Buying/Selling Slides

Econ 360

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BINGHAMTON UNIVERSITY
STATE UNIVERSITY OF NEW YORK

Learning Outcomes/Goals

1. Define a consumer as a net seller or net buyer of a particular commodity.

2. Identify budget constraints based on endowments rather than incomes.

3. Explain the concept of relative prices and why price normalization can make a problem simpler.

Where We Are/Going

- Given prices and an amount of money, we can determine a consumer's budget constraint.
- But what if instead of money, a consumer started with an endowment of goods.
- If they want a bundle that is not the same as this endowment, they have to trade with someone else/barter.
- Prices will be in terms of other goods, not in terms of money.
- These set of slides will give the background for such an exchange.
- In the next set of slides we will talk about finding which exchanges actually take place between two people and how to find prices.

Notation

- Two people A and B, two goods x and y, and each person starts with an endowment.
- Person A's endowment of good X is ω_x^A and their endowment of good Y is ω_y^A.
  - Therefore person B's endowment is ω_x^B,ω_y^B.
- Total endowments (person A's+person B's endowment) for the two goods are represented as $(\bar{\omega_x}, \bar{\omega_y})$ and represent the total amount of each good between the two people.
- Person A's choice (after trade) will be denoted as (x^A, y^A) and person B's choice (after trade) will be denoted as (x^B, y^B).

Notation

- Given prices for each good (p_x, p_y) we can figure out the worth of each person's endowment.
- For person A, the worth of their endowment is $p_x\omega_x^A + p_y\omega_y^A$.
- For person B, the worth of their endowment is $p_x\omega_x^B + p_y\omega_y^B$.

Net Demand

- Suppose Bill's endowment of apples is 2, and Bill's optimal bundle has 3 apples.
- The only way for Bill to go from 2 to 3 apples is to trade for that apple.
- We say Bill is a **Net Demander** of apples.
- How can we represent this with our notation?
  - $(x_a^B - \omega_a^B) = (3 - 2) = 1 > 0$.
- Suppose the other item is oranges, and Bill had 4 oranges but traded 2.
  - $(x_o^B - \omega_o^B) = (2 - 4) = -2 < 0$.
- Bill is a **Net Supplier** of oranges.

Relative Prices

- Until now we have had an income level w and prices p_1, p_2.
- But now our income w is simply the worth of our endowment, which depends on prices p_x, p_y.
- So if p_x, p_y=(2,4), is that really any different than if p_x, p_y=(1,2)?
- **No**, because the worth of our endowment and prices are exactly half at (1,2) then at (2,4) but this will not change the bundle we choose.
- So then we should make it easy on ourselves at set one of the prices equal to 1.
- Typically, we set $p_x = 1$ and then $p_y = p_y$.

Re-writing the Budget Constraint

- We can rewrite the budget constraint for two goods x and y for consumer i using
  1. Relative prices.
  2. Our definition of net demander and net supplier.

$$
\begin{aligned}
p_x x^i + p_y y^i &= p_x \omega_x^i + p_y \omega_y^i \\
p_x x^i + p_y y^i - p_x \omega_x^i - p_y \omega_y^i &= 0 \\
p_x (x^i - \omega_x^i) + p_y (y^i - \omega_y^i) &= 0 \\
1 (x^i - \omega_x^i) + p_y (y^i - \omega_y^i) &= 0.
\end{aligned}
$$

Questions for Class

1. How would you draw a budget constraint for such a barter economy?
2. How would you graphically solve a utility maximization problem in a barter economy?
3. How would changes in relative prices affect your answer?
4. How could you assess if a consumer's choices were consistent with WARP or not?