

28



Canadian Inflation, Unemployment, and Business Cycle

After studying this chapter, you will be able to:

- Explain how demand-pull and cost-push forces bring cycles in inflation and output
- Explain the short-run and long-run tradeoff between inflation and unemployment
- Explain how the mainstream business cycle theory and real business cycle theory account for fluctuations in output and employment

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The 1920s were years of unprecedented prosperity.

Then, in October 1929, the stock market crashed. Overnight, stock prices fell by 30 percent.

The Great Depression began and by 1933, real GDP had fallen by 30 percent, the price level had fallen by 20 percent, and one person in five was unemployed.

The 1990s and 2000s were also years of unprecedented prosperity.

In October 2008, stock prices fell, real GDP growth and inflation slowed, and the unemployment rate began to rise.

People asked: Are we on the verge of a Great Depression?

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◆ Inflation Cycles

In the long run, inflation occurs if the quantity of money grows faster than potential GDP.

In the short run, many factors can start an inflation, and real GDP and the price level interact.

To study these interactions, we distinguish two sources of inflation:

- Demand-pull inflation
- Cost-push inflation

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➤ Inflation Cycles

Demand-Pull Inflation

An inflation that starts because aggregate demand increases is called **demand-pull inflation**.

Demand-pull inflation can begin with any factor that increases aggregate demand.

Examples are a cut in the interest rate, an increase in the quantity of money, an increase in government expenditure, a tax cut, an increase in exports, or an increase in investment stimulated by an increase in expected future profits.

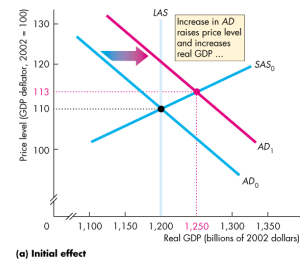
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➤ Inflation Cycles

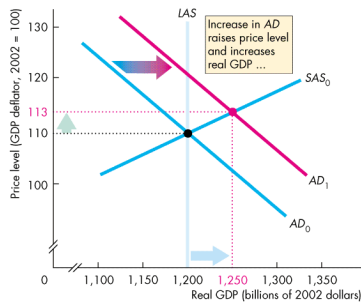
Initial Effect of an Increase in Aggregate Demand

Figure 28.1(a) illustrates the start of a demand-pull inflation.

Starting from full employment, an increase in aggregate demand shifts the AD curve rightward.



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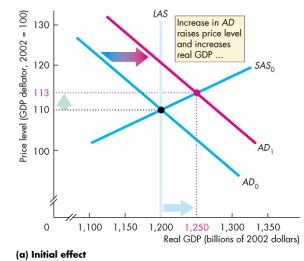


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➤ Inflation Cycles

The price level rises, real GDP increases, and an inflationary gap arises.

The rising price level is the first step in the demand-pull inflation.



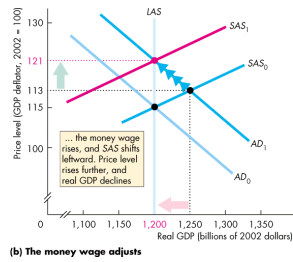
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➤ Inflation Cycles

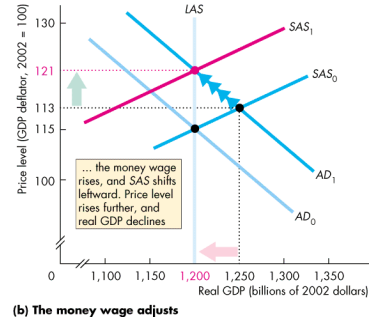
Money Wage Rate Response

Figure 28.1(b) shows that the money wage rate rises and the SAS curve shifts leftward.

The price level rises and real GDP decreases back to potential GDP.



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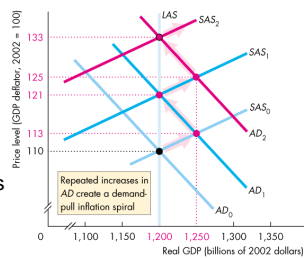
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➤ Inflation Cycles

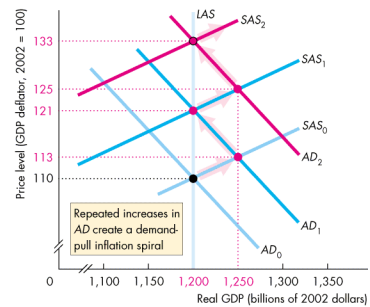
A Demand-Pull Inflation Process

Figure 28.2 illustrates a demand-pull inflation spiral.

