

Intro to Macro: Inflation

Section 2.3

Learning Objectives:

- Distinguish between inflation, disinflation and deflation.
- Explain that inflation and deflation are typically measured by calculating a consumer price index (CPI), which measures the change in prices of a basket of goods and services consumed by the average household.
- Explain that different income earners may experience a different rate of inflation when their pattern of consumption is not accurately reflected by the CPI.
- Explain that inflation figures may not accurately reflect changes in consumption patterns and the quality of the products purchased.
- Explain that economists measure a core/underlying rate of inflation to eliminate the effect of sudden swings in the prices of food and oil, for example.
- Explain that a producer price index measuring changes in the prices of factors of production may be useful in predicting future inflation.

Continued...

- Distinguish between inflation, disinflation and deflation.
- Explain that inflation and deflation are typically measured by calculating a consumer price index (CPI), which measures the change in prices of a basket of goods and services consumed by the average household.
- Explain that different income earners may experience a different rate of inflation when their pattern of consumption is not accurately reflected by the CPI.
- Explain that inflation figures may not accurately reflect changes in consumption patterns and the quality of the products purchased.
- Explain that economists measure a core/underlying rate of inflation to eliminate the effect of sudden swings in the prices of food and oil, for example.
- Explain that a producer price index measuring changes in the prices of factors of production may be useful in predicting future inflation.

Continued...

- Discuss the possible consequences of a high inflation rate, including greater uncertainty, redistributive effects, less saving, and the damage to export competitiveness.
- Discuss the possible consequences of deflation, including high levels of cyclical unemployment and bankruptcies.
- Explain, using a diagram, that demand-pull inflation is caused by changes in the determinants of AD, resulting in an increase in AD.
- Explain, using a diagram, that cost-push inflation is caused by an increase in the costs of factors of production, resulting in a decrease in SRAS.
- Evaluate government policies to deal with the different types of inflation.

Continued... HL Only

- Construct a weighted price index, using a set of data provided.(HL Only)
- Calculate the inflation rate from a set of data. (HL only)
- Discuss, using a diagram, the view that there is a long- run Phillips curve that is vertical at the natural rate of unemployment and therefore there is no trade-off between the unemployment rate and the inflation rate in the long run.
- Explain that the natural rate of unemployment is the rate of unemployment that exists when the economy is producing at the full employment level of output.
- Discuss, using a short-run Phillips curve diagram, the view that there is a possible trade-off between the unemployment rate and the inflation rate in the short run.
- Explain, using a diagram, that the short-run Phillips curve may shift outwards, resulting in stagflation (caused by a decrease in SRAS due to factors including supply shocks).

Links to ToK

- What criteria can be used to order macroeconomic objectives in terms of priority? Are such criteria external to economics (that is, normative)?

INFLATION

Inflation

- The second macroeconomics objective is referred to as inflation.
- Inflation Is a sustained increase in the price of good and services over a period of time.

MEASURING INFLATION

Consumer Price Index

- In order to measure inflation, economists use CPI to measure the increase or decrease in inflation

CPI:

- It measures the price of a set basket of goods between one period(base year) and another
- $CPI = \frac{\text{Price of a basket of goods in the current year}}{\text{price of the basket of goods in the base year}}$

Inflation Rate:

- Is the percentage change in the CPI of a country between two years.
- Inflation rate= $((\text{CPI year 2} - \text{CPI year 1}) / \text{CPI year 1}) \times 100$

Example: Calc. inflation %

- To calculate inflation between two years, we first must determine the CPIs for the two years in question. Assume the CPI is made up of just three goods, whose prices during two years are indicated in the table below.

Determining the CPI: Assume 2011 is the base year, and we want to calculate inflation between 2011 and 2012

- CPI for 2011 = Price of basket of goods in 2011/base year price**
- = $38/38=1 \times 100=100$**
- CPI for 2012 = Price of basket of goods in 2012/base year price**
- = $1.039 \times 100=103.9$**

With the CPIs known, we can calculate the rate of inflation:

$$\text{Inflation \%} = ((\text{CPI yr. 2} - \text{CPI yr. 1}) / \text{CPI yr.1}) \times 100$$
$$= 103.9 - 100 / 100 = 3.9\%$$

Good or service	Price in 2011	Price in 2012
Pizza	10€	10.50€
Haircuts	20€	19€
Wine	8€	10€
Total basket price	38€	39.50€

Weighted Price Index

- Because not all the goods measured in a nation's Consumer Price Index are equally important to the typical household,
- governments *weight* particular types of consumption more than other types.

