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基于马尔可夫状态转换模型的沪深股市波动率的估计

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Volatility Estimation of Shanghai and Shenzhen Stock Market Based on Markov Regime Switching Models

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摘要 为了更准确地估计具有结构转换的沪深股市收益率波动特征,本文将沪深股市的波动变化分为上涨、下跌和盘整三个状态,选用2000年1月4日至2011年12月30日的上证综指和深证成指日收益率数据作为样本,2012年1月4日至2012年1月17日的日收益率作为样本外预测,分别应用GARCH和APGARCH模型,以及RS-GARCH和RS-APGARCH模型估计和预测两序列的波动率,最后采用MSE_1、MSE_2和QLIKE对估计和预测出的波动率进行评价。结果表明:单一状态和三种状态下APGARCH模型均比GARCH模型估计和预测的波动率更准确;更进一步带有马尔可夫状态转换的模型估计和预测出的波动率更准确,且误差分布服从正态分布的模型估计和预测的波动率拟合结果优于误差服从t分布的模型。

关键词： 马尔可夫状态转换　APGARCH模型　波动率

Abstract： In order to get the more accurate estimation of volatility of daily return series of Shanghai and Shenzhen Stock market with regime switching, volatility of these stock index return series are divided into three regime states: rising, falling and consoliclation in the paper. Return series of Shanghai Composite Index and Shenzhen Component Index are chosen as study sample and January 4, 2000 to 2011 December 30 is set as the sample period and January 4, 2012 to January 17, 2012 is set as out of sample period. Then GARCH model, RS-GARCH model, APGARCH model and RS-APGARCH model are applied to estimation and forecasting of volatility of these two return series. Finally MSE_1, MSE_2 and QLIKE are used to evaluate the performance of these models. The results show that APGARCH model is more accurate in estimation and prediction of the volatilities of the series than the GARCH model, models with Markov regime switching are more accurate in estimation and prediction of the volatilities of the series, and the models with normal error distribution are more accurate in estimation and prediction of the volatilities of the series than the models with the error distribution following t-distribution.

引用本文：

杨继平, 张春会 .基于马尔可夫状态转换模型的沪深股市波动率的估计[J] 中国管理科学, 2013,V(2): 42-49

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[1] Engle R F. Autoregressive conditional heteroskedasticity with estimates of the variance of United Kingdom inflation [J]. Econometrica, 1982, 50(4): 987-1007. crossref

[2] Bollerslev T. Generalized autoregressive conditional heteroskedasticity [J]. Journal of Econometrics, 1986, 31(3): 307-327. crossref

[3] Engle R F, Lilien D M, Robins R P. Estimating time varying risk premia in the term structure: the ARCH-M model[J]. Econometrica, 1987, 55(2): 391-407. crossref

[4] Nelson D B. Conditional heteroskedasticity in asset returns: a new approach [J]. Econometrica, 1991, 59(2): 347-370. cross ref

[5] Ding Zhuanxin, Granger C W J, Engle R F. A long memory property of stock market returns and a new model[J]. Journal of Empirical Finance, 1993, 1(1): 83-106. cross ref

[6] Glosten L R, Jagannathan R, Runkle D E. On the relation between the expected value and the volatility of the nominal excess return on stocks [J]. Journal of Finance, 1993, 48(5): 1779-1801. cross ref

[7] Rabemananjara R, Zakoian J M. Threshold ARCH models and asymmetries in volatility [J]. Journal of Applied Econometrics, 1993, 8(1): 31-49. cross ref

[8] Bollerslev T, Engle R F, Nelson D B. ARCH models[M].//Engle R F, McFadden D L. Handbook of econometrics, Vol 4, Cambridge: Cambridge University Press, 1994.

[9] 任彪, 李双成. 中国股票市场波动非对称性特征研究[J]. 数学的认识与实践, 2004,34(9): 63-68.

