Consequences of Intervening in Competitive Markets

- Lectures 4 and 5 outline
  - A couple items from the end of last lecture
  - Supply and demand
  - Price controls
  - Price ceiling
  - Price floor
  - Consumer and producer surplus
  - Excise taxes
    - Efficiency, tax revenues, and Who bears the tax?

Prices Above Equilibrium Result in a Surplus

- Price ceiling
- Price floor
- Consumer and producer surplus
- Excise taxes
  - Efficiency, tax revenues, and Who bears the tax?

Price Below Its Equilibrium Level Creates a Shortage

- An increase in demand...
  - leads to a movement along the supply curve to a higher equilibrium price and quantity

Analyze the (short run) Market for Diet Dr. Pepper if the Surgeon General Says It Promotes Weight Loss

- An increase in demand...
  - leads to a movement along the supply curve to a higher equilibrium price and quantity
Analyze the Orange Market if Florida has a Wisconsin Winter

Price

P'
P

S' S

Quantity

Q Q

A decrease in supply...

... leads to a movement along the demand curve to a higher equilibrium price and lower quantity

Simultaneous Shifts of the Demand and Supply Curves: Two Examples

Bad weather in Florida, and fruit causes hair loss

Manufacturing efficiencies and viruses

Simultaneous Shifts of the Demand and Supply Curves: Two Examples

P P

S S

S' S'

D D

Q of oranges

Q of computers

Price Ceilings (such as rent control in New York City)

- A price ceiling holds prices down – it is a limit, above which prices cannot go.
  - This is a price set by government to prevent a price from rising to the equilibrium price.

- Why would government do this?
  - Perhaps the government worries that necessities, like housing, are unaffordable.
  - Perhaps the government worries that producers are making “excess” profit (like gas lines in the 1970s).
  - There can be clear “winners” in a market with price ceilings (those who get the commodity at below-market prices).

A Price Ceiling Example

Rent | Demand | Supply
--- | --- | ---
$1,400 | 1,000 | 2,000
$1,200 | 1,100 | 1,500
$1,000 | 1,200 | 1,200
$800 | 1,500 | 1,000
$600 | 1,800 | 750
$400 | 2,100 | 600
Consequences of Price Ceilings

- Inefficient allocation to consumers.
  - Demand reflects willingness to pay. Price ceilings shut many who would willingly pay, and others who would willingly supply, out of the market.
- Wasted resources.
  - Because of shortages, people may need to spend abnormally large amounts of time finding the regulated product.
- Low quality.
  - Price ceilings lower incentives to maintain and improve property.
- Black markets

Price Floors (such as minimum wage legislation)

- A price floor holds up a price that would otherwise fall to the equilibrium wage.
  - For example, a minimum wage, if binding, will restrict wages to falling to their equilibrium level.
- Why would government do this?
  - There are influential groups of sellers (i.e., farmers).
  - Policy-makers dislike market outcomes (low-skilled people get paid too little).
  - Policymakers sometimes also appear to have a poor understanding of the behavior of competitive markets.
- Price floors and ceilings may not be binding...

A Price Floor Example

<table>
<thead>
<tr>
<th>Wages</th>
<th>Labor Demand</th>
<th>Labor Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>$8.75</td>
<td>300</td>
<td>500</td>
</tr>
<tr>
<td>$8.00</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>$7.75</td>
<td>500</td>
<td>300</td>
</tr>
<tr>
<td>$7.50</td>
<td>550</td>
<td>200</td>
</tr>
<tr>
<td>$7.00</td>
<td>600</td>
<td>100</td>
</tr>
<tr>
<td>$6.75</td>
<td>650</td>
<td>50</td>
</tr>
</tbody>
</table>

Consequences of Price Floors

- Inefficiency
  - Greater unemployment – people are willing to work and employers will hire them for less.
  - For commodity price floors, there will be surpluses
- Wasted resources.
  - Unemployment requires greater job search.
  - Surplus resources may not be used well.
- Illegal activity
  - “Underground” (or black) market activities.
  - Inefficiently high “quality” (like textbook airline example).
Consumer Surplus and the Demand Curve

- The demand curve reflects willingness to pay.
- The willingness to pay is also the marginal benefit from consumption.
- Individual consumer surplus is the net gain to an individual buyer from the purchase of a good.
- It is equal to the difference between a buyer’s willingness to pay and the price paid.
- Total consumer surplus is the sum of individual consumer surpluses of all the buyers of the good.

