



Chapter 6: Unemployment and Inflation

Learning Objectives

After studying this chapter, you should be able to

- 6.1** Understand the meaning and the types of unemployment
- 6.2** Explain how unemployment is measured
- 6.3** Understand the incidence and costs of unemployment
- 6.4** Explain the classical and Keynesian theories of unemployment
- 6.5** Understand inflation, its measurement, and its effects
- 6.6** Compare the rates of unemployment and inflation among the provinces and between Canada and other countries

Assess Your Knowledge

1. Is someone necessarily unemployed if he or she does not have a job?
2. Can technological advance cause unemployment?
3. Which of the following demographic groups is likely to have the highest unemployment rate?
 - a. University graduates
 - b. High school dropouts
 - c. Men 25 years and older
 - d. Highly skilled workers
4. How does inflation affect your savings?
5. Inflation is a situation of severe unemployment over a long period. True or false?

The Meaning of Unemployment and Types of Unemployment

LO 6.1 Understand the meaning and the types of unemployment

What is unemployment?

Unemployment is a state of joblessness. It is an economic condition that exists when workers are without jobs even though they are willing and able to work. Statistics Canada defines the unemployed as those individuals 15 years and older who are without jobs and who are actively looking for work and available for work.

***unemployment** an economic condition that exists when workers are without jobs even though they are willing and able to work*

Types of Unemployment and Their Importance

The type of unemployment rarely matters to those without work, but it matters to economists and policymakers because each type demands a different solution. Unemployment is commonly divided into four categories

- Frictional unemployment
- Seasonal unemployment
- Structural unemployment
- Cyclical unemployment

Frictional Unemployment

Frictional unemployment occurs in any economy where individuals are free to change jobs and employers are free to hire or dismiss workers. It reflects normal labor market turnover and can be seen as a sign of a dynamic economy. This type of unemployment includes people who are between jobs, recent graduates entering the labor force, or individuals rejoining the workforce after a break. It arises from the time it takes to match workers with suitable jobs and is generally short-term. Frictional unemployment can increase in periods of rapid technological or sectoral change, when workers shift between industries or occupations.

Job Leavers: Individuals who voluntarily leave their jobs to seek better opportunities without having secured new positions. They contribute to frictional unemployment as they transition between roles.

New Entrants: People entering the labor force for the first time—such as recent high school or university graduates—who are actively searching for their first job.

Performance-Based Layoffs: Although layoffs are often tied to broader economic trends, dismissals due to poor performance can also result in frictional unemployment. These individuals must re-enter the job market to find new positions.

This period of unemployment is typically short term and represents a normal aspect of labor market activity. It reflects the time required to connect job seekers with appropriate job openings, contributing to a more efficient allocation of labor. For example, a recent graduate may spend several weeks or months searching for employment after finishing school; during this transition, they are classified as frictionally unemployed.

frictional unemployment unemployment that results from people moving between jobs or entering or re-entering the labour force

Reducing frictional unemployment requires improving the flow of information between job seekers and employers. When job openings are communicated efficiently, and when employers can readily identify available talent, the time individuals spend between jobs can decrease. Strategies to improve matching efficiency include:

- Developing advanced job matching platforms that align job seeker skills with employer requirements using real-time data and algorithms.
- Expanding access to career counseling services that assist individuals with resume preparation, interview skills, and targeted job search strategies.
- Promoting networking opportunities through job fairs, alumni networks, and professional platforms to strengthen connections between employers and potential employees.

Despite these efforts, eliminating frictional unemployment is unlikely. A certain level of unemployment will always result from the job search process and the evolving structure of the labor market. This understanding gives rise to the concept of full employment, which acknowledges that some unemployment, particularly frictional and structural, is a permanent feature of a dynamic economy.

Full employment refers to a labor market condition in which the only unemployment that exists is frictional and structural. It does not mean that unemployment is zero, but that the economy is operating at its sustainable capacity without cyclical job loss. For example, if the combined

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frictional and structural unemployment rate is estimated at 3%, then full employment corresponds to a 97% employment rate. This benchmark reflects the natural churn of workers entering and exiting jobs, as well as longer-term shifts in industries and skills, acknowledging that complete employment for all individuals at all times is unattainable.

full employment *a condition that prevails when the only unemployment is frictional and structural unemployment*

Seasonal unemployment results from predictable fluctuations in labor demand tied to weather patterns, agricultural cycles, school calendars, and holiday periods. It is especially pronounced in countries with distinct seasonal shifts, such as Canada. This type of unemployment varies across industries, depending on how seasonal factors influence their operations:

- **Agricultural Sector:** Activity decreases in winter, reducing the need for labor as growing seasons end.
- **Construction Industry:** Cold, harsh winter conditions slow down or halt projects and reduce the demand for labour.
- **Winter Sports and Activities:** Demand for workers in winter-related industries drops during off-peak summer months.
- **Tourism and Hospitality:** Seasonal peaks (summer or specific holiday periods) temporarily boost employment, which declines in the off-season.
- **Retail:** Employment spikes during holiday shopping seasons, followed by a downturn post-holiday period.
- **Education:** The academic calendar creates peak times for employment, with a slowdown during summer.
- **Landscaping and Gardening:** Demand for labor rises with favorable weather in spring and summer, then decreases in autumn and winter.
- **Fishing Industry:** Employment is influenced by seasonal fish patterns and regulatory periods, leading to fluctuating demand for labor.
- **Summer Recreational Services:** Season-specific activities (e.g., summer camps) lead to seasonal employment peaks.

Industries adjust their workforce size to match seasonal fluctuations in demand, resulting in higher unemployment during off-peak periods. Workers in these sectors must plan for income variability, while governments may intervene with targeted measures to cushion the effects. These measures can include skills training for off-season employment, wage subsidies, or

unemployment insurance programs designed to support affected workers during periods of inactivity.

seasonal unemployment *unemployment caused by seasonal variations*

Even in economies with limited seasonal variation, seasonal unemployment can still arise. In many tropical countries, for example, tourism is heavily dependent on visitors from North America and Western Europe during the winter months. As tourist arrivals decline in the summer, employment in hospitality and related services falls. These countries face constraints in addressing seasonal unemployment, as their economies often lack diversification and depend heavily on a single industry, limiting the scope for counter-seasonal job creation or large-scale policy intervention.

Seasonal Adjustment of Unemployment Rates

Official unemployment figures account for seasonal fluctuations through statistical adjustments. In Canada, for example, Statistics Canada publishes seasonally adjusted unemployment rates to filter out predictable changes tied to the time of year. This allows for more accurate comparisons across months. Although winter may bring increased activity in some sectors and declines in others, total economic activity generally slows, often leading to a rise in unemployment. Seasonal adjustment helps distinguish these routine patterns from underlying labor market trends.

Statistics Canada maintains long-term monthly unemployment records, allowing it to estimate the typical seasonal pattern for each month. Using these trends, it applies statistical models to adjust the current month's unemployment rate by filtering out predictable seasonal fluctuations. For example, if unemployment typically rises in February due to seasonal factors, only deviations beyond that expected increase are reflected in the seasonally adjusted rate. Similar adjustments are made for months like July and August, which may show typical employment gains in sectors such as tourism and agriculture.

Structural Unemployment

Structural unemployment arises from long-term shifts in the economy that change the composition of labor demand. These shifts may include changes in consumer preferences, technological innovation, or evolving trade relationships between Canada and other countries. It occurs when workers' skills no longer match the needs of employers, creating a persistent gap

between the available workforce and job vacancies. This mismatch can appear within specific regions or across the national economy.

structural unemployment *unemployment that is caused by a mismatch between the types of skills that unemployed workers possess and the types of workers that employers would like to hire*

For example, structural unemployment may result from a sustained decline in demand for textiles among Canadian and global consumers, or from automation in textile manufacturing. As the industry contracts or modernizes, it requires fewer workers, increasing unemployment within the sector and possibly raising the national unemployment rate. The broader adoption of labor-saving technologies across industries has created a specific form of structural unemployment referred to as **technological unemployment**.

technological unemployment a type of structural unemployment caused by the introduction of labour-saving equipment or methods of production.

The Impact of AI on Employment

Artificial intelligence has the potential to reshape employment across a wide range of industries. Jobs that involve routine, repetitive, or rules-based tasks are especially vulnerable to automation. Occupations at higher risk of disruption include:

1. **Routine or repetitive tasks:** Jobs involving repetitive tasks that follow predictable patterns, such as data entry, assembly line work, and basic administrative tasks, are at risk of being automated by AI systems.
2. **Customer service and support roles:** AI-powered chatbots and virtual assistants are increasingly being used to handle customer inquiries, troubleshoot problems, and provide support, potentially reducing the need for human customer service representatives.
3. **Transportation and logistics:** With advancements in autonomous vehicles and drone technology, jobs in transportation and logistics, such as truck drivers, delivery drivers, and warehouse workers, could be impacted by AI-driven automation.
4. **Manufacturing and production:** AI-enabled robots and automation systems are increasingly being deployed in manufacturing and production facilities to perform tasks such as assembly, quality control, and material handling, which could lead to job displacement for human workers.

5. **Financial services:** AI algorithms are being used in various aspects of the financial services industry, including algorithmic trading, risk assessment, fraud detection, and customer service, potentially reducing the need for certain roles like traders, analysts, and clerks.

6. **Healthcare:** AI technologies are being developed to assist with medical diagnosis, treatment planning, drug discovery, and administrative tasks in healthcare settings, which could impact jobs for healthcare professionals such as radiologists, pathologists, and administrative staff.

7. **Legal services:** AI-powered tools for legal research, contract analysis, and document review are increasingly being adopted by law firms and legal departments, potentially reducing the demand for certain legal support roles.

It is important to note that while AI may automate specific tasks within certain occupations, it can also generate new opportunities that depend on human skills—creativity, problem-solving, emotional intelligence, and interpersonal communication. The impact of AI on employment is therefore multifaceted, shaped by industry trends, the speed of technological advancement, and how organizations choose to implement AI tools within their operations.

Cyclical Unemployment

Cyclical unemployment arises from declines in aggregate spending and total output during economic downturns. In Canada, this type of unemployment has accompanied every major recession. The Great Depression of the 1930s marked an era of unprecedented joblessness and social hardship. In the 1970s, oil price shocks and inflation triggered recessions that raised unemployment rates across the economy. The early 1980s brought another sharp downturn, severely impacting manufacturing and resource-based industries. The early 1990s recession in Canada was triggered by tight monetary policy aimed at controlling inflation, high interest rates, and weakening external demand, particularly from the United States. These factors contributed to a sharp economic slowdown and rising unemployment, especially in construction and manufacturing. During the Great Recession of 2008–2009, unemployment surged following a collapse in global financial markets. Most recently, the COVID-19 recession beginning in 2020 led to large-scale job losses in sectors such as hospitality and tourism due to lockdowns, supply chain breakdowns, and reduced consumer activity. These episodes illustrate the recurring nature of cyclical unemployment in response to fluctuations in economic demand.

cyclical unemployment *unemployment that arises because of declines in aggregate expenditure and aggregate output, such as during recessions*

Reading Comprehension

1. What is the difference between frictional and structural unemployment?
2. How is full employment defined?
3. How do economic fluctuations affect the rate of unemployment?

