


Taking the Nation's Economic Pulse

Full Length Text — Part: 3 Chapter: 7
Macro Only Text — Part: 3 Chapter: 7

To Accompany “Economics: Private and Public Choice 11th ed.”
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GDP – A Measure of Output

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GDP – A Measure of Output

- **Gross Domestic Product (GDP):** The market value of final goods and services produced within a country during a specific time period, usually a year.
- **GDP** is the most widely used indicator of economic performance.

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Questions for Thought:


1. Indicate how each of the following activities will affect GDP:

- a. You pay \$600 per month to lease an apartment while attending school.
- b. You pay \$8,000 to purchase a four-year-old car.
- c. You have car trouble and have to pay a repair shop \$1,500 to fix the transmission of your car.
- d. You pay \$5,100 to purchase 100 shares of Microsoft stock (\$50 per share for the stock plus a \$100 brokerage fee).
- e. You sell your 100 shares of Microsoft stock (*purchased for \$5,000*) for \$6000 minus a \$100 brokerage fee.

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Questions for Thought:


1. Indicate how each of the following activities will affect GDP: (*cont.*)

- f. Your aunt sends you \$500 to help with your college expenses.
- g. You earn \$500 providing computer services for a faculty member.
- h. You win \$500 playing cards with classmates in the dormitory.

2. Why aren't the purchases of intermediate goods like steel and automobile motors and the purchase of final market goods like new automobiles both included in GDP?

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Two Ways of Measuring GDP

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Two Ways of Measuring GDP

Dollar flow of **expenditures** on final goods = **GDP** = Dollar flow of **income** (and indirect cost) of final goods

- **GDP** is a measure of both output and income. Thus, there are two ways it can be measured.
 - GDP can be derived by totaling the expenditures on final-user goods and services produced during the year. This is called the **expenditure approach**.
 - Alternatively, GDP can be calculated by summing the income payments to the resource suppliers and the indirect cost of producing the goods and services. This is called the **resource cost-income approach**.

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The Expenditure Method of Measuring GDP

- **Expenditure Approach:**
 - GDP is the sum of expenditures on final-user goods and services purchased by households, investors, governments, and foreigners.
 - There are four components of GDP:
 - personal consumption purchases
 - gross private investment (including inventories)
 - government purchases (consumption and investment)
 - net exports (exports minus imports)

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Resource Cost-Income Method of Measuring GDP

- **Resource Cost - Income Approach**
 - GDP is the sum of costs incurred and income (including profits) generated by the production of goods and services during the period.
 - The direct cost income components of GDP:
 - employee compensation
 - self-employment income
 - rents
 - interest
 - corporate profits

Sum of these = **national income**

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Resource Cost-Income Method of Measuring GDP

- **Resource Cost - Income Approach:** (cont.)
 - Not all cost components of GDP result in an income payment to a resource supplier. To get GDP, we need to account for 3 other factors:
 - **Indirect business taxes:** Taxes that increase the firm's production costs and therefore final prices.
 - **Depreciation:** The cost of wear and tear on the machines and other capital assets used to produce goods and services.
 - **Net Income of Foreigners:** The income that foreigners earn producing goods within the borders of the U.S. minus the income Americans earn abroad.

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Resource Cost-Income Method of Measuring GDP

- When derived by the **Resource Cost - Income Approach**, GDP is equal to the sum of
 - national income, (*employee compensation, self-employment income, rents, interest, corporate profits*)
 - indirect business taxes,
 - depreciation, and,
 - net income of foreigners.

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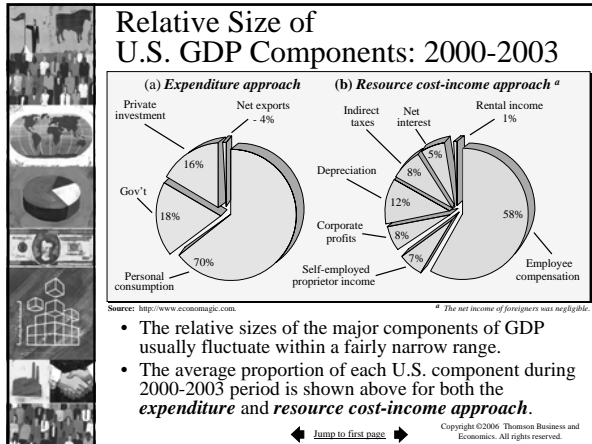
Two Ways of Measuring GDP: A Summary

- The two methods of calculating GDP are summarized below:

Expenditure Approach	Resource Cost-Income Approach
Personal consumption expenditures + Gross private domestic investment + Government consumption and gross investment + Net exports of goods and services = GDP	Aggregate income: Employee Compensation Income of self-employed Rents Profits Interest + Non-income cost items: Indirect business taxes and depreciation + Net income of foreigners = GDP

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Questions for Thought:

- Which of the following is GDP designed to measure?
 - The total market value of goods and services produced in a year.
 - the income generated and costs incurred producing goods and services during a year.
 - Both (a) and (b)
- Can net investment ever be negative? What would negative net investment imply?
- What is the largest component of GDP when it is derived by the expenditure approach? What is the largest component of GDP when it is derived by the income-cost approach?

