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On the volatility of high frequency stock index based on SV model of MCMC. (English)

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Summary: By using of 5-min high-frequency data in CSI 300 index stock high-frequency data from 15th Jan. 2018 to 5th Mar. 2018, basing on Bayesian analysis simulated by MCMC, this paper adopts the stochastic volatility model to do empirical researches on China's stock market and utilizes DIC criterion to do model fitting comparison. The result shows that China's stock market has higher volatility persistence, and the fitting effect for SV model to 5-min high-frequency data is better than the low-frequency data, and the standard stochastic volatility model (SV-N) is more suitable for high frequency-data of 5-min than the heavy-tail finance stochastic volatility model (SV-T).

For the entire collection see [\[Zbl 1446.65004\]](#).

MSC:

[91G60](#) Numerical methods (including Monte Carlo methods)
[65C05](#) Monte Carlo methods
[91G15](#) Financial markets

Keywords:

[SV model](#); [Gibbs sampling](#); [Bayesian analysis](#); [Monte Carlo method](#)

Software:

[BUGS](#)

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References:

- [1] Andersen, T., Bollerslev, T.: (Super) High frequency data analysis and modeling. *Stat Study* (11), 28-31 (2002)
- [2] Andersen, T., Bollerslev, T.: The distribution of exchange rate volatility. *J. Am. Stat. Assoc.* 96(457), 42-55 (2000) · [Zbl 1015.62107](#)
- [3] Andersen, T., Bollerslev, T.: Answering the skeptics: yes, Standard volatility models do provide accurate forecasts. *Int. Econ. Rev.* 39(4), 885-905 (1998)
- [4] Gao, T.M.: *Method and Modeling of Econometric Analysis*, vol. 14. Tsinghua University Press (2009)
- [5] Li, S.G., Zhang, S.Y.: Financial volatility model based on high frequency data. *Stat Decis* (1), 7-8 (2008)
- [6] Li, G.H.: Study on fluctuation of coastal dry bulk freight rate based on stochastic volatility model. *Res. Dev. Sci. Technol. World* 38(3) (2016)
- [7] Liu, F.Q.: Comparison of SV model based on DIC criterion. *Stat. Decis.* (9) (2004)
- [8] Lu, X.H., Zhang, Y.H., Zheng, Y.X.: Research and comparison of wavelet estimation methods for high frequency data volatility. *Stat. Decis.* (2018)
- [9] Madhu K., Raul S.: Regime-switching stochastic volatility and short-term interest rates. *J. Empir Financ.* 11(3), 309-329 (2004)
- [10] Meyer, R., Yu, J.: BUGS for a Bayesian analysis of stochastic volatility models. *Econ. J.* (S1368-4221) 3, 198-215 (2000) · [Zbl 0970.91060](#)
- [11] Robert, C.P., Casella, G.: *Monte Carlo Statistical Methods*. Springer, New York (2004) · [Zbl 1096.62003](#)
- [12] Spiegelhalter, D.J., Best, N.G., Carlin, B.P.: Bayesian measures of model complexity and fit (with Discussion). *J. R. Stat. Soc. Ser. B* 64(4), 583-616 (2002) · [Zbl 1067.62010](#)
- [13] Sun, Z.H.: An analysis of the pulsating characteristics of the gold market in China. *J. Changsha Univer. Sci. Technol.* 30(2)

(2015)

- [14] Wang, T.Y., Huang, Z.: Research on modeling and application of volatility based on high frequency data. *Econ. Perspect* (3), 141-146 (2012)
- [15] Wang, C.F., Zhuang, H.G., Fang, Z.M., Lu, T.: Estimation and volatility prediction of long memory stochastic volatility models research on high frequency data of China's stock market. *Syst. Eng.* 7(26), 29-34 (2008)
- [16] Yang, J.Y., Zhang, Y.H.: Research on the market liquidity of stock index futures based on ACD model. *Math. Prac. Theory* 46(9), 54-60 (2016)
- [17] Yang, J.Y., Zhang, Y.H.: Impact of circuit-breaker mechanism on china's share market. *Stat. Decis.* 13, 153-155 (2017)

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