

ACTIVITY 22

# Elasticity of Demand and Changes in Total Revenue

What exactly do we mean by “a considerable change” and “a little change” in the quantity demanded? One way to define elasticity of demand more precisely is to examine what happens to *total revenue* when a price changes. Total revenue is price times quantity demanded.

$$\begin{array}{rcl} \text{Price} \times \text{quantity demanded} & = & \text{total revenue} \\ \$10 \times 150 \text{ items} & = & \$1500 \end{array}$$

What happens to total revenue depends on the *relative size* of the changes in price and the quantity demanded. If the percentage change in the quantity demanded is greater than the percentage change in price, total revenue and the price change will move in opposite directions. This situation indicates that the demand

schedule that lies between the two prices is elastic. If the percentage change in quantity demanded is less than the percentage change in price, total revenue and the price change will move in the same direction. This situation indicates that the demand schedule that lies between these two prices is inelastic. Let’s summarize these points:

$$\left. \begin{array}{l} \text{Price } \uparrow \text{ total revenue } \downarrow \\ \text{Price } \downarrow \text{ total revenue } \uparrow \end{array} \right\} \text{ Elastic demand}$$

$$\left. \begin{array}{l} \text{Price } \uparrow \text{ total revenue unchanged} \\ \text{Price } \downarrow \text{ total revenue unchanged} \end{array} \right\} \text{ Unit elastic demand}$$

$$\left. \begin{array}{l} \text{Price } \uparrow \text{ total revenue } \uparrow \\ \text{Price } \downarrow \text{ total revenue } \downarrow \end{array} \right\} \text{ Inelastic demand}$$

Now let’s do some problems to drive home the point. For each problem, complete the mathematics, fill in the answer blanks and circle the correct answer. Then write whether the product has an elastic or inelastic demand schedule between these two prices. The first problem is completed for you.

1. Price rises from \$5 to \$6. Quantity demanded decreases from 15 to 10.

a. Old price x quantity demanded = old total revenue  
 $\underline{5} \quad \underline{15} \quad \underline{75}$

b. New price x quantity demanded = new total revenue  
 $\underline{6} \quad \underline{10} \quad \underline{60}$

c. P  $\downarrow$   $\uparrow$  TR  $\downarrow$   $\uparrow$  elastic

2. Price falls from \$10 to \$9. Quantity demanded increases from 100 to 110.

a. Old price x quantity demanded = old total revenue  
 $\underline{\hspace{1cm}} \quad \underline{\hspace{1cm}} \quad \underline{\hspace{1cm}}$

b. New price x quantity demanded = new total revenue  
 $\underline{\hspace{1cm}} \quad \underline{\hspace{1cm}} \quad \underline{\hspace{1cm}}$

c. P  $\downarrow$   $\uparrow$  TR  $\downarrow$   $\uparrow$

**ACTIVITY 22 continued**

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3. Price rises from \$6 to \$9. Quantity demanded decreases from 60 to 50.
- a. Old price x quantity demanded = old total revenue  
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- b. New price x quantity demanded = new total revenue  
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- c. P ↓ ↑      TR ↓ ↑      \_\_\_\_\_
4. Price falls from \$6.50 to \$6.00. Quantity demanded increases from 100 to 200.
- a. Old price x quantity demanded = old total revenue  
\_\_\_\_\_
- b. New price x quantity demanded = new total revenue  
\_\_\_\_\_
- c. P ↓ ↑      TR ↓ ↑      \_\_\_\_\_
5. Price falls from \$4.00 to \$3.75. Quantity demanded increases from 300 to 340.
- a. Old price x quantity demanded = old total revenue  
\_\_\_\_\_
- b. New price x quantity demanded = new total revenue  
\_\_\_\_\_
- c. P ↓ ↑      TR ↓ ↑      \_\_\_\_\_
6. Why do price and total revenue go in opposite directions when the demand for the good is elastic?
7. Why do price and total revenue go in the same direction when the demand for the product is inelastic?