Homework 5

Aleck Zhao

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Chapter 6: Interest Rate Futures

4. 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?

6. The 350-day LIBOR rate is 3% with continuous compounding and the forward rate calculated from a Eurodollar futures contract that matures in 350 days is 3.2% with continuous compounding. Estimate the 440-day zero rate.

9. It is May 5, 2014. The quoted price of a government bond with a 12% coupon that matures on July 27, 2024, is 110-17. What is the cash price?

11. It is July 30, 2015. The cheapest-to-deliver bond in a September 2015 Treasury bond futures contract is a 13% coupon bond, and delivery is expected to be on September 30, 2015. Coupon payments on the bond are made on February 4 and August 4 each year. The term structure is flat, and the rate of interest with semiannual compounding is 12% per annum. The conversion factor for the bond is 1.5. The current quoted bond price is $110. Calculate the quoted futures price for the contract.

14. Suppose that the 300-day LIBOR zero rate is 4% and the 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 and futures rates for the purposes of your calculation.

21. The 3-month Eurodollar futures price for a contract maturing in 6 year is quoted as 95.20. The standard deviation of the change in the short term interest rate in 1 year is 1.1%. Estimate the forward LIBOR interest rate for the period between 6.00 and 6.25 years in the future.

26. A Eurodollar futures quote for the period between 5.1 and 5.35 years in the future is 97.1. The standard deviation of the change in the short-term interest rate in one year is 1.4%. Estimate the forward interest rate in an FRA.

27. It is March 10, 2014. The cheapest-to-deliver bond in a December 2014 Treasury bond futures contract is an 8% coupon bond, and the delivery is expected to be made on December 31, 2014. Coupon payments on the bond are made on March 1 and September 1 each year. The rate of interest with continuous compounding is 5% per annum for all maturities. The conversion factor for the bond is 1.2191. The current quoted bond price is $137. Calculate the quoted futures price for the contract.