



National-Income Accounting

Part I

Nothing is more destructive than the gap between people's perceptions of their own day-to-day economic well-being and what politicians and statisticians are telling them about the economy.

Nicolas Sarkozy



Measures of Output

National-income accounting refers to the measurement of aggregate economic activity, particularly national income and its components.



Gross Domestic Product (GDP)

Gross domestic product (GDP) is the total dollar value of final output produced within a nation's borders in a given time period.



Gross Domestic Product (GDP)

- Each good and service produced and brought to market has a price.
- That price serves as a measure of value for calculating total output.



Table: The Measurement of Output

Output

Amount

Last Year's Output

In physical terms

Oranges 2 billion

Bicycles 2 million

Rock concerts 700

Total ?

In monetary terms

2 billion oranges @ \$0.20 each \$ 400 million

2 million bicycles @ \$50 each 100 million

700 rock concerts @ \$1 million each 700 million

Total \$1200 million



Table: The Measurement of Output

Output

Amount

This Year's Output

In physical terms

Oranges	3 billion
Bicycles	4 million
Rock concerts	<u>600</u>
Total	?

In monetary terms

3 billion oranges @ \$0.20 each	\$ 600 million
4 million bicycles @ \$50 each	200 million
600 rock concerts @ \$1 million each	<u>600 million</u>
Total	\$1400 million



GDP Versus GNP

- **Gross National Product (GNP)** refers to output produced by American-owned factors regardless of location.
- **GDP** refers to output produced within America's borders.



GDP Versus GNP

GDP is geographically focused, including all output produced within a nation's borders regardless of whose factors of production are used to produce it.



International Comparisons

The geographic focus of GDP facilitates international comparisons of economic activity.



GDP per Capita

- **GDP per capita** is total GDP divided by total population – average GDP.
- GDP per capita is commonly used as a measure of a country's standard of living.



GDP per Capita

Measures of per capita GDP tell us nothing about the way GDP is actually distributed or used – they are only a statistical average.



Measurement Problems

The methods of calculating GDP create a few problems.



Non-Market Activities

- GDP measures exclude most goods and services produced that are not sold in the market.
- Exclusion of non-market activities causes problems when comparing living standards over time or between countries.



Unreported Income

- The GDP statistics fail to capture market activities that are not reported to tax or census authorities.
- The **underground economy** is motivated by tax avoidance or to conceal illegal activities.



Value Added

- The production of most goods and services involves a series of stages.
- To accurately measure GDP we must distinguish intermediate goods from final goods.



Value Added

- **Intermediate goods** are goods or services purchased for use as input in the production of final goods or services.
- **Value added** is the increase in the market value of a product that takes place at each stage of the production process.



Table: Value Added in Various Stages of Production

Stages of Production	Value of Transactions	Value Added
1. Farmer grows wheat, sells it to miller	\$0.12	\$0.12
2. Miller converts wheat to flour, sells it to baker	0.28	0.16
3. Baker bakes bagel, sells it to bagel store	0.60	0.32
4. Bagel store sells bagel to consumer	0.75	0.15
Total	\$1.75	\$0.75



Two Ways to Calculate GDP

- Compute the value of the *final* output.
- Count only the *value added* at each stage of production.



Real Versus Nominal GDP

Distinguishing increases in quantity from increases in prices is done by distinguishing between real GDP and nominal GDP.



Real Versus Nominal GDP

- **Nominal GDP** is the value of final output produced in a given period, measured in the prices of that period.
- **Real GDP** is the value of final output produced in a given period, adjusted for changing prices.



Real Versus Nominal GDP

The distinction between nominal and real GDP is important whenever the price level changes.



Computing Real GDP

- The **base period** is the time period used for comparative analysis.
- It is the basis for the indexing of price changes.



