

Thursday, Oct 7, Lecture 10

Competition, Producer Surplus and Economic Efficiency



Clicker Question

A consumer's MWTP *curve* is the same *curve* as his

- a. supply curve.
- b. demand curve.
- c. production-possibility curve.
- d. income-consumption curve.

Price Setters and Price Takers

- A seller is called a **price taker** if she charges a price set by others (usually the market price).
- A seller is called a **price setter** if she sets her own price, which may be different from what others are charging.
- In a perfectly competitive equilibrium, every firm is a price-taker.
 - Even though a firm can set any price it wants to,
 - each firm will voluntarily charge the market price,...
 - and no firm will decide to set a different price.

- Why doesn't a competitive firm set its price **higher** than the market price?
 - Because of perfect information, buyers know that other firms are offering the same product at the market price,...
 - so if one firm asks buyers to pay a higher price, they will buy elsewhere.
- Why doesn't a competitive firm set its price **lower** than the market price?
 - Each firm is selling as much as it wants to sell at the market equilibrium price,...
 - (there's no excess supply),...
 - so why should it sell for less?

Competition and Supply Curves

- Supply curves answer the question, “How much would you want to sell at each reasonable price?”
- Individual supply curves exist only for firms that are price takers,...
- ...including all firms in perfectly competitive markets.
- After we explain producer surplus, we will see where supply curves come from.

Production Cost and Producer Surplus

- Isabel makes T-shirts.
- Suppose that Isabel can produce a T-shirt at a cost of **\$10** (the total opportunity cost, including the cost of her time).
- Then she finds out that the same kind of T-shirt can be sold at a price of **\$22**.
- She says “Great! It costs me only **\$10**, but I can sell it for **\$22**, so I will produce it.”

■ An economist would say:

- The market price is **\$22**,
- the opportunity cost of producing the shirt is **\$10**,
- so Isabel will receive a **producer surplus** of **?** for the shirt.
- The producer surplus from a unit of production is the profit *originating from that unit*.

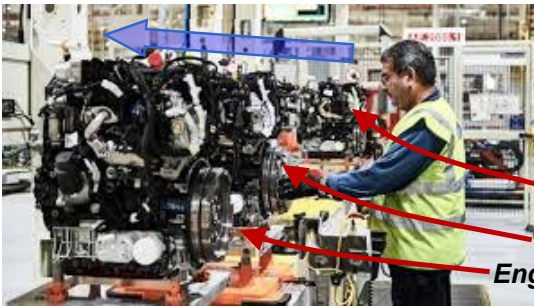
■ A positive producer surplus, creates an incentive to produce and sell the product.

How Many Units Should a Competitive Firm Produce?

- To make a rational decision about how much to produce (and supply),...
- ...the owner or manager of a competitive firm must “think at the margin,” and evaluate each unit, one at a time, to decide whether or not that unit is worth producing.
- The competitive firm is a price-taker, so the **price** received for every unit will be the same.
- But even when units are identical, the **opportunity cost** of production might be different for each unit.

Marginal Cost

- Suppose a firm is producing many units.
- The **marginal cost (MC)** of unit Q is the *opportunity cost* of producing unit $\#Q$ when $Q-1$ units are being produced.
 - We can think of **MC** as the additional cost (or incremental cost) required to produce Q units instead of $Q-1$ units.
 - So as Q changes, **MC** may change as well, even when all units are identical to one another.



Example: Does this worker speed up or slow down as he works on engine after engine each day?

Engine #190 Does he get going?
Or does he get tired?

Engine #189

Engine #188

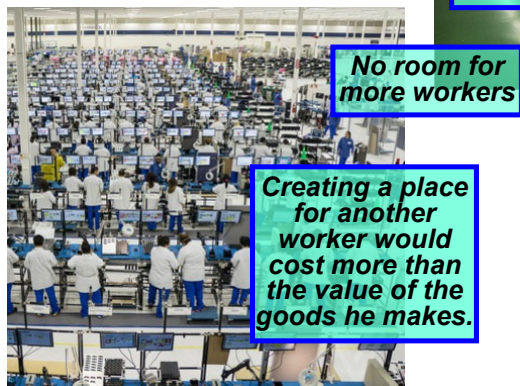
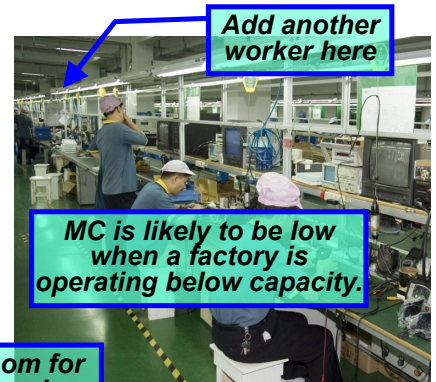
The faster he works;
the lower the cost!

