CHOICES MADE BY HOUSEHOLDS AND FIRMS

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Household Behavior and Consumer Choice

- Household Choice in Output Markets
- The Basis of Choice: Utility
- Income and Substitution Effects
- The Indifference Curve Approach
The Determinants of Household Demand

- The price of the product
- **The income available to the household**
- The household's amount of accumulated wealth
- The prices of other products available to the household
- The household's tastes and preferences
- The household's expectations about future income, wealth, and prices
A consumer’s budget constraint identifies which combinations of goods and service the consumer can afford with a limited budget, at given prices.

Budget constraint: The different combinations of good a consumer can afford with a limited budget, at given price.
The slope of the budget line indicates the spending tradeoff between one good and another—the amount of one good that must be sacrificed in order to buy more of another good. If $P_y$ is the price of the good on the vertical axis and $P_x$ is the price of the good on the horizontal axis, then the slope of the budget line is $-P_x/P_y$. 
The Equation of the Budget Constraint

\[ P_x X + P_y Y = I, \]

where \( P_x \) = the price of \( X \), \( X \) = the quantity of \( X \) consumed, \( P_y \) = the price of \( Y \), \( Y \) = the quantity of \( Y \) consumed, and \( I \) = household income.
Changes in The Budget Line

- Change in Income
- Change in Price

1. An increase in income shifts the budget line rightward, with no change in slope.
2. A decrease in the price of *movies* rotates the budget line *upward*...

3. While a decrease in the price of *concerts* rotates it *rightward*.
Consumer Decision: The Marginal Utility Approach

Lisa’s Total and Marginal Utility from Consuming Ice Cream Cones

<table>
<thead>
<tr>
<th>Number of Cones</th>
<th>Total Utility</th>
<th>Marginal Utility</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0 utils</td>
<td>30 utils</td>
</tr>
<tr>
<td>1</td>
<td>30 utils</td>
<td>20 utils</td>
</tr>
<tr>
<td>2</td>
<td>50 utils</td>
<td>10 utils</td>
</tr>
<tr>
<td>3</td>
<td>60 utils</td>
<td>5 utils</td>
</tr>
<tr>
<td>4</td>
<td>65 utils</td>
<td>5 utils</td>
</tr>
<tr>
<td>5</td>
<td>68 utils</td>
<td>3 utils</td>
</tr>
<tr>
<td>6</td>
<td>68 utils</td>
<td>0 utils</td>
</tr>
</tbody>
</table>

(a) Total Utility
1. The change in total utility from one more ice cream cone...

(b) Marginal Utility
2. is called the marginal utility of an additional cone.
3. Marginal utility falls as more cones are consumed.
Marginal Utility (MU): The additional satisfaction gained by the consumption or use of one more unit of a good or service.

Total Utility (TU): The total amount of satisfaction obtained from consumption of a good or service.

Law of Diminishing Marginal Utility: The more of any one good consumed in a given period, the less satisfaction (utility) generated by consuming each additional (marginal) unit of the same good.
Allocating Income to Maximize Utility

<table>
<thead>
<tr>
<th>Point on Budget Line</th>
<th>Number of Concerts per Month</th>
<th>Marginal Utility from Last Concert ( MU_c )</th>
<th>Marginal Utility per Dollar Spent on Last Concert ( \frac{MU_c}{P_c} )</th>
<th>Number of Movies per Month</th>
<th>Marginal Utility from Last Movie ( MU_m )</th>
<th>Marginal Utility per Dollar Spent on Last Movie ( \frac{MU_m}{P_m} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>0</td>
<td>—</td>
<td>—</td>
<td>15</td>
<td>50</td>
<td>5</td>
</tr>
<tr>
<td>B</td>
<td>1</td>
<td>1,500</td>
<td>50</td>
<td>12</td>
<td>100</td>
<td>10</td>
</tr>
<tr>
<td>C</td>
<td>2</td>
<td>1,200</td>
<td>40</td>
<td>9</td>
<td>150</td>
<td>15</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>600</td>
<td>20</td>
<td>6</td>
<td>200</td>
<td>20</td>
</tr>
<tr>
<td>E</td>
<td>4</td>
<td>450</td>
<td>15</td>
<td>3</td>
<td>350</td>
<td>35</td>
</tr>
<tr>
<td>F</td>
<td>5</td>
<td>360</td>
<td>12</td>
<td>0</td>
<td>—</td>
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</table>
Allocating Income to Maximize Utility... cont

utility-maximizing rule: \( \frac{MU_X}{P_X} = \frac{MU_Y}{P_Y} \) for all goods

diamond/water paradox A paradox stating that (1) the things with the greatest value in use frequently have little or no value in exchange and (2) the things with the greatest value in exchange frequently have little or no value in use.
Deriving the Demand Curve

1. When the price of concerts is $30, point D is best for Max.
2. If the price falls to $10, Max's budget line rotates rightward, and he chooses point I.
3. And if the price drops to $5, he chooses point K.
4. The demand curve shows the quantity Max chooses at each price.
“Great news! Now that Pepsi is cheaper, my income has greater purchasing power. I am, in effect, richer than I was. Because I am richer, I can buy both more Pepsi and more pizza.” (This is the income effect.)

