Homework on Day 4

January 24, 2019

A fund manager at an insurance company wants to construct a bond portfolio to meet a stream of liability payout in the future.

(a) Suppose the current date is 2010/12/31, and the zero-coupon bond curve is given by the excel file s0023_disc_factors_hist.xls.

(b) Suppose the current market prices of on-the-run Treasury bonds are shown in the excel file "homework_day_4.xls".

(c) The liability stream are shown in the excel file "homework_day_4.xls".

(d) Assuming that the zero curve is piece-wise linear.

(e) Suppose the fund manager decides to include the Treasury bonds with maturities of 2y, 5y, 10y, 15y, and 30y in the portfolio and he wants the portfolio to be immunized against the first three risk factors based on PCA. How much of each of the bonds should he hold in the portfolio?