4. The following table lists some of the advantages and disadvantages of floating versus fixed exchange rates.

Table 12–1

Floating Exchange Rates	
Advantages:	Allows monetary policy to pursue goals other than just exchange-rate stabilization, for example, the stability of prices and employment.
Disadvantages:	Exchange-rate uncertainty is higher, and this might make international trade more difficult.
Fixed Exchange Rates	
Advantages:	Makes international trade easier by reducing exchange rate uncertainty. It disciplines the monetary authority, preventing excessive growth in M. As a monetary rule, it is easy to implement.
Disadvantages:	Monetary policy cannot be used to pursue policy goals other than maintaining the exchange rate. As a way to discipline the monetary authority, it may lead to greater instability in income and employment.

5. The impossible trinity states that it is impossible for a nation to have free capital flows, a fixed exchange rate, and independent monetary policy. In other words, you can only have two of the three. If you want free capital flows and an independent monetary policy, then you cannot also peg the exchange rate. If you want a fixed exchange rate and free capital flows, then you cannot have independent monetary policy. If you want to have independent monetary policy and a fixed exchange rate, then you need to restrict capital flows.

Problems and Applications

1. The following three equations describe the Mundell–Fleming model:

$$Y = C(Y - T) + I(r) + G + NX(e). \qquad (IS)$$

$$M/P = L(r, Y). \qquad (LM)$$

$$r = r^*.$$

In addition, we assume that the price level is fixed in the short run, both at home and abroad. This means that the nominal exchange rate e equals the real exchange rate ϵ.

a. If consumers decide to spend less and save more, then the IS^* curve shifts to the left. Figure 12–8 shows the case of floating exchange rates. Since the money supply does not adjust, the LM^* curve does not shift. Since the LM^* curve is unchanged, output Y is also unchanged. The exchange rate falls (depreciates), which causes an increase in the trade balance equal to the fall in consumption.

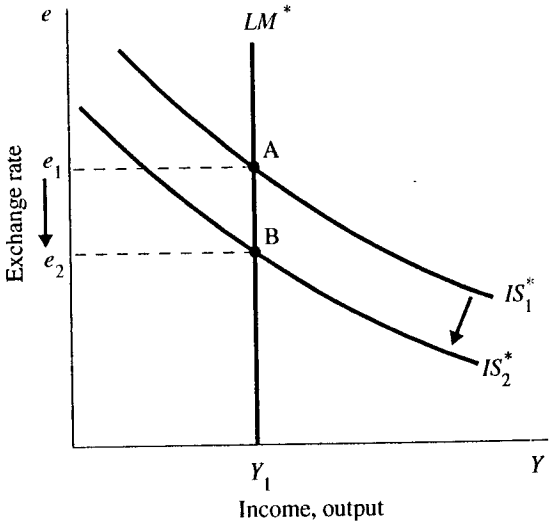


Figure 12–8

Figure 12–9 shows the case of fixed exchange rates. The IS^* curve shifts to the left, but the exchange rate cannot fall. Instead, output falls. Since the exchange rate does not change, we know that the trade balance does not change either.

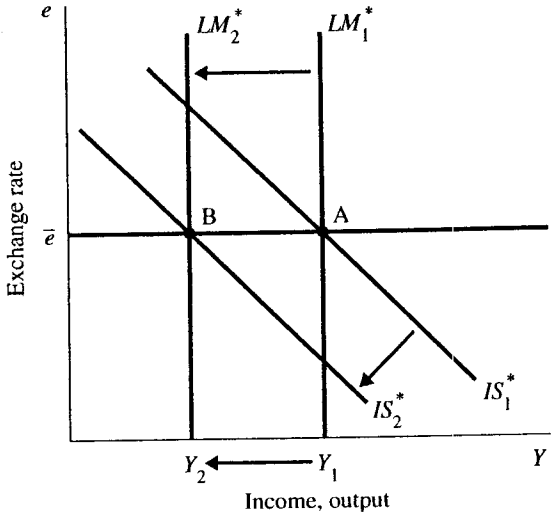


Figure 12–9

In essence, the fall in desired spending puts downward pressure on the interest rate and, hence, on the exchange rate. If there are fixed exchange rates, then the central bank buys the domestic currency that investors seek to exchange, and provides foreign currency. As a result, the exchange rate does not change, so the trade balance does not change. Hence, there is nothing to offset the fall in consumption, and output falls.

b. If some consumers decide they prefer stylish Toyotas to Fords and Chryslers, then the net-exports schedule, shown in Figure 12–10, shifts to the left. That is, at any level of the exchange rate, net exports are lower than they were before.

