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Option-based forecasts of volatility: an empirical study in the DAX-index options market

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Abstract

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subsumes all the information contained in past realised volatility and is a better predictor for future realised volatility than model-free implied volatility.

Keywords: Black-Scholes implied volatility model-free implied volatility volatility forecasting

JEL Classification : G13 G14

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Notes

The data source for DAX-index options and DAX-index is the Institute of Finance, Banking, and Insurance of the University of Karlsruhe (TH). The risk-free rate is available on Data-Stream.

Nonetheless, as the computation of B-S and model-free implied volatilities has involved some methodological choices deeply described in Section 5, we pursue an EIV procedure to estimate if the difference between the B-S implied volatility or in the model-free implied volatility (model-free implied volatility) and the true B-S implied volatility is significant. The first step is to compute the difference error associated with the B-S implied volatility (model-free implied volatility) and the true B-S implied volatility. As an indicator of the significance of the difference error, we use the test specified in Section 5. The test is based on the two-sided test of the difference between the two implied volatilities and $Var(\hat{\sigma}_{BS} - \hat{\sigma}_{MF})$ is the variance of the difference between the two implied volatilities.

The non-normality of the residuals is caused by one outlier that corresponds to the September 2001 crash. In order to eliminate the effect of the outlier, regressions (5)–(8) have been re-estimated on the sample period 26 September 2001 to 31 December 2005 and the results, which are available on request, are consistent with the ones reported for the entire sample period.

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