The Measurement of Unemployment

LO 6.2 Explain how unemployment is measured

The state of unemployment in an economy is generally

measured by the rate of unemployment or the **unemployment rate**. You have no doubt heard statistics on the unemployment rate.

unemployment rate the number of people unemployed expressed as a percentage of the labour force

Unemployment Rate

Let us first define the unemployment rate, and then we will see how Statistics Canada estimates it. The unemployment rate expresses the number of people unemployed as a percentage of the labour force.

The labour force

The **labour force** is the sum of the number of employed and unemployed people 15 years and older who are willing and able to work.

labour force *the sum of all employed and all unemployed people who are willing and able to work*

Let us use LF to denote the labour force, Un to denote the number unemployed, and Em to denote the number employed. We can then express the labour force as

$$LF = Un + Em$$

Symbolically, we can express the unemployment rate (UR) as follows:

$$UR = \frac{UN}{LF} \times 100$$

For example, if the labour force has 100 000 people, 10 000 of whom are unemployed, then the unemployment rate is calculated as follows:

$$UR = \frac{Un}{LF} \times 100 = \frac{10\,000}{100\,000} \times 100 = 10\%$$

The unemployment rate, in this case, is 10%. It is worth noting our reference to unemployment relates to only one factor of production: labour. An unemployment rate of 10% does not tell us anything directly about the employment of land or capital. We would, of course, expect that a high unemployment rate would result in a low level of the utilization of capital and other inputs.

Capacity Utilization Rate

The capacity utilization rate measures the extent to which firms use their available factory space and machinery. It indicates the percentage of productive capacity in active use at a given time. When firms use all available equipment and facilities, they are considered to be operating at full capacity; when they fall short, they operate below full capacity. In practice, most firms operate below full capacity due to maintenance cycles, labor shortages, or fluctuations in demand. Historically, the capacity utilization rate moves inversely with the unemployment rate—when firms ramp up production, they require more workers, and when output contracts, unemployment tends to rise.

***capacity utilization rate** shows the degree to which firms use their factories and machinery*

Other labour force statistics

One crucial labor statistic to be acquainted with is **the labor force participation rate**, also referred to as the participation rate. This metric represents the percentage of the population aged 15 years and older that is actively participating in the labor force. Over the past five decades, Canada has witnessed a significant increase in the participation rate, primarily driven by the rising involvement of women in the labor force. This trend can be attributed to both

sociological and economic factors. Sociologically, there has been a cultural shift with more women entering the labor market, facilitated by increased accessibility to jobs and professions that were traditionally male dominated, such as the medical and legal fields. In fact, women now constitute the majority in these professions, which reflects significant societal changes and advancements in gender equality.

Economically, the rise of two-income households has become increasingly common as couples strive to either enhance or sustain their standards of living. Concurrently, the Canadian economy has undergone significant transformation over the past five decades. The service sector, typically employing more women than men, has witnessed steady expansion; it has contributed to the increased participation of women in the labor force. Conversely, the manufacturing sector, which predominantly employs men, has declined due to technological advancements and heightened foreign competition. As a result, the participation of men in the labor force has diminished.

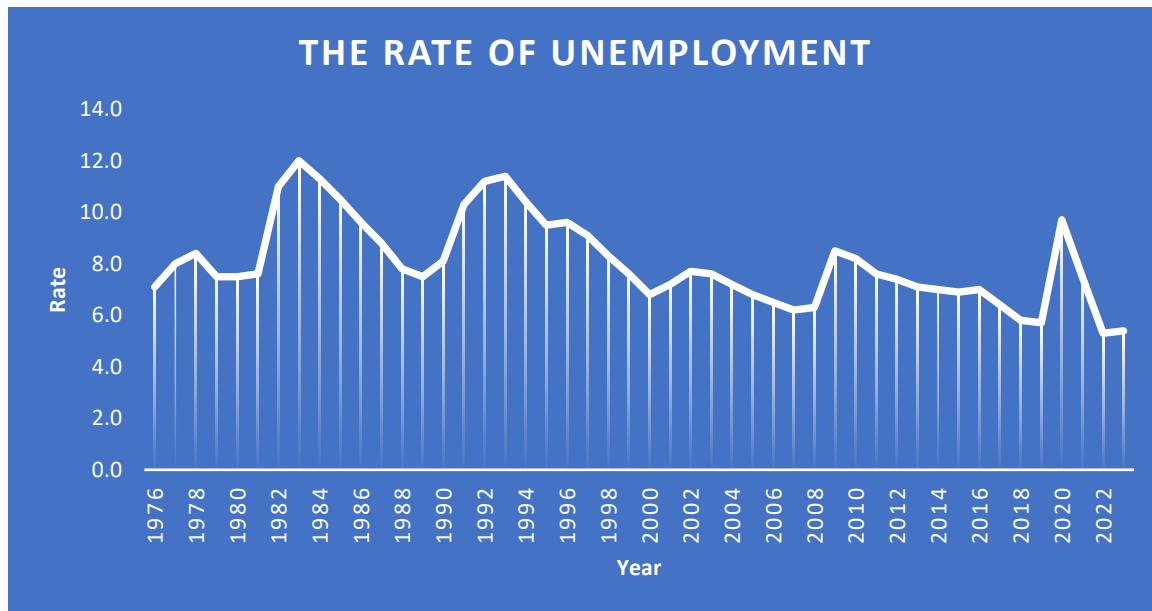
labour force participation rate *the labour force expressed as a percentage of the adult population*

The participation of women in the labor force has been a significant development in both Canada and the United States. In Canada, the majority of women participate in the labor force; this development reflects their increasing involvement in various sectors of the economy. Similarly, in the United States, as of 2020, women accounted for a slight majority of employed individuals, excluding farm workers and the self-employed. This trend underscores the growing presence and contribution of women to the labor force, marking a significant milestone in workforce dynamics.

Another essential rate to be familiar with is **the employment rate**, which is defined as the percentage of the labor force that is employed. Referring to the equation provided, where the labor force consists of the number of people employed and the number of people unemployed, dividing both sides of the equation by the labor force and multiplying by 100 reveals that the employment rate and the unemployment rate together add up to 100%. This relationship highlights the inverse relationship between employment and unemployment rates, emphasizing their complementary nature in assessing labor market dynamics.

employment rate *indicates the percentage of the labour force that is employed*

Figure 6.1: The rate of unemployment



Source: Statistics Canada, Labour Force Survey, Table 14-10-0327-01

$$(Un/LF)*100 + (Em/LF)*100 = (LF/LF)*100$$

$$\text{Unemployment rate} + \text{employment rate} = 100\%$$

This means if you know the rate of unemployment, you will easily calculate the rate of employment. For example, if the rate of unemployment is 10%, then the rate of employment will be 90%.

Let us examine the data for Canada in 2023 as presented in Table 6.1. This table displays the number of Canadians in each category of the labor force. To gain a deeper understanding of the changes occurring in the labor force, it's beneficial to analyze both the stocks (at a given time) and the flows (per unit of time) of the working population across four categories: new entrants, employed individuals, unemployed individuals, and discouraged workers.

Figure 6.2 below illustrates the stocks and flows of these four categories. In this visualization, rectangular boxes represent the number of people in each category at a specific time (the stocks), while the arrows depict the movement of people (flows) among the categories. The net

Table 6.1 Labour Force Characteristics, 2023

Characteristic	Number
Population	39.5 million
Labor Force	20.4 million
Employment	19.4 million
Unemployment	1 million (5.0%)
Not in the Labor Force	19 million
Unemployment Rate	5.00%
Participation Rate	65.70%

Source: Statistics Canada, [The Daily — Labour Force Survey, January 2023](#)

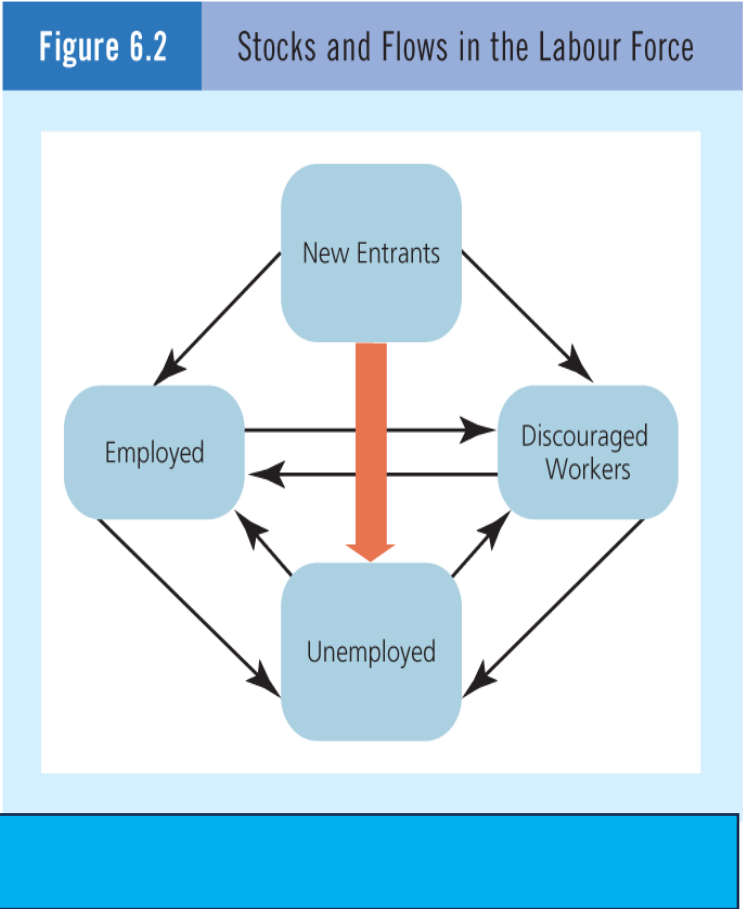
unemployed, and discouraged workers, the figure also demonstrates a bidirectional flow among the employed, unemployed, and discouraged workers. This reflects the fluidity of the labor market, where individuals may move between categories over time based on various factors, including job availability and personal circumstances.

flow from one category to another determines the size of each category at a given time, such as at the end of a month. This analysis provides insights into the dynamics of the labor force and the transitions occurring within it over time.

