

Jobs and unemployment

Objectives :

Define the unemployment rate and other labour market indicators.

Describe the trends and fluctuations in the indicators of labour market performance in Canada

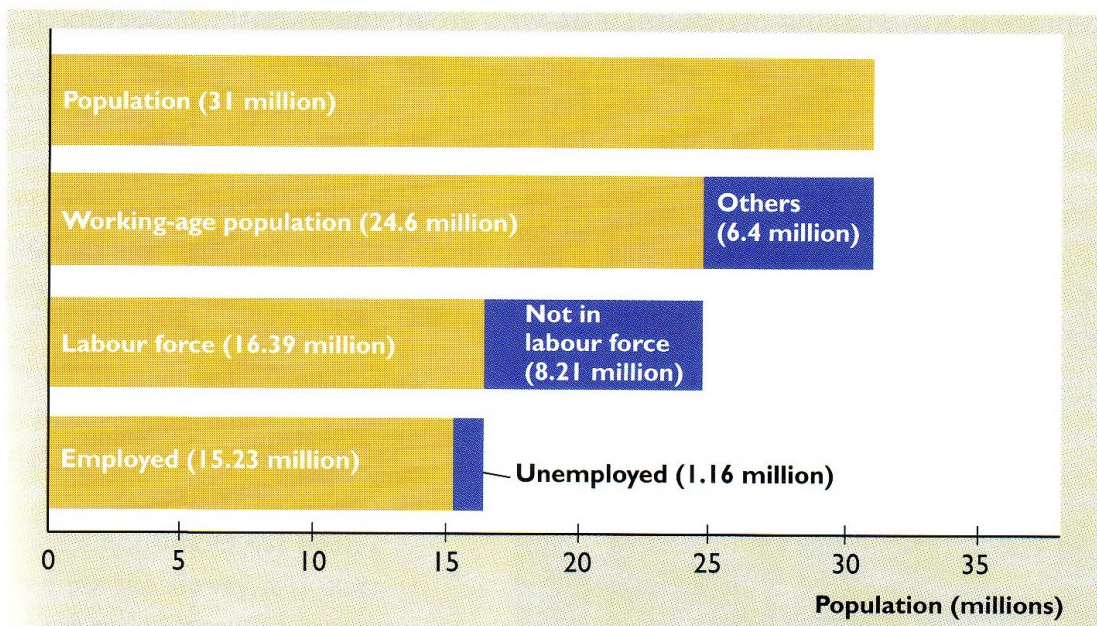
Describe the sources and types of unemployment, define full employment, and explain the link between unemployment and real GDP.

Labour market indicators.

The working-age population is the total number of people aged 15 years and over.

The labour force is the number of people employed plus the number unemployed.

Population Labour Force Categories



SOURCE: Statistics Canada.

Two main labour market indicators

The unemployment rate

The labour force participation

The unemployment rate is the percentage of the people in the labour force who are unemployed.

$$\begin{aligned}\text{Unemployment rate} &= \frac{\# \text{ of people unemployed}}{\text{Labour force}} \times 100 \\ &= \frac{1.16 \text{ million}}{16.39 \text{ million}} \times 100 \\ &= 7.1 \%\end{aligned}$$

The labour force participation rate is the percentage of the working-age population who are members of the labour force.

$$\begin{aligned}\text{Labour force participation rate} &= \frac{\text{Labour force}}{\text{Working-age population}} \times 100 \\ &= \frac{16.39 \text{ million}}{24.58 \text{ million}} \times 100 \\ &= 66.7 \%\end{aligned}$$

discouraged workers

A person who does not have a job, is available and willing to work but has not made specific efforts to find a job within the previous four weeks.

Part-time workers

Full-time workers are those who usually work 30 hours or more a week.

Part-time workers are those who usually work less than 30 hours.

Part-time workers are divided into two groups: voluntary part-time and involuntary part-time worker.

Aggregate hours

Aggregate hours are the total number of hours worked by all the people employed, both full time and part-time, during a year and equal the number of people employed, multiplied by the average work hours per person.

Aggregate hours = 15.23 million x 34.5 x 50 = 26.27 billion



The Labour Force Survey

Statistics Canada goes to great lengths to collect accurate labour force data. They constantly train and retrain 720 interviewers. Each month, each interviewer contacts 75 households and asks basic demographic questions about all persons living at the address and detailed labour force questions about persons aged 15 or over.

