

**PROBLEM SET 6**  
**14.02 Macroeconomics**  
**May 3, 2006**  
**Due May 10, 2006**

I. Answer each as True, False, or Uncertain, and explain your choice.

1. The United States finances its current account deficit by increasing its holdings of foreign assets.
2. The higher productivity and output of another country is a threat to the prosperity of the US.
3. The national income identity implies that budget deficits cause trade deficits.
4. A small open economy can reduce its trade deficit through fiscal contraction at a smaller cost in output than a large economy can.
5. The domestic demand for goods and the demand for domestic goods are identical, if the trade deficit is equal to zero.
6. A real depreciation leads to an immediate deterioration of the trade balance.

II. Short Questions:

1. Interest Rates and Exchange Rates

Consider two bonds, one issued in euros in Germany, and one issued in dollars in the United States. Assume that both government securities are one-year bonds – paying the face value of the bond one year from now. The exchange rate,  $E$ , stands at 1 dollar = 0.79 euros.

The face values and prices on the two bonds are given by

|               |             | Face Value | Price      |
|---------------|-------------|------------|------------|
| United States | 1-year bond | \$10,000   | \$9,531.98 |
| Germany       | 1-year bond | €10,000    | €9,687.11  |

Note: The symbol € represents the euro.

- a. Compute the nominal interest rate on each of the bonds.
- b. Compute the expected exchange rate next year consistent with uncovered interest parity.
- c. If you expect the dollar to appreciate relative to the euro, which bond should you buy?
- d. Assume you are a US investor. You exchange dollars for euros and purchase the German bond. One year from now it turns out the exchange rate,  $E$ , is actually 0.83 (1 dollar = 0.83 euros). What is your realized rate of return in dollars compared to the realized rate of return you would have made had you held the US bond?
- e. Is the difference in rates of return in (d) consistent with the uncovered interest parity condition? Why or why not?

## 2. Balance of Payments

Consider a world with three equal-sized economies, A, B, and C, and three goods, clothes, cars, and computers. Assume that consumers in all three economies desire to spend an equal amount on all three goods.

Suppose the value of production of each good in the three economies is as follows (denominated in the same currency):

|           | A  | B  | C  |
|-----------|----|----|----|
| clothes   | 10 | 0  | 5  |
| cars      | 5  | 10 | 0  |
| computers | 0  | 5  | 10 |

- What is GDP in each economy? If the total value of production is consumed, how much will consumers in each economy spend on each of the goods?
- What will be the trade balance in each country? What will be the pattern of trade in this world (i.e., which good will each country export and to whom)?
- Given your answer to part (b), will country A have a zero trade balance with country B? With country C? Will any country have a zero trade balance with any other country?
- The United States has a large trade deficit. It has a trade deficit with each of its major trading partners, but the deficit is much larger with some countries (e.g., China) than with others. Suppose the United States eliminates its overall trade deficit (with the world as a whole). Do you expect it to have a zero trade balance with every one of its trading partners? Does the especially large trade deficit with China necessarily indicate that China does not allow US goods to compete on an equal basis with Chinese goods?

## 3. Nominal and Real Exchange Rates

Download ‘ps6sq3.xls’ from the course website. The spreadsheet contains data on the following variables from 1980 to 2004:  $E$  refers to the nominal exchange rate between the US dollar and the Euro;  $P$ , the price level in the United States;  $P^*$ , the price level in the Euro area; and  $TB\_US$ , the US bilateral trade balance with the Euro area as a ratio of GDP.

NOTE: We define the nominal exchange rate as the price of a US dollar in terms of Euros.

- Derive the history of real exchange rates between the US dollar and the Euro from the data provided, and plot the evolution of both the nominal and the real exchange rates from 1980 to 2004. Label the figure descriptively and turn it in with your problem set.
- Were US goods relatively cheaper or more expensive in 1985 (as opposed to 2000)? How about in 2004 (as opposed to 2000)?

## 4. Eliminating a Trade Deficit

Consider an economy with a trade deficit ( $NX < 0$ ) and output equal to its natural level ( $Y = Y_n$ ). Assume the Marshall-Lerner condition holds.

- a. Discuss: “What is needed to reduce the trade deficit is a reduction in the budget deficit. There is no need for an exchange rate depreciation.”
- b. Discuss: “What is needed to reduce the trade deficit is an exchange rate depreciation. There is no need to reduce the budget deficit.”
- c. Show the best combination of fiscal policy and exchange rate adjustment needed to reduce the trade deficit while maintaining output at the natural level.
- d. Should the US want to reduce its trade deficit? If the rest of the world is willing/eager to lend to the US, why should the US worry?
- e. If you were Secretary of the Treasury of the Bush administration, and you wanted to reduce the trade deficit, what program would you offer?