Figure 6.2 illustrates the initial stock of new entrants into the labor market, including recent graduates and those rejoining the workforce. Depending on their success in finding employment, some of these new entrants transition to become employed, while others may remain unemployed. Some individuals may become discouraged workers, choosing to cease actively seeking employment due to perceived barriers. While there is a unidirectional flow from new entrants to employed,

Figure 6.2 Stocks and Flows in the Labour Force

The number of people in each category of the labour force—the employed, the unemployed, and the discouraged workers—varies with the net flow of people among the categories. For example, in a given month the number of people in a category depends on new entrants finding a job, and the net flow of people employed and unemployed, the workers and unemployed.



people in each labour force—unemployed, discouraged, and discouraged workers—varies with the net flow of people among the categories. For example, in a given month the number of people in a category depends on new entrants finding a job, and the net flow of people employed and unemployed, the workers and unemployed.

The net flow of people among the categories of course depends on the conditions in the labour market. If the demand for labour is high, as is the case in an economic boom, employment increases, unemployment decreases, and previously discouraged workers may want to try their luck once more and start looking for work. On the other hand, if the demand for labour is low, as is the case in a recession, the number of people employed decreases, the number of people unemployed increases, and the number of discouraged workers increases.

The major labour force statistics

Let us look at Figure 6.3. The diagram shows that, in 2023, 20.3 million people were employed (the green rectangle) and 1.1 million were unemployed (the yellow rectangle). Thus, the labour force consisted of the green rectangle plus the yellow rectangle, which represents 21.4 million people. The diagram also shows that there were 10.3 million people who were not in the labour

force (the blue rectangle). When these are added to the 1.1 million people who were unemployed, we arrive at 11.4 million people who were not working (the blue rectangle plus the yellow rectangle). The sum of the employed (the green area), the unemployed (the yellow area), and the number not in the labour force (the blue area) equals the adult population of 31.7 million in 2023. The size of the working population depends on the population of a country.

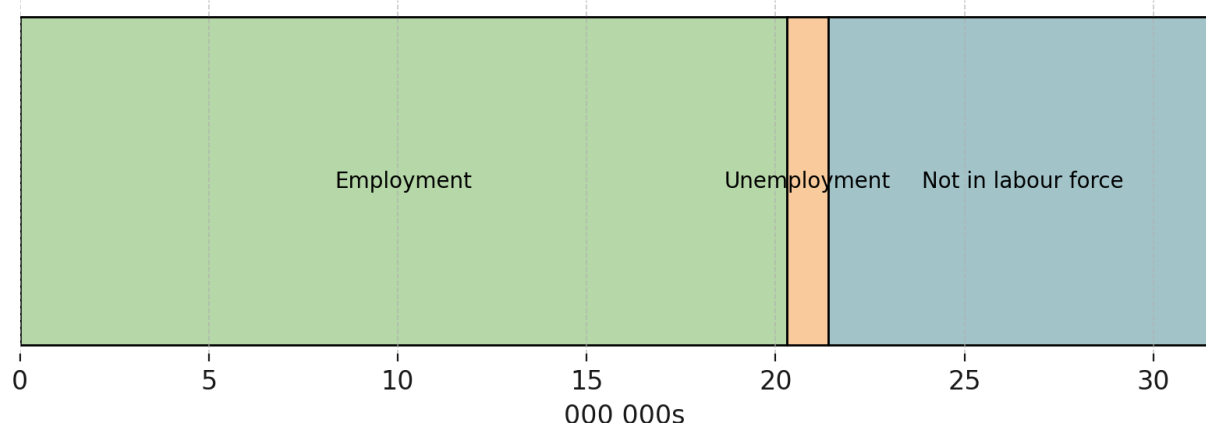
(Source: [Statistics Canada](#), Table 14-10-0287-01)

Measuring unemployment

The Measurement of Unemployment Each month, Statistics Canada conducts a survey of Canadian households, interviewing about 56 000 of them (about 110 000 individuals) to determine their employment status. Based on the results of the survey, Statistics Canada estimates the unemployment rate. Although most people regard the estimate as fairly reliable, it has several limitations. To understand these limitations, you must understand the definitions of the key terms used in the survey.

First, Statistics Canada defines a person as *employed* if that person had a job at the time of the interview or was away from work for such reasons as illness, vacation, strikes or lockouts, familial obligations, and so on. Second, Statistics Canada defines a person as *unemployed* if that person was actively looking for work and was actually available for work during the past month, or who was laid off for more than 26 weeks, even if he or she was not looking for another job. Third, the survey defines the adult working population as persons 15 years of age and older, excluding people in the armed forces, inmates of institutions, and Native people on reserves.

Figure 6.3 Employment Status of the Adult Population, 2023 (000 000s)



Source: Statistics Canada, Table 14-10-0287-01 — Labour force characteristics, monthly, seasonally adjusted and trend-cycle, last updated June 2024.

Let us now address some of the issues arising from these definitions. Just how *actively* must people look for work to be counted as unemployed? Consider the following situation. Jin is a young man from a well-to-do family. He reads the classified advertisements, hoping to find a well-paying job of his liking just to have something to do. Jin would be classified as unemployed if he told the interviewer that he has been trying to find a job during the reference week.

Some people accept part-time jobs or jobs that are well below their education, training, and skills. A case in point would be an MBA graduate who could find employment only as a teller in a bank. This is an example of **underemployment**. Underemployment is a situation in which workers accept low-paying jobs or part-time jobs because they cannot find a full-time job consistent with their qualifications.

underemployment a situation in which workers accept low-paying jobs or part-time jobs because they cannot find a full-time job consistent with their qualifications This means the survey does not account for underemployment and classifies under-employed people simply as employed. In such cases, the unemployment statistics do not adequately reflect the extent of unemployment.

To be officially unemployed, a person must be in the labour force. Hence, if Lydia has looked for work for several weeks without success and then gives up looking for work actively because she is convinced that nothing is available, the survey would list her as not being in the labour force and therefore not among the unemployed, even though she would be happy to accept employment if she were offered a job. Economists classify a worker like Lydia as a discouraged

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worker. **Discouraged workers** are workers who have abandoned the search for jobs because they are unable to find work. They are not counted as unemployed.

***discouraged workers** workers who have abandoned the search for jobs because they are unable to find work*

If underemployed and discouraged workers were counted as unemployed, the unemployment rate would be higher than the officially reported figure. To take account of discouraged workers, Statistics Canada conducts a special survey every six months to determine the number of workers who are not in the labour force.

The unemployment rate does not tell us anything about how long the unemployed worker is out of work. It only measures the rate of unemployment at a particular time. However, for the unemployed person, there is certainly a big difference between bouts of unemployment lasting for four weeks and those lasting for six months or longer. The average duration of unemployment has important implications for the economy as well. When the duration is long, when workers cannot find jobs for a long time, unemployment is not only a loss of income for the unemployed workers during the extended period, but also results in a loss of output for the economy. That is why some economists use the average duration of unemployment during a recession as an indicator of the severity of a recession; if the average duration is short, the recession is considered mild, and if the average duration is long, the recession is considered serious. For example, in the United States in the summer of 2009, the median duration of unemployment reached its highest level since 1948, indicating that the 2007–2009 recession was severe. The high duration of unemployment is one of the reasons why some economists have labelled this recession in the United States as the Great Recession.

It is also important to note that national unemployment figures do not tell us anything about how the rate of unemployment is distributed among the various regions. When we say that the unemployment rate in Canada is 8%, we must realize that it may be 5% in some regions and 11% in others.

The foregoing discussion suggests that care should be taken when looking at official unemployment statistics. Yet despite these limitations, the consistency with which the monthly labour force statistics are measured makes the unemployment rate a fairly reliable indicator of

movements in the labour force.

Reading Comprehension

1. Identify the important rates in the labour force.
2. How has the rate of participation changed in Canada over the last 50 years?

The Incidence and Costs of Unemployment

LO 6.3 Understand the incidence and costs of unemployment

The likelihood of being unemployed

Not all demographic groups are equally susceptible to being unemployed. In general, a more educated and a better skilled worker is more likely to find a job and less likely to be laid off than a less educated and an unskilled worker. A skilled and younger worker is also more likely to find a job than an unskilled and older worker. But a younger unskilled worker is more likely to be unemployed than an older skilled worker. This is due partly to the fact that unskilled high-school dropouts experience considerable difficulty in finding jobs and partly since it often takes a while for unskilled young workers to find employment after they enter the labour force.

Youth unemployment

Some of the youth unemployment could be frictional. Since young workers have fewer obligations, such as raising children or paying for the mortgage, than older workers do, they are more likely to change jobs more frequently than older workers. If young workers are dissatisfied with their employment, they are likely to quit their current employment in search of a better job with another company or even move to a different region.

In the past, the unemployment rate for women used to be higher than it was for men, but today men have a higher rate of unemployment. The change in the incidence of unemployment for adults is mostly due to structural changes that have taken place in the economy. As mentioned earlier, employment in the manufacturing sector, where traditionally the majority of

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the employed are men, has diminished because of technological change and competition from abroad. On the other hand, employment in the service sector, where most of the employed are women, has expanded, providing women with more employment opportunities than in the past. In the past, the higher rate of unemployment among women was due, in large part, to discrimination against women in the labour market. Efforts to end discrimination against women in the labour market seem to have contributed to the reduction in the incidence of unemployment among women.

Note that among the groups of unemployed people, people between the ages of 15 and 24 have the highest rate of unemployment, most probably because of their low level of education, low experience, and low skills. The unemployment rate is lowest among people aged 25 years and over, probably because of their superior education, better skills, and long experience compared to younger workers.

