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Original Articles

Forecasting the weekly time-varying beta of UK firms: GARCH models vs. Kalman filter method

Taufig Choudhry 🔀 & Hao Wu

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Abstract

This paper investigates the forecasting ability of three different Generalised Autoregressive Conditional Heteroscedasticity (GARCH) models and the Kalman filter method. The three GARCH models applied are: bivariate GARCH, BEKK GARCH, and GARCH-GIR. Forecast errors based on 20 UK company's weekly stock return (based on

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Notes

Brooks, Faff, and McKenzie (1998) provide several citations of papers that apply these different methods to estimate the time-varying beta.

The leverage effect is due to the reduction in the equity value, which would raise the debt-to-equity ratio, hence raising the riskiness of the firm as a result of an increase in future volatility. Glosten, Jagannathan, and Runkle (1993) provide an alternative explanation for the negative effect; if most of the fluctuations in stock prices are caused by fluctuations in expected future cash flows, and the riskiness of future cash flows does not change proportionally when investors revise their expectations, the unanticipated changes in stock prices and returns will be negatively related to unanticipated changes in future volatility.

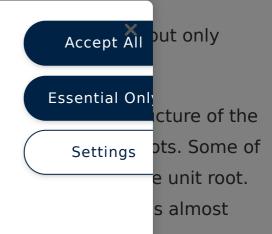
There is more than one GARCH model available that is able to capture the asymmetric effect in volatility, however, according to Engle and Ng (1993), the Glosten, Jagannathan, and Runkle (1993) model is the best at parsimoniously capturing this asymmetric effect.

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true by the style of construction of the Kalman filter and the GARCH. These results are also available on request.

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