Consumer Surplus

1. The demand curve reflects willingness to pay.
2. The willingness to pay is also the marginal benefit from consumption.
3. Individual consumer surplus is the net gain to an individual buyer from the purchase of a good.
4. It is equal to the difference between a buyer’s willingness to pay and the price paid.
5. Total consumer surplus is the sum of individual consumer surpluses of all the buyers of the good.

Price Reductions Will Increase Consumer Surplus

The total consumer surplus generated by purchases of a good at a given price is equal to the area below the demand curve but above that price.
Producer Surplus and the Supply Curve

- The supply curve shows the potential seller's cost (actually, marginal cost) at which he or she is willing to sell a good.
- Individual producer surplus is the net gain to a seller from selling a good. It is equal to the difference between the price received and the seller's cost.
- Total producer surplus in a market is the sum of the individual producer surpluses of all the sellers of the good.

Producer Surplus

The total producer surplus from sales of a good at a given price is the area above the supply curve but below that price.

A Price Increase will Increase Producer Surplus

Total Surplus: Consumer and Producer Surplus

- The total surplus generated in a market is the total net gain to consumers and producers from trading in the market.
- Total surplus is the sum of the producer and consumer surplus.
- The maximum total surplus is achieved at the market equilibrium in a competitive market.
- In equilibrium there is no way to make some people better off without making others worse off.
- This is the sense in which (competitive) markets are efficient.
Total Surplus: The Sum of Consumer and Producer Surplus

<table>
<thead>
<tr>
<th>Price</th>
<th>Quantity</th>
<th>Consumer Surplus</th>
<th>Producer Surplus</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>100</td>
<td>0.5<em>100</em>75 = 3,750</td>
<td>0.5<em>40</em>100 = 2,000</td>
</tr>
<tr>
<td>100</td>
<td>75</td>
<td></td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>3,750</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total surplus is therefore 5,750

Equilibrium and Efficiency

- Those who value the goods most highly receive them.
- Sales are allocated to those who most value the sales.
- Each consumer values the purchase more than every producer who provides it.
- Those who do not make a purchase value the good less than every potential seller who does not make a sale.

An Application of Consumer and Producer Surplus: Taxes

- A tax causes a deadweight loss to society, because less to the good is produced and consumed than in the absence of the tax.
- Some mutually beneficial trades between producers and consumers do not take place.
- Good economic policymaking should, all else being equal, seek to minimize deadweight loss.
- Taxes imposed on goods with inelastic demand and/or supply, will lead to small reductions in quantities and, therefore, in a small deadweight loss.

Deadweight Loss of an Excise Tax (Area of a Triangle, \( \frac{1}{2}BH \))

- Reduction in consumer surplus: \( 25*90 + 0.5*60*25 = 3000 \)
- Increase in government tax revenue: \( 50*90 = 4500 \)
- Deadweight loss: \( 0.5*50*60 = 1500 \)

Deadweight loss is the sum of the green triangle and the purple triangle - the loss in producer and consumer surplus that exceeds the increase in tax revenue.
Effects of an Excise Tax Levied on Cab Drivers

What is the incidence of this tax?

Effects of an Excise Tax Levied on Those Who Ride Cabs

The results are identical to the previous example.

Key Concepts in the Analysis of Taxation and Price Controls

- **Incidence**
  - Who bears the tax. It is not necessarily the person who writes the check!

- **Efficiency (or deadweight loss or excess burden)**
  - The inefficiency that results because the tax discourages mutually beneficial transactions.
  - Taxes drive a wedge between the price that consumers pay and that producers receive.

- **Tax revenue**
  - The average tax rate times the quantity that is consumed at the new equilibrium.