

Normalizing Logarithms of Realized Volatility in an ARFIMA Model

Authors : G. L. C. Yap

Abstract : Modelling realized volatility with high-frequency returns is popular as it is an unbiased and efficient estimator of return volatility. A computationally simple model is fitting the logarithms of the realized volatilities with a fractionally integrated long-memory Gaussian process. The Gaussianity assumption simplifies the parameter estimation using the Whittle approximation. Nonetheless, this assumption may not be met in the finite samples and there may be a need to normalize the financial series. Based on the empirical indices S&P500 and DAX, this paper examines the performance of the linear volatility model pre-treated with normalization compared to its existing counterpart. The empirical results show that by including normalization as a pre-treatment procedure, the forecast performance outperforms the existing model in terms of statistical and economic evaluations.

Keywords : Gaussian process, long-memory, normalization, value-at-risk, volatility, Whittle estimator

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