FINM8007 TOPICS IN INTERNATIONAL FINANCE

Note: These are quiz and exam questions (with brief suggested solutions) from previous semesters. **I have already checked the accuracy of these solutions.** The instructors will not be answering any email queries about these questions and solutions. As stated previously, due to the quantitative and technical nature of this subject, it is not possible for the instructors to explain concepts and clarify course materials via emails. **If you have any queries, please ask them during the instructors' consultation hours, which are available on the course website.**

The instructors will NOT be responsible for answering questions from past year exam papers of other similar courses. The course has been substantially revised and updated to include important current topics in international finance, so past year exam papers may NOT be relevant to your preparation for the exam. You should focus on the materials (such as Practice Questions and Short Quizzes) on the course website to prepare for the actual exam.

Question 1

A Danish toy company has sold plastic blocks worth 500,000 Danish Krone (DKK) to a US distributor, who has to pay the toy company immediately in DKK. The US distributor, who has US dollars (USD), receives the following spot quote for DKK per USD (DKK/USD): DKK/USD 6.9100 - 6.9500. What is the USD cost of the plastic blocks to the US distributor? Show your working clearly.

Question 2

Assume that you are a trader with Deutsche Bank in Germany. From the quote screen on your computer terminal, you notice that Deutsche Bank is quoting 0.8273 Euros (EUR) per US dollar (USD) and Credit Suisse is offering 1.2806 Swiss Francs (CHF) per USD. You learn that UBS is making a direct market between the CHF and the EUR, with a current quote of 0.6195 EUR per CHF (EUR/CHF). Can you make a triangular arbitrage profit by trading at these prices, assuming that you have USD 5,000,000 with which to conduct the arbitrage? Show how you conduct the triangular arbitrage clearly. **Note: ignore bid-ask spreads. Assume that all the interest rates are zero.**

Question 3

Suppose that you are a trader in Japan and you see the following quotes on your screen:

Spot exchange rate	86.85 Japanese Yen (JPY) per Australian dollar (AUD)
30-day forward rate	87.41 JPY per AUD
30-day AUD interest rate	4% per annum (p.a.)
30-day JPY Interest rate	1% p.a.

Assuming that you have JPY 1 million, can you make a profit (in JPY) with these quotes? Show your working clearly.

Question 4

Assume that you are a Vietnamese resident. From 1 January 2008 to 31 December 2008, the exchange rate of the Vietnamese Dong (VND) per USD (VND/USD) changed from VND/USD 16,000 to VND/USD 18,000. Over the same period, the inflation rate in the United States and Vietnam were 2% per annum (p.a.) and 25% p.a. respectively. By how much did the value of the VND change over the year? What would the relative version of the Purchasing Power Parity predict the VND/USD exchange rate to be in December 2008? By what percentage was the Dong overvalued or undervalued in December 2008?

Question 5

Assume that you are a Japanese importer of Australian beef. Initially, the price of Australian beef exported to Japan is fixed at 8,000 Australian dollars (AUD) per tonne and the original exchange rate is 80 Japanese Yen (JPY) per AUD. If the AUD subsequently depreciates 20% and you lower the price of Australian beef to 550,000 JPY per tonne, what is the degree of the exchange rate pass-through (in percentage)?

Question 6

Assume that the domestic currency is the Australian dollar (AUD). BHP-Billiton (an Australian-based multinational) has a Canadian subsidiary (Anglo Potash Limited), which pays a dividend to the parent company (based in Australia) each year. A dividend of 25 million Canadian dollars (CAD) has been declared now and will be paid to BHP-Billiton 90 days later. BHP-Billiton is trying to decide how to manage the foreign exchange risk associated with the dividend. The currently available data are given below:

Spot rates (CAD per AUD)	CAD/AUD 0.9428 – 0.9431
90-day forward rates (CAD per AUD)	CAD/AUD 0.9471 – 0.9478
90-day CAD interest rate	8.0% per annum (p.a.)
90-day AUD interest rate	6.0% p.a.

Based on the data, explain and calculate how BHP-Billiton could use a forward exchange contract and a money market hedge to hedge the foreign exchange risk. Explain your answers clearly and completely. Give your final answers in AUD.

Question 7

AIC Mines Limited (an Australian-based multinational corporation) has a Canadian subsidiary (Intrepid Mines Limited), which pays a dividend to the parent company (based in Australia) each year. A dividend of 10 million Canadian dollars (CAD) has been declared now and will be paid to AIC Mines Limited 120 days later. If AIC Mines Limited wants **to hedge against the uncertainty associated with the dividend and lock in the Australian dollar (AUD) value of the dividend**, explain and show clearly and completely with the data below how AIC Mines Limited can use the option hedge:

Spot rate (CAD per AUD)	CAD/AUD 0.9251
120-day option strike price	CAD/AUD 0.9600
120-day option premium	2%
120-day CAD interest rate	4.5% per annum (p.a.)
120-day AUD interest rate	3.3% p.a.

