1. (2 points) Is it possible for a country to have a current account deficit at the same
time and has a surplus in its balance of payments? Explain your answer using hy-
pothetical figures.
ANSWER: (1 point) Yes. The balance of payments (BoP) is the sum of current ac-
count (CA), capital account (KA) and financial account (FA). Theoretically, because
of the double-entry bookkeeping practice, the sum is supposed to be zero.

\[ \text{BoP} = CA + KA + FA = 0 \]

(1 point) Given a current account deficit, the theory predicts that the sum of the
capital account and the financial account must be surplus. However, in practice,
the balance of payments may deviate from zero because of statistical discrepancy;
particularly in recording financial transactions in the financial account. Suppose
the current account deficit is 100 billion dollars, a combined surplus of the capital
account and the financial account must be greater than 100 billion dollars to produce
a surplus in the balance of payments.

(Optional note) Sometimes the term "balance of payments" is used to describe the
official settlements balance with the opposite sign. This balance indicates the pay-
ments gap covered by the official reserve transactions. For example, the U.S. official
settlements balance in 2003 is 250 billion dollars. In this case, some newspapers
may say that "the U.S. balance of payments in 2003 is -250 billion dollars." When
it is a large negative number, it is often a subject of concern because it indicates an
excessive role of the central bank in financing the current account deficit.

2. (2 points) Suppose that the U.S. net foreign debt is 25 percent of U.S. GDP and
that foreign assets and liabilities alike pay an interest rate of 5 percent per year.
What would be the drain on U.S. GDP (as a percentage) from paying interest on
the net foreign debt? What if the net foreign debt were 100 percent of GDP? At
what point do you think a country’s government should become worried about the
size of its foreign debt?

ANSWER:

(1 point) 25 percent debt-to-GDP ratio and 5 percent interest rate implies that the interest payment as the ratio to GDP is $0.25 \times 0.05 = 0.0125 = 1.25$ percent of GDP. If the debt-to-GDP ratio is 100 percent, then the interest payment will become $1 \times 0.05 = 0.05 = 5$ percent of GDP.

(1 point) Intuitively, the government should be concerned about the net foreign debt when paying back the debt becomes difficult. We can use the balance of payments accounting to find out how much output needed to pay back the debt.

\[ \text{CA} = \text{savings} - \text{investment} \]

When a country run a current account surplus, their residents have more savings than the domestic investment and so they also invest overseas. That is how a country with a current account surplus can accumulate net foreign assets. In contrast, a country that runs a current account deficit does not have enough savings for its domestic investment, so it must borrow from abroad and accumulate net foreign debts. In other words, the stock of net foreign debts are a result of past capital inflows triggered by current account deficits. The only way to reduce the foreign debt is to reverse the direction of capital flows. So, we must run a current account surplus from now, and use the surplus to pay back the debt.

The size of foreign debt comes to play a role because the larger it is, the larger the interest payment and the larger future current account surpluses need to be. This can also be explained using another current account accounting. (See Table 12-2 for an example.)

\[ \text{CA} = \text{export} - \text{import} + \text{net income transfer from abroad} \]

In this case, the net income transfer is the "negative" value of the interest payment we calculated above. In order to run a current account surplus in the future, the U.S. will have to run a trade balance surplus which is greater than the amount of the interest payment. When the debt-to-GDP ratio is 25 percent, to reduce and pay back the debt, the U.S. will have to run the trade surplus of more than 1.25 percent of GDP for a number of years in the future. But when the debt-to-GDP ratio is 100 percent, the trade surplus has to be more than 5 percent of GDP. This cannot happen without strong export growth. So, a country’s government should become worried when its foreign debt is so large that it requires unrealistically high export growth in the future.

(Optional note) We can also consider the relationship of net foreign assets (NFA) and current account (CA).
CA this period = change in NFA = NFA next period - NFA this period

Current account reflects the direction of capital flows and as a result indicates whether a country is accumulating more debts or assets in a particular period. It is a "flow" concept. However, "NFA" is a "stock" concept, meaning it is the accumulated balance of a flow variables. When NFA is negative, it indicates that the nation is a net debtor country. When it is positive, it indicates that the nation is a net creditor country. We can also use this relationship to track the path of NFA.

NFA next period = NFA this period + CA this period

Consider a case where we start out with a negative number of NFA. So, this relationship tells us that the only way to reduce and eventually pay back the foreign debt is to keep running current account surplus in the future.

