenue.

How much people react to a change in a factor (such as the price of a good) is called *elasticity*.



Elasticity: The sensitivity or responsiveness of quantity demanded or supplied to a change in another factor, e.g. price.

Price elasticity of demand is a specific type of elasticity. It measures how much quantity demanded changes following a change in the price of a good or service. If demand for a good is price elastic, this means that consumers are very sensitive to changes in price. Dropping the price will cause sales to rise enough to generate an increase in total revenue. Conversely, raising the price will cause quantity demanded to fall so much that total revenue will fall.

If demand is price inelastic, customers are not very sensitive to changes in price, e.g. a price rise will only see quantity demanded fall slightly. When demand is price inelastic, firms should raise their prices to increase total revenue.

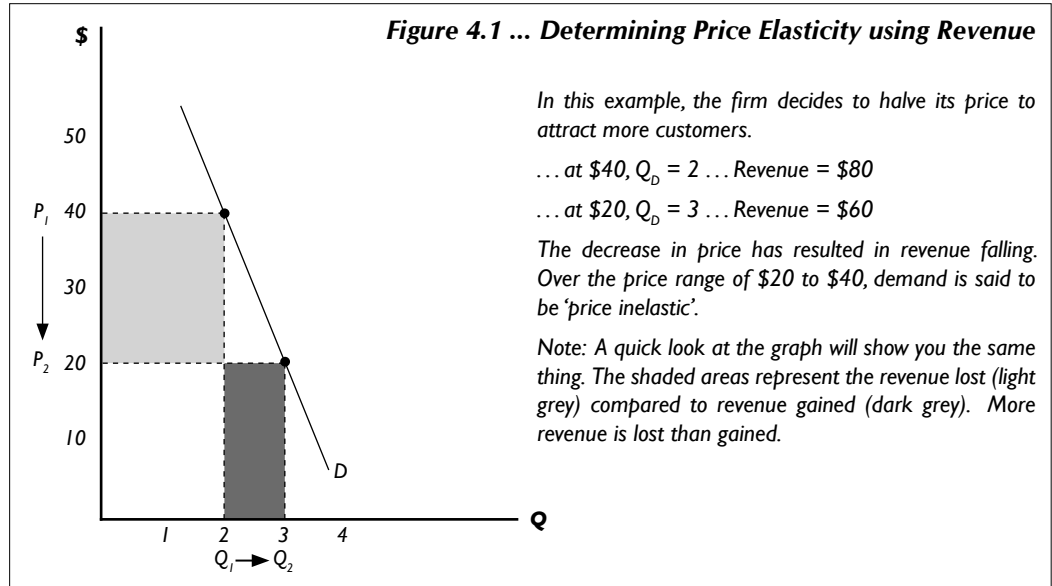


Price Elasticity of Demand: The responsiveness of quantity demanded to changes in the price.

There are two ways to determine the price elasticity of demand – compare the revenue before and after a price change or calculate the coefficient of elasticity.

Compare Revenue to Determine Price Elasticity of Demand

This approach can best be shown graphically on a demand curve.



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- If price falls and revenue falls (or vice versa) then demand is said to be *price inelastic*.
- If price rises and revenue stays the same, then demand is said to be *price unit elastic*.
- If price falls and revenue rises (or vice versa) then demand is said to be *price elastic*.

Calculate the Coefficient of Elasticity of P_{e_D}

The second approach compares the percentage change in quantity demanded to the percentage change in price. The most common approach is to use the mid-point approach. The formula for this is as follows:

$$\text{Mid-Point Approach: } \frac{\frac{Q_{D_2} - Q_{D_1}}{(Q_{D_2} + Q_{D_1}) \div 2}}{\frac{P_2 - P_1}{(P_2 + P_1) \div 2}}$$

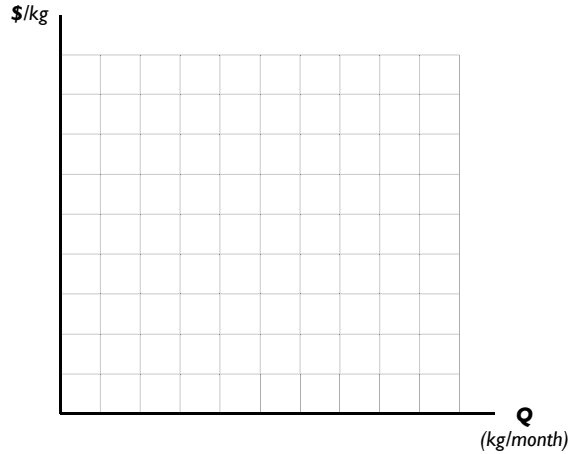
Repeating the example above but using the mid-point approach to calculating the coefficient of price elasticity, we get the following results:

$$\frac{\frac{3 - 2}{(3 + 2) \div 2}}{\frac{20 - 40}{(20 + 40) \div 2}} \rightarrow \frac{\frac{1}{2.5}}{\frac{-20}{30}} \rightarrow \frac{0.4}{-0.67} \rightarrow -0.60 \text{ (2dp)}$$

Imagine two green grocers, both of whom face the same demand curve. One, however, specialises in giving extra service (e.g. free deliveries) and so sells less produce but at a higher price. The other says “forget about service, I want sales, sales, sales” . . . and so sells her produce at cheaper prices. Their products are otherwise exactly the same and so face the same demand curve.

1. Use the demand schedule below to construct the market demand curve on the axis to the right.

Price (\$/kg)	Q _D (kg/month)
16	1 000
14	2 000
12	3 000
10	4 000
8	5 000
6	6 000
4	7 000



- Joe sells his produce at \$14/kg. Show this on the graph and label it P_J and Q_J.
- Betty sells her produce at \$6/kg. Show this on the graph and label it P_B and Q_B.
- Both Joe and Betty decide to lower their prices by \$2/kg. Show this on the graph above.
- Over the price ranges shown, calculate the coefficient of price elasticity of demand.

6. Describe the price elasticity of demand over each price range.

\$6 - 4 _____
 \$14 - 12 _____

7. Each producer has changed their price by \$2/kg and this has resulted in an increase in quantity of 1 000 kg/month. Yet the coefficients of elasticity are different. Explain why.

8. State what each producer should do in terms of their pricing strategy.

Joe _____
 Betty _____

9. Summarise the connection between price elasticity of demand, changes in price and total revenue.

10. Complete the following table:

Price Range	\$4 - \$6	\$6 - \$8	\$8 - \$10	\$10 - \$12	\$12 - \$14	\$14 - \$16
Elasticity Coefficient						
Elasticity						

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Exercise 4.1 Price Elasticity of Demand