“Now that the price of Pepsi has fallen, I get more pints of Pepsi for every pizza that I give up. Because pizza is now relatively more expensive, I should buy less pizza and more Pepsi.” (This is the substitution effect.)

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<td>Pepsi</td>
<td>Consumer is richer, so he buys more Pepsi.</td>
<td>Pepsi is relatively cheaper, so consumer buys more Pepsi.</td>
<td>Income and substitution effects act in same direction, so consumer buys more Pepsi.</td>
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<td>Pizza</td>
<td>Consumer is richer, so he buys more pizza.</td>
<td>Pizza is relatively more expensive, so consumer buys less pizza.</td>
<td>Income and substitution effects act in opposite directions, so the total effect on pizza consumption is ambiguous.</td>
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INCOME AND SUBSTITUTION EFFECTS... cont

Price Decrease:

- Substitution Effect
  - $P \downarrow$
  - $Q^D \uparrow$

Purchasing Power

- $Q^D \uparrow$ if normal
- $Q^D \uparrow$ if inferior

Ultimate Effect (Almost Always)

$\Rightarrow Q^D \uparrow$

Price Increase:

- Substitution Effect
  - $P \uparrow$
  - $Q^D \downarrow$

Purchasing Power

- $Q^D \downarrow$ if normal
- $Q^D \downarrow$ if inferior

$\Rightarrow Q^D \downarrow$
The Indifference Curve Approach

- NEXT MEETING
ASSUMPTIONS

- We assume that this analysis is restricted to goods that yield positive marginal utility, or, more simply, that "more is better."

- The **marginal rate of substitution is defined as** $\frac{MUX}{MUY}$, or the ratio at which a household is willing to substitute $X$ for $Y$.

- We assume that consumers have the ability to choose among the combinations of goods and services available.

- We assume that consumer choices are consistent with a simple assumption of rationality. If a consumer shows that he prefers $A$ to $B$ and subsequently shows that he prefers $B$ to a third alternative, $C$, he should prefer $A$ to $C$ when confronted with a choice between the two.
DERIVING DIFFERENCE CURVES
The Marginal Rate of Substitution

If Max gets another concert...

he could give up 9 movies and be just as satisfied.
Consumer Decision Making

The optimal combination of goods for a consumer is the point on the budget line where an indifference curve is tangent to the budget line.

1. Points B and E are affordable...

2. But point D (also affordable) is preferred because it is on a higher indifference curve.

The optimal combination of two goods $x$ and $y$ is that combination on the budget line for which $\text{MRS}_{xy} = \frac{P_x}{P_y}$.
What Happen When Things Change?

1. When Max's income rises to $300, his budget line shifts outward.

2. If his preferences are shown by these two indifference curves, he'll choose point $H$.

3. But different preferences could lead him to other points like $H'$ or $H''$. 
1. When the price of concerts is $30, \( \text{MRS}_{\text{movies}} = \frac{P_{\text{concerts}}}{P_{\text{movies}}} \) at Point D.

2. But when the price of concerts falls to $10, this condition is satisfied at point J.

3. The demand curve shows the quantity of concerts Max chooses at each price for concerts.
“Great news! Now that Pepsi is cheaper, my income has greater purchasing power. I am, in effect, richer than I was. Because I am richer, I can buy both more Pepsi and more pizza.” (This is the income effect.)

Income effect: the change in consumption that results when a price change moves the consumer to a higher or lower indifference curve

“Now that the price of Pepsi has fallen, I get more pints of Pepsi for every pizza that I give up. Because pizza is now relatively more expensive, I should buy less pizza and more Pepsi.” (This is the substitution effect.)

Substitution effect: the change in consumption that results when a price change moves the consumer along a given indifference curve to a point with a new marginal rate of substitution
## Income and Substitution Effects When the Price of Pepsi Falls

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INCOME AND SUBSTITUTION EFFECTS... cont
A Giffen Good

A GIFFEN GOOD. In this example, when the price of potatoes rises, the consumer’s optimum shifts from point C to point E. In this case, the consumer responds to a higher price of potatoes by buying less meat and more potatoes.