

Second Midterm Exam

No points will be given by simply writing down formulas, and writing down definitions or irrelevant statements from the book, or saying "yes," will get you zero points. Justify all your answers. If you cannot prove something give some intuition. Good luck. Reminder: this is an open book exam, but no open notes.

Time: 1hr 20 minutes.

I. Problems (15 points each).

1. It is March 3, 2017. Malone, a U.S. company, exports baseball equipment to Taiwan. Malone expects to receive a payment of TWD 50 million in August 1, 2017 (TWD=Taiwanese Dollar). Malone decides to hedge this exposure using an August forward contract, which expires on August 1, 2017. The 3-month, 4-month and 5-month Taiwanese interest rates are 3.5%, 3.7% and 4%, while the 3-month, 4-month and 5-month U.S. interest rates are 1%, 1.1% and 1.3%, respectively. On March 3, the spot exchange rate is 29.78 TWD/USD and the August 1 forward trades at 30.12 TWD/USD.

(A) Calculate the amount to be received on August 1, using a forward hedge.

(B) Calculate the amount to be received on August 1, using a money market hedge.

(C) Assume the payment is made on July 11, 2017. On July 11, the spot exchange rate is 30.51 TWD/USD, the Taiwanese short-term interest rate is 3.85% and the U.S. short-term interest rate is 1.5%. Calculate the value of the August 1 forward contract on July 11, 2017. (Use IRP to calculate the forward rate.)

(D) (Continuation of question C) Calculate the hedger's profits (losses).

2. Mr. Elvid is the owner of a liquor store chain in Texas. Mr. Elvid imports beer from England, payments are denominated in GBP. Mr. Elvid is worried about a potential appreciation of the GBP against the USD in June 2017. He wants to set up an option hedge. Mr. Elvid's June payables are GBP 500,000. The USD/GBP exchange rate is 1.5151 USD/GBP.

A. Calculate Mr Elvid's TE in June.

B. Suppose changes in the USD/GBP, e_t , follow a Normal distribution with mean zero and standard deviation .10. Derive the VaR(97.5%) for Mr. Elvid's transaction exposure.

C. Using the information given in the quote clip, construct:

i) at the money (closest in-the-money) June hedge.

ii) out of the money June hedge.

iii) a zero-cost collar (or close to zero cost), with out-of-the-money June options.

(Specify strike prices, total premium costs and worst case scenario.) Briefly discuss the advantages and disadvantages of each strategy.

3. Assume that the following regression model was applied to historical annual data:

$$e_{f,t} = \alpha + \beta \text{INT}_t + \tau \text{INC}_t + \delta \text{TB}_t + \varepsilon_t,$$

where $e_{f,t}$ is the percentage change in the **USD/MYR** exchange rate in period t (MYR= Malaysian Ringgit), INT_t is the interest rate differential between Malaysia and the U.S. in period t , INC_t is the income growth rate differential between Malaysia and the U.S. in period t , TB_t represents the change in the U.S. trade balance and ε_t is an error term.

Assume that the regression coefficients were estimated as

$$\alpha = .002$$

$$\beta = .90$$

$$\tau = -.85$$

$$\delta = .60$$

This year the change in the U.S. trade balance, TB_t , is forecasted to be 15% and the income growth rate differential, INC_t , is forecasted to be 4%. This year INT_t is forecasted as follows:

<u>INT</u>	<u>Probability</u>
-3%	.10
-2%	.30
-1%	.50
4%	.10

Now, you have to answer the following questions:

(i) Using the above information, what will be your forecast for $e_{f,t}$?

(ii) Assume S_{t-1} is equal to 4.10 **MYR/USD**. Using the regression model, forecast S_t .

(iii) What is your Random Walk forecast for S_t ?

(iv) Suppose $S_t = .25$ USD/MYR. Looking at (ii) and (iii), which forecast has the lowest squared error?

4. Laker Airway, a British air carrier, pioneered a railroad-like system called Skytrain. The idea was to fill all the seats at the same consistently low price, with no-frills service. As with other start-up companies, Laker Airways was heavily laden with debt. Between 1979 and 1982, Laker took on an enormous amount of new debt to purchase the ten aircraft needed to service the transatlantic routes from Gatwick Airport (U.K.). The debt came in three major segments:

(1) Mitsui Bank of Japan extended a loan of USD 59 million at 8.5% for 20 years.

(2) The Export-Import Bank of the U.S. in conjunction with other banks extended a loan of USD 228 million at an average interest rate of 7.5% over nine years.

(3) Midland Bank (U.K.) led a syndicate of European banks in extending a loan of USD 131 million. The British government extended a subsidy to Laker Airway by agreeing to pay any interest above a fixed level. Therefore, Laker Airways interest rate was fixed at 9%.

During the early 1980s, the GBP was appreciating against the USD. However, by the end of 1981, the USD reversed this trend and started to appreciate against the GBP. Laker Airways' 1981 revenues were GBP 30 million and USD 15 million. Laker Airway's cost, excluding interest payments, were GBP 15 million and USD 5 million. The exchange rate in 1981 was 1.81 USD/GBP.

(A) Assume no revenue or cost growth in 1982. Calculate the CF-elasticity.

(B) Would you rely on the CF-elasticity to make hedging decisions? Briefly explain

(C) Laker Airways went into bankruptcy in 1982. Propose two solutions that might have saved Laker Airways.

II. CASE (25 points)

Questions are based on the posted article (January 26, 2017). Briefly answer the following questions:

Note: No points will be given by simply writing lines from the article.

1) Drinks group Diageo seems to have economic exposure. Can you provide an estimate of its economic exposure?

2) Assume Diageo is considering moving production abroad. What are the advantages and disadvantages of this move for Diageo?

3) FX analysts expect the GBP to continue to depreciate. Would you advise Whirlpool, the U.S. manufacturer of appliances, to hedge its GBP currency receivables? What advice would you give Diageo regarding its foreign currency receivables?

4) Unilever, like the majority of U.K. multinational companies, derives a majority of its revenue from outside the U.K. Based on the revenue and profits reported in the article, do you think Unilever faces economic exposure?

5) The stock market did not show a big reaction in response to Unilever's end-of-year results. Given what you learned in class, how would you interpret this reaction?

PHILADELPHIA OPTIONS

Tuesday March 27, 2017

		Calls		Puts	
		Vol.	Last	Vol.	Last
Australian Dollar					84.90
10,000 Australian Dollars -cents per unit.					
83	June	19	2.17	10	0.50
84	May	20	1.09	16	1.04
85	June	12	1.45	8	1.60
85	May	30	1.18	11	1.25
87	June	4	0.62	2	2.53
British Pound					151.51
10,000 British Pounds -cents per unit.					
148	June	7	6.88	8	0.23
149	June	8	5.74	4	0.68
150	May	19	0.82
151	June	12	1.64	5	3.01
153	May	21	1.30	13	4.27
154	June	14	0.95	10	5.05
156	June	4	0.65	11	7.15