Phillips Curve

RIDLEY COLLEGE
SINCE 1889

Assessment Objectives

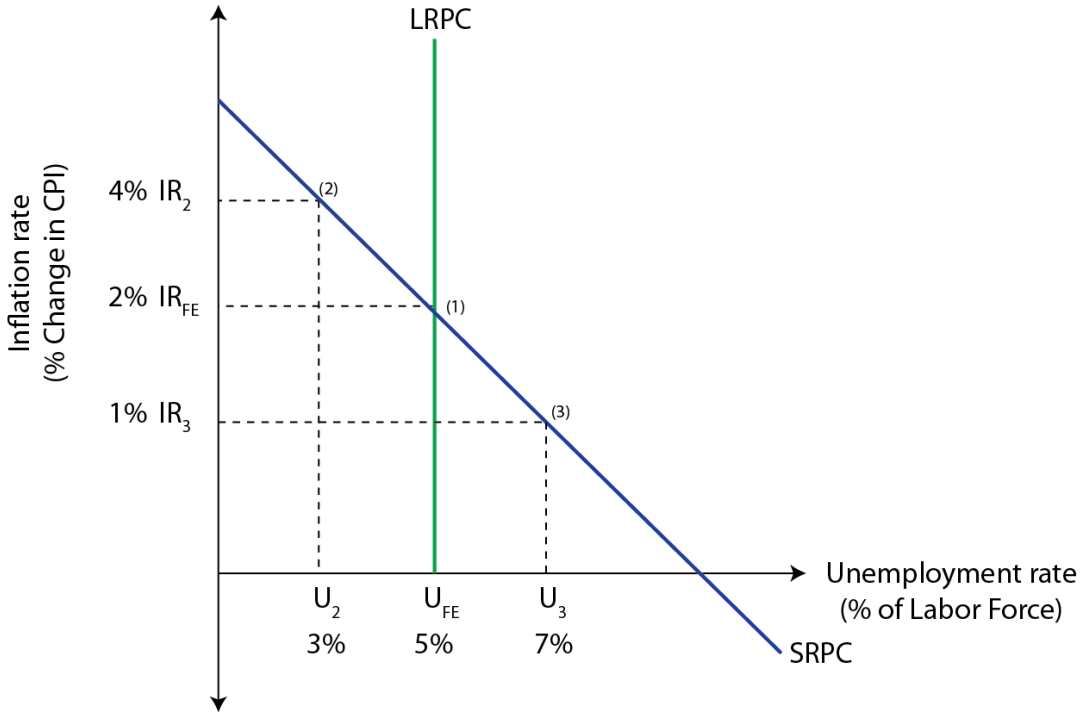
Specific Expectations	
3.A	Define (using graphs as appropriate) the short-run Phillips curve and the long-run Phillips curve.
3.A	Explain (using graphs as appropriate) short-run and long-run equilibrium in the Phillips curve model.
3.B	Explain (using graphs as appropriate) the response of unemployment and inflation in the short run and in the long run.

Phillips Curve

- **Phillips Curve** a curve showing the relationship between unemployment and inflation.
  - The **Short-run Phillips Curve (SRPC)** shows the negative relationship between the rate of inflation and the unemployment rate.
    - When aggregate demand shifts, there is a short-run trade-off between inflation and unemployment
    - Rising inflation is usually accompanied by a drop in unemployment
    - When unemployment increases, inflation tends to fall
    - In the short-run, policy-makers can choose between the competing alternatives of low inflation or low unemployment by using policies that affect aggregate demand.
  - The **Long-run Phillips Curve (LRPC)** is vertical at the natural rate of unemployment, indicating that there is no negative relationship between inflation and unemployment.