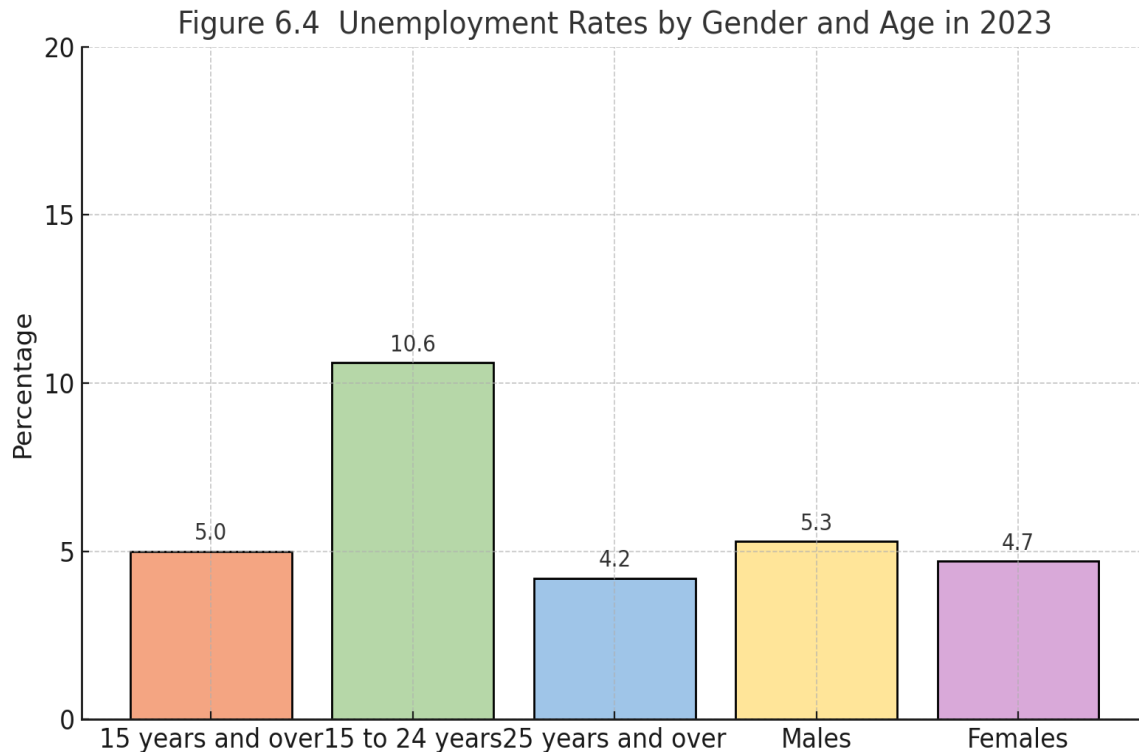
The costs of unemployment

Unemployment carries a number of costs to the economy; it affects the lives of the unemployed and their families; it affects society at large. For a clearer analysis, it is useful to categorize the costs of unemployment into two main types: economic and non-economic costs.

The *economic* costs of unemployment

The economic costs of unemployment are multifaceted; they affect individuals and society at large. At the individual level, unemployment leads to significant financial strain. Those without employment experience a direct loss of income, which often necessitates drastic reductions in consumption for themselves and their families. The financial hardship may force individuals to sell their assets, frequently at a loss, to fulfill their financial commitments.

Figure 6.4 shows the unemployment rate according to age and sex.



Source: [Statistics Canada](#), Table 14-10-0287-01 — Labour force characteristics by sex and age group, seasonally adjusted, 2023 annual averages, last updated June 2024.

The effects of unemployment extend beyond immediate financial losses. Unemployed workers, when they do find employment, often must take positions outside their areas of expertise and training, usually at lower wages. This situation particularly harsh for individuals entering the labor force during periods of high unemployment, as they commence their careers at lower starting salaries compared to times of economic prosperity. Research indicates that the wage disparity caused by starting work during a high unemployment phase persists, with a significant income gap remaining even after ten years of employment.

On a broader scale, unemployment results in a loss of potential output. An economy grappling with high unemployment rates operates below its capacity; it produces fewer goods and services than it could if it were at full employment. This underutilization of the labor force means that society as a whole misses the economic contributions that the unemployed could have made.

Unemployment also generates considerable financial costs to society through the government's provision of unemployment benefits. Billions of dollars are allocated annually to support unemployed individuals. These funds could have otherwise contributed to enhancing public services such as healthcare, education, infrastructure improvements, or other critical areas. Therefore, unemployment not only diminishes the economic welfare of individuals, reduces total output, but it also imposes substantial financial burdens on society.

Measuring the economic cost of unemployment

Measuring the economic cost of unemployment involves quantifying the gap between what an economy is currently producing and what it could produce if it were operating at full capacity, with all available labor engaged in productive activity. This measure is grounded in the concept of **the output gap**, which serves as a key indicator of the economic cost of unemployment.

To begin, the potential GDP, or full-employment output, is defined as the level of output the economy would achieve if it were employing all its labor resources efficiently—that is, with only frictional. This type of unemployment is considered natural or unavoidable as it results from the normal turnover in the labor market.

On the other hand, actual GDP is the level of output currently being produced by the economy. By comparing actual GDP to potential GDP, we can determine **the output gap**. The output gap reveals the difference between potential and actual economic activity, quantifying the loss in total output or income attributable to unemployment.

The output gap, sometimes referred to as the **income gap**, can help us quantify the economic cost of unemployment. It represents the additional goods and services that could have been produced had the economy been operating at full employment. Understanding and measuring this gap provides critical insight into the economic implications of unemployment and guides policymakers in formulating responses to mitigate these costs.

potential GDP or full-employment output *the economy's output at full employment*

actual output *the level of output produced by the economy*

output gap or income gap *the difference between the potential output and the actual output of an economy*

We have estimated loss of output due to unemployment using 2023 data, expressed in 2017 dollars for consistency with current Statistics Canada reporting. Figure 6.5 illustrates the economic cost of unemployment from 1980 to 2023.

As discussed earlier, the gap between potential GDP and actual GDP represents the economic cost of unemployment. In 2023, the national unemployment rate averaged 5.0%. That year, the estimated output gap—the difference between Canada’s potential real GDP and its actual output—was approximately \$57.6 billion. This figure reflects the goods and services that were not produced because labor and capital were underutilized.

To understand the scale of this loss, consider that dividing \$57.6 billion equally among all Canadian households in 2023 would have provided over \$3,000 per household. Alternatively, the lost output was roughly equal to the GDP of Saskatchewan and Prince Edward Island combined in that same year. (Source: [Statistics Canada](#), Table 36-10-0434-01 and [Statistics Canada](#), Table 14-10-0287-01)

An Economic Theory

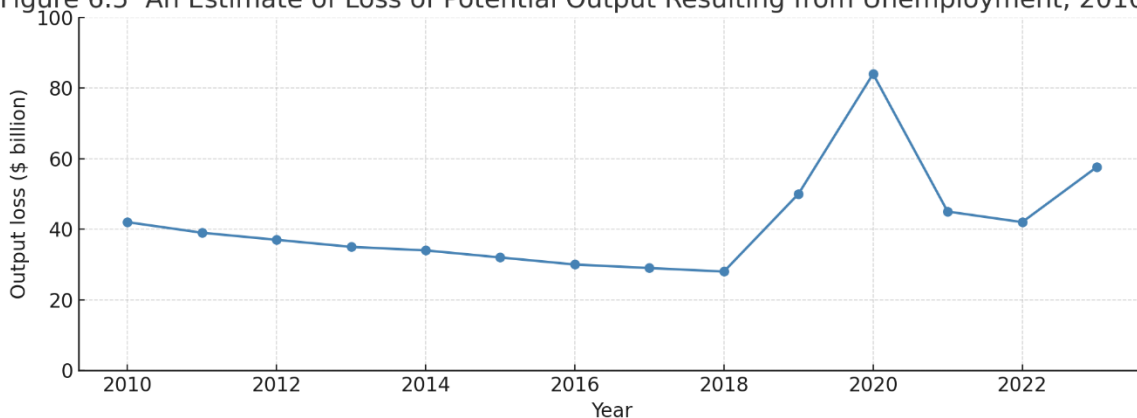
Okun’s Law, named after American economist Arthur Okun (1928–1980), describes a consistent relationship between changes in the unemployment rate and fluctuations in real Gross Domestic Product (GDP). The principle suggests that a 1 percentage point rise in the unemployment rate corresponds to roughly a 2 percent drop in real GDP compared to its potential. First introduced in 1962, the model proposes a linear connection between labor market conditions and output performance. Empirical studies have continued to validate this relationship, with the 1:2 ratio serving as a widely used benchmark. In Canada, several macroeconomic assessments have found this approximation to hold, reinforcing the law’s applicability in varied economic settings.

***Okun’s law** the assertion that real output falls by 2% for every 1 percentage point increase in the unemployment rate*

Let us use Okun’s Law to calculate the loss in output in the Canadian economy in 2023. Real output in 2023, measured in constant 2017 dollars, was approximately \$2,538.3 billion. The unemployment rate for the year averaged 5.0%. Assuming full employment is also 5.0%, there is no output gap, and therefore no output loss for 2023 under Okun’s Law.

Figure 6.5: An Estimate of Loss of Potential Output Resulting from Unemployment, 2010 and 2023

Figure 6.5 An Estimate of Loss of Potential Output Resulting from Unemployment, 2010–2023



Source: Author's calculation

Estimated using Okun's Law and annual unemployment rates from Statistics Canada, Table 14-10-0287-01 — Labour force characteristics, seasonally adjusted. GDP benchmarks based on Statistics Canada, Table 36-10-0434-01 — Gross domestic product (GDP) at market prices, constant 2017 dollars. Output loss estimates assume a 2% decline in real GDP for every 1 percentage point increase in the unemployment rate above Canada's estimated full-employment level (approximately 5%).

By contrast, in 2020—during the height of the COVID-19 recession—the unemployment rate averaged 9.5%. Using Okun's 1:2 ratio, the gap above full employment (4.5 percentage points) implies a 9.0% loss in potential output. With real GDP of \$2,227.5 billion in 2020, potential output would have been approximately \$2,448.0 billion, indicating an output loss of about \$220.5 billion in real terms for that year.

(Source: [Statistics Canada](#), Table 36-10-0434-01; [Statistics Canada](#), Table 14-10-0287-01)

The non-economic costs of unemployment

The non-economic costs of unemployment go beyond mere loss of income; they encompass significant personal and social costs.

1. **Decline in Mental Health:** Unemployment is strongly associated with deteriorations in mental health, including increased rates of depression, anxiety, and emotional distress. The loss of work often leads to a sense of purposelessness and can significantly increase stress levels.
2. **Physical Health Effects:** There is evidence to suggest that unemployment can lead to worsened physical health outcomes. This includes higher risks of heart disease, increased likelihood of engaging in unhealthy behaviors (such as smoking or physical inactivity), and even reduced life expectancy.
3. **Loss of Self-Esteem:** The loss of employment can lead to a significant decline in self-esteem and personal identity, which is often closely tied to one's profession or career achievements. This can affect an individual's confidence and willingness to seek out new opportunities.
4. **Strain on Relationships:** The stress and financial strain caused by unemployment can lead to tensions within family relationships and friendships, potentially causing long-term damage to these important social supports.
5. **Increased Social Isolation:** Without the routine and social interactions provided by employment, individuals may experience increased isolation and loneliness, further impacting mental health.
6. **Reduced Future Employment Prospects:** Extended periods of unemployment can lead to skill decay, making it more difficult for individuals to find employment in the future. This can lead to a vicious cycle of unemployment and underemployment.
7. **Impact on Children and Dependents:** The effects of unemployment can extend to the children and dependents of the unemployed, affecting their educational achievements, health, and overall well-being.
6. **Increased Crime Rates:** Research has linked high unemployment rates with increases in crime, particularly property crime, as individuals facing financial desperation may turn to illegal activities.
9. **Community Decline:** High levels of unemployment within a community can lead to social and economic decline, affecting community cohesion and leading to deterioration in services and infrastructure.

