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Nonparametric prediction of stock returns based on yearly data: The long-term view

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Abstract

One of the most studied questions in economics and finance is whether empirical models can be used to predict equity returns or premiums. In this paper, we take the actuarial long-term view and base our prediction on yearly data from 1872 through 2014. While many authors favor the historical mean or other parametric methods, this article focuses on nonlinear relationships between a set of covariates. A bootstrap test on the true functional form of the conditional expected returns confirms that yearly returns on the S&P500 are predictable. The inclusion of prior knowledge in our nonlinear model shows notable improvement in the prediction of excess stock returns compared to a fully nonparametric model. Statistically, a bias and dimension reduction method is proposed to import more structure in the estimation process as an adequate way to circumvent the curse of dimensionality.

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JEL classification

C14; C53; C58; G17; G22

Keywords

Prediction of stock returns; Cross-validation; Prior knowledge; Bias reduction; Dimension reduction

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