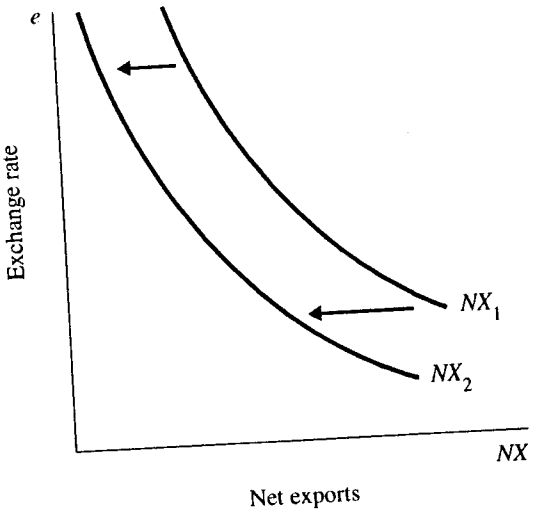


Figure 12–10

This shifts the IS^* curve to the left as well, as shown in Figure 12–11 for the case of floating exchange rates. Since the LM^* curve is fixed, output does not change, while the exchange rate falls (depreciates).

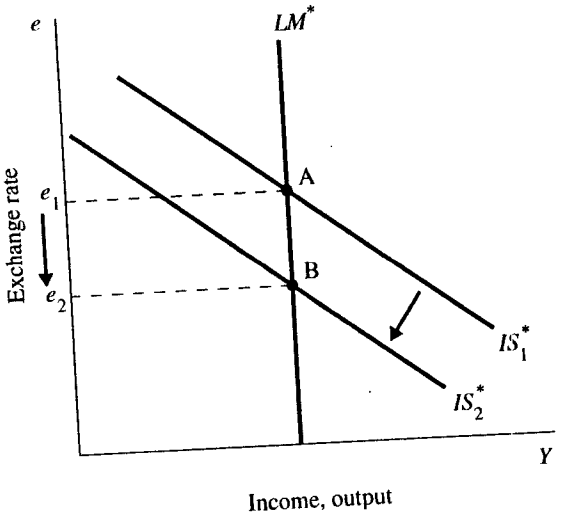


Figure 12–11

The trade balance does not change either, despite the fall in the exchange rate. We know this since $NX = S - I$, and both saving and investment remain unchanged.

Figure 12–12 shows the case of fixed exchange rates. The leftward shift in the IS^* curve puts downward pressure on the exchange rate. The central bank buys dollars and sells foreign exchange to keep e fixed: this reduces M and shifts the LM^* curve to the left. As a result, output falls.

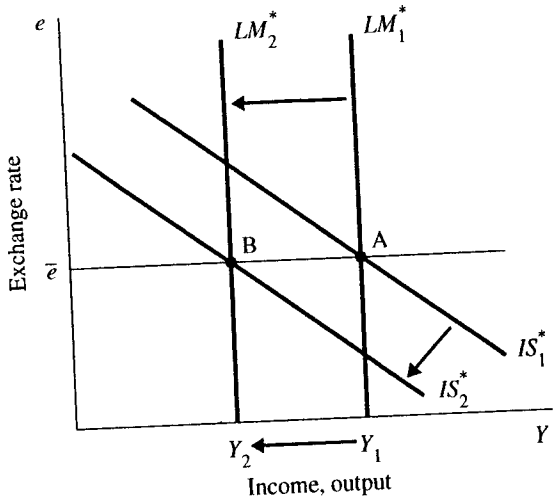


Figure 12–12

The trade balance falls, because the shift in the net exports schedule means that net exports are lower for any given level of the exchange rate.

c. The introduction of ATM machines reduces the demand for money. We know that equilibrium in the money market requires that the supply of real balances M/P must equal demand:

$$M/P = L(r^*, Y).$$

A fall in money demand means that for unchanged income and interest rates, the right-hand side of this equation falls. Since M and P are both fixed, we know that the left-hand side of this equation cannot adjust to restore equilibrium. We also know that the interest rate is fixed at the level of the world interest rate. This means that income—the only variable that can adjust—must rise in order to increase the demand for money. That is, the LM^* curve shifts to the right.

Figure 12–13 shows the case with floating exchange rates. Income rises, the exchange rate falls (depreciates), and the trade balance rises.