Aggregate demand keeps increasing and the process just described repeats indefinitely.



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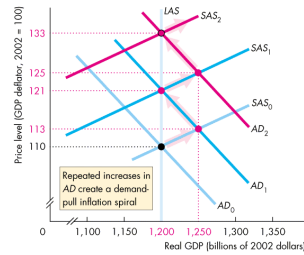


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➤ Inflation Cycles

Several factors can increase aggregate demand to start a demand-pull inflation, but *only an ongoing increase in the quantity of money can sustain it*.

A demand-pull inflation occurred in Canada in the 1960s.



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➤ Inflation Cycles

Cost-Push Inflation

An inflation that starts with an increase in costs is called **cost-push inflation**.

There are two main sources of increased costs:

1. An increase in the money wage rate
2. An increase in the money price of raw materials, such as oil

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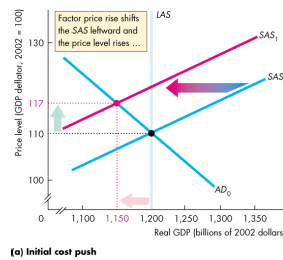
➤ Inflation Cycles

Initial Effect of a Decrease in Aggregate Supply

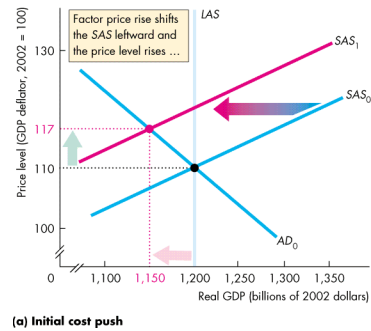
Figure 28.3(a) illustrates the start of cost-push inflation.

A rise in the price of oil decreases short-run aggregate supply and shifts the SAS curve leftward.

Real GDP decreases and the price level rises.



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➤ Inflation Cycles

Aggregate Demand Response

The initial increase in costs creates a *one-time* rise in the price level, not inflation.

To create inflation, aggregate demand must increase.

That is, the Bank of Canada must increase the quantity of money persistently.

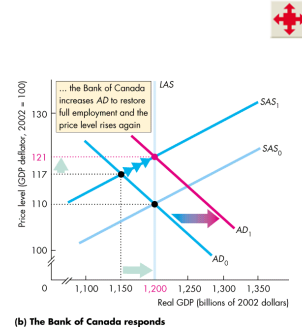
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➤ Inflation Cycles

Figure 28.3(b) illustrates an aggregate demand response.

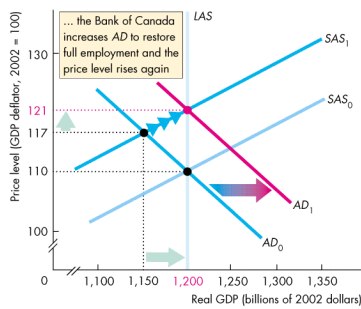
The Bank of Canada stimulates aggregate demand to counter the higher unemployment.

Real GDP increases and the price level rises again.



(b) The Bank of Canada responds

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(b) The Bank of Canada responds

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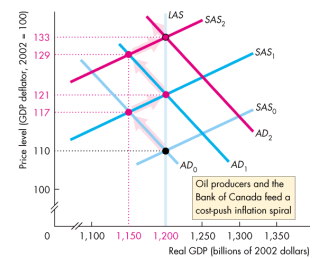
➤ Inflation Cycles