Example: Weighted PI

- For example, food and beverages make up approximately 15% of the typical household's budget in a given year. But housing (either rental payments or mortgage payments) make up 40%.
- In this example, housing prices should be weighted more heavily than food and beverages
- Consider the table showing the prices of the three goods measured in a CPI in two years, including the weight given to each good based on the percentage of the typical consumer's income spent on it.

Good	Price in 2009	Price in 2010	Weight
Banana	\$2	\$1.50	25%
Haircut	\$11	\$10	30%
Taxi ride	\$8	\$10	45%

To establish a price index with 2009 as the base year, we must calculate the weighted price of the basket of goods for 2009. To do this, we multiply the average price of each good by its weight, expressed in hundredths.

2009:

Banana = $2 \times 0.25 = 0.5$, plus

Haircut = $11 \times 0.3 = 3.3$, plus

Taxi ride = $8 \times 0.45 = 3.6$

Price index for 2009 = 7.7

$$\text{Inflation rate} = \frac{8.775 - 7.7}{7.7} = 0.14 \times 100 = 14\%$$

DEGREES OF INFLATION

- *'Price level stability'* is a primary macroeconomic objective;
- but what is considered 'stable' inflation?
- Is NO inflation (0%) desirable?
- What about negative inflation?
- We must distinguish between different degrees of inflation to know what is a desirable inflation rate.

Deflation:

- Deflation refers to a decrease in the average price level of goods/services over time.
- If the CPI for one year is smaller than the CPI from a previous year, then the inflation rate will be negative.
- Deflation is considered highly undesirable because it discourages investment and consumption
- households and firms prefer to postpone spending until prices are lower in the future
- and therefore can lead to recession and rising unemployment.

Low inflation:

- Inflation rates of between 0-5% are considered *low and stable*.
- This is the desired range for most countries, over which
- consumers' confidence over the stability of future prices is sound
- businesses and households can invest, spend and save without fear of future erosions in the values of their savings and investments.

High inflation:

- Inflation rates of greater than 5% are considered high in most countries
- At high inflation rates, firms and households will rush to spend their money now before its value is eroded by higher prices.
- The race to spend while money is dear causes AD to grow rapidly, causing *demand-pull inflation*, reducing real incomes and contributing to instability across the economy

Test Your Knowledge

- With your partner, answer the following question and post your answer on edmodo
- Distinguish between inflation, disinflation and deflation.

CAUSES OF INFLATION

- Inflation can be caused by one of two ways
 1. *increase in aggregate demand*
 2. *decrease in aggregate supply.*

Demand-pull inflation

- Occurs when there is an increase in total demand for a nation's output, either from
 - domestic households
 - foreign consumers
 - the government or firms (C, X_n, G or I).
- When demand increases without a corresponding increase in aggregate supply, the nation's output cannot keep up with the demand,
- and prices are driven up as goods become more scarce.

- **Cost-push inflation:** Occurs as the result of a *negative supply shock*, arising from a sudden, often unanticipated, increase in the costs of production for the nation's producers. Cost-push inflation could result from any of the following:

