QUESTIONS - CHAPTER 22 INTEREST RATE PARITY

Question 22.1
An investor in London has two investment opportunities. He can invest in two-year UK government bonds with an annual nominal interest rate of 4.5%. Or he can invest in two-year US government bonds with an annual nominal interest rate of 2.6%. Currently the spot exchange rate is 1.8 US dollar/UK pound and the two years forward exchange rate is 1.7 US dollar/UK pound.

22.1A Should the investor hold his money in UK or US government bonds?

22.1B Does the covered interest parity hold? Do you think this situation will exist for a long time?

Question 22.2
The same London investor now looks to Europe and notices that the annual nominal interest rate on two-year German government bonds is 2.7%. Remember that two-year UK government bonds give an annual nominal interest rate of 4.5%. The spot exchange rate is 0.7 UK pound/European euro.

22.2A Do financial markets expect the pound to appreciate or depreciate against the euro?

22.2B What is the two-year forward rate of the euro against the pound for the covered interest parity to hold?

22.2C If the London investor is risk neutral and decides not to hedge the exchange rate risk, what should the expected euro/pound spot exchange rate in two years at least be in order for this investor to hold German bonds?

22.2D What should the expected euro/pound spot exchange rate in two years at least be if the London investor is risk averse?

Question 22.3
The covered and uncovered interest parity conditions constitute powerful tools to predict exchange rate movements. Below we have listed a number of events. Predict with the covered or uncovered interest parity conditions what will happen with the European euro/US dollar spot exchange rate.

22.3A The Federal Reserve announces that the discount rate will be lowered.
22.3B GDP figures of the Euro area turn out to be better than expected, raising expectations that the European economy is coming sooner out of its slump.

22.3C The ECB president hesitates before he says “strong euro”.

22.3D Most large American companies unexpectedly raise their profit prospects.

Question 22.4

Suppose you have a hundred euros and you know that the inflation rate will be 5% the coming year.

22.4A Would you lend your money to somebody who promises to give you 103 euros back after one year?

22.4B How much euros do you at least want to receive back after one year?

22.4C Taking into account your answer to 22.4B, what is the real and the nominal interest rate you demand?

22.4D Do you think you will ever demand a negative real interest rate, whatever the rate of inflation may be? Explain.

22.4E Explain whether you will ever demand a negative nominal interest rate.

Question 22.5

On the 21st of June 2004 an article was published on the BBC News website about the appreciation of the Japanese yen against the US dollar. We have selected the following excerpt:

*Japan’s shares and yen strengthen*

*Japanese share prices surged upwards on Monday, and the yen hit a six-week high against the US dollar. Traders said optimism about Japan’s economic growth was fuelling demand for stocks among foreign investors, who were therefore buying yen.*

*Although economists anticipate the US central bank will deliver a rise in interest rates on 30 June, traders said currency markets have largely factored this in after months of rumour and expectation. "Expectations for strong US growth have become old news and the outlook for Japan’s solid economic recovery now looks fresher," said an UFJ Bank currency trader.*

Source: [http://news.bbc.co.uk](http://news.bbc.co.uk)
22.5A Explain with the uncovered interest parity condition how a rise in share prices can lead to an appreciation of the yen against the dollar.

22.5B Explain why an expected increase in the US interest rate does not lead to an appreciation of the dollar in the excerpt above.

Question 22.6

Also taxes play a role when considering the interest parity condition.

22.6A How does a proportional tax on foreign exchange transactions alter the interest parity condition?

22.6B How does a flat tax per transaction affect the interest parity condition?

22.6C Which type of investor would prefer the proportional fee and which type of investor the flat fee?

Question 22.7

In the main text three possible investment strategies are described. In this question we will calculate the return on the three options through the eyes of an American investor who is considering buying either one-year USA government bonds or one-year Canadian government bonds. The three options he considers are:

I. He can purchase one-year USA government bonds.

II. He can exchange his American dollars on the spot exchange market to Canadian dollars, buy one-year Canadian government bonds and buy a forward contract to secure the exchange rate of his Canadian dollars to USA dollars one year ahead.

III. He can exchange his USA dollars on the spot exchange market to Canadian dollars, buy one-year Canadian government bonds and exchange his Canadian dollars after one year back to USA dollar on the spot exchange market.

The Excel file for question 22.7 offers you daily data on the annual yield of the government bonds, the spot exchange rate between the two dollars and the one-year forward rate. With this dataset you will be able to calculate the ex post return of these three strategies. Calculate these returns for every day available in the dataset and plot the returns of these three strategies.
in a diagram with the different days on the horizontal axis. Which option should the American investor choose? Explain why.

**Question 22.8**

Paragraph 22.4 of the main text gives a rough idea of the empirical validity of the covered interest parity condition. Let’s do the same test for the USA and Canada. The Excel file for question 22.8 contains data on the daily yield for 1 month, 3 months, 6 months, and 12 months treasury bills from the USA and Canada. The daily spot exchange rate between the Canadian and USA dollar and the different forward rates are also available.

22.8A Produce four scatter diagrams that show on one axis the return on investing in USA treasury bills and on the other the return on investing in Canadian treasury bills. Of course both returns should be calculated in a common currency. Does the covered interest parity hold according to your graphs?

You can also test the covered interest parity condition with a regression analysis. The typical test of the covered interest parity condition is based upon the following regression:

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\frac{F_{\text{Can}/\text{US}}}{S_{\text{Can}/\text{US}}} = \alpha + \beta \left( \frac{1 + r_{\text{Can}}}{1 + r_{\text{US}}} \right)
\]

In which F is the forward exchange rate, S the spot exchange rate and r the yield of a treasury bill over the period considered.

22.8B What values should α and β have for the covered interest parity condition to be empirically validated?

22.8C Check with a regression analysis whether the covered interest parity holds empirically. What do you conclude?