Høgskolen i Østfold

EXAMINATION

Course code: SFB12604	Course: International Finance
Date: 05.05.2014	Duration of exam: 09.00-13.00
Permitted materials: English-mother tongue dictionary Mother tongue-English dictionary Calculators	Lecturer: Roswitha M. King
The examination: The examination paper consists of 5 (five) pages inclusive this page. Please check that the examination papers are complete before you start answering the questions. The exam consists of 4 (fore) exercises. You are to solve all the four exercises. Solutions are to be written in English language. The numbers in square brackets [.] indicate the maximum amount of points obtainable for the exercise.	
Date of announcement of the examination results: 27.05.2014 The examination results will be made available on the Studentweb no later than two workdays after the announcement of the examination results. Follow instructions given at www.hiof.no/studentweb	

Final Exam Questions

Course code: SFB 12604
Course title: International Finance. **Semester:** Spring 2014.

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] Profit Diagram for a *Forward* defined on Treasury Bonds – Seller's Perspective

Assume that you have in hand a *forward* that conveys to you an obligation to sell a treasury bond at a future date T. The contract price, E, is 240 points. Here we use the convention of the Chicago Board of Trade of quoting in points, with 1 point = USD 1000. At the expiration date T, of the forward, its market (spot) price, S_T is the same as the (spot) price of the underlying asset (i.e. the treasury bond itself). Consider three possible cases for the market (spot) price at expiration date T:

i) 220 points
ii) 240 points
iii) 260 points

a) Calculate the seller's profit (loss) for the given three cases, (i), (ii), (iii).and draw the associated profit diagram. Interpret your graph.

b) Assume that you are a rational economic agent, who wants to profit from selling a *forward*. What **expectation** regarding the development of the market (spot) price for treasury bonds is consistent with making a profit with selling this *forward*?

c) Explain how selling a *forward* can be used for the purpose of profiting through speculation.

2. [25] **Forward Premium (Discount)**

Consider the following quotations for Swiss Franc (SF) against US Dollar (USD), where we consider USA to be the "home country". In the following you are given spot rates and forward rates. The spot rate is the one that prevails on the day that the forward contract is signed.

(i) (Foreign currency)/(Home currency) i.e. indirect quote
Spot rate: **SF 1.4500/USD**
180 day forward rate: **SF 1.4700/USD**

(ii) (Home currency)/(Foreign currency) i.e. direct quote
Spot rate: **USD 0.689655/ SF**
180 day forward rate: **USD 0.680272/ SF**

a) Write down the general formula for the percent-per-year forward premium (discount).

b) Calculate the forward premium (discount) for the numerical data given in (i) and (ii) above.

c) Interpret your numerical results for (i) and (ii). So - is the Swiss Franc selling forward at a premium or discount against the US dollar? What do your results indicate about the market's expectation of the development of the value of SF relative to USD, 180 days into the future?

d) Explain in words what a forward premium (discount) is. What is the underlying cause of the existence of a forward premium or discount?

3. [25] Currency Swap

As we know, *a currency swap* is a cash management tool useful for companies that have assets and liabilities denominated in different currencies. But not everybody knows that. So, in the following you are asked to explain how a currency swap works, with the help of a concrete example. In the following € denotes Euro, and $ denotes US Dollar.

A firm has €500 000 (500 000 Euros) on deposit with a bank in Siena, Italy. The firm has an upcoming funding requirement of $ 450 000 (450 000 US dollars) . This funding requirement is for a time span of 12 months. The funding requirement begins on January 1 (the so-called 'near date') and ends on December 31 of the same year (the so-called 'far date'). We count '12 months' as '360 days'. The firm wants to avoid foreign exchange risk on the transaction. The firm wants to use its € deposits to meet the funding requirement in US dollars.

The firm makes the following contractual arrangement with its trusted bank in Siena: On January 1 the firm will deliver €500 000 to the bank in Siena, in exchange for receiving US dollars, at the spot rate of $0.90 per €. (Euros outgoing; dollars incoming). Simultaneously the firm agrees to buy back the € 500 000 euros from the bank, on January 31 with US dollars, at a forward exchange rate of $ 0.8955 per €.

The relevant interest rate for US dollars is 3% per year.
The relevant interest rate for Euro is 5% per year.

a) How many US dollars does the firm receive on the 'near date', January 1, from the bank, and how many euros does the firm deliver to the bank at that date? Show your calculations.

b) At the 'far date', December 31 of the same year, what amount and what currency do you receive from the bank? What amount and what currency do you deliver to the bank? Show all the steps of your analysis and calculation.

c) Are exactly the same amounts of currencies exchanged, in reverse direction, at the 'near date' and at the 'far date' between the firm and the bank in Siena? Explain in detail.

d) Explain the concept of *forward point adjustment* (i) in general and (ii) how it applies to our specific case.

4. [25] Portfolio Diversification over Two Risky Assets

While the systemic effects of international portfolio diversification are subject to debate, from an individual investor's point of view portfolio diversification continues to be a widely accepted and recommended investment behavior. The perceived benefits are to be demonstrated with the following stylized example of investment situation and strategy.

Here is your investment pattern:

	Expected Return	*Expected Risk*
Investment in instrument A	14%	15%
Investment in instrument B	18%	20%
Correlation Coefficient ($\rho_{A\text{-}B}$)	0.34	

Let w_A and w_B denote the weights assigned to investments in the two types of risky assets, with $w_A + w_B = 1$.

a) Assuming that you invest 40% of your funds in instrument A and 60% in B, compute

(i) The expected risk of your portfolio
(ii) The expected return of your portfolio

where we recall that expected risk of portfolio is represented by the formula

$$\sigma_p = \sqrt{w_A^2\sigma_A^2 + w_B^2\sigma_B^2 + 2w_A w_B \rho_{A-B}\sigma_A\sigma_B}$$

and expected return of portfolio is represented by the formula

$E(R_p) = w_A E(R_A) + w_B E(R_B)$

b) Suppose you invest all your funds in the lower risk instrument, A, compute

(i) The expected risk of your portfolio
(ii) The expected return of your portfolio.

c) Suppose you invest 70% of your funds in instrument A and 30% in instrument B, compute

(i) The expected risk of your portfolio
(ii) The expected return of your portfolio

d) Interpret your results for (a), (b), (c) in in the context of portfolio theory.

e) Draw the three alternative portfolio profiles with varying investment weights in a well-labeled and annotated diagram that has 'expected portfolio risk, σ_p' on the horizontal axis and 'expected portfolio return in percent' on the vertical axis.