Chapter 2
A Tour of the Book

1.   True/False/Uncertain

   a.   False.

   b.   Uncertain: the question should specify either real or nominal GDP.

   c.   True.

   d.   True.

   e.   False. The level of the CPI means nothing. Its rate of change tells us about inflation.

   f.   Uncertain. Which index is better depends on what we are trying to measure—inflation faced by consumers or inflation in the economy as a whole.

2.   GDP and Its Components

   a.   +$100; Personal Consumption Expenditures

   b.   no change: intermediate good

   c.   +$200 million; Gross Private Domestic Fixed Investment

   d.   +$200 million; Net Exports

   e.   no change: the jet was already counted when it was produced, i.e., presumably when WestJet (or some other airline) bought it new as an investment.

3.   Measured versus True GDP

   a.   Measured GDP increases by $10+$12=$22. (Strictly, this involves mixing the final goods and income approaches to GDP. Assume here that the $12 per hour of work creates a final good worth $12.)

   b.   True GDP should increase by much less than $22 because by working for an extra hour, you are no longer producing the work of cooking within the house. Since cooking within the house is a final service, it should count as part of GDP. Unfortunately, it is hard to measure the value of work within the home, which is why measured GDP does not include it.

4.   Measuring GDP

        i. $1,000,000 the value of the silver necklaces.

        ii.   Value added at the silver mine (the 1st Stage): $300,000.
                at the second stage value added is $1,000,00-$300,000=$700,000.
                GDP: $300,000+$700,000=$1,000,000.

        iii.   Wages: $200,000 + $250,000=$450,000.
                Profits: ($300,000-$200,000)+($1,000,000-$250,000-300,000)
                =$100,000+$450,000=$550,000.
                GDP: $450,000 (wages) + $550,000 (profits) =$1,000,000.

5.   Nominal and Real GDP

        a.   1998 GDP: 10*$2,000+4*$1,000+1000*$1=$25,000
                1999 GDP: 12*$3,000+6*$500+1000*$1=$40,000
                Nominal GDP has increased by 60%.

        b.   1998 real (1998) GDP: $25,000
                1999 real (1999) GDP: 12*$2,000+6*$1,000+1000*$1=$31,000
                Real (1999) GDP has increased by 24%.

        c.   1998 real (1998) GDP: 10*$3,000+4*$500+1,000*$1=$33,000
                1999 real (1999) GDP: $40,000.
                Real (1999) GDP has increased by 21.2%.

        d.   The answers measure real GDP growth in different units. The growth rate does
                depend on the year used as base year. The statement is true as is clear from the
                answers to part (b) and part (c). Neither answer is more correct, they are just
                different. As explained in the appendix, the solution is chain-weighted measures
                of real GDP.

6.   The GDP Deflator

        a.   1998 base year:
                Deflator(1998)=1; Deflator(1999)=$40,000/$31,000=1.29
                Inflation=29%

        b.   1999 base year:
                Deflator(1998)=$25,000/$33,000=0.76; Deflator(1999)=1
                Inflation=(1-0.76)/0.76=.32=32%

        c.   Analogous to 5d in that the choice of base year does change the rate of inflation.
                Intuitively, since production proportions for different products in the base years
                are different, the weights of goods in the price indexes are different.

7.   The Unemployment Rate

      a.   the labour force is the employed + the unemployed who are searching = 14 + 2 = 16 million

      b.   the participation rate is 16/18 = 88.8%

      c.   the unemployment rate 2/16 = 12.5%

      d.   it would be 3.5/17.5= 20%

8.   Chain-Type Indexes

      a.   1998 real GDP = 10*$2,500 + 4*$750 + 1000*$1 = $29,000
            1999 real GDP = 12*$2,500 + 6*$750 + 1000*$1 = $35,500

      b.   (35,500-29,000)/29,000 = .224 = 22.4%

      c.   Deflator in 1998=$25,000/$29,000=.86
            Deflator in 1999=$40,000/$35,500=1.13
            Inflation = (1.13 -.86)/.86 = .314 = 31.4%.

      d.   Yes, see appendix for further discussion.

9.   Using the Web to Get the Most Recent GDP Information

Answers will vary depending on the website that is accessed.

MACROECONOMICS

Fifth Canadian Edition

OLIVIER BLANCHARD | DAVID R. JOHNSON

Chapter 2
A Tour of the Book

- Output, unemployment and inflation.
- Short, Medium and Long run.

A Tour of the Book

GDP, Value Added, and Income

Gross domestic product (GDP)

- Measure of aggregate output in the national income accounts.

Three ways of thinking about an economy's GDP.

1. GDP Is the Value of the Final Goods and Services Produced in the Economy during a Given Period.
2. GDP Is the Sum of Value Added in the Economy during a Given Period.
3. GDP Is the Sum of Incomes in the Economy during a Given Period.

A Tour of the Book

2-1 | Aggregate Output

1. GDP Is the Value of the Final Goods and Services Produced in the Economy during a Given Period.

Suppose that the economy is composed of just two firms.

