Higher-Order Asset Pricing Factors via Forward Selection Fama-MacBeth Regression*

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Abstract

We show that the higher-order terms and interactions of the common sparse linear factors are significantly priced in the cross-section of equity returns. A higher-order model with only a small number of selected higher-order terms from six widely used factors outperforms traditional benchmarks both in-sample and out-of-sample. It also substantially reduces the alphas of the extensive factor zoo, suggesting that the pricing power of many zoo factors is attributable to their exposure to higher-order terms of common linear factors. We identify and rank the most relevant higher-order terms by developing a forward selection Fama-MacBeth procedure.

Keywords: high-dimensional factor models, risk premium, stochastic discount factor, forward selection Fama-MacBeth regression procedure, factor zoo

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