[10] Liu H C, Hung J C. Forecasting S&P-100 stock index volatility: the role of volatility asymmetry and distributional assumption in GARCH models[J]. Expert Systems with Applications, 2010, 37(7): 4928-4934. cross ref

[11] Orhan M, Koksal B. A comparison of GARCH models for VaR estimation [J]. Expert Systems with Applications, 2012,39(3):3582-3592. cross ref

[12] Hamilton J D, Susmel R. Autoregressive conditional heteroskedasticity and changes in regime [J]. Journal of Econometrics, 1994, 64(1): 307-333. cross ref

[13] Gray S. Modeling the conditional distribution of interest rates as a regime switching process[J]. Journal of Financial Economics, 1996, 42(1): 27-62. cross ref

[14] Ané U T L. Stock market dynamics in a regime-switching asymmetric power GARCH model[J]. International Review of Financial Analysis, 2006, 15: 109-129. cross ref

[15] 李松臣, 张世英. 变结构门限t-GARCH 模型及其伪持续性研究[J]. 数量经济技术经济研究, 2006, 23(7): 126- 133. MagSci

[16] Henry Ó T. Regime switching in the relationship between equity returns and short-term interest rates in theUK [J]. Journal of Banking and Finance, 2009, 33(2): 405-414. cross ref

[17] 张锐, 魏宇,金炜东. 基于MRS-EGARCH模型的沪深300指数波动率预测研究, [J]. 系统工程学报, 2011, 26(5): 628-635.

[18] 蒋详林, 王春峰, 吴晓霖. 基于状态转移ARCH模型的中国股市波动性研究[J]. 系统工程学报, 2004, 19(3): 270-277. MagSci

[19] Li M L, Lin H W.Estimating value-at-risk via Markov switching ARCH models-an empirical study on stock index returns[J]. Applied Economics Letters, 2004, 11(11): 679-691. cross ref

[20] Moore T, Wang P. Volatility in stock returns for new EU member states Markov regime switching model[J]. International Review of Financial Analysis, 2007, 16(3): 282-292. cross ref

[21] Krämer W. Long memory with Markov-Switching GARCH[J]. Economics Letters, 2008, 99(2): 390-392. cross ref

[22] Walid C, Chaker A, Masood O, Fry J. Stock market volatility and exchange rates in emerging countries: a Markov-state switching approach [J]. Emerging Markets Review, 2011, 12(3): 272-292. cross ref

[1] 吴鑫育, 杨文昱, 马超群, 汪寿阳.基于非仿射随机波动率模型的期权定价研究[J]. 中国管理科学, 2013,(1): 1-7

[2] 魏宇 .基于多分形理论的动态VaR预测模型研究[J]. 中国管理科学, 2012,20(5): 7-15

[3] 吴鑫育, 周海林, 马超群, 汪寿阳.基于随机贴现因子方法的权证定价研究[J]. 中国管理科学, 2012,(4): 1-7

[4] 王良, 冯涛.中国ETF基金价格"已实现"波动率、跟踪误差之间的Granger关系研究[J]. 中国管理科学, 2012,(1): 59-70

[5] 史金凤 刘维奇 杨威 .基于分位数回归的金融市场稳定性检验
[J]. 中国管理科学, 2011,19(2): 24-29

[6] 叶五一 陈杰成 缪柏其 .基于虚拟变量分位点回归模型的条件VaR估计以及杠杆效应分析
[J]. 中国管理科学, 2010,18(4): 1-07

[7] 李红权 汪寿阳 .基于价格极差的金融波动率建模：理论与实证分析
[J]. 中国管理科学, 2009,17(6): 1-08

[8] 王鹏 王建琼 .中国股票市场的多分形波动率测度及其有效性研究
[J]. 中国管理科学, 2008,20(6): 9-15

[9] 张鸿彦 .基于人工智能的隐含波动率的敏感度的研究
[J]. 中国管理科学, 2008,16(3): 125-130

[10] 黄海南 钟伟 .GARCH类模型波动率预测评价
[J]. 中国管理科学, 2007,15(6): 13-19

[11] 朱微亮 刘海龙.稳健的动态资产组合模型研究[J]. 中国管理科学, 2007,15(3): 19-24