

EXAMINATION

Course code: SFB 12614	Course: International Finance (10 ECTS)
Date: May 5, 2021	Duration: 09:00 – 13:00 (4 hours) plus 30 minutes for uploading to INSPERÅ. Central European Summer Time (Norway Time)
	Lecturers: Roswitha M. King and Imtiaz Badshah
The examination: The exam consists of 4 (four) exercises. You must solve all four exercises. The exercises have equal weight.	

Show all your calculations. Interpret the meaning of your results. Explain all symbols that are not already explained in the given text. If formulas are involved, first work with the general formula, then later fill in numbers. Clearly indicate what your final answer is. Good luck!

1. Spot and Forward Exchange Rates

Instruction: Structure your answers to precisely fit each of the sub-questions.

In the following SF will denote Swiss Franc and US\$ will denote US dollar.

- a)** Consider a 180 day forward exchange rate that describes the relation between Swiss Franc and US Dollar, represented as SF/US\$. Write down the general formula for this forward rate for this representation of the relation.
- b)** Calculate the 180 day SF/US\$ forward rate, given the following data:
Spot rate SF/US\$ is SF 1.20/US\$; relevant Swiss Franc interest rate on a per year basis is 6%; relevant US\$ interest rate on a per year basis is 10%. Show all your calculations.
- c)** Explain the difference between a *spot exchange rate* and a *forward exchange rate* in words.

2. Forward Quotations in Percentage

Instruction: Structure your answers to precisely fit each of the sub-questions.

Consider the following quotations for Japanese Yen (¥) against the US Dollar (US\$). We assume that

the USA is the “home country” and that Japan is the “foreign country”.

- (i) (Foreign currency)/(Home currency) i.e. indirect quote: The Foreign Currency Price of a unit of Home Currency.

Spot rate: ¥ 107.00/US\$

Three-month-forward rate: ¥ 106.20/US\$

- (ii) Or in terms of (Home currency)/(Foreign currency) i.e. direct quote: The Home Currency Price of a unit of Foreign Currency.

Spot rate: US\$ 0.009345794/¥

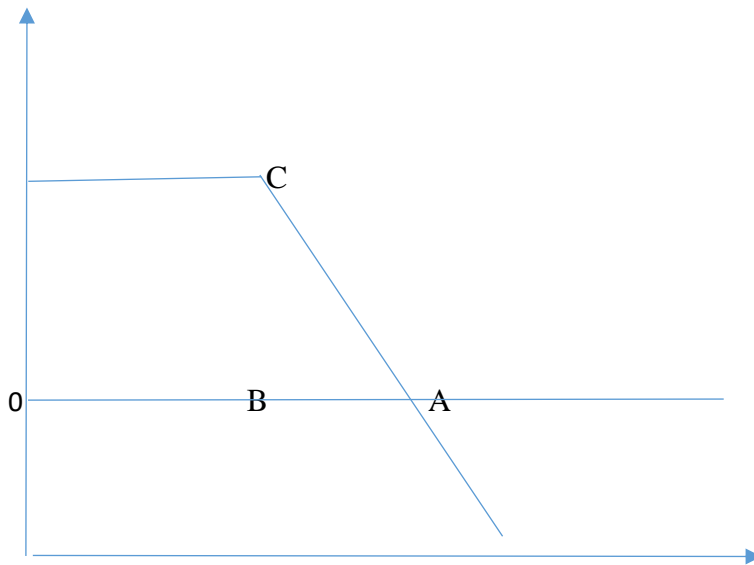
Three-month-forward rate: US\$ 0.009416196

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- (a) Write down the general formula – without numbers - for the percent-per-annum premium (discount) for (i) and (ii).
- (b) Substituting the appropriate numerical values compute the 90-day-forward premium (discount) in percentage per annum terms for (i) and (ii). Show all your calculations.
- (c) So, do we have a premium or discount?
- (d) How do the numerical results for (i) and (ii) differ?
- (e) In words: What is a forward premium (discount)? Where does it come from? What does it tell us?

3. Option Profit Diagram

Instruction: Structure your answers to precisely fit each of the sub-questions.

Consider the following Option Profit Diagram:



- a)** Is this the profit diagram of a buyer or seller? Is the diagram depicting a put option or a call option?
- b)** What does the vertical axis measure?
- c)** What does the horizontal axis measure?
- d)** Knowing that we are dealing with the graphical representation of a profit function, write down the profit function that is associated with the above diagram. If you use symbols, make sure all of them are explained.
- e)** The profit diagram has a horizontal line segment and a descending (falling) line segment? Explain in detail why this is so and what it means.
- f)** Consider the line segment between A and B but excluding the points A and B themselves. Is the option 'in the money' or 'out of the money' or 'at the money' between A and B? Explain.

4. Currency Swap (Norwegian Krone NOK and Australian Dollar AUD)

Instruction: Structure your answers to precisely fit each of the sub-questions.

A firm has NOK 10.000.000 (ten million Norwegian Krone) deposited with a bank in Oslo. The firm has an upcoming funding requirement in Australia. This funding requirement is for 1.773.000 Australian dollars (AUD), and for a time span of 6 months. To be precise, the funding requirement begins on March 1 (near date) and ends on September 1 (far date). This counts as a time span of 180 days. The firm wants to use its NOK deposit to meet the funding requirement in Australia. Also, the firm does not wish to take on any foreign exchange risk in connection with this transaction. The firm decides that its situation would be well served by arranging for a Currency Swap.

The firm makes the following arrangement with its trusted bank in Oslo: On March 1 the firm will deliver NOK 10. 000. 000 to the bank (outgoing cash flow) and the bank exchanges this for the firm into Australian Dollars (incoming cash flow) at the exchange rate AUD 0.1773/NOK. At the same time the firm agrees to a 'reverse transaction' that will happen on September 1 at a forward exchange rate of AUD 0.1807764/NOK

The relevant interest rate in Australia for Australian Dollars is 8% per annum.

The relevant interest rate in Norway for Norwegian Krone is 4% per annum.

- (a) How many Australian Dollars do you receive on March 1 from the bank?
- (b) On September 1: What amount of what currency do you receive from the bank? What amount and what currency do you deliver to the bank?
- (c) Are the amounts of currencies that are exchanged between you and the bank on March 1 and on September 1 exactly the same amounts but only in reverse direction?
- (d) If your answer to (c) is 'yes' explain in detail why that is so. If your answer to (c) is 'no' explain in detail why that is not so.

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