Computing Real GDP

The general formula for computing real GDP is:

$$\text{Real GDP in year } t = \frac{\text{nominal GDP in year } t}{\text{price index}}$$

$$\text{Real GDP in 2002} = \frac{\$10,481 \text{ billion}}{\frac{101.5}{100}} = \$10,326 \text{ billion}$$

(2001 prices)



Table: Computing Real GDP

	2001	2002
1. Nominal GDP (in billions)	\$10,101	\$10,481
2. Change in nominal GDP		+ \$380
3. Change in the price level, 2001 to 2002		1.5%
4. Real GDP in 2001 dollars	\$10,101	\$10,326
5. Change in real GDP		+ \$225

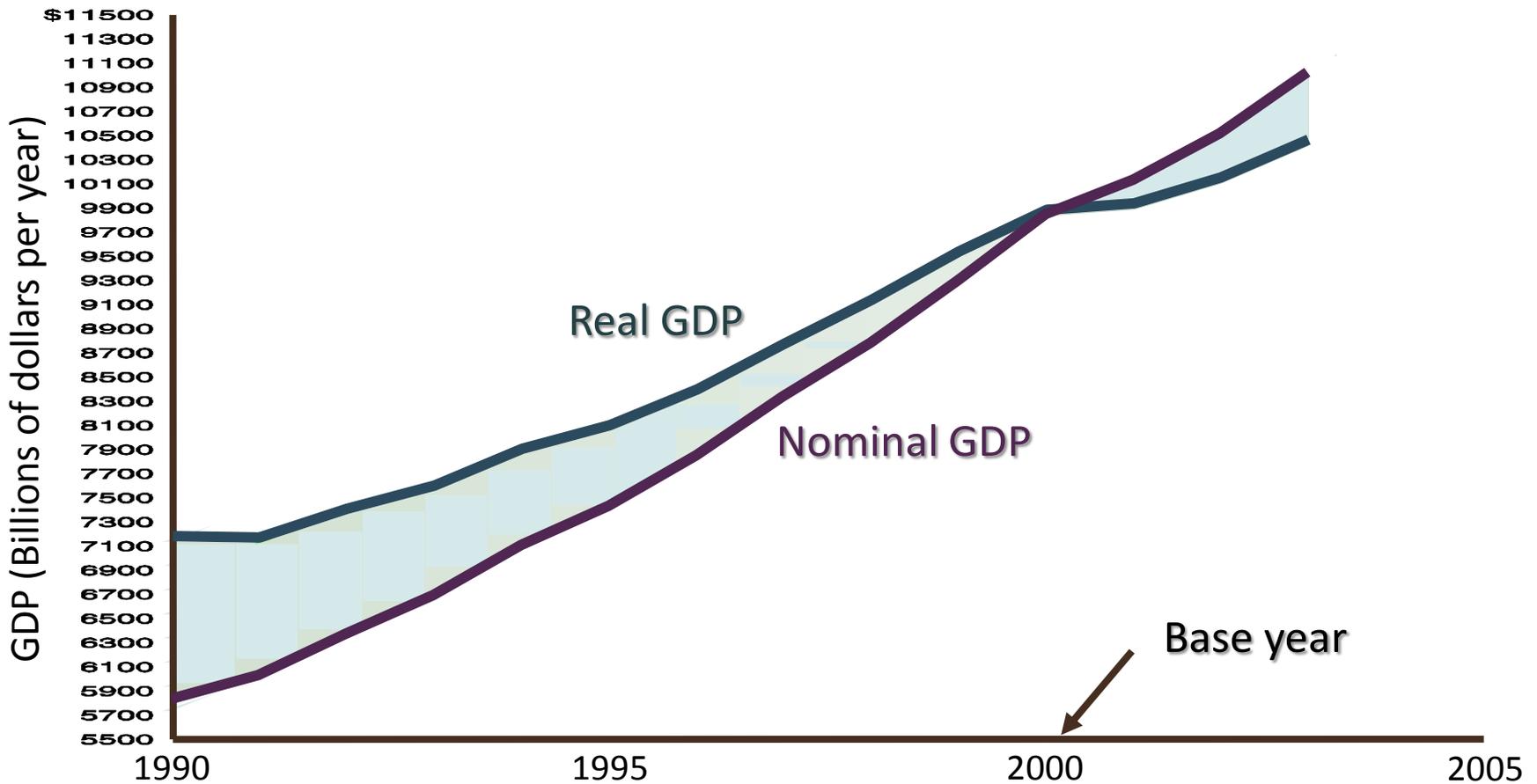


Computing Real GDP

- Inflation tends to obscure actual declines in real output.
- **Inflation** is the increase in the average level of prices of goods and services.



Chart: Changes in GDP: Nominal Versus Real





Chain-Weighted Price Adjustments

Chain-weighted indices use a moving average of price levels in consecutive years as an inflation adjustment.



Continued in National-Income Accounting Part II