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Real and Nominal GDP

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Real and Nominal GDP

- The term "*real*" means adjusted for inflation.
- *Price indexes* are used to adjust income and output data for the effects of inflation.
 - A *price index* measures the cost of purchasing a market basket (or "bundle") of goods at a point in time relative to the cost of purchasing the same market basket during an earlier reference (or *base*) period.

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Two Key Price Indexes:

- (1) *Consumer Price Index*
- (2) *GDP Deflator*

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Two Key Price Indexes:

- *Consumer Price Index* (CPI): measures the impact of price changes on the cost of a typical bundle of goods and services purchased by households.
- *GDP Deflator*: designed to measure the change in the average price of the market basket of goods included in GDP.
 - The GDP deflator is a broader price index than the CPI.

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CPI and GDP Deflator: 1993-2003


Year	CPI (1982-84 = 100)	Inflation rate (percent)	GDP deflator (2000 = 100)	Inflation rate (percent)
1993	144.5	3.0	88.4	2.3
1994	148.2	2.6	90.3	2.1
1995	152.4	2.8	92.1	2.0
1996	156.9	3.0	93.9	1.9
1997	160.5	2.3	95.4	1.7
1998	163.0	1.5	96.5	1.1
1999	166.6	2.2	97.9	1.4
2000	172.2	3.4	100.0	2.2
2001	177.1	2.8	102.4	2.4
2002	179.9	1.6	104.1	1.7
2003	184.0	2.3	106.0	1.8

Source: <http://www.economagic.com>

- Even though the CPI and the GDP deflator are based on different market baskets and procedures, they yield similar estimates of the rate of inflation.

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Using the GDP Deflator to Derive Real GDP

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Using the GDP Deflator to Derive Real GDP


- The formula for converting nominal GDP into real GDP (in period 1 prices) is:

$$\text{Real GDP}_2 = \text{Nominal GDP}_2 \times \frac{\text{GDP Deflator}_1}{\text{GDP Deflator}_2}$$

- Data on both money GDP and price changes are essential for meaningful comparisons of output between two time periods.

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Using the GDP Deflator to Derive Real GDP


- Between 1998 and 2003, nominal GDP increased by 25.8%.
- But, when the 2003 GDP is deflated to account for price increases ... we can see that real GDP increased by only 14.5%.

	Nominal GDP <i>(billions of U.S. \$)</i>	Price index <i>(GDP deflator, 2000 = 100)</i>	Real GDP <i>(billions of 1998 \$)</i>
1998	\$8,747	96.5	\$8,747
2003	\$11,004	106.0	\$10,018
% increase	25.8%	9.8%	14.5%

Source: <http://www.economic.com>

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Converting Earlier Figures into Current Dollars


- Sometimes we will want to make real data (*e.g. income*) comparisons in terms of the purchasing power of the dollar during the current year.
- This can be done by “inflating” the data for earlier years for increases in the price level.
- The formula for converting the figures for an earlier year into **current dollars** is:

$$\text{Figure}_{\text{current } \$} = \text{Figure}_{\text{earlier } \$} \times \frac{\text{price index}_{\text{current year}}}{\text{price index}_{\text{earlier year}}}$$

- If prices have risen, this will “inflate” the data for earlier years and bring it into line with the current purchasing power of the dollar.

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Questions for Thought:

1. What do price indexes measure?
2. What is the difference between the CPI and the GDP deflator? Which would you use if you wanted to measure whether your own earnings this year were higher than they were last year?
3. The CPI was 190 in 2004 compared to 100 in 1983. Suppose that the price of a ticket at a local movie theater rose from \$4 to \$8 between 1983 and 2004. Did the real ticket price increase or decrease? Calculate the 1983 ticket price measured in 2004 dollars.

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Questions for Thought:

4. Use the following data to answer this question.

	Nominal GDP (trillions of \$)	GDP deflator (2000=100.0)
2001	\$10.10	102.4
2002	10.48	103.9
2003	10.99	105.7


- Calculate the real GDP in 2001, 2002, and 2003 measured in 2000 dollars.
- What was the percent change in real GDP between 2001 and 2002? What was the percent change between 2002 and 2003?
- What was the inflation rate as measured by the GDP deflator in 2002 and 2003?

