What is GDP?

- **Gross Domestic Product (GDP)** is the nation’s expenditure on all the final goods and services produced during the year at market price.

How is GDP calculated?

- You will learn one way to calculate GDP is by adding all of **Nation’s expenditures**.
- Another method used is the income approach (not discussed here).

Nation’s Expenditures

\[
C + I + G + X = GDP
\]

This lecture will concentrate on Consumption

Consumption

- Consumption is the nation’s expenditures on all final goods and services produced during the year at market prices
  - Consumption was almost $2 trillion dollars in 2002

- Americans spend over 95% of their income after taxes
- The total of everyone’s expenditures is called consumption
  - Consumption is designated by the letter C
• C is the largest sector of GDP
• C is just over two-thirds of GDP

**Consumption (Continued)**

• The consumption functions states
  – As income rises, consumption (C) rises, but not as quickly
  – Therefore, consumption varies with disposable income (DI)

**Consumption and Disposable Income**

<table>
<thead>
<tr>
<th>Disposable Income</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000</td>
<td>1,400</td>
</tr>
<tr>
<td>2,000</td>
<td>2,200</td>
</tr>
<tr>
<td>3,000</td>
<td>3,000</td>
</tr>
<tr>
<td>4,000</td>
<td>3,800</td>
</tr>
<tr>
<td>5,000</td>
<td>4,600</td>
</tr>
</tbody>
</table>

As Income rises so does Consumption
**BUT NOT AS QUICKLY!**

DI increases . . . C increases but by a smaller amount
DI decreases . . . C decreases but by a smaller amount

**Consumption and Disposable Income (Continued)**

<table>
<thead>
<tr>
<th>Disposable Income</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,000 + 1,000</td>
<td>1,400 + 800</td>
</tr>
<tr>
<td>2,000 + 1,000</td>
<td>2,200 + 800</td>
</tr>
<tr>
<td>3,000 + 1,000</td>
<td>3,000 + 800</td>
</tr>
<tr>
<td>4,000 + 1,000</td>
<td>3,800 + 800</td>
</tr>
<tr>
<td>5,000 + 1,000</td>
<td>4,600</td>
</tr>
</tbody>
</table>

Two Ways To View Consumption-Income Relationship

1. As the ratio of total consumption to total disposable income.
2. As the relationship of changes in consumption to changes in disposable income.
Average Vs. Marginal

• The **average propensity to consume** (APC) is total consumption in a given period divided by total disposable income.

\[
\text{APC} = \frac{\text{Total consumption}}{\text{Total disposable income}} = \frac{C}{Y_d}
\]

\[
\text{APS} = \frac{\text{Total saving}}{\text{Total disposable income}} = \frac{S}{Y_d}
\]

Table 2

<table>
<thead>
<tr>
<th>Disposable Income</th>
<th>Consumption</th>
<th>Saving</th>
</tr>
</thead>
<tbody>
<tr>
<td>$40,000</td>
<td>$30,000</td>
<td>$10,000</td>
</tr>
</tbody>
</table>

\[
\text{APC} = \frac{30,000}{40,000} = \frac{3}{4} = .75
\]

\[
\text{APS} = \frac{10,000}{40,000} = \frac{1}{4} = .25
\]

Table 2 (Continued)

<table>
<thead>
<tr>
<th>Disposable Income</th>
<th>Consumption</th>
<th>Saving</th>
</tr>
</thead>
<tbody>
<tr>
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<td>$10,000</td>
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</tbody>
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\[
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\]
Table 3

<table>
<thead>
<tr>
<th>Disposable Income</th>
<th>Saving</th>
<th>Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>$20,000</td>
<td>$1,500</td>
<td>$18,500</td>
</tr>
</tbody>
</table>

\[
APC = \frac{C}{DI} = \frac{18500}{20000} = \frac{37}{40} = .925
\]

\[
APS = \frac{S}{DI} = \frac{1500}{20000} = \frac{3}{40} = .075
\]

Table 3 (Continued)

<table>
<thead>
<tr>
<th>Disposable Income</th>
<th>Saving</th>
<th>Consumption</th>
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</thead>
<tbody>
<tr>
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\]

5-16

5-17

5-18

5-19

5-20

APCs Greater than One

<table>
<thead>
<tr>
<th>Disposable Income</th>
<th>Consumption</th>
<th>Saving</th>
</tr>
</thead>
<tbody>
<tr>
<td>$10,000</td>
<td>$12,000</td>
<td></td>
</tr>
</tbody>
</table>
### APCs Greater than One (Continued)

<table>
<thead>
<tr>
<th>Disposable Income</th>
<th>Consumption</th>
<th>Saving</th>
</tr>
</thead>
<tbody>
<tr>
<td>$10,000</td>
<td>$12,000</td>
<td>- 2000</td>
</tr>
</tbody>
</table>

Where is this going to come from?

\[
\text{APC} = \frac{C}{DI} = \frac{12,000}{10,000} = \frac{12}{10} = 1.2
\]

\[
\text{APS} = \frac{S}{DI} = \frac{-2,000}{10,000} = \frac{-2}{10} = -0.2
\]

\[
\text{APC} + \text{APS} = 1
\]

### The Marginal Propensity to Consume

- The **marginal propensity to consume** (MPC) is the fraction of each additional (marginal) dollar of disposable income spent on consumption.
Marginal Propensity to Consume (MPC)

$$\text{MPC} = \frac{\text{CHANGE in Consumption}}{\text{CHANGE in Income}}$$

**Table 4**

<table>
<thead>
<tr>
<th>Year</th>
<th>DI</th>
<th>C</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>$30000</td>
<td>$23000</td>
<td>$7000</td>
</tr>
<tr>
<td>1999</td>
<td>$40000</td>
<td>$31000</td>
<td>$9000</td>
</tr>
</tbody>
</table>

**Table 4 (Continued)**

<table>
<thead>
<tr>
<th>Year</th>
<th>DI</th>
<th>C</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>$30000</td>
<td>$23000</td>
<td>$7000</td>
</tr>
<tr>
<td>1999</td>
<td>$40000</td>
<td>$31000</td>
<td>$9000</td>
</tr>
</tbody>
</table>

Change in C = $8000
Change in DI = $10000

$$\text{MPC} = \frac{\text{Change in C}}{\text{Change in DI}} = \frac{8000}{10000} = .8$$

**MPS**

$$\text{MPS} = \frac{\text{Change in S}}{\text{Change in DI}} = \frac{2000}{10000} = .2$$

The MPC and MPS

MPS = 0.20
MPC = 0.80