

Real Vs. Nominal GDP, Per Capita GDP, & the shortcoming of GDP

Comparing GDP Across Time

GDP can grow due to:

- 1) Economy producing more
- 2) Prices having risen

Calculating GDP and Real GDP in a Simple Economy

	Year 1	Year 2
Quantity of apples (billions)	2,000	2,200
Price of apple	\$0.25	\$0.30
Quantity of oranges (billions)	1,000	1,200
Price of orange	\$0.50	\$0.70
GDP (billions of dollars)	\$1,000	\$1,500
Real GDP (billions of year 1 dollars)	\$1,000	\$1,150

Nominal GDP

- **nominal GDP**, is the value of all final output produced in an economy during a given year, **calculated using the prices current in the year which the output is produced**

Keeping it Real

- Comparing output over time is best done with real output which is nominal output adjusted for inflation
- **Real GDP** is the value of the final goods and services produced calculated using the prices of some base year

Nominal Vs. Real

- **Nominal GDP** is GDP calculated at existing prices.
- **Real GDP** is nominal GDP adjusted for inflation.
- Real GDP is important to society because it measures what is really produced

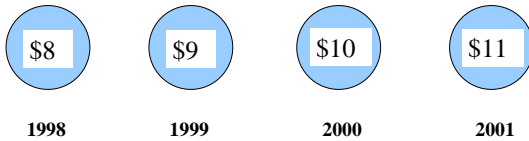
Real vs. Nominal GDP

Nominal versus Real GDP in 1996, 2000, and 2004

	Nominal GDP (billions of current dollars)	Real GDP (billions of 2000 dollars)
1996	\$7,817	\$8,329
2000	9,817	9,817
2004	11,734	10,842

Source: U.S. Commerce Department.

GDP Versus Real GDP (RGDP)



GDP is the Price

RGDP is the pie

GDP is measured in current dollars. Therefore it appears as if GDP was larger in 2001 than in previous years. To make year-to-year GDP comparisons, we have to get rid of inflation

Copyright ©2002 by The McGraw-Hill Companies, Inc. All rights reserved.

9-26

Deflating GDP to Get RGDP

$$RGDP_{cy} = GDP_{cy} \times \frac{GDP\ DEFLATOR_{by}}{GDP\ DEFLATOR_{cy}}$$

Copyright ©2002 by The McGraw-Hill Companies, Inc. All rights reserved.

9-27

Deflating GDP to Get RGDP

$$RGDP_{cy} = GDP_{cy} \times \frac{GDP\ DEFLATOR_{by}}{GDP\ DEFLATOR_{cy}}$$

$$RGDP_{86} = 4422.2 \times \frac{100}{80.6}$$

$$RGDP_{86} = 4422.2 \times 1.2406948$$

$$RGDP_{86} = 5486.6$$

Copyright ©2002 by The McGraw-Hill Companies, Inc. All rights reserved.

9-30

Deflating GDP to Get RGDP

$$RGDP_{97} = GDP_{97} \times \frac{GDP\ DEFLATOR\ by}{GDP\ DEFLATOR_{97}}$$

$$RGDP_{97} = 8083.4 \times \frac{100}{115.2}$$

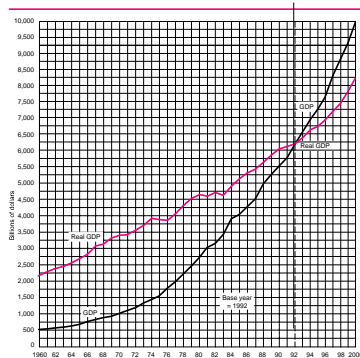
$$RGDP_{97} = 8083.4 \times 8680556$$

$$RGDP_{97} = 7016.8$$

Copyright ©2002 by The McGraw-Hill Companies, Inc. All rights reserved.

9-34

GDP and Real GDP (in 1992 Dollars), 1960-2000



Copyright ©2002 by The McGraw-Hill Companies, Inc. All rights reserved.

9-35

Calculating Percentage Changes

$$\% \text{ change} = \frac{\text{Change}}{\text{Original Number}}$$

Copyright ©2002 by The McGraw-Hill Companies, Inc. All rights reserved.

