1. In Munich, a bratwurst costs 5 euros; a hot dog costs $4 at Boston’s Fenway Park. At an exchange rate of $1.05/per euro, what is the price of a bratwurst in terms of a hot dog? All else equal, how does this relative price change if the dollar depreciates to $1.25 per euro? Compared with the initial situation, has a hot dog become more or less expensive relative to a bratwurst?

2. As defined in footnote 3, cross exchange rates are exchange rates quoted against currencies other than the U.S. dollar. If you return to Table 14-1, you will notice that it lists not only exchange rates against the dollar, but also cross rates against the euro and the pound sterling. The fact that we can derive the Swiss franc/Israeli shekel exchange rate, say, from the dollar/franc rate and the dollar/shekel rate follows from ruling out a potentially profitable arbitrage strategy known as triangular arbitrage. As an example, suppose the Swiss franc price of a shekel were below the Swiss franc price of a dollar times the dollar price of a shekel. Explain why, rather than buying shekels with dollars, it would be cheaper to buy Swiss francs with dollars and use the francs to buy the shekels. Thus, the hypothesized situation offers a riskless profit opportunity and therefore is not consistent with profit maximization.

3. Table 14-1 reports exchange rates not only against the US dollar, but also against the euro and the pound sterling. (Each row gives the price of the dollar, euro, and pound, respectively, in terms of a different currency.) At the same time, the table gives the spot dollar prices of the euro ($1.3221 per euro) and the pound sterling ($1.5539 per pound). Pick any five currencies from the table and show that the three quoted spot exchange rates (in terms of dollars, euros, and pounds) approximately rule out triangular arbitrage. Why do we need to add the word “approximately”?

4. Petroleum is sold in a world market and tends to be priced in U.S. dollars. The Nippon Steel Chemical Group of Japan must import petroleum to use in manufacturing plastics and other products. How are its profits affected when the yen depreciates against the dollar?

5. Calculate the dollar rates of return on the following assets:
   a. A painting whose price rises from $200,000 to $250,000 in a year.
   c. A £10,000 deposit in a London bank in a year when the interest rate on pounds is 10 percent and the $/£ exchange rate moves from $1.50 per pound to $1.38 per pound.

6. What would be the real rates of return on the assets in the preceding question if the price changes described were accompanied by a simultaneous 10 percent increase in all dollar prices?

7. Suppose the dollar interest rate and the pound sterling interest rate are the same, 5 percent per year. What is the relation between the current equilibrium $/£ exchange rate and its expected future level? Suppose the expected future $/£ exchange rate, $1.52 per pound, remains constant as Britain’s interest rate rises to 10 percent per year. If the U.S. interest rate also remains constant, what is the new equilibrium $/£ exchange rate?

8. Traders in asset markets suddenly learn that the interest rate on dollars will decline in the near future. Use the diagrammatic analysis of this chapter to determine the effect on the current dollar/euro exchange rate, assuming current interest rates on dollar and euro deposits do not change.