Once a household has been selected for the survey, it is questioned for six consecutive months. Each month, one-sixth of the households in the sample are removed and

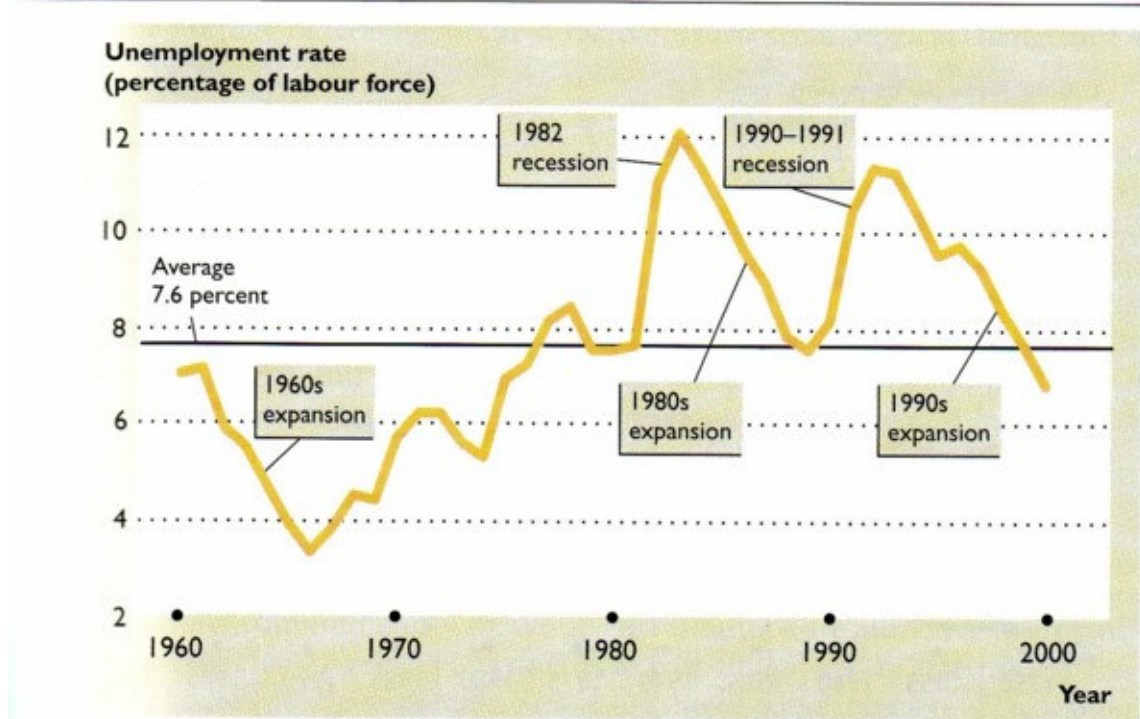
replaced by new households in the same or a similar area. The result of this approach is a combined rotation and overlap of households in the sample that provides very reliable information about month-to-month and year-to-year changes in the labour market.

The first time that a household is in the panel, it is visited by an interviewer armed with a laptop computer with a computerized questionnaire. If the household has a telephone, most of the subsequent interviews are conducted by phone, and approximately 85 percent of interviews are by telephone.