Phillips Curve

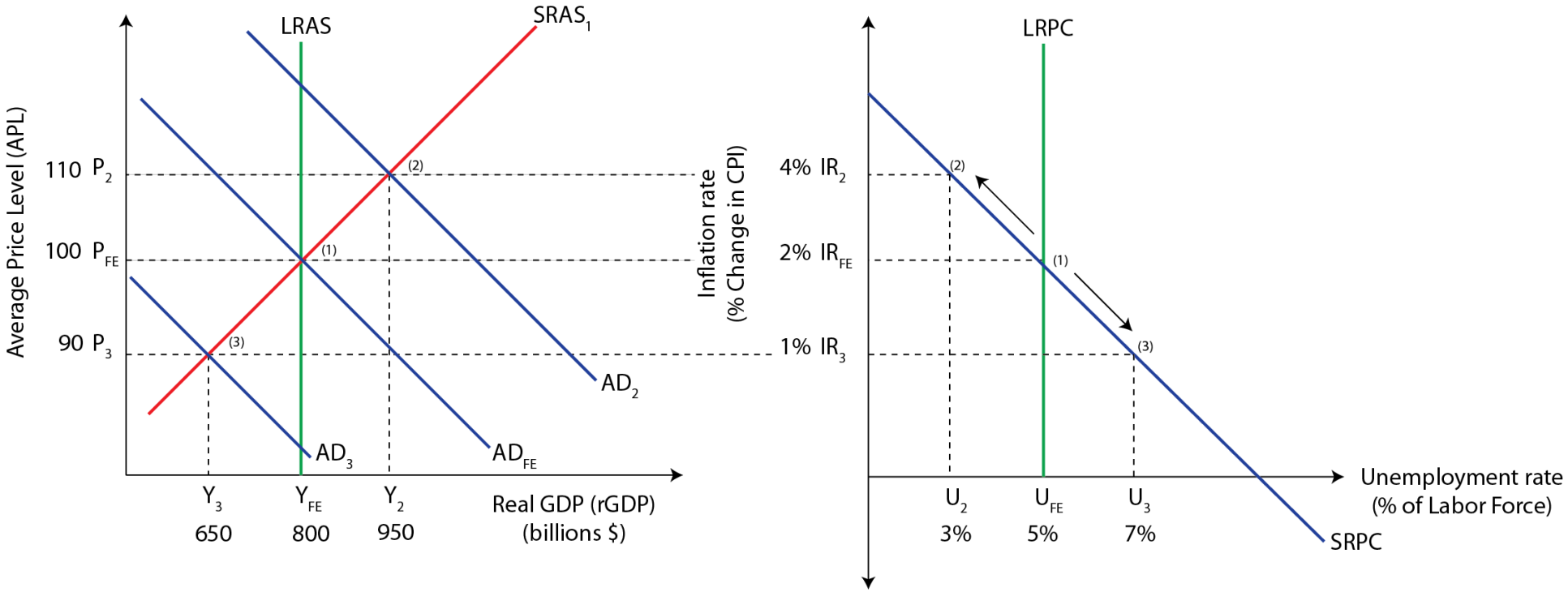
- In the long-run, wages and prices are perfectly flexible and a country's output will return to its full employment level following negative or positive demand shocks.
- In the long-run, the only impact of an increase in aggregate demand is to increase the rate of inflation, while the level of real output and unemployment remain unchanged at the natural rate of unemployment.



Phillips Curve: Changes in Aggregate Demand

- Changes in aggregate demand (AD) lead to movement along the Short-Run Phillips Curve (SRPC).
  - A negative demand shock will cause a decrease in output, employment and the price level. This leads to movement down and to the right along the SRPC.
    - $\downarrow$ AD $\Rightarrow$ $\downarrow$ Inflation & $\uparrow$ Unemployment
  - A positive demand shock will cause output, employment and the price level to increase. This leads to movement up and to the left along the SRPC.
    - $\uparrow$ AD $\Rightarrow$ $\uparrow$ Inflation & $\downarrow$ Unemployment