A Cost-Push Inflation Process

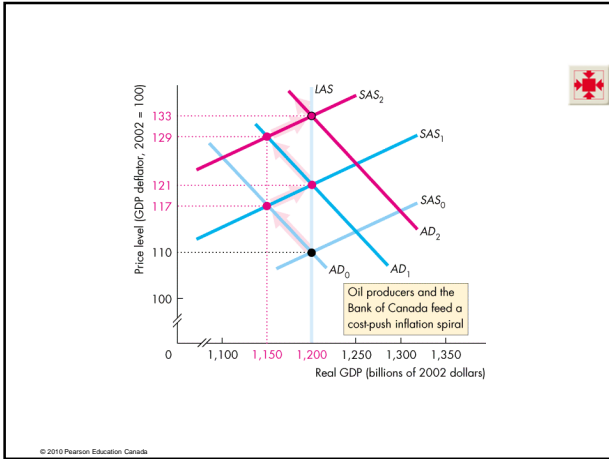
If the oil producers raise the price of oil to try to keep its relative price higher,

and the Bank of Canada responds by increasing the quantity of money,

a process of cost-push inflation continues.



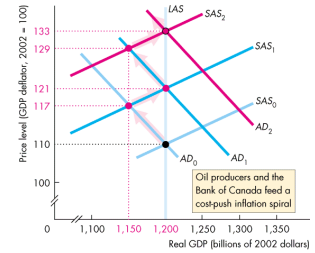
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Inflation Cycles

The combination of a rising price level and a decreasing real GDP is called **stagflation**.

Cost-push inflation occurred in Canada during the 1970s when the Bank responded to the OPEC oil price rise by increasing the quantity of money.



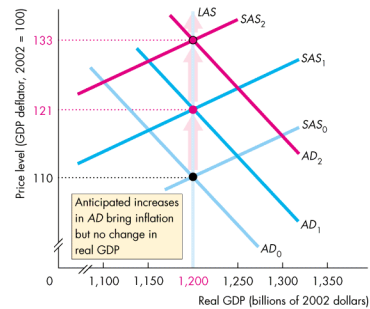
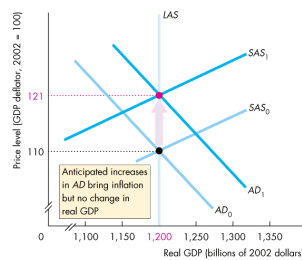
Inflation Cycles

Expected Inflation

Aggregate demand increases, but the increase is expected, so its effect on the price level is expected.

The money wage rate rises in line with the expected rise in the price level.

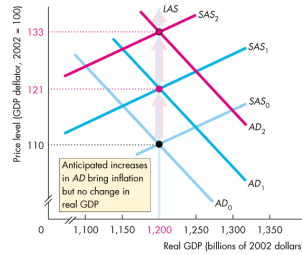
Figure 28.5 illustrates.



➤ Inflation Cycles

The price level rises as expected and real GDP remains at potential GDP.

The process repeats.



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➤ Inflation Cycles

Forecasting Inflation

To expect inflation, people must forecast it.

The best forecast available is one that is based on all the relevant information and is called a **rational expectation**.

A rational expectation is not necessarily correct, but it is the best available.

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➤ Inflation Cycles

Inflation and the Business Cycle

When the inflation forecast is *correct*, the economy operates at full employment.

If aggregate demand grows *faster* than expected, real GDP moves above potential GDP, the inflation rate exceeds its expected rate, and the economy behaves like it does in a demand-pull inflation.

If aggregate demand grows *more slowly* than expected, real GDP falls below potential GDP, the inflation rate slows, and the economy behaves like it does in a cost-push inflation.

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➤ Inflation and Unemployment: The Phillips Curve

A **Phillips curve** is a curve that shows the relationship between the inflation rate and the unemployment rate.

There are two time frames for Phillips curves:

- The short-run Phillips curve
- The long-run Phillips curve

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➤ Inflation and Unemployment: The Phillips Curve

The Short-Run Phillips Curve

The **short-run Phillips curve** shows the tradeoff between the inflation rate and unemployment rate, holding constant

1. The expected inflation rate
2. The natural unemployment rate

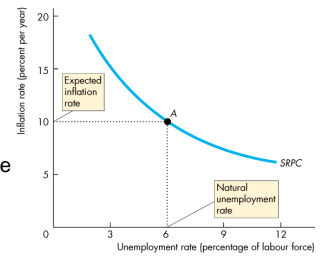
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➤ Inflation and Unemployment: The Phillips Curve