Figure 12–13

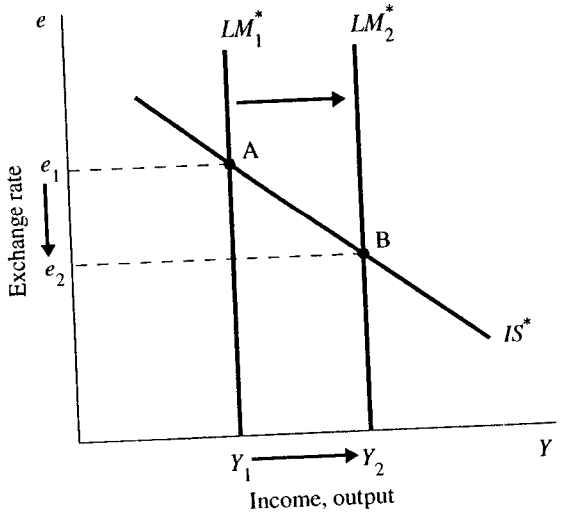
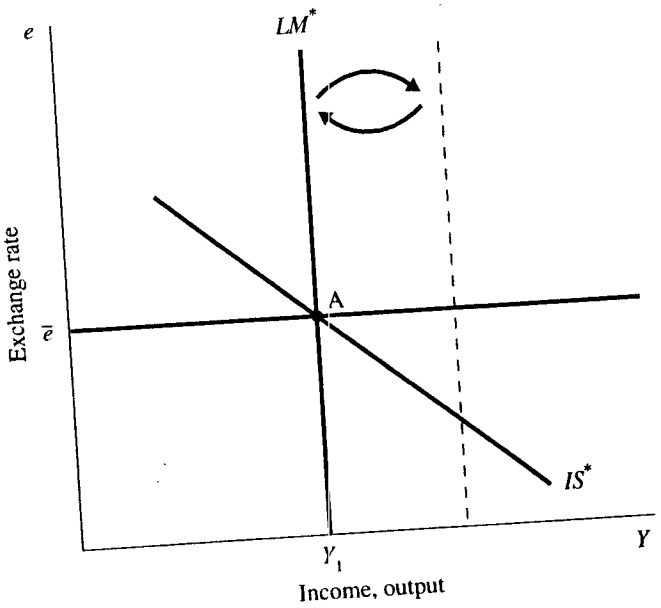


Figure 12–14 shows the case of fixed exchange rates. The LM^* schedule shifts to the right; as before, this tends to push domestic interest rates down and

cause the currency to depreciate. However, the central bank buys dollars and sells foreign currency in order to keep the exchange rate from falling. This reduces the money supply and shifts the LM^* schedule back to the left. The LM^* curve continues to shift back until the original equilibrium is restored.

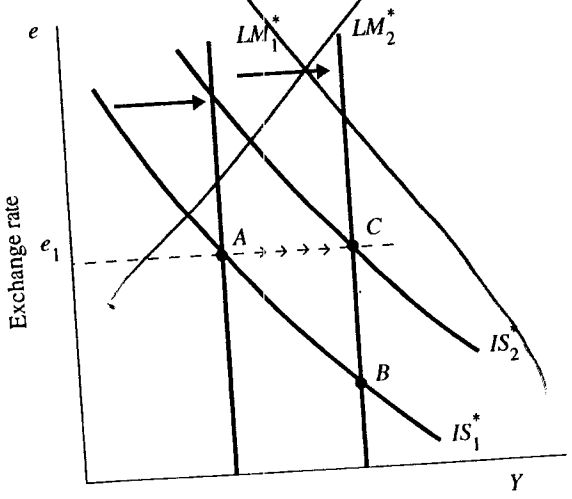
Figure 12–14



In the end, income, the exchange rate, and the trade balance are unchanged.

2. The economy is in recession, at point A in Figure 12–15. To increase income, the central bank should increase the money supply, thereby shifting the LM^* curve to the right. If only that happened, the economy would move to point B, with a depreciated exchange rate that would stimulate exports and raise the trade balance. To keep the exchange rate from depreciating and the trade balance from rising, the fiscal authorities should cut taxes or increase government spending. That would shift the IS^* curve to the right, so that the economy would move to point C. Under the assumption in the chapter that net exports depend only on the exchange rate, this would keep the trade balance from changing. The increase in output and income would, instead, reflect an increase in

Figure 12–15



4. *Demand-pull inflation* results from high aggregate demand: the increase in demand "pulls" prices and output up. *Cost-push inflation* comes from adverse supply shocks that push up the cost of production—for example, the increases in oil prices in the mid- and late 1970s.

   The Phillips curve tells us that inflation depends on expected inflation, the difference between unemployment and its natural rate, and a shock ϵ:

   $$\pi = \pi^e - \beta(u - u^n) + \epsilon.$$

   The term "$-\beta(u - u^n)$" is the demand-pull inflation, since if unemployment is below its natural rate ($u < u^n$), inflation rises. The supply shock ϵ is the cost-push inflation.

