Long Memory in Stock Market Volatility and the Volatility-in-Mean Effect: The FIEGARCH-M Model

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Abstract:

We extend the fractionally integrated exponential GARCH (FIEGARCH) model for daily stock return data with long memory in return volatility of Bollerslev and Mikkelsen (1996) by introducing a possible volatility-in-mean effect. To avoid that the long memory property of volatility carries over to returns, we consider a filtered FIEGARCH-in-mean (FIEGARCH-M) effect in the return equation. The filtering of the volatility-in-mean effect thus allows the co-existence of long memory in volatility and short memory in returns. We present an application to the S&P 500 index which documents the empirical relevance of our model.