

## EXAMINATION

Course code: SFB12614	Course: International Finance
Date: 5.5.2015	Duration of exam: 09.00-13.00 (4 hours)
Permitted materials: English-mother tongue dictionary Mother tongue-English dictionary Calculators	Lecturer: Roswitha M. King
<p>The examination:</p> <p>Solutions are to be written in English language.</p> <p>The examination paper consists of 4 (four) pages including this page. Please check that the examination papers are complete before you start answering the questions.</p> <p>The exam consists of 4 (fore) exercises. You are to solve all the four exercises.</p> <p>The numbers in square brackets [.] indicate the maximum amount of points obtainable for the exercise.</p>	
Date of announcement of the examination results: 29.5.2015	
Results are accessible to students on the Studentweb no later than two workdays after the date specified above. Follow instructions given at <a href="http://www.hiof.no/studentweb">www.hiof.no/studentweb</a>	

## Final Exam Questions

Course code: SFB 12614

Course title: International Finance. Semester: Spring 2015.

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Show all your calculations and interpret their meaning. Explain all symbols that are not already explained in the given text. Label all items in graphs including the axes. If formulas are involved, first write down the general formula, before filling in numbers. Give opening and concluding statement.

Good luck!

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### 1. [25] Spot- and Forward Exchange Rates & Forward Premium(Discount)

- a) Explain in words with precision the concept of a *Spot Exchange Rate*.
- b) Explain in words with precision the concept of a *Forward Exchange Rate*.
- c) Explain the relation between spot- and forward exchange rates.
- d) Consider a 180 day forward exchange rate for US\$/€, where US\$ denotes US Dollar, and € denotes Euro. Write down the general formula for this forward rate, but incorporating the numerical value, 180, for the number of days forward.
- e) Now consider the following additional data: The US\$/€ spot rate is US\$ 1.20/€. The relevant interest rate earned on US dollars on a per year (annual) basis is 6%. The relevant interest rate earned on Euros on a per year (annual) basis is 10%. Calculate the 180 day US\$/€ forward rate, given the above data. Show all your steps and calculations.
- f) In the context of spot- and forward rates the concept of *Forward Premium (Discount)* is of importance. Explain this concept in words.
- g) Assuming the USA is the 'home country', and using the above data and your calculations, determine, with the help of the formula for 'forward premium (discount)', whether Euro is selling forward at a premium or at a discount.

## 2. [25] Portfolio Risk Reduction through Diversification

Here we consider a ‘domestic portfolio’ consisting of stocks (shares) of one single (home) country.

- a) Explain the concept of portfolio risk reduction through diversification with the help of a graph that measures ‘percent risk’ on the vertical axis and ‘number of not-perfectly correlated stocks’ on the horizontal axis.
- b) It is often said that portfolio risk can be reduced even more by adding international stocks to the portfolio of domestic stocks. Is this necessarily true in theory? Is this necessarily true in the ‘real world’? Discuss the issue.

## 3. [25] Profit Diagram for the Seller of a Put Option Defined on Treasury Bond Futures.

At date zero (today) you sell a put option defined on T-bond futures on the Chicago Board of Trade, where, as you recall, quotes are expressed in *points*, with 1 point equal to US\$ 1000 (one thousand US dollars). You immediately collect a premium of US\$ 2000. The exercise price (strike price), denoted by  $E$ , is 110 points. This price is fixed in the contract. At the expiration date of this option, denote by date  $T$ , the prevailing market price of T-bond futures is relevant. We consider three possible values that the market price, denoted  $S_T$ , may have at date  $T$ : (i)  $S_T = 105$ , (ii)  $S_T = 110$ , and (iii)  $S_T = 115$ .

- a) Calculate the profit (loss) for the seller for the three cases (i), (ii) and (iii). Show all your steps and calculations and explain the reasoning for the seller’s profit (loss) for the cases (i), (ii) and (iii).
- b) Draw a profit diagram for the seller of this put option. Clearly indicate the three values of seller’s profit (loss) that you calculated in part (a). The diagram should measure ‘profit (loss)’ on the vertical axis and ‘market price  $S_T$ ’ on the horizontal axis.
- c) Interpret the diagram.

#### 4. [25] Exchange Rate Pass-Through

A Japanese company, in the following called ‘The company’ produces motor-bikes, in the following called JMB (Japanese Motor-Bike) and wants to break into the US market. In particular, it wants to produce motor bikes that compete with the famous US originating Harley-Davidson motorbike – a rather ambitious task, considering the cult-like status of the Harley-Davidson.

On January 1 the company signs a contract with a US importer to deliver JMBs for a price per unit of ¥ 4 000 000 (four million Japanese Yen). This is the original export price. On this first day of January the spot exchange rate is ¥ 120.00/US\$, where US\$ denotes US dollar. The forecast inflation rate for the USA is 4% over the next 12 months starting from January 1, and for Japan it is 0% (no inflation) over the same 12 month period.

*In the following you should show all your steps and details of your calculations, as well as your reasoning for the calculations that you do.*

- a)** Compute the export price of a JMB expressed in US\$ on January 1, the date of signing of the contract.
- b)** Assuming that Purchasing Power Parity (PPP) holds, compute the PPP-compliant exchange rate at the end of the year (exactly 12 months after the signing of the contract)
- c)** Assuming 100% exchange rate pass-through, compute the US\$ price of a JMB at the end of the year (exactly 12 months after the signing of the contract).
- d)** Assuming 60% pass-through, compute the US\$ price of a JMB at the end of the year (exactly 12 months after the signing of the contract).
- e)** Explain the relation between Purchasing Power Parity and Exchange Rate Pass-Through.
- f)** Give three reasons why in the ‘real world’ internationally active companies choose less than 100% pass-through. Explain the reasons in detail.