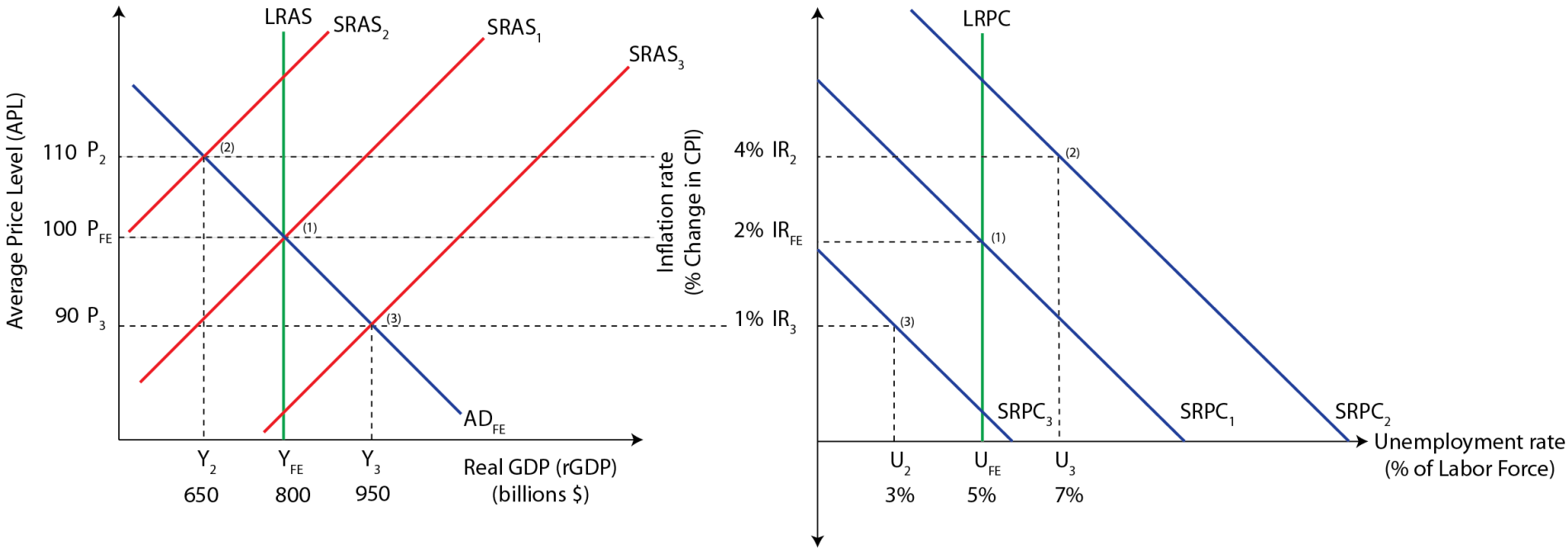
Phillips Curve: Changes in Aggregate Demand



Phillips Curve: Changes in Aggregate Supply

- Changes in Short-Run Aggregate Supply (SRAS) lead to shifts of the Short-Run Phillips Curve (SRPC).
  - A negative supply-side shock causes both higher inflation and higher unemployment. This leads to an outward and rightward shift of the SRPC.
    - $\downarrow$ SRAS $\Rightarrow$ $\uparrow$ Inflation & $\uparrow$ Unemployment
    - **Stagflation** occurs when the country's economy stagnates while inflation increase.
  - A positive supply-side shock will cause output to increase and the price level to fall. More output means lower unemployment and a lower price level means lower inflation. This leads to an inward and leftward shift of the SRPC.
    - $\uparrow$ SRAS $\Rightarrow$ $\downarrow$ Inflation & $\downarrow$ Unemployment