- As more units are produced, the **MC**
 - will sometimes fall at first,...
 - ...but **eventually** will start to increase,...
 - ...because when a large enough quantity is being produced,...
 - ...it becomes more difficult and costly to increase production further.
 - **Example:** Farmer Jones has to kiss his cows to get more out of them.
 - **Example:** Factories have to pay workers higher wages (overtime) for hours worked above the standard 40-hour week.

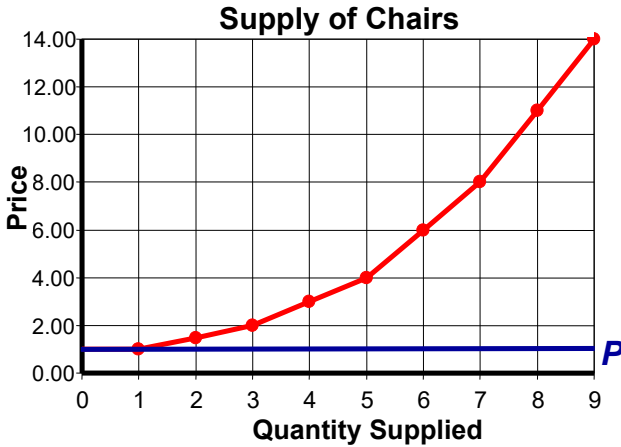
Marginal Cost and Producer Surplus

- The Producer Surplus from producing *Unit Q* is equal to $P - MC$ for that unit.
 - This is the profit received from producing *Unit Q*.
 - P is the same for all units, but the MC of *Unit Q* is likely to be different from the MC of other units.
- A profitable firm has an incentive to produce all units that create a positive producer surplus,...
- ...but the firm will not produce past the level where all additional units would bring negative surplus.

- In the case of increasing marginal costs (MC), a firm will have the incentive to produce *Unit Q* if $MC < P$, in order to get surplus $P - MC$.
- The firm would continue to increase output as long as $MC < P$,
- But the firm will *not* produce units with $MC > P$.



Marginal Cost and Supply!



■ Suppose P is the market price of chairs.

■ How many chairs would you produce when...

- $P = \$1 ?$
- $P = \$4 ?$
- $P = \$8 ?$
- $P = \$11 ?$
- $P = \$5 ???$

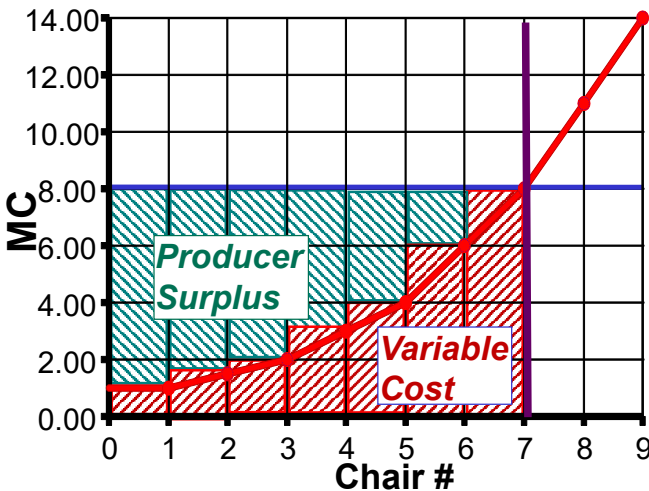
■ Notice that the **MC curve** provides the answers to supply-curve questions.

■ In this case, the **MC curve** is the same curve as the **supply curve**.

■ But the axes are different. (The functions are inverses.)

■ If you know one, you can derive the other.

