方正金工团队

方正证券
FOUNDER SECURITIES

跟踪聪明钱：从分钟行情数据到选股因子

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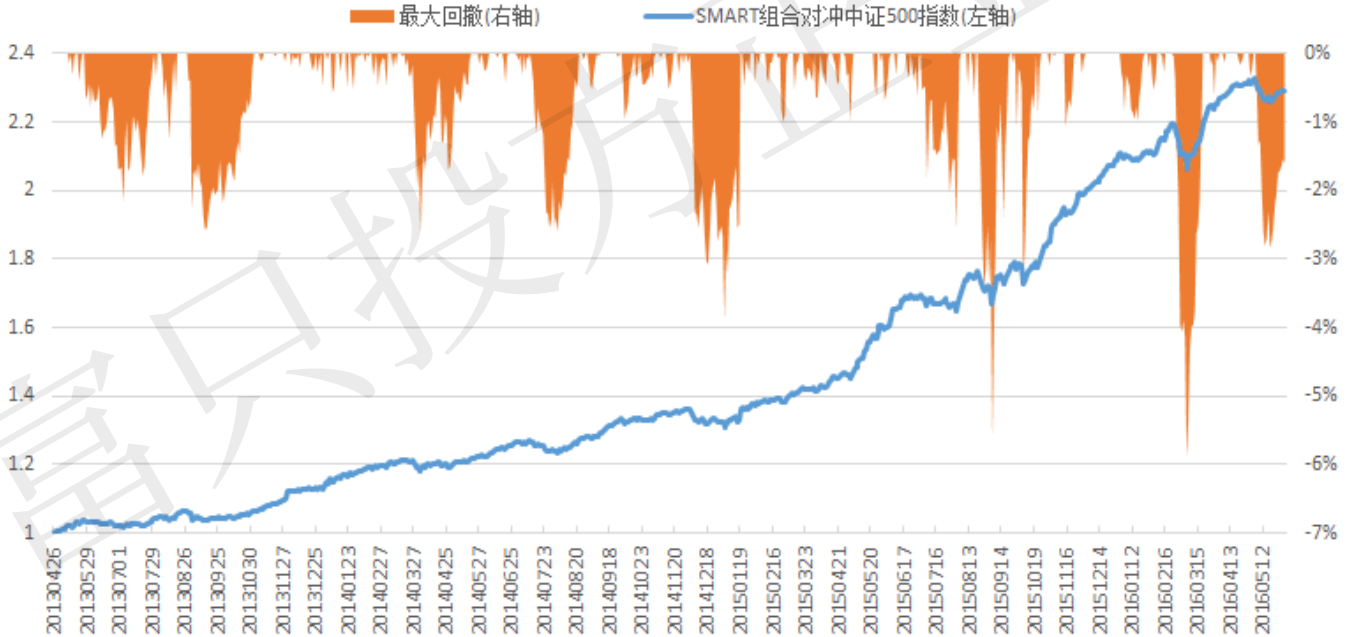
方正证券（601901.SH）是行业领先的大型综合类证券公司，致力于为客户提供交易、投融资、财富管理等全方位金融服务。
Founder Securities (601901.SH), an industry-leading large comprehensive securities company,is committed to providing its clients with full services in stock transactions, investment & financing, wealth management, among others.

结果预览：跟踪聪明钱的SMART组合

组合对冲中证500指数

- **年化收益：32%**
- **最大回撤：5.9%**
- 信息系数：3.7
- 月度胜率：79%



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- Idea of Chasing Smart Money