5. The Phillips curve relates the inflation rate to the expected inflation rate and to the difference between unemployment and its natural rate. So one way to reduce inflation is to have a recession, raising unemployment above its natural rate. It is possible to bring inflation down without a recession, however, if we can costlessly reduce *expected* inflation.

   According to the rational-expectations approach, people optimally use all of the information available to them in forming their expectations. So to reduce expected inflation, we require, first, that the plan to reduce inflation be announced before people form expectations (e.g., before they form wage agreements and price contracts); and second, that those setting wages and prices believe that the announced plan will be carried out. If both requirements are met, then expected inflation will fall immediately and without cost, and this in turn will bring down actual inflation.

6. One way in which a recession might raise the natural rate of unemployment is by affecting the process of job search, increasing the amount of frictional unemployment. For example, workers who are unemployed lose valuable job skills. This reduces their ability to find jobs after the recession ends because they are less desirable to firms. Also, after a long period of unemployment, individuals may lose some of their desire to work, and hence search less hard.

   Second, a recession may affect the process that determines wages, increasing wait unemployment. Wage negotiations may give a greater voice to "insiders," those who actually have jobs. Those who become unemployed become "outsiders." If the smaller group of insiders cares more about high real wages and less about high employment, then the recession may permanently push real wages above the equilibrium level and raise the amount of wait unemployment.

   This permanent impact of a recession on the natural rate of unemployment is called *hysteresis*.

chpt 13

Problems and Applications

1. In this question, we examine two special cases of the sticky-price model developed in this chapter. In the sticky-price model, all firms have a desired price p that depends on the overall level of prices P as well as the level of aggregate demand $Y - \overline{Y}$. We wrote this as

   $$p = P + a(Y - \overline{Y}).$$

   There are two types of firms. A proportion $(1 - s)$ of the firms have flexible prices and set prices using the above equation. The remaining proportion s of the firms have sticky prices—they announce their prices in advance based on the economic conditions that they expect in the future. We assume that these firms expect output to be at its natural rate, so $(Y^e - \overline{Y}^e) = 0$. Hence, these firms set their prices equal to the expected price level:

   $$p = P^e.$$

The overall price level is a weighted average of the prices set by the two types of firms:

$$P = sP^e + (1 - s)[P + a(Y - \overline{Y})].$$

Rearranging:

$$P = P^e + [a(1 - s)/s](Y - \overline{Y}).$$

a. If no firms have flexible prices, then $s = 1$. The above equation tells us that

$$P = P^e.$$

That is, the aggregate price level is fixed at the expected price level: the aggregate supply curve is horizontal in the short run, as assumed in Chapter 9.

b. If desired relative prices do not depend at all on the level of output, then $a = 0$ in the equation for the price level. Once again, we find $P = P^e$: the aggregate supply curve is horizontal in the short run, as assumed in Chapter 9.

2. In the sticky-wage model, we assumed that the wage did not adjust immediately to changes in the labor market. This resulted in an upward-sloping aggregate supply curve with the form

$$Y = \overline{Y} + \alpha(P - P^e).$$

In this problem, we consider the effect of allowing these contracts to be indexed for inflation.

a. In the simple sticky-wage model, the nominal wage W equals the desired real wage ω times the expected price level P^e:

$$W = \omega P^e.$$

Full indexing, however, makes the nominal wage depend on the *actual* price level. That is, the contract specifies the desired real wage ω, and the nominal wage adjusts fully to changes in the price level. As a result,

$$W = \omega P,$$

or

$$W/P = \omega.$$

This means that unexpected price changes do not affect the real wage and, hence, do not affect the amount of labor used or the amount of output produced. The aggregate supply schedule is thus vertical at $Y = \overline{Y}$.

b. If there is partial indexing, then the aggregate supply curve will be steeper than it is without indexing, although it will not be vertical. In the sticky-wage model, an unexpected increase in the price level reduces the real wage W/P, since the nominal wage W is unaffected. With partial indexing, the increase in the price level causes an increase in the nominal wage. Since the indexing is only partial, the nominal wage increases by less than the price level does, so the real wage falls. This causes firms to use more labor and increase production. However, the real wage does not fall as much as it does without indexing, so output does not rise as much.

In effect, this is like making the parameter α smaller in the equation for aggregate supply. That is, output fluctuations become less responsive to surprises in the price level.

3. The economy has the Phillips curve:

$$\pi = \pi_{-1} - 0.5(u - 0.06).$$

a. The natural rate of unemployment is the rate at which the inflation rate does not deviate from the expected inflation rate. Here, the expected inflation rate is just last period's actual inflation rate. Setting the inflation rate equal to last period's inflation rate, that is, $\pi = \pi_{-1}$, we find that $u = 0.06$. Thus, the natural rate of unemployment is 6 percent.