9-36

Calculating Percentage Changes

$$\% \text{ change} = \frac{\text{Change}}{\text{Original Number}}$$

1980 GDP = 2784.2

1980 RGDP = 4611.9

1979 GDP = 2557.5

1979 RGDP = 4624.0

Change -----> 226.7

Change -----> 12.9

% change = $\frac{226.7}{2557.5}$

% change = $\frac{12.1}{4624.0}$

% change = .0886413 = 8.8% ↑ % change = .0026168 = .26% ↓

Copyright ©2002 by The McGraw-Hill Companies, Inc. All rights reserved.

9-44

GDP Per Capita

- GDP Per Capita is GDP divided by the size of the population: it is equal to the average GDP per person.
- Not an end in itself does not address how a country uses that output to affect living standards.

Per Capita GDP

$$\text{Per capita GDP} = \frac{\text{GDP}}{\text{Population}}$$

Copyright ©2002 by The McGraw-Hill Companies, Inc. All rights reserved.

9-46

Per Capita GDP

$$\text{Per capita GDP}_{2000} = \frac{\text{GDP}_{2000}}{\text{Population}_{2000}}$$

Copyright ©2002 by The McGraw-Hill Companies, Inc. All rights reserved.

9-47

Per Capita GDP

$$\text{Per capita GDP}_{2000} = \frac{\text{GDP}_{2000}}{\text{Population}_{2000}}$$

$$\text{Per capita GDP} = \frac{\$9,966,000,000,000}{281,000,000}$$

Copyright ©2002 by The McGraw-Hill Companies, Inc. All rights reserved.

9-48

Per Capita GDP

$$\text{Per capita GDP}_{2000} = \frac{\text{GDP}_{2000}}{\text{Population}_{2000}}$$

$$\text{Per capita GDP}_{2000} = \frac{\$9,966,000,000,000}{281,000,000}$$

$$\text{Per capita GDP}_{2000} = \$35,466$$

Copyright ©2002 by The McGraw-Hill Companies, Inc. All rights reserved.

9-49

Per Capita Real GDP

To compare per capita GDP in one year with that of another year we have to correct for inflation. In other words, we really need to revise our formula

$$\text{Per capita real GDP} = \frac{\text{Real GDP}}{\text{Population}}$$

Copyright ©2002 by The McGraw-Hill Companies, Inc. All rights reserved.

9-50

GDP Per Capita

- GDP Per Capita is GDP divided by the size of the population: it is equal to the average GDP per person.
- Not an end in itself does not address how a country uses that output to affect living standards.

GDP Measures Market Activity, Not Welfare

- GDP does not measure happiness, nor does it measure economic welfare.
- Welfare is a complicated idea, very difficult to measure.

GDP Measures Market Activity, Not Welfare

- GDP does not measure happiness, nor does it measure economic welfare.
- Welfare is a complicated idea, very difficult to measure.

Shortcomings of GDP as a Measure of National Economic Well-being

- **Production that is excluded**
 - Household production
 - Illegal production
 - The underground economy
- **Treatment of leisure time**
- **Human cost and benefits**
- **GDP gives us a ballpark idea of how much we produce, *not* necessarily how well off we are**

What Goes into GDP

- James Tobin and William Nordhaus:
A Measure of Economic Welfare

GDP

- The economic bads
- The regrettable necessities
- + Household, unreported, and illegal production

A Measure of Economic Welfare

Copyright ©2002 by The McGraw-Hill Companies, Inc. All rights reserved.

9-55

What Goes Into GDP

- When a large part of our production goes toward national defense, police protection, pollution control devices, repair and replacement of poorly made cars and appliances, and cleanups of oil spills, a large GDP is not a good indicator of how we're doing
- In general, the problem with using GDP as a measure of national economic well-being is that GDP is just one number, and no single number can possibly provide us with all of the information we need

Copyright ©2002 by The McGraw-Hill Companies, Inc. All rights reserved.

9-56

The Last Word on GDP

- GDP includes some things that really shouldn't be counted
- GDP has excluded some things that should be included
- If we can accept GDP, while acknowledging all of its limitations, it serves us well

Copyright ©2002 by The McGraw-Hill Companies, Inc. All rights reserved.

9-57