Question 8

Parts A, B, C, and D are independent of one another. Answer all the parts. You do not need any references or in-text citations to answer the parts.

Part A

What is the difference between the retail or client market and the wholesale or interbank market for foreign exchange? Who are the market participants in the foreign exchange market?

Part B

Answer both parts [i] and [ii].

[i] Discuss and compare hedging transaction exposure using the forward contract vs. money market instruments. When do the alternative hedging approaches produce the same result?

[ii] Discuss and compare the costs of hedging via the forward contract and the options contract. What are the advantages of a currency options contract as a hedging tool compared with the forward contract?

Part C

Answer both parts [i] and [ii].

[i] Over the past five years, the exchange rate between the U.S. dollar (USD) and British pound (GBP) has changed from about 1.90 USD per GBP (USD/GBP) to about 1.45 USD/GBP. Would you agree that over this five-year period that British goods have become cheaper for buyers in the United States?

(This problem is adapted from CFA® Problems.)

[ii] During 2002, the US dollar (USD) went from 135 Japanese Yen (JPY) per USD to 118 JPY per USD. By how much did the USD change against the JPY during the year? Assume that the JPY is the domestic currency.

Part D

Answer both parts [i] and [ii].

[i] What is meant by "interest rate parity"? Explain clearly. If the spot rate for US dollars (USD) against the Australian dollar (AUD) is USD/AUD 0.95 and 30-day interest rates are 2.0 per cent per annum in the USA and 7.25 per cent per annum in Australia, what 30-day forward rate would interest rate parity dictate? Give your final answer in terms of how many US cents per AUD. Assume that Australia is the domestic country.

[ii] Assume that the domestic currency is the Australian dollar (AUD). Explain clearly how you would compute the forward margin associated with an n-day US dollar (USD) forward contract. Assume that $0 < n \leq 360$, the spot rate is S AUD per USD (AUD/USD), the forward rate is F AUD/USD and these rates are strictly positive. Quote your forward margin in annual percentage terms.

Brief suggested solutions

Question 1

USD cost of the plastic blocks = USD 500,000/6.91 = **USD 72,358.90**

Comments:

Similar questions are available in the lecture slides, Practice Questions and Exercises (PQE), Short Quizzes (SQ), and past year questions.

Question 2

Moving from USD → EUR → CHF → USD:

USD (5,000,000 x 0.8273 / 0.6195) / 1.2806 = USD 4,136,500/0.7933317

Arbitrage profits = USD [4,136,500 / 0.7933317 – 5,000,000] = USD 214,086.3651 = **USD 214,086.37**

Comments:

Similar questions are available in the lecture slides, Practice Questions and Exercises (PQE), Short Quizzes (SQ), and past year questions.

Question 3

Covered interest arbitrage:	
Invest the JPY in Japan:	
Principal	JPY 1,000,000.00
Interest for the 30-day period	1/12 %
Gross return	JPY 3,002,500/3
Net return in JPY	JPY 833⅓
Covered Interest Arbitrage (CIA) in AUD:	
Principal	JPY 1,000,000.00
Converted to AUD at the spot rate	JPY/AUD 86.85
Yielding principal in AUD	AUD 1,000,000/86.85
Invested at AUD interest rate for the 30-day period	1/3 %
Yielding AUD at end of 30-day period	AUD 361,200,000/31,266
Which are simultaneously sold forward at the forward rate of	JPY/AUD 87.41
Gross return in JPY, fully covered, after 30 days	JPY 1,009,802.725
Net return in JPY	JPY 9,802.725004
Difference	**JPY 8,969.39**

You can make a profit of JPY 8,969.39 from CIA in AUD.

Comments:

Similar questions are available in the lecture slides, Practice Questions and Exercises (PQE), Short Quizzes (SQ), and past year questions.

Question 4

Percentage change in VND = (16,000/18,000 – 1) x 100 % = - 100/9 % = **-11.11%**

Applying the formula according to the relative version of the Purchasing Power Parity (PPP), the VND/USD in December 2008 should be = VND/USD 16,000 x (1 + 0.25) / (1 + 0.02) = VND/USD 20,000/1.02 = **VND/USD 19,607.84**

Overvaluation of the VND = (20,000/1.02)/18,000 – 1 = 1,640/18,360 = **8.93 %**

Comments:

Similar questions are available in the lecture slides, Practice Questions and Exercises (PQE), Short Quizzes (SQ), and past year questions.