- Firm 1 produces steel, employing workers and using machines. It sells the steel for $100 to Firm 2, which produces cars. Firm 1 pays its workers $80 and keeps what remains, $20, as profit.

- Firm 2 buys the steel and uses it, together with workers and machines, to produce cars. Revenues from car sales are $210. Of the $210, $100 goes to pay for steel and $70 goes to workers in the firm, leaving $40 in profit.

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2-1 | Aggregate Output

Steel Company		
Revenues from sales		$100
Expenses (Wages)		$80
Profit		$20

Car Company		
Revenues from sales		$210
Expenses		$170
Wages	$70	
Steel Purchase	$100	
Profit		$40

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What is GDP in this economy?

- It is the value of the production of final goods:

  - GDP in this economy: $210.

    - Steel is an intermediate good , a good used in the production of the final goods, cars, and thus should not be counted in GDP.

A Tour of the Book

2-1 | Aggregate Output

2. GDP Is the Sum of Value Added in the Economy during a Given Period.

The value added by a firm in the production process is defined as the value of its production minus the value of the intermediate goods it uses in production.

- Steel company does not use intermediate goods.
  - Value added: $100.
- Car company: value of the cars it produces minus the value of the steel it uses in production.
  - Value added: $210 - $100 = $110.

- GDP in this economy: $100 + $110 = $210.

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2-1 | Aggregate Output

3. GDP Is the Sum of Incomes in the Economy during a Given Period.

GDP from the income side: labour income (wages), capital income (profits and interest) and indirect taxes.

- Steel company: $100
    - Wages: $80
    - Profits: $20
- Car company: $110
    - Wages: $70
    - Profits: $40

- GDP in this economy: $150 + $60 = $210.

A Tour of the Book

2-1 | Aggregate Output

TABLE 2–1	The Composition of Canadian GDP by Type of Income, 1981 and 2012.	
	1981	**2012**
Labour income	63%	60%
Capital income	14%	16%
Depreciation	13%	14%
Indirect taxes	10%	10%

Source: Data from Gross domestic product, chained 2002 dollars, using CANSIM II variable V3850085; gross domestic product, 1997 constant prices, using CANSIM II variable V3862685; gross domestic product, 1992, constant prices, using CANSIM II variable V646962.

A Tour of the Book

2-1 | Aggregate Output

Three different but equivalent ways:

From the output side:

1. GDP is equal to the value of the final goods and services produced in the economy during a given period.

2. GDP is the sum of value added in the economy during a given period.

From the income side

3. GDP is the sum of incomes in the economy during a given period.

Nominal and Real GDP

Nominal GDP

- The sum of the quantities of final goods produced times their current price.
  - Nominal GDP increases over time due to price and or production increases.

Real GDP

- The sum of the quantities of final goods times constant (rather than current) prices.

A Tour of the Book

2-1 | Aggregate Output

Year	Quantity of Cars	Price of Cars	Nominal GDP
2006	10	$10,000	$100,000
2007	12	$12,000	$144,000
2007	13	$13,000	$169,000

➤ To calculate real GDP, let 2007 be the *base year*.

Year	Quantity of Cars	Price of Cars	Real GDP in *2007 dollars*
2006	10	$12,000	$120,000
2007	12	$12,000	$144,000
2007	13	$12,000	$156,000

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2-1 | Aggregate Output

- Nominal GDP goes up from $100,000 in 2006 to $144,000 in 2007, a 44% increase, and from $144,000 in 2007 to $169,000 in 2008, a 16% increase.

- Real GDP in 2007 dollars increases by 20% from 2006 to 2007 and by 8% from 2007 to 2008.

  - If we had decided to measure real GDP in 2008 prices, the level of real GDP would be but its increase from year to year would be the same as above.

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➤ Nominal GDP

➤ Dollar GDP

➤ GDP in current dollars.

➤ Real GDP

➤ GDP in terms of goods,

➤ GDP in constant dollars,

➤ GDP adjusted for inflation,

➤ GDP in 2007 dollars.

