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

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Abstra

Volatility ... ne risk manage ... divided into option-b ... latility expe ... tion in order to pr ... nguish betweer ... odel-free' implied ... implied price processe ... s not rely on a particu ... unbiased ... wo option-based vo ... ata on the DAX-index options market. Our results suggest that Black–Scholes implied volatility

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

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the two stage least squares procedure, is the beta obtained through the OLS procedure

and Var(x) is the variance of the coefficient x. The Hausman specification test is distributed as a χ^2 (1).

In the regressions that include as an explanatory variable lagged realised volatility, the Durbin's alternative confirmed the non-autocorrelation of the residuals. The results of the Durbin's alternative and of the Breusch–Godfrey LM test are available on request.

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.

In order to see if B–S implied volatility or model-free implied volatility have been measured with errors, we adopt an instrumental variable procedure. The Hausman (1978) specification test reported in the last column of Table 2 indicates that the errors-in-variables problem is not significant both in univariate and encompassing regressions (In encompassing regression (3), the results are reported for the instrumental variable procedure applied to). Therefore we can trust the OLS regressions results.