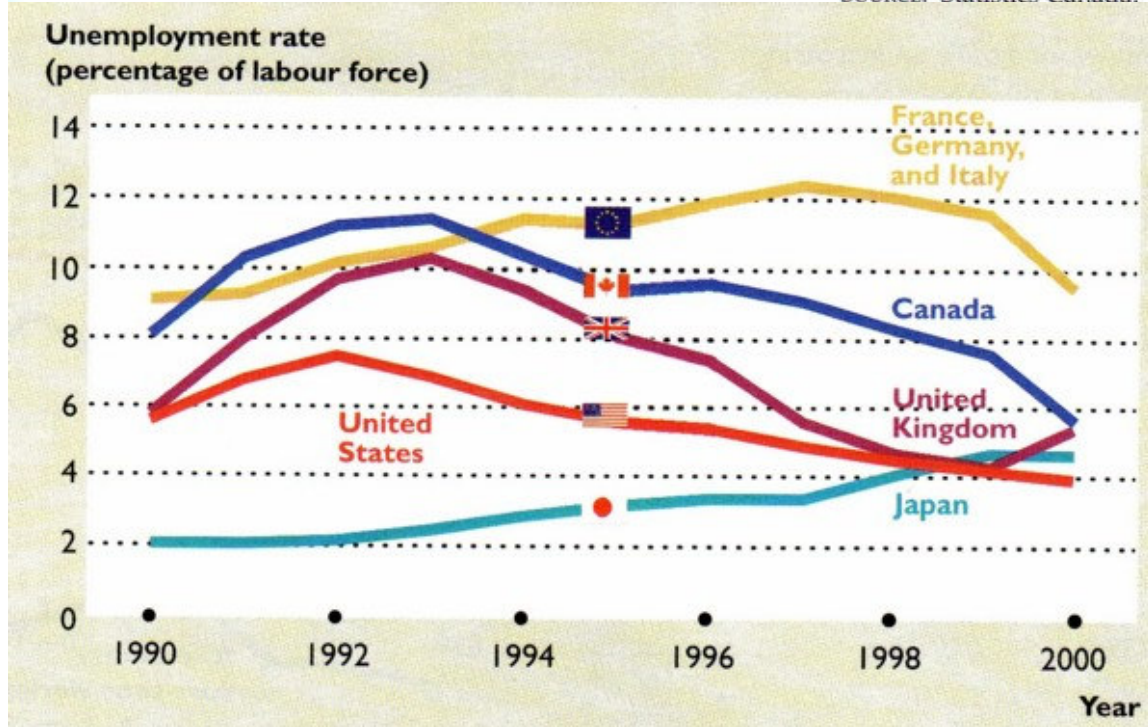


Labour market trends and fluctuations

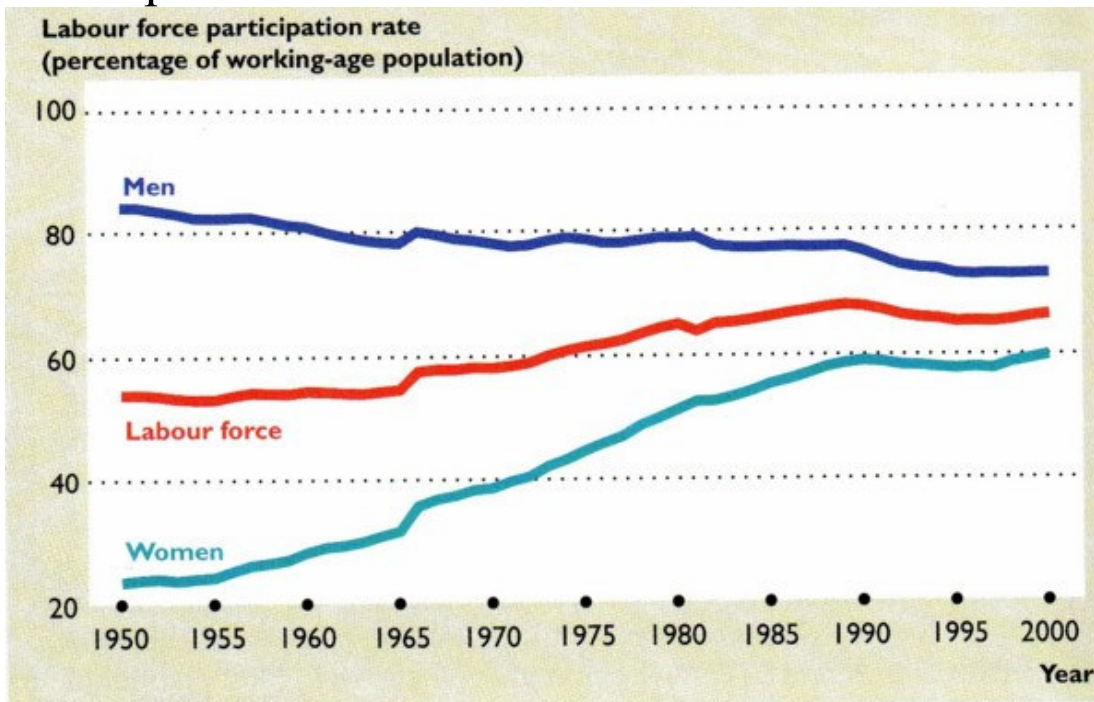
The Canadian Unemployment Rate: 1960–2000



