Other Demand Elasticity Concepts

Chapter 6-3
How much of a shift?

Other Elasticity Concepts

• Other elasticities can be useful in specifying the effects of a shift factor of demand:
  – Income elasticity of demand.
  – Cross-price elasticity of demand.

Income Elasticity of Demand

• *Income elasticity of demand* – the percentage change in demand divided by the percentage change in income.

\[
E_{\text{Income}} = \frac{\text{Percentage change in demand}}{\text{Percentage change in income}}
\]

Income Elasticity of Demand

• An increase in income generally increases one’s consumption of almost all goods.

• The increase may be greater for some goods than for others.

Income Elasticity of Demand

• *Normal goods* are those whose consumption increases with an increase in income.

• They have income elasticities greater than zero.
Income Elasticity of Demand

- Normal goods are divided into luxuries and necessities.

- **Luxuries** are goods that have an income elasticity greater than one.
  - Their percentage increase in demand is greater than the percentage increase in income.

- **A necessity** has an income elasticity less than 1.
  - The consumption of a necessity rises by a smaller proportion than the rise in income.

- **Inferior goods** are those whose consumption decreases when income increases.
  - Inferior goods have income elasticities less than zero.

### Income Elasticities of Selected Goods

<table>
<thead>
<tr>
<th>Product</th>
<th>Income elasticity</th>
<th>Income elasticity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Short Run</td>
<td>Long Run</td>
</tr>
<tr>
<td>Motion pictures</td>
<td>0.81</td>
<td>3.41</td>
</tr>
<tr>
<td>Foreign travel</td>
<td>0.24</td>
<td>3.09</td>
</tr>
<tr>
<td>Tobacco products</td>
<td>0.21</td>
<td>0.86</td>
</tr>
<tr>
<td>Furniture</td>
<td>2.60</td>
<td>0.53</td>
</tr>
<tr>
<td>Jewelry and watches</td>
<td>1.00</td>
<td>1.64</td>
</tr>
<tr>
<td>Hard liquor</td>
<td>—</td>
<td>2.50</td>
</tr>
<tr>
<td>Private university tuition</td>
<td>—</td>
<td>1.10</td>
</tr>
</tbody>
</table>

Cross-Price Elasticity of Demand

- Cross-price elasticity of demand – the percentage change in demand divided by the percentage change in the price of another good.

\[
E_{\text{Cross - Price}} = \frac{\text{Percentage change in demand}}{\text{Percentage change in price of a related good}}
\]
Cross-Price Elasticity of Demand
• Cross-price elasticity of demand tells us the responsiveness of demand to changes in prices of other goods.

Complements and Substitutes
• **Substitutes** are goods that can be used in place of another.
• Substitutes have positive cross-price elasticities.

Complements and Substitutes
• **Complements** are goods that are used in conjunction with other goods.
• Complements have negative cross-price elasticities.

Cross-Price Elasticities

<table>
<thead>
<tr>
<th>Commodities</th>
<th>Cross-Price Elasticity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef in response to price change in pork</td>
<td>0.11</td>
</tr>
<tr>
<td>Beef in response to price change in chicken</td>
<td>0.02</td>
</tr>
<tr>
<td>U.S. cars in response to price changes in European and Asian automobiles</td>
<td>0.28</td>
</tr>
<tr>
<td>European automobiles in response to price changes in U.S. and Asian automobiles</td>
<td>0.61</td>
</tr>
<tr>
<td>Beer in response to price changes in wine</td>
<td>0.23</td>
</tr>
<tr>
<td>Hard liquor in response to price changes in beer</td>
<td>-0.11</td>
</tr>
</tbody>
</table>

Calculating Income Elasticity

\[
E_{\text{income}} = \frac{(26 - 20)}{20} = \frac{26}{20} = 1.3
\]

Calculating Cross-Price Elasticity

\[
E_{\text{cross}} = \frac{(108 - 104)}{(108 + 104)/2} = \frac{0.38}{106} = 0.12
\]