Homework 5

(Due on Dec 11th 2022)

We will predict stock returns using a set of 146 macroeconomic variables. You will use the predictor (x) variables from Stock and Watson's 2002 JBES paper. The appendix of that paper describes 215 variables, but many of them only exist for recent years. Consequently, we will use a set of 146 variables that span the sample March 1959 – December 1998. The Excel file "macro_data.xls" on the class website lists the 146 variables and the sequence in which they appear in the file "macro_data.txt," which contains the data we will use. The Excel file also describes the transformations that have been applied to each to remove trends. (Note: The data in "macro_data.txt" have already been transformed; you do not need to transform them again.)

The model is:

$$r_{i,t} = g(x'_t\beta) + \varepsilon_t$$

where $r_{i,t}$ denotes excess returns on some portfolio i and x_t denotes the predictor variables.

For ten book-to-market portfolios, your task is to estimate several models using OLS and two dimension reduction methods with various numbers of factors and SIR slices and to select the best fitting model.

Feel free to try other models and procedures (e.g., deleting variables with insignificant coefficients). Please summary your results in a table and write a short report on them.