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基于滑动窗口 MF-DFA 的股票风格资产收益多重分形分析

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Multifractal analysis on stock style asset returnsbased on sliding windows MF-DFA

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摘要 风格投资已逐渐成为基金构建投资组合的一种主流量化投资方法. 本研究在分析风格资产收益呈分形特征的基础上, 通过引入滑动窗口技术对传统的多重分形消除趋势波动分析法 (MF-DFA) 加以改进, 并对中信标普公司推出的 6 种股票纯风格资产指数日收益率序列的波动特征进行研究, 实证结果发现: 滑动窗口技术能有效减少因分割连接点处的不连续性而产生的伪波动误差; 风格资产指数日收益率序列均具有相关多重分形特征, 即原始序列具有持久性, 位置重构序列均具有反持久性, 且位置重构序列的多重分形特征显著弱于原始序列的多重分形特征, 表明风格资产指数收益序列的持久相关性是形成多重分形特征的主要原因; 价值、成长型比规模型风格资产具有更规律的多重分形特征, 表明价值、成长型比规模型风格资产的分形规律更明显. 本研究对基金公司、基金经理及时准确地把握股市风格动向以便构建适度风格漂移策略具有重要的理论价值与现实意义.

关键词 : 股票风格资产   滑动窗口 MF-DFA   广义 Hurst 指数   多重分形谱

Abstract: Style investment has become a main quantitative investment approach to construct investment portfolio for funds. This paper analyzed the fractal characteristics of stock style assets returns, and revised the multifractal detrended fluctuation analysis through introducing a sliding window technique, researched on the daily return volatility characteristics of six kinds of pure stock style assets indexs introduced by Standard&Poor company, the empirical results showed that: sliding window technique can effectively reduce the fake-flutrated errors from the unconuity on junction points; daily return series of style asset indexs have relevant multifractal characteristics, the characteristics mean that the original style asset series is persistent and position reconstruction series have anti-persistence, the multifractal characteristics of position reconstruction series were significantly weaker than the multifractal characteristics of original series, which indicates enduring relevance of style asset indexs return series was the main reasons of multifractal characteristics; value&growth syle assets have stronger multifractal characteristics than the size style assets, indicating that the multi-fractal characteristics of size style assets were significantly weaker than the multifractal characteristics of value&growth syle assets. There is an important theoretical value and practical significance for fund managers timely and accuratly grasp the market style trends to construct a moderate style drift strategy.

Key words : stock style asset   sliding windows MF-DFA   generalized Hurst exponents   multifractal spectrum

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