Econ 101 Discussion Section-Handout 4

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1 Review

- Elasticity
  - We are interested in understnding how sensitive is the quantity with respect to the price. But more important we want a measure that is units free.
  - Think about elasticity as a the percentage change on one good induced by the percentage change in the price
  - In particular the elasticity of demand $\epsilon_D = \frac{\Delta\%Q}{\Delta\%P}$
  - We say that the demand is inelastic if $\epsilon_D < 1$ and elastic if $\epsilon_D > 1$ there is the special case that happens when $\epsilon_D = 1$
- Formulas to get elasticity
  - There are several approaches to get the elasticity
    - $\epsilon_D = \frac{\Delta\%Q}{\Delta\%P}$ called the percentage formula, $arc\epsilon_D = \frac{\frac{q1-q_2}{q_1+q_2}}{\frac{p_1-p_2}{p_1+p_2}}$ called the arc elasticity. finally the slope, point elasticity elasticiy $\epsilon_d = \frac{1}{slope}\frac{P}{Q}$
  - Which one to use, it depends on how is the information presented.
- Different elasticities
  - Income elasticity :We can kno when a good is a normal, inferior or even luxury
  - Supply elasticty
  - Cross price elasticiy: We can understand when a good is substitute or complement of another.

2 Problems: Elasticity

1. Consider Doru's demand for fleece jackets. His demand schedule is given below, along with the slope of his demand curve at each point. Using the point elasticity technique, calculate Doru's price elasticity of demand to complete the table. Then answer the questions below.

Slope	Q	P	Price elasticity of demand, ϵ_D
$-8/5$	5	4	
$-27/5$	$10/3$	9	
$-64/5$	$5/2$	16	
-25	2	25	

   (a) Does Doru's demand curve exhibit the law of demand? Why or why not?

(b) Is Doru's demand curve linear? Why or why not? Give TWO reasons.

(c) At any given price, is Doru's demand for fleece jackets elastic or inelastic?

(d) Interpret Doru's price elasticity of demand for fleece jackets in the jargon of percentage changes.

2. Consider the demand for issues of *The Economist* magazine. Suppose the price of one copy of *The Economist* is \$5.00, and at this price, 1000 copies are sold. Then, suppose an increase in the price of ink causes the price per copy of *The Economist* to increase to \$5.50.

   (a) If 800 copies are sold at the new price of \$5.50, what is the price elasticity of demand? Use the midpoint formula.

   (b) Is demand for *The Economist* elastic or inelastic between \$5.00 and \$5.50 (i.e., at the midpoint of these you found in (a))?

3. Consider Joe's demand for Star Wars books. At a price of \$8 per book, Joe buys 4 Star Wars books, and at this price, his price elasticity of demand is $\epsilon_D = -2$. Assuming Joe's demand for Star Wars books is linear, find his demand equation.

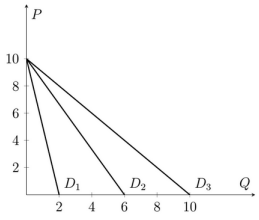
4. Consider the market for bicycles. Assume the demand for bicycles is linear, with a slope of -0.5.

   (a) Suppose at a price of \$300, we observe that 700 bicycles are sold. Using the point elasticity technique, determine if this equilibrium is above or below the midpoint of the demand curve.

   (b) Suppose Trek (a bicycle manufacturer headquartered in Wisconsin) sells all the bicycles in this market. If Trek raised the price of its bicycles above \$300, would Trek increase its total revenue? Why or why not?

   (c) Suppose we now observe that 500 bicycles are sold at a price of \$400 each. If Trek were to increase the price of bicycles above \$400, would its total revenue increase? Why or why not?

5. In the plot below, which demand curve is the most price elastic at $P = 5$? D_1, D_2, or D_3?



6. Suppose the demand for Whatchamacallits (a type of candy bar) is given by $P = 4 - (e^{-3}\sin(\frac{5}{6})\sqrt{2})Q$. What is the price elasticity of demand for Whatchamacallits at $P = 2$?

7. Suppose when the price of good X increases, the quantity demanded of good Y increases. Are goods X and Y complements, substitutes, or neither? What might be the cross-price elasticity of demand for goods X and Y? Give an example of two such goods X and Y that behave in this way.

8. Suppose when the price of good U decreases, the quantity demanded of good V increases. Are goods U and V complements, substitutes, or neither? What might be the cross-price elasticity of demand for goods U and V? Give an example of two such goods U and V that behave in this way.

9. Suppose when the price of good A increases, the quantity demanded of good B does not change. What is the cross-price elasticity of demand for goods A and B?

10. Suppose when Nick's income increases, Nick buys more golf balls than he did before. Are golf balls a normal or inferior good for Nick? What might be Nick's income elasticity of demand for golf balls?

11. Now consider Nick's demand for Mountain Dew. When his income increases, the quantity of Mountain Dew he demands does not change. What is Nick's income elasticity of demand for Mountain Dew?