Marginal Cost and Producer Surplus



■ Suppose $P = \$8$.

■ How much does it cost to produce the 1st chair?

■ How much surplus do you get when you sell it?

■ 2nd chair?

■ 3rd chair?

■ 7th chair?

■ You will produce 7 chairs.

■ The area underneath the MC Curve is the **variable cost**.

■ The area between the MC Curve and the price is **producer surplus** for all the chairs sold.

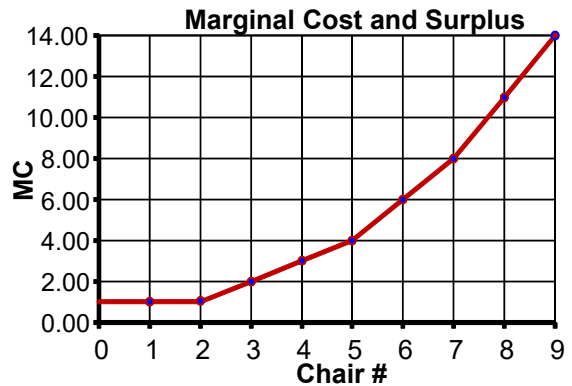
■ **Producer surplus** is the sum of profits created as units are produced.

■ Costs that enable production to begin ("fixed costs") are not subtracted from producer surplus.

Clicker Question

How much producer surplus will the firm obtain (approximately) if the price is \$6

- a. \$36
- b. \$19
- c. \$12
- d. 0



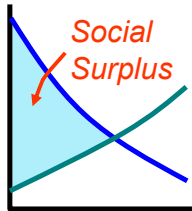
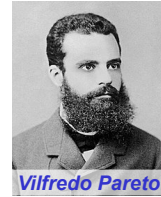
Economic Efficiency

- **Economic activity** has *the potential* to create value (utility, satisfaction, surplus, etc.) for the members of society.
- **Economic efficiency** measures how well economic activity *fulfills* its value-creating potential.
- We say that economic activity is **efficient** when no value-creating opportunity is wasted.
- The level of efficiency does **NOT** depend on how the created value is distributed.

Concepts of Efficiency

- Economists apply two different concepts of economic efficiency:

- *Pareto efficiency*



and

- *social surplus*

- The two concepts are related, but they are not equivalent.
- We will explain both, but we will emphasize social surplus.

Pareto Efficiency

- A changed situation is a *Pareto improvement* if some people are better off after the change, but no one is worse off.
- A situation is called *Pareto efficient* when no Pareto improvements are possible.

Example: Pareto Efficiency

- On a hot Friday night...
 - **Pete** has a blind date with **Paula**.
 - And his friend **David** has a blind date with **Deirdre**.
- The dates are both disasters 😞. ...

- Luckily, all four meet on the way back to the dorms.
- Economists call this outcome a **Pareto improvement** compared to the first dating situation.

Pareto Efficiency

- A changed situation is a **Pareto improvement** if some people are better off after the change, but no one is worse off.
- In our blind date example,
 - **Pete** and **Paula** did not like each other, and neither did **David** and **Deirdre**, but....

- A situation is called **Pareto efficient** when no Pareto improvements are possible.
 - This might happen because all possible Pareto improvements have already occurred,...
 - or because there never were any possible Pareto improvements.
- Pareto improvements are socially desirable,...
- because, by definition, some people are better off and no one is worse off.

■ But a Pareto-efficient situation may not be *socially desirable*.

- Suppose a billionaire, enjoys every dollar he has.
- Then, the situation in which he has all of the world's wealth is Pareto efficient,...
- because no Pareto improvements are possible (you cannot give anything to anyone else without making *the billionaire* worse off).
- The rest of society might be miserable, however.

Clicker Question

Suppose I like apples and you like oranges.
Which of the following situations is NOT Pareto efficient?

- a. We both have apples.
- b. I have apples and you have oranges.
- c. We both have oranges.
- d. I have oranges and you have apples.

Economic Surplus

- Economic **surplus** measures the benefits of economic activity in monetary units.
- **Consumer surplus** is the benefit obtained by consumers.
- **Producer surplus** is the benefit obtained by producers.
- **Social Surplus =
Consumer Surplus + Producer Surplus**
- The amount of surplus created is a measure of economic efficiency.
- **Social Surplus** is easier to apply than **Pareto efficiency**.

