Derivative Instruments
Paris Dauphine University - Master IEF (272)

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Exercises Chapter 6

Exercise 1 *It is January 9. The price of a Treasury bond with a 12% coupon that matures on October 12, in four years, is quoted as 102-07.*

What is the cash price ?

Exercise 2 *A Eurodollar futures price changes from 96.76 to 96.82.*

What is the gain or loss to an investor who is long two contracts ?

Exercise 3 (Done) *The 350-day LIBOR rate is 3% with continuous compounding and the forward rate calculate from a Eurodollar futures contract that matures in 350 days is 3.2% with continuous compounding.*

Estimate the 440-day zero rate.

Exercise 4 *It is January 30. You are managing a bond portfolio worth $6 million. The duration of the portfolio in six months will be 8.2 years. The September Treasury bond futures price is currently 108-15, and the cheapest-to-deliver bond will have a duration of 7.6 years in September.*

How should you hedge against changes in interest rates over the next six months ?

Exercise 5 *Suppose that the Treasury bond futures price is 101-12. Which of the following four bonds is cheapest to deliver ?*

Bond	*Price*	*Conversion Factor*
1	*125-05*	*1.2131*
2	*142-15*	*1.3792*
3	*115-31*	*1.1149*
4	*144-02*	*1.4026*

Exercise 6 *Suppose that the 300-day LIBOR zero rate is 4% and Eurodollar quotes for contracts maturing in 300, 398 and 489 days are 95.83, 95.62, and 95.48.*

Calculate 398-day and 489- day LIBOR zero rates.
(Assume no difference between forward andfutures rates for the purposes of your calculations.)

Exercise 7 (Done) *On August 1 a portfolio manager has a bond portfolio worth $10 million. The duration of the portfolio in October will be 7.1 years. The December Treasury bond futures price is currently 91-12 and the cheapest-to-deliver bond will have a duration of 8.8 years at maturity.*

a) How should the portfolio manager immunize the portfolio against changes in interest rates over the next two months ?

b) How can the portfolio manager change the duration of the portfolio to 3.0 years ?

Exercise 8 *The three-month Eurodollar futures price for a contract maturing in six years is quoted as 95.20. The standard deviation of the change in the short-term interest rate in one year is 1.1%.*

Estimate the forward LIBOR interest rate for the period between 6.00 and 6.25 years in the future.