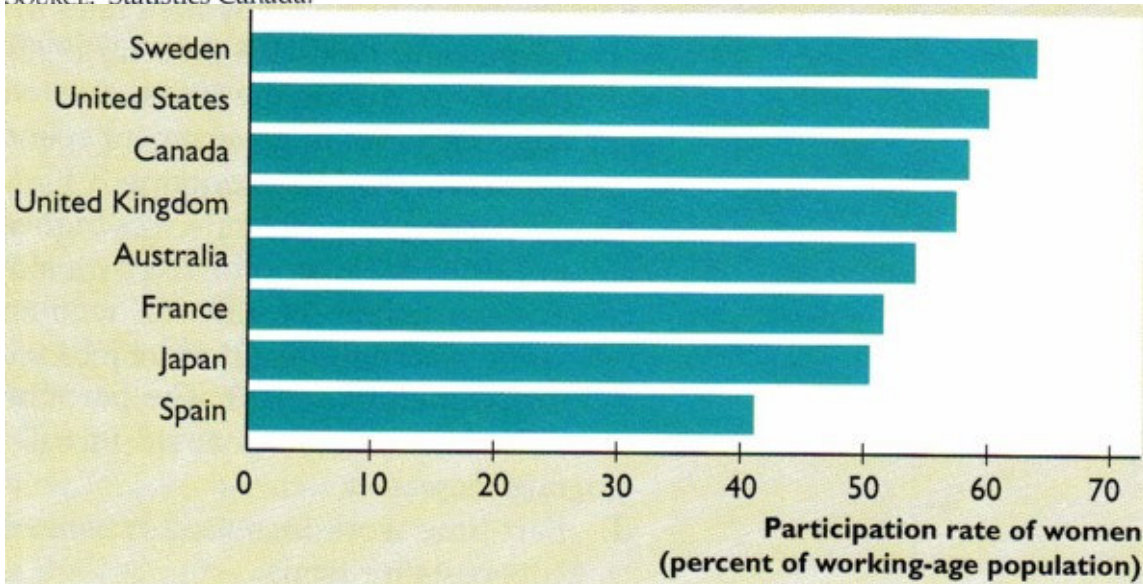
SOURCE: Statistics Canada.



Participation rate



SOURCE: Statistics Canada.



Why has the labour force participation rate increased? The main reason is an increase in the number of women.

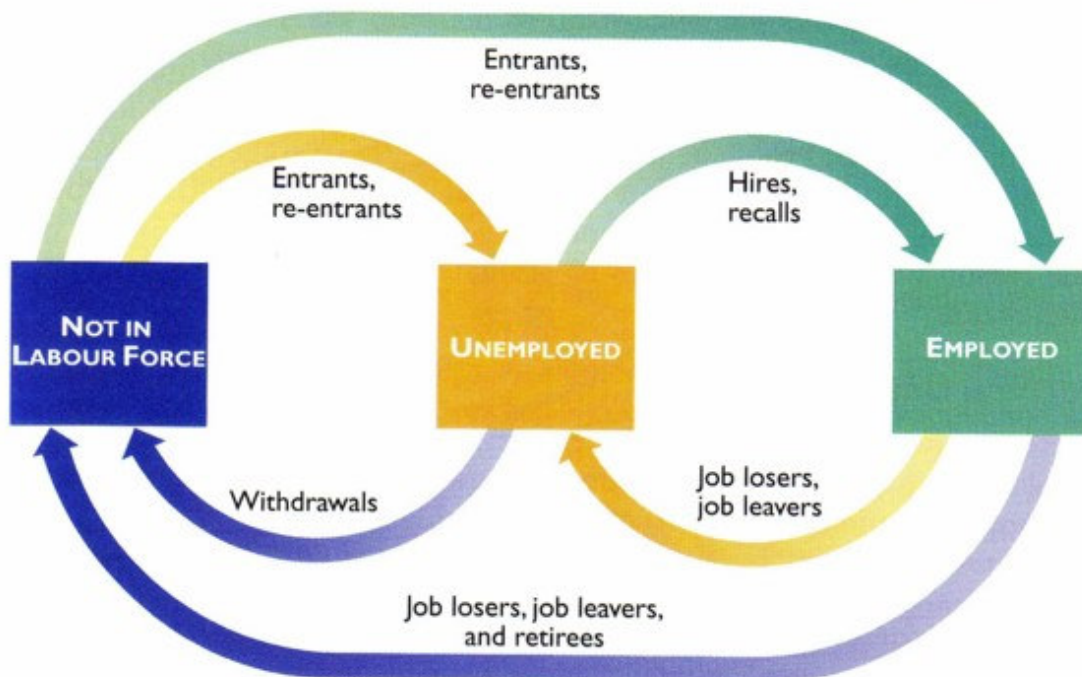
The sources and types of unemployment

People who become unemployed are:

1. job losers
2. job leavers
3. entrants or re-entrants

Labour market flows

Labour Market Flows



Four types of unemployment

- frictional
- structural
- seasonal
- cyclical

Frictional unemployment arises from normal labour turnover-from people entering and leaving the labour force and from the ongoing creation and destruction of jobs.

It is a permanent and healthy phenomenon in a dynamic, growing economy.

Structural unemployment arises when changes in technology or international competition change the skills needed to perform jobs or change the locations of jobs.

Seasonal unemployment arises because of seasonal weather patterns. It increases during winter months and decreases during the spring and summer.

Cyclical unemployment is the fluctuating unemployment over the business cycle. It increases during a recession and decreases during an expansion.

