ECNS 204

Principles of Microeconomics

Chapter 3 – Silberberg and Ellis

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Elasticity of Demand

- The law of demand says nothing about the actual quantitative measure of the slope of demand curves. It only says they will have a negative slope.
- If we wish to measure the sensitivity of quantity demanded to a price change, then we rely on the ***elasticity of demand***:

$$\boldsymbol{\varepsilon_D = \frac{\%\Delta Q}{\%\Delta P} = \frac{\Delta Q/Q}{\Delta P/P} = \frac{\Delta Q}{\Delta P} * \frac{P}{Q}}$$

- The elasticity of demand is a dimensionless number…the units used to measure price and quantity all cancel out in the above expression.
- For demand curves, $\varepsilon_D < 0$, because price and quantity demanded move in opposite directions.
- Example: If a 10% reduction in price led to a 50% reduction in quantity demanded, this would be a rather large response.
  - We call such a portion of demand curve ***elastic***, meaning a small %ΔP induces a large (or elastic) change in quantity demanded.

Elasticity of Demand

- To be more precise, we use the following definitions:
  - If the absolute percent change in quantity demanded is greater than the absolute percent change in price, the demand is ***elastic***.
  - If the absolute percent change in quantity demanded is less than the absolute percent change in price, the demand is ***inelastic***.

- Mathematically,
  - ***Elastic***: $-\infty < \varepsilon < -1$
  - ***Inelastic***: $-1 < \varepsilon < 0$

- Elasticities on a linear demand curve: https://montana.techsmithrelay.com/XB0e
- Relationship between elasticity of demand and total expenditures:

https://montana.techsmithrelay.com/cBWg

Elasticity of Demand and Substitutability

- Consider a good with an elastic demand…
  - For this good, a price change induces a relative large change in quantity demanded (i.e., $\%\Delta Q$ is sensitive to price changes)
  - Q. What does this say about the available substitute goods for the item under consideration?
  - Ans. Many substitutes are available. Try to think of some examples of goods with an elastic demand.

- Practice problems
  Ch. 3, #19: https://montana.techsmithrelay.com/Fbg8
  Ch. 3, #20: https://montana.techsmithrelay.com/MUg9
  Elasticity of demand and TE: https://montana.techsmithrelay.com/Sm8I

Shipping the Good Apples Out

- According to your textbook, an irate consumer once wrote to the editor of a Seattle newspaper wondering why it was, in a state known for its apple production, that she had trouble finding high-quality (HQ) apples in the supermarkets.

- This complaint, in fact, is commonly observed in other contexts:
  - French often drink inexpensive, low-quality wine. These wines are never exported. Only the higher-quality wines are exported to the U.S. and elsewhere.
  - Most high-grade beef winds up in restaurants, not in supermarkets for home use. Restaurants sell almost all of this high-grade beef.
  - Clothing manufacturers wind up with many clothes that have minor faults due to errors in production. These are typically sold in factory outlet stores located close to the factory. On the HQ clothes are shipped out to distant locations.

Shipping the Good Apples Out

- Q. What explains these observations that HQ goods are "shipped out"?
- Ans. Due to the law of demand.
- Let's consider the following WA apple example:
  - Suppose there are two kinds of apples: HQ apples and LQ apples
  - Price of HQ apples = $2.00/lb.
  - Price of LQ apples = $1.00/lb.
- Q. What is the cost of HQ apples relative to LQ apples?
  - By purchasing 1 lb. of HQ apples, you forgo the opportunity to purchase 2 lbs. of LQ apples.
- Now, let's say you are a grocery store in MT wanting to buy WA apples. What other cost must you incur?
  - You must incur a fixed shipping cost. For instance, suppose shipping is $1.00/lb.
  - Now, P_{HQ} = $2/lb. + $1/lb. = $3/lb. and P_{LQ} = $1/lb. + $1/lb. = $2/lb.
  - Here, by purchasing 1 lb. of HQ apples, you forgo the opportunity to purchase 1.5 lbs. of LQ apples.
  - What has happened to the relative price of HQ apples? It has gone down!

Shipping the Good Apples Out

- With the lower relative price, the law of demand predicts that proportionally more HQ apples will be consumed at the distant location…although the total amount of WA apples consumed at distant locations will be lower than at locations close to WA (b/c price is higher overall).

- Another example:
  - The wholesale price of HQ "Arabica" coffee beans is about $.80/lb; LQ "Robusta" coffee beans sell for about $.40/lb.
  - Q. Why do coffee shops such as Starbucks that sell prepared coffee drinks (e.g., lattes) use exclusively HQ Arabica beans?
  - Ans. Shipping the Good Apples Out reasoning! There is a fixed cost incurred to prepare these drinks…so, the relative price of HQ beans falls.