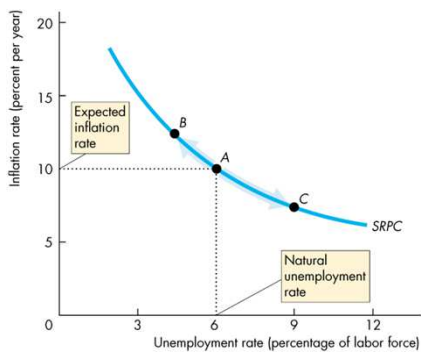


Figure 28.6 illustrates a short-run Phillips curve (SRPC)—a downward-sloping curve.

It passes through the natural unemployment rate and the expected inflation rate.



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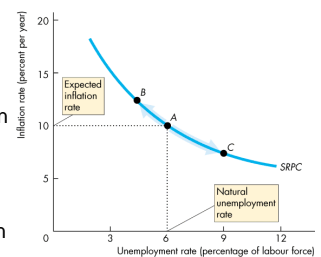
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➤ Inflation and Unemployment: The Phillips Curve

With a given expected inflation rate and natural unemployment rate:

If the inflation rate rises above the expected inflation rate, the unemployment rate decreases.

If the inflation rate falls below the expected inflation rate, the unemployment rate increases.



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➤ Inflation and Unemployment: The Phillips Curve

The Long-Run Phillips Curve

The **long-run Phillips curve** shows the relationship between inflation and unemployment when the actual inflation rate equals the expected inflation rate.

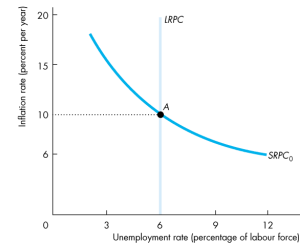
The long-run Phillips curve (*LRPC*) is vertical at the natural unemployment rate.

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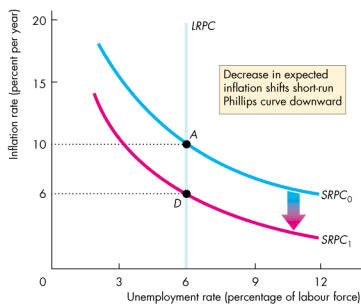
➤ Inflation and Unemployment: The Phillips Curve

Figure 28.7 shows the relationship between the *SRPC* and the *LRPC*.

The *SRPC* intersects the *LRPC* at the expected inflation rate—10 percent a year.



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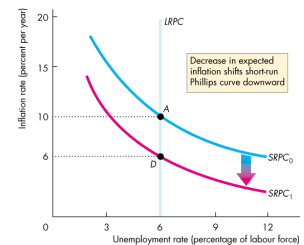


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➤ Inflation and Unemployment: The Phillips Curve

If expected inflation falls from 10 percent to 6 percent a year,

SRPC shifts downward to cut *LRPC* at 6 percent a year.



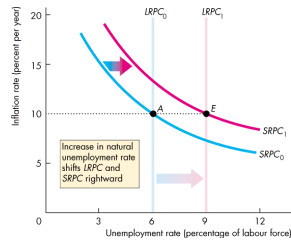
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➤ Inflation and Unemployment: The Phillips Curve

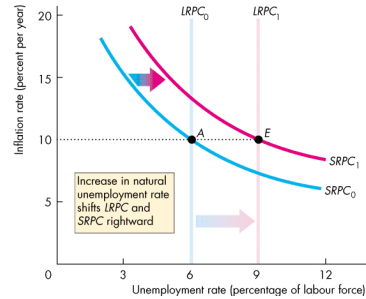
Changes in the Natural Unemployment Rate

A change in the natural unemployment rate shifts both the *LRPC* and *SRPC*.

Figure 28.8 illustrates.



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➤ Business Cycles

Business cycles are easy to describe but hard to explain.

Two approaches to understanding business cycles are:

- Mainstream business cycle theory
- Real business cycle theory

Mainstream Business Cycle Theory

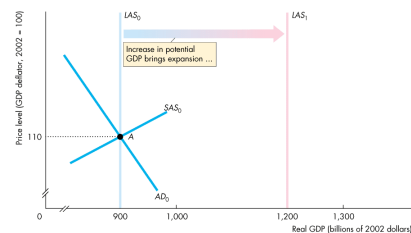
Because potential GDP grows at a steady pace while aggregate demand grows at a fluctuating rate, real GDP fluctuates around potential GDP.

