

## LECTURE 05: MARGINAL ANALYSIS & SUPPLY AND DEMAND

- I. The Economic Naturalist
- II. 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
1 <sup>st</sup>	\$20	5 <sup>th</sup>	\$16	9 <sup>th</sup>	\$12
2 <sup>nd</sup>	\$19	6 <sup>th</sup>	\$15	10 <sup>th</sup>	\$11
3 <sup>rd</sup>	\$18	7 <sup>th</sup>	\$14	11 <sup>th</sup>	\$10
4 <sup>th</sup>	\$17	8 <sup>th</sup>	\$13	12 <sup>th</sup>	\$9

- ii. Note that each item down the list would be worth less and less to you.
  - 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 <sup>st</sup>	\$8	5 <sup>th</sup>	\$12	9 <sup>th</sup>	\$16
2 <sup>nd</sup>	\$9	6 <sup>th</sup>	\$13	10 <sup>th</sup>	\$17
3 <sup>rd</sup>	\$10	7 <sup>th</sup>	\$14	11 <sup>th</sup>	\$18
4 <sup>th</sup>	\$11	8 <sup>th</sup>	\$15	12 <sup>th</sup>	\$19

### III. 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 7<sup>th</sup> orange, where the only price we can agree on is \$14.
  - iv. Note if we try to exchange an 8<sup>th</sup> orange, we wouldn't agree on a price.

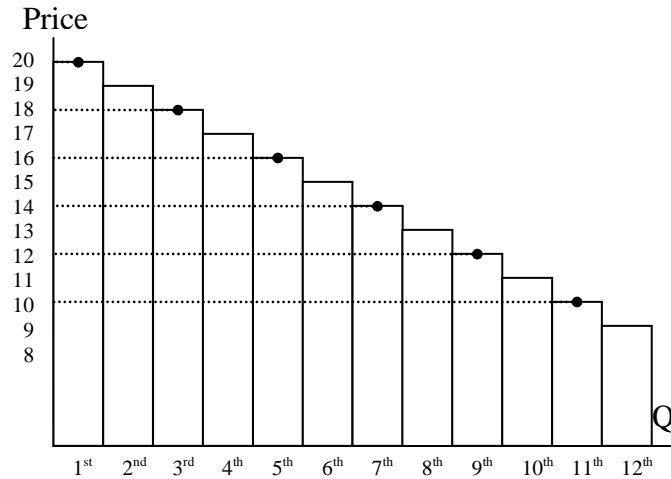
ORANGE	UTILITY	COST	ORANGE	UTILITY	COST
1 <sup>st</sup>	\$20	\$8	7 <sup>th</sup>	<b>\$14</b>	<b>\$14</b>
2 <sup>nd</sup>	\$19	\$9	8 <sup>th</sup>	\$13	\$15
3 <sup>rd</sup>	\$18	\$10	9 <sup>th</sup>	\$12	\$16
4 <sup>th</sup>	\$17	\$11	10 <sup>th</sup>	\$11	\$17
5 <sup>th</sup>	\$16	\$12	11 <sup>th</sup>	\$10	\$18
6 <sup>th</sup>	\$15	\$13	12 <sup>th</sup>	\$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. If it falls, the most costly item doesn't get produced. These socially desirable results emerge without a central planner. Prices solve problems.

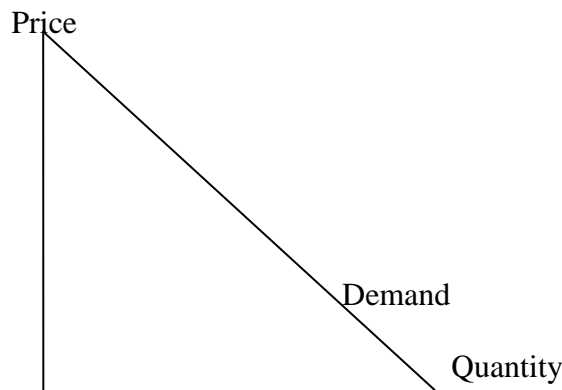
### IV. Demand

- a. The neoclassical framework leads us nicely to the notion of equilibrium—the point at which no one can be better off by changing his or her behavior.

- i. This is notably similar to the notion that people act until marginal cost = marginal benefit.

