EC 368 International Money and Finance

Class Exercise 2

Question 1
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.

Answer
a. $(250,000 - 200,000)/200,000 = 0.25$
   b. $(216 - 180)/180 = 0.20$
   c. There are two parts to this return. One is the loss involved due to the appreciation of the dollar; the dollar appreciation is $(1.38 - 1.50)/1.50 = -0.08$. The other part of the return is the interest paid by the London bank on the deposit, 10 percent. (The size of the deposit is immaterial to the calculation of the rate of return.) In terms of dollars, the realized return on the London deposit is thus 2 percent per year.

Question 2
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?

Answer
a. The real return on the painting would be 25% - 10% = 15%. This return could also be calculated by first finding the portion of the $50,000 increase in the painting’s price due to inflation ($20,000), then finding the portion of the nominal increase due to real appreciation ($30,000), and finally finding the appropriate real rate of return ($30,000/$200,000 = 0.15).
   b. Again, subtracting the inflation rate from the nominal return, we get 20% - 10% = 10%.
   c. 2% - 10% = -8%.
**Question 3**

Suppose the dollar interest rate and the pound sterling interest rate are the same, 3 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 7 percent per year. If the U.S. interest rate also remains constant, what is the new equilibrium $/£ exchange rate?

**Answer**

The uncovered interest rate parity can be expressed as:

$$i^S = [i^E + \frac{E_{t+1}^e - E_t}{E_t}]$$

Where ($i^S$) the dollar interest rate, ($i^E$) the pound sterling interest rate, $E_{t+1}^e$ the future expected exchange rate between the dollar and the pound, and $E_t$ the current equilibrium exchange rate.

The current equilibrium exchange rate ($E_t$) must equal its expected future level ($E_{t+1}^e$) since, with equality of nominal interest rates, ($i^S = i^E$) there can be no expected increase or decrease in the dollar/pound exchange rate in equilibrium. If the expected exchange rate remains at $1.52$ per pound and the pound interest rate rises to 7 percent, then interest parity is satisfied only if the current exchange rate changes such that there is an expected appreciation of the dollar equal to 4 percent. This will occur when the exchange rate rises to $1.583$ per pound (a depreciation of the dollar against the pound).

**Question 4**

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

**Answer**

If market traders learn that the dollar interest rate will soon fall, they also revise upward their expectation of the dollar’s future depreciation in the foreign-exchange market. Given the current exchange rate and interest rates, there is thus a rise in the expected dollar return on euro deposits. The downward-sloping curve in the diagram below shifts to the right and there is an immediate dollar depreciation, as shown in the figure below where a shift in the interest-parity curve from $II$ to $II'$ leads to a depreciation of the dollar from $E_0$ to $E_1$. 

![Diagram](image-url)
**Question 5**
In October 1979, the U.S central bank (the Federal Reserve System) announced it would play a less active role in limiting fluctuations in dollar interest rates. After this new policy was put into effect, the dollar’s exchange rate against foreign currencies became more volatile. Does our analysis of the foreign exchange market suggest any connection between these two events?

**Answer**

Greater fluctuations in the dollar interest rate lead directly to greater fluctuations in the exchange rate using our model described in the lectures. The movements in the interest rate can be investigated by shifting the vertical interest rate curve. As shown in the Figure below, these movements lead directly to movements in the exchange rate. For example, an increase in the interest rate from \(i\) to \(i'\) leads to a dollar appreciation from \(E\) to \(E'\). A decrease in the interest rate from \(i\) to \(i''\) leads to a dollar depreciation from \(E\) to \(E''\). This diagram demonstrates the direct link between interest rate volatility and exchange rate volatility, given that the expected future exchange rate does not change.

![Diagram showing the relationship between interest rate and exchange rate fluctuations](image-url)