Practice problem

A labour force survey in a Polynesian island records the following data for December 31, 2001: number employed, 13,500; number unemployed, 1,500; number not in the labour force, 7,500. The survey also provides the following information about labour market flows during 2002: hires and recalls, 1,000; job losers, 750; job leavers, 300; entrants, 150; re-entrants, 450; withdrawals, 500. The working-age population increased during 2002 by 100. Calculate for the end of 2002:

- a. The unemployment rate.
- b. The labour force participation rate.

The consumer price index

Objectives:

Explain what the consumer price index (CPI) is and how it is calculated

Explain the limitations of the CPI as a measure of the cost of living

Adjust money values for inflation and calculate real wages rates and real interest rates.

The consumer price index(CPI) is a measure of the average of the prices paid by households for a fixed basket of goods and services.

Reading the CPI numbers

Statistics Canada defines the value of the CPI to be 100 in a period called the base period. Currently 1992. The CPI in 1992 is defined to be 100.

In September 2001, the CPI was 117.4. This number tells us that the average of the prices paid by households for a fixed basket of goods and services was 17.4 higher in September 2001 than it was in 1992.

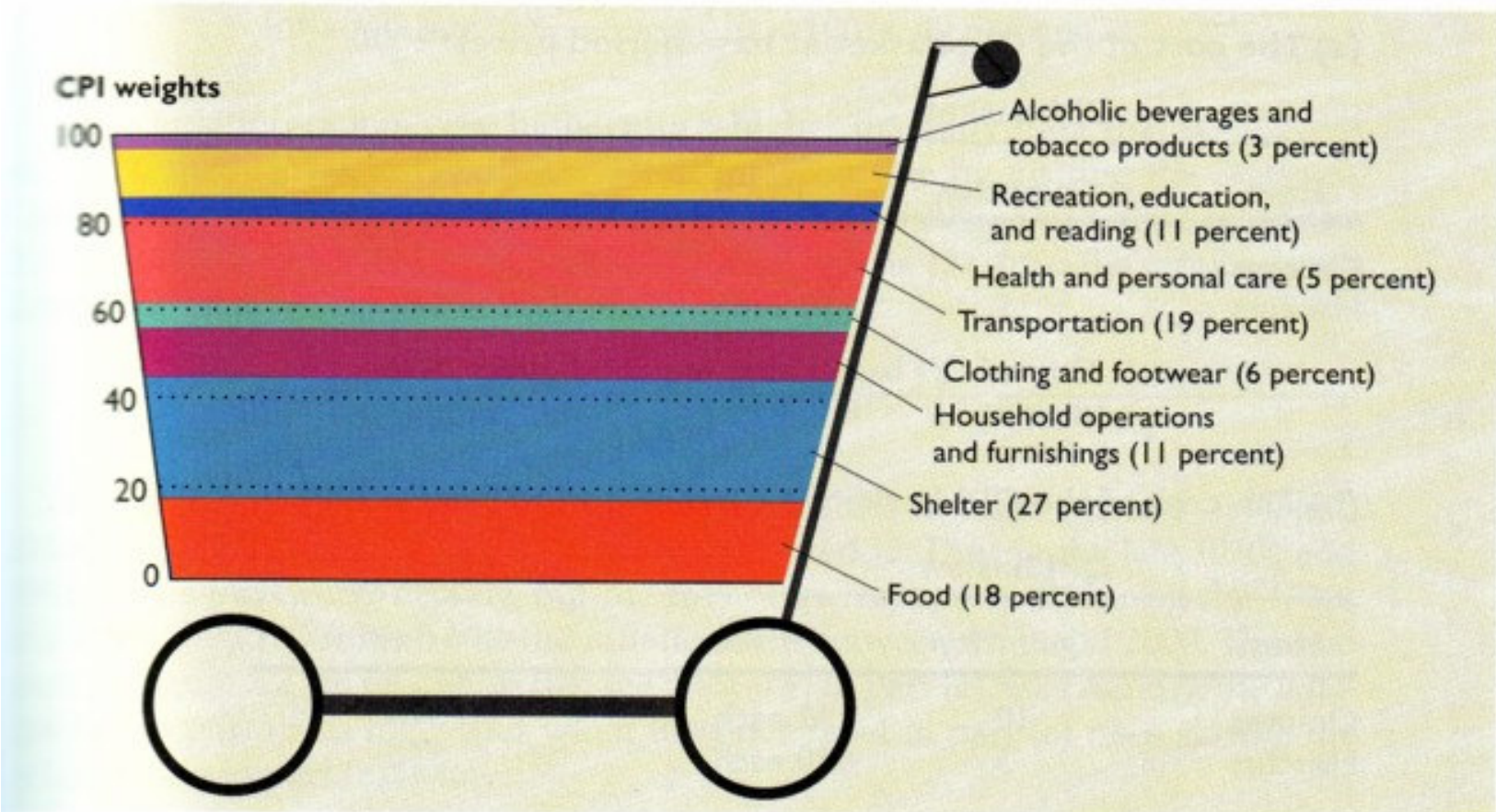
In August 2001, the CPI was 117.1. Comparing to September we have an increase of 0.3 percent in September 2001.

