Homework on Day 4

January 25, 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 **zero-coupon** bonds with maturities of 2y, 3y, 4y, 5y, and 10y in the portfolio and he wants the portfolio to match the present value of the liability no matter how the first three risk factors based on PCA change tomorrow. How much of each of the bonds should he hold in the portfolio?