The Efficiency of Markets

What is the *best* quantity to be produced from society's standpoint, in the sense of *maximizing the net benefit to society*?

We need to look at the benefits to consumers and producers.

Consumer Surplus

- Start by looking at each buyer's *willingness to pay* (the maximum price the consumer would voluntarily pay to receive the good).

- An individual buyer's *consumer surplus* from a purchase is her willingness to pay minus the purchase price.

- Exactly what we called a buyer's "value" in our market experiment.

Consider the example of the Elvis recording with 4 potential buyers.

From each buyer's willingness to pay, we can construct the market demand curve. At a price of $70, the quantity demanded is the number of people whose willingness to pay is at least $70. (John, Paul, and George make 3.)

- Why the flat segments? Why the vertical segments?

- What if the commodity is something like apples, where buyers might want to purchase more than one? Say John is willing to pay $1 for the first apple, and $0.50 for the second apple.

Just like we can go from knowledge of everyone's willingness to pay to the market demand curve, we can use the market demand curve to measure consumer surplus.

The price is the willingness to pay of the *marginal* buyer. If the price is $70, then George is willing to pay $70, but would leave the market if the price were any higher.

What about a price of $75? In a large market, the demand curve is smooth. There is someone who is willing to pay $75, but would leave the market if the price were any higher.

At a price of $80, the consumer surplus in the market is John's consumer surplus of $20. At a price of $70, the consumer surplus in the market is John's surplus of $30 plus Paul's surplus of $10.

The consumer surplus in a market is the area below the demand curve and above the price.

When the price falls, the consumer surplus rises for two reasons. First, the consumers that were willing to pay the higher price have their surplus increased by the amount of the price drop. Second, new buyers who were not willing to pay the higher price are willing to pay the lower price, and receive some surplus.

These two reasons correspond to a rectangle and a triangle in the diagram.

What does consumer surplus measure?

- Consumer surplus measures the economic well-being of consumers as they perceive it.

- If consumers are rational, then their preferences should be respected by policymakers seeking to maximize society's welfare. People are usually better judges of their own preferences than governments are.

- Should we disregard measured consumer surplus for illegal drugs? Cigarettes? Fatty foods?

Producer Surplus

- Start by looking at each seller's *willingness to sell* (the minimum price the seller would voluntarily accept for the good).

- Willingness to sell is the opportunity cost of producing that unit of output, since sellers would not sell that unit below the cost of producing it, but would sell if the price was greater than the cost of producing it.

- Willingness to sell is exactly the seller's "cost" in our experiment.

- An individual seller's *producer surplus* from a transaction is the price minus her willingness to sell. This is also how much the transaction adds to her profit.

Consider the example of the four sellers of painting services.

From each seller's willingness to sell, we can construct the market supply curve. At a price of $800, the quantity supplied is the number of sellers whose willingness to sell is $800 or less. (Frida, Georgia, and Grandma make 3.)

If (unlike our simple example) a seller might want to supply more than one unit, then she has a willingness to sell her first unit, a willingness to sell her second unit, and so on.

Just like we can go from everyone's willingness to sell to the market supply curve, we can use the market supply curve to measure producer surplus.

The price is the willingness to sell of the marginal seller. If the price is $800, Frida is willing to sell, but would leave the market if the price were any lower.

At a price of $600, the producer surplus in the market is Grandma's producer surplus of $100. At a price of $800, the producer surplus in the market is Grandma's producer surplus of $300 plus Georgia's producer surplus of $200.

The producer surplus in a market is the area above the supply curve and below the price.

When the price rises, producer surplus goes up for initial producers (rectangle) and new producers receive some surplus (triangle).

Market Efficiency

Imagine a hypothetical *benevolent social planner*, who tries to maximize the total benefit buyers and sellers receive from participating in the economy.

Total Surplus = Cons. Surplus + Prod. Surplus

= (Value to Buyers - Amount paid by Buyers) + (Amount received by Sellers - Costs of Sellers)

= Value to Buyers - Costs of Sellers

Notice that the total surplus just depends on the amount that each seller produces and each buyer consumes, not on the prices at which transactions occur. In principle, we can compare the total surplus of a market equilibrium with the outcomes of economies with government interventions or economies that do not involve markets at all.

Can the social planner improve upon the equilibrium in the market?

An allocation of resources that maximizes total surplus is *efficient*.

- For efficiency, the production must be done by firms with the lowest costs, and output must be consumed by those with the highest willingness to pay.

- Also for efficiency, the quantity produced and consumed must maximize total surplus.

At the market equilibrium, any buyer who purchases has a willingness to pay above the market price, and any buyer who does not purchase has a willingness to pay below the market price. Thus, output is consumed by those with the highest willingness to pay.

At the market equilibrium, any firm who produces has a willingness to sell (opportunity cost) below the market price, and any firm who does not produce has a willingness to sell above the market price. Thus, output is produced by those with the lowest cost.

Thus, the social planner cannot improve total surplus by reallocating production across firms or reallocating consumption across buyers.

Because the height of the demand curve is the value to the marginal buyer and the height of the supply curve is the cost of the marginal seller, increasing output increases total surplus whenever the height of the demand curve is greater than the height of the supply curve.

The social planner cannot improve total surplus by changing the quantity of output from the equilibrium quantity.