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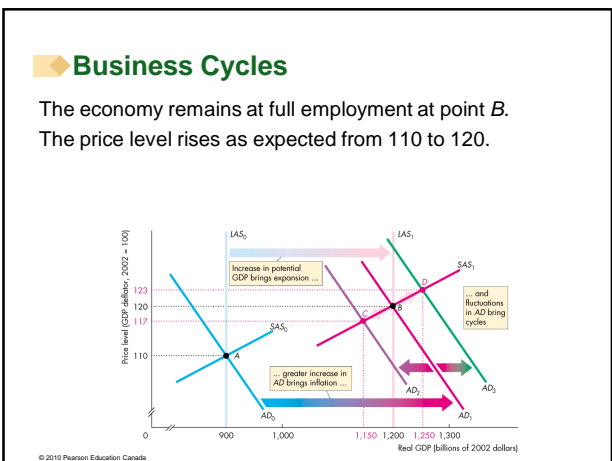
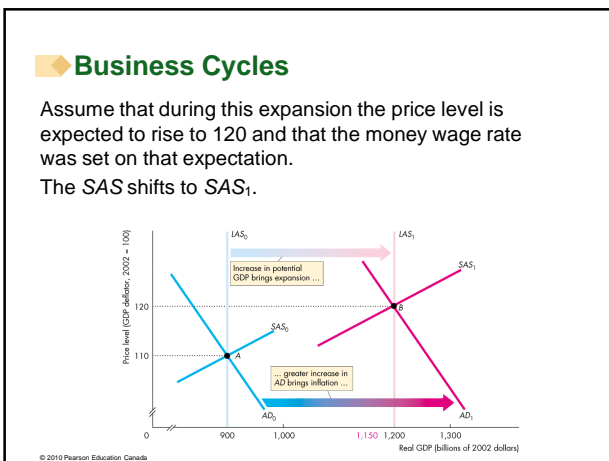
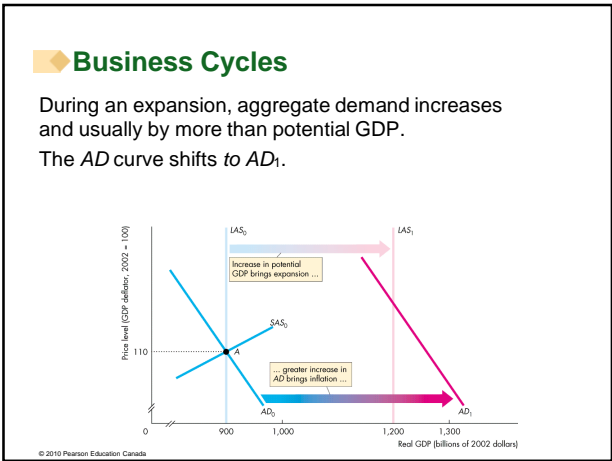
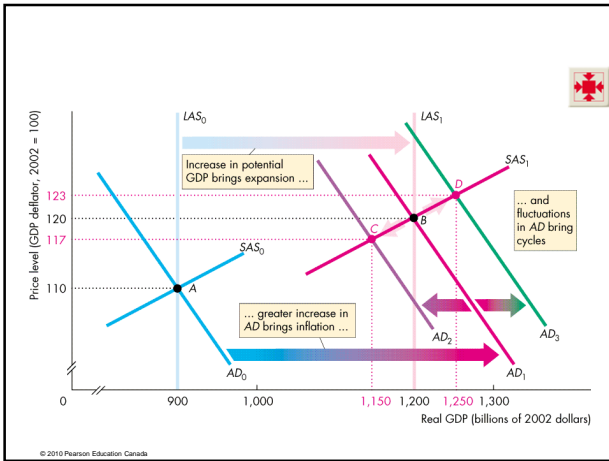
➤ Business Cycles

Initially, potential GDP is \$900 billion and the economy is at full employment at point A.

