Derivatives
Revisions 3
Questions

Hedging Strategies Using Futures

1. Under what circumstances are **a.** a short hedge and **b**. a long hedge appropriate?

2. Explain what is meant by a ***perfect hedge***. Does a perfect hedge always lead to a better outcome than an imperfect hedge? Explain your answer.

3. A company has a $20 million portfolio with a beta of 1.2. It would like to use futures contracts on the S&P 500 to hedge its risk. The index futures price is currently standing at 1080, and each contract is delivery of $250 times the index. What is the hedge that minimizes risk? What should the company do if it wants to reduce the beta of the portfolio to 0.6?

4. "For an asset where futures prices are usually less than spot prices, long hedges are likely to be particularly attractive". Explain this statement.

5. On July 1, an investor holds 50,000 shares of a certain stock. The market price is $30 per share. The investor is interested in hedging against movements in the market over the next month and decides to use September Mini S&P futures contracts. The index futures price is currently 1,500 and one contract is for delivery of $50 times the index. The beta of the stock is 1.3. What strategy would the investor follow?

6. An airline executive has argued. "There is no point in our using oil futures. There is just as much chance that the price oil in the future will be less than the futures price as there is that will be greater than this price". Discuss the executive's viewpoint.

Swaps

1. Companies A and B have been offered the following rates per annum on a $20 million 5-year loan:

	Fixed rate	Floating rate
Company A	5.0%	LIBOR + 0.1%
Company B	6.4%	LIBOR + 0.6%

Company A requires a floating-rate loan; company B requires a fixed rate loan. Design a swap that will net a bank, acting as intermediary, 0.1% per annum and that will appear equally attractive to both companies.

2. Company X wishes to borrow US dollars at a fixed rate of interest. Company Y wishes to borrow Japanese yen at a fixed rate of interest. The amounts required by the two companies are roughly the same at the current exchange rate. The companies are subject to the following interest rates, which have been adjusted to reflect the impact of taxes:

	Yen	Dollar
Company X	5.0%	9.6%
Company Y	6.5%	10.0%

Design a swap that will net a bank, acting as intermediary, 50 basis points per annum. Make the swap equally attractive to the two companies and ensure that all foreign exchange risk is assumed by the bank.

3. A financial institution has entered into a **10-year** currency swap with company Y. Under the terms of the swap the financial institution receives interest at **3%** per annum in Swiss Francs and pays interest at **8%** per annum in U.S. Dollars. Interest payments are exchanged once a year. The principle amounts are **7** million Dollars and **10** million Francs. Suppose that company Y defaults on the payments at the end of year 6 when the exchange rate is **$0.80** per Franc. Assume that at the end of year **6** the interest rate is **3%** per annum in Swiss Francs and **8%** per annum in U.S. dollars for all maturities. All interest rates are quoted with annual compounding.
Evaluate the cost to the financial institution of the default of company Y.

4. A currency swap has a remaining life of 15 months. It involves exchanging interest at 10% on £20 million for interest at 6% on $30 million once a year. The term structure of interest rates in both the United Kingdom and the United states is currently flat, and if the swap were negotiated today the interest rates exchanged would be 4% in dollars and 75 in sterling. All interest rates are quoted with annual compounding. The current exchange rate (dollars per pound sterling) is 1.8500. What is the value of the swap to the party paying sterling? What is the value of the swap to the party paying dollars?