好风凭借力，送我上青云。

S 指标　度量每一分钟交易的聪明度

$$S_t = |R_t|/\sqrt{V_t}$$

构造依据：聪明钱的行为特征

1）单笔订单数量更大

2）订单报价更为激进

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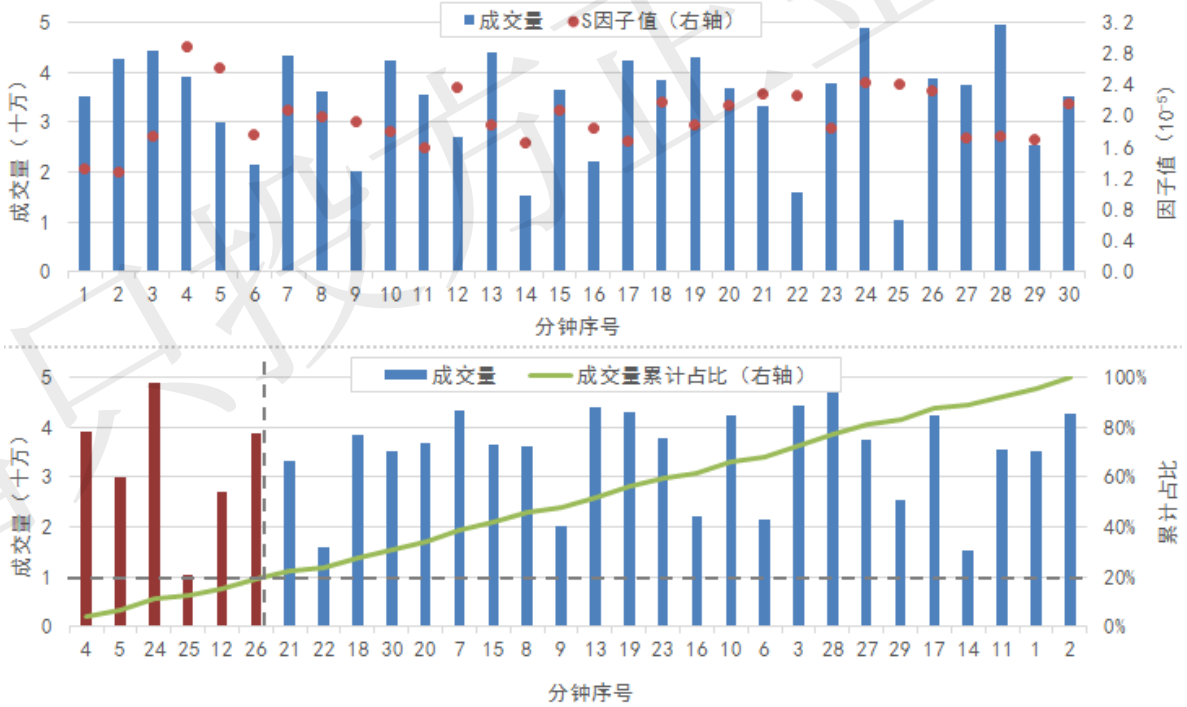
如何划分聪明钱?

- 按 S 指标的排序
- 截取成交累计占比 20%



聪明钱的情绪因子

$$Q=VWAP_{smart}/VWAP_{all}$$

关于因子的直觉理解：

1）Q值高，代表逢高出货，情绪悲观

2）Q值低，代表逢低吸筹，情绪乐观

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历史回测的基本框架

- 回测时段：20130430-20160531
- 样本空间：全体A股，剔除ST、未满60天新股
- 月初调仓，交易费率设为双边千分之三
- 涨停、停牌不买入，跌停、停牌不卖出

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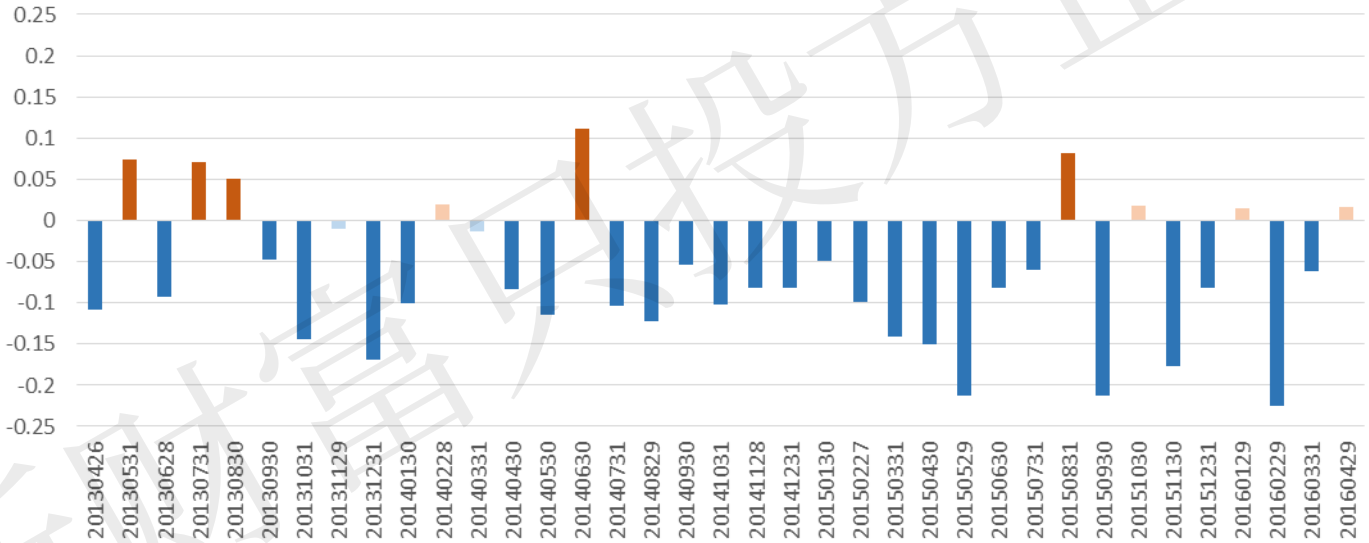
本月因子与次月收益的相关系数

