3. A negative oil price shock: It is common to blame some of the poor macroeconomic performance of the 1970s on the rise in oil prices. In the middle of the 1980s, however, oil prices declined sharply. Using the AS/AD framework, explain the macroeconomic consequences of a one-time negative shock to the inflation rate, as might occur because of a sharp decline in oil prices.

4. The oil price shocks of 2006–2009: Between 2006 and the middle of 2008, oil prices rose sharply—from around $60 to more than $140 per barrel. By the end of 2008, however, oil prices had fallen even more sharply, to just over $40 per barrel. Think of these events as two separate shocks.
   (a) What, precisely, are the two shocks? (For the purpose of this question, let’s ignore the significant role played by the financial crisis itself.)
   (b) Using the AS/AD framework, explain how the macroeconomy would evolve in response to these shocks.

5. A decline in foreign demand for U.S. goods: Suppose the European and Japanese economies succumb to a recession and reduce their demand for U.S. goods for several years. Using the AS/AD framework, explain the macroeconomic consequences of this shock, both immediately and over time.

6. Reinfation in Japan: In the late 1990s and early 2000s, inflation was actually negative in Japan (look back at Figure 13.19). This question asks you to explore a change in policy to achieve a higher inflation rate.
   Consider an economy that begins with output at potential and an inflation rate of $\pi$, so the economy begins in steady state. A new chair of the central bank decides to raise the long-run inflation target to $\pi'$ (greater than the original $\pi$). Show how the economy responds over time, using the AS/AD framework.
   Comment on your results.

7. The slope of the AS curve:
   (a) Why does the AS curve slope upward?
   (b) If the AS curve were more steeply sloped, how would the economy respond differently to aggregate demand shocks (shocks to $\pi$)?
   (c) If the curve were more steeply sloped, how would the economy respond differently to aggregate supply shocks (shocks to $\pi$)?
   (d) What kind of economic changes in the economy would lead the curve to be more steeply sloped?

8. The slope of the AD curve:
   (a) Why does the AD curve slope downward?
   (b) If the AD curve were more steeply sloped, how would the economy respond differently to aggregate demand shocks (shocks to $\pi$)?
   (c) If the curve were more steeply sloped, how would the economy respond differently to aggregate supply shocks (shocks to $\pi$)?
   (d) What kind of economic changes in the economy would lead the curve to be more steeply sloped?

9. The Taylor rule: John Taylor of Stanford University proposed the following monetary policy rule:
   \[ R_t - \pi_t = m(\pi_t - \pi) + \bar{h} \bar{r} \]
   That is, Taylor suggests that monetary policy should increase the real interest rate whenever output exceeds potential.
   (a) What is the economic justification for such a rule?
   (b) Combine this policy rule with the IS curve to get a new aggregate demand curve. How does it differ from the AD curve we considered in the chapter? Consider the response of short-run output to aggregate demand shocks and inflation shocks.

10. A monetary policy rule that completely offsets aggregate demand shocks: Our monetary policy rule responds only to shocks to the inflation rate. We saw in Section 13.5 that this means that aggregate demand shocks can cause the economy to undergo a "boom-recession" cycle. Create your own monetary policy rule that would insulate the aggregate economy completely from aggregate demand shocks—so that neither inflation nor output would change if an aggregate demand shock hit the economy. Explain why your policy works. (Hint: Assume that policymakers can observe the aggregate demand shocks directly.)

11. Crowding out: Consider a simplified version of the Taylor rule, where monetary policy depends only on short-run output:
   \[ R_t - \pi_t = \bar{h} \bar{r}^e \]
   (a) Draw an IS-MP diagram, but instead of the usual MP curve, plot the simplified version of the Taylor rule. You might label this curve MPR for "monetary policy rule."
   (b) Now consider the effect of a positive aggregate demand shock in the IS-MP diagram. (An example might be a fiscal stimulus.) Compare and contrast the effect of this shock on the economy in the standard IS-MP diagram versus the IS-MP diagram. Why is the result different?
   (c) Economists refer to the result in the IS-MP diagram as "crowding out." What gets crowded out and why?

12. The coefficient on inflation in the nominal version of the policy rule: Consider the policy rule for the nominal interest rate in equation (13.5). Draw a graph with the inflation rate on the horizontal axis and the nominal interest rate on the vertical.
   (a) What is the slope of this line? Is it larger than 1 or less than 1?
   (b) Suppose the slope were the reverse of what you answered in part (a): larger or less than 1. Explain what this implies about the response of nominal interest rates to inflation in a good monetary policy rule.