Cost-push inflation

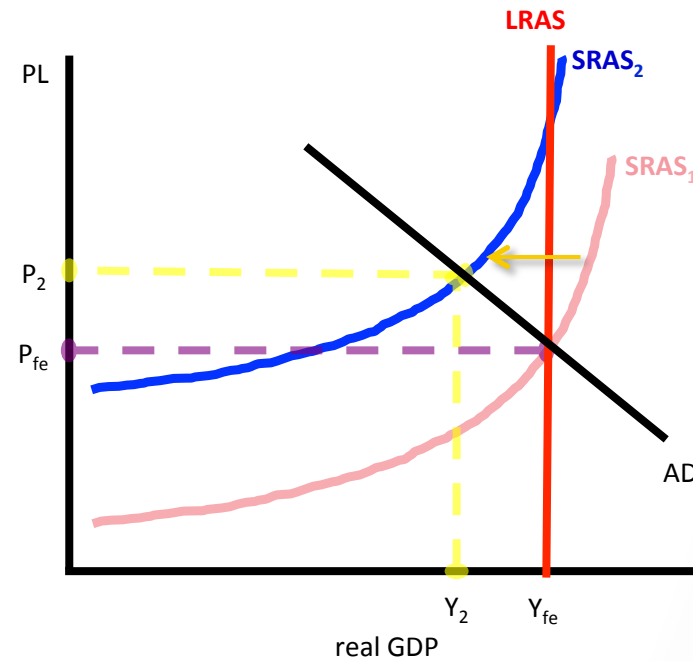
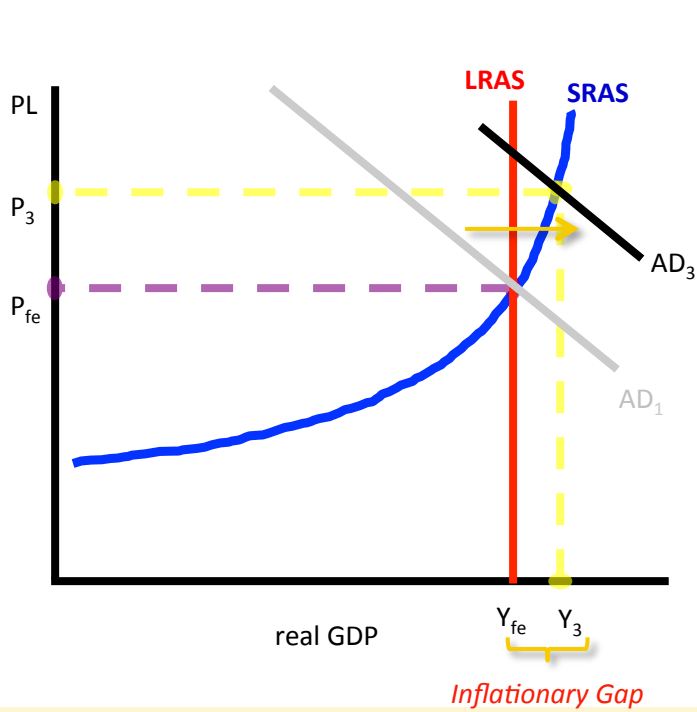
- Occurs as the result of a *negative supply shock*, arising from a
- sudden, often unanticipated, increase in the costs of production for the nation's producers.
- Cost-push inflation could result from any of the following:

- Increase in the wage rate
- Increase in resource costs
- Increased energy or transportation costs
- Increased regulation by the government
- Increased business taxes
- Reduction in the exchange rate

ILLUSTRATING INFLATION IN THE AD/ AS MODEL

The graph

- As with most macroeconomic concepts, inflation can be illustrated as an increase in the average price level in the AD/AS model.



Demand-pull inflation: When AD increases beyond the full-employment level of output the economy experiences an increase in the average price level

Cost-push inflation: When AS decreases from the full-employment level, there is an increase in the average price level.

Test your Knowledge

- Answer the following questions and post answer on edmodo
 1. Explain, using a diagram, that demand-pull inflation is caused by changes in the determinants of AD, resulting in an increase in AD.
 2. Explain, using a diagram, that cost-push inflation is caused by an increase in the costs of factors of production, resulting in a decrease in SRAS.

CONSEQUENCES OF INFLATION

- High inflation, like high unemployment, has several negative effects on households, firms and the overall economy.

Lower Real Incomes

- A household's *real income* is its nominal income adjusted for any inflation in the economy.
- The more prices rise, the less a certain amount of income can buy for households.
- Higher inflation makes consumers *feel poorer*, since the real value of their incomes falls when inflation rises.