Phillips Curve: Changes in Aggregate Supply

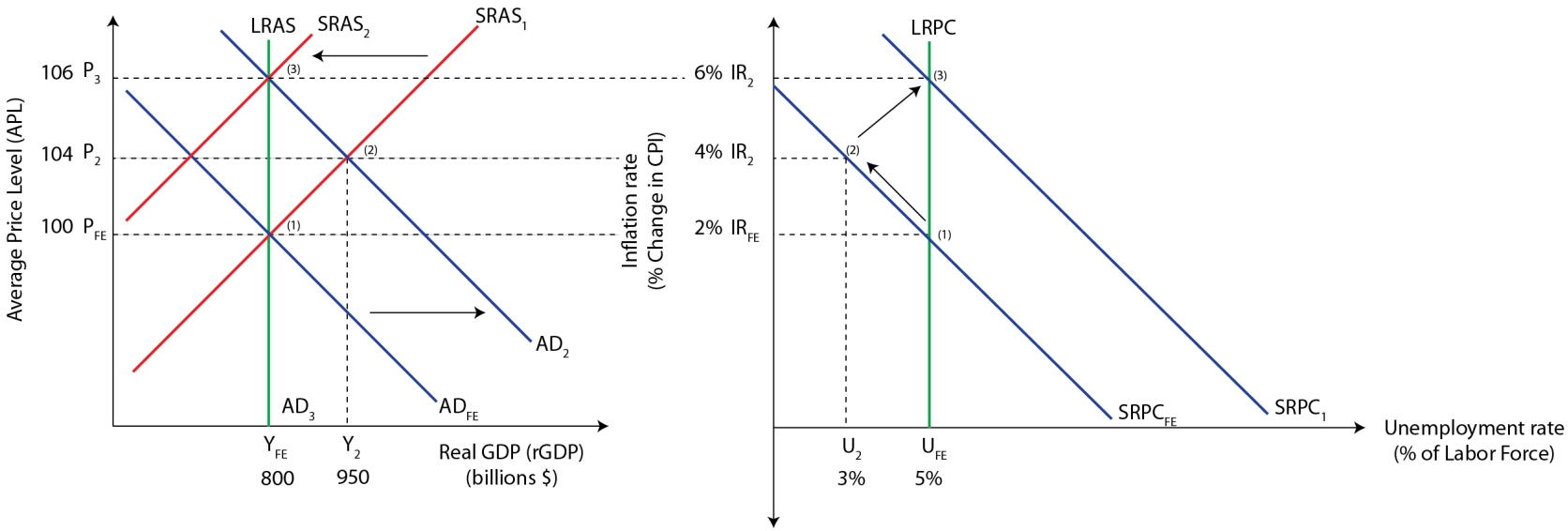


Phillips Curve: Self-Correction

- An increase in aggregate demand (AD) causes an increase in output, the price level, and employment. This is shown as **(1)** to **(2)** in the AD-AS model.
  - Unemployment decreases and inflation increases as shown as movement along the Phillips curve from **(1)** to **(2)**.
  - In the long-run, an economy producing beyond full employment, at point **(2)**, will experience rising wages and input costs, causing SRAS to decrease and output to return to the full employment level.
  - As this happens, inflation will increase and unemployment will return to the NRU in the Phillips curve model.
  - Rising wages and other input prices cause the SRAS to shift in, moving the economy from equilibrium at point **(2)** in the AS-AD model to a new equilibrium at point **(3)**.

Phillips Curve: Self-Correction

- Inflation has increase while unemployment has returned to its natural rate.
- In the Phillips curve, higher inflation and higher unemployment are shown as an outward shift of the SRPC while causes the equilibrium in the Phillips curve model to move from **(2)** to **(3)**
- As output returns to its full employment level in the AS-AD model, unemployment returns to its natural rate in the Phillips Curve Model.