Question 5

Original JPY price = JPY 8,000 x 80 = JPY 640,000

Let new exchange rate be JPY/AUD R2.

R2/80 – 1 = - 0.20 → R2 = 64

If 100% exchange-rate pass through → JPY price = JPY 8,000 x R2 = JPY 8,000 x 64 = JPY 512,000

Magnitude of decrease in price if 100% pass through = JPY (640,000-512,000) = JPY 128,000

Since price only falls to JPY 550,000, actual magnitude of decrease in price = JPY 90,000

So, degree of exchange rate pass-through = 90,000/128,000 = **70.3125 %**

Comments:

Similar questions are available in the lecture slides, Practice Questions and Exercises (PQE), Short Quizzes (SQ), and past year questions.

Question 6

Forward market: BHP-Billiton can lock in the account receivable at the forward rate of CAD/AUD 0.9478. This guarantees revenue of AUD (25 million/0.9478) = **AUD 26,376,872.76** 90 days later.

Money market hedge: This technique matches the account receivable with an account payable. BHP-Billiton Limited would borrow CAD today and repay the loan in 90 days with the CAD 25 million revenue.

Present Value (PV) of CAD 25 million = CAD 25 million/(1 + {0.08 x 90/360}) = CAD (25 million/1.02)

Sell CAD (25 million/1.02) spot at CAD/AUD 0.9431 = AUD 25 million/(1.02 x 0.9431) = AUD (25 million/0.961962)

These funds are now available to the company and therefore can be valued at the company's opportunity cost of capital (6.0% p.a.). The value of these funds in 90 days is:

Future Value (FV) of the funds = AUD (25 million/0.961962) x {1 + (0.06 x 90/360)} = **AUD 26,378,380.85**

This amount represents the AUD value of the CAD 25 million revenue in 90 days' time.

Comments:

Similar questions are available in the lecture slides, Practice Questions and Exercises (PQE), Short Quizzes (SQ), and past year questions.

Question 7

Buy a put option on the CAD at the strike rate of CAD/AUD 0.9600

Cost of option (option premium) is currently AUD 10 million x 0.02 ÷ 0.9251 = AUD 200,000/0.9251

If AIC Mines Limited exercises the option:

Minimum revenue (note that CAD 10 million is an account receivable/asset) 120 days later
= AUD [10 million/0.9600 – FV of option premium]
= AUD [10 million/0.9600 – 200,000/0.9251 x (1 + 0.033 x 120/360)]
= **AUD 10,198,095.70**

However, there is potential for the revenue to be higher if AUD depreciates (CAD appreciates).

Comments:

Similar questions are available in the lecture slides, Practice Questions and Exercises (PQE), Short Quizzes (SQ), and past year questions.

Question 8

Parts A, B, C, and D are independent of one another. Answer all the parts. You do not need any references or in-text citations to answer the parts.

Part A

What is the difference between the retail or client market and the wholesale or interbank market for foreign exchange? Who are the market participants in the foreign exchange market?

Answer: The market for foreign exchange can be viewed as a two-tier market. One tier is the *wholesale* or *interbank market* and the other tier is the *retail* or *client market*. International banks provide the core of the foreign exchange (FX) market. They stand willing to buy or sell foreign currency for their own account. These international banks serve their retail clients, corporations or individuals, in conducting foreign commerce or making international investment in financial assets that requires FX. Retail transactions account for only about 14 percent of FX trades. The other 86 percent is interbank trades between international banks, or non-bank dealers large enough to transact in the interbank market.

Answer: The market participants that comprise the FX market can be categorized into five groups: international banks, bank customers, non-bank dealers, FX brokers, and central banks. *International banks* provide the core of the FX market. Approximately 100 to 200 banks worldwide make a market in foreign exchange, i.e., they stand willing to buy or sell foreign currency for their own account. These international banks serve their retail clients, the *bank customers*, in conducting foreign commerce or making international investment in financial assets that requires foreign exchange. *Non-bank dealers* are large non-bank financial institutions, such as investment banks, mutual funds, pension funds, and hedge funds, whose size and frequency of trades make it cost-effective to establish their own dealing rooms to trade directly in the interbank

market for their foreign exchange needs.

Most interbank trades are *speculative* or *arbitrage* transactions where market participants attempt to correctly judge the future direction of price movements in one currency versus another (speculation) or attempt to profit from temporary price discrepancies in currencies between competing dealers (arbitrage).

FX brokers match dealer orders to buy and sell currencies for a fee, but do not take a position themselves. Interbank traders use a broker primarily to disseminate as quickly as possible a currency quote to many other dealers.