结论：RankIC 基本为负



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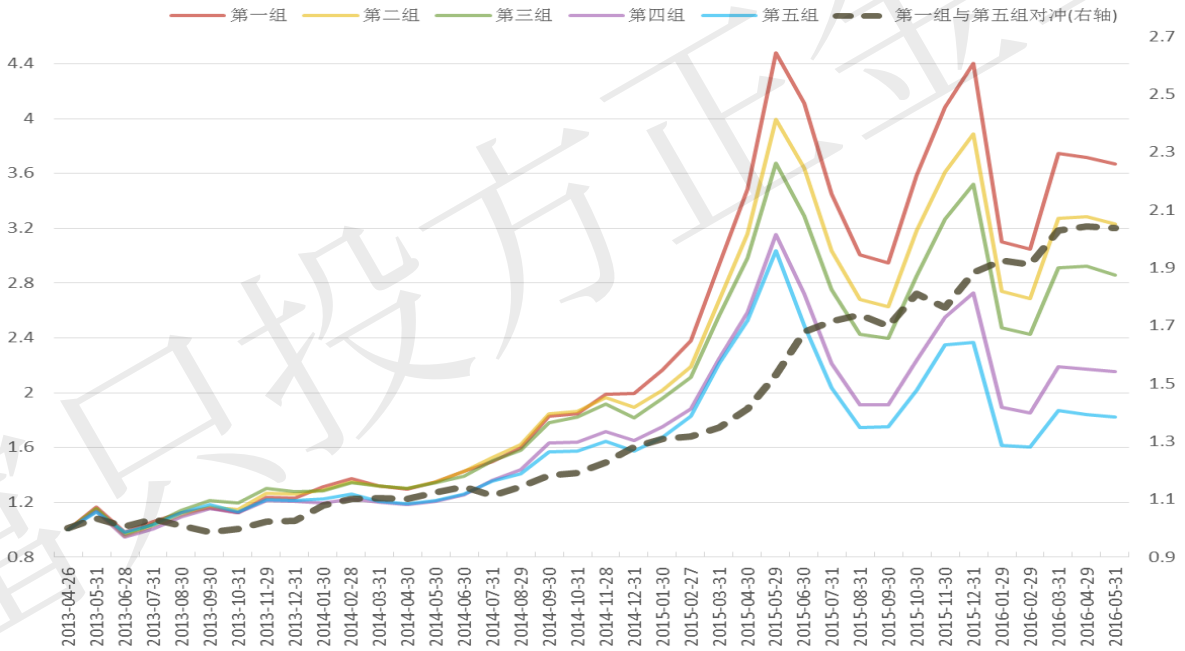
3、因子的选股能力

