Financial Modelling (BEAM046) Term 1 2022/3

Week 7 Tutorial Case: Modelling the Yield Curve

You are a Treasury bond analyst in an investment bank. The US Treasury is about to issue a new 10-year bond with the following details:

Maturity date	07/10/2027
Principle	1000 USD
Coupon rate	2.125%
Coupon frequency	Semi-annual

The bank is considering bidding in the auction of the bond and needs to know the fair price. The template file contains a set of zero-coupon bond yields. Assume that today's date is 07/10/2017.

1. Estimate a yield curve for the zero-coupon bond yields using a third order polynomial (first convert the yields to log yields).
2. Use the fitted yield curve to estimate the spot yields for the bond's coupon payment maturities.
3. Use these estimated spot yields to find the fair price of the bond.
4. Calculate the yield-to-maturity of the bond assuming that its market price is equal to the fair price that you have calculated.
5. Estimate a yield curve for the zero-coupon bond yields using the Nelson-Siegel model and use this to calculate the fair price and yield-to-maturity of the bond.