

45. On a \$20 million 5-year loan, company A has been offered 12% or LIBOR+0.1%, and company B has been offered 13.4% or LIBOR+0.6%. Design a swap that gives A a floating-rate loan, B a fixed-rate loan, net a bank (acting as intermediary) 0.1% pa, and appears equally attractive to both companies.
46. A \$100 million interest rate swap has a remaining life of 10 months, where LIBOR is exchanged for 12% (s-a). The current rate is 10% (cc), and 6-month LIBOR was 9.6% (s-a) two months ago. What is the current value of the swap to the party paying floating? Find this value twice (in terms of bonds and FRAs).
47. Company X wishes to borrow USD at a fixed rate of interest, while company Y wishes to borrow Japanese yen at a fixed rate of interest. At the current exchange rates, both amounts required are the same. X can borrow yen for 5% and USD for 9.6% while Y can borrow yen for 6.5% and USD for 10%. Design a swap that will net a bank (acting as an intermediary) 50 basis points pa. Make the swap equally attractive to the two companies and ensure that all foreign exchange risk is assumed by the bank.
48. A currency swap has a remaining life of 15 months. It involves exchanging interest at 14% of 20 million GBP for interest at 10% on 30 million USD once a year. The interest rates (flat) are 8% in USD and 11% in GBP (ac). The current exchange rate is 1.65 USD per GBP. What is the value of the swap to the party paying GBP? Find this value twice (in terms of bonds and forwards).
49. Under what circumstances will the holder of the following options make a profit? Under what circumstances will the options be exercised? Draw a diagram illustrating how the profit from the options depends on the stock price at maturity of the options.
- (a) Long position in a European call that costs \$5 and has strike price \$100.
 - (b) Short position in a European put that costs \$8 and has strike price \$60.
 - (c) Long positions in a European call and put that cost \$3 and \$4 and have strike prices \$45 and \$40.
50. The price of a stock is \$40. The price of a 1-year European put on the stock with a strike price of \$30 is quoted as \$7 and the price of a 1-year European call on the stock with a strike price of \$50 is quoted as \$5. Explain and draw diagrams illustrating the profit:
- (a) An investor buys 100 shares, shorts 100 call options, and buys 100 put options.
 - (b) An investor buys 100 shares, shorts 200 call options, and buys 200 put options.