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Shortcomings and Strengths of GDP as a Measuring Rod

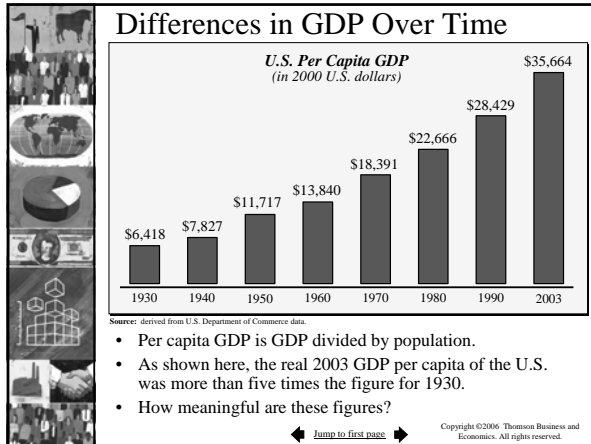
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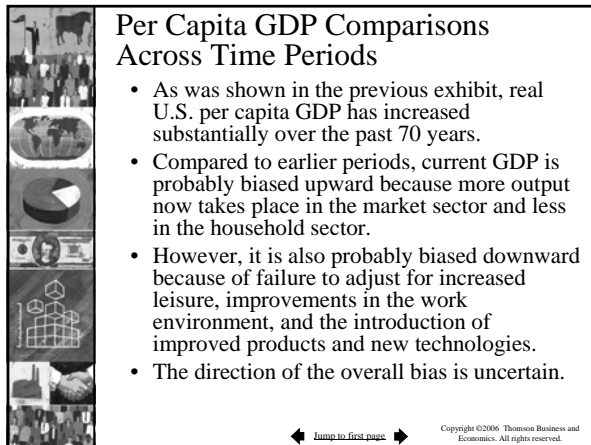


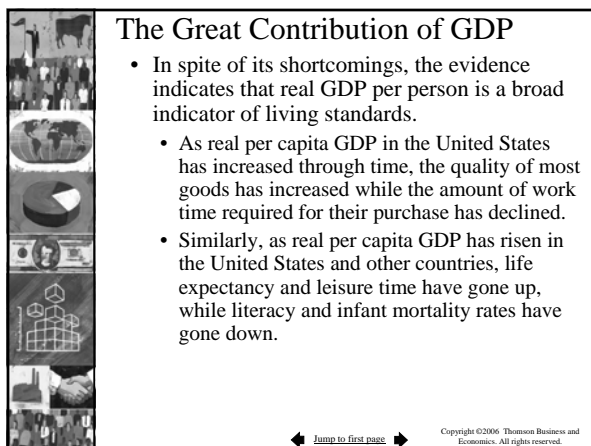
Shortcomings of GDP as a Measuring Rod


- Shortcomings of GDP:
 - It does not count non-market production.
 - It does not count the underground economy.
 - It makes no adjustment for leisure.
 - It probably understates output increases because of the problem of estimating improvements in the *quality* of products.
 - It does not adjust for harmful side effects.

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The Great Contribution of GDP

- However, the “great contribution” of GDP is its ability to measure short-term fluctuations in output.
- Year-to-year (*and quarter-to-quarter*) changes in real GDP provide a reasonably precise measure of what is happening to the rate of output.

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Questions for Thought:

1. When making income and GDP comparisons across time periods, why is it important to adjust for changes in the level of prices?
2. If nominal GDP during a year increased by 7% while the GDP deflator rose by 10 %, what happened to real GDP?
3. GDP does not count services such as child care, food preparation, cleaning, and laundry within the household. Why not? Is GDP a sexist measure? Does it understate the productive contributions of women relative to men?

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Questions for Thought:

4. On Sept. 11, 2001, terrorists crashed 2 planes into the World Trade Center in New York, killing 3000 people and causing the towers to collapse. Which of the following best indicates how GDP was influenced by the damages from the attack and the cleanup that followed?
 - (a) The damage from the attack was subtracted from GDP, while the expenditures from the cleanup were added.
 - (b) Neither the damages from the attack nor the expenditures from the cleanup affected GDP.
 - (c) No adjustment was made for the damages from the attack, while the expenditures from the cleanup were added to GDP.

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Questions for Thought:

5. Which of the following are included in GDP?

- a. the value of goods produced in the underground economy
- b. the value of leisure
- c. increases in the value of housing and financial assets
- d. depreciation in the value of real assets such as equipment and buildings
- e. the value of services such as food preparation and house cleaning that we provide for ourselves

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Questions for Thought:

6. Your father tells you he earned \$1.50 per hour when he was 16 in 1969; you made \$6.00 per hour when you were 16 in 2003. Given that the CPI was 36.7 in 1969 and 184 in 2003, which of the following is the 2003 equivalent of your father's hourly earnings when he was 16?

- (a) \$2.76
- (b) \$6.23
- (c) \$7.52

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**End
Chapter 7**

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