ECO 120-04
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Assignment 9 Solutions

Suppose that the U.S. economy is initially in long-run equilibrium, producing its potential output Y_p, as depicted directly below.

Part A: Recessions and expansions

1. Please define a recessionary period using actual output Y and potential output Y_p.

> $Y < Y_p$ or $Y - Y_p < 0$ (notice that these are equivalent statements).

2. Please define an expansionary period using actual output Y and potential output Y_p.

> $Y > Y_p$ or $Y - Y_p > 0$ (notice that these are equivalent statements).

3. Please define the output gap using actual output Y and potential output Y_p.

> The output gap is $\frac{Y-Y_p}{Y_p} \times 100\%$.

4. Please define a recessionary period using the output gap.

> We know that $Y - Y_p < 0$. We can multiply both sides by $\frac{100\%}{Y_p}$ to obtain $\frac{Y-Y_p}{Y_p} \times 100\% < 0$.
>
> That is, the output gap is negative.

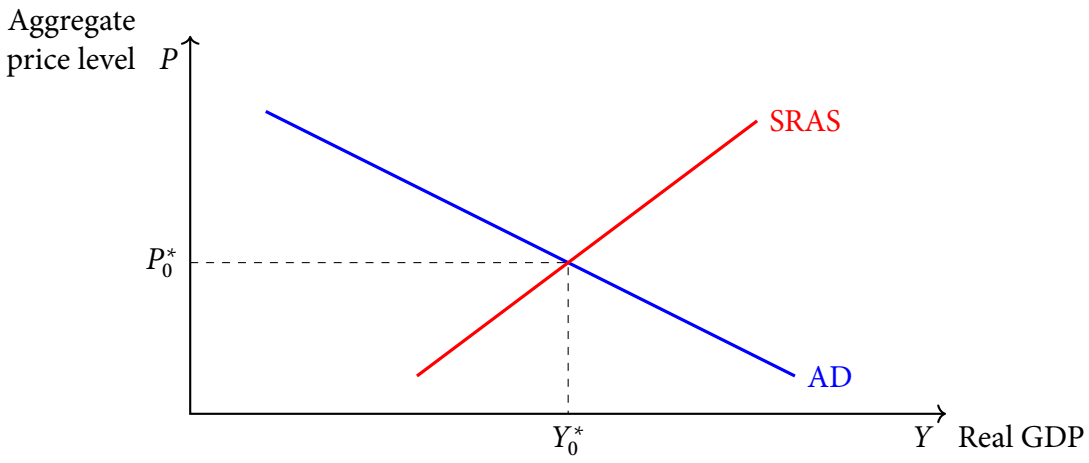
5. Please define an expansionary period using the output gap.

> We know that $Y - Y_p > 0$. We can multiply both sides by $\frac{100\%}{Y_p}$ to obtain $\frac{Y-Y_p}{Y_p} \times 100\% > 0$.
>
> That is, the output gap is positive.

Part B: An economy during a recessionary period

Please graph an economy in a recessionary period using the aggregate supply and demand model.

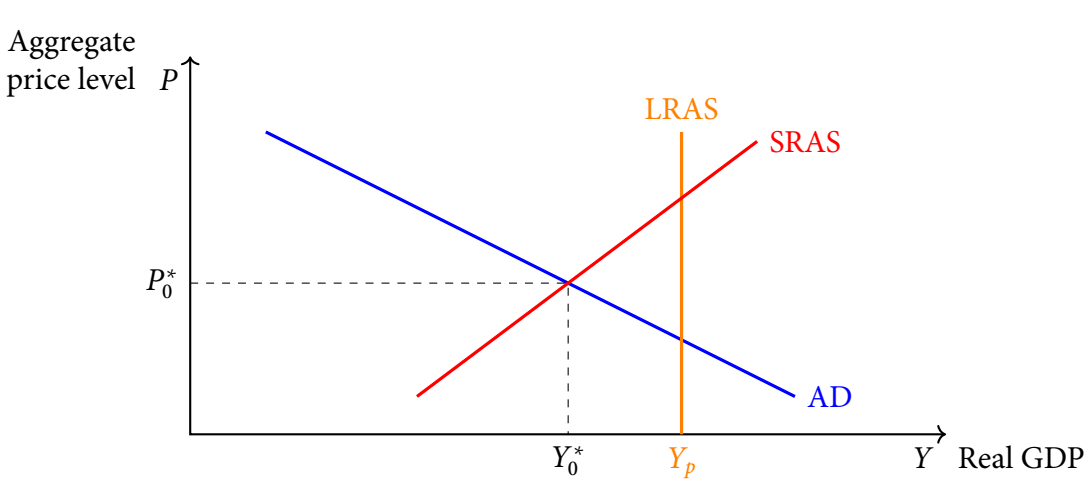
1. Begin by drawing and labeling axes.
2. Draw and label an aggregate demand (AD) and short-run aggregate supply (SRAS) curves.
3. Label the aggregate price level P_0^* and the actual output level Y_0^*.



