

2016 MFE R Programming Workshop Lab 2

Brett R. Dunn

October 31, 2016

Getting started on this lab is likely to be a bit harder than the previous lab. It will require you to do some reading of R package manuals/vignettes. As you become more experienced with R programming, this will be commonplace, so it is best to become comfortable with it now. Having the skill of learning about a new package from its standard documentation will be immensely useful. R is as useful as it is a programming language because of the packages the community has built around it. Learn to use them and you will quickly understand why R is such a fantastic data analytics platform.

1 Interpolating the Yield Curve

Date on the treasury yield curve can be found at:

<http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yield>

- Download the data for the latest day and import it into R (the last row on that page). Notice that the yields are for unequally spaced intervals (1mo, 3mo, 1 year, etc.)
- Using the lubridate and xts packages construct (you can use `as.xts()` or `xts()`) an XTS object with two columns that has the dates and the yields. For example on November 3, 2014 you would get:

Date	Yield
December 3, 2014	0.03
February 3, 2015	0.04
May 3, 2015	0.07
...	...

- Make a plot of this yield curve
- Now we are going to interpolate the missing yields (ie 2 months, 4 months, 5 months, etc.) all the way out to 30 years. Create an empty xts object that has the monthly date index starting at the first monthly observation going out to 30 years. The yields column will have NA values to begin, but you will want to populate the rows that you have observations for with the data from the treasury website.
- Now create two more columns in your dataset using `na.approx()` and `na.spline()` from the xts package. These functions will replace the NA values with interpolated values.
- Plot your interpolated yield curves