Lower Real Interest Rates for Savers

- The *real interest rate* is the *nominal interest rate* minus the inflation rate.
- example:
 - if you have a savings account offering a 5% interest rate, and inflation is 2%, the *real return on your savings* is only 3%. But if inflation increases to 4%, your real return is just 1%.

Higher nominal interest rates for borrowers

- When banks anticipate high inflation in the future, they will raise the interest rates they charge borrowers today.
- This increases the cost of borrowing money to invest in new capital or to buy homes or expensive durable goods,.

Reduced international competitiveness

- A country experiencing high inflation will find demand for its goods fall among international consumers,
- as they become more expensive compared to other country's goods.
- Also, higher prices and wages will reduce foreign investment in the country as firms do not wish to produce where costs are rising, rather where costs will be low in the future.

CONSEQUENCES OF DEFLATION

Deflation

- a decrease in the average price level, sounds like a good thing.
- But it is not, and in some circumstances can be worse for an economy than mild inflation.

- WHY?

Rising Unemployment:

- With the expectation of lower future prices for their output,
- and with low demand for goods and services,
- firms are likely to lay off workers,
- leading to higher unemployment and downward pressure on workers' wages across the economy

Delayed consumption:

- With the expectation of future price decreases, households will increase savings and decrease spending.
- The decrease in current consumption can lead to further deflation and contribute to a *deflationary spiral*,
- in which lower prices lead to
- lower AD which leads to
- even lower prices

Declining investment:

- If firms expect less demand for their output in the future,
- they'll invest less now,
- which could result in slower economic growth,
- as the nation's capital stock depreciates over time and is not being replenished at a rate that will promise sustained growth

Cost to borrowers:

- Deflation causes the value of money to increase over time.
- Therefore, the real debt burden of borrowers increases as the price level falls.
- Bankruptcies result as borrower's incomes fall while the value of the money they must pay back increases.

- With your partner, answer the following questions
 - Post answers on edmodo
1. Discuss the possible consequences of a high inflation rate, including greater uncertainty, redistributive effects, less saving, and the damage to export competitiveness.
 2. Discuss the possible consequences of deflation, including high levels of cyclical unemployment and bankruptcies.

THE PHILIPS CURVE

- Referring to AD/AS diagrams, there is often a tradeoff between unemployment and inflation in an economy.

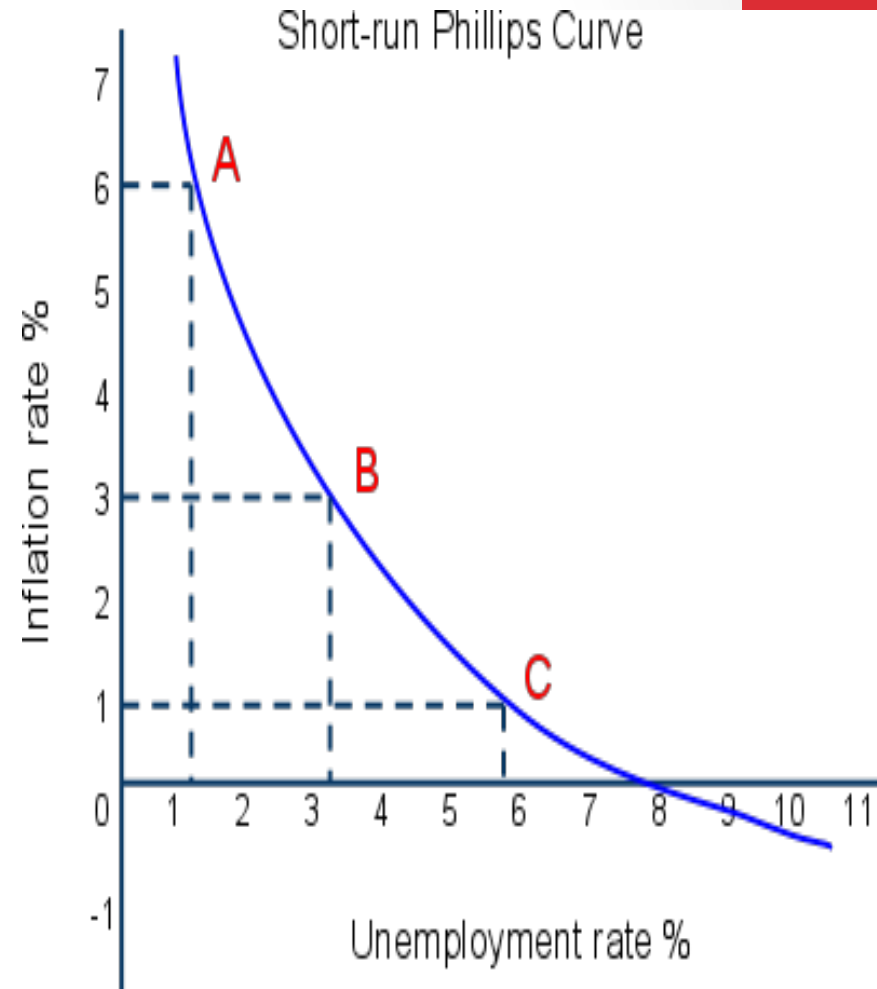
The unemployment/ inflation tradeoff:

- When AD falls in the short-run, unemployment rises and inflation decreases (or becomes negative).
- When AD rises, unemployment falls and inflation increases.
- This *short-run tradeoff between unemployment and inflation is illustrated in a model known as the Phillips Curve.*

The Philips Curve:

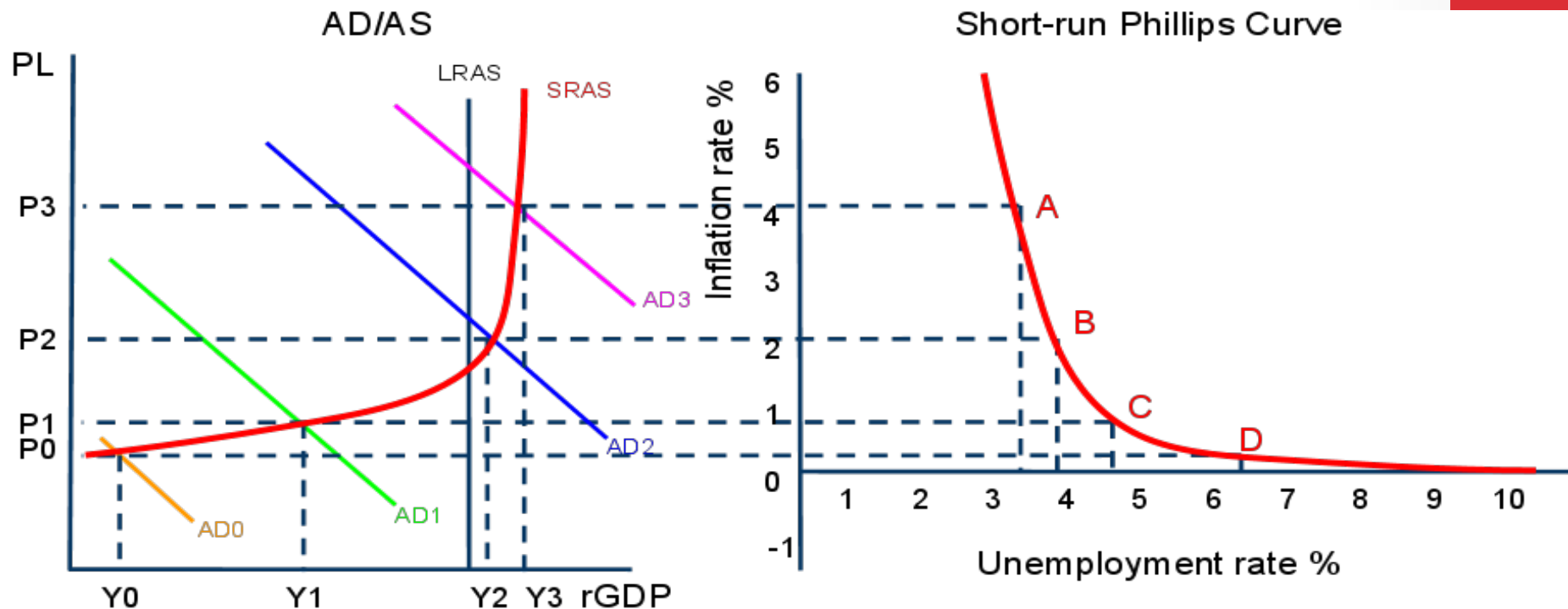
A graph which shows the relationship between unemployment and inflation in the short-run:

- **At point A:** Aggregate demand is very high (probably beyond full employment) since inflation is higher than desired and unemployment is very low.
- **At point B:** AD has fallen to a level around full employment. Inflation is stable and unemployment is at a more natural rate of 3.5%
- **At point C:** AD has fallen, and the economy is probably in a recession. Inflation is very low and unemployment is relatively high.



The Short-run Phillips Curve and AD/AS

- The Phillips Curve on the previous slide reflects the changes seen in an AD/AS model when AD changes in the short-run.
- Study the graphs below and observe how an economy *moves along its short-run Phillips Curve* when AD shifts from AD0 to AD3.



Rationale for the Phillips Curve Relationship

- Why do inflation and unemployment move in opposite directions in the short-run?
- It all has to do with the amount of available labor in the economy at different levels of aggregate demand.

When AD is weak:

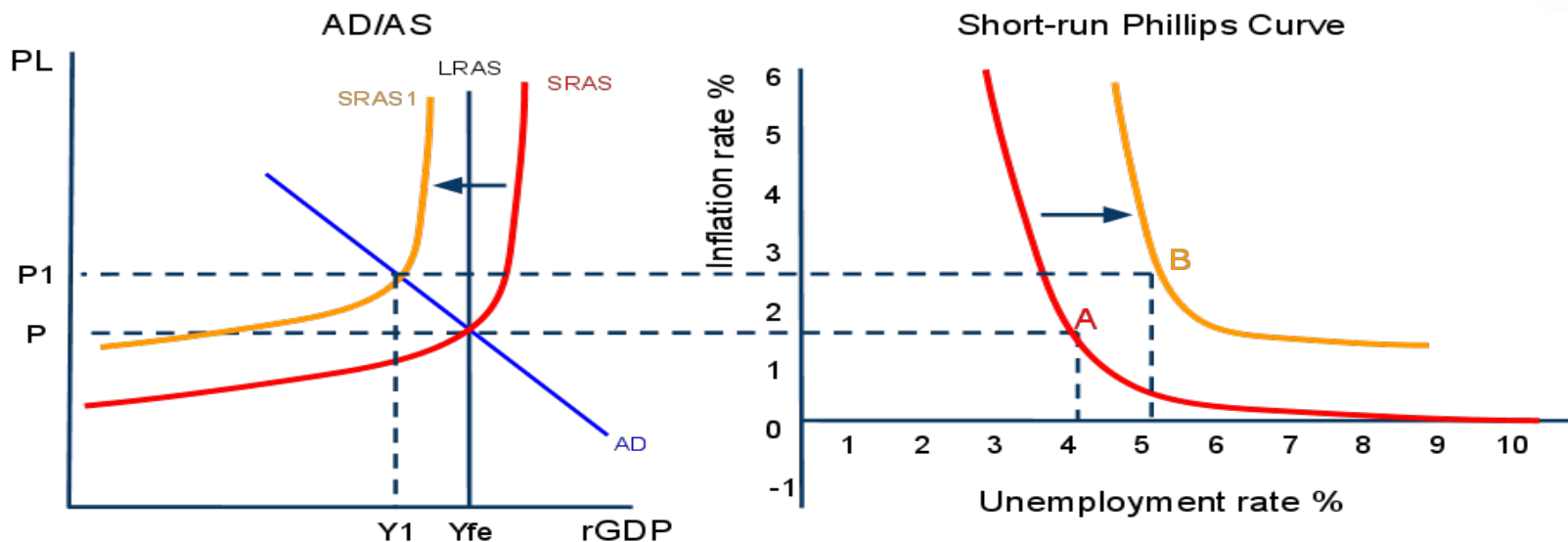
- If AD intersects SRAS at a level of output below full employment...
- Firms have cut back on output and reduced their prices to try to maintain sales during the period of weak demand.
- Inflation is therefore low.
- As workers have been laid off by firms, the number of people who are unemployed grows.
- Unemployment is therefore high.

