

Lecture VI: Differences in Tastes

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I. Readings for Next Lecture:

- A. Becker Lecture 12
- B. Landsburg Chapters 14 – 15

II. A Little More on the Derivation of Demand

- A. Recall in Lecture 4 our discussion of Laspeyres price indices

$$P^t = \sum \frac{p_t^t}{p_t^0} (p_t^0 Q_t^0). \quad (1)$$

The notion was that P^t had something to do with a compensation that left the original consumption alternative unchanged – essentially an inflation index.

- B. Becker reintroduces the idea in Chapter 8 formulating the demand function as

$$D_x = f\left(\frac{p_x}{P}, \frac{p_z}{P}, \frac{I}{P}\right) \quad (2)$$

1. Equation 2 emphasizes the idea that it is the relative change in real price and income that drives the consumption decisions.
2. First, suppose that all prices in the economy (including the price of labor – income) go up by the same fraction – α

$$D_x = D_x = f\left(\frac{\alpha p_x}{\alpha P}, \frac{\alpha p_z}{\alpha P}, \frac{\alpha I}{\alpha P}\right) = f\left(\frac{p_x}{P}, \frac{p_z}{P}, \frac{I}{P}\right). \quad (3)$$

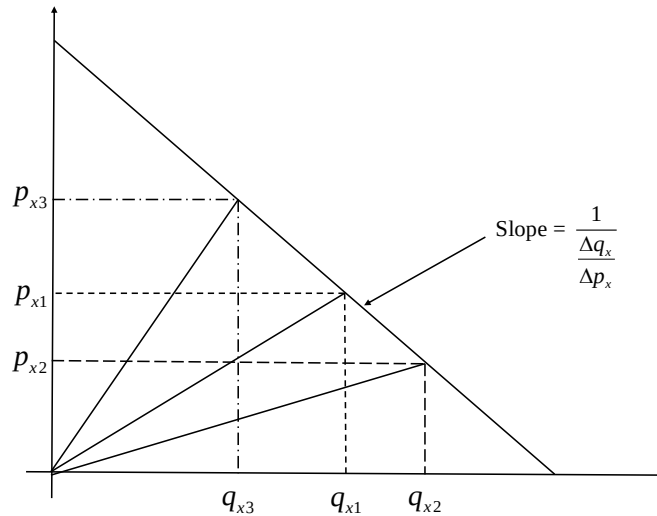


Figure 1: Comparing the Elasticity of the Demand Curve

3. There has been no change in the demand for either good.
- C. In the parlance of economic theory the demand function is homogeneous of degree zero - doubling all prices and income does not affect the level of demand.
- D. A little on mathematical specification of the demand function.
 1. As we developed in Lecture 1 we are often interested in the elasticity of the demand function

$$\epsilon_x = -\frac{\frac{\Delta q_x}{q_x}}{\frac{\Delta p_x}{p_x}} = \frac{\Delta q_x}{\Delta p_x} \times \frac{p_x}{q_x}. \quad (4)$$

2. An alternative way to visualize the elasticity of the demand curve is the ratio between the slope of the demand curve and the point on the demand curve (i.e., the slope of a line originating at the origin and terminating on the demand curve) as depicted graphically in Figure 1.
3. Let us assume that at point (q_{x1}, p_{x1}) the slope of the demand

function is equal to the negative of the slope of the ray from the origin.

$$-\frac{\Delta q_x}{\Delta p_x} \times \frac{p_{x1}}{q_{x1}} = 1 \quad (5)$$

in the venacular of economics – the demand curve is unitarily elastic at this point.

4. If we move to (q_{x2}, p_{x2}) we know that

$$\frac{p_{x1}}{q_{x1}} > \frac{p_{x2}}{q_{x2}} \Rightarrow \epsilon = -\frac{\Delta q_x}{\Delta p_x} \times \frac{p_{x2}}{q_{x2}} < 1. \quad (6)$$

In economic terms, the points to the right of the point of unitary elasticity are inelastic.

5. If we move to (q_{x3}, p_{x3}) we know that

$$\frac{p_{x1}}{q_{x1}} < \frac{p_{x3}}{q_{x3}} \Rightarrow \epsilon = -\frac{\Delta q_x}{\Delta p_x} \times \frac{p_{x3}}{q_{x3}} > 1. \quad (7)$$

At these points the demand curve is elastic.

6. The issue here is what happens the total revenue as the quantity increases at each of these points – marginal revenue.
- a. Using the results from Chapter 1, if the demand curve is unitarily elastic an increase in quantity has no affect on revenue

$$\frac{\Delta pq}{\Delta q} = \left[1 - \frac{1}{\epsilon = 1} \right] = 0. \quad (8)$$

- b. If the demand curve is inelastic, the revenue falls with in increase in quantity

$$\frac{\Delta pq}{\Delta q} = \left[1 - \frac{1}{\epsilon < 1} \right] < 0. \quad (9)$$

- c. If the demand curve is elastic, the revenue increases with an increase in quantity

$$\frac{\Delta pq}{\Delta q} = \left[1 - \frac{1}{\epsilon > 1} \right] > 0. \quad (10)$$

III. Differences in Tastes and Preferences

- A. In the early days of atomic theory, the atom was a theoretical construct. The most powerful microscope could not observe an atom. The theory was tested by deriving implications of atomic structure which could be observed.
- B. Think about utility or preference theory in the same way.
 - 1. In most cases we cannot observe or directly measure utility (I am making allowances for Random Utility Theory).
 - 2. What we do is to derive the implications of utility theory – such as downward sloping demand functions – and test those implications.
- C. This construction leads us to ask about the uniqueness of utility or preference orderings.
 - 1. Can we assume that the individual's preferences are constant over time?
 - 2. We definitely cannot assume that preferences are constant between individuals.
- D. These differences in preferences manifest difference in tastes between consumers.
 - 1. Figure 2 presents two sets of preferences and the associated Engel curves.
 - 2. Figure 3 presents the derivation of the demand curves for the two sets of preferences.
 - a. Focusing on the second good, Consumer 2's demand curve for good 2 is relatively more elastic – there is a larger change in quantity for a given change in price.
 - b. Figure 4 presents the aggregate demand curve for the two consumers

$$D_T(p) = D_1(p) + D_2(p). \quad (11)$$

Note that the price effect for Consumer 2 is greater than the price effect for Consumer 1 – $x'_{22} - x_{22} \gg x'_{12} - x_{12}$.