2-1 | Aggregate Output
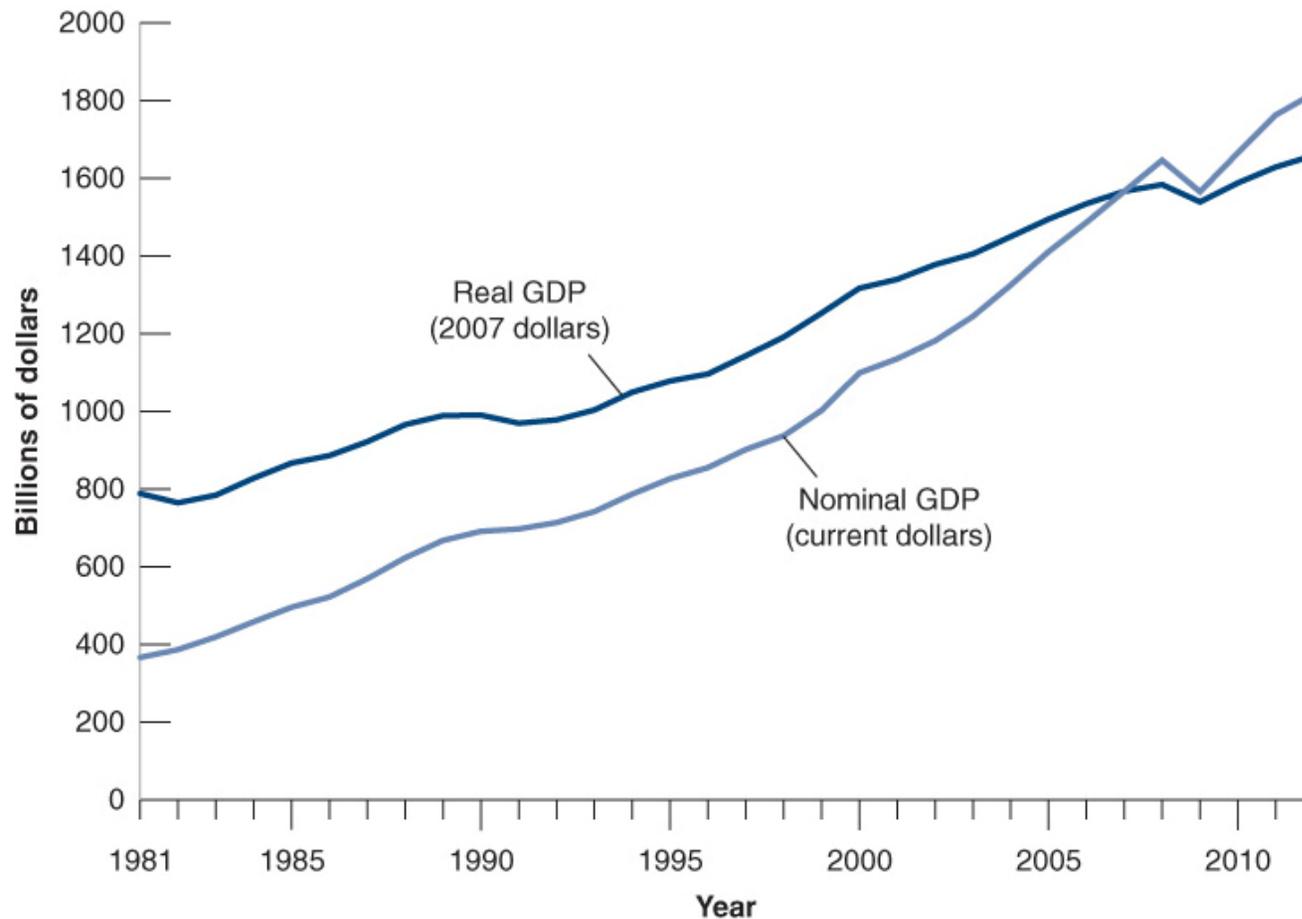
FIGURE 2–1

Nominal and Real GDP in Canada, 1981–2012

From 1981 to 2012, nominal GDP increased by a factor of 5. Real GDP increased by a factor of 2.1.

Source: Data from Real GDP, CANSIM II variable; nominal GDP, CANSIM II variable.

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Y_t: GDP (output) in year t

Rate of output growth:

$$\frac{Y_t - Y_{t-1}}{Y_{t-1}}$$

- rate of growth > 0: expansion
- rate of growth < 0: recession

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The Unemployment Rate

$$u = \frac{U}{L} \cdot 100$$

Unemployment rate = Unemployed / Labor Force

$$L = N + U$$

Labor Force = Employed + Unemployed

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Labour Force Survey (LFS)

- Large survey of Canadian households to compute the unemployment rate.

  - Interviews of 60,000 households every month.

  - Unemployed: is a person does not have a job and has been looking for work in the last four weeks.

In Canada (2012):

  - On average, 17.3 million people were employed and 1.4 million people were unemployed.

  - Unemployment rate was 7.5%.

A Tour of the Book

2-2 | The Other Major Macroeconomic Variables

- Unemployed: only those looking for work are counted.

  - Those not working and **not looking for work** are counted as not in the labour force.

  - **Discouraged workers**: when unemployment is high, some of those without jobs give up looking for work and therefore are no longer counted as unemployed.

- **Participation rate**: the ratio of the labour force to the total population of working-age persons.

  - A higher unemployment rate is typically associated with a lower.

  - 2012: the participation rate was 66.7% (a full percentage point lower than it was in 2008).

A Tour of the Book

Unemployment and Activity

Okun's law:

- High output growth → Unemployment rate ↓

    - High output growth leads to high employment growth, as firms hire more workers to produce more. High employment growth leads to a decrease in unemployment.