4. In a recession, is potential output Y_p above or below actual output Y_0^*?

> Above.

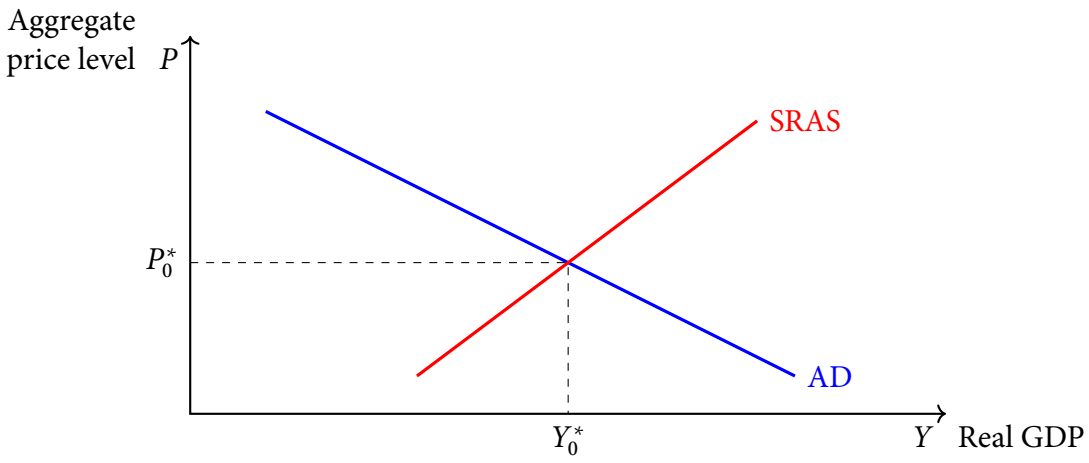
5. Add a long-run aggregate supply (LRAS) curve to your graph, and label Y_p.



Part C: An economy during an expansionary period

Please graph an economy in an expansionary period using the aggregate supply and demand model.

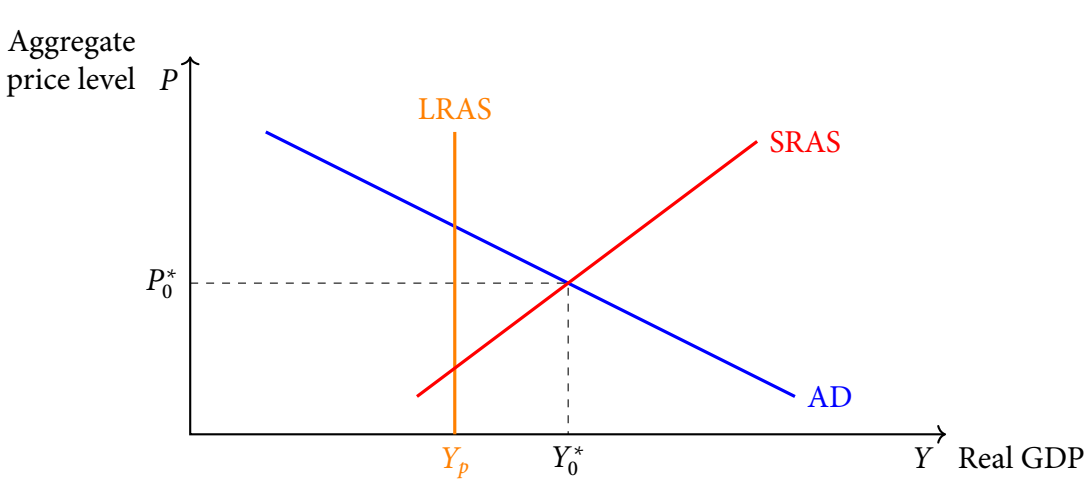
1. Begin by drawing and labeling axes.
2. Draw and label an aggregate demand (AD) and short-run aggregate supply (SRAS) curves.
3. Label the aggregate price level P_0^* and the actual output level Y_0^*.



4. In an expansion, is potential output Y_p above or below actual output Y_0^*?

> Below.

5. Add a long-run aggregate supply (LRAS) curve to your graph, and label Y_p.



Part D: The short-run and the long-run

1. What characterizes the short-run in the aggregate supply and demand (AS and AD) model?

> Wages are sticky in the short-run. Wages are flexible in the long-run.

2. Which curve shifts as nominal wages change?

> The SRAS curve.