Constructing the CPI

There are three stages

1. Selecting the CPI basket
2. conducting the monthly price survey
3. calculating the CPI

The CPI Basket



SOURCE: Statistics Canada.

The basket contains around 600 goods and services arranged in the eight large groups shown in the figure.

Statistics Canada (StatsCan) breaks each of these categories into smaller ones. For example, transportation includes automobiles; gasoline; car insurance and repairs; airline, bus, and train tickets; taxi fares; and other items involving transportation.

Calculating the CPI

Three steps

1. find the cost of the CPI basket at base period prices.
2. Find the cost of the CPI basket at current period prices.
3. Calculate the CPI for the base period and the current period.

(a) The cost of the CPI basket at base period prices: 2000

CPI basket			Cost of CPI basket
Item	Quantity	Price	
Oranges	10	\$1 each	\$10
Haircuts	5	\$8 each	<u>\$40</u>
Cost of CPI basket at base period prices			\$50

(b) The cost of the CPI basket at current period prices: 2001

CPI basket			Cost of CPI basket
Item	Quantity	Price	
Oranges	10	\$2 each	\$20
Haircuts	5	\$10 each	<u>\$50</u>
Cost of CPI basket at current period prices			\$70

$$\text{CPI} = \frac{\text{cost of CPI basket at current period prices}}{\text{Cost of CPI basket at base period prices}} \times 100$$

$$\text{CPI in 2000} = \frac{\$50}{\$50} \times 100 = 100$$

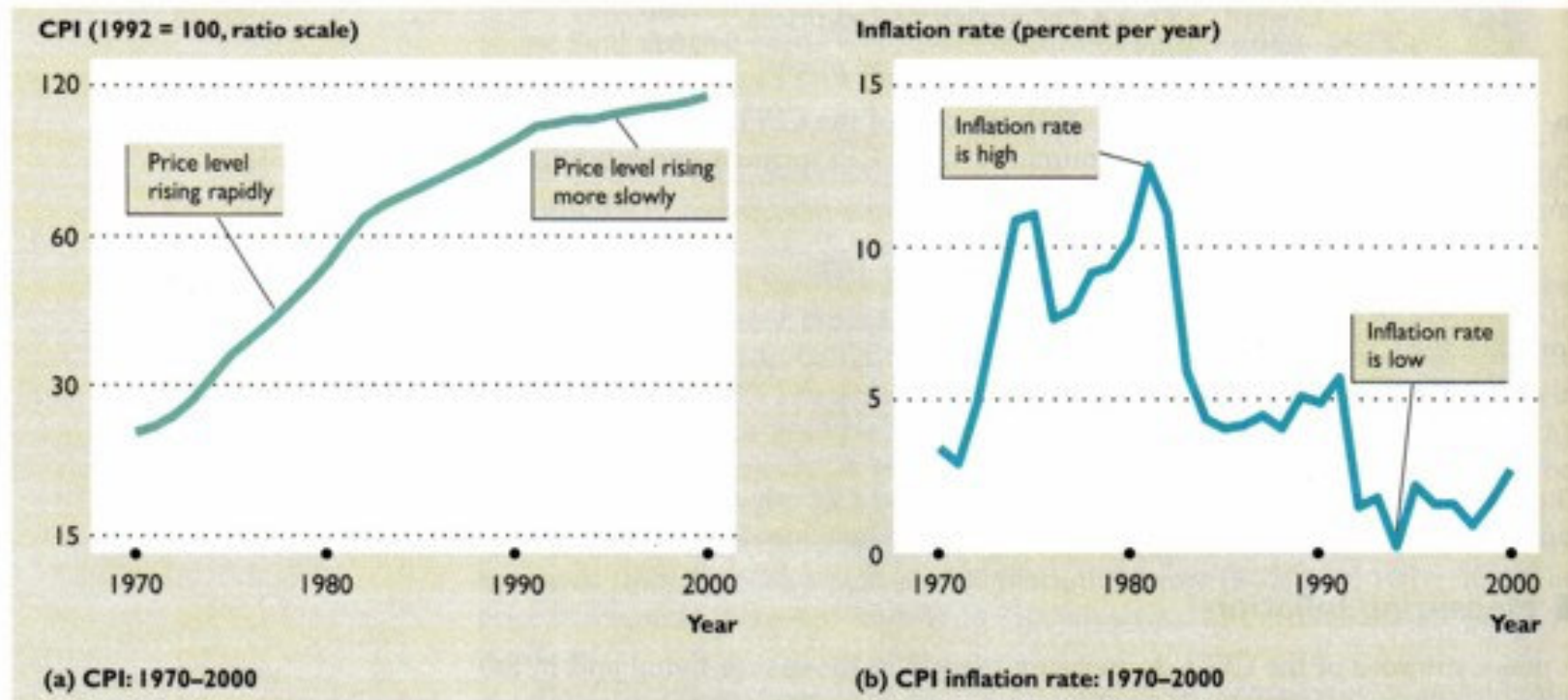
$$\text{CPI in 2001} = \frac{\$70}{\$50} \times 100 = 140$$

