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Stable Factors in Security Returns: Identification Using Cross-Validation

Delores A. Conway & Marc R. Reinganum

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Abstract

Recent papers in financial research focus on identifying a stable factor structure for security returns. The likelihood ratio test typically is used to determine the number of factors from exploratory factor analysis models. In this article, we consider the use of cross-validation to identify a stable factor structure in security returns. When applied to actual stock-return data, cross-validation identifies a smaller number of stable factors than the likelihood ratio test. In groups of 30–60 randomly selected securities, cross-validation suggests one dominant factor, whereas the likelihood ratio test identifies from four to six factors. Furthermore, when groups are designed to highlight industry or size effects, the discovery of more than one dominant factor is problematic. Even if there are multiple economic factors generating stock returns, they may be difficult to disentangle if the underlying factors tend to be correlated.

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