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基于小波分析的股市波动的多重分形辨识

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Stock market volatility based on wavelet analysis identification of multifractal

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摘要 以上证指数和深圳成分指数日收盘价的时间序列为样本,利用小波分析方法剔除序列的噪声干扰,对序列保留的波动趋势进行多重分形辨识.通过 WTMM (小波变换模极大)计算配分函数,尺度函数和多重分形谱等,全面细致的量化了序列的局部及不同层次的波动奇异性.计算结果表明:去除噪声干扰后,中国现行证券市场的波动呈现显著的多重分形特征.

关键词: WTMM   小波分析   股市波动   多重分形

Abstract： The Shanghai Composite Index and Shenzhen Component Index on the closing price time series as a sample, using the wavelet analysis eliminate noise sequence, sequence to retain the fluctuations of the multifractal trends identified. By WTMM (wavelet transform modulus maxima) calculate the partition function, scaling function and multifractal spectra, a comprehensive and detailed quantification of the sequence of the fluctuations at different levels of local and singularity. The results show that: after the removal of noise, Chinese current stock market existing securities significant fluctuations in the market multifractal characteristics.

Key words： WTMM   wavalet analysis   stock market volatility   multifractal

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[1]   陈国进,王占海.我国股票市场连续性波动与跳跃性波动实证研究[J].系统工程理论与实践, 2010, 30(9): 1554-1562.Chen G J, Wang Z H. Contir voatility and jump voatility in China's stock market[J]. Systems Engineering -- Theory & Practice, 2010, 30(9): 1554-1562.

[2]   王文波,费浦生,羿旭明.基于EMD与神经网络的中国股票市场预测[J].系统工程理论与实践, 2010, 30(6): 1027-1033.Wang W B, Fei P S, Yi X M Prediction of China stock market based on EMD and neural network[J]. Systems Engineering -- Theory & Practice, 2010, 30(6): 1027-1033.

[3]   Lo A W. Long-term memory in stock market prices[J]. Econometrica, 1991, 59: 1279-1314.

[4]   Peters E E. Fractal Market Analysis: Applying Chaos Theory to Investment and Economics[M]. Economic Science Press, 2002.

[5]   Lux T, Marches M. Scaling and criticality in a stochastic multagent model of a financial market[J]. Nature, 1999, 397(11): 498-50

[6]   樊智,张世英.金融市场的效率与分形市场理论[J].系统工程理论与实践, 2002, 22(3): 13-19.Fan Z, Zhang S Y. Efficiency of financial market

fractal market theory[J]. Systems Engineering -- Theory & Practice, 2002, 22(3): 13-19.

[7] Calvet L, Fisher A. Multifractality in asset returns: Theory and evidence[J]. The Review of Economics and Statistics, 2002, 84: 3? 406. cross^ref

[8] Onali E, Goddard J. Unifractality and multifractality in the Italian stock market[J]. International Review of Financial Analysis, 2009 18: 154-163. cross^ref

[9] Stavroyiannis S, Makris I, Nikolaidis V. Non-extensive properties multifractality and inefficiency degree of the Athens Stock Excha General Index[J]. International Review of Financial Analysis, 2010, 19(1): 19-24. cross^ref

[10] 卢方元.中国股市收益率的多重分形分析[J].系统工程与理论实践, 2004, 24(6): 50-54.Lu F Y. The multifractal analysis on stock market ret in China[J]. Systems Engineering -- Theory & Practice, 2004, 24(6): 50-54.

[11] 都国雄, 宁宣熙. 上海证券市场的多重分形特性分析[J]. 系统工程与理论实践, 2007, 27(10): 40-47.Du G X, Ning X X. Multifractal analysis on Shanghai stock market[J]. Systems Engineering -- Theory & Practice, 2007, 27(10): 40-47.

[12] 傅强,周宇欢, 王亮. 湍流与蠕虫的DNA序列的多重分形谱分析[J].解放军理工大学学报: 自然科学版, 2010, 11(5): 572-577.Fu Q, Zhou Y H, War Multi-fractal spectrum for signal time series of turblence and worm DNA[J]. Joural of PLA University of Sciences and Technology: Natural Science Edition, 2010, 11(5): 572-577.

[13] Giaouris D, Finch J W. Denoising using wavelets on electric drive applications[J]. Electric Power Systems Research, 2008, 78(4): ! 565. cross^ref

[14] 杨福生. 小波变换的工程分析与应用[M]. 北京: 科学出版社, 1999.

[15] 余俊. 证券市场的分形特征研究[D]. 青岛: 青岛大学, 2008.Yu J. Study on fractal characteristics in securities market[D]. Qingdao: Qingc University, 2008.

[16] 张德丰. 小波分析与工程应用[M]. 北京: 国防工业出版社, 2008.

[17] 罗世华, 曾九孙.基于多分辨分析的高炉铁水含硅量波动多重分形辨识[J]. 物理学报, 2009, 58(1): 150-157.Luo S H, Zeng J S. Multi-fractal indentification of the fluctuation of silicon content in blast furnace hot metal based on multi-resolution analysis[J]. Acta Physica Sinica, 2009, 58(1): 150-157.

[18] Mallat S, Zhong S. Characterization of signals from multiscale edges[J]. IEEE Transactions on Pattern Analysis and Machine Intelligence, 1992, 14: 710-732. cross^ref

[19] Mallat S. A thoery for multiresolution signal decomposition: The wavelet representation[J]. IEEE Transactions on Pattern Analysis Machine Intelligence, 1989, 11: 674-693. cross^ref

[20] Muzy J F, Bacry E, Arneodo A. Multifractal formalism for singular signals: Application to turbulence data[J]. Phys Rev Lett, 1991, (3515-3518. cross^ref

[21] 马瑞恒, 李钊, 王伟策, 等. 基于小波变换模极大的爆破震动信号奇异谱分析[J]. 爆炸与冲击, 2004, 24(6): 529-533.Ma R H, Li Z, Wang W C, e The singular spectrum analysis of blasting vibration signal based on WTMM[J]. Explosion and Shock Waves, 2004, 24(6): 529-533

[22] 陈 陈凌. 分形几何学[M]. 2版. 北京: 地震出版社, 2005. cross^ref

[1] 许林, 宋光辉, 郭文伟. 基于滑动窗口 MF-DFA 的股票风格资产收益多重分形分析[J]. 系统工程理论实践, 2012, 32(9): 1891-1899.

[2] 彭选华, 傅强. 风险价值的多尺度估值模型及其均方误差收敛性分析[J]. 系统工程理论实践, 2011, 31(10): 1837-1846.

[3] 葛根;王洪礼;许佳. 小波分频技术和混沌时间序列在国际石油价格预测中的应用[J]. 系统工程理论实践, 2009, 29(7): 64-68.

[4] 王春峰;张龙斌;房振明. 股指期货对冲比率和对冲期限关系的多尺度研究[J]. 系统工程理论实践, 2009, 29(1): 6-12.

[5] 何越磊;姚令侃;苏凤环. 强沙尘暴时序的标度不变性分析[J]. 系统工程理论实践, 2005, 25(7): 125-130.

[6] 卢方元. 中国股市收益率的多重分形分析[J]. 系统工程理论实践, 2004, 24(6): 50-54.

[7] 郭明;谢磊;王树青. 基于模型的多尺度间歇过程性能监控[J]. 系统工程理论实践, 2004, 24(1): 97-102.