

ACTIVITY 24

Elasticity Coefficients

So far, you have used the total revenue method to determine if demand was elastic, inelastic, or unit elastic. Now it is time to get more precise. To gain this precision, economists calculate price *elasticity of demand* (E_d) coefficients. The price elasticity of demand coefficient is calculated by dividing the percentage change in quantity demanded by the percentage change in price.

$$E_d = \frac{\text{percentage change in quantity demanded}}{\text{percentage change in price}}$$

Because of different bases, the formula works like this:

$$E_d = \frac{\frac{\Delta Q}{(Q_1 + Q_2)/2}}{\frac{\Delta P}{(P_1 + P_2)/2}}$$

Because the relationship of quantity demanded and price is inverse, the coefficient will always yield a negative number. However, because it is understood to be negative, we drop the negative symbol. If E is greater than 1, demand is elastic. If E is less than 1, demand is inelastic. If $E = 1$, demand is unit elastic.

- Suppose you are given the following data on the market demand for compact discs at a local store:

Local Market Demand for CDs	
Price (\$)	Quantity demanded per day
12	50
10	70
8	80
6	95

- What is the price elasticity of demand over the price range of \$12 to \$10? _____
- What is the price elasticity of demand over the price range of \$10 to \$8? _____

The concept of price elasticity also applies to supply. Price *elasticity of supply* (E_s) is defined as the percentage change in quantity supplied divided by the percentage change in the price of the good. The formula is

$$E_s = \frac{\text{percentage change in quantity supplied}}{\text{percentage change in price}}$$

Because of different bases, the formula works like this:

$$E_s = \frac{\frac{\Delta Q}{(Q_1 + Q_2)/2}}{\frac{\Delta P}{(P_1 + P_2)/2}}$$

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Because price and quantity supplied are a direct relationship, there is no need to change the sign. If E is greater than 1, the elasticity of supply is elastic. If E is less than 1, the elasticity of supply is inelastic. If $E = 1$, elasticity of supply is unit elastic.

2. Suppose you are given some information on market supply for compact discs at a local store:

Price (\$)	Quantity supplied per day
12	100
10	90
8	80
6	50

- a. What is the price elasticity of supply over the price range of \$12 to \$10? _____
- b. What is the price elasticity of supply over the price range of \$10 to \$8? _____

In addition to price elasticity of demand, economists determine income elasticity of demand. This measure relates the percentage change in the quantity of a good purchased to the percentage change in income. In most cases, the relationship is positive. An increase in income causes an increase in the quantity of the good purchased. These goods are called *normal goods*. In a few cases, the relationship is negative. These goods are called *inferior goods*. Steak is an example of a normal good; cabbage and turnips might be examples of inferior goods.

3. Suppose you are given the following information on the spending habits of a family:

	Income per month	Quantity of potatoes demanded per month	Quantity of steak demanded per month
Year 1	\$1,000	4 lb.	2 lb.
Year 2	\$1,500	3 lb.	6 lb.

- a. What is the income elasticity of demand for potatoes? _____
- b. Are potatoes a normal or inferior good? _____
- c. What is the income elasticity of demand for steak? _____
- d. Is steak a normal or inferior good? _____
- e. What qualities make a good inferior or normal?