

KEY CONCEPTS

appreciation	floating exchange rate	nominal exchange rate
Balassa-Samuelson effect	foreign exchange reserves	policy trilemma
capital controls	the international transmission of	real exchange rate
current account balance	monetary policy	sovereign debt
depreciation	the law of one price	unit labor cost

REVIEW QUESTIONS

1. What is the difference between a nominal exchange rate and a real exchange rate?
2. Between 1970 and 1995, the dollar depreciated sharply versus the Japanese yen, while the average value of this exchange rate did not change much between 1995 and 2013. What might explain these facts?
3. Why would we expect the law of one price to hold in principle? Why might it fail to hold in practice?
4. Why do interest rates and exchange rates move in the same direction in the short run?
5. How and why are net exports and investment similar in the short-run model? Does this similarity make the IS curve steeper or flatter?
6. Why does a change in the foreign real interest rate lead to a shift of the AD curve?
7. Does the level of the exchange rate matter in the long run? Why or why not?
8. What is the policy trilemma, and why are countries restricted to one side of the triangle?


EXERCISES

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1. **The Big Mac:** Look back at the Big Mac Index in Table 20.1. Compute the level of the exchange rate that would be needed to equalize the dollar price of the Big Mac across all countries. State whether each currency appears to be currently overvalued or undervalued relative to the dollar, and calculate the amount (as a percentage) by which the currency would need to appreciate or depreciate in order to equalize the price of a Big Mac.
2. **Net exports and the IS curve:** Consider the way in which net exports depend on the real exchange rate. Does the dependence of net exports on the real

exchange rate make the IS curve steeper or flatter? What is the economic interpretation of this result?

3. **The depreciation of the dollar versus the yen:** Look back at equation (20.3) in Section 20.2.
 - (a) Apply our growth rates rules (from Chapter 3) to this equation to express the growth rate of the exchange rate as a function of the inflation rate at home and abroad.
 - (b) Between 1975 and 1995, U.S. inflation averaged 5.7% per year, while inflation in Japan averaged 3.6% per year. At what rate should we expect the dollar to depreciate against the yen between 1975 and 1995?
 - (c) Using Figure 20.1, make a rough calculation of the annual rate of depreciation of the dollar versus the yen. Do the numbers match up reasonably well?
 - (d) What must have been happening to the real exchange rate between 1975 and 1995? Can you think of any reason why this might have occurred?
-  4. **Fixed versus floating exchange rates:** Suppose Mexico wishes to fix its exchange rate relative to the U.S. dollar.
 - (a) If the Federal Reserve raises interest rates, what would happen to the peso-dollar exchange rate in the absence of any change in Mexican interest rates?
 - (b) Suppose Mexico wants to keep its interest rate fixed no matter what, maintain a fixed exchange rate, and allow open capital markets. What will happen when the United States raises interest rates? (*Hint:* What if the Mexican central bank holds a large number of dollars as foreign reserves in order to back its exchange rate?)
 - (c) Summarize what you learn from this exercise.
5. **Expansionary monetary policy in Europe:** Suppose the European Central Bank decides to stimulate the European economy by reducing interest rates there. Use the AS/AD model to explain how and why this affects the U.S. economy in the short run. How does the economy return to steady state?
6. **Imports and short-run output:** In addition to depending on the exchange rate (and therefore on the interest rate), imports may depend on short-run output: when the economy is booming, consumers tend to demand more foreign goods. To incorporate this result into our short-run model, suppose the new net exports equation is

$$\frac{NX_t}{\bar{Y}_t} = \bar{a}_{nx} - \bar{b}_{nx}(R_t - \bar{R}^w) - \bar{n}\tilde{Y}_t$$

Derive the IS curve with this new equation, and explain how it differs from the standard IS curve in the short-run model.

7. **Currency crises and the demand for dollars:** Suppose there is a currency crisis in the rest of the world, leading to an increase in demand for U.S. dollars (a “flight to safety”). Use the AS/AD framework to explain the effects of this shock on the U.S. economy. Be sure to explain carefully how and why the shock enters the AS/AD model. (*Hint:* If the rest of the world would like more dollars, what does it have to give in exchange for those dollars?)



- 8. The unwinding of the U.S. trade deficit:** Suppose some shock occurs to the U.S. economy that makes foreign investors more reluctant to hold U.S. assets. Use the AS/AD framework to explain the effects of this shock on the U.S. economy. Note: There are several possible answers to this question, depending on which effect dominates. Just be clear about the case you choose to analyze.
- 9. The policy trilemma:** One could make a reasonable case that the United States in the past decade has been able to achieve all three goals of the policy trilemma: it sets its own monetary policy, it has open capital markets, and it has experienced a relatively stable exchange rate. Yet the chapter claimed that an open economy can only achieve two of these policy goals. How do we understand this apparent contradiction?
- 10. Currency crises and macroeconomic performance:** Using the Country Snapshots data file (snapshots.pdf), study the macroeconomic performance of Mexico, Indonesia, and Korea after the financial crises in each region. How large were the declines in GDP per worker in each country, and how quickly did the regions recover?
- 11. Advising a developing country:** Suppose you are appointed the international economic adviser to a small developing country. The country is deciding what kind of exchange rate and monetary policy regime to adopt. Provide your advice in a one-page policy memo, outlining the pros and cons of your position.



WORKED EXERCISES

- 4. Fixed versus floating exchange rates:**
- (a) When the Federal Reserve raises interest rates, U.S. assets become more attractive than Mexican assets. This increases the demand for dollars and reduces the demand for pesos, putting pressure on the peso to depreciate.
- (b) In this hypothetical example, Mexico is attempting to violate the policy trilemma—trying to achieve all three goals simultaneously. At the old exchange rate, investors will want to trade their pesos for dollars to take advantage of the high U.S. interest rate. The Mexican central bank can finance these exchanges using its foreign reserves, but eventually Mexico will run out of dollars. As it runs out of dollars, it will be forced to reduce the value of the peso so as to stem the demand for these exchanges.
- (c) This example helps us to think about why all three goals of the policy trilemma cannot be achieved simultaneously, at least in the long run. It also shows how in the short run, a country may appear to be meeting all

three goals if it is running down its supply of foreign reserves. This actually happened in Mexico in 1994.

8. The unwinding of the U.S. trade deficit:

Many questions in international economics are tricky because there are often several “channels” at work; this exercise is an example.

The direct answer is that the U.S. economy would *boom* after this flight away from the dollar. If foreigners want to hold fewer dollars, the dollar exchange rate will depreciate, stimulating net exports (and therefore the rest of the economy) and thereby causing the trade deficit to unwind. It seems odd that this is the basic effect at work, but we know that a reduction in the trade deficit *is the same thing* as an increase in net exports, and this is a positive stimulus to aggregate demand. You should be able to work out these effects in the AS/AD graph. (It will look much like Figure 20.5.)

In practice, we might suspect that such a lack of confidence in the dollar would not have purely stimulating effects on the economy. This is where our model is less successful than we might like, and a richer model is needed. The text discusses some channels through which other effects might work. For example, an increase in the “risk premium” on government debt could raise long-term interest rates, reducing investment and aggregate demand; see the discussion in Section 20.8.