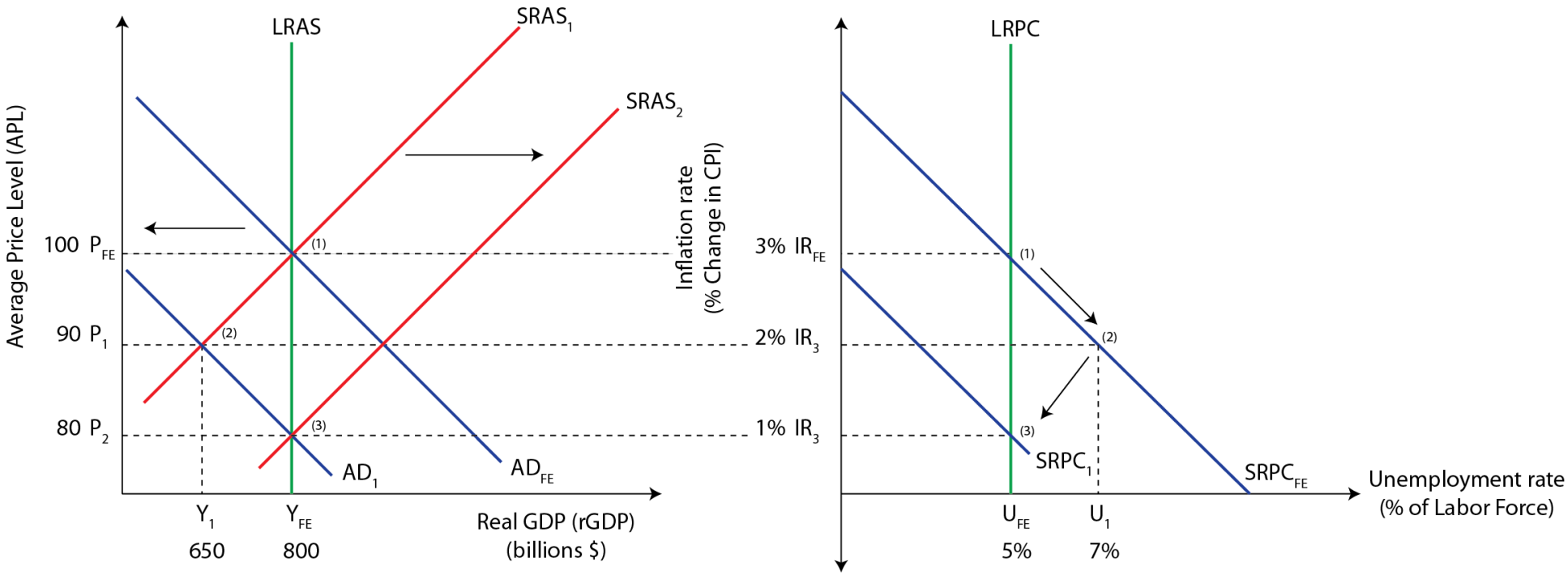


Phillips Curve: Self-Correction

- A negative demand-side shock will cause a decrease in output, employment, and the price level in the AS-AD model, and a movement down and to the right along the SRPC in the Phillips curve model.
  - A move from point **(1)** to **(2)** in the AS-AD model corresponds to a move from **(1)** to **(2)** in the Phillips curve model.
  - In the long-run, an economy producing below full employment, at point **(2)**, will experience falling wages and input costs, causing the SRAS to increase and output to return to the full employment level.
  - Inflation will decrease and unemployment will return to the NRU in the Phillips curve model.
  - Falling wages and other input prices cause SRAS to shift out, restoring full employment in the AS-AD model at a lower price level.

Phillips Curve: Self-Correction

- The outward shift of the SRAS corresponds with an inward shift of the SRPC, restoring the natural rate of unemployment (NRU) in the Phillips Curve model at a lower inflation rate.

