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# Optimal Portfolios when Variances and Covariances can Jump

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## Abstract

We analyze the optimal portfolio choice in a multi-asset Wishart-model in which return variances and correlations are stochastic and subject to jump risk. The optimal portfolio is characterized by the positions in stock diffusion risk, variance-covariance diffusion risk, and jump risk. We find that including jumps in the second moments changes the optimal positions and particularly variance-covariance hedging demands significantly. Erroneously omitting these jumps gives rise to substantial model risk. Furthermore, variance-covariance jump risk can have a significant impact on potential utility gains when the market is completed by adding derivatives. As a robustness check, we compare our results to those obtained for other parametrizations of Wishart-models from the literature as well as to various single-asset models.

KEYWORDS: Optimal portfolio choice, stochastic correlation, Wishart process, derivatives, jump risk, covariance jumps

JEL CLASSIFICATION: G11, G13

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