多空对冲收益

- 年化收益：26%
- 最大回撤：8.0%
- 信息比率：2.7
- 月度胜率：76%



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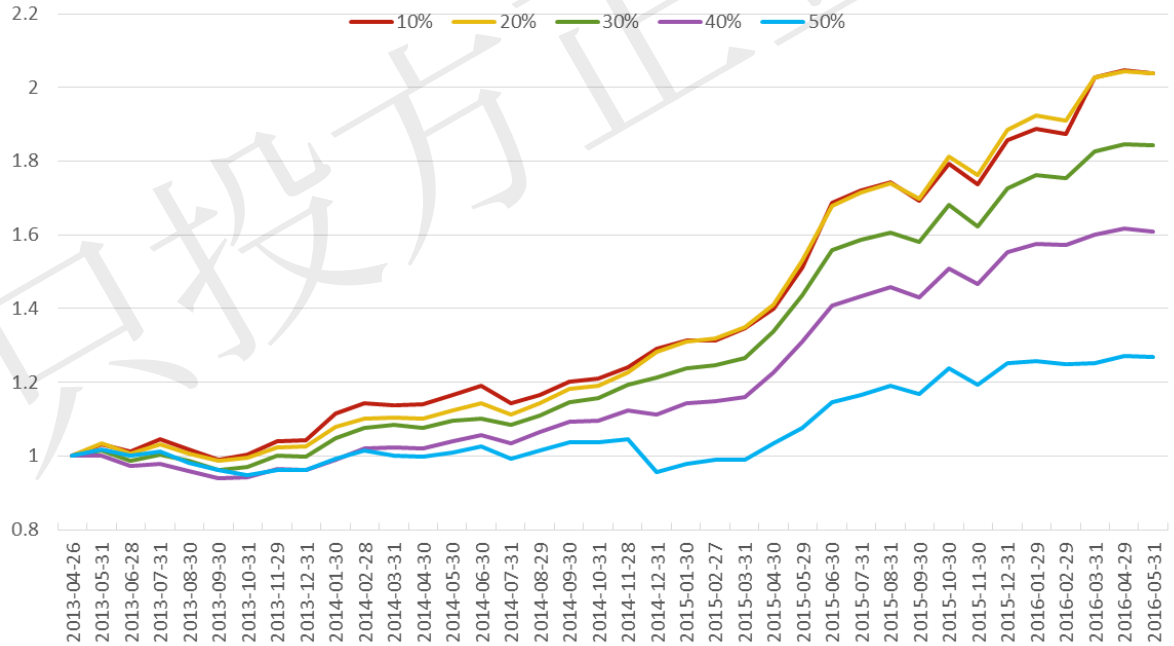
截止值对选股能力的影响

- 截止值增大，收益单调递减
- 结合实证经验，取 20%



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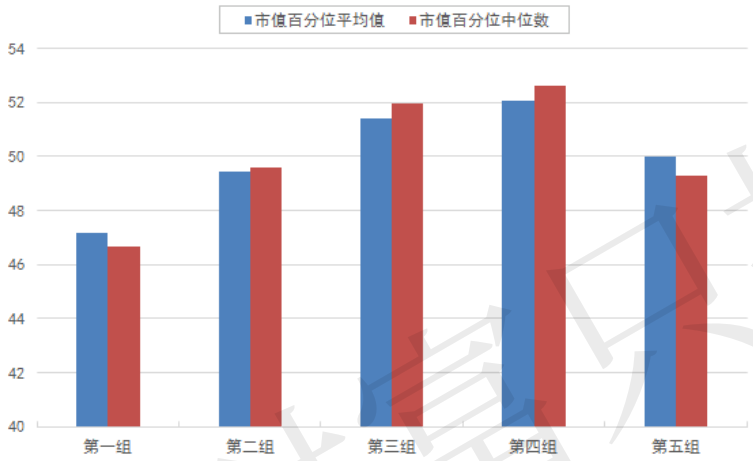
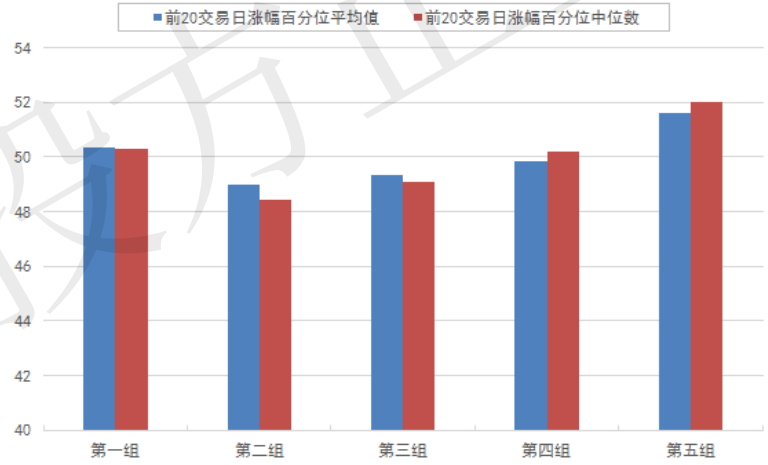
按Q因子排序分组后，各组的市值、动量特征：



