Lecture 10: Competition, Producer Surplus and Economic Efficiency

Session ID: DDEE

Clicker Question
Price Setters and Price Takers

- A seller is called a **price taker** if she accepts a price set by others (usually the market price).
- A seller is called a **price setter** if she sets her own price, choosing from a range of reasonable prices.

- 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 not?*

- Why doesn’t a competitive firm set its price **higher** than the market price?
  - 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?
  - A firm can sell as much as it wants to at the market equilibrium price,…
  - 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 of the possible prices.”

- 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 production for each shirt is $10,
- so Isabel will receive a **producer surplus** of $22 − $10 = $12 per 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.

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**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.”

The competitive firm is a price-taker, so the **price** of every unit will be the same.

But even when units are identical, the **opportunity cost** of producing each unit might be different.
Marginal Cost

Suppose a firm is producing many units.

The marginal cost (MC) of unit $Q$ is the opportunity cost of unit $Q$, with the production of the preceding $Q-1$ units taken into account.

- The number of units already produced affects the cost of producing the next unit.
- So as $Q$ changes, $MC$ may change as well, even when all units are identical to one another.
- We can think of $MC$ as the additional cost required to produce $Q$ units instead of $Q-1$ units.

As more units are produced, the $MC$

- will sometimes fall at first,…
- …but eventually will start to increase,…
- …because when a large 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 that would be earned by producing Unit Q is given by $P - MC$.
  - This is the profit earned by producing Unit Q.

- 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 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 $MC < P$,

- …until it reaches the point at which $MC = P$ or until the last point at which $MC \leq P$.

- But when $MC$ is increasing, the firm will not produce units with $MC > P$. 
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 ???

In a case like this, 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.

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**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.

**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.
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*
  - *social surplus*.

- The two concepts are related, but they are not equivalent.

- We will explain both, but we will emphasize social surplus.
A double blind-date story…

- 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 …

- Economists call this outcome a Pareto improvement.
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,

  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 you cannot give anything to anyone else without making him worse off.

The rest of society might be miserable, however.
Economic Surplus

- Economic **surplus** measures the benefits of economic activity in monetary units.

- **Consumer surplus** is the benefit obtained by consumers,…

- and **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…

- …that is easier to apply than **Pareto efficiency.**

Measuring Economic Surplus

- Recall that consumer surplus can be measured as the area between the price and the demand curve.
Supply and Producer Surplus

As we have just seen,…

…producer surplus can be measured as the area between the supply curve and the price.

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 (\( DWL \)).

- 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?
Should Policy Makers Try to Maximize Social Surplus

- Social surplus measures the value created by the economy above costs.
- But social surplus, like Pareto efficiency, does NOT take equity [fairness] into account.
- Perhaps it would be desirable to give everyone a fair share of social surplus,…
- even if the total amount of surplus is reduced as a result.
- To be discussed…

Clicker Question
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