Chapter 20

Measuring GDP and Economic Growth

Gross Domestic Product

- **GDP** or **Gross domestic product** is the market value of all the final goods and services produced within a country in a given time period.
- A **final good** (or service) is an item that is bought by its final user during a specified time period.
- An **intermediate good** (or service) is an item that is produced by one firm, bought by another firm, and used as a component of a final good or service.

- Study Figure 20.1 on p.469 of your textbook. This figure shows the circular flow of expenditure and income and gives the following information:

- The economy consists of:
  - Firms
  - Households
  - Governments
  - Rest of world

- Aggregate economic markets are:
  - Goods markets (goods and services)
  - Factor markets (productive resources)

- Define the following:
  - ***Y*** Income
  - ***C*** **Consumption expenditure**
  - ***I*** **Investment**
  - ***G*** **Government expenditures**
  - ***X*** **Exports**, **M** **Imports**
  - ***NX*** **Net exports** = **X** - **M**

- Let's summarize what the circular flow diagram tells us.
- Households:
  - Sell factor services to firms and receive incomes = *Y*
  - Spend *C* on goods and services

- Governments:
  - Spend *G* on goods and services

- The Rest of the World:
  - Spend *NX* on goods and services

- Firms:
  - Buy the services of factors of production from households and pay incomes *Y*
  - Produce goods and services, which they sell to households, *C,* governments, *G*, other firms (and themselves), *I*, and the rest of the world, *NX*.
  - ***Y = C + I + G + NX***

Measuring Canada's GDP

- Statistics Canada measures Canada's GDP in two ways:
  - Expenditure approach
  - Income approach

- Expenditure approach:
  - ***Y = C + I + G + NX***
- The table below shows Canada's GDP using the expenditure approach in 2008.

Item	Symbol	Amount in 2008 (billions of dollars)	Percentage of GDP
Personal expenditures on consumer goods and services	C	885	56.1
Business investment	I	304	19.3
Government expenditures on goods and services	G	357	22.6
Net exports of goods and services	X – M	32	2.0
Gross domestic product	Y	1,578	100.0

- Income approach:
  - Sums incomes paid by firms to households
  - Wages, salaries, and supplementary labour income + Corporate profits + Interest and miscellaneous investment income + Farmers' income + Income from non-farm unincorporated businesses = Net domestic income at factor cost
  - Net domestic income at factor cost + Indirect taxes **-** Subsidies = Net domestic product at market prices
  - Net domestic product at market prices+ depreciation = GDP

- The table below shows Canada's GDP using the income approach in 2008.

Item	Amount in 2008 (billions of dollars)	Percentage of GDP
Wages, salaries, and supplementary labour income	815	51.6
Corporate profits	226	14.3
Interest and miscellaneous investment income	75	4.7
Farmers' income	1	0.1
Income from non-farm unincorporated businesses	93	5.9
Indirect taxes less subsidies	165	10.5
Capital consumption (depreciation)	202	12.8
Statistical discrepancy	1	0.1
Gross domestic product	1,578	100.0

Nominal GDP and Real GDP

- Because GDP in 2008 was greater than in 2007, we know that one or two things must have happened during 2008:
  - We produced more goods and services in 2008 than in 2007
  - We paid higher prices for our goods and services in 2008 than we paid in 2007

- Economists at Statistics Canada split GDP into two parts.
- One part tells us the change in production, and the other part tells us the change in prices.

- **Real GDP** is the value of final goods and services produced in a given year when valued at constant prices.
- By comparing the value of the goods and services produced at constant prices, we can measure the change in the volume of production.
- **Nominal GDP** is the value of the final goods and services produced in a given year valued at the prices that prevailed in that same year.

- The table below gives GDP data for 2007 for an economy that produces only two goods.

Item	Quantity	Price
Balls	100	$1.00
Bats	20	$5.00

- Nominal GDP in 2007 is $200 (the sum of the expenditures on balls and bats).
- The table below gives GDP data for 2008.