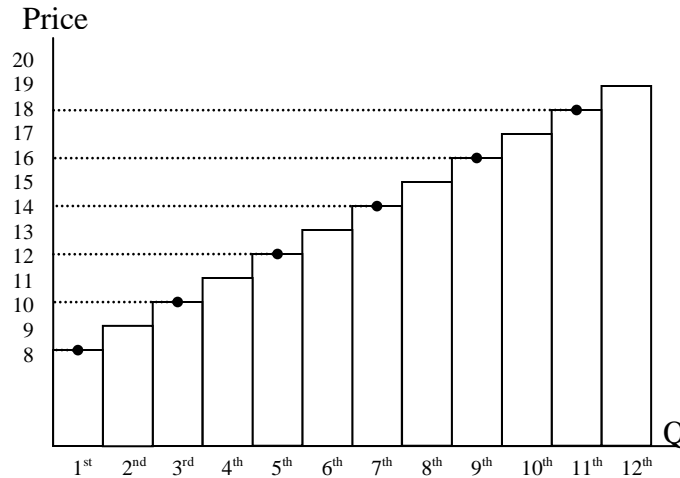


- b. Recall from last time when we explored marginal benefit. We can summarize a person's marginal utilities for oranges with a diagram.

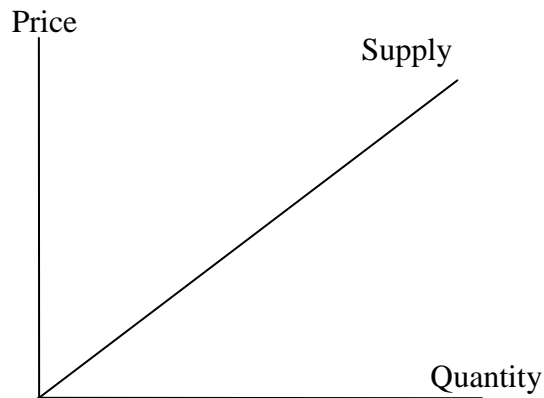


- c. Now, instead of focusing on one person, consider *everyone* in the whole of a market, such as the market for socks or chicken. As each person's marginal utility fills the graph, the marginal benefits resemble a line. This is the demand curve.
- d. Note how this diagram makes intuitive sense. As the price of something moves in one direction, the quantity people demand will move in the opposite direction. This is called the *Law of Demand*.

## V. Supply



a. Same goes with MC.

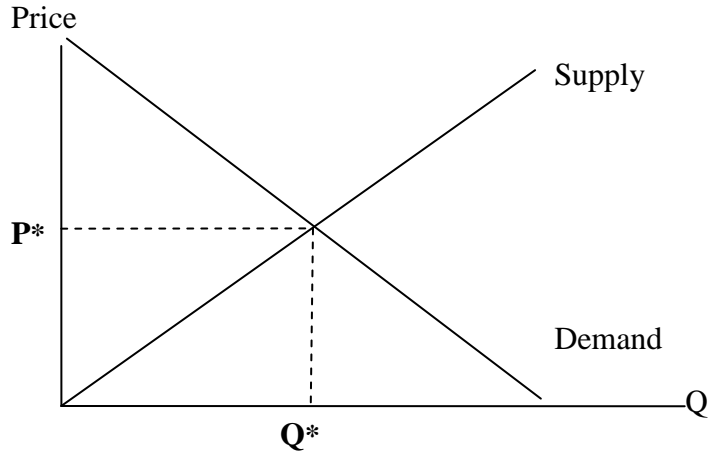


b. And once again we can expand our thinking to the whole a market with all the sellers. Like our previous example, we come up with a smooth line but this time of marginal costs. Economists call this the supply curve.

c. Note how this diagram also makes intuitive sense. As the price of something changes in one direction, the amount people will supply will move in that same direction. This is called the *Law of Supply*.

## VI. Equilibrium

a. Not surprisingly, the supply and demand curves can be combined into a single diagram. This diagram is perhaps the most important and insight in all of economics. It forms the foundation of much of economic thinking.



- b. Remember that because supply and demand curves also double as marginal cost and marginal benefit curves, the same rules apply: people consume until marginal cost equals marginal benefit. Thus we achieve an equilibrium where  $P^*$  is the equilibrium price and  $Q^*$  is the equilibrium quantity.
- c. Note that the equilibrium price is the market price, the price that people cannot deviate from nor influence.