ECON2113 Macroeconomics

Chapter 6 Exercises

Solutions

1. A reduction in the supply of money leads to excess demand for money and increased interest rates, reducing the level of private spending (especially investment). Therefore the AD-curve shifts to the left. This causes an excess supply of goods and services at the original price level so the price level starts to decrease. Since the AS-curve is upward sloping, a new short-run macro-equilibrium is reached at a lower level of output (and therefore a higher level of unemployment) and a lower price level.

However, the higher level of unemployment eventually provides downward pressure on wages, reducing the cost of production and shifting the upward-sloping AS-curve to the right. Alternatively, since this short-run equilibrium output level is below the full-employment level, prices will continue to fall and the upward-sloping AS-curve will shift to the right. As long as output is below the full-employment level Y^*, the upward-sloping AS-curve will continue to shift to the right, which means that the price level will continue to decline. Eventually a new long-run equilibrium will be reached at the full-employment level of output (Y^*) and a lower price level.
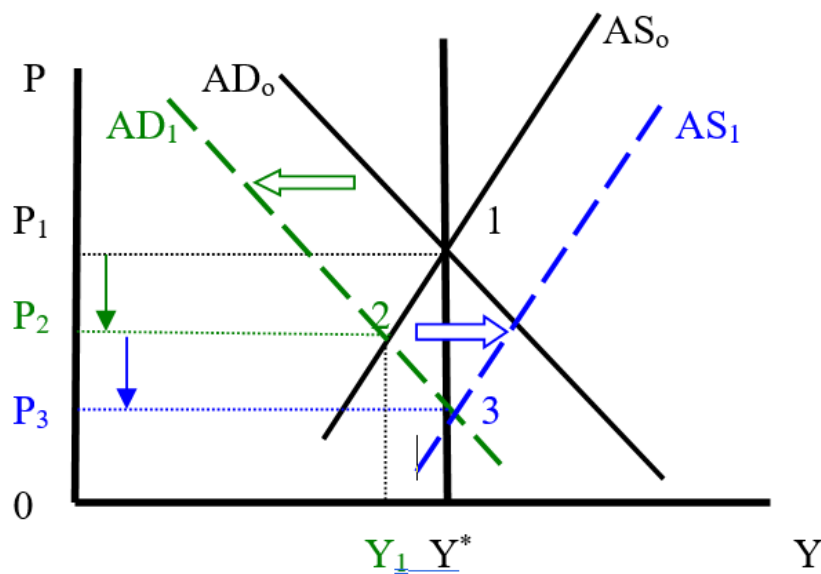
Short-run Effect: Y $\Downarrow$ UR $\Uparrow$ P $\Downarrow$

Long-run Effect: Y = const.   UR = const.   P $\Downarrow$

2. The rational expectations theory predicts that an announced change in monetary policy will immediately change people's expectations about the inflation rate. If people could adjust immediately to this change in inflationary expectations, the rate of unemployment and output would remain at the full-employment level. In this hypothetical situation, any announced monetary policy change would not affect the unemployment rate. In other words, we would move immediately from point 1 to point 3 in the diagram that was used to explain the previous question. But even if people have rational expectations and can anticipate the effects of a policy change correctly, they may not be able to immediately adjust due to wage contracts, etc. Thus, there will always be some deviation from the full-employment output level Y*. In the above diagram, the AS-curve would start shifting to the right much earlier and we would end up somewhere between points 1 and 3 and even with an anticipated policy change we would have some increase in unemployment.

3.

a. A favorable supply shock, such as a decline in material prices, shifts the upward-sloping AS-curve to the right, leading to excess supply at the existing price level. A new short-run equilibrium is reached at a higher level of output and a lower price level. But since output is now above the full-employment level, there is upward pressure on wages and prices and the upward-sloping AS-curve starts shifting back to the left. A new long-run equilibrium is reached back at the original position at Y^* and the original price level (assuming that the change in material prices did not affect the full-employment level of output). Since nominal wages (W) will have risen but the price level (P) will not have changed, real wages (W/P) will have increased.

P | AD   ASₒ

AS₁

Pₒ 1

P₁ 2

0   Y* Y₁   Y
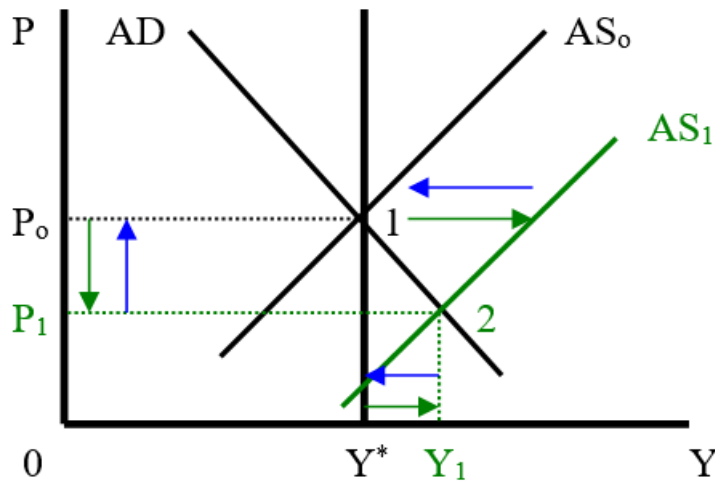
b. Lower material prices lower the cost of production, shifting the upward-sloping AS-curve to the right. This leads to an increase in output and a lower price level. Since unemployment is below its natural rate, there is a shortage of labor, providing upward pressure on wages. But higher wages will increase the cost of production again, so the upward-sloping AS-curve will eventually shift back to the original long-run equilibrium (assuming that potential GDP has not been affected). The adjustment process can be described as follows:

1==>2: material prices ↓ ==> cost of production ↓ ==> the AS-curve shifts right

==> excess supply ==> P ↓ ==> real ms ↑ ==> i ↓ ==> I ↑ ==> Y ↑

Short-run effect: Y ↑,   i ↓,   P ↓

2==>1:   Since $Y > Y^*$ ==> nominal wages ↑ ==> the AS-curve shifts left

==> excess demand ==> P ↑ ==> real ms ↓ ==> i ↑ ==> I ↓ ==> Y ↓

Short-run effect: Y↓,   i↑,   P↑

Long-run effect: Y back at Y^*, i remains the same, P remains the same.

4.

a. Okun's law states that a reduction in the unemployment rate of 1 percent will increase the level of output by about 2 percent. This relationship allows us to measure the cost to society of a given rate of unemployment in terms of lost production. Using Equation (6) in the textbook for Okun's law, we can calculate the effect on unemployment in the following way:

$$(Y^* - Y)/Y^* = - \omega (u^* - u) ==> 3\% = - 2(u^* - u) ==> (u^* - u) = - 1.5\%$$

Therefore, if the output gap (the gap between potential GDP and actual GDP), is 3%, then the unemployment gap $(u^* - u)$ is - 1.5%.

b. Using Equations (2b) and (5) in the textbook, we can see that

$$(W_{t+1} - W_t)/W_t \quad - \pi^e = - \varepsilon(N^* - N)/N^* ==> (W_{t+1} - W_t)/W_t \quad - \pi^e = - \varepsilon(u - u^*)$$

$$==> (W_{t+1} - W_t)/W_t \quad = \pi^e - \varepsilon (-1.5\%) = \pi^e + 0.015\varepsilon$$

Here π^e represents the level of expected inflation and ε measures the responsiveness of wages to unemployment.