Potential GDP increases to \$1,200 billion and the *LAS* curve shifts rightward.

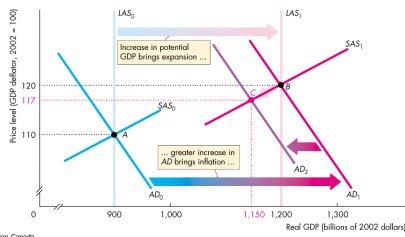


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Business Cycles

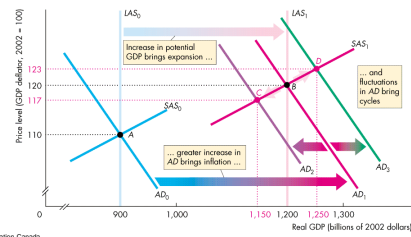
But if aggregate demand increases more slowly than potential GDP, the AD curve shifts to AD_2 .
 The economy moves to point C.
 Real GDP growth is slower; inflation is less than expected.



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Business Cycles

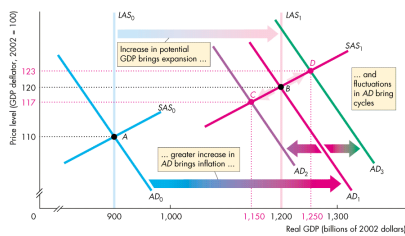
But if aggregate demand increases more quickly than potential GDP, the AD curve shifts to AD_3 .
 The economy moves to point D.
 Real GDP growth is faster; inflation is higher than expected.



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Business Cycles

Economic growth, inflation, and business cycles arise from the relentless increases in potential GDP, faster (on average) increases in aggregate demand, and fluctuations in the pace of aggregate demand growth.



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Business Cycles

Real Business Cycle Theory

Real business cycle theory regards random fluctuations in productivity as the main source of economic fluctuations.

These productivity fluctuations are assumed to result mainly from fluctuations in the pace of technological change.

But other sources might be international disturbances, climate fluctuations, or natural disasters.

We'll explore RBC theory by looking first at its impulse and then at the mechanism that converts that impulse into a cycle in real GDP.

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Business Cycles

The RBC Impulse

The impulse is the productivity growth rate that results from technological change.

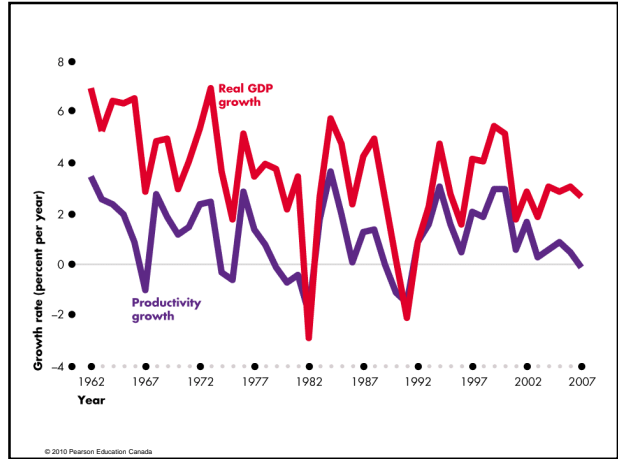
Most of the time, technological change is steady and productivity grows at a moderate pace.

But sometimes productivity growth speeds up, and occasionally it *decreases*—labour becomes less productive, on average.

A period of rapid productivity growth brings an expansion, and a *decrease* in productivity triggers a recession.

Figure 28.10 shows the RBC impulse.

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Business Cycles

The RBC Mechanism

Two effects follow from a change in productivity that gets an expansion or a contraction going:

1. Investment demand changes.
2. The demand for labour changes.

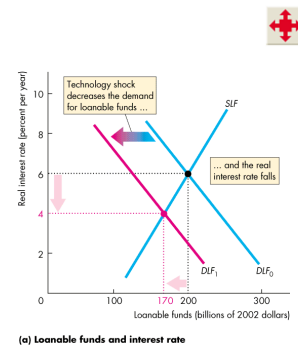
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Business Cycles

Figure 28.11(a) shows the effects of a decrease in productivity on investment demand.

