Topic 5 Transaction Exposure

1. How would you define transaction exposure? How is it different from economic exposure?

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

3. Suppose your company has purchased a put option on the German mark to manage exchange exposure associated with an account receivable denominated in that currency. In this case, your company can be said to have an 'insurance' policy on its receivable. Explain in what sense this is so.

4. Should a firm hedge? Why or why not?

5. Cray Research sold a supercomputer to the Max Planck Institute in Germany on credit and invoiced €10 million payable in six months. Currently, the six-month forward exchange rate is €1.05/$ and the foreign exchange advisor for Cray Research predicts that the spot rate is likely to be €1.10/$ in six months.

   (a) What is the expected gain/loss from the forward hedging?

   (b) If you were the financial manager of Cray Research, would you recommend hedging this € receivable? Why or why not?

   (c) Suppose the foreign exchange advisor predicts that the future spot rate will be the same as the forward exchange rate quoted today. Would you recommend hedging in this case? Why or why not?

6. You plan to visit Geneva, Switzerland in three months to attend an international business conference. You expect to incur the total cost of CHF 5,000 for lodging, meals and transportation during your stay. As of today, the spot exchange rate is $0.60/CHF and the three-month forward rate is $0.63/CHF. You can buy the three-month call option on CHF with the exercise rate of $0.64/CHF for the premium of $0.05 per CHF. Assume that your expected future spot exchange rate is the same as the forward rate. The three-month interest rate is 6 percent per annum in the United States and 4 percent per annum in Switzerland. **(*)**

   (a) Calculate your expected dollar cost of buying CHF5,000 if you choose to hedge via call option on CHF.

(b) Calculate the future dollar cost of meeting this CHF obligation if you decide to hedge using a forward contract.

(c) At what future spot exchange rate will you be indifferent between the forward and option market hedges?

(d) Illustrate the future dollar costs of meeting the CHF payable against the future spot exchange rate under both the options and forward market hedges.

7. Dell Computer produces its machines in Asia with components largely imported from the United States and sells its products in various Asian nations in local currencies.

   (a) What is the likely impact on Dell's Asian profits of a strengthened dollar? Explain.

   (b) What hedging technique(s) can Dell employ to lock in a desired currency conversion rate for its Asian sales during the next year?

   (c) Suppose Dell wishes to lock in a specific conversion rate but does not want to foreclose the possibility of profiting from future currency moves. What hedging technique would be most likely to achieve this objective?

   (d) What are the limits of Dell's hedging approach?

8. In order to eliminate all risk on its exports to Japan, a company decides to hedge both its actual and anticipated sales there. What risk is the company exposing itself to? How could this risk be managed?

9. Instead of its previous policy of always hedging its foreign currency receivables, Sun Microsystems has decided to hedge only when it believes the dollar will strengthen. Otherwise, it will go uncovered. Comment on this new policy.

10. The Row owes €70 million in 30 days for a recent shipment of Spanish textiles. It faces the following interest and exchange rates:

Spot rate:	€130/$
Forward rate (30 days)	€131/$
30-day put option on dollars at €129/$	1% premium
30-day call option on dollars at €131/$	3% premium
U.S. dollar 30-day interest rate (annualized):	7.5%
Euro 30-day interest rate (annualized):	15%

(a) What is the hedged cost of The Row's payable using a forward market hedge?

(b) What is the hedged cost of The Row's payable using a money market hedge?

(c) What is the hedged cost of The Row's payable using a put option?

11. In your role as an advisor to the CFO of Watermelon Technologies you have been asked to write a report on why hedging might reduce agency costs. While you have no problems convincing him that bondholders would prefer the firm hedge exchange rate risk, what arguments would you put forward to persuade him that he has a personal stake in the decision as well? **(*)** **2023 exam question (*)**

12. Samuel Samosir works for Peregrine Investments in Jakarta, Indonesia. He focuses his time and attention on the U.S. dollar/Singapore dollar ($/S$) exchange. The current spot rate is $0.6000/S$. After considerable study, he has concluded that the Singapore dollar will appreciate versus the U.S. dollar in the coming 90 days, probably to about $0.7000/S$. He has the following options on the Singapore dollar to choose from: **(*)**

Past Exam Question

Option	***Strike Price***	***Premium***
Put on S$	*$0.6500/S$*	*$0.00003/S$*
Call on S$	*$0.6500/S$*	*$0.00046/S$*

(a) Should Samuel buy a put on Singapore dollars or a call on Singapore dollars?

(b) Using your answer to (a), what is Samuel's break-even price?

(c) Using your answer to (a), what are Samuel's gross profit and net profit (including the premium) if the spot rate at the end of the 90 days is indeed $0.7000/S$?