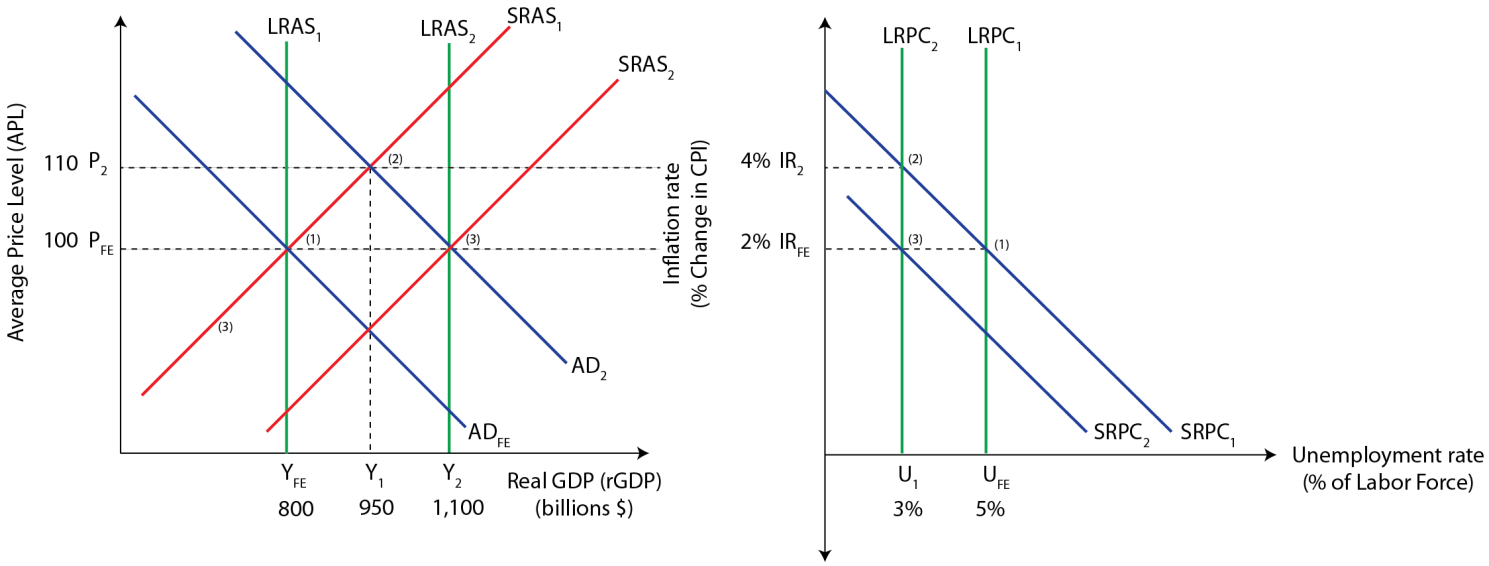


Natural Rate of Unemployment (NRU) and the LRPC

- Factors that cause the natural rate of unemployment (NRU) to change will cause a shift of the long-run Phillips curve (LRPC).
- Recall that the NRU consists of two types of unemployment:
  - **Structural unemployment** arises due to changing technology or other factors that result in a mismatch between the skills of a nation's workforce and the needs of employers.
  - **Frictional unemployment** arises from workers who are in between jobs and cannot quickly and easily be matched up with firms that demand labor.
- Increases in the NRU, although rare, result from shifts in society's attitudes toward work, changes in technology, or from policies that change the incentives around being unemployed.
- Decreases in the NRU may stem from improvements in the quality and/or quantity of the factors of production and economic growth.

Natural Rate of Unemployment (NRU) and the LRPC

- Changes in long-run aggregate supply (LRAS) lead to shifts of the Long-Run Phillips Curve.
  - Increases in LRAS leads to an inward and leftward shift of the LRPC curve and a decrease in the NRU.
  - Decreases in LRAS leads to an outward and rightward shift of the LRPC curve and an increase in the NRU.



Summary

- **Enduring Understanding**
  - The Phillips curve model is used to represent the relationship between inflation and unemployment and to illustrate how macroeconomic shocks affect inflation and unemployment.
- **Essential Knowledge**
  - The short-run trade-off between inflation and unemployment can be illustrated by the downward-sloping short-run Phillips curve (SRPC).
  - An economy is always operating somewhere along the SRPC.
  - The long-run relationship between inflation and unemployment can be illustrated by the longrun Phillips curve (LRPC), which is vertical at the natural rate of unemployment.
  - Long-run equilibrium corresponds to the intersection of the SRPC and the LRPC.

Summary (Continued)

- Points to the left of long-run equilibrium represent inflationary gaps, while points to the right of long-run equilibrium represent recessionary gaps.
- Demand shocks correspond to movement along the SRPC.
- Supply shocks correspond to shifts of the SRPC.
- Factors that cause the natural rate of unemployment to change will cause the LRPC to shift.