Total Surplus in the Market

- A buyer's consumer surplus is the area between the price and the demand curve.
- A seller's producer surplus is the area between the supply curve and the price.
- The same rules apply to the market as a whole:
 - Consumer surplus for the entire market is the area between the price and the market demand curve.
 - Producer surplus for the entire market is the area between the price and the market supply curve.
 - This is because each unit on the horizontal axis is being bought by a buyer and sold by a seller.

Social Surplus at the Competitive Equilibrium

■ The market:

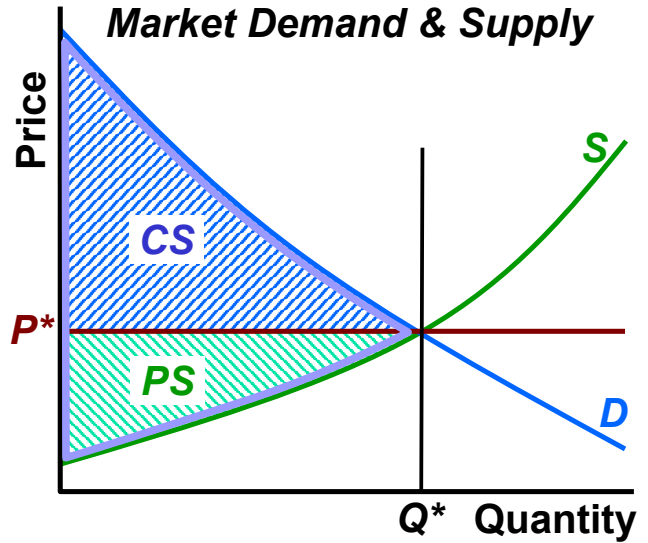
- demand
- supply
- equilibrium price
- equilibrium quantity

■ Consumer surplus (CS)

■ Producer surplus (PS)

■ Social surplus (SS)

$$SS = CS + PS$$



Surplus and Competition

■ Surplus is maximized in competitive equilibrium.

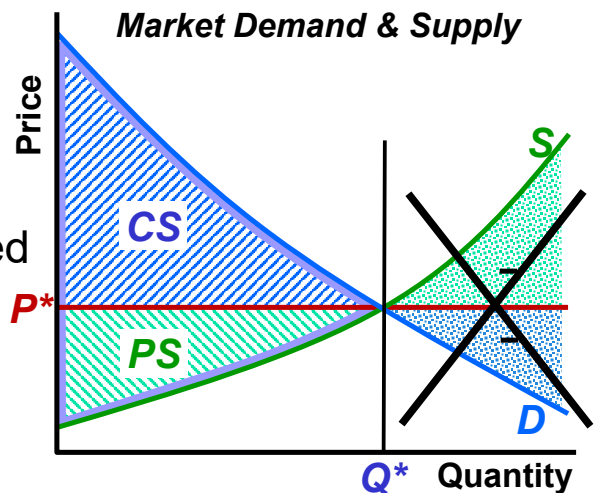
■ All units that generate positive **CS** and **PS** (to the left of Q^*) are produced and sold.

■ So there are no unexploited gains of trade.

■ Additional units that would create **negative CS** and **negative PS** are not produced or sold.

■ Policies that interfere with competitive equilibrium, tend to reduce surplus.

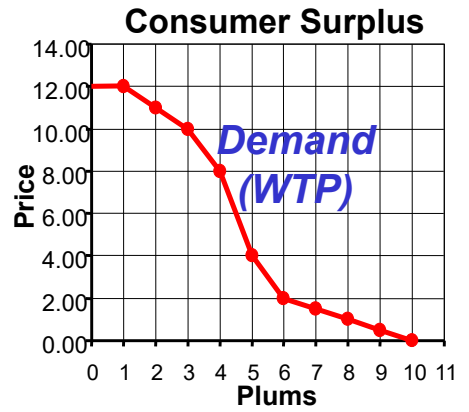
■ But is that always bad? **Discussed in Lecture 13.**



Clicker Question

If the price in this market is \$10, the consumer surplus would be approximately _____.

- a. \$100
- b. \$30
- c. \$12
- d. \$3



End of Lecture 10