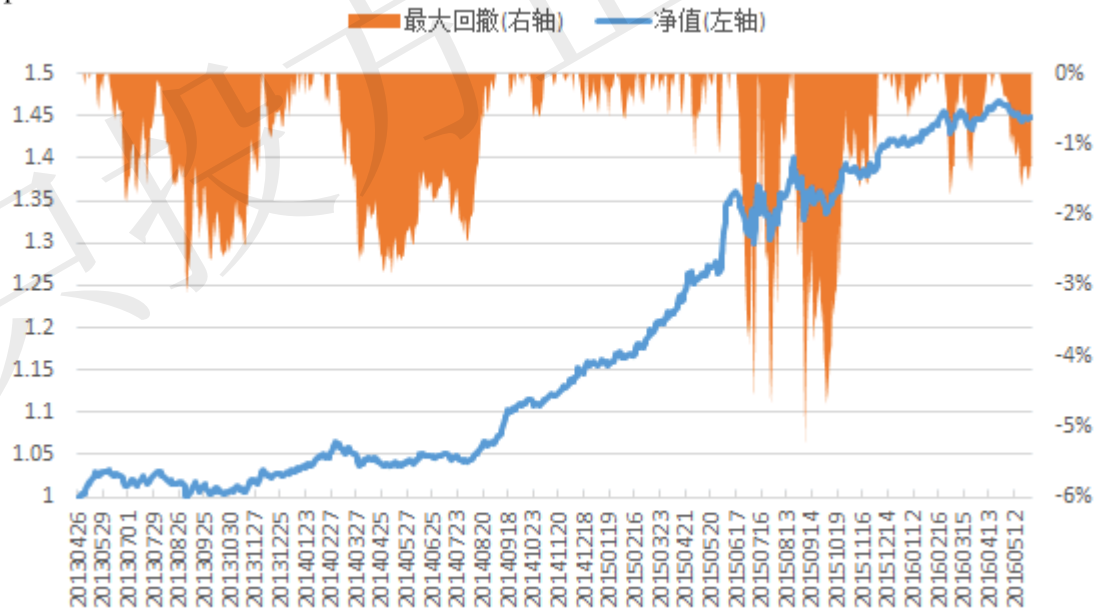


横截面回归法，剔除市值、动量、行业因子：

$$Q_i = \beta_1 LogMktVal_i + \beta_2 Ret20d_i + \sum_{j=1}^{N} \beta_{3j} Ind_{ji} + \varepsilon_i$$

