

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:

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

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

$$r = r^*.$$

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  $\bar{e}$ .

- 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.



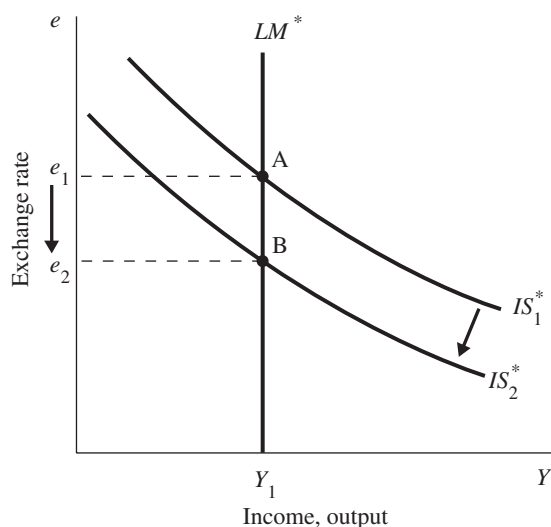


Figure 12-8

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.

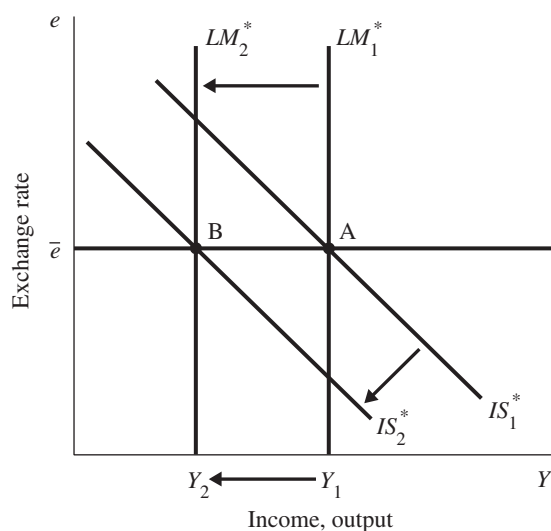


Figure 12-9

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, shifting  $LM^*$  to the left. 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.

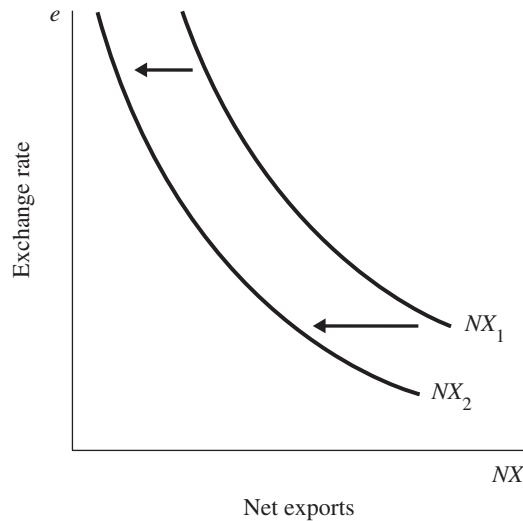


Figure 12–10

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).

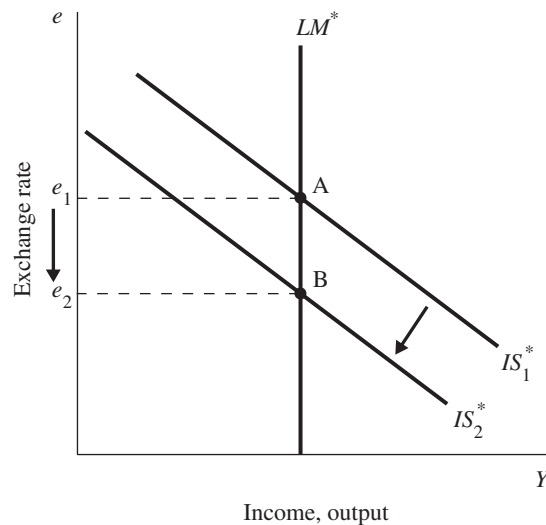


Figure 12–11

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. When consumers prefer to buy foreign cars, this will decrease net exports. The resulting decline in the value of the exchange rate will increase net exports and offset the decline, such that net exports remains 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.



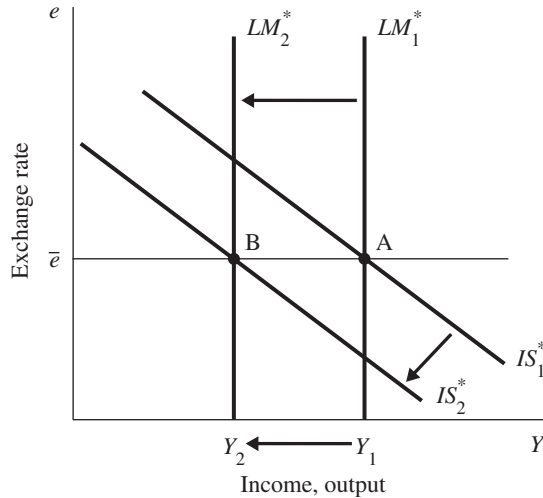


Figure 12-12

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. Intuitively, the decline in money demand will put downward pressure on the interest rate. This will cause capital outflow until balance is restored because in this model the interest rate will remain equal to the world interest rate. As capital flows out of the economy, the exchange rate will fall. This will increase net exports and output.