Measuring inflation

The inflation rate is the percentage change in the price level from one year to the next.

$$\text{Inflation rate} = \frac{(\text{CPI current year} - \text{CPI previous year}) \times 100}{\text{CPI previous year}}$$

$$\text{Inflation rate} = \frac{(140-100)}{100} \times 100 = 40 \text{ percent}$$



SOURCE: Statistics Canada.

Part (a) shows that the CPI (the price level) has increased every year. Part (b) shows that the inflation rate (the percentage change in the price level) has ranged between 12 percent a year and

almost zero. When the price level increases rapidly, the inflation rate is high. When the price level increases slowly, the inflation rate is low.

Practice problem

1. A Survey of Household Spending in Sparta shows that people consume only juice and cloth. In 2001, the year of the survey and also the base period, the average household spent \$40 on juice and \$25 on cloth. The price of juice in 2001 was \$4 a bottle, and the price of cloth was \$5 a metre. In the current year, 2002, the price of juice is \$4 a bottle and the price of cloth is \$6 a metre. Calculate:
 - a. The CPI basket.
 - b. The percentage of the average household budget spent on juice in the base period.
 - c. The CPI in 2002.
2. Table 1 shows the CPI in Russia. Calculate Russia's inflation rate in 2000 and 2001. Did the price level rise or fall in 2001? Did the inflation rate increase or decrease in 2001?

TABLE 1

Year	CPI
1999	186
2000	221
2001	251

The CPI and the cost of living

The purpose of a cost of living index is to measure changes in the amount of money that people would need to spend to achieve a given standard of living.

The main sources of bias in the CPI

New goods bias

If you want to compare the price level in 2001 with that of 1991 you have to compare the price of a DVD with that of a videocassette player. The DVD is more expensive but the quality is better. How much of the higher price is a sign of the higher quality?

Quality change bias

For example, antilock braking systems all add to the quality of a car. But they also add to the cost. Is the improvement in quality greater than the increase in cost?

Commodity substitution bias

Suppose that the price of beef increases, you might decide to buy more chicken and less beef. If you switch from beef to chicken, spend the same amount

on meat as before, your cost of meat has not changed. But the CPI says that the price of meat has increased because it ignores your substitution.

Outlet substitution bias.

When confronted with higher prices, people use discount stores more frequently and convenience stores less frequently.

Nominal and real values

To calculate real GDP, we use the GDP deflator rather than the CPI as our measure of price level. The reason is that we are dealing with economy totals, of which consumer spending is just one part.

Real GDP is equal to nominal GDP divided by the GDP deflator.

Nominal and real wages rates

Two other nominal–real distinctions play a big role in macroeconomics—and in your life. They are the distinctions between:

- The nominal wage rate and the real wage rate
- The nominal interest rate and the real interest rate

Let's study these vital distinctions.

■ Nominal and Real Wage Rates

The price of labour is the wage rate—the income that an hour of labour earns. In macroeconomics, we are interested in economy-wide performance, so we focus on the *average* hourly wage rate. The **nominal wage rate** is the average hourly wage rate measured in *current* dollars. The **real wage rate** is the average hourly wage rate measured in the dollars of a given base year.