- C. Another way to model the concept of preferences is to focus on characteristics instead of goods.

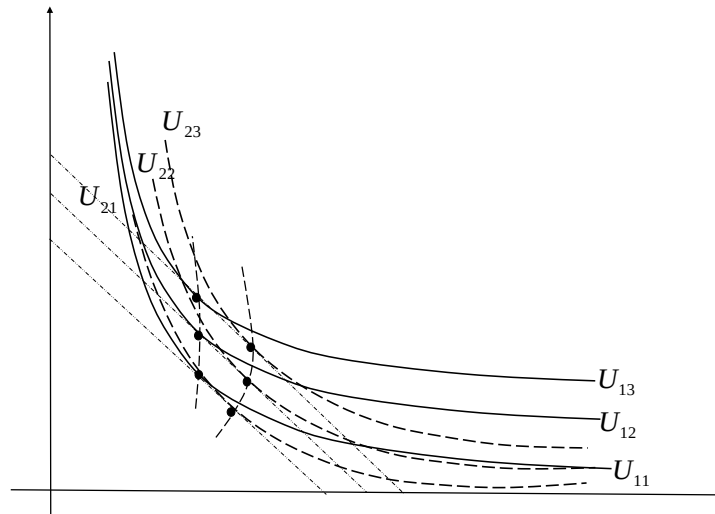


Figure 2: Engel Curves for Different Preferences

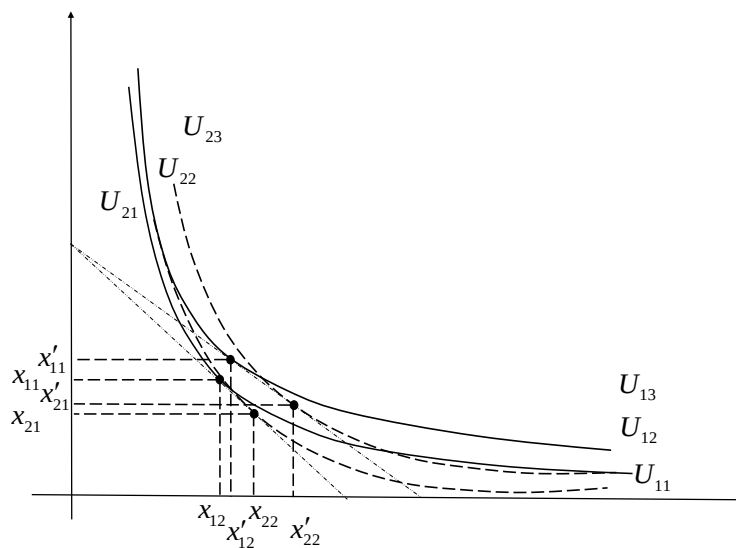


Figure 3: Demand Curves for Different Preferences

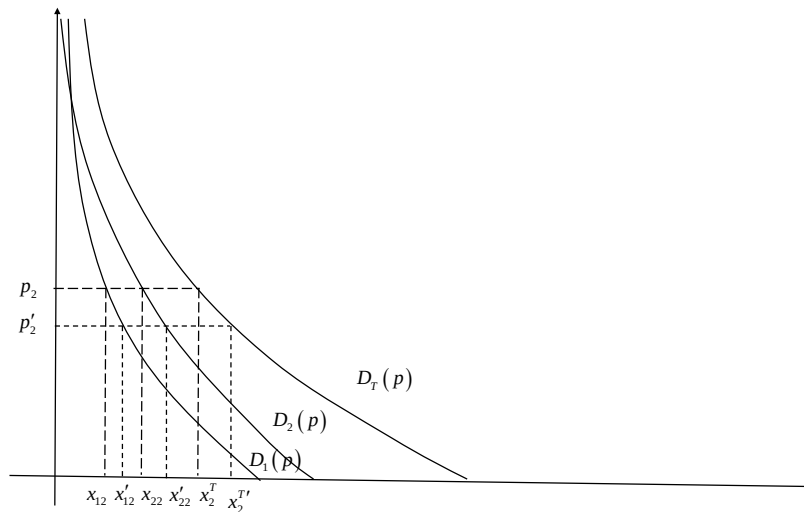


Figure 4: Demand Curves for Each Consumer

1. Assume that the consumer actually has preferences for characteristics of a good - z_1 could be the total calories provided by a meal, z_2 could be some quality of beef such as tenderness.
2. We would rewrite the utility function as $U(z_1, z_2, \dots, z_n)$.
3. Then we could construct a model where each good would be associated with amounts of those attributes - $x_1(z_1, z_2)$ could be the values of a potato.
4. The consumer's maximization problem could then be expressed as

$$\max_{x_1, x_2, \dots, x_N} U(z_1, z_2, \dots, z_n)$$

$$\text{s.t. } x_1(z_1, z_2, \dots, z_n)p_1 + x_2(z_1, z_2, \dots, z_n)p_2 + \dots + x_N(z_1, z_2, \dots, z_n)p_n \leq Y \quad (12)$$

5. Thus, the demand for each good is a function of the preferences on its characteristics.