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**Jianqing Fan, Alex Furger and Dacheng Xiu\*** (dacheng.xiu@chicagobooth.edu), 5807 S Woodlawn Avenue, Chicago, IL 60637. *Incorporating Global Industrial Classification Standard into Portfolio Allocation: A Simple Factor-Based Large Covariance Matrix Estimator with High Frequency Data.*

We document a striking block-diagonal pattern in the factor model residual covariances of the S&P 500 Equity Index constituents, after sorting the assets by their assigned Global Industry Classification Standard (GICS) codes. Cognizant of this structure, we propose combining a location-based thresholding approach based on sector inclusion with the Fama-French and SDPR sector Exchange Traded Funds (ETF's).

We investigate the performance of our estimators in an out-of-sample portfolio allocation study. We find that our simple and positive-definite covariance matrix estimator yields strong empirical results under a variety of factor models and thresholding schemes. Conversely, we find that the Fama-French factor model is only suitable for covariance estimation when used in conjunction with our proposed thresholding technique. Theoretically, we provide justification for the empirical results by jointly analyzing the in-fill and diverging dimension asymptotics. (Received January 14, 2015)