13. Deflation: The Japanese economy at the end of the 1990s and into the 2000s experienced several years of deflation (see Figure 13.19). Again, recall the
EXERCISES

1. A financial crisis: Suppose the economy starts with GDP at potential, the real interest rate and the marginal product of capital both equal to 3 percent, and a stable inflation rate of 2 percent. A mild financial crisis hits that raises the financial friction from zero to 2 percent.
(a) Analyze the effect of this shock in an IS/MP diagram.
(b) What policy response would you recommend to the Federal Reserve? What would be the effect of this policy response on the economy?
(c) How would your answer to part (b) change if the financial crisis were very severe, raising the financial friction to 6 percent?
(d) What other policy responses might be considered in this case?

2. The Great Depression: The “Roaring Twenties” led to an enormous run-up in stock prices. By 1928-1929, policymakers at the Federal Reserve had become concerned that there was a bubble in the stock market. In response, they tightened monetary policy by raising interest rates sharply. Answer the following questions:
(a) In an IS/MP diagram, show the effect on the economy of the increase in interest rates by the Fed.
(b) This policy had the desired effect of “popping” the stock market bubble, and stock prices fell sharply at the end of 1929 and into 1930. This created uncertainty in markets about the future, which, together with the loss in stock-market wealth, reduced consumption and investment. Show this second shock in your original IS/MP diagram.
(c) What is the effect of these two shocks on inflation? Show this in a graph of the Phillips curve. In the late 1920s, the average inflation rate was approximately zero. What will happen to the inflation rate over time in response to the shocks in parts (a) and (b)?
(d) Suppose the Federal Reserve left the nominal interest rate unchanged in response to the changes in inflation from part (c). What further change would have occurred in the IS/MP diagram?
(e) Summarize what you learn from this exercise about the Great Depression.

3. Predicting the fed funds rate: Consider the following simple monetary policy rule:
\[ R_f = \pi + \alpha T, \]
In the following questions, you are asked to gather data on inflation and short-run output to feed into this policy rule. A good resource for the data you will need is the FRED database of the St. Louis Fed, available at http://research.stlouisfed.org/fred2/.
(a) Pick some reasonable values for the parameters of this policy rule, and explain why you chose these values.
(b) Obtain data on the CPI inflation rate for the most recent 12-month period possible (you may include food and energy in your CPI calculation or not—your choice). Discuss briefly this value of the inflation rate.
(c) Create an estimate of \( T \) for the U.S. economy. Explain how to construct this estimate, and discuss its value. You may find it helpful to use the series GDPPPP from the FRED database.
(d) Use these data and the monetary policy rule you specified above to see what fed funds rate the policy rule indicates. How does this compare to the current fed funds rate? (HINT: Be sure that you are comparing two nominal rates; the simple rule above only gives you the real portion.)
(e) If the rates are different, why do you think that is the case? What would you recommend to the Fed, based on your calculation?

4. Government policy and the financial crisis: Based on what you’ve learned, pick a policy action undertaken by the U.S. government in response to the financial crisis. In a half-page essay, explain the policy action and the rationale behind the policy. Also, discuss briefly a possible criticism of the policy action.

5. Reading the minutes of the FOMC: The Federal Open Market Committee (FOMC) is the formal name of the group chaired by Bernanke and his successor that meets every 6 weeks or so to set monetary policy in the United States. Immediately after the meeting, the FOMC issues a statement consisting of a few paragraphs that summarizes its position. Then, 3 weeks later, the FOMC releases the minutes of its meeting. These minutes contain extensive details about the issues that were discussed in the meeting. Suppose your job is to explain Federal Reserve policy to the CEO of a corporation. Do a Web search for the latest FOMC minutes. Then answer the questions below:
(a) What action did the FOMC take, if any, regarding the level of the fed funds rate? Why did it make this choice?
(b) Pick a paragraph or two from the FOMC minutes, and quote it in your answer. Using the short-run model, explain, using graphs and words, the economic consequences of the events in the paragraph(s) you’ve quoted. You do not need to analyze anything else in the economy; just focus on what you’ve chosen.
(c) Pick one other thing that is mentioned in the minutes that you do not understand (for example, a term with which you are unfamiliar). Do some research to discover its economic significance, and explain it in two or three sentences.

6. The current state of the European economy: Write a couple of paragraphs about the state of the economy in the euro area over the past several years. What has happened to inflation, real GDP growth, and unemployment? What about a key policy interest rate set by the European Central Bank (ECB)? (HINT: The ECB sets several key interest rates, including a “deposit rate” (the interest rate that the ECB pays on deposits from banks) and a “lending rate” (the interest rate it charges for overnight loans). All are useful and interesting. To keep everybody on the same page, consider the lending rate.) An extremely helpful resource for this exercise is the ECB’s Statistical Data Warehouse, which you can find using a search engine. In answering this question, it may be helpful to copy some of the ECB’s graphs.