REVIEW QUESTIONS
AGGREGATE SUPPLY

1. Explain the two theories of aggregate supply. On what market imperfection does each theory rely? What do the theories have in common?

2. How is the Phillips curve related to aggregate supply?

3. Why might inflation be inertial?

4. Explain the differences between demand-pull inflation and cost-push inflation.

5. Under what circumstances might it be possible to reduce inflation without causing a recession?

6. Explain two ways in which a recession might raise the natural rate of unemployment.

7. In the sticky-price model, describe the aggregate supply curve in the following special cases:

        a. All firms have sticky prices ($s = 1$).
        b. The desired price does not depend on aggregate output ($a = 0$).

8. Suppose that an economy has the Phillips curve
$$\pi = \pi_{-1} - 0.5\,(u - 5)$$

   a. What is the natural rate of unemployment?
   b. Graph the short-run and long-run relation- ships between inflation and unemployment.
   c. How much cyclical unemployment is necessary to reduce inflation by 4 percentage points? Using Okun's law, compute the sacrifice ratio.
   d. Inflation is running at 6 percent.The central bank wants to reduce it to 2 percent. Give two scenarios that will achieve that goal.

9. An economy has the following equation for the Phillips curve:

$$\pi = E\pi - 0.5\,(u - 06)$$

People form expectations of inflation by taking a weighted average of the previous two years of inflation:

$$E\pi = 0.7\,\pi_{-1} - 0.7\,\pi_{-2}$$

Okun's law for this economy is:

$$(Y - Y_{-1}) / Y_{-1} = 3.0 - 2.0\,(u - u_{-1})$$

The economy begins at its natural rate of unemployment with a stable inflation rate of 5 percent.

a. What is the natural rate of unemployment for this economy?

b. Graph the short-run tradeoff between infla- tion and unemployment that this economy faces. Label the point where the economy begins as point A. (Be sure to give numerical values for point A.)

c. A fall in aggregate demand leads to a reces- sion, causing the unemployment rate to rise 4 percentage points above its natural rate. On your graph in part (a), label the point the economy experiences that year as point B. (Once again, be sure to give numerical values.)

d. Unemployment remains at this high level for two years (the initial year described in part (c) and one more), after which it returns to its natural rate. Create a table showing unemployment, inflation, expected inflation, and output growth for 10 years beginning two years before the recession. (These calculations are best done on a computer spreadsheet.)

e. On the same graph you used in part (b), graph the short-run tradeoff the economy faces at the end of this 10-year period. Label the point where the economy finds itself as point C. (Again, use numerical values.)

f. Compare the equilibrium before the recession with the new long-run (period ten) equilibrium. How much does inflation change? How many percentage points of out- put are lost during the transition? What is this economy's sacrifice ratio?

10. According to the rational-expectations approach, if everyone believes that policymakers are com- mitted to reducing inflation, the cost of reducing inflation—the sacrifice ratio—will be lower than if the public is skeptical about the policymakers' intentions. Why might this be true? How might credibility be achieved?

11. Suppose that the economy is initially at a long- run equilibrium. Then the Fed increases the money supply.
a. Assuming any resulting inflation to be unexpected, describe any changes in GDP, unemployment, and inflation that are caused by the monetary expansion. Explain your conclusions using three diagrams: one for the IS–LM model, one for the AD–AS model, and one for the Phillips curve.

b. Assuming instead that any resulting inflation is expected, describe any changes in GDP, unemployment, and inflation that are caused by the monetary expansion. Once again, explain your conclusions using three diagrams: one for the IS–LM model, one for the AD–AS model, and one for the Phillips curve.

12. Assume that people have rational expectations and that the economy is described by the sticky- price model. Explain why each of the following propositions is true.
  a. Only unanticipated changes in the money supply affect real GDP. Changes in the money supply that were anticipated when prices were set do not have any real effects.
  b. If the CB sets the money supply at the same time as people are setting prices, so that everyone has the same information about the state of the economy, then monetary policy cannot be used systematically to stabilize output. Hence, a policy of keeping the money supply constant will have the same real effects as a policy of adjusting the money supply in response to the state of the economy. (This is called the policy irrelevance proposition.)
  c. If the CB sets the money supply well after people have set prices, so that the CB has collected more information about the state of the economy, then monetary policy can be used systematically to stabilize output.

12. Suppose that an economy has the Phillips curve

$$\pi = \pi_{-1} - 0.5\,(u - u^n)$$

and that the natural rate of unemployment is given by an average of the past two years' unemployment:

$$u^n = 0.5(\,u_{-1} + \ u_{-2})$$

   a. Why might the natural rate of unemployment depend on recent unemployment (as is assumed in the preceding equation)?

   b. Suppose that the Fed follows a policy to permanently reduce the inflation rate by 1 percentage point. What effect will that policy have on the unemployment rate over time?

   c. What is the sacrifice ratio in this economy? Explain.

   d. What do these equations imply about the short-run and long-run tradeoffs between inflation and unemployment?

13. Some economists believe that taxes have an important effect on the labor supply. They argue that higher taxes cause people to want to work less and that lower taxes cause them to want to work more. Consider how this effect alters the macroeconomic analysis of tax changes.

   a. If this view is correct, how does a tax cut affect the natural level of output?

   b. How does a tax cut affect the aggregate demand curve? The long-run aggregate supply curve? The short-run aggregate supply curve?

   c. What is the short-run impact of a tax cut on output and the price level? How does your answer differ from the case without the labor- supply effect?

   d. What is the long-run impact of a tax cut on output and the price level? How does your answer differ from the case without the labor- supply effect?