Erasmus
School of
Economics

MOOC Econometrics

Lecture 3.1 on Model Specification: Motivation

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Introduction

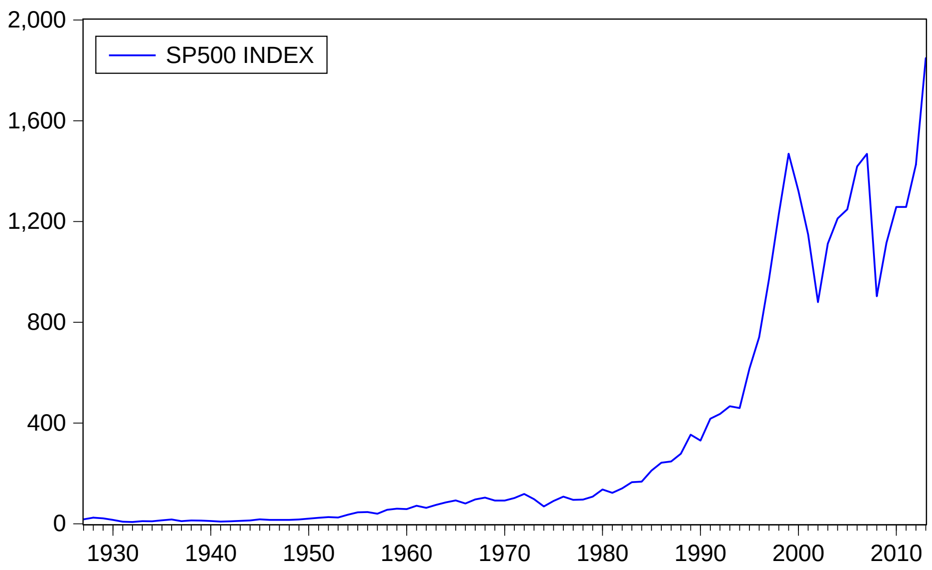
- Question 1: Do we include all explanatory variables or only a few?
- Question 2: Should we transform the variables?
- Question 3: How to evaluate a model?

Test

Suppose that all explanatory variables in a dataset are relevant for the dependent variable. Should we include all?

Answer: Not necessarily. Lecture 3.2 will explain the why and how.

