

LECTURE 03: MARGINAL ANALYSIS

- I. The Marginal Revolution
 - a. The Diamond-Water Paradox
 - i. Water is critical for life and diamonds are not. Why is water so cheap and diamonds so dear?
 - b. The paradox was solved with the Marginal Revolution
 - i. Margin: the change in total something, each individual units of something
 - ii. Marginal analysis: decisions are made on the margin; a little bit more or a little bit less
 - iii. People put value on something based on marginal analysis
 - c. Diminishing Marginal Utility
 - i. *Utility*—economic lingo for satisfaction or benefit
 - ii. Each additional unit—each marginal change—generates less and less utility (we call this diminishing marginal utility).
 - iii. The first ice cream I eat is great, the second isn't as good as the first, the third is even less, the fourth starts tasting disgusting
 - d. Oranges example
 - i. Suppose I hand you 12 oranges. What do you use them for and in what order?

ORANGE	UTILITY	ORANGE	UTILITY	ORANGE	UTILITY
<i>1st</i>	\$20	<i>5th</i>	\$16	<i>9th</i>	\$12
<i>2nd</i>	\$19	<i>6th</i>	\$15	<i>10th</i>	\$11
<i>3rd</i>	\$18	<i>7th</i>	\$14	<i>11th</i>	\$10
<i>4th</i>	\$17	<i>8th</i>	\$13	<i>12th</i>	\$9

- ii. Note that each item down the list would be worth less and less to you.
 - iii. Now suppose I give 11 oranges instead. Do you divvy up the orange, reducing each activity by a twelfth or do you give up an option on your list? If so, what option do you give up?
 - e. Marginal utility
 - i. The value of one more gallon of water is very low but the value of one more diamond is quite high
 - ii. Use the most valuable ends first, then go down the list
 - f. Marginal cost

- i. Marginal cost follows the same pattern as marginal utility, it just goes in the opposite direction
 - 1. Marginal cost *increases* (instead of *decreases*)
 - 2. Start with the *lowest cost* (instead of the *highest value*)
- g. Oranges example, cont.
 - i. Now suppose that I'm picking the oranges I'm handing you from a large tree. This time, I start with the lowest cost first.

ORANGE	COST	ORANGE	COST	ORANGE	COST
1 st	\$8	5 th	\$12	9 th	\$16
2 nd	\$9	6 th	\$13	10 th	\$17
3 rd	\$10	7 th	\$14	11 th	\$18
4 th	\$11	8 th	\$15	12 th	\$19

II. Synthesis

- a. Suppose instead of giving or handing you the oranges, I sell you them.
 - i. For the first orange, it costs me \$8 to get the orange and you are willing to pay \$20. Thus there are many opportunities for us to agree on price
 - ii. For the next orange, it costs me \$9 and you value it at \$19. Again, there are many opportunities to agree on a price (though there are slightly fewer).
 - iii. This continues until the 7th orange, where the only price we can agree on is \$14.
 - iv. Note if we try to exchange an 8th orange, we wouldn't agree on a price.

ORANGE	UTILITY	COST	ORANGE	UTILITY	COST
1 st	\$20	\$8	7 th	\$14	\$14
2 nd	\$19	\$9	8 th	\$13	\$15
3 rd	\$18	\$10	9 th	\$12	\$16
4 th	\$17	\$11	10 th	\$11	\$17
5 th	\$16	\$12	11 th	\$10	\$18
6 th	\$15	\$13	12 th	\$9	\$19

- b. The key idea behind marginal decision making is that people will engage in an action until marginal benefit equals marginal cost
- c. Again, the miracle of prices appears. If the price rises, then you will forgo your *least* valuable action. This socially desirable result emerges without a central planner. Prices solve problems.

III. Demand for labor

- a. The *marginal product of labor* (MPL) is the additional amount of revenue a firm gets by hiring one more person.

- i. Note that from the firm's perspective, this is the same as describing what their marginal benefit is.
 - ii. For firms, revenue equals benefit.
- b. Thus the demand for labor is the MPL. In the market for factory workers, the demand curve is the MPL for each additional worker a firm hires.

<i>Workers</i>	<i>Total Revenue</i>	<i>MPL</i>		<i>Workers</i>	<i>Total Revenue</i>	<i>MPL</i>
0	0			5	\$200	
1	\$50			6	\$225	
2	\$95			7	\$245	
3	\$135			8	\$260	
4	\$170			9	\$270	

- c. As always, you produce (in this case hire) until marginal cost equals marginal benefit (or when the wage equals MPL).
- i. If the wage is \$30, how many people do you hire?