



THE UNIVERSITY OF
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Department of Statistics

MASTER'S THESIS PRESENTATION

MO ZHOU

Department of Statistics
The University of Chicago

Covariance Matrix Estimation Based On High-Frequency Financial Data

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ABSTRACT

Covariance matrix estimation is an extremely important part of portfolio allocation in industry. In this article, we investigate a straightforward, positive-definite, factor-based covariance matrix estimator with high-frequency financial data. The basis of this estimator is derived from the observation that a block-diagonal pattern exists in the factor-based residual covariances of S&P 500 Equity Index members, which are organized via their Global Industry Classification Standard (GICS) names. With this information, we combine Fama-French factors, sector SPDR ETF factors with a location-based threshold techniques. This effectively gives a covariance matrix estimate which is positive-definite and interpretable. A portfolio study follows with model assessment and selection.