Central banks sometimes intervene in the foreign exchange market in an attempt to influence the price of its currency against that of a major trading partner, or a country that it "fixes" or "pegs" its currency against. Intervention is the process of using foreign currency reserves to buy one's own currency in order to decrease its supply and thus increase its value in the foreign exchange market, or alternatively, selling one's own currency for foreign currency in order to increase its supply and lower its price.

Part B

[i] Discuss and compare hedging transaction exposure using the forward contract vs. money market instruments. When do the alternative hedging approaches produce the same result?

Answer: Hedging transaction exposure by a forward contract is achieved by selling or buying foreign currency receivables or payables forward. On the other hand, money market hedge is achieved by borrowing or lending the present value of foreign currency receivables or payables, thereby creating offsetting foreign currency positions. If the interest rate parity is holding, the two hedging methods are equivalent.

[ii] Discuss and compare the costs of hedging via the forward contract and the options contract. What are the advantages of a currency options contract as a hedging tool compared with the forward contract?

Answer: There is no up-front cost of hedging by forward contracts. In the case of options hedging, however, hedgers should pay the premiums for the contracts up-front. The cost of forward hedging, however, may be realized ex post when the hedger regrets his/her hedging decision.

Answer: The main advantage of using options contracts for hedging is that the hedger can decide whether to exercise options upon observing the realized future exchange rate. Options thus provide a hedge against ex post regret that forward hedger might have to suffer. In the case of options, hedgers can eliminate the downside risk while retaining the upside potential.

Part C

[i] Over the past five years, the exchange rate between the U.S. dollar (USD) and British pound (GBP) has changed from about 1.90 USD per GBP (USD/GBP) to about 1.45 USD/GBP. Would you agree that over this five-year period that British goods have become cheaper for buyers in the United States?

(This problem is adapted from CFA® Problems.)

Answer: The value of the British pound in U.S. dollars has changed from about 1.90 to about 1.45. Therefore, the U.S. dollar has appreciated relative to the British pound, and the dollars needed by Americans to purchase British goods have decreased. Thus, the statement is correct.

[ii] During 2002, the US dollar (USD) went from 135 Japanese Yen (JPY) per USD to 118 JPY per USD. By how much did the USD change against the JPY during the year? Assume that the JPY is the domestic currency.

Percentage change in USD = (118/135 – 1) x 100 % = -17/135 = -12.59%

Answer: **12.59% depreciation against the JPY.**

Part D

[i] What is meant by "interest rate parity"? Explain clearly. If the spot rate for US dollars (USD) against the Australian dollar (AUD) is USD/AUD 0.95 and 30-day interest rates are 2.0 per cent per annum in the USA and 7.25 per cent per annum in Australia, what 30-day forward rate would interest rate parity dictate? Give your final answer in terms of how many US cents per AUD. Assume that Australia is the domestic country.

Answer:

Refer to the relevant lecture slides for details. Interest rate parity means that the cost of borrowing (return from investing) off-shore after covering the exchange rate risk equals the cost of borrowing (return from investing) on the domestic market.

Forward rate = USD/AUD 0.95 x (1 + 0.02 x 30/360) / (1 + 0.0725 x 30/360) = USD/AUD 0.94586871

94.59 US cents per AUD.

[ii] Assume that the domestic currency is the Australian dollar (AUD). Explain clearly how you would compute the forward margin associated with an n-day US dollar (USD) forward contract. Assume that 0 < n ≤ 360, the spot rate is S AUD per USD (AUD/USD), the forward rate is F AUD/USD and these rates are strictly positive. Quote your forward margin in annual percentage terms.

Answer: Refer to the relevant lecture slides for details.

Forward margin (in annual percentage terms) = **(F/S – 1) x (360/n) x 100.**

Comments:

Question 8 comprises several parts requiring short answers. As stated in the instructions, you do not need any references or in-text citations to answer these parts.

However, when answering any problem related to the Special Topics in the exam, you:

[1] must paraphrase, use your own words, and write in complete sentences and paragraphs;

[2] must not cut and paste sentences and paragraphs directly from the journal articles;

[3] must use the Harvard-style of referencing in your answers by having proper in-text citations and a SINGLE list of references containing the citations. For examples of the Harvard-style referencing, you can refer to the ANU website: https://www.anu.edu.au/students/academic-skills/academic-integrity/referencing/harvard. Alternatively, please follow the referencing style adopted by any of the journal articles assigned for the Special Topics. If in doubt whether you should include a citation

in your answers, the advice is to play it safe and include it. Marks will be deducted for not including in-text citations and a list of references in your answers.