13. Rio Tinto has operations in Europe. It would like to lock in the exchange rate on the €200M in operating income generated in the EU this quarter that they would like to repatriate. They are considering whether they should enter into a currency forward contract for the €200M at an exchange rate of $1.20 per Euro with a delivery date of June 30.

    Rio Tinto's investment expenditures are based in Australia but are focused on product innovations for the EU market. The size of these investment expenditures is expected to increase as the European economy strengthens. If Rio plans on funding these investments using its repatriated earnings from the EU, should it hedge these earnings with the currency futures contract? Explain completely. **(*)** ***Past Exam Question***

14. Coal River Industries of Cygnet, Tasmania, is completing a new assembly plant near Guatemala City. A final construction payment of Q8,400,000 is due in six months. ("GTQ" is the code for Guatemalan quetzals and its symbol is "Q".) Coal River uses 20% per annum as its weighted average cost of capital. Today's foreign exchange and interest rate quotations are: **(*)** ***Past Exam Question***

Present spot rate	*Q7.0000/$*
Six-month forward rate	*Q7.1000/$*
Guatemalan six-month interest rate	*14.00% per annum*
Australian dollar six-month interest rate	*6.00% per annum*

    Coal River's treasury manager, concerned about the Guatemalan economy, wonders if Coal River should be hedging its foreign exchange risk. The manager's own forecast is as follows:

    Highest expected rate: Q8.000/$, reflecting a significant devaluation
    Expected rate: Q7.3000/$
    Lowest expected rate: Q6.4000/$, reflecting a strengthening of the quetzal

(a) What realistic alternatives are available to *Coal River* for making payment? What are their cash flows?

(b) Which method would you select? Why?

15. The following information on interest rates and exchange rates is available to all with access to any of the finance data providers:

Currency	Spot	1 Month	3 Months	6 Months	12 Months
Euro	2.0310/20	22/18	64/54	128/105	227/228
GBP*	1.4890/00	55/22	160/156	302/289	560/523
Yen	154.20/30	8/6	33/27	75/62	164/137

* The quote for the British Pound (GBP) is AUD per GBP. For the Euro and Yen it is foreign currency per AUD. For ***most*** currency pairs, a point is 1/100th of 1% (i.e., 0.0001); the Japanese Yen currency pair is the only exception to this rule. Swap points for Japanese Yen currency pairs (e.g., Yen per AUD) are quoted to two decimal places only, so one point is 1/100.

2021 exam question (*)

The table below provides bid and ask interest rates on the Australian dollar (AUD), the Euro, the British Pound (GBP) and the Japanese Yen. These rates are quoted on a per annum basis.

Currency	1 Month	3 Months	6 Months	12 Months
AUD	5.6785-5.8125	5.5000-5.6250	5.5000-5.6250	5.6250-5.7500
Euro	4.4375-4.5625	4.3125-4.4375	4.3125-4.4375	4.3125-4.4375
GBP	10.0625-10.1875	9.8750-9.9375	9.6875-9.7500	9.6250-9.7500
Yen	5.1250-5.1875	4.7500-4.8125	4.6250-4.6875	4.6250-4.6875

NOTE: (a) was covered in Topic 3.

(b) Now suppose this investor expects a GBP 2 million payment in a month from client based in Glasgow. While he doesn't have a strong opinion on how the exchange rate is likely to move, he is intent on eliminating the uncertainty around the value of the GBP. What options does he have and what are the costs of eliminating this risk? Which approach should he utilize? Provide your answer in dollar terms.

16. The Swedish Steel Company has debt of 100,000 Euros, which becomes due in 12 months. The company's financial controller, Freja Doe, is having trouble sleeping at night knowing that the debt is unhedged. Sweden's currency is the Krona (Kr). The current Kr/Euro exchange rate is 20, and the per annum interest rates are 21 percent on Krona and 10 percent on the Euro. Freja is considering a forward hedge. However, a friend tells her that he recently bought a call on 100,000 Euros with strike price of 20 and is willing to sell the call option to her at the historic cost of 1 Kr per Euro or Kr 100,000 for the total contract. What should she do? Show your workings.

2023 exam question (*)

17. An Australian firm exports machinery to Korea at the price of 200,000 Korean won. This amount is however paid to the Australian firm only after six months. The Australian firm wishes to cover its exchange rate exposure. Using the information below, calculate its strategy of obtaining a forward contract or money market hedge will be equivalent. If not, which instrument will guarantee a higher dollar value at the end of six months. Explain how you would perform the forward contract and money market hedge.

Spot Rate: 3 won/$	Six-month forward rate: 3.5 won/$
Korean won interest rate: 41.64% *p.a.*	Australian dollar interest rate: 4.04% *p.a.*

2023 exam question (*)