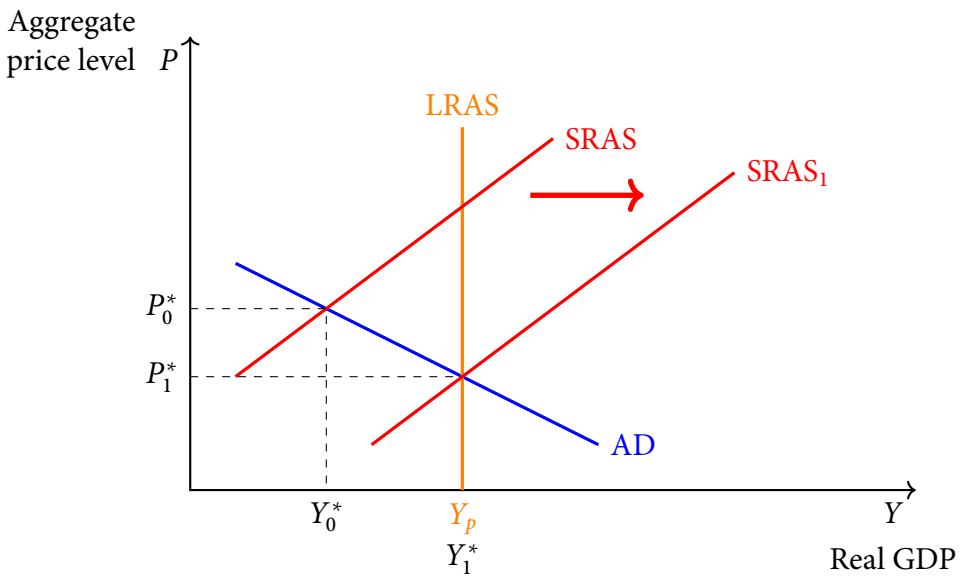
3. In which direction does the curve shift *when nominal wages increase*?

> The SRAS curve shifts in (or left).

4. In which direction does the curve shift *when nominal wages decrease*?

> The SRAS curve shifts out (or right).

5. In long-run equilibrium, $Y = Y_p$. Revisit part B, with *an economy in a recessionary period*. Suppose that wages adjust so that the economy returns to long-run equilibrium. Consider what shift would be necessary to make $Y = Y_p$. Graph this shift, and label the new price level P_1^* and new actual output level Y_1^*. Did wages increase or decrease?

> 
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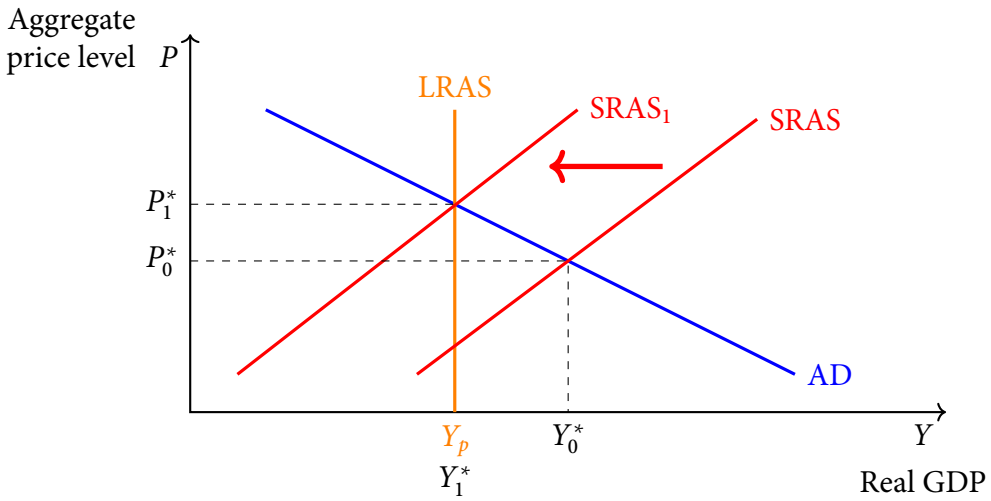
>
> Wages decreased, causing this rightward shift of the SRAS curve. (When labor is cheaper, firms are willing to produce more output at any given price.)

6. In long-run equilibrium, $Y = Y_p$. Revisit part C, with *an economy in an expansionary period*. Suppose that wages adjust so that the economy returns to long-run equilibrium. Consider what shift would be necessary to make $Y = Y_p$. Graph this shift, and label the new price level P_1^* and new actual output level Y_1^*. Did wages increase or decrease?



Wages increased, causing this leftward shift of the SRAS curve. (When labor is more expensive, firms will reduce their output at any given price.)