- Low output growth → Unemployment rate ↑

2-2 | The Other Major Macroeconomic Variables

FIGURE 2–2

Change in the Unemployment Rate versus GDP Growth, 1982–2012

High output growth is typically associated with a decrease in the unemployment rate. Conversely, low output growth is typically associated with an increase in the unemployment rate. The recessions in 1982, 1991, and 2009 are labelled.

Source: Data from GDP growth is percent change in real GDP using CANSIM II variable.
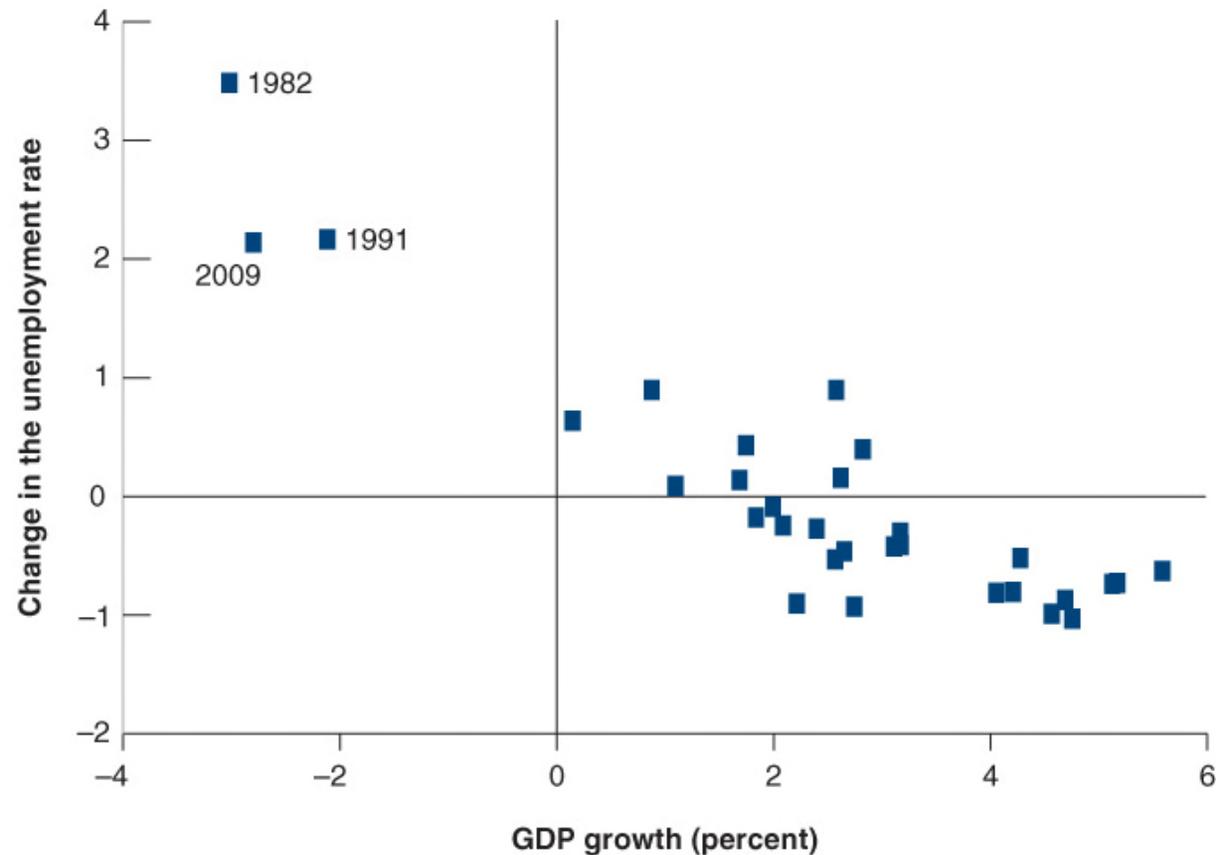
2-2 | The Other Major Macroeconomic Variables

Social Implications of Unemployment

- Financial and psychological suffering.

- Stagnant pool of people remaining unemployed for long periods of time.

  - Some groups (young, ethnic minorities, unskilled) suffer disproportionately from unemployment, remaining chronically unemployed and being most vulnerable to becoming unemployed when the unemployment rate increases.

The Inflation Rate

- Inflation: a sustained rise in the general level of prices (in the price level).

Two measures of the price level (price indexes):

1. GDP deflator

2. Consumer price index.

The GDP Deflator

- The ratio of nominal GDP to real GDP in year t:

$$P_t = \frac{Nominal\ GDPt}{Real\ GDPt} = \frac{\$Yt}{Y_t}$$

- The GDP deflator is an index number .

  - Base year: $P_t = 1$

- Rate of inflation: $\dfrac{P_t - Pt_{\_1}}{P_{t\_1}}$

Nominal GDP = GDP deflator X real GDP

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The Consumer Price Index

- The cost in dollars of a specific list of goods and services over time.

    - The list represents the consumption basket of a typical urban consumer.

