Sorting out your Investments:  
Sparse Portfolio Construction via the ordered $\ell_1$ - Norm

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Abstract

Since its introduction to the statistics literature, the desiring features of simultaneous model selection and estimation have gained Lasso a wide recognition in statistics and also recently in financial portfolio optimization. Still, the Lasso has known shortcomings when applied to the setting of highly dependent financial data. In this paper, we move away from the standard framework of orthogonal design and apply the recently developed \textit{sorted} $\ell_1$ \textit{penalized estimation}, called SLOPE, to the framework of correlated data. SLOPE relies on the idea of penalizing coefficients with a stronger signal more heavily and clumping equally correlated assets together. In fact, in a simulated factor model, SLOPE is able to identify and to cluster assets with the same underlying risk factor exposures into one group. This enables the investor to improve his ex-ante portfolio risk management. Furthermore, our empirical analysis on the SP100 and SP500 from 2004-2016 confirms the validity of SLOPE in developing effective investment strategies.

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