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

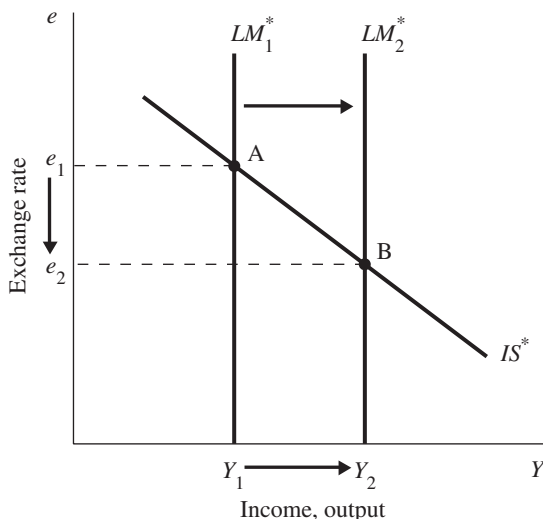


Figure 12-13



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.

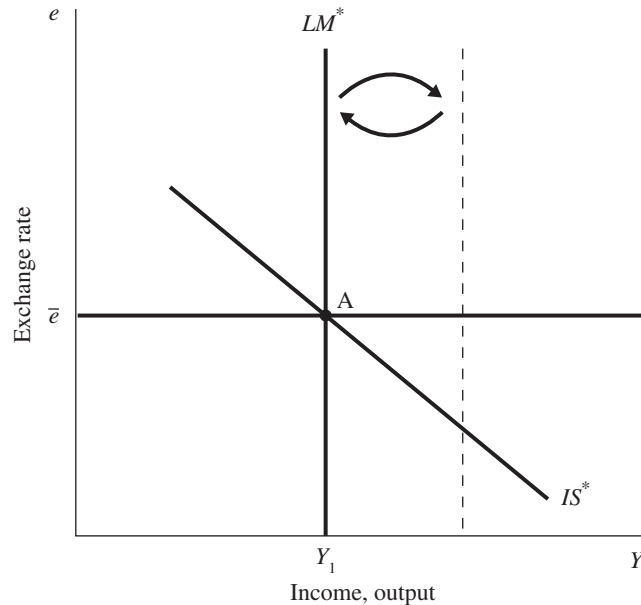


Figure 12–14

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

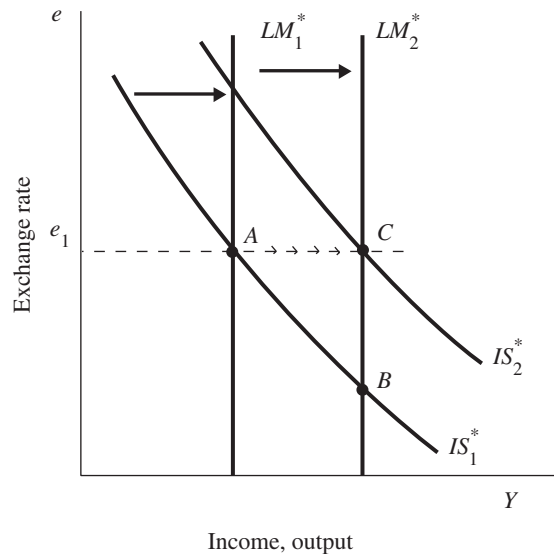


Figure 12–15



balance from changing. The increase in output and income would, instead, reflect an increase in domestic demand. (Note that without the monetary expansion, a fiscal expansion by itself would lead to a higher exchange rate—so the increase in domestic demand would be offset by a reduction in the trade balance.)

3. a. The Mundell–Fleming model takes the world interest rate  $r^*$  as an exogenous variable. However, there is no reason to expect the world interest rate to be constant. In the closed-economy model of Chapter 3, the equilibrium of saving and investment determines the real interest rate. In an open economy in the long run, the world real interest rate is the rate that equilibrates world saving and world investment demand. Anything that reduces world saving or increases world investment demand increases the world interest rate. In addition, in the short run with fixed prices, anything that increases the worldwide demand for goods or reduces the worldwide supply of money causes the world interest rate to rise.
- b. Figure 12–16 shows the effect of an increase in the world interest rate under floating exchange rates. Both the  $IS^*$  and the  $LM^*$  curves shift. The  $IS^*$  curve shifts to the left, because the higher interest rate causes investment  $I(r^*)$  to fall. The  $LM^*$  curve shifts to the right because the higher interest rate reduces money demand. Since the supply of real balances  $M/P$  is fixed, the higher interest rate leads to an excess supply of real balances. To restore equilibrium in the money market, income must rise; this increases the demand for money until there is no longer an excess supply. Intuitively, when the world interest rate rises, capital outflow will increase as the interest rate in the small country adjusts to the new higher level of the world interest rate. The increase in capital outflow causes the exchange rate to fall, causing net exports and hence output to increase, which increases money demand.

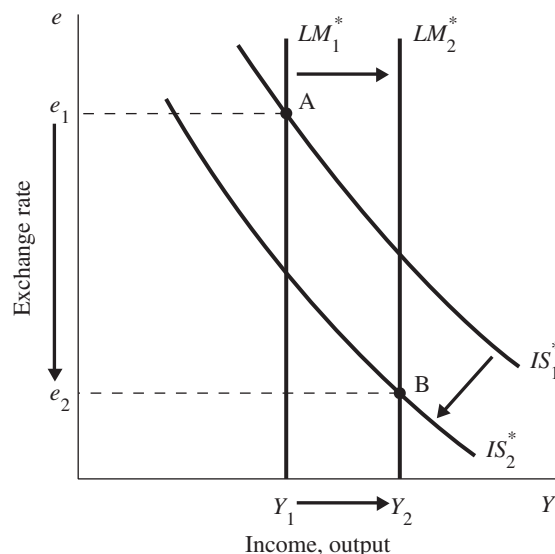


Figure 12–16

We see from the figure that output rises and the exchange rate falls (depreciates). Hence, the trade balance increases.