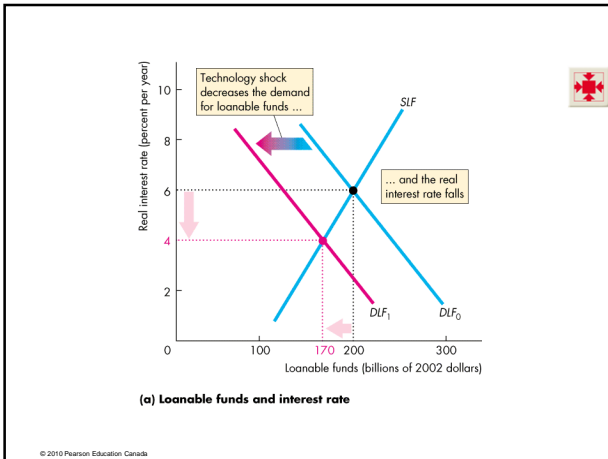
A decrease in productivity decreases investment demand, which decreases the demand for loanable funds.

The real interest rate falls and the quantity of loanable funds decreases.



(a) Loanable funds and interest rate

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Business Cycles

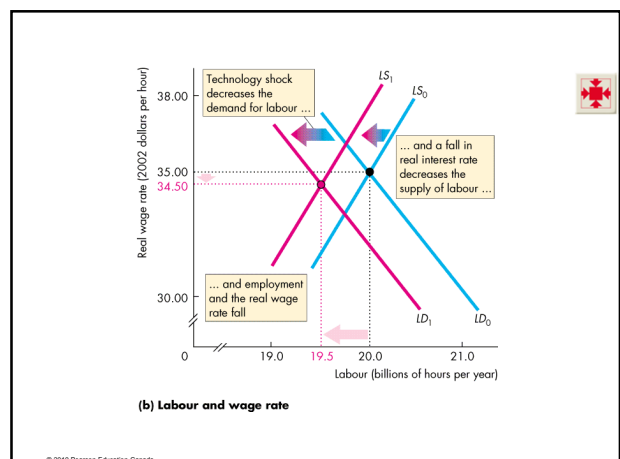
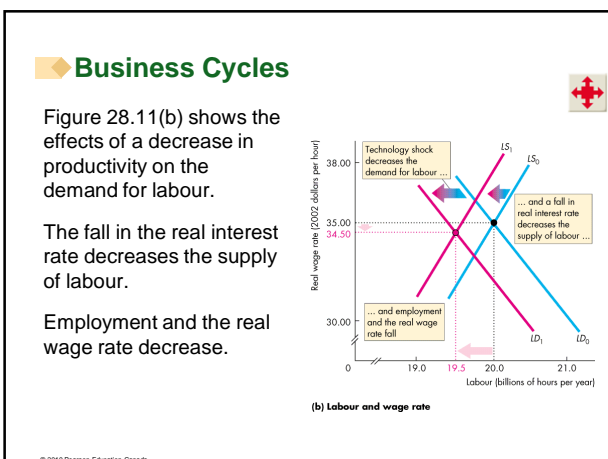
The Key Decision: When to Work?

To decide *when* to work, people compare the return from working in the current period with the *expected* return from working in a later period.

The when-to-work decision depends on the real interest rate. The lower the real interest rate, the smaller is the supply of labour today.

Many economists believe that this *intertemporal substitution* effect is small, but RBC theorists believe that it is large and the key feature of the RBC mechanism.

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Business Cycles

Criticisms and Defence of RBC Theory

The three main criticisms of RBC theory are that

1. The money wage rate *is* sticky, and to assume otherwise is at odds with a clear fact.
2. Intertemporal substitution is too weak a force to account for large fluctuations in labour supply and employment with small real wage rate changes.
3. Productivity shocks are as likely to be caused by *changes in aggregate demand* as by technological change.

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Business Cycles

Defenders of RBC theory claim that

1. RBC theory explains the macroeconomic facts about business cycles and is consistent with the facts about economic growth. RBC theory is a *single* theory that explains both growth and cycles.
2. RBC theory is consistent with a wide range of *microeconomic* evidence about labour supply decisions, labour demand and investment demand decisions, and information on the distribution of income between labour and capital.

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