Lecture 6: Market Equilibrium, Demand and Supply Shifts

Clicker Question
Market Equilibrium

A system is in **equilibrium** when there is no tendency for change.

A competitive market is in **equilibrium** at the market price if the **quantity supplied** equals the **quantity demanded**.

- We will show that in this equilibrium, the price and quantity have no tendency to change.
- At the market equilibrium, the price is called the **equilibrium price**, …
- …and the quantities supplied and demanded are called the **equilibrium quantity**.

**Example:** The Market for Milk

In the market for milk described previously, market supply and demand are as follows.

<table>
<thead>
<tr>
<th>Price ($)</th>
<th>Market Supply (Qts/day)</th>
<th>Market Demand (Qts/day)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.20</td>
<td>300</td>
<td>3200</td>
</tr>
<tr>
<td>0.40</td>
<td>600</td>
<td>2000</td>
</tr>
<tr>
<td><strong>0.60</strong></td>
<td><strong>1200</strong></td>
<td><strong>1200</strong></td>
</tr>
<tr>
<td>0.80</td>
<td>1800</td>
<td>600</td>
</tr>
<tr>
<td>1.00</td>
<td>2400</td>
<td>200</td>
</tr>
<tr>
<td>1.20</td>
<td>3600</td>
<td>100</td>
</tr>
</tbody>
</table>

The market equilibrium is described by a $.60 price and a traded quantity of 1200 quarts.
Equilibrium in the Market for Milk on a Graph

<table>
<thead>
<tr>
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<th>$Q_D$</th>
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Movement towards Market Equilibrium

- If the price is **above the equilibrium price**, 
  - quantity supplied > quantity demanded,  
  - **excess supply**.
  - Sellers cannot sell as much as they want,  
  - so they will tend to offer buyers a lower price.

- Therefore, the price will tend to move downwards towards the equilibrium price.
If the price is **below the equilibrium price**,

- quantity demanded $>\quad$ quantity supplied
- $\Rightarrow$ *excess demand*,
- buyers will not be able to buy all they want to buy,
- so they will tend to offer sellers a higher price.

Therefore, the price will tend to move upwards towards the equilibrium price.

**Clicker Question**
Movement Towards Equilibrium in the Market for Milk

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The Effect of Price Changes

Suppose the price is at $4$...

...so that a buyer is at point A on his demand curve. If price changes to $3$...

...the quantity demanded changes from 40 to 60,...so the buyer moves **ALONG** his original demand curve to point B. Why? Because the **same** demand curve yields the quantity demanded at **every reasonable price**. 

A price change doesn’t change the demand curve.

Likewise, if price changes, a seller will MOVE ALONG her original **supply curve**, because the same supply curve yields the quantity supplied at every reasonable price.  A price change doesn’t change the supply curve.
Demand-Curve Shifts

Changes in some demand-related factors affect the quantities demanded at every price:

- Consumer preferences
- Income of consumers
- Prices of other consumer goods
- Expectations about the future

Such changes affect demand in general,…

…and they often change the position of the entire demand curve.

But those demand-related factors usually do NOT affect the position of the supply curve.

A demand-curve shift to the left would create excess supply, and the price would fall.

A supply-curve shift would have similar effects.

**New market equilibrium:**
Higher price
Larger quantity

Excess demand causes price to rise until excess demand disappears.

This change would lead to excess demand at the original price.

A greater quantity demanded at every price would cause the demand curve to shift to the right.
Changes in Consumer Preferences

- Consumer preferences change for many reasons.
  - New information
  - Fashion
  - Experience

- These changes can shift demand.

Example: Preference for Milk

New evidence emerges that milk cures baldness in men.

- New market equilibrium:

```
<table>
<thead>
<tr>
<th>Price</th>
<th>Quarts of Milk</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>20</td>
</tr>
<tr>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>8</td>
<td>40</td>
</tr>
</tbody>
</table>
```

___ milk demanded at every price.

```
D D' S
```

```
A B
```

New market equilibrium:
Example 2: Preference for Milk

New evidence shows that milk improves the complexion of women, ...but...

```
In new equilibrium:
```

Clicker Question
Income and Demand

- Demand is affected by a person's income.
  
  - *Normal* goods: demand increases as income rises.
  
  - *Inferior* goods: demand increases as income falls.

**Example:** Large Houses and Income in Washington DC

Government salaries increase. Large houses are normal goods,… but the supply curve is almost vertical,… …because…

*In new equilibrium:*
Substitutes

- Two goods are **substitutes** if you can use one of them **instead of** the other.
  - Demand for a good (chicken) **increases** when the price of a substitute (hamburger) rises,…
  - because consumers want to buy less of the substitute,
  - so they consume more of the first good instead.
  - It’s true whatever the price of the first good is, so it’s demand curve shifts to the right.

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**Example:** Car rentals and Airfares

Suppose airfares are rising sharply. (And the quality of air travel is falling.)

Road travel is a substitute for air travel, so ….

In new equilibrium:
Complements

Two goods are **complements in demand** if you normally use both of them together.

- Demand for a good **decreases** when the price of a complement rises,…
- because if the complement is too expensive, the first good is less useful.

### Example: Motel Rooms and Gasoline Prices

Suppose gasoline prices increase.

Motel rooms and gasoline are…

In new equilibrium:

<table>
<thead>
<tr>
<th>Price</th>
<th>Rooms rented</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>20</td>
<td>200</td>
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</tbody>
</table>
Supply-Curve Changes

Changes in some supply-related factors will affect the quantities supplied at every price:

- Prices of Inputs
- Technology
- Economic Environment
  - taxes
  - government regulations
  - weather

Changes in these factors affect supply in general,…

…and they can shift the entire supply curve.

But they usually do **NOT** affect the position of the demand curve.

Example: Supply of Milk and Mad Cows

Mad-cow disease kills many cows.

In new equilibrium:

Will the demand for milk be affected? *Why or why not?*
Example: Supply of Milk and Hormones

BST is discovered. Causes each cow to give much more milk.

In new equilibrium:

Clicker Question
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