Item	Quantity	Price
Balls	160	$0.50
Bats	22	$22.50

- Nominal GDP in 2008 is $575.
- To calculate real GDP, we choose one year, called the base year, against which to compare the other years.
- The traditional method of calculating real GDP values the quantities produced in each year at the prices of the base year. (We are going to choose 2007 as the base year.)
- The table below shows the prices in 2007 and the quantities in 2008.

Item	Quantity	Price
Balls	160	$1.00
Bats	22	$5.00

- Using the traditional method, real GDP in 2008 is $270.

- The appendix to this chapter shows how to calculate the chained-dollar real GDP, which is the new method of calculating real GDP, uses the prices of two adjacent years to calculate the real GDP growth rate.

- To find the real GDP growth rate in 2008, we compare the quantities produced in 2007 and 2008 by using both the 2007 prices and the 2008 prices.
- We then average the two sets of numbers in a special way.
- First we need to calculate the value of 2007 quantities at 2008 prices.
- The table summarizes these quantities and prices.

Item	Quantity	Price
Balls	100	$0.50
Bats	20	$22.50

- The value of the 2007 quantities at the 2008 prices is $500.
- At the 2007 prices, the value of production increased from $200 in 2007 to $270 in 2008, and the percentage increase is 35 percent.

- At the 2008 prices, the value of production increased from $500 in 2007 to $575 in 2008, and the percentage increase is 15 percent.
- Taking the average of these two percentage increases, real GDP is 25 percent greater in 2008 than in 2007.
- Real GDP in 2007 is $200, so real GDP in 2008 is $250.

The Uses and Limitations of Real GDP

- When all the economy's labour, capital, land, and entrepreneurial ability are fully employed, the value of production is called **potential GDP**.
- Real GDP fluctuates around potential GDP and the rate of long-term economic growth is measured by the growth rate of potential GDP.

- The growth rate of output per person sagged from the mid-1970s to the mid-1990s in a phenomenon called the productivity growth slowdown.

- A *business cycle* is the periodic but irregular up-and-down movement in economic activity.
- It is measured by fluctuations of real GDP around potential GDP.

- Every business cycle has two turning points:
  - Peak
  - Trough
- And every business cycle has two phases:
  - Recession
  - Expansion

- A **recession** is a period during which real GDP decreases—the growth rate of real GDP is negative—for at least two successive quarters.
- An **expansion** is a period during which real GDP increases.
- A **peak** is an upper turning point where an expansion ends and a recession begins.
- A **trough** is a lower turning point where a recession ends and an expansion begins.
- A slowdown in the growth rate of real GDP but with the growth rate *not* becoming negative for two quarters is called a growth recession.

- We use the Lucas wedge to calculate how costly are growth slowdowns and lost output over the business cycle.

- The **Lucas wedge** is the accumulated loss of output that results from a slowdown in the growth rate of real GDP per person.

- We compare the standard of living over time by calculating real GDP per person in different years.
- Some of the factors that influence the standard of living and that are not part of GDP are:
    - Household production
    - Underground economic activity
    - Health and life expectancy
    - Leisure time
    - Environment quality
    - Political freedom and social justice

- Two special problems arise in making international comparisons of economic welfare.
- First, the real GDP of one country must be converted into the same currency units as the real GDP of the other country.
- Second, the same prices must be used to value the goods and services in the countries being compared.

- An example of a problem with international comparisons occurs when we look at the economy of China.
- According to the official statistics of the International Monetary Fund and the World Bank, China is a poor developing country.
- If we use data based on purchasing power parity prices (we value all the goods and services produced in China at the prices prevailing in Canada), then China's real GDP is more than 6 times the official view.
- Some scholars think that even the official numbers are too big, so there is much uncertainty about China's real GDP.
- Regardless of the inaccuracies in real GDP measurement, the growth rate of real GDP gives a good indication of the phases of the business cycle.