When AD is strong:

- If AD intersects SRAS at a level of output beyond full employment...
- Firms have seen their sales grow and have begun raising their prices as a result.
- The nation's output is becoming more and more scarce, and consumers are willing to pay more, leading to inflation.
- In an effort to meet the growing demand for output, firms have begun hiring new workers, reducing the level of frictional and structural unemployment.

Supply Shocks in the Short-run Phillips Curve

- As we have shown, a shift in AD causes a movement along the short-run Phillips Curve.
- However, a shift in SRAS will cause a shift in the short-run Phillips Curve.
- As seen below, a negative supply shock causes both unemployment and inflation to rise.
- This is seen as a rightward shift of the Phillips Curve.



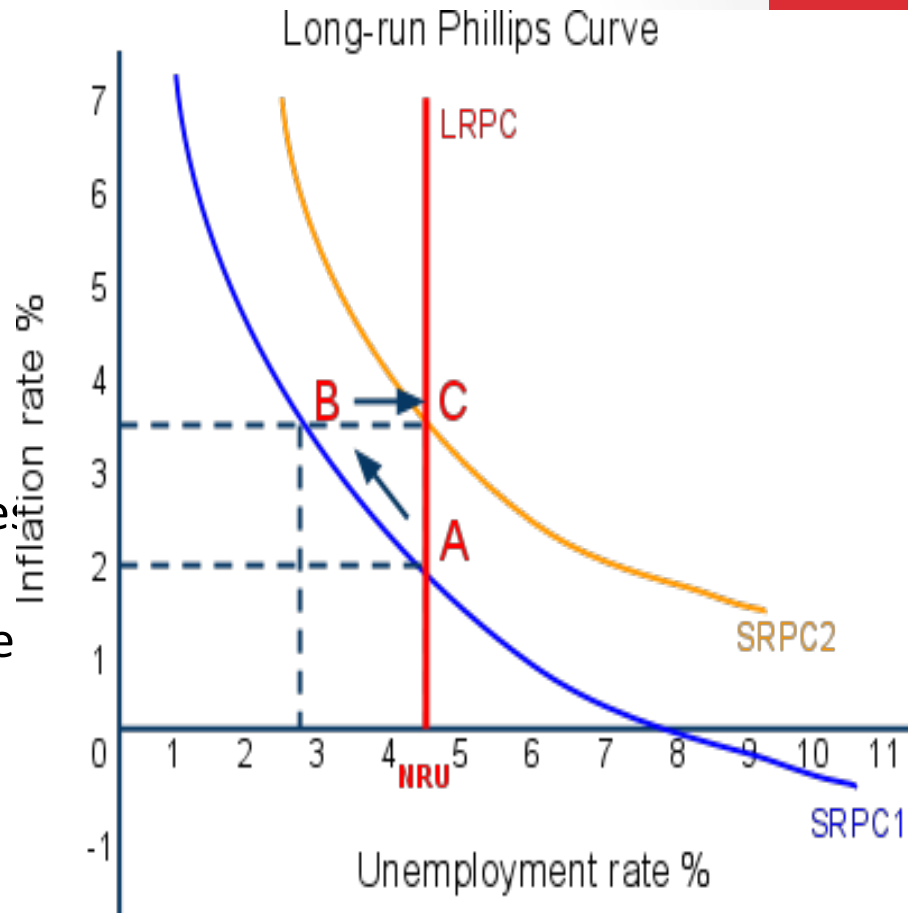
The Long-run Phillips Curve

- In the long-run, you will recall, all wages and prices in an economy are flexible.
- **In the case of high unemployment**
- *If there has been high unemployment, wages will fall in the long-run and employment and output will return to full-employment.*

From short-run to long-run in the Phillips Curve:

In the graph to the right, we can see...

