Principles of Economics
Review Session

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§5.1–5.2 How Consumers Make Choices

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- Objective condition: You are not able to get whatever you like
  - There are always opportunity costs and limited resources
  - That is, what are the prices and your income?
  - This is depicted by your budget constraint $P_X \cdot Q_X + P_Y \cdot Q_Y \leq I$
- Consumer chooses the number of goods Q_X, Q_Y to buy

- When both conditions meet, we should expect two things
  1. Your choice makes marginal benefits per dollar the same

$$\frac{MB_X}{P_X} = \frac{MB_Y}{P_Y} \quad \text{or, equivalently,} \quad \frac{MB_X}{MB_Y} = \frac{P_X}{P_Y}$$

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- Why?
  1. If $>$ happens, you should buy more X; if $<$ happens, you should buy more Y; not a best choice in either case
  1′. (Alternative explanation) Exchange ratio between X and Y is the same subjectively (MB_X/MB_Y) and objectively (P_X/P_Y)
  2. We (implicitly) assumed leaving money has no benefit
- Again, the power of marginal analysis

§5.3 From Choice to Demand

- Price of X changes from P_X to $P'_X \Rightarrow$ make different choice $\Rightarrow$ quantity demanded changes from Q_X to Q'_X
- Plot these different combinations of prices and quantity demanded (P_X, Q_X), (P'_X, Q'_X), (P''_X, Q''_X), ... etc on the price-quantity plane yields the consumer's demand curve

§5.4 Consumer's Surplus

- Consumer's surplus 消費者剩餘 is the sum of differences between the demand curve and the market price
- Why? Since the demand curve depicts your willingness to pay, if it is higher than the real price, it is as if you earn something
- Recall experiment 3, if you get a black K, you're happy
- Why bother? A measure of efficiency
- More on this in Chapter 7

§5.5 Elasticity of Demand

- Price elasticity of demand measures how sensitive a price change may lead to a quantity demanded change

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- Inelastic demands more vertical, elastic ones more horizontal
- Why not just use slopes? We want unit-free and comparable
- Consider $\Delta P = 1$ in rice and cars

- Why should we care about elasticity of demand?
  - Just to name a few:
  - What's the effect of a price hike? (see past midterm essays)
  - The effect on total revenue (graph, or observe $TR = P \cdot Q$)
  - The effect on tax incidence (graph, or see Chapter 10)

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- An interesting case: illegal drugs, which has inelastic demand
  - Interdiction reduces supply but makes vendors richer
  - Education reduces demand and vendors get poorer

- In general, when will elasticity of demand be larger?
  - More close substitutes (you can always switch)
  - Larger budget share (more room to adjust, e.g. meat vs. salt)
  - More time to adjust (you can always try to find a substitute)
  - More like luxuries rather than necessities (Mankiw textbook)
- Cross-price elasticity of demand: Replace P with P_Y
- Income elasticity of demand: Replace P with I
- □ elasticity of demand is

$$\frac{\%(\Delta Q)}{\%(\Delta \square)}$$

Budget Sets

ALL 5-4. Akio consumes two goods, books and sweaters. His income is $24, the price of a sweater is $4, and the price of a book is $2.

a. Suppose Akio's parents give him $8 for his birthday. Draw Akio's budget set.

b. Now suppose Akio's parents had given him two sweaters for his birthday instead of giving him $8. Akio is a very polite young man and would never return a gift that his parents had given him. Draw Akio's budget set.

c. Based on your answers to parts a. and b., is it possible that Akio would prefer a gift of $8 to a gift of two sweaters? He would prefer a gift of two sweaters to a gift of $8? He would be indifferent between a gift of $8 and a gift of two sweaters?

Consumer's Choice

ALL 5-7. You have decided to spend $40 this month on CDs and movies. The total benefits you receive from different quantities of CDs and movies are shown in the table below. The price of a CD is $10 and the price of a movie is $10.

a. Complete columns B, C, E, and F in the table above.

b. What combination of movies optimizes your total benefit? Explain your reasoning.

c. Suppose the local movie theater decides to offer a student discount and as a result the price of a movie falls to $5. If the price of CDs remains $10 and you continue to spend $40 on CDs and movies, now what combination of movies optimizes your total benefit? Explain your reasoning.

Elasticities of Demand

ALL 5-13. Nadia consumes two goods, food and clothing. The price of food is $2, the price of clothing is $5, and her income is $1,000. Nadia always spends 40 percent of her income on food regardless of the price of food, the price of clothing, or her income.

a. What is her price elasticity of demand for food?
b. What is her cross-price elasticity of demand for food with respect to the price of clothing?
c. What is her income elasticity of demand for food?

Elasticity of Electricity

Midterm 2008 Essay Part D.

Read the article and answer the following questions:

1. Assume Taipower's revenue and loss estimates mentioned above is for the whole year, and infer the total amount of electricity (多少度) used by all Taiwanese. (Assume Taipower thinks that the quantity demanded is the same before and after the price hike.)
2. What is the (average) price elasticity of electricity for military families? (You may use the midpoint method in your calculations.)

3. Suppose the price elasticity of electricity for normal households is the same as military families. If Taipower increases electricity price by the proposed NT$0.64, how much electricity could be conserved? (Note that you are making a different assumption than Taipower in question 1!)
4. Assuming this elasticity is fixed for all quantities, if the ministry of economics agrees to eliminate the price discount for military family according to the proposed three year plan, how much electricity (per family and total) would be conserved in each year?
5. What are the possible reasons for these estimates to be inaccurate?
6. Suppose we are worried about the well-being of the poor who cannot afford high utility costs. What kind of discount scheme would you propose taking the above facts into account?