While these non-economic costs are more difficult to quantify than financial losses, they are profound and far-reaching, affecting the well-being of individuals, families, and entire communities.

Reading Comprehension

1. Why do younger workers have a higher rate of unemployment than older ones?
2. Why is the rate of unemployment higher for men than it is for women?
3. What do you understand by the term *potential GDP*?

The Classical and Keynesian Theories of Unemployment

LO 6.4 Explain the classical and Keynesian theories of unemployment

Economic Theories of Unemployment

Economists have developed several theories to explain the causes and dynamics of unemployment; each grounded in different assumptions about how markets function. Classical theory emphasizes the self-correcting nature of markets and views unemployment as a temporary outcome of wage or price rigidity. Keynesian theory challenges this view, arguing that insufficient aggregate demand can cause prolonged unemployment without automatic recovery. Structural theories highlight mismatches between worker skills and job requirements, while frictional unemployment reflects the time needed for workers to find suitable jobs. More recent approaches, including search and efficiency wage theories, examine how labor market frictions, expectations, and employer behavior influence employment outcomes. Together, these theories provide complementary insights into the persistence and variation of unemployment across time and economies.

The Classical Theory of Unemployment

The Classical Theory of Unemployment maintains that full employment is the natural outcome of a self-adjusting economy. Classical economists, writing from the eighteenth to early twentieth centuries, argued that flexible prices, wages, and interest rates would correct any temporary imbalances. A decline in consumer or business spending would lead to unsold inventories, causing prices to fall. Lower prices would stimulate demand and encourage firms to

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invest and produce more. As production expanded, employment would rise, restoring full employment without requiring government action.

classical economists eighteenth-, nineteenth-, and early twentieth-century economists who argued that the economy would automatically achieve full employment if wages and prices were flexible.

BUSINESS SITUATION 8.1

You have just become a member of a powerful group of business owners, most of whom are chief executive officers. This influential group of business executives has consistently opposed policies to reduce unemployment, claiming that unemployment reduces wages, which in turn reduces production costs. Lower production costs mean increased profits for businesses.

Classical economists argue that when consumers reduce their spending, they are effectively increasing their savings. The increase in savings then boosts the supply of funds available for lending, which reduces interest rates. Similarly, when firms cut back on spending, it leads to a decrease in the demand for investment loans, further causing interest rates to drop. Lower interest rates, in turn, stimulate increases in consumer and investment spending.

They also contend that unemployment in the economy prompts competition among workers for available jobs, leading to a decrease in wages. This reduction in wages incentivizes firms to hire more workers, thereby restoring full employment. Thus, according to classical economists, deviations from full employment are temporary, as market forces naturally correct them.

The classical theory suggests that setting wage rates above the equilibrium level leads to unemployment. This situation can be shown in Figure 6.6, where a higher wage rate than the equilibrium creates unemployment, reinforcing the belief that market adjustments naturally address imbalances.

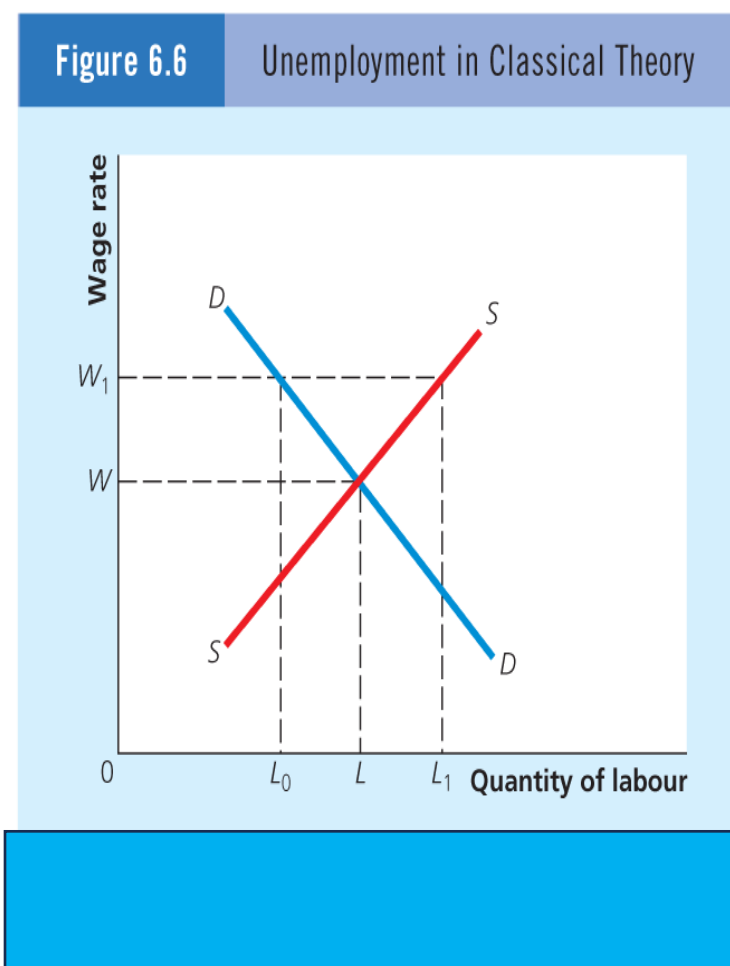
The diagram illustrates the labor market, where line DD represents the demand for and SS the supply of labor. The demand curve slopes downward, indicating that employers will demand

fewer labor services at higher wage rates, while the supply curve slopes upward, showing that workers offer more labor services as wage rates increase. At point W, where the demand and supply curves intersect, is the equilibrium wage rate. Should the wage rate be set at W_1 , the labor supply reaches L_1 , and the demanded quantity falls to L_0 , resulting in a surplus of labor that surpasses demand. This surplus, shown as $L_1 - L_0$, constitutes unemployment, prompting a decrease in wage rates until the market reaches equilibrium. Classical economists argued that the economy naturally operates at full employment when prices and wages are flexible.

Figure 6.6 Unemployment in Classical Theory

The classical and automatic employment

The foundation employment **Say's Law**, the French Jean-Baptiste (1832). This "supply creates demand," the act of goods and inherently market for reasoning Law unfolds as produce goods



economists full

of the classical theory rests on attributed to economist Say (1767– principle states its own meaning that producing services generates a them. The behind Say's follows: People and services

primarily to earn income, enabling them to buy the goods and services they desire and meet their needs and wants. Therefore, production itself generates demand for goods and services. Given this dynamic, it becomes highly unlikely, if not impossible, for the total production of

goods and services to surpass what customers wish to purchase; essentially, production and demand for goods and services balance each other out.

***Say's law** the assertion that the production of goods and services creates a market for those goods and services: supply creates its own demand.*

Say's Law, while influential in the development of classical economic thought, has several acknowledged weaknesses, especially when applied to modern economies:

1. **Ignoring saving:** Say's Law assumes that all income earned will immediately be used to purchase goods and services, overlooking the possibility that money can be held back as savings. People might not spend all their income on consumption, especially during economic uncertainty, leading to a gap between supply and demand.
2. **Overlooking Involuntary Unemployment:** The law assumes that markets always clear, meaning that all goods and services produced will find buyers, and by extension, everyone willing to work at the prevailing wage will find employment. This overlooks the reality of involuntary unemployment, where people are willing to work but cannot find jobs due to economic downturns.
3. **Assuming Instantaneous Market Adjustments:** Say's Law implies that markets adjust instantly to changes in supply and demand, which ensures that all goods and services find buyers, but market adjustments can be slow, and during these periods, excess supply can lead to unsold goods and unemployment.
4. **Neglecting Consumer Confidence:** The law underestimates the impact of consumer confidence on spending. In times of economic uncertainty, even if people have money, they may choose to save rather than spend, reducing demand for goods and services.
5. **Disregarding the Role of Investment:** Say's Law focuses on the production and consumption of goods and services without adequately accounting for investment. Investment decisions, which are influenced by expectations about the future, can lead to economic expansions or contractions independent of current production levels.
6. **Inadequate in Addressing Economic Cycles:** Say's Law does not account for the cyclical nature of economies, where booms and busts can lead to periods of overproduction (leading to inflation) or underproduction (leading to unemployment and recession).

In summary, while Say's Law provides a foundation for understanding the relationship between supply and demand, its limitations become apparent in complex, modern economies where

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savings, investment, consumer confidence, and the speed of market adjustments play crucial roles.

The Keynesian theory of unemployment

The Keynesian Theory of Unemployment

The Keynesian theory of unemployment offers a sharp departure from the classical view. Prompted by the prolonged unemployment of the Great Depression (1929–1939), economists began to question the classical belief in automatic full employment. British economist John Maynard Keynes (1883–1946) emerged as the leading critic of this framework. In 1936, during a period when industrial economies were still struggling to recover, Keynes published *The General Theory of Employment, Interest, and Money*. This landmark work challenged prevailing economic doctrines and transformed the study of macroeconomics.

Keynesian theory *this theory of unemployment states that unemployment can be caused by low aggregate expenditure*

In "*The General Theory*," Keynes illustrates that unemployment may stem from a lack of aggregate spending. Keynes's theory posits that when overall spending is inadequate for firms to sell their produced goods and services, they will cut back on production and lay off workers. This adjustment leads the economy to stabilize at an equilibrium below full employment. To address this issue and return to full employment, Keynes advocates for government intervention through increased government spending, reduced taxes, or a blend of both strategies. The nuances and implications of the Keynesian theory will be the focus of our discussion in the forthcoming chapters.

Keynes main ideas can be summarized as follows:

1. **Aggregate Demand Determines Economic Activity:** Keynes argued that the total demand for goods and services (aggregate demand) in an economy is the primary driving force behind economic activity and employment levels. Unlike classical economists, who believed in self-correcting markets, Keynes maintained that it is possible for economies to settle into equilibriums with less than full employment due to insufficient demand.
2. **Importance of Government Intervention:** Keynes contended that in times of economic downturn, market forces alone are insufficient to restore full employment. He advocated for government intervention through fiscal policies, such as increased public spending and tax cuts, to stimulate aggregate demand and pull economies out of recessions.