- **From point A to B:** AD has increased, causing higher inflation and lower unemployment in the short-run. However, in the long-run, the economy will move...
- **From point B to C:** Because following the increase in AD, workers see their real wages fall and so eventually demand higher nominal wages. As they do so, firms reduce employment and raise prices, returning unemployment to its natural rate (NRU), now at a higher inflation rate.



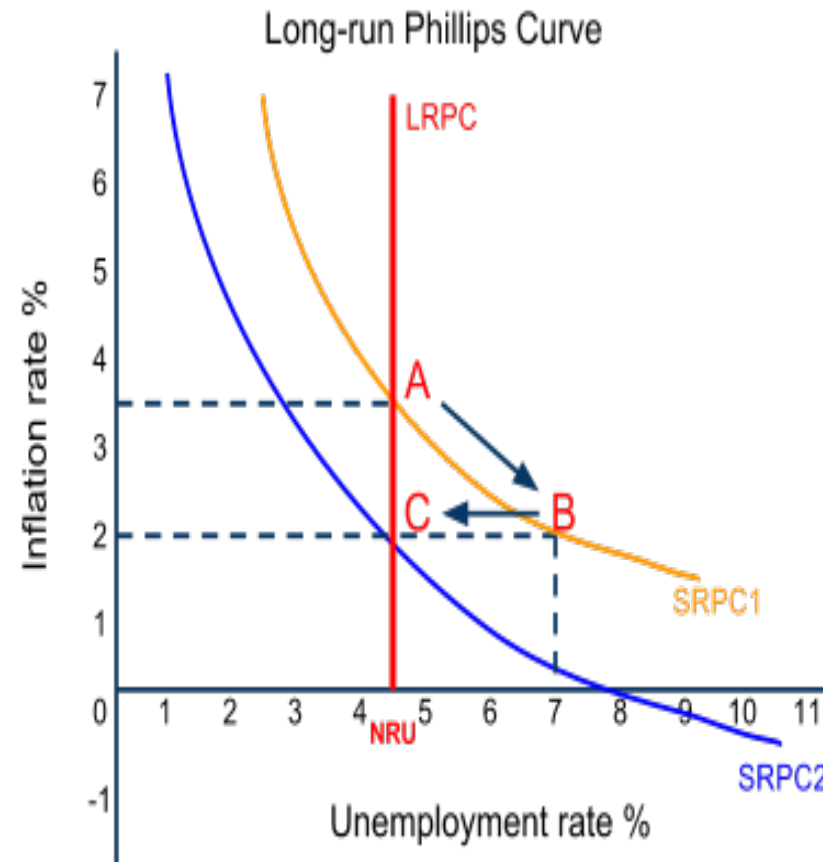
- In the long-run, you will recall, all wages and prices in an economy are flexible.
- **In the case of deflation**
- *If there has been deflation in the economy, workers will accept lower wages in the long-run and employment and output will return to the full-employment level.*

From short-run to long-run in the Phillips Curve.

From short-run to long-run in the Phillips Curve:

Curve: In the graph to the right, we can see...

- **From point A to B:** AD has decreased, causing lower inflation and higher unemployment. However, in the long run the economy will move...
- **From point B to C:** Because following the decrease in AD, workers who became unemployed eventually began accepting lower wages, leading firms to increase output and employment back to the full employment level



In the long-run, unemployment always returns to its Natural Rate, regardless of the level of inflation!

Test Your Knowledge

Watch the videos in the next slide and answer the following question with your partner.

1. Discuss, using a diagram, the view that there is a long-run Phillips curve that is vertical at the natural rate of unemployment and therefore there is no trade-off between the unemployment rate and the inflation rate in the long run.
2. Discuss, using a short-run Phillips curve diagram, the view that there is a possible trade-off between the unemployment rate and the inflation rate in the short run.
3. Explain, using a diagram, that the short-run Phillips curve may shift outwards, resulting in stagflation (caused by a decrease in SRAS due to factors including supply shocks).

Video

- [Watch the videos](#)

Short-run Philips Curve

- <http://www.econclassroom.com/?p=2934>

Long-run Philips Curve

<http://www.econclassroom.com/?p=2941>