Derivative Instruments
Paris Dauphine University - Master IEF (272)

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Exercises Chapter 7

Exercise 1 (Done) *Companies A and B have been offered the following rates per annum on a $20 million five- 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.

Exercise 2 *Company X wishes to borrow U.S. 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 have been quoted the following interest rates, which have been adjusted for the impact of taxes :

	Yen	*Dollars*
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.

a) Make the swap equally attractive to the two companies and ensure that all foreign exchange risk is assumed by the bank.

b) What will the swap contract look like if the currency risk is taken over by company X ?

c) What will the swap contract look like if the currency risk is taken over by company Y ?

Exercise 3 (Done) *A $100 million interest rate swap has a remaining life of 10 months. Under the terms of the swap, six-month LIBOR is exchanged for 7% per annum (compounded*

semiannually).

The average of the bid-offer rate being exchanged for six-month LIBOR in swaps of all maturities is currently 5% per annum with continuous compounding.

The six-month LIBOR rate was 4.6% per annum two months ago.

What is the current value of the swap to the party paying floating?

What is its value to the party paying fixed?

Exercise 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 7% 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?

Exercise 5 *A corporate treasurer tells you that he has just negotiated a five-year loan at a competitive fixed rate of interest of 5.2%.*

The treasurer explains that he achieved the 5.2% rate by borrowing at six-month LIBOR plus 150 basis points and swapping LIBOR for 3.7%.

He goes on to say that this was possible because his company has a comparative advantage in the floating-rate market.

What has the treasurer overlooked?

Exercise 6 *The LIBOR zero curve is flat at 5% (continuously compounded) out to 1.5 years. Swap rates for 2- and 3-year semiannual pay swaps are 5.4% and 5.6%, respectively.*

Estimate the LIBOR zero rates for maturities of 2.0, 2.5, and 3.0 years.

(Assume that the 2.5-year swap rate is the average of the 2- and 3-year swap rates.)