3. **The Multiplier Effect:** Keynes introduced the concept of the multiplier effect, which suggests that an initial increase in spending leads to increased income and consumption, further amplifying the initial stimulus. This understanding provides the rationale for government spending as a tool to boost economic activity.
4. **Liquidity Preference and Interest Rates:** Keynes challenged the classical view of interest rates, proposing instead that they are determined by the supply and demand for money rather than the supply and demand for savings. He introduced the concept of liquidity preference—the desire to hold wealth in liquid form—and argued that interest rates should be managed to influence investment and consumption.
5. **The Paradox of Thrift:** Keynes highlighted the paradox of thrift, which suggests that while saving is beneficial for an individual, it can be harmful to the economy if everyone saves simultaneously. In such cases, aggregate demand falls, leading to reduced economic activity and higher unemployment.
6. **Uncertainty and Expectations:** Keynes also emphasized the role of uncertainty and expectations in economic decision-making. He argued that because the future is inherently uncertain, investors' and consumers' expectations about the future significantly affect current economic activity.
7. **Inflexible Wages and Prices:** Contrary to classical economics, which assumed that flexible wages and prices would automatically restore full employment, Keynesians argue that wages and prices could be "sticky" downwards, preventing the automatic adjustment and perpetuating unemployment.

These ideas not only challenged classical economic theories but also formed the foundation of Keynesian economics, influencing economic policymaking during the Great Depression and for many years thereafter.

Reading Comprehension

1. Discuss the classical theory of unemployment.
2. What did the classical economists suggest that government do to reduce unemployment?
3. What does Keynesian theory suggest that the government do to reduce unemployment?

Inflation:
Definition,
Measurement,
and Effects

LO 6.5 Understand
inflation, its
measurement, and
its effects

Definition of Inflation

Inflation is a sustained increase in the average price level of goods and services over time, leading to a gradual rise in the cost of living. It has become a frequent topic in Canadian households and media since 2021, following several years of low and stable inflation. Understanding what inflation means is essential before examining its economic effects.

***inflation** a sustained increase in the average level of prices over time; a persistent increase in the cost of living*

We need to distinguish between the increase in the price of a specific product, influenced by demand and supply changes in particular markets, and a general rise in the overall price level. Take, for instance, a scenario where a surge in school enrollments boosts the demand for textbooks, leading to higher textbook prices, provided all other conditions remain the same. This increase signifies a shift in relative prices rather than a clear indicator of inflation, especially if prices in other markets are falling. Inflation involves a widespread rise in prices across multiple sectors.

We also need to distinguish between a persistent rise in the average price level, indicative of inflation, and a one-off increase in the price level is important. These distinctions, fundamental in nature, are illustrated in Figure 6.7.

Figure 6.7 shows the relationship between the average price level, as measured by a price index, and time, measured in years. The steadily rising line *PS* shows a persistent rise in the price index from 100 in Year 0 to 200 in Year 5. The slope of the line *PS* represents changes in

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the average level of prices over time and could be used to calculate inflation. By contrast, line *PQ* shows the price level remaining constant at 100 from Year 0 to Year 2. Then at Year 2, the price level suddenly increases from 100 to 200, as shown by the vertical line *QR*, and then remains constant at 200 for the remaining three years. This situation is described as a once-and-for-all increase in the price level in Year 2. We cannot describe this situation as inflationary because the price rise is not sustained.

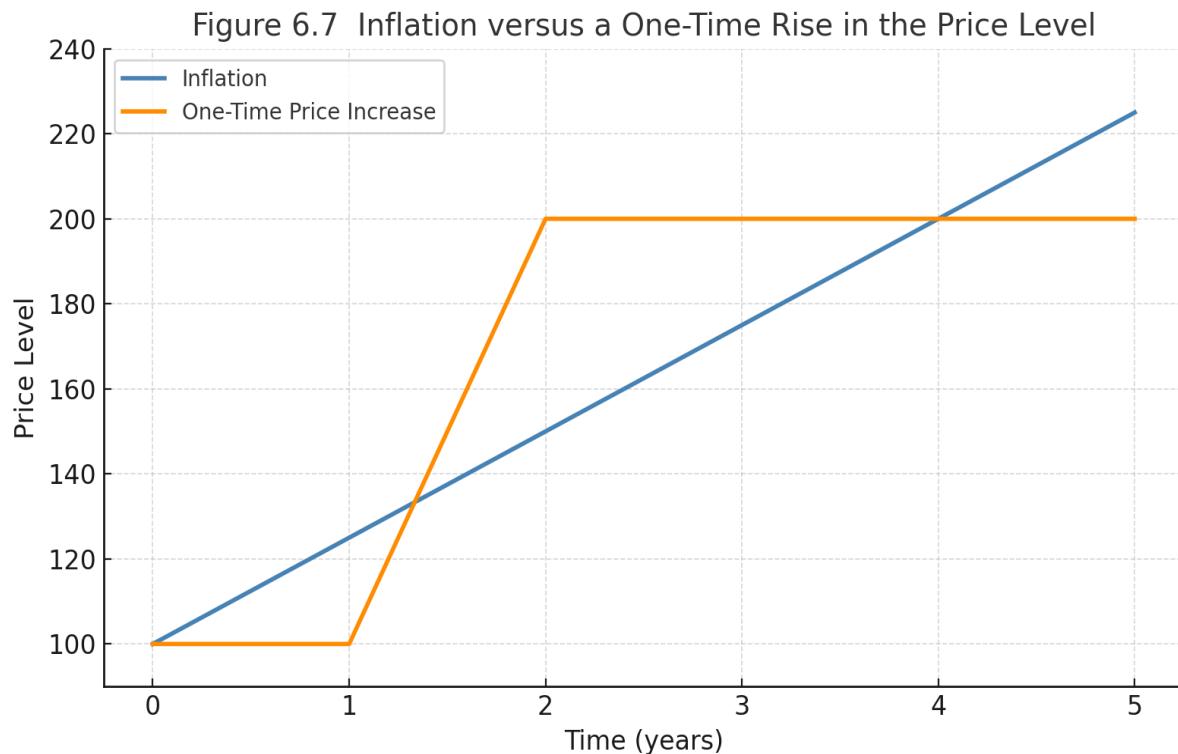
In an inflationary situation, the purchasing power of money falls. When there is inflation, \$100 will buy less today than it did last year and more today than it will next year.

The *rate of inflation*

The **rate of inflation** is the rate of change in the average level of prices. It tells how fast inflation is increasing. The rate of inflation is usually expressed as a monthly or an annual rate. If the rate of inflation is 5% per year, then a box of paper clips that costs \$1 now will cost \$1.05 a year later.

***rate of inflation** is the rate of change of the average level of prices*

Figure 6.7 Inflation versus a Once-Only Rise in the Price Level



How is inflation measured

We can measure changes in the price level by using price indexes. Let us recall that, in Chapter 5, we discussed that price indexes could be used to deflate the GDP. There are many price indexes, but the three popular ones are the *consumer price index (CPI)*, the *producer price index (PPI)* or the *wholesale price index*, and the *GDP deflator* or the *implicit GDP price index*. Of the three price indexes, the CPI is used most often. The **consumer price index** is an index that measures changes in the prices of consumer goods and services. In constructing the CPI, Statistics Canada collects information on the prices of a fixed basket of goods and services and calculates the average change over time. The **producer price index** is an index that measures changes in the prices of producer goods (goods bought by manufacturers). The **implicit price deflator** (also called the **GDP deflator**) is an index that measures changes in the average level of prices of all final goods and services. The *implicit price deflator* is therefore the most comprehensive of the three price indexes. Various other indexes are employed to measure inflation rates, tailored to the specific focus of the economic analysis.

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consumer price index *an index that measures changes in the prices of consumer goods and services*

producer price index *an index that measures changes in the prices of producer goods*

implicit price deflator or GDP deflator *an index that measures changes in the average level of prices of all final goods and services*

How Statistics Canada constructs the CPI

Statistics Canada follows a structured process to construct the Consumer Price Index (CPI). It begins by identifying a fixed basket of goods and services typically purchased by individuals and families in urban and rural areas—the target population. This basket reflects spending patterns in a specific reference year. As of 2024, the current reference year is 2022. Each item in the basket is assigned a weight based on its share of total household spending.

Prices for the items in the basket are collected monthly from a wide range of retail outlets. To ensure comparability over time, the CPI uses a base year to measure changes in the cost of the basket. The current base year is also 2022. The CPI is calculated by dividing the cost of the basket in a given year by the cost in the base year and multiplying by 100. This index provides a measure of how the average cost of living changes over time. (Source: [Statistics Canada](#), Table 18-10-0004-13 and metadata)

An example of how the CPI is constructed

This can be illustrated with a simple example. Suppose the typical household buys only two items: apples and bus tickets. Table 6.2 shows hypothetical quantities and prices for these two items in 2022 and 2023 and demonstrates how the Consumer Price Index (CPI) is calculated.

Assume that in 2022—the base year—the price of an apple was \$1.20, and the household purchased 25 apples, spending \$30.00. A single bus ride cost \$3.50, and the household took 12 rides, spending \$42.00. The total cost of the monthly basket in 2022 was \$72.00.

In 2023, suppose the price of apples rose to \$1.32 (a 10% increase) and the bus fare increased to \$3.85 (also a 10% increase). Holding the quantities fixed at 25 apples and 12 bus rides, the household would now spend \$33.00 on apples and \$46.20 on bus fares, for a total basket cost of \$79.20.

To calculate the CPI for 2023 using 2022 as the base year, divide the 2023 basket cost (\$79.20) by the 2022 cost (\$72.00) and multiply by 100:

$$\text{CPI for 2023} = (79.20 / 72.00) \times 100 = 110.0$$

This index value indicates that, based on the fixed basket, the overall price level rose by 10% between 2022 and 2023. The CPI has no units, as it is a ratio of two monetary values.

$$\text{The CPI in 2022} = (\$72 / \$72) \times 100 = 100$$

$$\text{The CPI in 2023} = (\$79.20 / \$72) \times 100 = 110$$

Table 6.2 An Example of the Construction of the CPI

Calculating the rate of inflation

The rate of inflation between two periods is calculated by taking the percentage change in the CPI between the two periods. The formula to calculate the rate of inflation is a general formula used to calculate percentage changes in any variable that we introduced in Chapter 1.

So, the rate of inflation between two years is:

$$\text{Rate of Inflation} = \left(\frac{\text{CPI}_{\text{current year}} - \text{CPI}_{\text{previous year}}}{\text{CPI}_{\text{previous year}}} \right) \times 100$$

Therefore, applying this formula, the rate of inflation between 2010 and 2011 will be:

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$$\{(104 - 100)/100\} * 100 = 4\%$$

Volatile prices and the CPI?

Some economists contend that the Consumer Price Index (CPI) may overstate the true increase in the cost of living because it includes items with highly volatile prices. To address this concern, they advocate for a measure that excludes these price fluctuations—particularly in products like gasoline and fresh food. This refined measure is known as **the core rate of inflation**. Since 2006, Statistics Canada has published monthly data on the core CPI, which excludes eight especially volatile components, such as fuel, vegetables, cigarettes, mortgage interest payments, and the effects of indirect taxes. The core index aims to reveal underlying inflation trends by filtering out short-term price shocks.

