Consumers, Producers, and the Efficiency of Markets

Chapter 7

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.
- Interesting question: is this equilibrium allocation desirable?

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 price that a buyer is willing and able to pay for a given amount of a good, when the alternatives are all or nothing.
- It measures how much the buyer values the good or service.
Consumer Surplus

**Consumer surplus** is the amount a buyer is willing to pay for a given amount of a good minus the amount the buyer actually pays for it.

### 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>

Four Possible Buyers’ Willingness to Pay...

<table>
<thead>
<tr>
<th>Price</th>
<th>Buyer</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, George</td>
<td>3</td>
</tr>
<tr>
<td>$50 or less</td>
<td>Ringo</td>
<td>4</td>
</tr>
</tbody>
</table>

Consumer Surplus

The market demand curve depicts the various quantities that buyers would be willing and able to purchase at different prices.
Measuring Consumer Surplus with the Demand Curve...

- John's willingness to pay
- Paul's willingness to pay
- George's willingness to pay
- Ringo's willingness to pay

Price of lockers

$100
80
70
50

0 1 2 3 4
Quantity of lockers

Demand

Price = $80

John's consumer surplus ($20)

Price of lockers

$100
80
70
50

0 1 2 3 4
Quantity of lockers

Demand

There are 2 lockers available. Who should get them?

Price of lockers

$100
80
70
50

0 1 2 3 4
Quantity of lockers

Demand

John's consumer surplus ($30)

Total consumer surplus ($40)

Price = $70

Price = $80

John's consumer surplus ($20)
Competitive equilibrium: price will be between 70 and 80

ISU method: price = 50 and lottery

Measuring Consumer Surplus with the Demand Curve

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

How the Price Affects Consumer Surplus...
Consumer Surplus and Economic Well-Being

**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.

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Producer Surplus

- **Producer surplus** is the amount a seller is paid minus the cost of production.
- It measures the benefit to sellers participating in a market.

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The Costs of Four Possible Sellers...

<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>

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Producer Surplus and the Supply Curve

- Just as consumer surplus is related to the demand curve, producer surplus is closely related to the supply curve.
- At any quantity, the price given by the supply curve shows the cost of the *marginal seller*, the seller who would leave the market first if the price were any lower.
Supply Schedule for the Four Possible Sellers...

<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>

Producer Surplus and the Supply Curve...

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

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

Grandma's producer surplus ($300)

Georgia's producer surplus ($200)

Total producer surplus ($500)

How Price Affects Producer Surplus...

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?

Economic Well-Being and Total Surplus

$$\text{Consumer Surplus} = \text{Value to buyers} - \text{Amount paid by buyers}$$

and

$$\text{Producer Surplus} = \text{Amount received by sellers} - \text{Cost to sellers}$$
Economic Well-Being and Total Surplus

\[
\text{Total Surplus} = \text{Consumer Surplus} + \text{Producer Surplus}
\]

or

\[
\text{Total Surplus} = \text{Value to buyers} - \text{Cost to sellers}
\]

Market Efficiency

Market efficiency is achieved when the allocation of resources maximizes total surplus.

Evaluating the Market Equilibrium...

Consumer and Producer Surplus in the Market Equilibrium...
Three Insights Concerning Market Outcomes

- Free markets allocate the supply of goods to the buyers who value them most highly.
- 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.

The Efficiency of the Equilibrium

- Value to buyers is greater than cost to sellers.
- Value to buyers is less than cost to sellers.

Measuring Consumer Surplus with the Demand Curve...

Price of lockers: $100, $80, $70, $60, $50, $30

Quantity of lockers: 0, 1, 2, 3, 4

Deadweight loss

Tax revenue