

Introduction to Macroeconomics

ECO1102 Section B, Fall 2011
(Lecture #2, Sept. 13)

Chapter 5: Measuring a Nation's Income

Key objective:

- Discuss some of the data that economists and policy makers use to monitor the performance of an economy, for example, how “rich” is a country.

Gross Domestic Product (GDP)

Definition:

- GDP is the market value of all final goods and services produced within a country in a given period of time (loosely speaking, it is how much a country is producing).
- Statistics Canada releases data on national and provincial GDP every three months.

The Measurement of GDP

From the definition of GDP

- “GDP is the Market Value”
- “. . . Of All Final”
- “. . . Goods and Services”

The Measurement of GDP (cont.)

- “. . . Produced . . .”
- “. . . Within a Country . . .”
- “. . . In a Given Period of Time.”

The Components of GDP

- GDP includes all items produced in the economy and sold *legally* in markets.
- What Is Not Counted in GDP?

- GDP (Y) is the sum of the following:
 - Consumption (C)
 - Investment (I)
 - Government Purchases (G)
 - Net Exports (NX)

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

The Components of GDP (cont.)

- *Consumption (C)*:
 - The spending by households on goods and services, with the exception of purchases of new housing.
- *Investment (I)*:
 - The spending on capital equipment, inventories, and structures, including new housing.
- *Government Purchases (G)*:
 - The spending on goods and services by local, state, and federal governments.
 - Does *not* include transfer payments (e.g., welfare, old age pension) because they are not made in exchange for currently produced goods or services.
- *Net Exports (NX)*:
 - Exports minus imports.

GDP Measures both Income and Expenditure

Note:

- GDP measures two things at once
 - Total income of everyone in the economy
 - Total expenditure on the economy's output of goods and services
- For an economy as a whole, income must equal expenditure because:
 - Every transaction has a buyer and a seller.
 - Every dollar of spending by some buyer is a dollar of income for some seller.

Canadian GDP and Its Components, 2008

(Table 5.1, p.105)

	billions	% of GDP	per person
Y	\$1,600	100.0	\$48,009
C	891	56	26,735
I	371	23	11,132
G	314	20	9,422
NX	25	1	700

Examples—What Is the Impact on GDP?

- A.** Debbie spends \$200 to buy her husband dinner
- B.** Sarah spends \$1800 on a new laptop to use in her publishing business. The laptop was built in China.
- C.** General Motors builds \$500 million worth of cars, but consumers only buy \$470 million of them.
- D.** Jane spends \$1200 on a computer to use in her editing business. She got last year's model on sale for a great price from a local manufacturer.

Real vs Nominal GDP

- If GDP rises from one year to the next, one of two things must be true
 - The economy is producing more goods and services
 - Goods and services are being sold at higher prices
- ***Nominal GDP*** values the production of goods and services at *current prices*.
- ***Real GDP*** values the production of goods and services at constant prices (that is, it ignores price increases).

Real vs Nominal GDP

- *Real GDP* is really the accurate measure of how much a country produced and of its standard of living.

Example: Suppose all prices and incomes were to double tomorrow. Would you be richer?

- An accurate view of the economy's performance (that is, how much is being produced) therefore requires adjusting nominal GDP to take into account price increases.
- This is done by using the *GDP deflator*.
- Correcting nominal GDP for changes in prices using the GDP deflator yields *real GDP*.

The GDP Deflator

- The *GDP deflator* is a measure of the price level.
- It tells us the rise in nominal GDP that is attributable to a rise in prices rather than a rise in the quantities produced. It is calculated as

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

- Note that given nominal GDP and the GDP deflator, one can calculate real GDP as

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

Example: Real and Nominal GDP

Suppose an economy where only two goods are produced:

year	Pizza		Latte	
	<i>P</i>	<i>Q</i>	<i>P</i>	<i>Q</i>
2008	\$10	400	\$2.00	1000
2009	\$11	500	\$2.50	1100
2010	\$12	600	\$3.00	1200

Compute nominal GDP in each year:

Increase:

2008:

2009:

2010:

Example: Real and Nominal GDP (cont)

Suppose an economy where only two goods are produced:

year	Pizza		Latte	
	<i>P</i>	<i>Q</i>	<i>P</i>	<i>Q</i>
2008	\$10	400	\$2.00	1000
2009	\$11	500	\$2.50	1100
2010	\$12	600	\$3.00	1200

Compute real GDP at 2008 prices :

Increase:

2008:

2009:

2010:

Real GDP

- The change in real GDP is the amount that GDP would change if prices were constant (*i.e.*, if zero inflation).

Example: Real and Nominal GDP (cont)

GDP deflator = $100 \times (\text{Nominal GDP} / \text{Real GDP})$

year	Nominal GDP	Real GDP	GDP Deflator	Change in GDP Deflator: Measure of Inflation
2008	\$6000	\$6000		
2009	\$8250	\$7200		
2010	\$10,800	\$8400		

Compute the GDP deflator in each year:

2008:

2009:

2010:

Example:
MKMR,
p. 119, #6

6. Consider the following data on Canadian GDP:

Year	Nominal GDP (in billions)	GDP Deflator (base year 2002)
2009	1600	118
2008	1520	121

- What was the growth rate of nominal GDP between 2008 and 2009? (Note: The growth rate is the percentage change from one period to the next.)
- What was the growth rate of the GDP deflator between 2008 and 2009?
- What was real GDP in 2008 measured in 2002 prices?
- What was real GDP in 2009 measured in 2002 prices?
- What was the growth rate of real GDP between 2008 and 2009?
- Was the growth rate of nominal GDP higher or lower than the growth rate of real GDP? Explain.