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Bachelorthesis zum Thema

No Model No Cry
Intraday Model Free Implied Volatility and the Leverage Effect for Individual Equities

Zur Erlangung des akademischen Grades
Bachelor of Arts

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Abstract

This thesis reviews and employs the CBOE VIX method in order to create and analyse an intraday sample of implied volatility for 268 individual equities. It contributes the R-Package `R.MFIV`[1] which is developed for the efficient calculation of the VIX from CBOE option data. In the review of the model-free IV theory and CBOE replication methodology we highlight the data requirements and caveats which influence the quality of the results. We show that there are shortcomings in the option data like a low amount of strike prices which are spaced apart too far. However, we also find that the range of strike prices is large and there are possible ways to deal with these problems. Since only a small fraction of stocks on the CBOE offers weekly option contracts and the sample includes the complete term structure of option contracts, we propose a cubic spline interpolation approach which aims at achieving the quality of the weekly VIX results. In a benchmark comparison it proved to be more accurate than the 2003 VIX method, but only by a small margin. Lastly we assessed and confirmed that the resulting VIX data conforms to the leverage effect, a stylised property of the VIX which is well established in the literature.

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[1]Development version available on https://github.com/m-g-h/R.MFIV