Multifactor asset pricing with a large number of observable risk factors and unobservable common and group-specific factors

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Abstract

This paper analyzes multifactor models in the presence of a large number of potential observable risk factors and unobservable common and group-specific pervasive factors. We show how relevant observable factors can be found from a large given set and how to determine the number of common and group-specific unobservable factors. The method allows consistent estimation of the beta coefficients in the presence of correlations between the observable and unobservable factors. The theory and method are applied to the study of asset returns for A-shares/B-shares traded on the Shanghai and Shenzhen stock exchanges, and to the study of risk prices in the cross section of returns.

Key words: factor models, panel data analysis, penalized method, LASSO, SCAD, heterogenous coefficients

JEL Clarification codes: C23, C52, G12