    - The set of goods produced in the economy (GDP) is not the same as the set of goods bought by consumers.

    - CPI = Average price of consumption = the cost of living index.

    - Like the GDP deflator, the CPI is an index.

FIGURE 2–3

Canadian Inflation Rate, Using the CPI and the GDP Deflator, 1982–2012

The inflation rates, computed using either the CPI or the GDP deflator, are largely similar.

Source: Data from GDP deflator using CANSIM II variable; and consumer price index using CANSIM II variable.
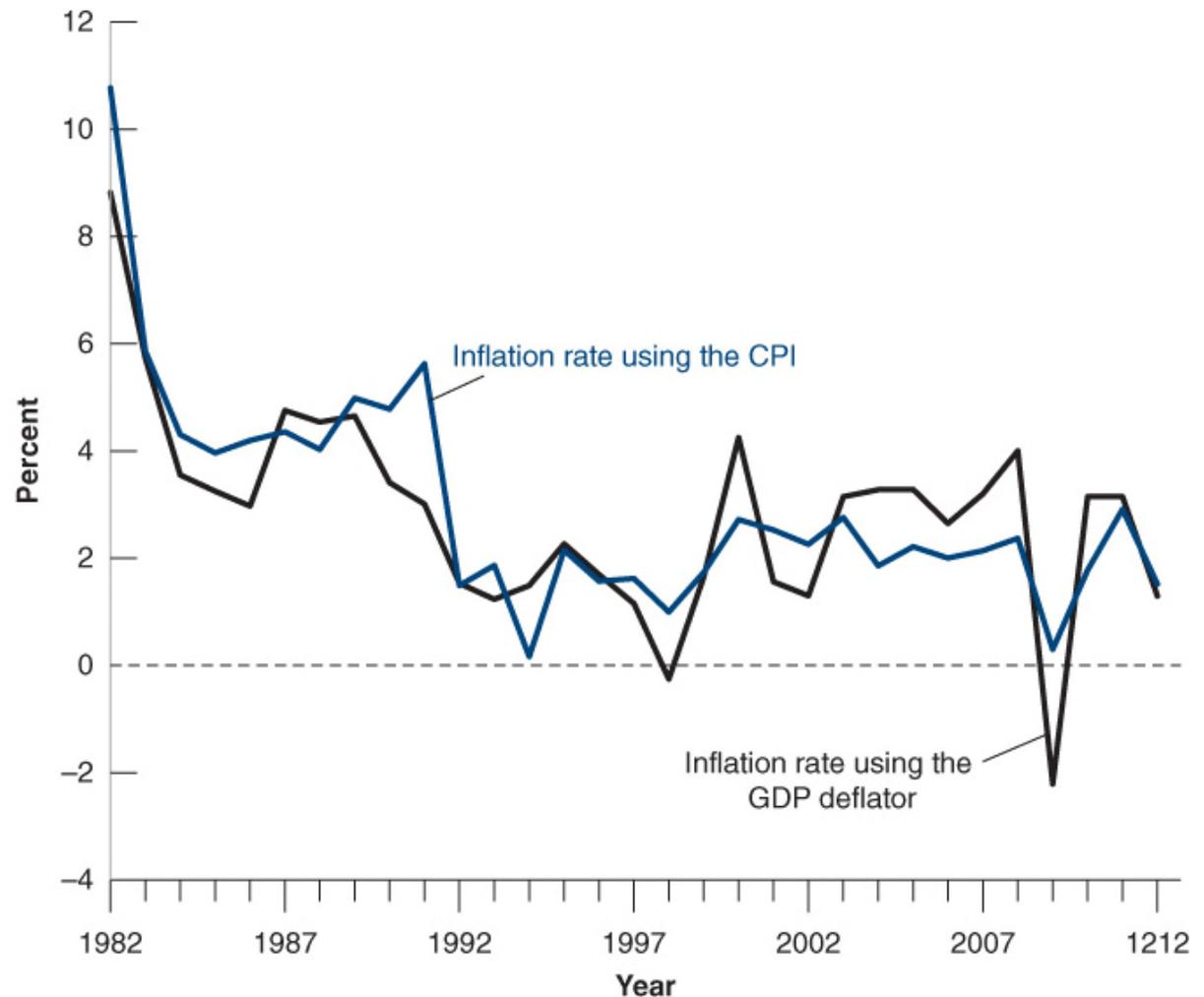
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GDP Deflator X Consumer Price Index

- ✓ The CPI and the GDP deflator move together most of the time.

  - ✓ In most years, the two inflation rates differ by less than 1%.

- ✓ The GDP deflator is the price of goods produced in Canada. The CPI is the price of goods consumed. These can be different goods.

  - ✓ A sharp decline in energy prices in 2009: GDP deflator inflation became negative while CPI inflation was zero.

