

Homework 6. Quantitative Methods for fixed Income Securities

Chapter 7 Key Rate Hedging

The following questions will lead to the design of a spreadsheet to calculate the two- and five-year key rate duration profile of four-year bonds.

- 7.1 Column A should contain the coupon payment dates from .5 to 5 years in increments of .5 years. Let column B hold a par-yield curve flat at 4.50%. Put the discount factors corresponding to the par-yield curve in column C. Price a 12% and a 6.50% four-year bond under this initial par-yield curve.
- 7.2 Create a new par-yield curve, by adding a two-year key rate shift in column D. Compute the new discount factors in column E. What are the new bond prices?
- 7.3 Create a new par-yield curve, by adding a five-year key rate shift in column F. Compute the new discount factors in column G. What are the new bond prices?
- 7.4 Assume that the par-yield curve is flat at 3%. Consider the hedging of a 30-year maturity bond with 4% coupon rate using payer's swaps of 2-, 5-, 10- and 30-yr maturities. Let the notional of the coupon bond be \$10m.
 - a. Compute the kr01s of the coupon bond.
 - b. Compute the kr01s of the four swaps.
 - b. Provide the notional values of the four swaps for hedging.