Consumers, Producers, and the Efficiency of Markets
Consumers, Producers and the Efficiency of Markets

• Revisiting the Market Equilibrium
  – Do the equilibrium price and quantity maximize the total welfare of buyers and sellers?
  – Market equilibrium reflects the way markets allocate scarce resources.
  – Whether the market allocation is desirable can be addressed by welfare economics.
Consumers, Producers and the Efficiency of Markets

- Welfare Economics
  - *Welfare economics* is the study of how the allocation of resources affects economic well-being.
  - Buyers and sellers receive benefits from taking part in the market.
  - The equilibrium in a market maximizes the total welfare of buyers and sellers.
Consumers, Producers and the Efficiency of Markets

• Welfare Economics
  – Equilibrium in the market results in maximum benefits, and therefore maximum total welfare for both the consumers and the producers of the product.
Consumers, Producers and the Efficiency of Markets

• Welfare Economics
  – Consumer surplus measures economic welfare from the buyer’s side.
  – Producer surplus measures economic welfare from the seller’s side.
CONSUMER SURPLUS

• *Willingness to pay* is the maximum amount that a buyer will pay for a good.
• It measures how much the buyer values the good or service.
CONSUMER SURPLUS

• *Consumer surplus* is the buyer’s willingness to pay for a good minus the amount the buyer actually pays for it.
Table 1: Four Possible Buyers’ Willingness to Pay

<table>
<thead>
<tr>
<th>Buyer</th>
<th>Willingness to Pay</th>
</tr>
</thead>
<tbody>
<tr>
<td>John</td>
<td>$100</td>
</tr>
<tr>
<td>Paul</td>
<td>80</td>
</tr>
<tr>
<td>George</td>
<td>70</td>
</tr>
<tr>
<td>Ringo</td>
<td>50</td>
</tr>
</tbody>
</table>
Using the Demand Curve to Measure Consumer Surplus

• The market demand curve depicts the various quantities that buyers would be willing and able to purchase at different prices.
The Demand Schedule and the Demand Curve

<table>
<thead>
<tr>
<th>Price</th>
<th>Buyers</th>
<th>Quantity Demanded</th>
</tr>
</thead>
<tbody>
<tr>
<td>More than $100</td>
<td>None</td>
<td>0</td>
</tr>
<tr>
<td>$80 to $100</td>
<td>John</td>
<td>1</td>
</tr>
<tr>
<td>$70 to $80</td>
<td>John, Paul</td>
<td>2</td>
</tr>
<tr>
<td>$50 to $70</td>
<td>John, Paul,</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>George</td>
<td></td>
</tr>
<tr>
<td>$50 or less</td>
<td>John, Paul,</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>George, Ringo</td>
<td></td>
</tr>
</tbody>
</table>
Figure 1 The Demand Schedule and the Demand Curve

Price of Album

$100

John’s willingness to pay

Paul’s willingness to pay

George’s willingness to pay

Ringo’s willingness to pay

Quantity of Albums

Demand

John's willingness to pay

Paul's willingness to pay

George's willingness to pay

Ringo's willingness to pay
Figure 2 Measuring Consumer Surplus with the Demand Curve

(a) Price = $80

John’s consumer surplus ($20)
Figure 2 Measuring Consumer Surplus with the Demand Curve

(b) Price = $70

Price of Album

$100

80

70

50

0

Quantity of Albums

1 2 3 4

Demand

John’s consumer surplus ($30)

Paul’s consumer surplus ($10)

Total consumer surplus ($40)

John’s consumer surplus ($30)

Paul’s consumer surplus ($10)

Total consumer surplus ($40)
Using the Demand Curve to Measure Consumer Surplus

• The area below the demand curve and above the price measures the consumer surplus in the market.
Figure 3 How the Price Affects Consumer Surplus

(a) Consumer Surplus at Price $P_1$
Figure 3 How the Price Affects Consumer Surplus

(b) Consumer Surplus at Price $P_2$

- Initial consumer surplus
- Consumer surplus to new consumers
- Additional consumer surplus to initial consumers

Price

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>$P_1$</td>
<td>$P_2$</td>
<td>$Q_1$</td>
<td>$Q_2$</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Quantity

Demand
What Does Consumer Surplus Measure?

• Consumer surplus, the amount that buyers are willing to pay for a good minus the amount they actually pay for it, measures the benefit that buyers receive from a good as the buyers themselves perceive it.
PRODUCER SURPLUS

- *Producer surplus* is the amount a seller is paid for a good minus the seller’s *cost*.
- It measures the benefit to sellers participating in a market.
<table>
<thead>
<tr>
<th>Seller</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mary</td>
<td>$900</td>
</tr>
<tr>
<td>Frida</td>
<td>800</td>
</tr>
<tr>
<td>Georgia</td>
<td>600</td>
</tr>
<tr>
<td>Grandma</td>
<td>500</td>
</tr>
</tbody>
</table>
Using the Supply Curve to Measure Producer Surplus

- Just as consumer surplus is related to the demand curve, producer surplus is closely related to the supply curve.
## The Supply Schedule and the Supply Curve

