

Chapter 7

GDP: Measuring Total Production and Income

It's time for Macroeconomics!

- Over the business cycle, the economy grows
and contracts
- Some important “gauges” of macro performance include:

Measuring gross domestic product (GDP) (production of output)

Goal: To summarize the total production of an entire economy into a single number we call the:

Definition: **“GDP is the market value of all final goods and services produced within an economy in a given period of time.”**

- “GDP is the Market Value”

- “...of all...”

- “...final goods and services...”
 - We do not count intermediate goods. Why?
 - *Example:* Ford purchases \$1000 worth of Goodyear tires and puts them on a new \$20,000 truck. We count only the

If we counted the tires and the truck we would get \$21,000 for GDP. What’s wrong with this calculation?

- “...produced...”
- “...within an economy...”
- “...in a given period of time”

The Components of GDP

Personal Consumption Expenditures, or “Consumption”

Gross Private Domestic Investment, or “Investment”

**Government Consumption and Gross Investment, or
“Government Purchases”**

Net Exports of Goods and Services, or “Net Exports”

- $NX = \text{Exports} - \text{Imports}$
- e.g. U.S. firm produces a \$1000 computer in Texas and sells it to a Mexican consumer
- e.g. U.S. consumer purchases a \$300 pair of Italian-produced shoes

Learning Objective 7.1

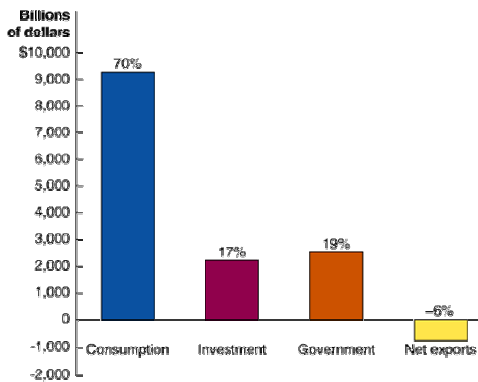
$$Y = C + I + G + NX$$

An Equation for GDP and Some Actual Values

FIGURE 7-2

Components of GDP in 2006

COMPONENTS OF GDP (billions of dollars)		
Consumption		\$9,269
Durable goods	\$1,070	
Nondurable goods	2,715	
Services	5,484	
Investment		2,213
Business fixed investment	1,396	
Residential construction	767	
Change in business inventories	50	
Government Purchases		2,528
Federal	927	
State and local	1,601	
Net Exports		-763
Exports	1,466	
Imports	2,229	
Total GDP		\$13,247



Measuring GDP by the Value-Added Method

Value added The market value a firm adds to a product.

Calculating Value Added

<i>FIRM</i>	<i>VALUE OF PRODUCT</i>	<i>VALUE ADDED</i>	
Cotton Farmer	Value of raw cotton = \$2	Value added by cotton farmer	=
Textile Mill	Value of raw cotton woven into cotton fabric = \$5	Value added by cotton textile mill	=
Shirt Company	Value of cotton fabric made into a shirt = \$20	Value added by shirt manufacturer	=
L.L. Bean	Value of shirt for sale on L.L. Bean's Web site = \$43	Value added by L.L. Bean	=
	Total Value Added		=

Measuring Production = Measuring Income

- If you pay Theresa \$50 to clean your house, your expenditure on the house cleaning (\$50) is exactly equal to the
- For an economy as a whole, total income must _____ total expenditures.
- Recall the circular-flow diagram: every dollar of spending becomes a dollar of income. Remember that "income" includes:

Calculating Nominal GDP and Real GDP

Consider the idyllic enclave of “Nelsonville” which produces only two goods: **cars** and **computers**.

	2008 Quantities	2008 Prices	2009 Quantities	2009 Prices
Cars	8	\$20,000	10	\$30,000
Computers	30	\$1000	40	\$1000

We need to calculate the market value of the production in each year.

Nominal GDP: the production of goods and services valued at current prices.

- Nominal GDP in '08:
- Nominal GDP in '09:
- “Growth Rate” (a.k.a. “% change in”) of Nominal GDP between '08 and '09 is equal to :
- Notice that Nominal GDP can increase if either:

- When studying GDP over time, economists would like to know if output has changed (not prices).
- Thus, economists measure **Real GDP** by valuing output using a fixed set of prices.
- To calculate **Real GDP**, we use one year's prices for all of our calculations. This year is termed the

- Assume that '08 is the base year.
- Real GDP in '08:

- Real GDP in '09:

- Calculate the growth rate of Real GDP between '08 and '09:

- Compare '09 Nominal GDP and '09 Real GDP:

- What accounts for the difference?

- We can use this information to calculate the overall level of prices and the changes in prices over time.

GDP Deflator

Price level: A measure of the _____ prices of goods and services in the economy.

GDP deflator: A measure of the price level.

% Change in GDP deflator: A measure of the change in the price level.

$$\text{GDP deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100$$

- GDP Deflator in '08:

- GDP Deflator in '09:

- % Change in GDP Deflator between '08 and '09:

- Interpretation of this number?

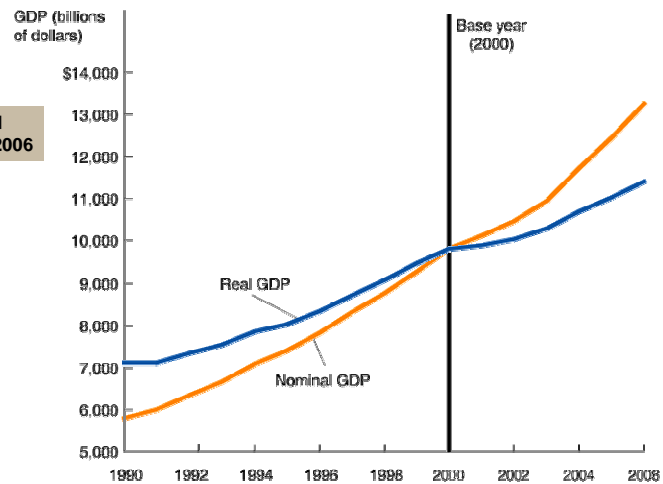
- There is a slight problem with Real GDP and the GDP Deflator the way that we have calculated them. If you use '09 as the base year, you will get slightly different values for growth rates of Real GDP and the GDP Deflator:
- In 1996, the commerce department began using **chain-type indices** help eliminate these distortions.

Learning Objective 7.3

Real GDP versus Nominal GDP

Comparing Real GDP and Nominal GDP

FIGURE 7-3
Nominal GDP and Real GDP, 1990–2006



Does GDP Measure What We Want It to Measure?

Shortcomings in GDP as a Measure of Total Production

Official GDP statistics fail to include the following kinds of production:

- 1) Household Production


- 2) The Underground Economy

- Do these omissions imply that GDP understates or overstates actual production?

- Application: US 1950 – Present As more and more women have entered the labor force, families have become more likely to pay others for child care, cleaning services, food preparation, etc.
 - Now: These activities

 - Then: These activities

 - Implication? The growth rates of US GDP from 1950 to present _____ actual growth.




Shortcomings of GDP as a Measure of Well-Being

Real GDP per person (“per capita”) is often used as a measure of well-being. It is not, however, a perfect measure of well-being.

- The Value of Leisure Is Not Included in GDP

- GDP Is Not Adjusted for Pollution or Other Negative Effects of Production

- 
- GDP Is Not Adjusted for Changes in Crime and Other Social Problems

- GDP Measures the Size of the Pie but Not How the Pie Is Divided Up

Are there alternative measures of well-being? The U.N. uses the Human Development Index (HDI), which includes the following variables: