

Economics

ELEVENTH EDITION

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29

INFLATION, JOBS, AND THE 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 the 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

We care about inflation because it raises our cost of living.

We care about unemployment because it takes our jobs.

We want low inflation, low unemployment, and rapid income growth.

But can we have all these things at the same time?

Or do we face a tradeoff among them?

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 between two sources of inflation:

- Demand-pull inflation
- Cost-push inflation

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.

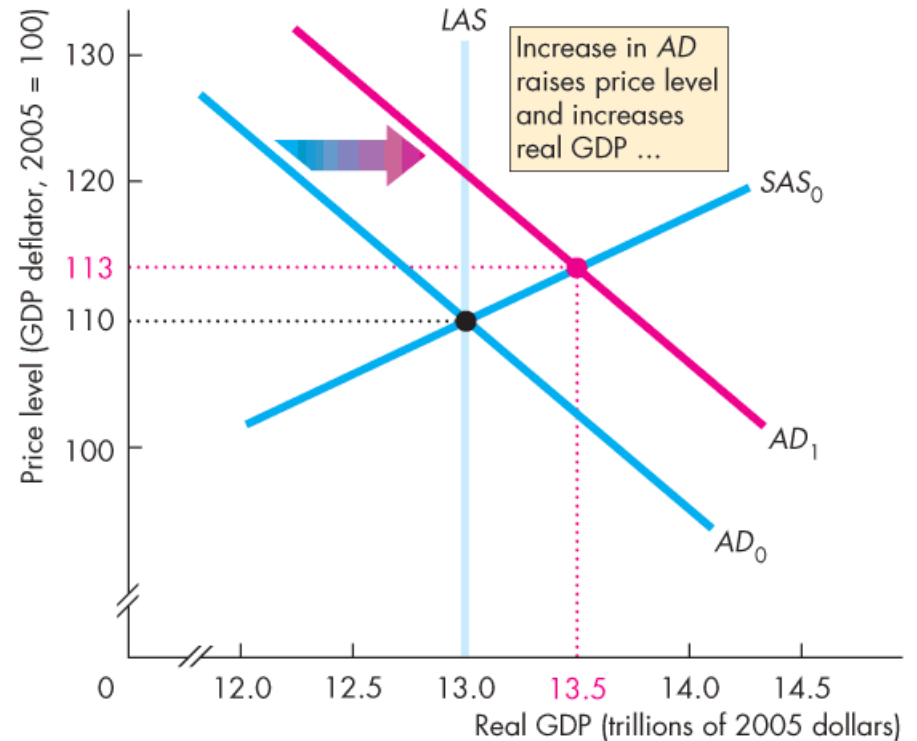
Inflation Cycles



Initial Effect of an Increase in Aggregate Demand

Figure 29.1(a) illustrates the start of a demand-pull inflation.

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

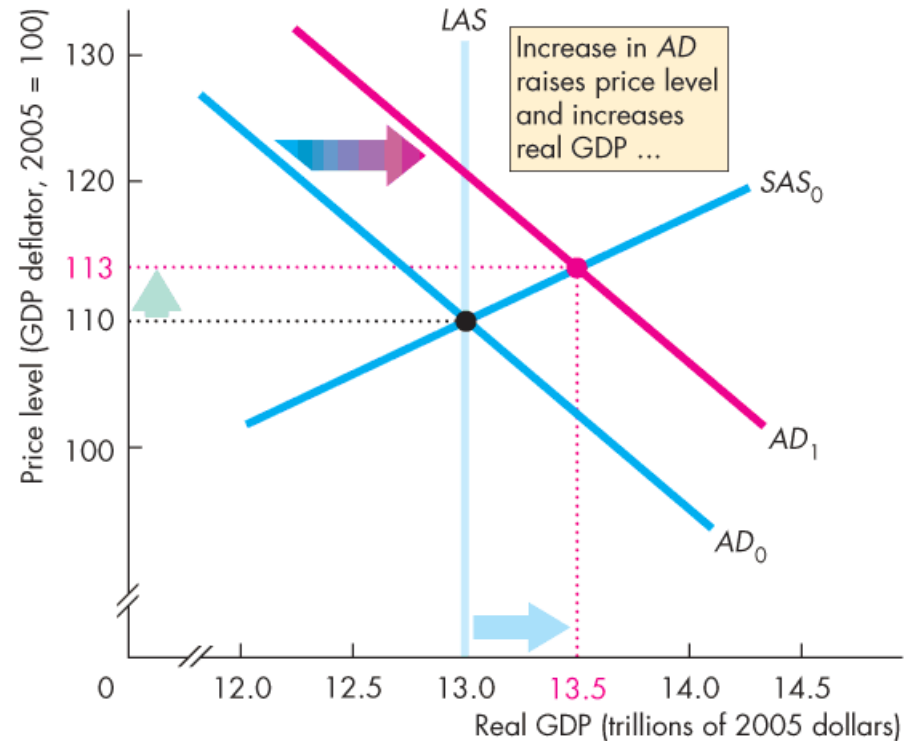


(a) Initial effect

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.



(a) Initial effect

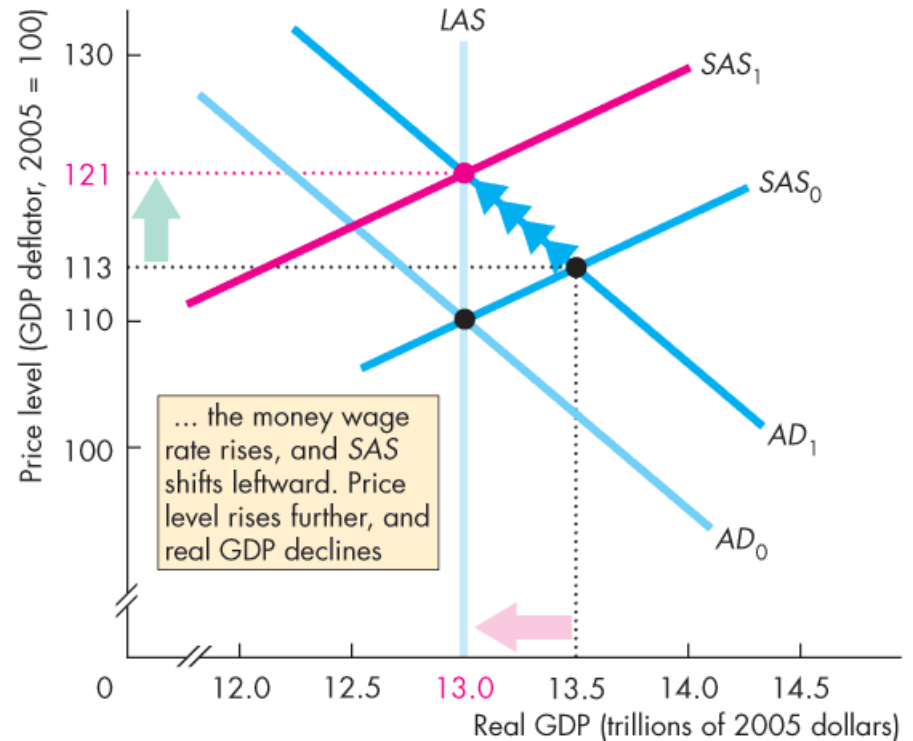
Inflation Cycles



Money Wage Rate Response

The money wage rate rises and the SAS curve shifts leftward.

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



(b) The money wage rate adjusts

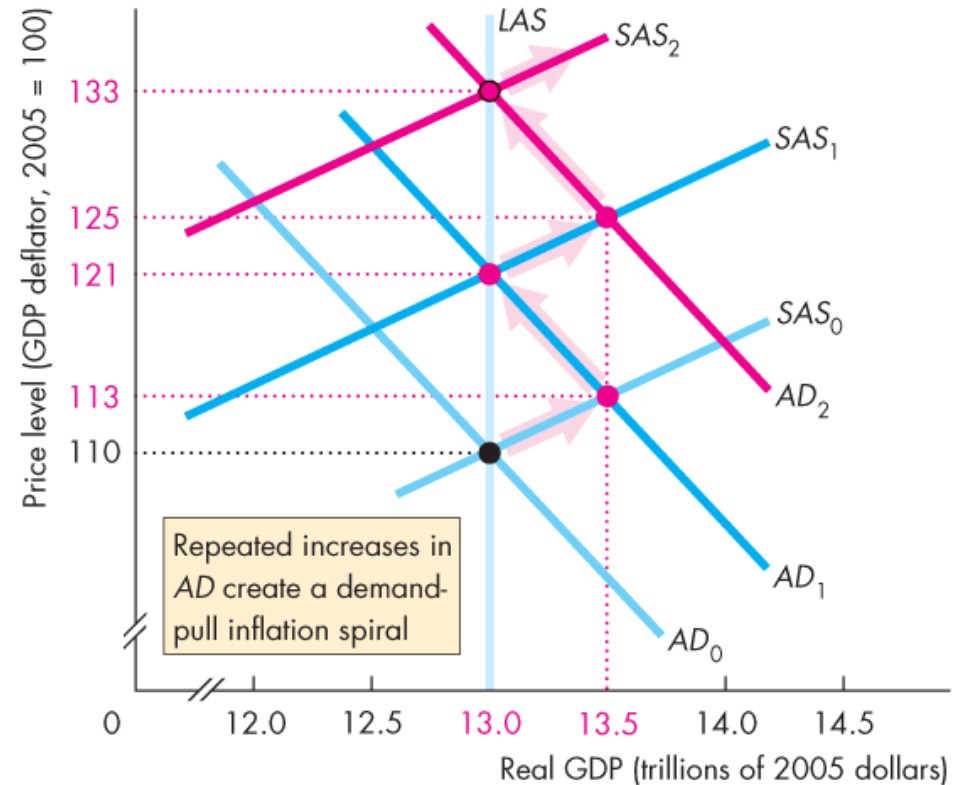
Inflation Cycles



A Demand-Pull Inflation Process

Figure 29.2 illustrates a demand-pull inflation spiral.

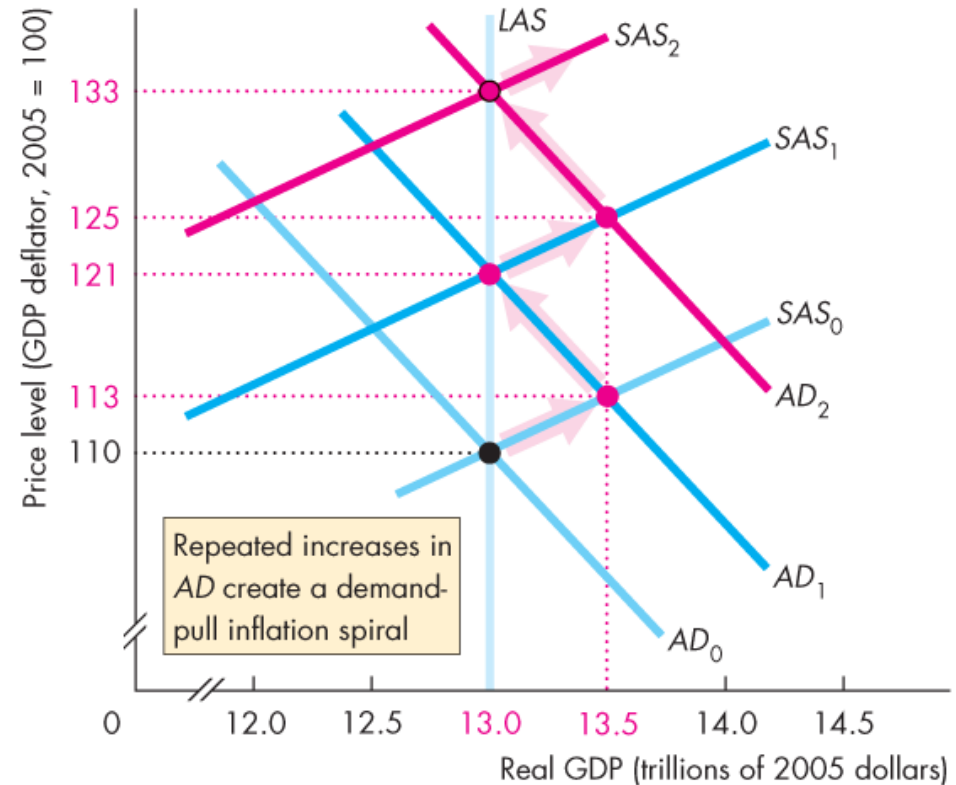
Aggregate demand keeps increasing and the process just described repeats indefinitely.



Inflation Cycles

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

Demand-pull inflation occurred in the United States during the late 1960s.



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

Inflation Cycles

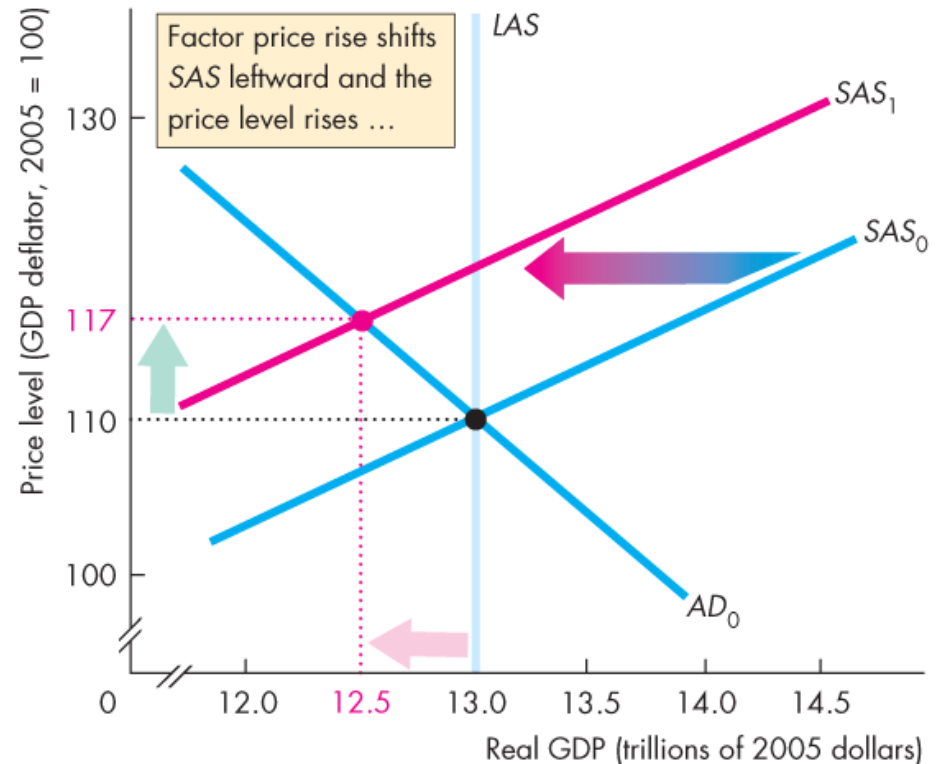


Initial Effect of a Decrease in Aggregate Supply

Figure 29.3(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.



(a) Initial cost push

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 Fed must increase the quantity of money persistently.

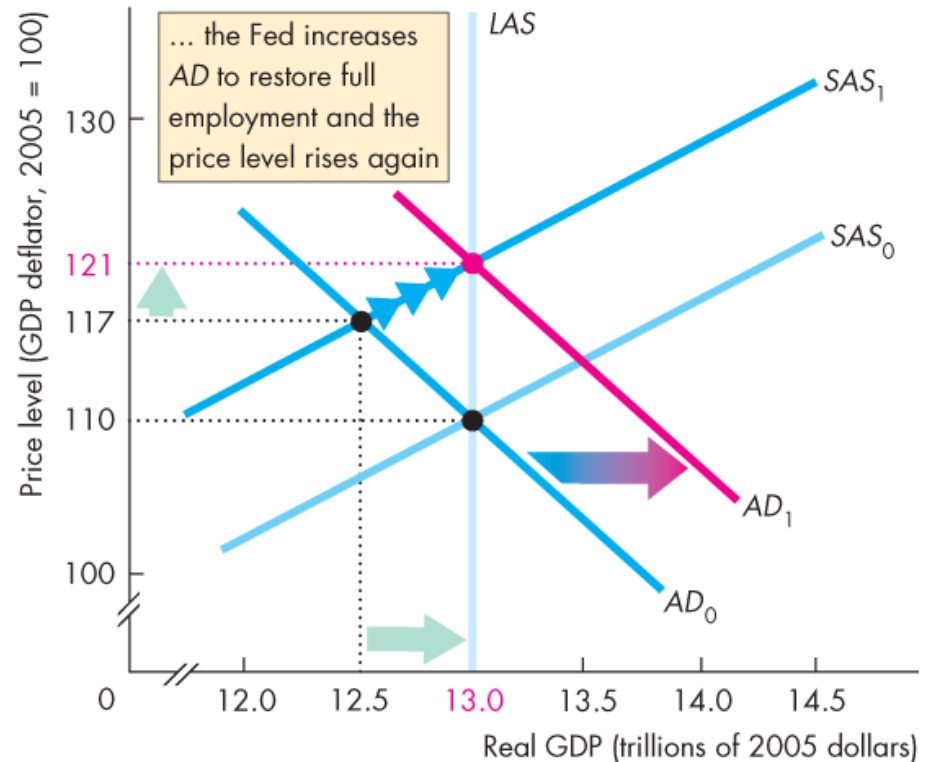
Inflation Cycles



Figure 29.3(b) illustrates an aggregate demand response.

Suppose that the Fed stimulates aggregate demand to counter the higher unemployment rate and lower level of real GDP.

Real GDP increases and the price level rises again.



(b) The Fed responds

Inflation Cycles

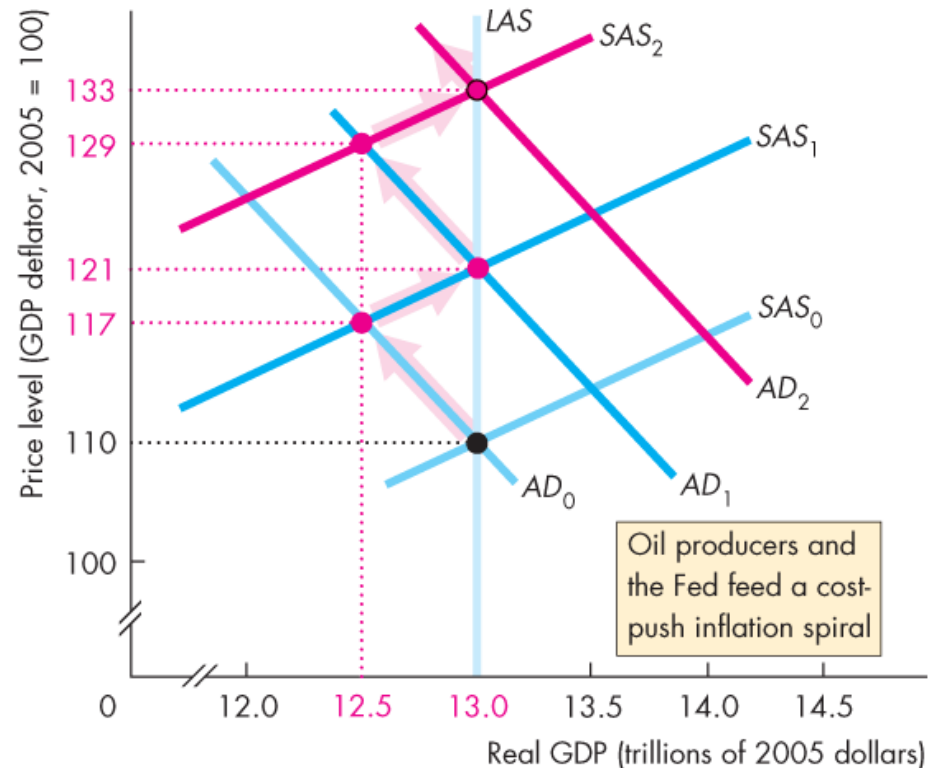


A Cost-Push Inflation Process

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

and the Fed responds by increasing the quantity of money, ...

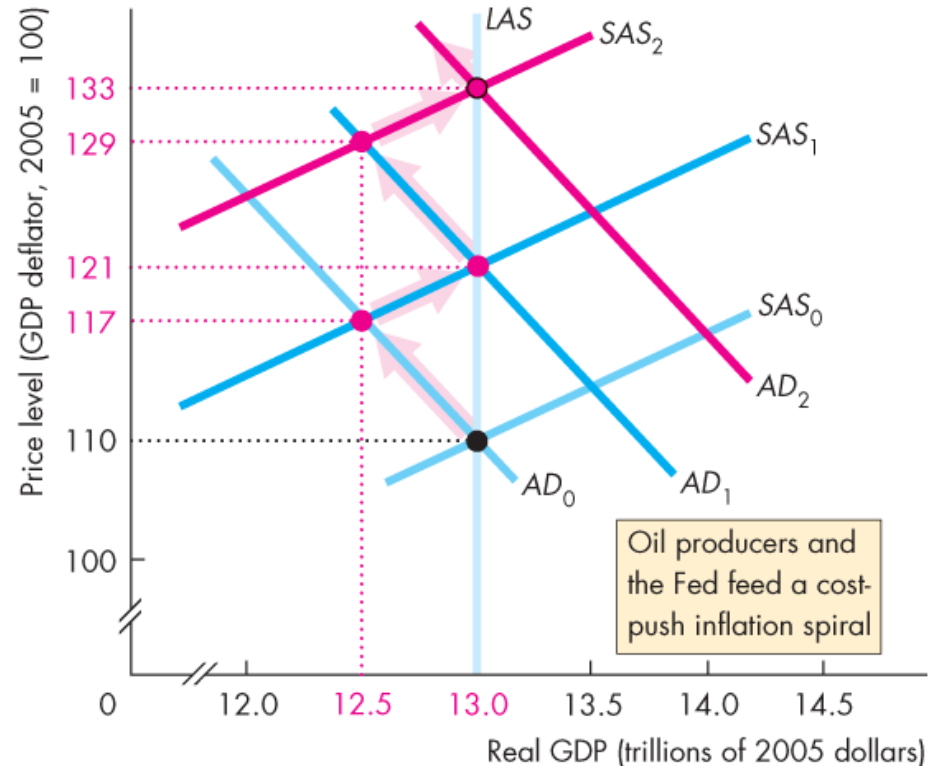
a process of cost-push inflation continues.



Inflation Cycles

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

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



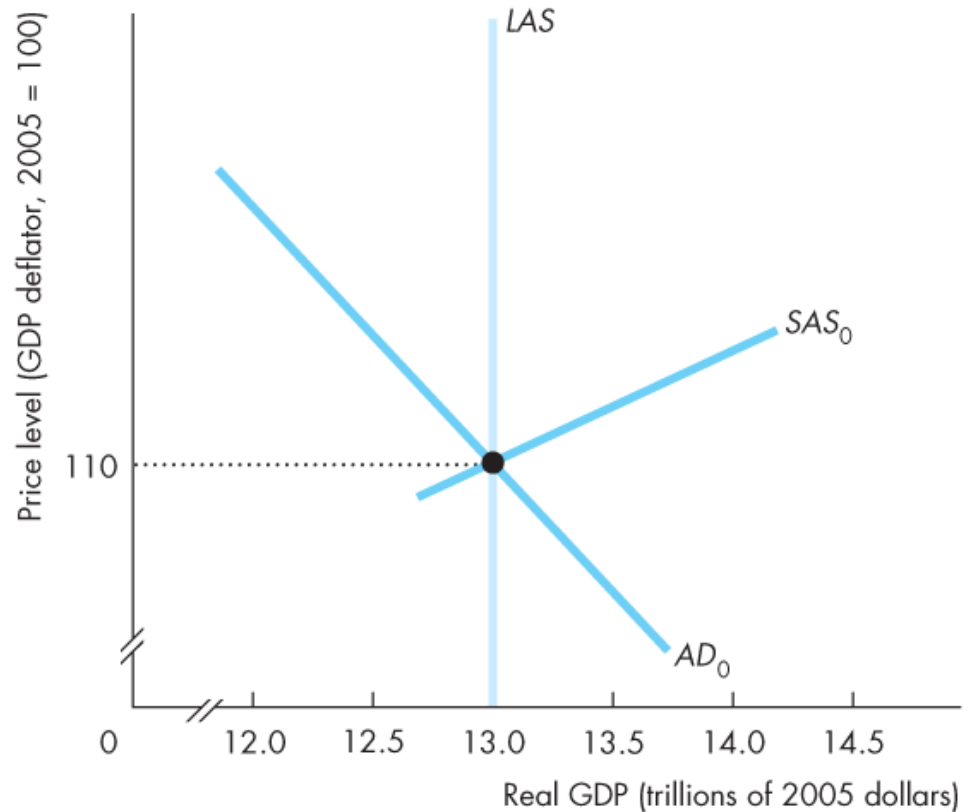
Inflation Cycles



Expected Inflation

Figure 29.5 illustrates an expected inflation.

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

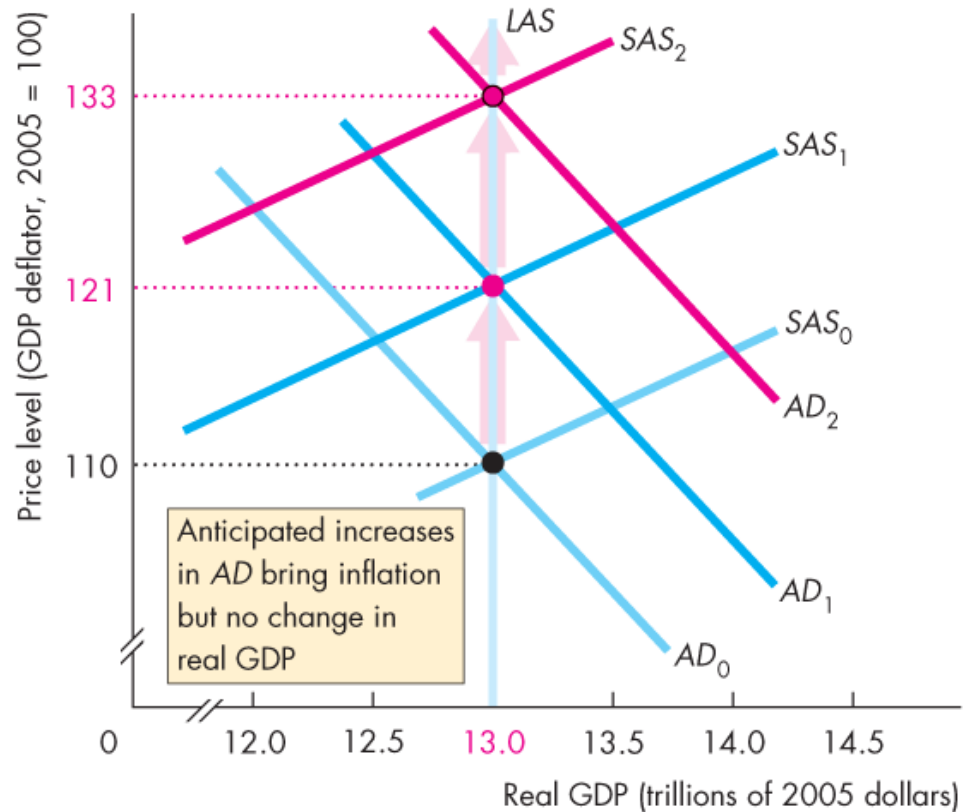


Inflation Cycles

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

The *AD* curve shifts rightward and the *SAS* curve shifts leftward ...

so that the price level rises as expected and real GDP remains at potential GDP.



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.

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.



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



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

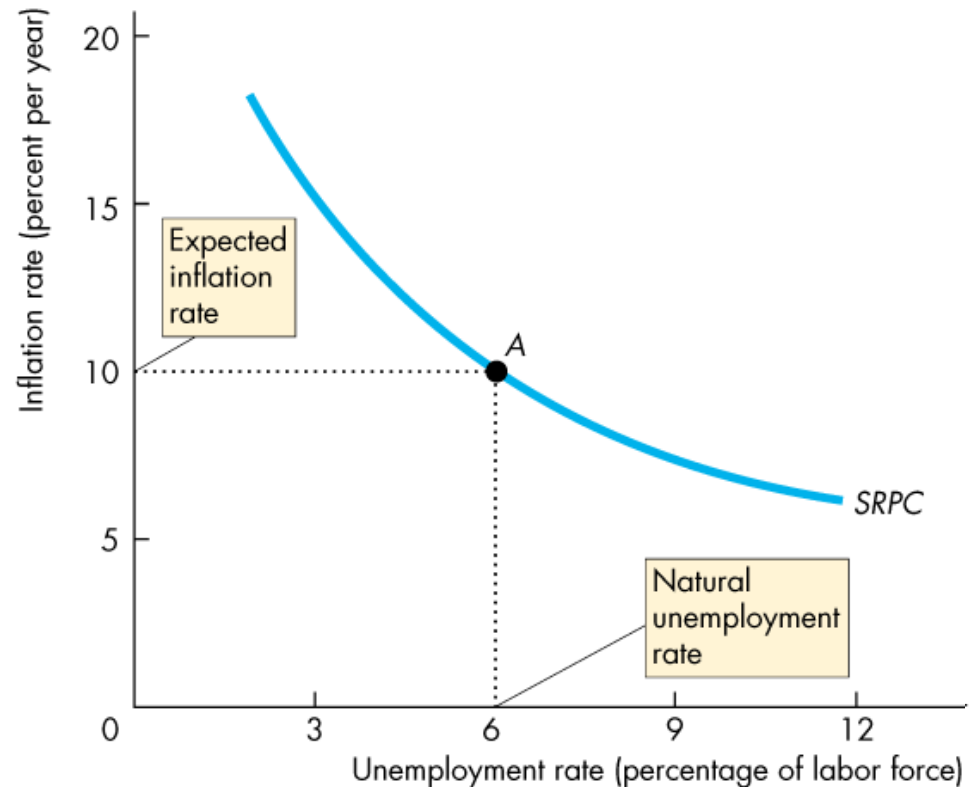


Inflation and Unemployment: The Phillips Curve



Figure 29.6 illustrates a short-run Phillips curve (*SRPC*)—a downward-sloping curve.

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



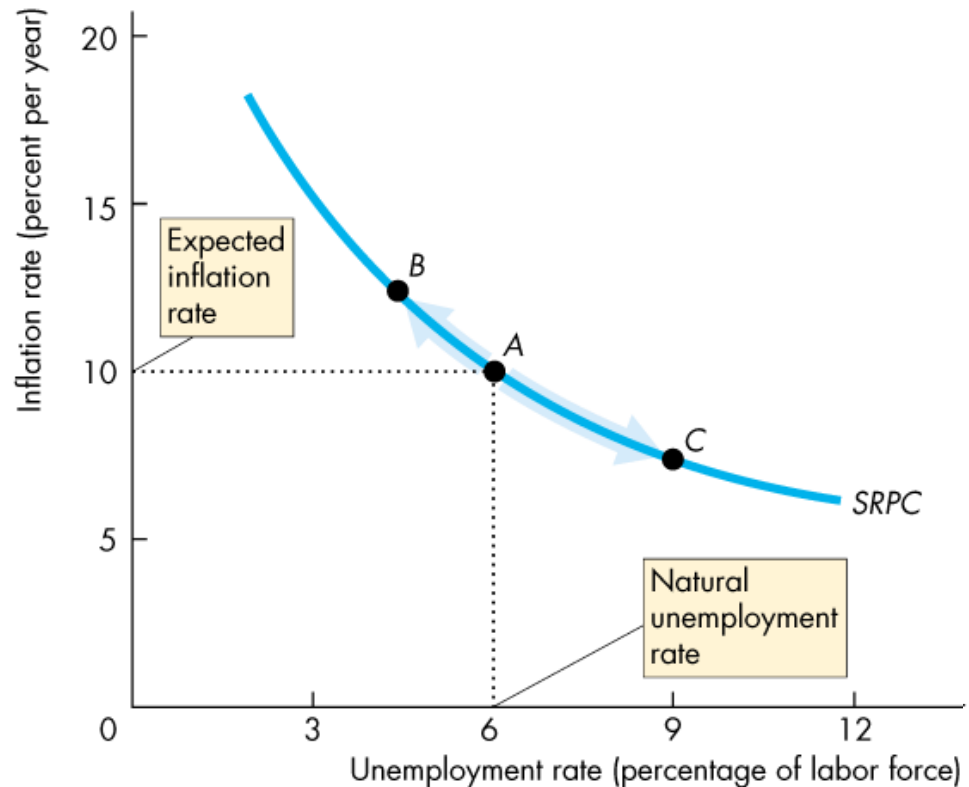


Inflation and Unemployment: The Phillips Curve

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.





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.

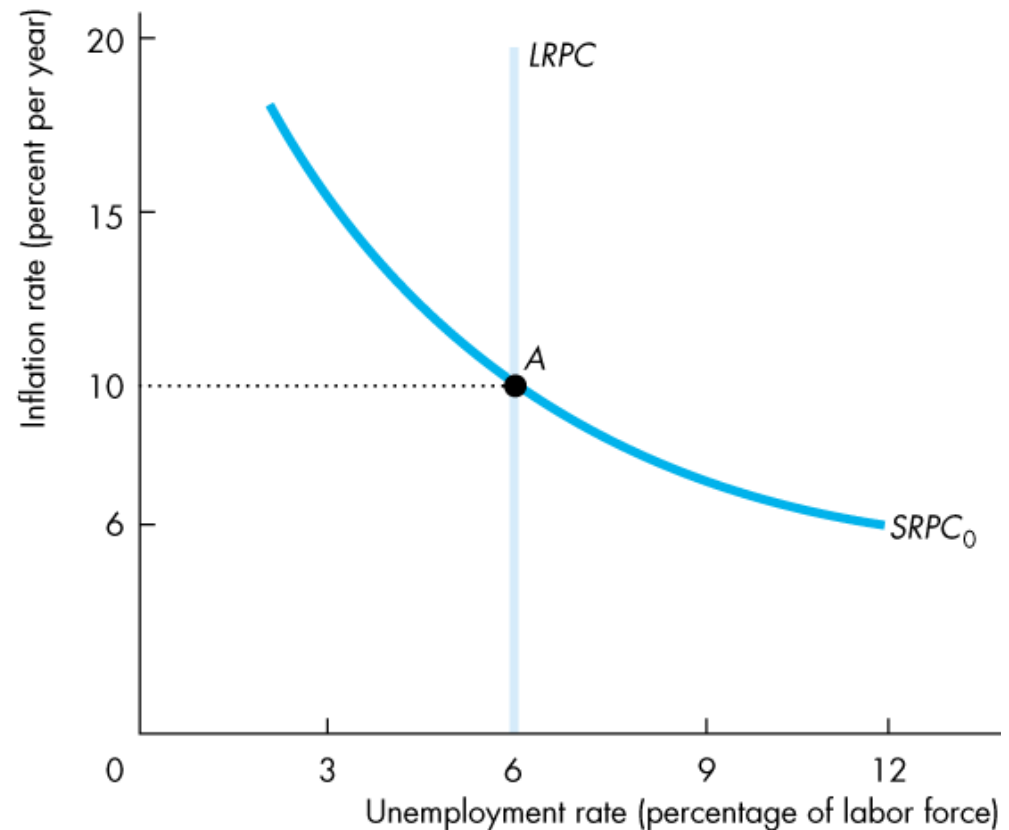


Inflation and Unemployment: The Phillips Curve



Figure 29.7 illustrates the long-run Phillips curve ($LRPC$), which is vertical at the natural unemployment rate.

Along $LRPC$, a change in the inflation rate is expected, so the unemployment rate remains at the natural unemployment rate.





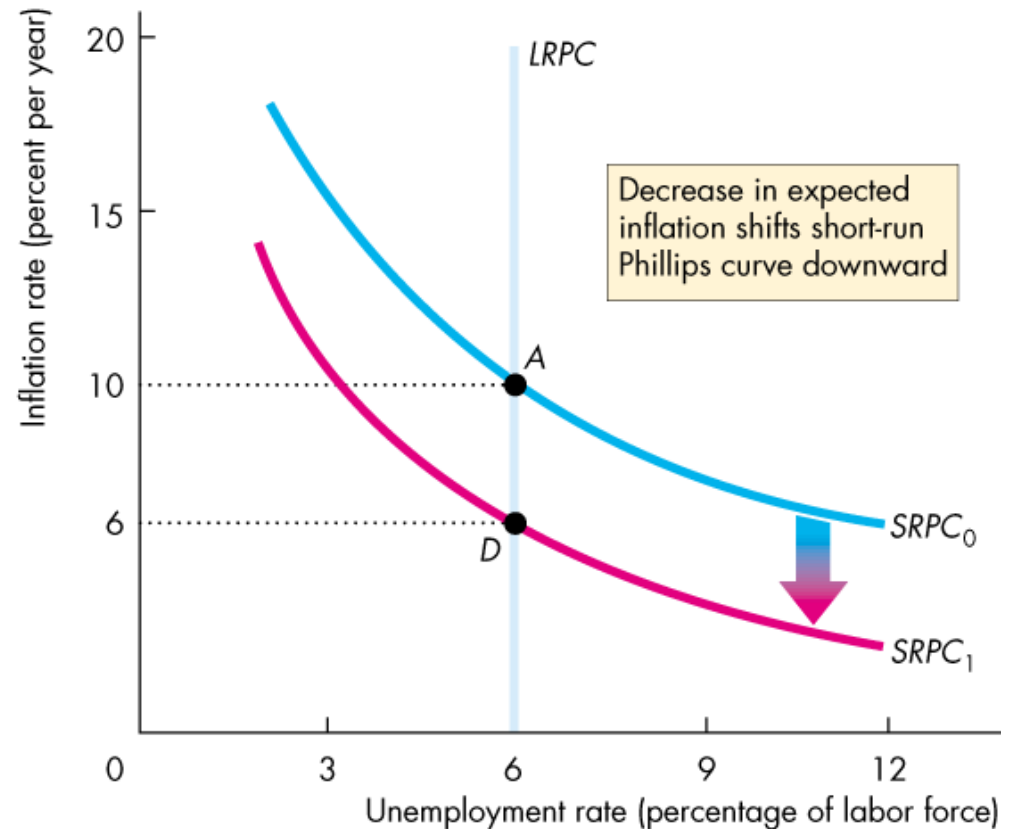
Inflation and Unemployment: The Phillips Curve



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

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

the short-run Phillips curve shifts downward by an amount equal to the fall in the expected inflation rate.



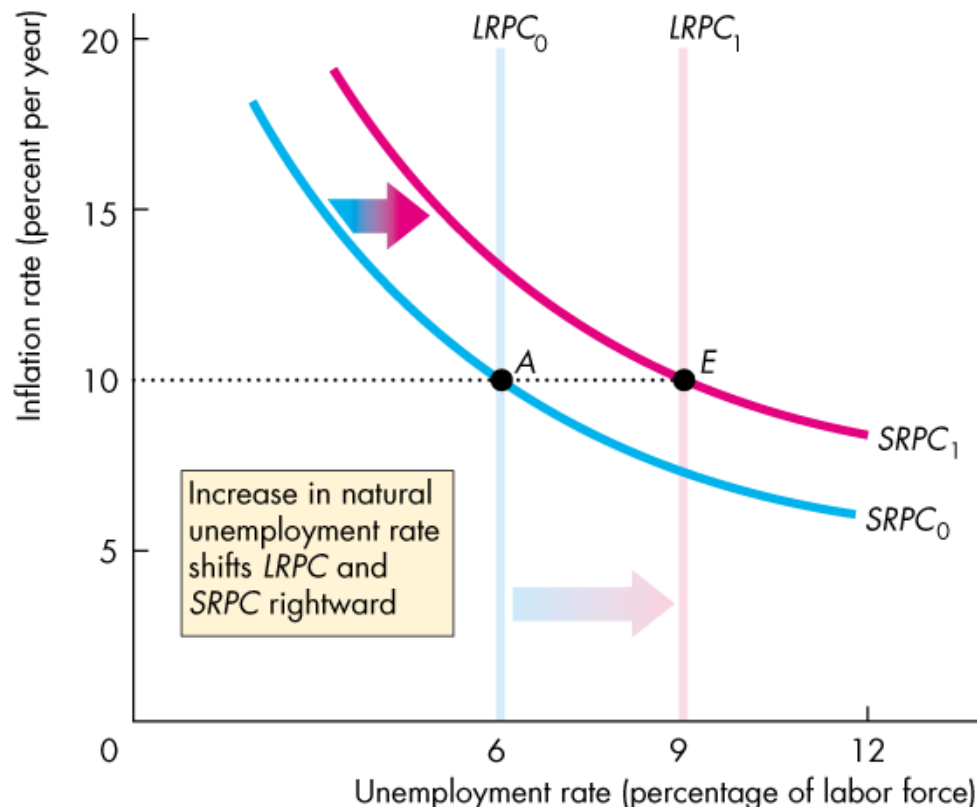
Inflation and Unemployment: The Phillips Curve



Changes in the Natural Unemployment Rate

A change in the natural unemployment rate shifts both the long-run and short-run Phillips curves.

Figure 29.8 illustrates.



The Business Cycle

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

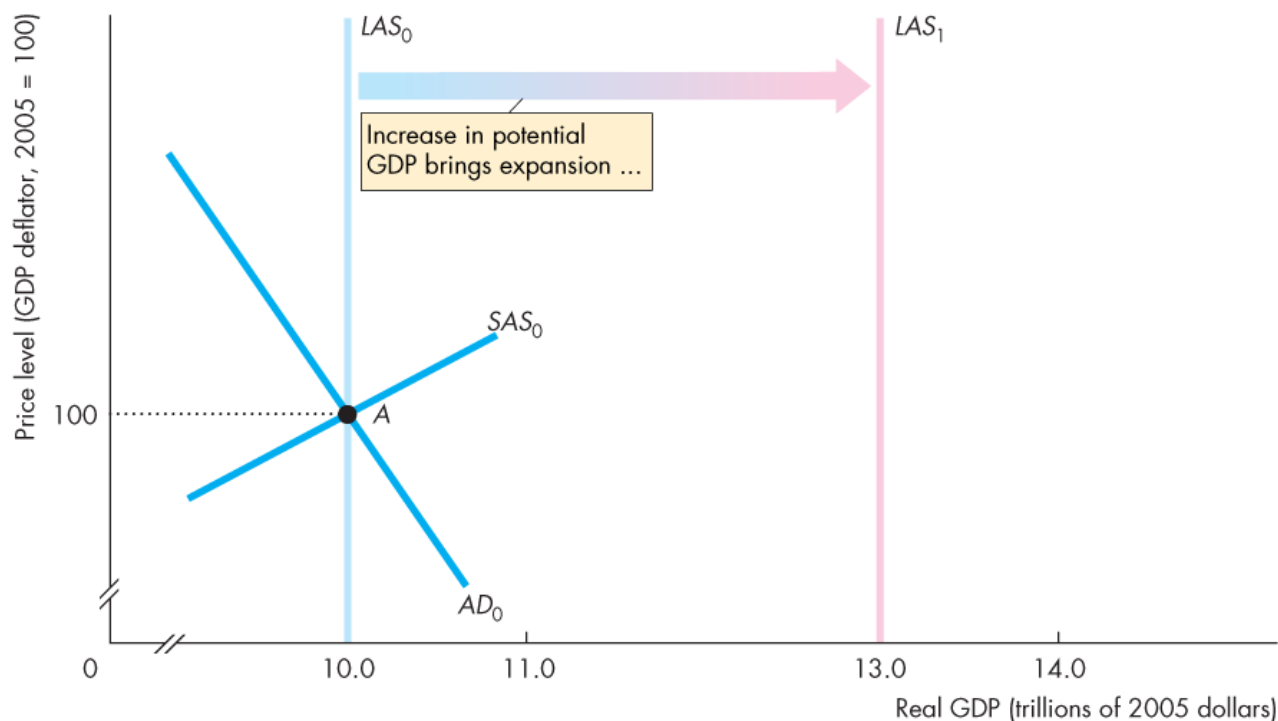
Because potential GDP grows at a steady pace while aggregate demand grows at a fluctuating rate, real GDP fluctuates around potential GDP.

The Business Cycle



Initially, potential GDP is \$10 trillion and the economy is at full employment at point A.

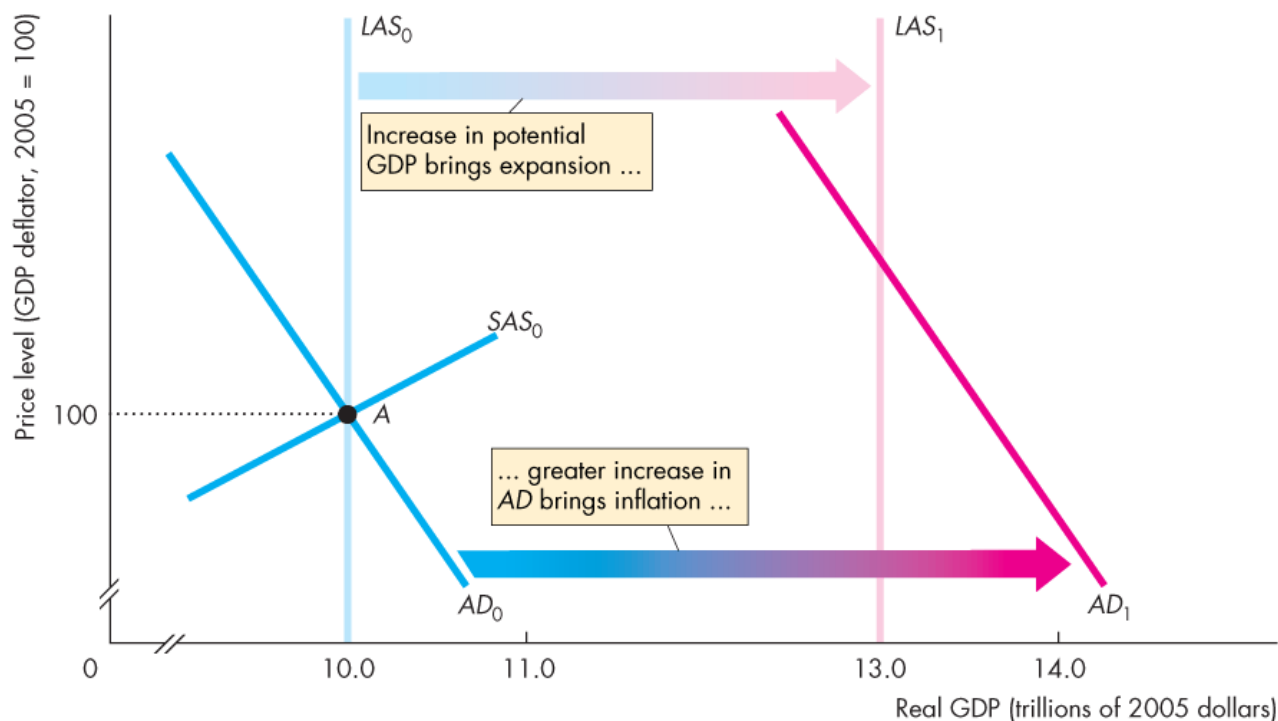
Potential GDP increases to \$13 trillion and the *LAS* curve shifts rightward.



The Business Cycle

During an expansion, aggregate demand increases and usually by more than potential GDP.

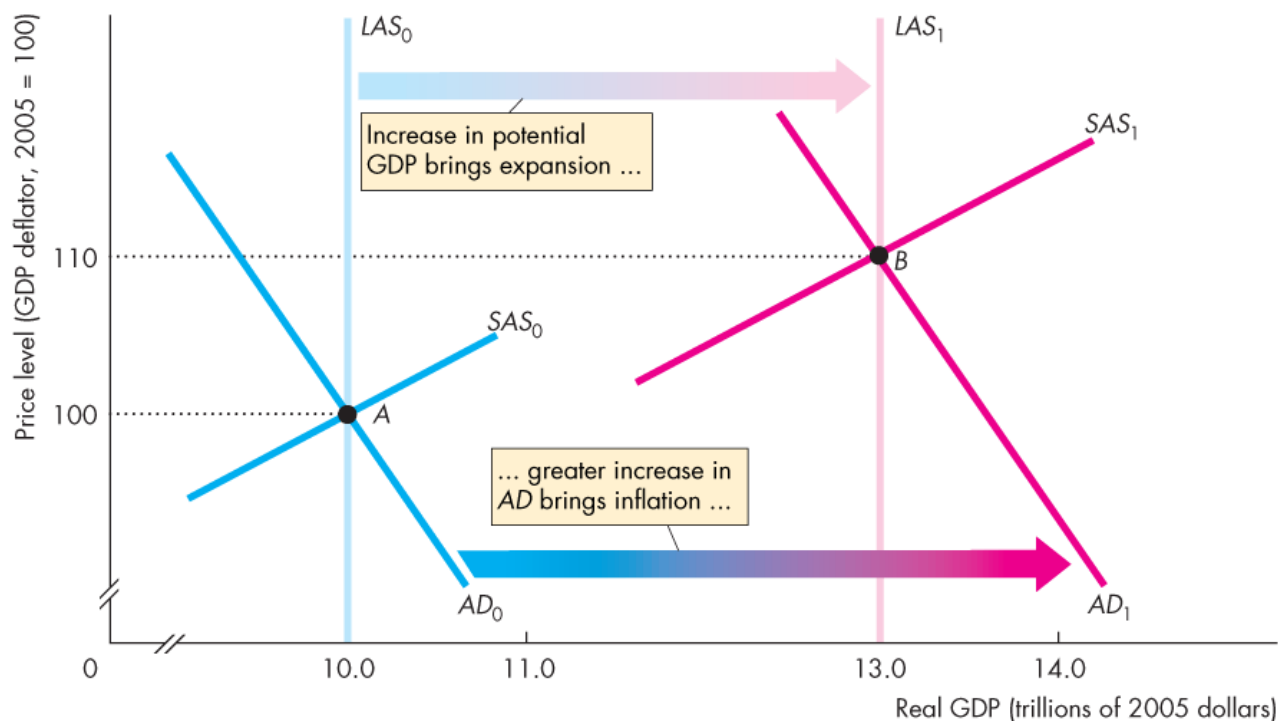
The AD curve shifts to AD_1 .



The Business Cycle

Assume that during this expansion the price level is expected to rise to 110 and that the money wage rate was set on that expectation.

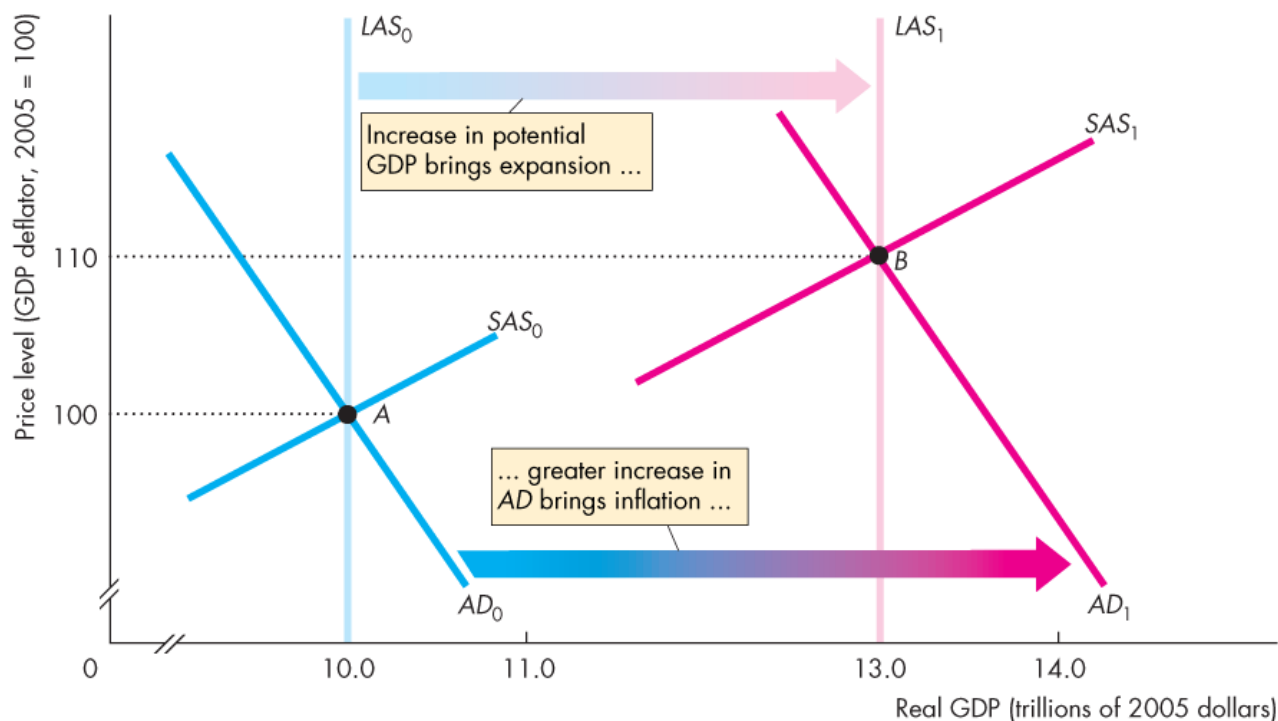
The SAS shifts to SAS_1 .



The Business Cycle

The economy remains at full employment at point *B*.

The price level rises as expected from 100 to 110.

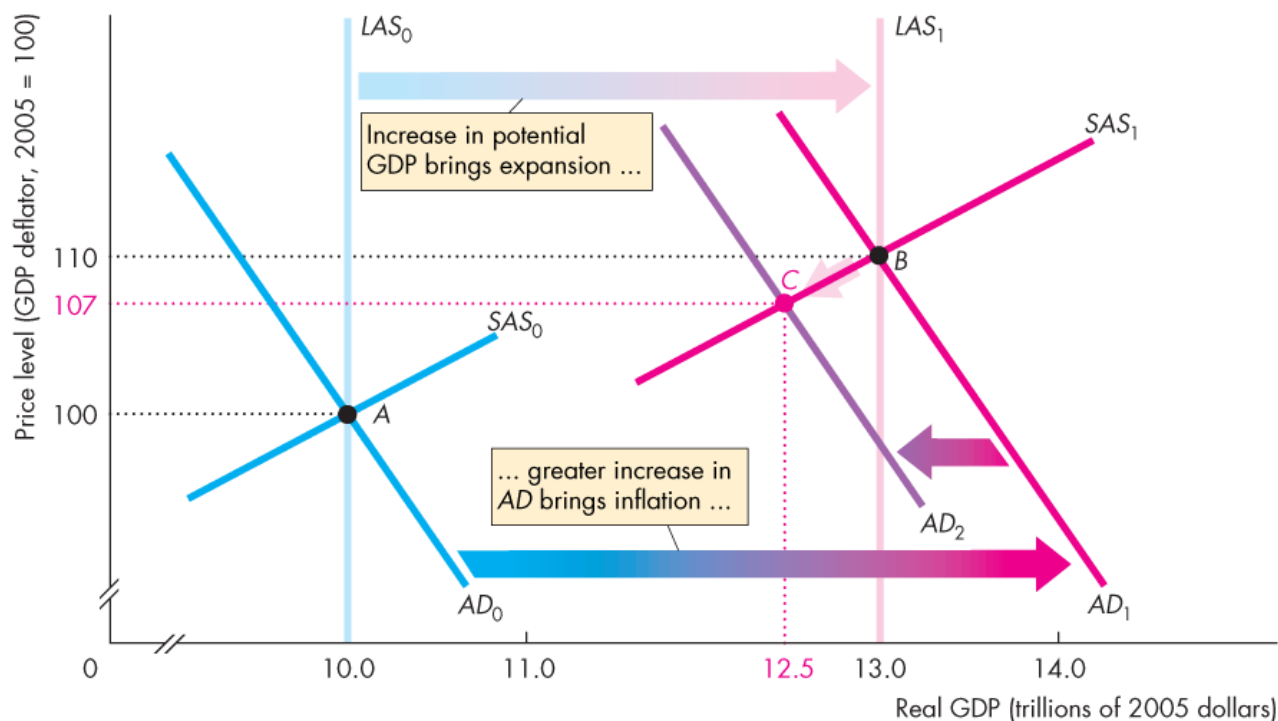


The Business Cycle

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.

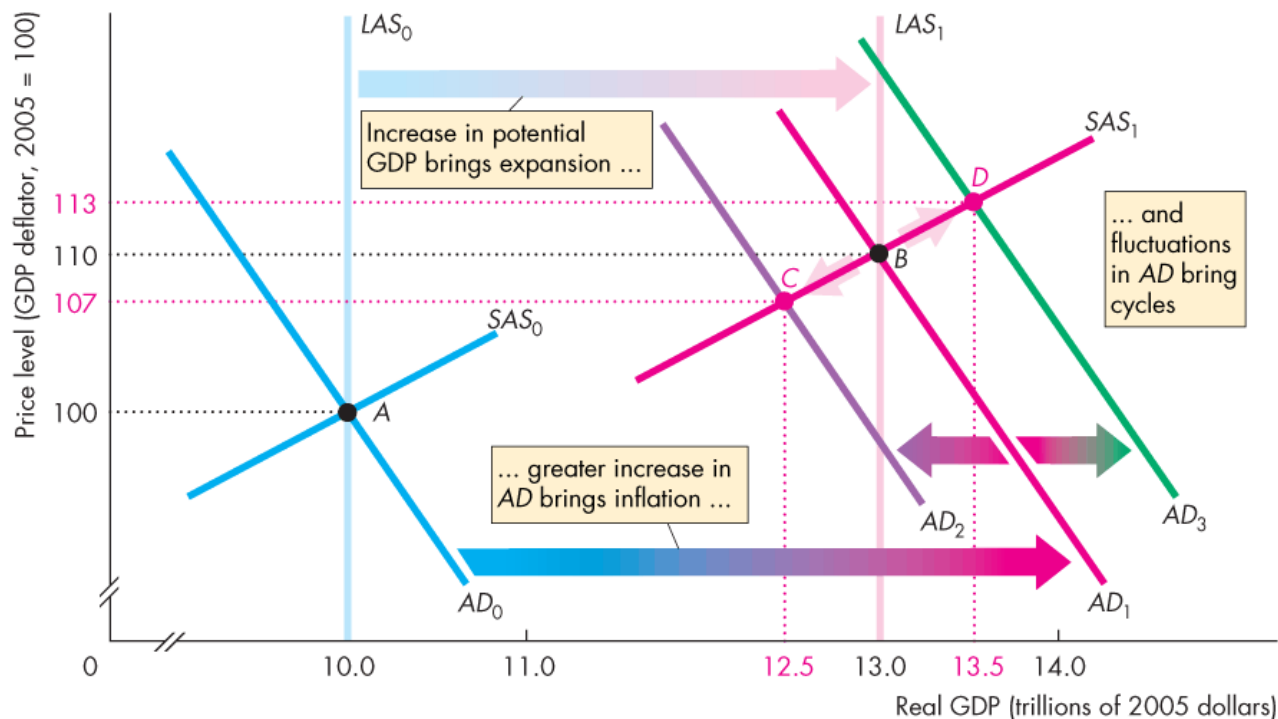


The Business Cycle

But if aggregate demand increases more quickly than potential GDP, the AD curve shifts to AD_3 .

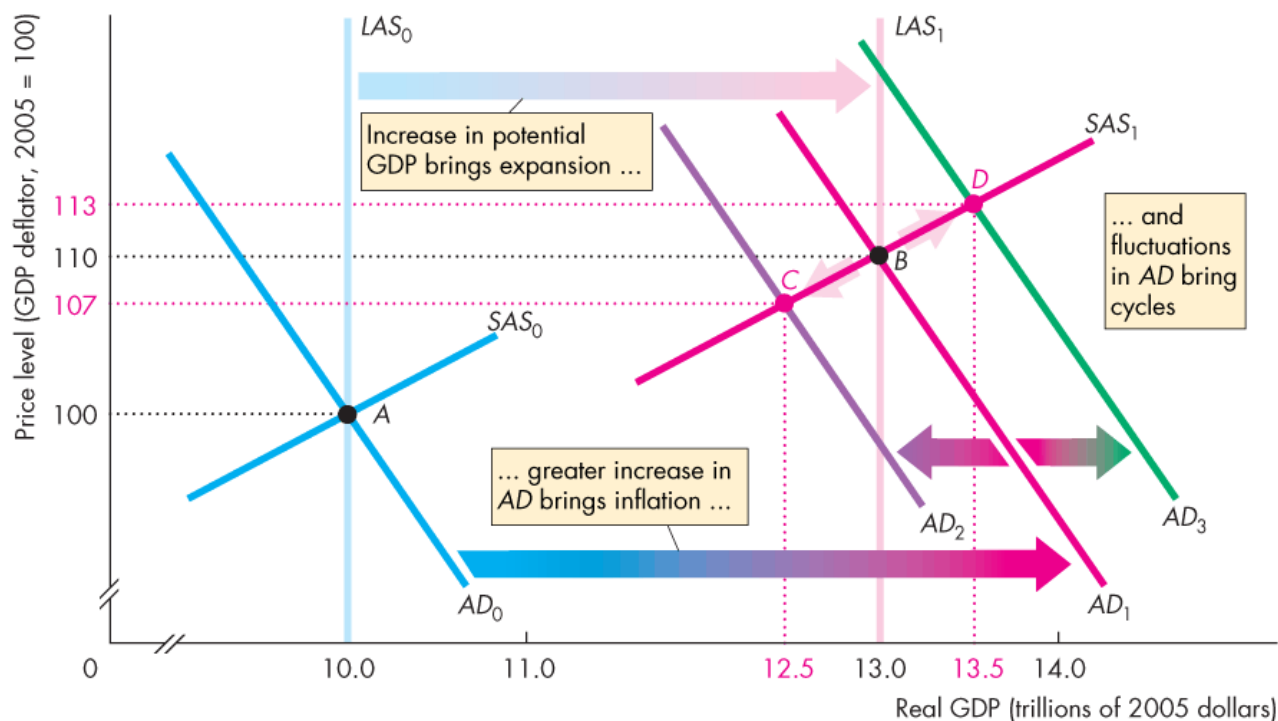
The economy moves to point D .

Real GDP growth is faster; inflation is higher than expected.



The Business Cycle

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



The Business Cycle

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.

The Business Cycle

The RBC Impulse

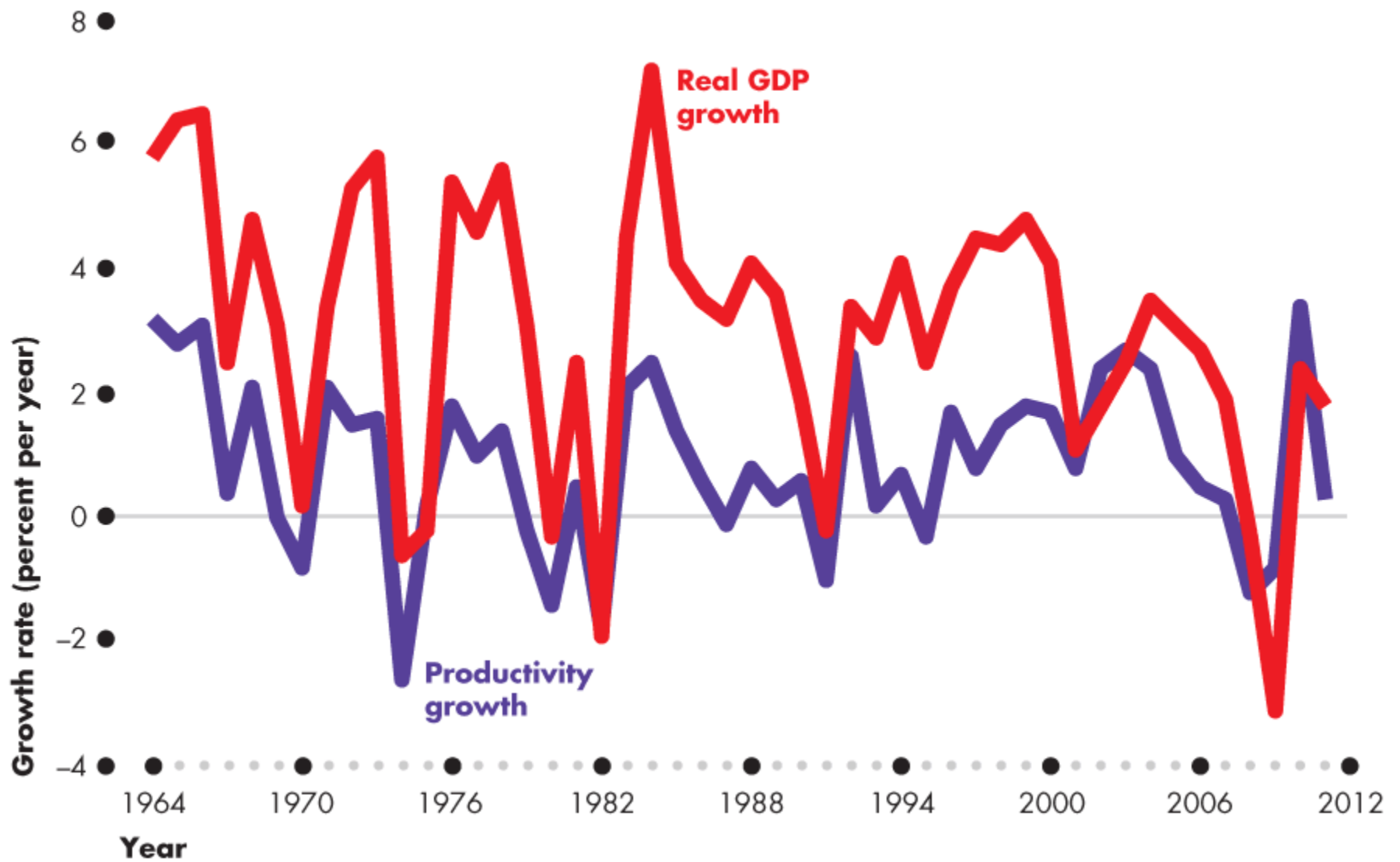
The impulse is the productivity growth rate that results from technological change.

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*—labor becomes less productive, on average.

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

The figure on the next slide shows the RBC impulse.



The Business Cycle

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 labor changes.

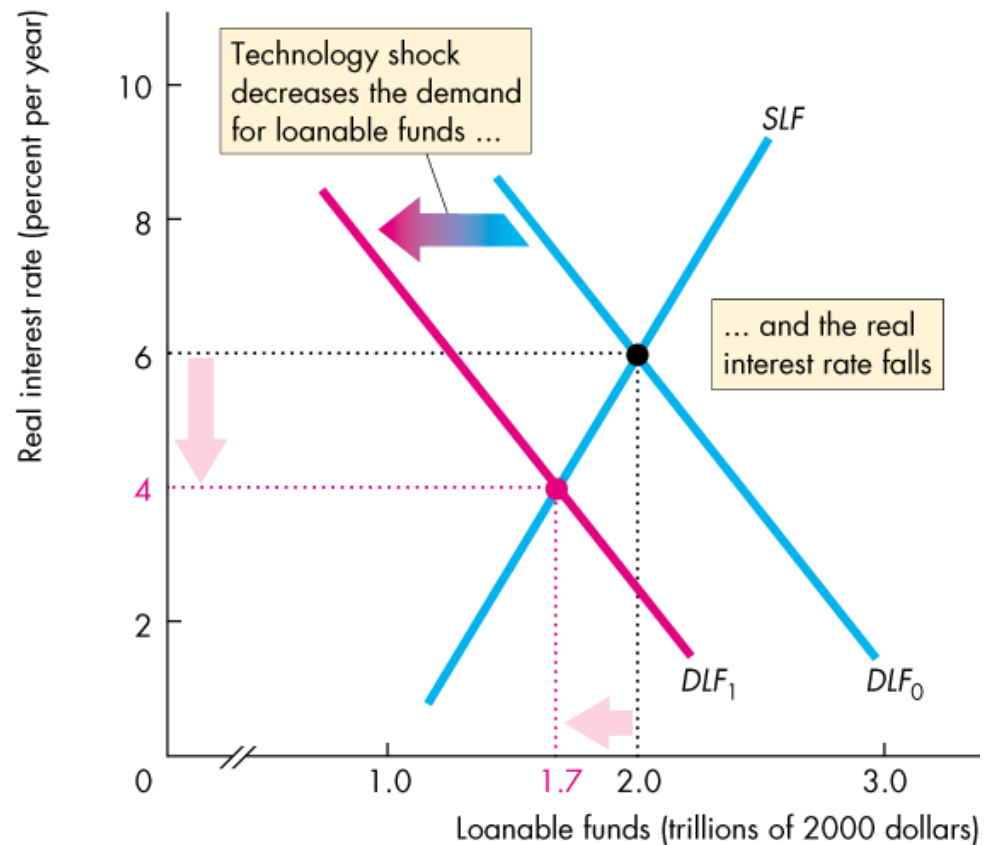
The Business Cycle



Figure 29.10(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

The Business Cycle

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 labor 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.

The Business Cycle

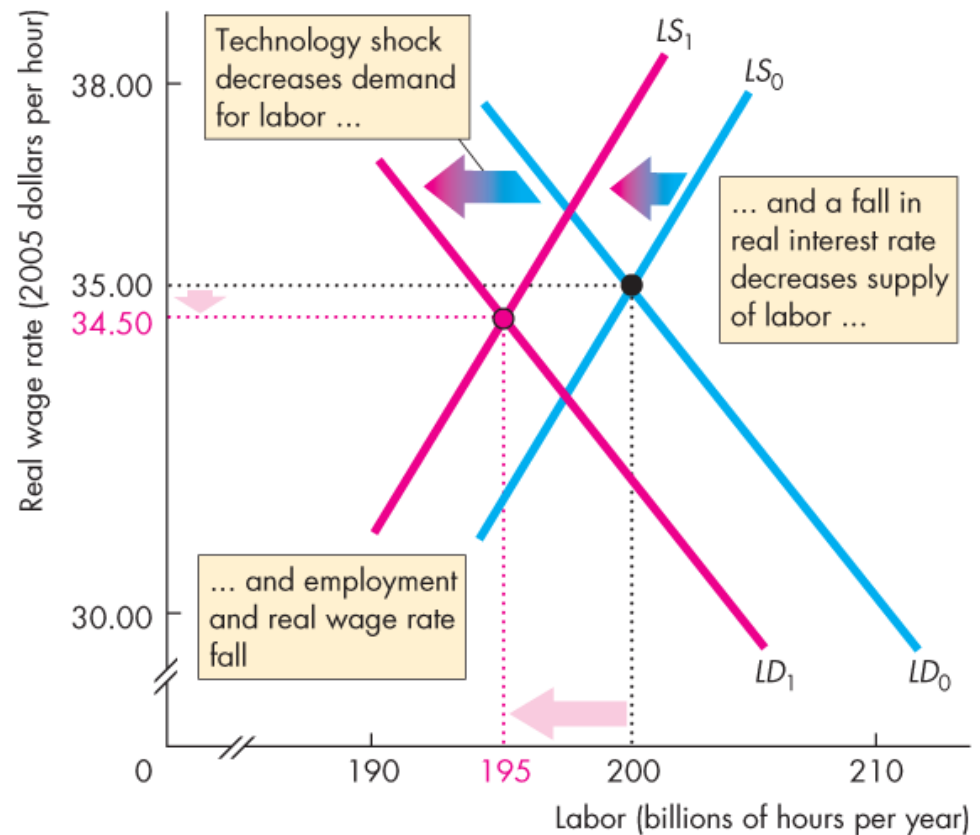


Figure 29.10(b) shows the effects of a decrease in productivity on the demand for labor.

A decrease in productivity decreases the demand for labor.

The fall in the real interest rate decreases the supply of labor.

Employment and the real wage rate decrease.



(b) Labor and wage rate

The Business Cycle

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 labor 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.

The Business Cycle

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 labor supply decisions, labor demand and investment demand decisions, and information on the distribution of income between labor and capital.