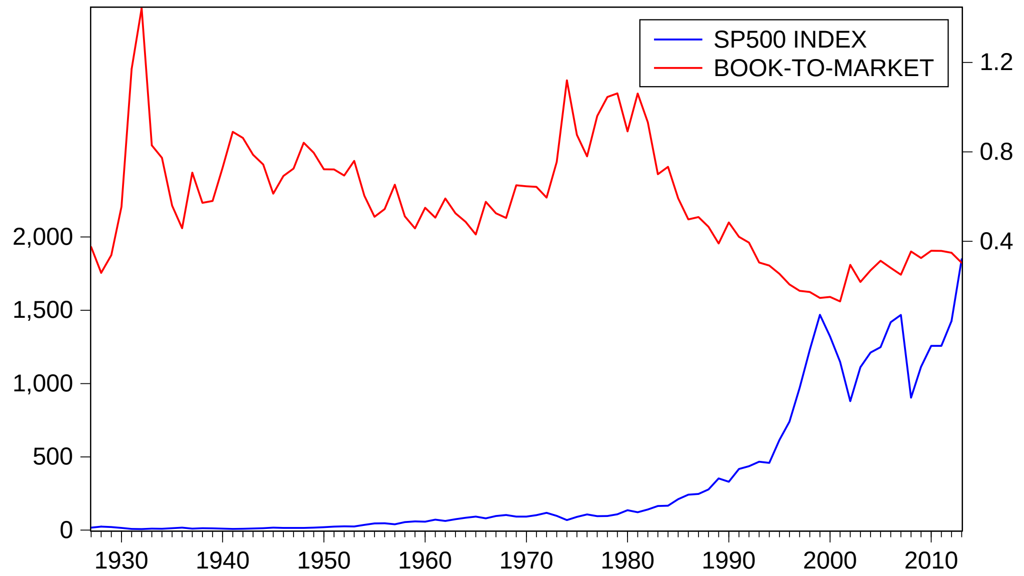
Example: Stock market index



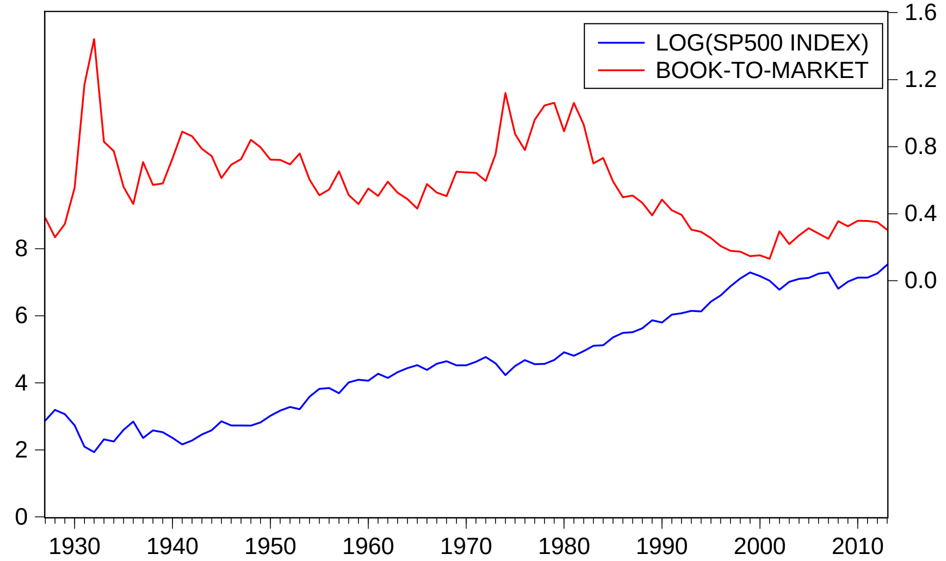
Explanatory variables

- Stock characteristics: Dividends, earnings, volatility, book value, issuing activity
- Interest-rate related: Treasury bill rates, long term yields, corporate bond returns
- Macroeconomic: Inflation, investment, consumption

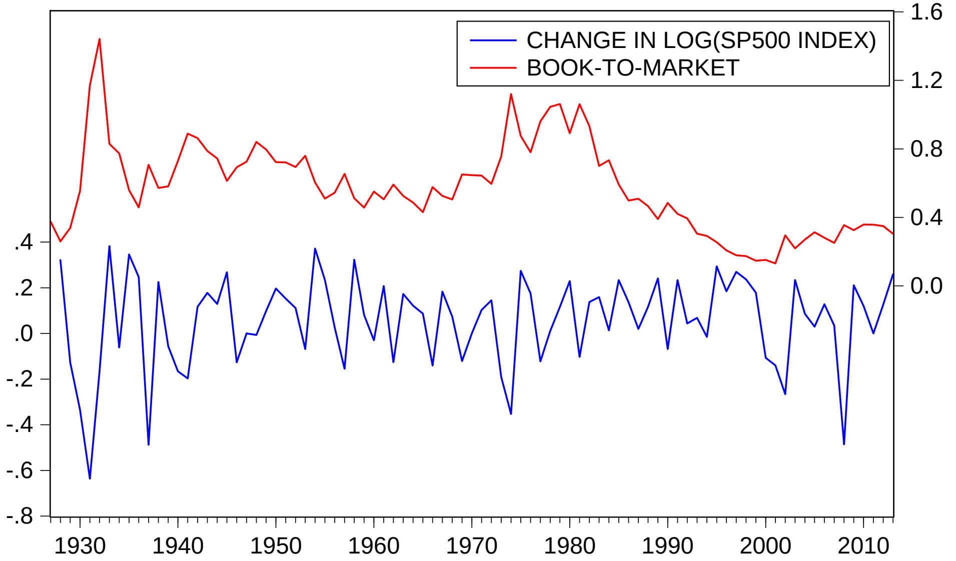
Stock index and book-to-market ratio



Log stock index and book-to-market ratio



Change in log stock index, and book-to-market ratio



Regression output

Dependent variable: change in log(SP500 index)
Sample size: 86

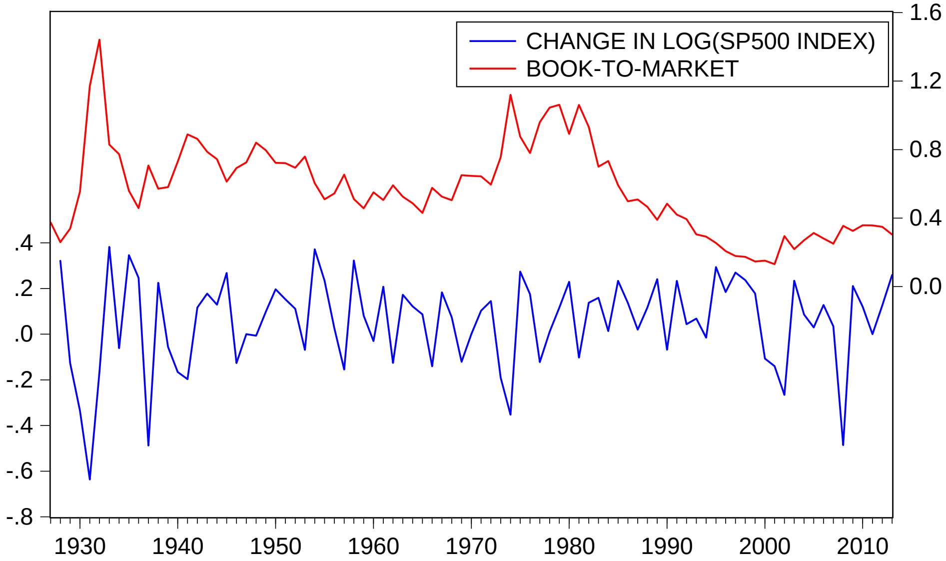
	Coefficient b_j	Standard error $SE(b_j)$	t-Statistic t_j	p-value $H_0: \beta_j = 0$
Constant	0.177	0.050	3.543	0.001
Book-to-market	-0.213	0.079	-2.702	0.008
R-squared	0.080			
SE of regression	0.191			

Test

What is the interpretation of the negative sign of Book-to-market?

Answer: High book-to-market usually coincides with periods when market-value decreased.

Change in log stock index, and book-to-market ratio



TRAINING EXERCISE 3.1

- Train yourself by making the training exercise (see the website).
- After making this exercise, check your answers by studying the webcast solution (also available on the website).