Erasmus School of Economics

MOOC Econometrics

Training Exercise 3.3

Notes:

- This exercise uses the datafile `TrainExer33` and requires a computer.
- The dataset `TrainExer33` is available on the website.

Questions

(a) In Lecture 3.1 we took the first difference of the logarithmic transformed series. These two transformations combined provide the interpretation of being an (approximate) growth rate. Show this. Hint: Use the definition of the first difference, $\log(a) - \log(b) = \log(a/b)$, $\log(a/b) = \log(1 + (a - b)/b)$, and that $\log(1 + x) \approx x$ for x small.

(b) Use dataset TrainExer33 to regress the change in the log of the S&P500 index on a constant, the book-to-market ratio, and the square of the book-to-market ratio. Is the relationship between the index and book-to-market quadratic?

(c) Define a dummy that is 1 for 1980 and all following years. Regress the change in the log of the S&P500 index on a constant, the book-to-market ratio, and an interaction between the book-to-market ratio and the just-defined dummy. Is the relationship between the index and book-to-market stable over the pre- and post-1980 period?

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