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Forschungsseminar

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Seminargebäude - S12

Forecasting with Supervised Factor Models

Abstract

In many forecasting applications in macroeconomics and finance a vast set of potential predictor variables can be exploited to forecast a variable or diffusion index of interest. In order to prevent overfitting one approach to treat such large predictor spaces is to make use of factor models that aim at finding a low-dimensional subspace underlying the high-dimensional predictor space. A widely used approach is to estimate the factors by means of Principal Component Analysis (PCA). PCA and similar methods perform predictor space compression and estimation of the forecast equation in two separate steps. Hence, PCA does not exploit any information about the forecast target when computing the factors. We analyze the potential gains in forecast accuracy that might be achieved by incorporating some form of supervision in the factor computation process both in a simulation study and in an application on a large macroeconomic dataset. Specifically, we consider Principle Covariate Regression (PCovR) and propose an information criterion for choosing the weighting parameter that governs the trade-off between predictor space compression and target orientation of the estimated factors.