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Jump Adjusted Optimal Currency Exposure

Master's Thesis

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Author
David Richard Haab

Supervisor
Prof. Dr. M. Paolella

Department of Banking and Finance, Universität Zürich

Assistant
Urban Ulrych

University of Zurich

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Abstract

Over the last decades, the utilization of high-frequency data in financial modelling has gained in popularity. Compared to lower frequency equivalents, it conveys more precise information about the fine-structure of the underlying stochastic processes.

Working with an extensive set of 5-minute candlestick data, we exploit its informational content to forecast the conditional co-variance structure. Combining the strands of literature on high-frequency econometrics and optimal currency exposure we develop a novel currency hedging strategy.

The currency and asset data are examined for the presence of jumps. Moreover, we aim to identify the adequate jump type - finite or infinite activity - in order to forecast jump robust, conditional co-variation. To this end, suitable non-parametric measures, such as realized power and truncated power variations, are employed. The co-variation's decomposition into a continuous part and a jump part as well as into signed semi-covariances is assessed in terms of improving forecast quality using the parsimonious HAR-model and adaptations thereof.

Time-varying jump adjusted optimal currency exposures are derived from the predicted conditional co-variation employing a range of portfolios and currencies. We show that the optimally dynamically hedged portfolio outperforms the unhedged as well as the fully hedged portfolio, in terms of Sharpe ratios, on a monthly rebalancing horizon both in- and out-of-sample.

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