***core rate of inflation or core CPI** excludes volatile prices such as prices of gasoline and some food items*

Headline inflation refers to the total inflation rate measured by the **Consumer Price Index (CPI)**, which includes **all items in the basket**, including **volatile components** like food and energy. It captures the overall change in the cost of living and reflects the price fluctuations that consumers experience.

In contrast, **core inflation** excludes certain volatile items, typically food, energy, and indirect taxes—to reveal underlying, persistent inflation trends.

***Headline inflation** is often more variable month to month, while **core inflation** provides a smoother, more stable indicator of long-term inflationary pressure. Statistics Canada reports both.*

Problems in using the CPI to estimate the rate of inflation

The Consumer Price Index (CPI) is a widely used indicator for measuring inflation, but it has several weaknesses that can affect its accuracy and relevance:

1. **Fixed Basket of Goods and Services:** The CPI uses a fixed basket of goods and services, which is updated only periodically, every ten years. This approach may not accurately reflect changes in consumer behavior or preferences as people switch to substitutes when relative prices change.

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2. **Introduction of New Products:** The CPI may fail to capture the impact of new products entering the market. As consumers adopt new goods and services that were not previously included in the CPI basket, the measure may not fully represent current spending patterns.
3. **Quality Adjustments:** The CPI may not adequately adjust for improvements in the quality of goods and services. When the quality of a product increases, its price might also rise, but this price increase could reflect improved value rather than inflation. The CPI has mechanisms for quality adjustments, but they may not fully capture the extent of quality changes.
4. **Substitution Bias:** The fixed basket approach can lead to substitution bias. As prices change, consumers may substitute more expensive items with cheaper ones, but the CPI basket does not adjust for this behavior in the short term, potentially overstating inflation.
5. **Outlet Substitution Bias:** Changes in where consumers shop (e.g., switching from brick-and-mortar stores to online shopping) can also introduce bias. The CPI may not fully account for the lower prices often found online or at discount retailers, potentially overstating inflation.
6. **Geographical Coverage:** The CPI may not accurately reflect price changes in all geographic areas. It typically measures urban consumer spending, which may not match price changes in rural areas.
7. **Non-Market Goods and Services:** The CPI does not include non-market goods and services, such as do-it-yourself activities, such as home maintenance or childcare provided by family members, which can be significant portions of overall consumption but difficult to price.

Due to these weaknesses, economists and policymakers often look at a range of inflation measures, including core inflation (which excludes volatile food and energy prices) and other price indexes, to get a more comprehensive view of inflation trends.

Reducing these limitations of the CPI

To mitigate the limitations of the Consumer Price Index (CPI), economists have proposed alternatives, such as the Chained Price Index for Consumption (CPIC). This index, grounded in consumption expenditures from national income accounts, is calculated by dividing current consumption expenditures by real consumption expenditures and then multiplying by 100. Unlike the CPI, the CPIC adjusts for changes in consumer behavior over time, reflecting the actual purchases of consumers within a given year.

However, while the CPIC offers improvements, such as better capturing substitutions that consumers make in response to changing prices, it also has its limitations. Because it is based

on the GDP deflator, the CPIC includes prices for non-consumer goods and services. This inclusion means that, although the CPIC can provide a more dynamic picture of consumer spending and potentially offer a more accurate reflection of inflation's impact on the cost of living, it may not fully isolate the cost changes specifically related to consumer goods and services.

Further refining inflation measures involves continuous adjustments and improvements to account for consumer behavior, new products, and quality changes. This process ensures that inflation metrics remain relevant and accurately reflect the economic reality faced by consumers.

Chained Price Index for Consumption (CPIC) is an index based on the consumption expenditures reported in the national income accounts

Doubling Time

In fact, there is a rule or formula that we can use. The so-called **rule of 70** is a formula for determining the number of years required for a number (in this case, the average price level) to double for a given rate of change (in this case, the rate of inflation). According to this rule, the number of years required for a doubling of the price level is determined by dividing 70 by the annual rate of inflation. That is,

rule of 70 a formula for determining the number of years required for a number to double for a given rate of change

$$N = \frac{70}{\text{Rate of inflation}}$$

where N is the number of years necessary for the price level to double.

Obviously, the higher the rate of inflation, the shorter the time required for the average price level to double. If the rate of inflation is 5% per year, then the average price level will double in $(70 \div 5) = 14$ years. If the rate of inflation of 4.8% in 2000 had continued indefinitely, then the consumer price index would have doubled in $(70 \div 4.8) = 14.4$ years or by approximately 2014.

Analyzing the Effects of Inflation

The impact of inflation depends on whether it is anticipated or unanticipated, and on the ability

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of individuals and institutions to adjust their nominal incomes. To assess its consequences, it is essential to distinguish between these two types. Inflation is considered anticipated when the actual rate matches the expected rate. For example, if everyone expects a 3% inflation rate next year and that prediction holds, inflation is fully anticipated. In contrast, inflation is unanticipated when the actual rate exceeds expectations—for instance, if people expect 4% but the rate turns out to be 6%. Anticipated inflation allows individuals and businesses to make informed adjustments, while unanticipated inflation introduces uncertainty and redistributes purchasing power.

Hyperinflation

Hyperinflation is an excessively high rate of inflation, also called **runaway inflation**. A good example of hyperinflation is Germany in the early 1920s, when the annual inflation rate was well over 1 million percent.

***hyperinflation or runaway inflation** an excessively high rate of inflation, usually 100% or more annually*

This rate of inflation is difficult to conceive. To add some perspective to such a staggering rate of inflation, just imagine what the situation would be if the amount of money required to purchase a huge mansion in one year was not enough to purchase a box of matches one year later. Some countries, such as Angola, Argentina, Democratic Republic of Congo, Zimbabwe, Bulgaria, Romania, Brazil, Nicaragua, and Peru, have all experienced what many would describe as hyperinflation or runaway inflation.

Problems caused by inflation

Inflation is considered a problem for several reasons, foremost among them its tendency to distort price signals, signals that are essential for the efficient allocation of resources by households and firms. When prices reflect actual supply and demand, they guide decisions about production, consumption, and investment. Inflation blurs these signals, making it harder for economic agents to interpret relative price changes and potentially leading to resource misallocation.

Inflation also erodes purchasing power. As the general price level rises, the same amount of money buys fewer goods and services. This is especially burdensome for individuals on fixed incomes or for savers whose returns do not keep pace with inflation, reducing their real standard of living.

The effects of inflation, however, are not uniform. They vary depending on income sources, asset ownership, and debt obligations. Those with stable incomes and inflation-protected investments may fare better than those with unindexed savings or fixed payments. Debtors may even benefit, as inflation reduces the real value of what they owe. This uneven distribution of costs and benefits complicates the design of effective inflation policies.

Winners and Losers in Inflation

To understand who gains and who loses during inflation, it is important to distinguish between nominal income and real income. Nominal income refers to the actual number of dollars received over a period, while real income adjusts for changes in the price level and reflects purchasing power. The change in real income is determined by the difference between the rate of change in nominal income and the inflation rate.

Consider an example from 2021. Suppose Rebecca's salary rose by 5% and Julian's remained the same, while the inflation rate was 2%. Rebecca's real income rose by 3%, allowing her to buy more goods and services. Julian's real income, on the other hand, fell by 2%, reducing his purchasing power. This example shows how individuals with rising incomes can benefit from inflation, while those with fixed or stagnant incomes become worse off.

***real income** nominal income adjusted for the rate of inflation*

Who Are the Winners and Losers?

Inflation affects different groups in different ways, depending on how their income, expenses, and debts respond to rising prices. Some people benefit, while others lose purchasing power or face higher costs.

Winners of Inflation

1. **Debtors:** People or entities with fixed-rate debts benefit from inflation because they can repay their loans with money that is worth less than when they borrowed it. This is especially true for long-term loans like mortgages.

2. Owners of Real Assets: Individuals who own assets like real estate or commodities may see the value of these assets rise with inflation, protecting them from the erosion of purchasing power.

3. Businesses with Pricing Power: Companies that can easily pass on increased costs to consumers without losing demand for their products or services can maintain or even increase their profit margins during inflationary periods.

4. Inflation protected income: people whose income is protected from inflation and investors in inflation-protected securities, such as Treasury Inflation-Protected Securities (TIPS), or those holding investments in sectors that typically outpace inflation, like commodities or real estate, can also emerge as winners.

Losers of Inflation

1. Savers: People with a significant amount of cash savings or investments in fixed-income securities that do not adjust for inflation (e.g., standard bonds) lose purchasing power over time as inflation rises.

2. Fixed Income Recipients: Individuals relying on fixed incomes, such as retirees living on pensions that do not adjust for inflation, will find their living standards declining as the cost-of-living increases.

3. Lenders: Creditors or lenders who provide loans at fixed interest rates lose because the real value of the repayments decreases over time.

4. Consumers: Generally, consumers may suffer as the buying power of their income decreases, particularly if wages do not keep up with the pace of inflation.

5. Businesses with High Input Costs: Small businesses facing steep increases in input costs that cannot be passed on to consumers due to competition or other factors may see their profit margins shrink.

Inflation affects different groups in different ways, and policymakers must weigh these varied impacts when crafting strategies to manage inflation. The negative effects are most severe when inflation is unanticipated and when individuals cannot adjust their nominal income in response.

For example, creditors who expect inflation of 4% can protect themselves by raising nominal interest rates by that amount. This adjustment ensures that the real value of the repayments remains unchanged. Similarly, individuals on fixed contracts can guard their purchasing power

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by negotiating cost-of-living adjustments (COLAs). These clauses automatically raise nominal income in line with inflation, so if the price level increases by 3%, wages rise by the same amount. COLA clauses are widely used in employment and pension agreements to offset the erosion of purchasing power.

Inflation affects the economy as a whole in several ways beyond its effects on individual income redistribution:

1. **Resource Allocation:** During inflationary periods, individuals may seek to preserve the purchasing power of their income by investing in durable goods and assets. This behavior can lead to a misallocation of resources within the economy as investment flows into sectors perceived as offering protection against inflation, potentially diverting resources away from more productive uses.
2. **Labor Market Dynamics:** Some economists argue that inflation can diminish the incentive to work. As nominal wages fail to keep pace with inflation or real wages decline, individuals may feel disincentivized to work harder. This could lead to reduced labor force participation and productivity, affecting overall economic output.
3. **Taxation:** Inflation can push individuals into higher income tax brackets, leading to a higher proportion of taxes paid out of income. To mitigate this effect, individuals may reduce their work effort or engage in tax avoidance strategies, potentially impacting government revenue and economic efficiency.
4. **Business Environment:** While mild inflation may initially stimulate profits, investment, and economic growth, there is a risk that even moderate inflation could escalate into hyperinflation. Hyperinflation poses severe economic challenges, as the rapid loss of money's value prompts individuals to spend currency as quickly as they receive it. This behavior can lead to a breakdown in the monetary system, with people resorting to inefficient barter systems for goods and services.
5. **Monetary Stability:** Hyperinflation may necessitate monetary reform to restore confidence in the currency and stabilize the economy. Failure to address hyperinflation promptly could result in widespread economic disruption and damage to the overall economic structure.

