Training Exercise 3.5

Notes:

- This exercise uses the datafile `TrainExer35` and requires a computer.

- The dataset `TrainExer35` is available on the website.

Questions

(a) Replicate the R^2 values of slide 7 from lecture 3.5. In particular, show that a regression of the log equity premium (the variable `LogEqPrem` in the data file) on a constant and all five explanatory variables gives an R^2 of 10.8%, and that a regression of the log equity premium on a constant and only book-to-market gives an R^2 of 6.3%. Then, based on these values, argue whether the additional four variables are significant when comparing the full with the book-to-market only model.

(b) Replicate the RESET statistic of slide 8 of Lecture 3.5. Proceed in the following steps. First regress the log equity premium on a constant and the book-to-market ratio. Then store the fitted log equity premium based on the output from this regression. Finally, regress the log equity premium on a constant, the book-to-market ratio, and the square of the fitted log equity premium that was stored in the previous step. The RESET test statistic is the statistic of an F-test on the fitted log equity premium parameter.

(c) Replicate the Chow break statistic of slide 8 of Lecture 3.5. Proceed in the following steps. First regress the log equity premium on a constant and the book-to-market ratio and store the sum of squared residuals. Then perform the same regression for both the subsample of observations over 1927-1979, and the subsample of observations over 1980-2013. For both regressions, store the sum of squared residuals. Use these sum of squared residuals to calculate the Chow break statistic.

(d) Replicate the Chow forecast statistic of slide 8 of Lecture 3.5. No new regression is required, you should be able to base this result on the regressions you have run so far.