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2-2 | The Other Major Macroeconomic Variables

Inflation and Unemployment

- Negative relation between the unemployment rate and the change in inflation.
    - When the unemployment rate is low, inflation tends to increase.
    - When the unemployment rate is high, inflation tends to decrease.

➢ This negative relation is called the Phillips relation.

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FIGURE 2-4

Change in the Canadian Inflation Rate versus the Canadian Unemployment Rate, 1976–2012

When the unemployment rate is low, inflation tends to increase. When the unemployment rate is high, inflation tends to decrease.

Source: Data from Inflation is the percent change in the CPI using CANSIM II variable; unemployment rate 1976 using CANSIM II variable.
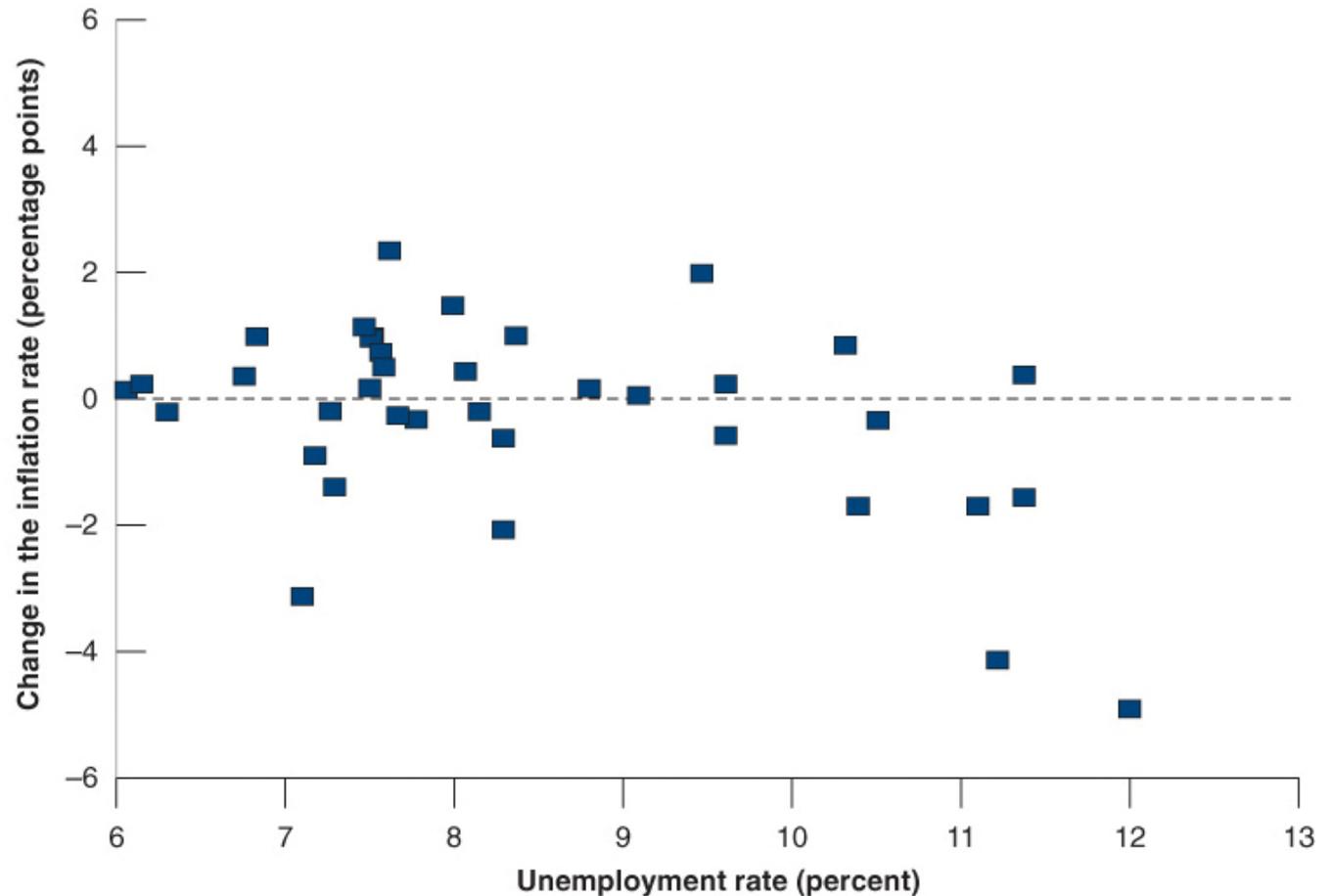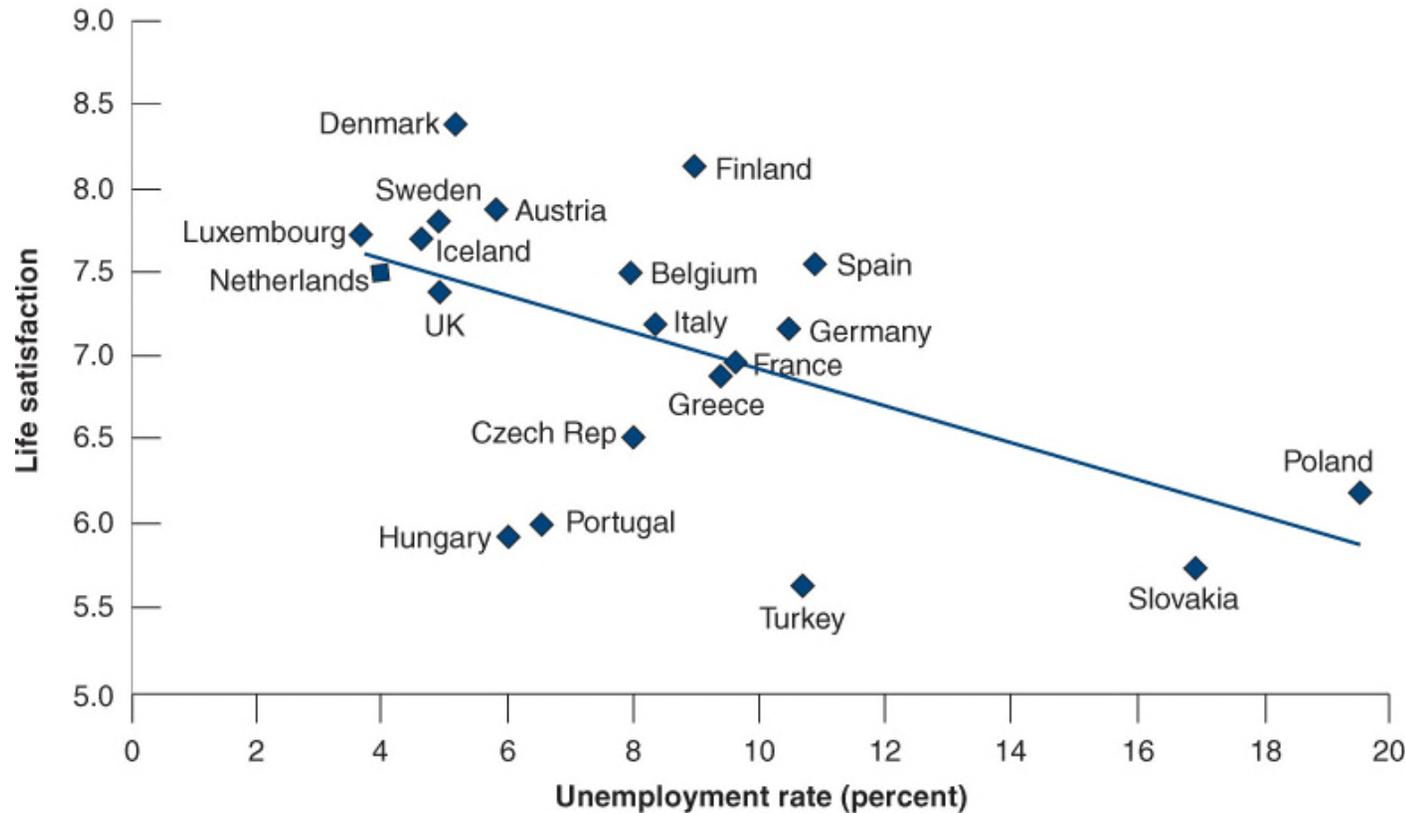
FIGURE 2-5