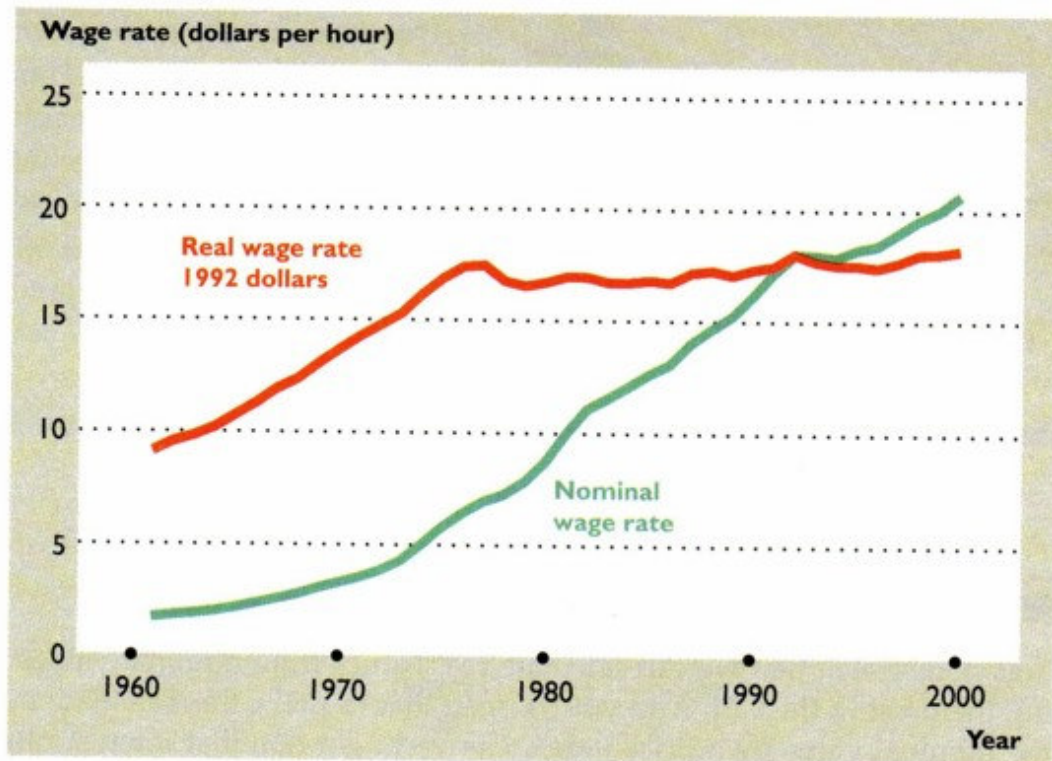
To calculate the real wage rate, we divide the nominal wage rate by the CPI and multiply by 100. That is:

$$\text{Real wage rate in 2000} = \frac{\text{Nominal wage rate in 2000}}{\text{CPI in 2000}} \times 100.$$

In 2000, the nominal wage rate (average hourly wage rate) was \$20.01 and the CPI was 113.5 (1992 = 100), so the real wage rate in 2000 was:

$$\text{Real wage rate in 2000} = \frac{\$20.01}{113.5} \times 100 = \$17.63 \text{ (1992 dollars).}$$

Nominal and Real Wage Rates: 1970–2000



SOURCE: Statistics Canada.

Nominal and real interest rates

A **nominal interest rate** is the interest payable on a loan expressed as a percentage of the loan. For example, if your bank lends you \$100 for which you pay interest of \$5 a year, the nominal interest rate is 5 percent. The **real interest rate** is the interest rate payable on the loan expressed in the purchasing power of the interest received. That is, the real interest rate is the nominal interest rate adjusted for the effects of inflation.

Suppose that your bank lends you \$100 and that after one year, you repay the loan. You pay the bank the \$100 that you borrowed plus the \$5 interest that you owe (at 5 percent a year). But suppose that during the year, prices have increased by 3 percent. You pay the bank \$105, but the bank needs \$103 just to buy what \$100 would have bought when you borrowed the money. So how much interest has your bank really earned? It has earned \$2, or a real interest rate of 2 percent a year.

To convert a nominal interest rate to a real interest rate, we *subtract the inflation rate*. That is:

$$\text{Real interest rate} = \text{Nominal interest rate} - \text{Inflation rate.}$$

Plug your numbers into this formula. The nominal interest rate is 5 percent a year, the inflation rate is 3 percent a year, and the real interest rate is 5 percent minus 3 percent, which equals 2 percent a year.

TABLE 1

Year	Price of gasoline (cents per litre)	CPI (1992 = 100)
1970	10	24.2
1985	51	75.0
2001	75	115.6

1. Table 1 shows some gas prices and the CPI for three years:
 - a. Calculate the real price of gasoline in each year in 1992 dollars.
 - b. In which year was gasoline the most costly in real terms?
 - c. By how much did the real price of gasoline change from 1985 to 2001?
2. Canadian Industries Ltd. agreed to pay its workers \$22 an hour in 2002, a 10 percent increase over the 2000 wage rate of \$20 an hour. The CPI for these years was 114 in 2000 and 122 in 2002.
 - a. Calculate the real wage rate in each year.
 - b. What was the change in the real wage rate between 2000 and 2002?
3. Sally worked hard all year so that she could go to school full time the following year. She put her savings into a mutual fund that paid a nominal interest rate of 7 percent a year. The CPI was 123 at the beginning of the year and 132 at the end of the year. What was the real interest rate that Sally earned?

