PROBLEM SET #5 SOLUTION

1. Which of the following goods are tradeable? Explain briefly.
a. Cars ---> TRADEABLE
b. Vinny's Car Service ---> NOT tradeable
c. Computers ---> TRADEABLE
d. Software ---> TRADEABLE
e. Health Check-up ---> NOT tradeable
f. Airline Travel ---> TRADEABLE if international travel
g. Haircuts ---> NOT tradeable

2. The share of exports and imports in GDP is much lower for the United States than it is for Belgium. Does this mean that the US economy is less open than the Belgian economy? Explain.

Answer: Not necessarily. A lot of US markets may be open to trade, and still there may not be any trade in those markets because both the US and foreign countries are as competitive in the market for those goods.

3. Ronald Reagan was President of the United States from 1981 to 1988. Suppose that you are German (living in Germany) and that at the time you were planning to complete a one year masters degree at MIT. Would you have been better off doing your MIT masters in the beginning, middle or end of the Reagan presidency?

Answer: To answer this question you have to consult graph 11-6. Looking at the real exchange rate, it should be obvious that the best time to complete your masters at MIT would have been toward the end of the Reagan presidency. At that time the real exchange rate between the US and Germany was at its highest, meaning that the relative price of US goods (relative to German goods) was at its lowest.

4. Suppose that the interest rate in the US is 6%, the interest rate in Japan is 1%, and that the current nominal exchange rate is .01$/yen. What is the expected rate of appreciation or depreciation of the dollar (state which)? How many dollars would a US resident expect to earn for each dollar invested in Japanese bonds for one year?

Answer: The expected depreciation of the dollar is 5%(=6%-1%). By the uncovered interest parity relation a US resident should expect to earn $1.06 for every dollar invested in Japanese OR US bonds for one year.

5. Please explain your answers to the following:
a. Is it true that budget deficits lead to trade deficits?
b. How can a government eliminate the trade deficit while *increasing* the level of output?
c. How can a government eliminate the trade deficit while *decreasing* the level of output?

Answer:
a. TRUE. An increase in domestic demand (e.g., as generated by a budget deficit through higher G, lower T, or both) will lead to a deterioration of the trade balance (Figure 12-3).
b. A depreciation will do. It leads to an increase in NX, meaning both the demand relation (ZZ in Figure 12-2a) and the NX relation (NX in Figure 12-2b) will shift up.
c. Now a depreciation alone is not enough. The government will also have to contract domestic demand, e.g., by decreasing G, shifting ZZ back down. The decrease in G will have to be such that the overall shift is down. The new NX relation will be as in (b). However, the improvement in the trade position will not be as dramatic because the level of output will be lower (even though we will be on the new, higher, NX curve).

6. During a recession, should small or large countries be more interested in policy coordination? Explain.

Answer: Small countries (relative to their exports) have the most to gain. The effect of domestic demand on domestic output is greater for a country like the US than for a country like Belgium. A country like the US has a bigger multiplier and thus can use fiscal policy more effectively (e.g., to get out of a recession), because only a small part of the increases in domestic demand falls on foreign goods, with the remainder falling on US goods. The reverse is true for Belgium.

7. Consider the following model of the goods market in an open economy:

$$C = 400 + .5Y_D$$
$$I = 700 - 4{,}000i + .2Y$$
$$G = T = 200$$
$$X = 100 + .1Y^* + 100\varepsilon$$
$$Q = .1Y - 50\varepsilon$$
$$\varepsilon = 2.0$$
$$Y^* = 1{,}000$$
$$i = 10\%$$

Please show clearly your derivations for the following questions:

a. Find equilibrium GDP [Hint: use (12.4)]

Answer:

$$Y = 400 + .5(Y-200) + 700 - 4{,}000(.1) + .2Y + 200 - 2(.1Y - 50(2)) + 100 + .1(1{,}000) + 100(2) \Rightarrow$$

$$Y = 2{,}800$$

b. Determine the value of C, I, G and Net Exports. Is the demand for domestic goods equal to the value you found in (a)?

Answer:

$C=1,700$
$I=860$
$G=200$
$\varepsilon Q=360$
$X=400$
$C+I+G-\varepsilon Q+X=2,800$
$NX=40$

c. Suppose that G increases by 200. Calculate the new equilibrium GDP. What has happened to Net Exports as a result?

Answer:

$Y=3,200$
$\varepsilon Q=440$
$X=400$
$NX=-40$

Net Exports went down, i.e., the trade deficit deteriorated.

d. Using the original assumptions for everything else, suppose that foreign output increases by 200. Find equilibrium GDP. What has happened to Net Exports? Why is the answer different than the one you obtained when government spending increased by the same amount?

Answer:

$Y=2,840$
$\varepsilon Q=368$
$X=420$
$NX=52$

Output has increased but not by as much because only part of the increase in foreign output falls on domestic goods. Also, the trade position has actually improved because the increase in imports (as a result of higher domestic output) is smaller than the increase in exports (as a result of higher foreign output).