3. (2 points) Calculate the dollar rates of return on a deposit 10,000 pounds in a London bank in a year when the interest rate on pounds is 10 percent and the dollar/pound exchange rate moves from 1.50 dollars per pound to 1.38 dollars per pound. What is the interest rate a U.S. bank needs to offer to attract capital flows from London?

ANSWER:
(1 point) Today 1 dollar gives us 1/1.50 pounds. With 10 percent interest rate, the next period gross return is (1+0.10) x 1/1.50 pounds. Then convert this back to the U.S. dollar with the rate 1.50 dollar per pound. So, the the gross return becomes (1+0.10) x 1/1.50 x 1.38 dollars. Subtracting 1 dollar from this will give the net dollar return on the London deposit of 0.012 or 1.2 percent. Note that the total of 10,000 pounds is irrelevant, because the interest rate is in percent.

We can use the uncovered interest parity to approximate the return. The dollar return on the London deposit = the pound interest rate + the depreciation of U.S. dollar. The depreciation of U.S. dollar = (1.38-1.50)/1.50 = -0.08 = 8 percent appreciation. The negative sign indicates that the U.S. dollar does not depreciate but appreciates. The dollar return on the London deposit = 0.10 - 0.08 = 0.02 = 2 percent.

(1 point) A U.S. bank needs to offer more than 1.2 (2 if we use the approximation method) percent interest rate to attract capital flows from London. A U.S. bank does not need to pay as much as the London bank because of the future appreciation or capital gain of the U.S. dollar.

4. (2 points) Suppose traders in asset markets suddenly learn that the interest rate on dollars will decline in the near future. Use the diagrammatic analysis of Chapter 13 to determine the effects on the current dollar/euro exchange rate, assuming current interest rates on dollar and euro deposits do not change.
ANSWER:
(1 point) Figure 4.1 indicates the traders’ anticipation after they heard the news. If the interest rate declines in the future from $R$ to $R'$, they foresee that the dollar will depreciates from $E_1$ to $E_2$. Given this anticipation, the traders adjust their expectation right away. Such an expectation shift will change the current exchange rate as depicted in Figure 4.2.

(1 point) In Figure 4.2, the initial equilibrium is at Point 1. The new expected depreciation $E_e'$ is higher than the original $E_e$. Such an expectation shift raises the dollar return of euro deposits, and causes the dollar/euro rate to depreciate as people increase their demand for the euro deposits. The foreign exchange market will observe $E_3$, which is higher than $E_1$. If the traders have perfect foresight, then $E_3 = E_2$.

5. (2 points) Suppose the U.S. congress is concerned with the dollar-euro exchange rates and wishes to prevent traders’ from affecting the exchange rate in Question 4. Explain how the congress can achieve its goal using a tax policy.

ANSWER: The congress can do many things. You get points for discussing only one case.
First, the congress can increase the rate of return on U.S. dollar assets today by subsidizing dollar savings. If there is currently a tax on interest earnings, the congress can cut the tax. This policy change will shift in the $R$ schedule to the right today, so that the exchange rate remains unchanged at Point 4 in Figure 5.
Alternatively, the congress can announce the news of a future subsidy or tax cut on interest earnings. Such an announcement will shift the expectation among the traders back from $E_e'$ in Figure 4.2 to the original $E_e$. This is because the traders anticipate Figure 5 right away, even if the congress does not actually implement the policy today. Such a shift will bring back the original dollar return on euro deposits and keep the exchange rate unchanged. In this case, we will observe Point 1 instead of Point 4 today.
Or, the congress can also tax on foreign exchange transactions to prevent the U.S. residents from moving their funds to euro deposit accounts. If the tax is so high that it prohibits foreign exchange transactions, it will prevent the expectation among traders from shifting in Figure 4.2. This works in the same way as capital controls designed to limit free flows of funds so that the equilibrium stays at Point 1.
Figure 4.1: Traders’ anticipation

\[ E^s, E \]

\[ R_s + \frac{E^s - E}{E} \]

Expected $ return on € deposits
Figure 4.2: Today foreign exchange market equilibrium

\[ R_s + \frac{E^e - E}{E} \]

Expected $ return on € deposits
Figure 5: Effects of a subsidy for savings on exchange rate

\[ R_s'' = R_e + \frac{E^e - E}{E} \]

Expected $ return on € deposits