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Extending the demand system approach to asset pricing

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Abstract: This article introduces a shrinkage procedure which allows to improve upon the parametric portfolio approach introduced in Brandt et al (Review of Financial Studies 22(9): 3411–3477, 2009) and more general factor conditional frameworks. We analyze optimal investment decisions for constant absolute and constant relative risk aversion. In both preference classes, especially out-of-sample performance of the optimal strategies is rather volatile. In order to reduce parameter and model uncertainty, we augment the optimal strategies by a shrinkage device that pulls the portfolio weights toward a predetermined policy portfolio. Our theoretical approach thereby extends the demand systems approach of Kojien and Yogo (Journal of Political Economy, 127(4):1475–1515, 2019) to more general classes of preferences and provides conditions for the existence of equilibrium. As a side product, we establish that the characteristics-based parametric portfolio approach of Brandt et al. (Review of Financial Studies 22(9): 3411–3477, 2009) can only be justified as optimal investments under exceedingly strong assumptions. In empirical US data, our shrinkage approach outperforms the parametric approach and the naive 1/N-strategy over quite a wide range of levels of absolute and relative risk aversion.

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