

EXAMINATION

Course code: SFB 12604	Course: International Finance (10 ECTS)	
Date: 15 th of May 2012	Duration of exam: 09:00 – 13:00 (4 hours)	
Permitted sources: English – mother tongue dictionary Mother tongue – English dictionary Calculators	Lecturer: Roswitha M. King	
<p>The examination:</p> <p>The examination papers consist of 4 (four) pages inclusive this page. The exam consists of 5 (five) exercises. You are to do all five exercises.</p> <p>Please check that the examination papers are complete before you start answering the questions.</p> <p>The numbers in square brackets [.] indicate the maximum amount of points obtainable for the question or sub-question.</p>		
Date of announcement of the examination results: <u>June 5, 2012</u>		

Final Exam Questions

Course code: SFB 12604

Course title: International Finance. Semester: Spring 2012.

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!

1. [10] Spot and Forward Exchange Rates

Among the most fundamental objects of International Finance are Spot Exchange Rates and Forward Exchange Rates and it may be appropriate to begin a final exam with these.

- a) [4] Explain the meaning of *spot rate* and *forward rate*. When and why are these different rates used? Are the two rates related at all? What is the difference between them?
- b) [4] Without using any numbers, write down with precision the formula for a 180-day forward rate for Swiss Franc/US dollar, SF/USD for short.
- c) [2] Given the following information, compute the 180-day Swiss Franc/USD forward rate.
Information: Spot rate SF/USD is SF1.4000/USD; Swiss Franc interest rate on a per-year basis is 4%; US dollar interest rate on a per-year basis is 8%. You may think of 'a year' as consisting of 360 days.

2. [25] Purchasing Power Parity and Exchange Rate Pass-Through

Companies that are internationally active are aware of the linkage between prices of goods and exchange rates between currencies. Companies are often less aware than they should about consumer attachment to certain products. Take for example the story of the Toyota Tercel. It is a subcompact car that was manufactured in Japan from 1978 to 2000 across five model generations. The Tercel was the first front-wheel-drive vehicle ever produced by Toyota. One of the models, a hatchback, enjoyed particular popularity worldwide. It was known to have a motor that would keep running long after the car's outer hull had fallen apart. When this model was discontinued a great sadness spread among its fans worldwide. Sadness transformed into protest. Finally Toyota understood and began to re-manufacture the Tercel hatchback due to popular demand and figured on a substantially higher price than the earlier discontinued model. It was, in particular, counting on substantial export to the US market. And this is where we turn to prices and exchange rates, beginning with the following information:

Among the Tercel hatchback fans the first day the 'new' Tercel went on the market has become part of mythology. This day is commonly referred to as 'Day 1- after' or 'Day-1' for short. We take the perspective of 'Day-1'.

The export price of the Tercel, on 'Day-1', expressed in Japanese Yen (¥), is ¥ 4,000,000 (four million). The exchange rate against the US dollar on this memorable day is ¥ 120.00/USD. The forecast rate of inflation in the USA is 4% per year. The forecast rate of inflation in Japan is 0% per year.

- a) [5] What is the export price of the Tercel on 'Day-1' expressed in US dollars?
- b) [5] Under the assumption that purchasing power parity holds, what should the exchange rate be exactly one year after 'Day-1'?
- c) [5] What should be the dollar price of a Tercel one year after 'Day-1' under the assumption of 100% exchange rate pass-through?
- d) [5] What should be the dollar price of a Tercel one year after 'Day-1' under the assumption of 60% exchange rate pass-through?
- e) [5] Why would an exporting company voluntarily take a reduction in revenues via only partial exchange rate pass-through?

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

As we know, options (as well as other derivatives) can be defined on all kinds of underlying assets. In this exercise we consider a put option that is defined on a Treasury bond future (T-Bond future for short). To be precise, we are considering the buyer of a put option that is defined on a treasury bond future. The transaction is executed at the Chicago Board of Trade, which has the long tradition of expressing prices and quotes in 'points', with 1 point = USD 1000.

Assumptions:

- On May 15, 2012 you **buy** one of the above described put options defined on a T-bond future.
- You **pay** a premium of USD 2000.
- The exercise price, E , (also called 'strike price') that is specified in your option contract is 115 points.
- We now consider three scenarios for the market (spot) price, S_T , of the underlying at the expiration date T of the option :
 - (i) $S_T = 115$ points,
 - (ii) $S_T = 110$ points,
 - (iii) $S_T = 120$ points.

Your task is to

- (a) [20] Draw a profit diagram, with 'profit' on the vertical axis and 'Market price S_T ' on the horizontal axis, using the three scenarios (i), (ii), (iii) to generate the appropriate points in the diagram. Explain in detail the reasoning behind the points that you draw in the diagram, associated with (i), (ii), (iii).
- (b) [5] What is a 'Put option defined on a treasury bond future'? Explain what we are really dealing with here. What is this thing that you are buying?

4. [20] The Gains from International Portfolio Diversification

In light of the financial crisis this topic has become controversial. It is, therefore, a good thing to be clear what the standard theory on International Portfolio Diversification actually tells us. This is a graphing exercise. Your task is to explain, with help of a well-labeled graph the gains (advantages) from *International Portfolio Diversification* relative to purely *Home-country Portfolio Diversification*. The graph should have 'expected return of portfolio', R , on the vertical axis, and 'expected risk of portfolio', σ , on the horizontal axis. Explain all symbols that you use, unless already given in this text.

5. [20] The Issue of Foreign Exchange Risk in International Portfolio Diversification

In the theory of International Portfolio Diversification, addressed in exercise 4, the exchange rate risk is, typically, not explicitly considered. So, we turn to it in a separate exercise.

Consider the case of a Belgian investor buying US equities:

The Belgian investor has € 1.000.000 (one million) and wants to invest on the New York Stock Exchange (NYSE). On the day the investment is transacted the spot exchange rate is USD 1.2000/€. The reason the spot exchange rate is of interest is that on NYSE you have to have USD in hand in order to buy equities. The price per share is USD 100. The investor holds the shares for exactly one year. Then the investor gives a sell-order for selling all the acquired shares. Not a bad idea, considering that the price of shares has risen to USD 120 per share. The Belgian investor plans a substantial purchase of land and buildings in Belgium, so the investment money and gains on investment must be converted back into euros. On the date of conversion into euros the spot exchange rate is USD 1.6000/€.

- a)** [10] What is the investor's separate return on shares and separate return on currency movements? Show all your calculation and reasoning.
- b)** [10] What is the investor's total combined (net) return after converting back to euros? What do you conclude?