

## *The Determinants of Elasticity of Demand*

Suppose we don't know the precise demand schedule for electricity and there is a 20 percent increase in the price of a kilowatt hour of electricity. We know that quantity demanded will decrease, but will it be by less than 20 percent (inelastic demand), exactly 20 percent (unit elastic) or more than 20 percent (elastic demand)? What factors influence the price elasticity of demand? (Remember, *ceteris paribus*!)

### Part A

Consider the following representative households in our market for electricity:

Household A: Uses electricity for lighting, appliances and heating.

Household B: Uses electricity for lighting, appliances and heating. Has a heating system that can, with one day's labor, be switched to burn natural gas.

- Household \_\_\_\_\_ will have the more elastic demand because of the presence of a \_\_\_\_\_ good.
- Because Household A has no available substitutes, should we assume that the quantity demanded of electricity will remain unchanged given the increase in price? \_\_\_\_\_  
Do you think Household A's response will be elastic or inelastic? \_\_\_\_\_
- Illustrate the same concept identified above by placing a 1, 2 or 3 by each item below, denoting the least price elastic to the most price elastic. Explain your reasoning.  
 \_\_\_\_\_ Demand for insulin  
 \_\_\_\_\_ Demand for Granny Smith apples  
 \_\_\_\_\_ Demand for running shoes  
 Rationale:

- To summarize: Demand is (*more / less*) elastic for goods with many available substitutes.

Activity written by Kelly A. Chaston, Davidson College, Davidson, N.C.

### Part B

Consider the following representative households in the electricity market:

Household A: Currently spends \$300 a month on electricity.

The household income is \$1,200 a month.

Household B: Currently spends \$300 a month on electricity.

The household income is \$3,600 a month.

5. Household \_\_\_\_\_ will have the more-elastic demand, as the expenditures on this good account for a (*smaller / larger*) proportion of its income.
6. Illustrate the same concept identified above by placing a 1, 2 or 3 by each item below, denoting the least elastic to the most elastic. Explain your reasoning.  
 \_\_\_\_\_ Demand for chewing gum  
 \_\_\_\_\_ Demand for automobiles  
 \_\_\_\_\_ Demand for clothing

Rationale:

7. To summarize: Goods that command a (*small / large*) proportion of a consumer's income tend to be more price elastic.

### Part C

We expect that the price elasticity of demand will also vary with the nature of the good being considered. Is it a necessity? A durable good? Are we considering the short run or the long run? Consider the following alternatives, and underline the option that correctly completes each statement.

8. The price elasticity of demand for cigarettes: A product that is considered to be a necessity will have a relatively price (*elastic / inelastic*) demand.
9. The price elasticity of demand for automobiles: In the short run, consumers can postpone the purchase of durable goods, and so such goods will have a relatively price (*elastic / inelastic*) demand.
10. Briefly summarize how the nature of the good — necessity, durable good or luxury good — and the time frame affect the price elasticity of demand for electricity.

### Part D

Now, suppose that prices in the market for electricity remain constant, but consumers' income increases by 30 percent. Again, we may not know the precise demand schedule but may still be able to use notions of elasticity to speculate about what will happen to demand.

Recall the income elasticity of demand,  $\epsilon_d$ :

$$\epsilon_d = \frac{\text{percentage change in quantity demanded}}{\text{percentage change in income}}$$

Note in this case, income and quantity demanded are the relevant variables. All other variables, including the price of electricity, are held constant.

11. In measurements of elasticity, if income and quantity demanded move in the opposite direction — that is, if one increases while the other decreases — then the elasticity coefficient will be (*positive / negative*).
12. Remember that if income increases, the demand for a normal good increases and demand for an inferior good decreases. If the good is a normal good, income elasticity will be (*negative / positive*). If it is an inferior good, income elasticity will be (*negative / positive*).

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