Problem Set 9 Solutions
December 8, 1995
14.02

Question 1:

1)

The aggregate supply equation:

$$P_t = P_{t-1}(1+\mu) \cdot F(1 - \frac{Y_t}{aL}, z)$$

The aggregate demand relation:

$$Y_t = Y(\frac{M}{P_t}, G, T)$$

2)

In the short run, the AD schedule shifts to the right, and the AS schedule does not shift. The AD shifts because there is more demand at a given price level once government spending increases. Both the IS and the LM schedules shift. IS shifts right due to the increase in government spending, and the LM shifts up because the increase in prices reduces the real money supply ($\frac{M}{P}$ decreases since M is fixed). Therefore, the short-run effect is to increase output, increase prices, and increase the interest rate.

3)

While moving towards the long run equilibrium, the AS schedule continues to shift up, moving the equilibrium point along the AD schedule until output again equals the natural rate at the long run equilibrium. This schedule moves in this way because as long as output exceeds the natural level, prices must exceed the level that workers expected, and therefore workers continue to revise their expectations upward. This means that they will bargain for higher wages, which results in increasing prices. In the IS/LM graph, the LM continues to shift up, as increases in the price level continue to lower the real money supply. There is no final effect on Y or Y_n , prices are higher, and the real money stock is lower. The composition of output has changed: G is higher (obviously), C is unchanged, and I has decreased due to the higher interest rates.

4)

Note: There is a mistake here. The increase in unemployment insurance should be interpreted as a decrease in T rather than an increase in G. This is because T is defined as the amount of taxes net of transfers from the government. All the analysis that follows is unaffected by whether the UI is interpreted as an increase in G or a decrease in T since the effect of either fiscal policy is expansionary.

In the wage-setting/price-setting graph, the increase in UI causes the WS schedule to shift up. The new natural rate of unemployment is above the previous natural rate. This happens because the higher z means that workers have more bargaining power. However, given the fixed markup μ, firms will set prices so that real wages remain unchanged. Therefore, in equilibrium workers bargaining position must be reduced by higher unemployment. This gets them to accept the same wage even though z is higher.

5)

The increase in the natural rate of unemployment implies that the natural level of output has fallen. The AS relation shifts up in the short-run so that the schedule passes through the new natural level of output at the previous price level. This schedule continues to shift up, moving the equilibrium point along the AD curve until output equals the (new) natural level in the long run.

6)

In the short run, both the AS and the AD schedules have shifted up. The short run effect is to increase the price level, since both the higher unemployment benefits and expansionary fiscal policy increase prices. The short run effect on output is ambiguous.

The AS schedule will continue to shift up as long as output exceeds the new natural level. The long-run equilibrium point is at the new natural level of output. Therefore the policy causes a rise in prices and a decrease in output in the long run. This result is paradoxical since the fiscal policy was expansionary, but the spending was done in a way to lower the natural level of output, and therefore the long-run response of output makes sense.

Question 2:

1. A
2. A
3. D
4. B

5. D
6. C
7. D
8. D