Comparison of Volatility Measures: a Risk Management Perspective

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Abstract

Over the past few years, a growing number of contributions have addressed the problem of finding optimal ways to aggregate financial ultra high frequency information into estimates of daily volatility. The list of alternative volatility measures is long, depending on which settings they are derived under (e.g. presence/absence of jumps or microstructure noise in the log–price process). Here, we consider realized volatility, bipower variation, two scales realized volatility and hi-low range. The question as of which volatility measure is best for forecasting future latent volatility is still open, in view of the fact that there is no clear observable benchmark. In this work we propose a horse race between these different volatility measures from a risk-management (VaR) perspective. Expanding on Engle and Gallo (2006), a Multiplicative Error Model is specified where for each volatility indicator the information set is extended to include past values of the other indicators in order to assess whether such links can be useful for forecasting. The data considered in this study consists of a sample of liquid NYSE stocks in the early 00's. Results show that extending the specification to include past information of different volatility measures improves prediction. The asymmetric loss function adopted to mimic what is relevant from a risk management perspective does not reveal substantial differences between measures adopted.

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