<table>
<thead>
<tr>
<th>Price</th>
<th>Sellers</th>
<th>Quantity Supplied</th>
</tr>
</thead>
<tbody>
<tr>
<td>$900 or more</td>
<td>Mary, Frida, Georgia, Grandma</td>
<td>4</td>
</tr>
<tr>
<td>$800 to $900</td>
<td>Frida, Georgia, Grandma</td>
<td>3</td>
</tr>
<tr>
<td>$600 to $800</td>
<td>Georgia, Grandma</td>
<td>2</td>
</tr>
<tr>
<td>$500 to $600</td>
<td>Grandma</td>
<td>1</td>
</tr>
<tr>
<td>Less than $500</td>
<td>None</td>
<td>0</td>
</tr>
</tbody>
</table>
Figure 4 The Supply Schedule and the Supply Curve
Using the Supply Curve to Measure Producer Surplus

• The area below the price and above the supply curve measures the producer surplus in a market.
Figure 5 Measuring Producer Surplus with the Supply Curve

(a) Price = $600

Grandma’s producer surplus ($100)
Figure 5 Measuring Producer Surplus with the Supply Curve

(b) Price = $800

<table>
<thead>
<tr>
<th>Quantity of Houses Painted</th>
<th>Price of House Painting</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>$500</td>
</tr>
<tr>
<td>1</td>
<td>$600</td>
</tr>
<tr>
<td>2</td>
<td>$700</td>
</tr>
<tr>
<td>3</td>
<td>$800</td>
</tr>
<tr>
<td>4</td>
<td>$900</td>
</tr>
</tbody>
</table>

- Total producer surplus ($500)
- Georgia’s producer surplus ($200)
- Grandma’s producer surplus ($300)
Figure 6 How the Price Affects Producer Surplus

(a) Producer Surplus at Price $P_1$
Figure 6 How the Price Affects Producer Surplus

(b) Producer Surplus at Price $P_2$

- Initial producer surplus
- Additional producer surplus to initial producers
- Producer surplus to new producers
MARKET EFFICIENCY

• Consumer surplus and producer surplus may be used to address the following question:
  – Is the allocation of resources determined by free markets in any way desirable?
The Benevolent Social Planner

Consumer Surplus
= Value to buyers – Amount paid by buyers

and

Producer Surplus
= Amount received by sellers – Cost to sellers
Total surplus
= Consumer surplus + Producer surplus

or

Total surplus
= Value to buyers – Cost to sellers
The Benevolent Social Planner

- **Efficiency** is the property of a resource allocation of maximizing the total surplus received by all members of society.
The Benevolent Social Planner

- In addition to market efficiency, a social planner might also care about *equity* – the fairness of the distribution of well-being among the various buyers and sellers.
Figure 7 Consumer and Producer Surplus in the Market Equilibrium

- **Price**: A
- **Demand**: B
- **Supply**: D
- **Equilibrium price**: C
- **Equilibrium quantity**: E
- **Consumer surplus**: triangle
- **Producer surplus**: triangle

The graph illustrates the market equilibrium with the price and quantity determined at point E, where the demand and supply curves intersect.
Evaluating the Market Equilibrium

• Three Insights Concerning Market Outcomes
  • Free markets allocate the supply of goods to the buyers who value them most highly, as measured by their willingness to pay.
  • Free markets allocate the demand for goods to the sellers who can produce them at least cost.
  • Free markets produce the quantity of goods that maximizes the sum of consumer and producer surplus.
Figure 8 The Efficiency of the Equilibrium Quantity

- Value to buyers is greater than cost to sellers.
- Value to buyers is less than cost to sellers.
Evaluating the Market Equilibrium

• Because the equilibrium outcome is an efficient allocation of resources, the social planner can leave the market outcome as he/she finds it.
• This policy of leaving well enough alone goes by the French expression *laissez faire*.
Evaluating the Market Equilibrium

• Market Power
  • If a market system is not perfectly competitive, market power may result.
    • Market power is the ability to influence prices.
    • Market power can cause markets to be inefficient because it keeps price and quantity from the equilibrium of supply and demand.
Evaluating the Market Equilibrium

• Externalities
  • created when a market outcome affects individuals other than buyers and sellers in that market.
  • cause welfare in a market to depend on more than just the value to the buyers and cost to the sellers.

• When buyers and sellers do not take externalities into account when deciding how much to consume and produce, the equilibrium in the market can be inefficient.
• Consumer surplus equals buyers’ willingness to pay for a good minus the amount they actually pay for it.
• Consumer surplus measures the benefit buyers get from participating in a market.
• Consumer surplus can be computed by finding the area below the demand curve and above the price.
Summary

- Producer surplus equals the amount sellers receive for their goods minus their costs of production.
- Producer surplus measures the benefit sellers get from participating in a market.
- Producer surplus can be computed by finding the area below the price and above the supply curve.
• An allocation of resources that maximizes the sum of consumer and producer surplus is said to be efficient.

• Policymakers are often concerned with the efficiency, as well as the equity, of economic outcomes.
Summary

• The equilibrium of demand and supply maximizes the sum of consumer and producer surplus.

• This is as if the invisible hand of the marketplace leads buyers and sellers to allocate resources efficiently.

• Markets do not allocate resources efficiently in the presence of market failures.