



## Evaluating volatility forecasts in option pricing in the context of a simulated options market

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### Abstract

The performance of an ARCH model selection algorithm based on the standardized prediction error criterion (SPEC) is evaluated. The evaluation of the algorithm is performed by comparing different volatility forecasts in option pricing through the simulation of an options market. Traders employing the SPEC model selection algorithm use the model with the lowest sum of squared standardized one-step-ahead prediction errors for obtaining their volatility forecast. The cumulative profits of the participants in pricing 1-day index straddle options always using variance forecasts obtained by GARCH, EGARCH and TARARCH models are compared to those made by the participants using variance forecasts obtained by models suggested by the SPEC algorithm. The straddles are priced on the Standard and Poor 500 (S & P 500) index. It is concluded that traders, who base their selection of an ARCH model on the SPEC algorithm, achieve higher profits than those, who use only a single ARCH model. Moreover, the SPEC algorithm is compared with other criteria of model selection that measure the ability of the ARCH models to forecast the realized intra-day volatility. In this case too, the SPEC algorithm users achieve the highest returns. Thus, the SPEC model selection method appears to be a useful tool in selecting the appropriate model for estimating future volatility in pricing derivatives.

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