Unemployment and Life Satisfaction

The graph shows that there is a negative relationship between unemployment and life satisfaction for a sample of European countries in 2003. Life satisfaction and unemployment are measured in the same way across these countries.

Source: David G. Blanchflower, Figure 3 in "Is unemployment more costly than inflation?" National Bureau of Economic Research, Working Paper 13505, October 2007.

FIGURE 2–6

**Inflation and Life Satisfaction**

The graph shows that there is a negative relationship between inflation and life satisfaction for a sample of European countries in 2003. Life satisfaction and inflation are measured in the same way across these countries.

Source: David G. Blanchflower, Figure 4 in "Is unemployment more costly than inflation?" National Bureau of Economic Research, Working Paper 13505, October 2007.
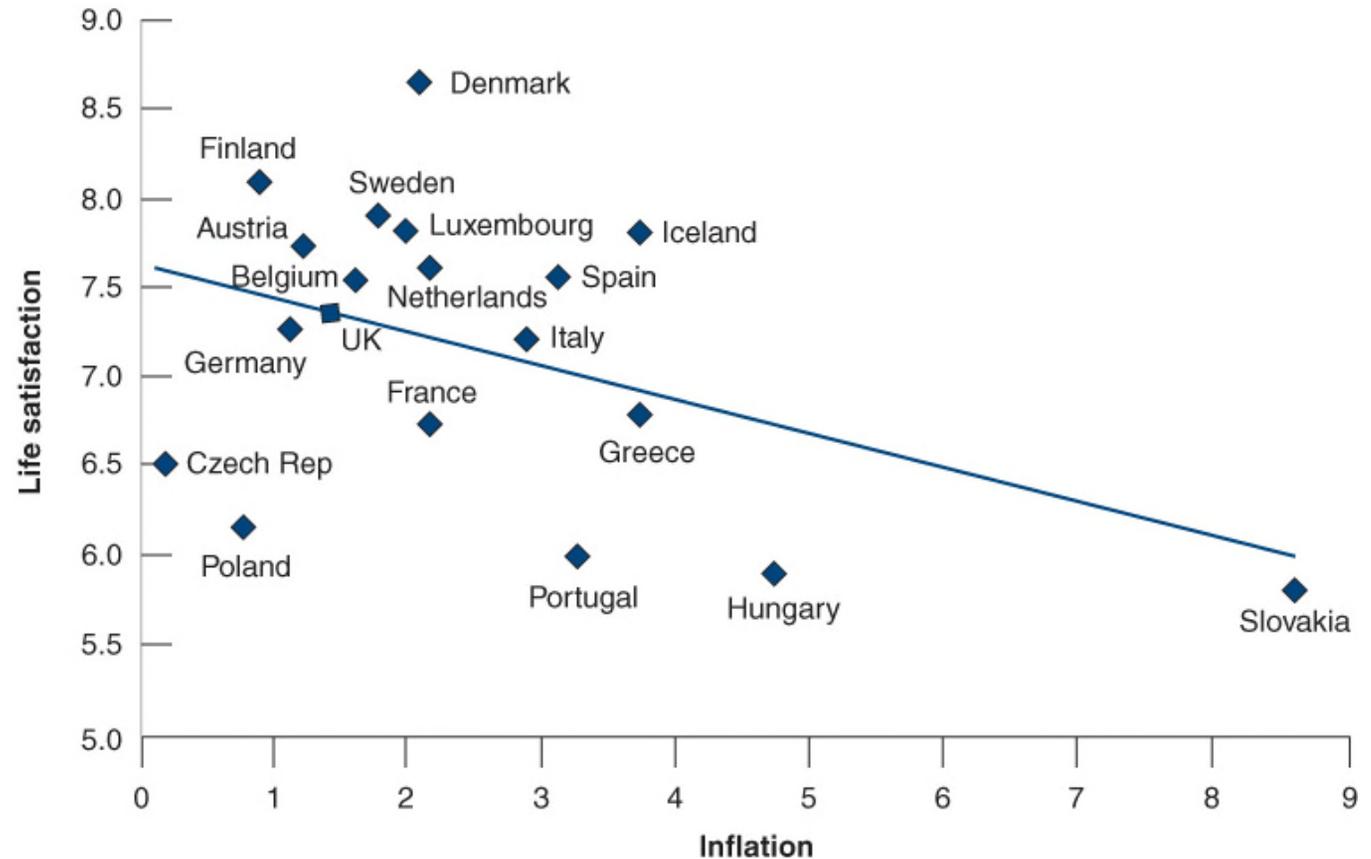
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Macroeconomic Policy Goals

1. Keep unemployment from being too high.

2. Keep inflation from becoming a problem.

3. Create conditions where output per person grow in the long run.

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What determines the level of aggregate output?

- Movements in output come from movements in the demand for goods.
- Fundamental determinants of the level of output: how advanced the technology of the country is, how much capital it is using, the size and the skills of its labour force.
- The true determinants of output: are such factors as the education system, the saving rate, and the quality of government.

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Determinants of output and different time periods

- **Short run**: a few years
  - Year-to-year movements in output are primarily driven by movements in demand.
- **Medium run**: a decade or two
  - The economy tends to return to the level of output determined by supply factors: the capital stock, technology, and the size of the labour force.
- **Long run**: from a decade to a century
  - Changes in the level of capital, level of technology, the saving rate, the education system, the role of government and demographic factors (birth-death rates, immigration policy).

A Tour of the Book

Summary

- Three equivalent ways to measure GDP

1. GDP is the value of the final goods and services produced in the economy during a given period;

2. GDP is the sum of value added in the economy during a given period; and

3. GDP is the sum of incomes in the economy during a given period.

  - Nominal GDP is equal to the sum of the quantities of final goods produced times their current prices. Real GDP is a measure of output.

A Tour of the Book

Summary

- Labour force: the sum of those employed and those unemployed.

- Unemployment rate: the ratio of the number of unemployed to the labour force.

  - A person is classified as unemployed if he or she does not have a job and has been looking for work in the last four weeks.

- Okun's law: output growth is negatively related to the unemployment rate.

A Tour of the Book

Summary

- Inflation is a rise in the general level of prices.

- GDP deflator: the average price of goods produced in the economy; Consumer price index (CPI): the average price of goods consumed in the economy.

- Phillips curve: the empirical relation between the change in the inflation rate and the unemployment.

- Inflation leads to changes in income distribution and increases distortions and uncertainty.

- There are costs to society associated with both inflation and unemployment.