In summary, The impact of inflation extends beyond individual income redistribution to affect resource allocation, labor market dynamics, taxation, business environment, and overall monetary stability. Policymakers must carefully manage inflation to mitigate its adverse effects

The relationship between inflation and unemployment

The relationship between inflation and unemployment is a key focus in macroeconomics and will be explored extensively in Chapter 16. Here, we introduce some fundamental aspects of this relationship, with reference to Figure 6.6.

Aggregate spending within an economy plays a pivotal role in determining both the inflation rate and the unemployment rate. When total spending dwindles to low levels, businesses are left with excess unsold inventory, prompting them to lay off workers without raising prices. This situation, depicted in section A of Figure 6.8, results in output and employment levels well below full employment, denoted by point F. Consequently, the unemployment rate surges.

Conversely, when aggregate spending increases, businesses experience a surge in demand for their goods and services, leading to a depletion of inventories and necessitating the hiring of more workers to meet production demands. This scenario, depicted in section B of Figure 6.8, is characterized by rising output, employment, and resource prices. As labor becomes relatively scarce, wages rise, ultimately contributing to an uptick in the price level. Consequently, the unemployment rate declines.

In summary, fluctuations in aggregate spending influence both inflation and unemployment rates, with low spending leading to higher unemployment and vice versa. This dynamic interplay underscores the intricate relationship between inflation and unemployment, which is central to macroeconomic analysis.

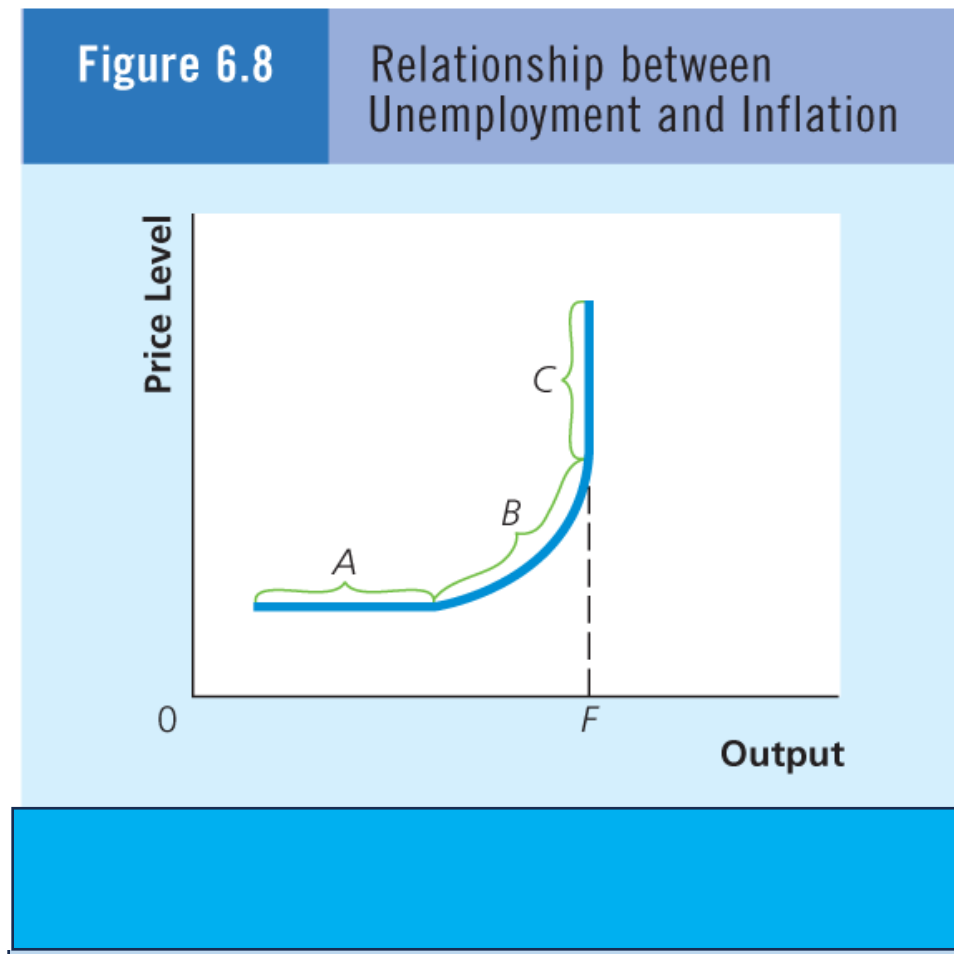
As total spending continues to increase, the economy ultimately reaches full employment (point F in Figure 6.8), where output and employment levels cannot surpass their maximum capacity. At this point, the unemployment rate cannot decline any further. With spending exerting pressure on the fixed total output, prices begin to rise, as depicted in section C of Figure 6.8.

The analysis indicates an inverse relationship between inflation and unemployment, represented by the upward-sloping segment of the curve in Figure 6.6. Based on this relationship, some economists advocate for tolerating a certain level of inflation to reduce the unemployment rate. However, others argue that such a trade-off is only viable in the short term; in the long run, increases in inflation yield minimal gains in reducing unemployment.

In short, while there appears to be a trade-off between inflation and unemployment in the short term, the efficacy of using inflation as a tool to manage unemployment diminishes over

time. This debate underscores the complexities of macroeconomic policymaking and the challenges of balancing inflation and unemployment objectives in the long run.

Figure 6.8 Relationship between Unemployment and Inflation



LO 6.6 Compare the rates of unemployment and inflation among the provinces and between Canada and other countries

The unemployment and inflation in the provinces

Table 6.3 below presents the unemployment rates by province in Canada for 2023. The national average stood at 5.4%. Among the provinces, Newfoundland and Labrador recorded the highest unemployment rate at 10.0%, followed by Prince Edward Island at 7.3%. In contrast, Quebec had the lowest rate at 4.5%, slightly below Manitoba and Saskatchewan, both at 4.8%. Ontario and Alberta reported rates close to the national average, at 5.7% and 5.9%, respectively. British Columbia also remained below the national figure at 5.2%. The table highlights regional disparities in labor market conditions, with Eastern provinces generally experiencing higher unemployment than Central and Western provinces.

Table 6.3 The Rate of Unemployment by Province, in 2023

Region	Rate
Canada	5.4
Newfoundland and Labrador	10.0
Prince Edward Island	7.3
Nova Scotia	6.3
New Brunswick	6.6
Quebec	4.5
Ontario	5.7
Manitoba	4.8
Saskatchewan	4.8
Alberta	5.9
British Columbia	5.2

(Source: [Statistics Canada](#), Table 14-10-0287-01 — Labour force characteristics by province, seasonally adjusted, 2023 annual averages)

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The rate of inflation in the provinces

Table 6.4 shows the inflation rate by province in Canada for the year 2023. The national inflation rate was 6.8%, but provincial rates varied across the country. Manitoba recorded the highest inflation at 7.9%, followed by Nova Scotia at 7.5% and New Brunswick at 7.3%. Prince Edward Island and British Columbia both reported inflation rates of 6.9%, slightly above the national average. Quebec and Saskatchewan remained just below the national rate at 6.7% and 6.6%, respectively. Newfoundland and Labrador and Alberta had the lowest inflation rates among the provinces, both at 6.4%. The data reflect regional differences in price pressures, influenced by local economic conditions, energy costs, and housing markets.

Table 6.4 The Rate of Inflation by Province 2023

Province	Inflation Rate (%)
Canada	6.8
Newfoundland and Labrador	6.4
Prince Edward Island	6.9
Nova Scotia	7.5
New Brunswick	7.3
Quebec	6.7
Ontario	6.8
Manitoba	7.9
Saskatchewan	6.6
Alberta	6.4
British Columbia	6.9

(Source: [Statistics Canada](#), Table 18-10-0004-13 — Consumer Price Index by province, 2023 annual averages)

Reading Comprehension

1. Why does the rate of unemployment vary across the provinces?
2. How does Canada's rate of inflation compare with that of the other developed countries?
3. How does Canada's rate of unemployment compare with that of the other developed countries?

Review

1. Review the learning objectives listed at the beginning of the chapter.
2. Have you accomplished all the objectives? One way to determine this is to answer the Reading Comprehension Questions at the end of each section. This will help you assess the extent to which you have accomplished the learning objectives.
3. If you have not accomplished an objective, review the relevant material before proceeding.

Key Points to Remember

1. **LO 6.1** The main types of unemployment are frictional unemployment, seasonal unemployment, structural unemployment, and cyclical unemployment.
2. **LO 6.2** The unemployment rate is obtained by expressing the number of people unemployed as a percentage of the labour force.

3. **LO 6.3** The groups most likely to be unemployed are unskilled workers and those between the ages of 15 and 24.
4. **LO 6.3** The economic cost of unemployment can be measured in terms of the lost output or income resulting from unemployment. The non-economic costs include the mental anguish, the frustration, and the loss of dignity and self-worth that the unemployed suffer.
5. **LO 6.4** According to the classical economists, full employment would automatically occur because wages and prices are flexible. The basis of their theory is Say's law, which states that supply creates its own demand.
6. **LO 6.4** Classical economists also argued that flexibility in prices and wages will lead to full employment. If wages do not decrease, they suggested, it is mostly because of government policy.
7. **LO 6.4** The Keynesian theory of unemployment states that a deficiency of total spending could cause the economy to achieve a less-than-full employment equilibrium, and that government intervention in the economy may be necessary to push it toward full employment.
6. **LO 6.5** Inflation is a sustained increase in the average level of prices over time and should not be confused with increases in relative prices caused by changes in demand and supply for particular products. Price indexes measure changes in the average level of prices. The three common indexes are the consumer price index, the producer price index, and the implicit price index (GDP deflator). There is also the chained price index for consumption.
9. **LO 6.5** The effects of inflation depend on the severity of the inflation. A mild inflation does not seem to disrupt the economy very much, but a high inflation redistributes income and wealth. Hyperinflation can cause economic collapse.
10. **LO 6.5** Some economists claim that an inverse relationship exists between inflation and unemployment. This view, however, is not supported by all economists.
11. **LO 6.6** The rates of unemployment and inflation vary among the provinces and across countries.