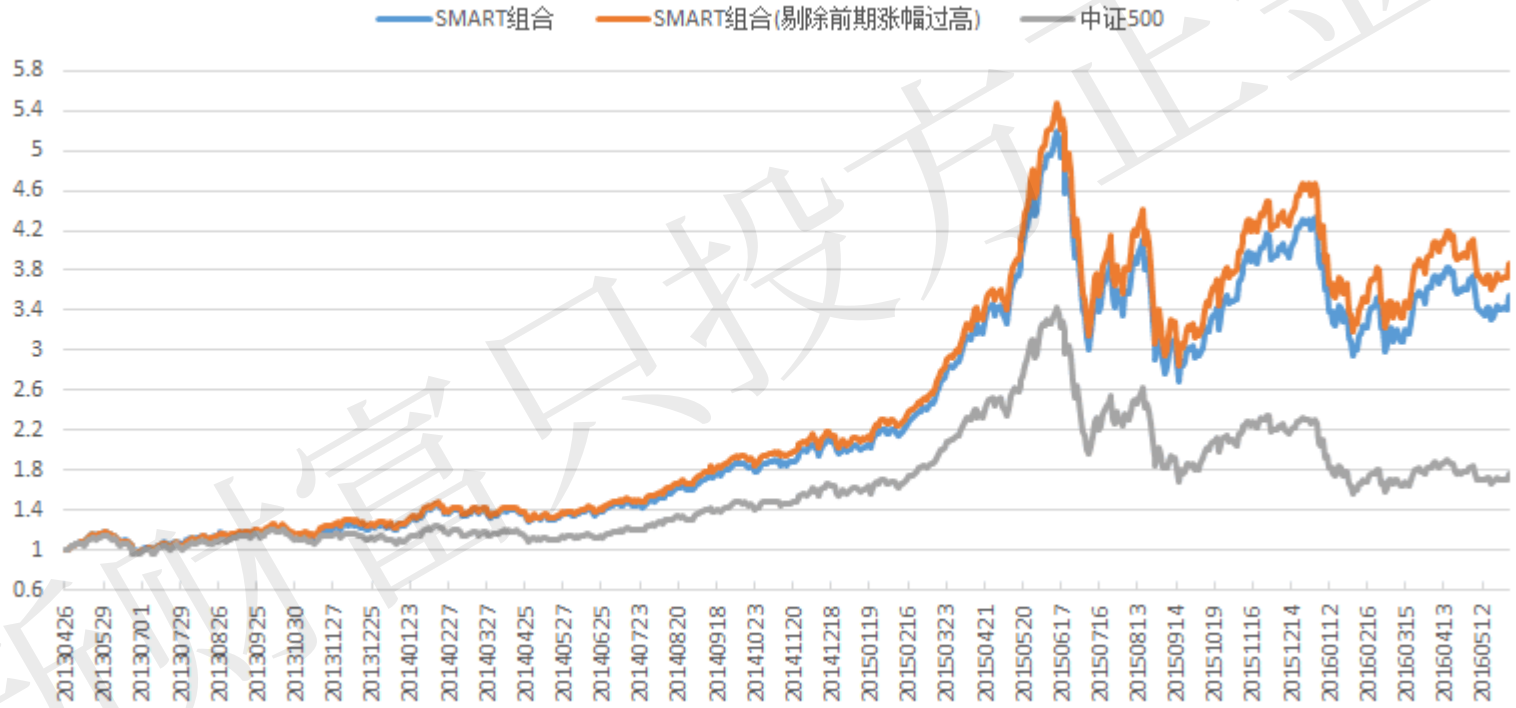
剔除后多空对冲效果：

- 年化收益：13%
- 最大回撤：5.2%
- 信息比率：2.1
- 月度胜率：78%



5、跟踪聪明钱的SMART组合

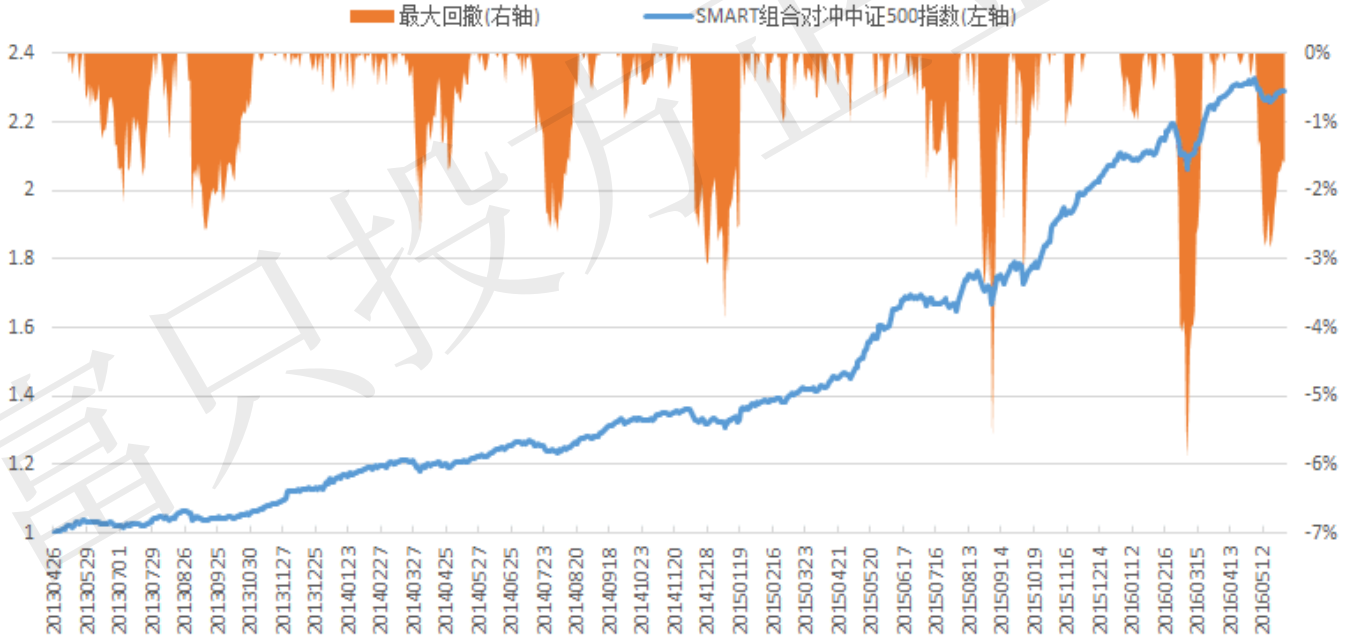
SMART组合：Q值排序分五组，取最小的第一组



5、跟踪聪明钱的SMART组合

SMART组合对冲中证500指数

- 年化收益：32%
- 最大回撤：5.9%
- 信息系数：3.7
- 月度胜率：79%



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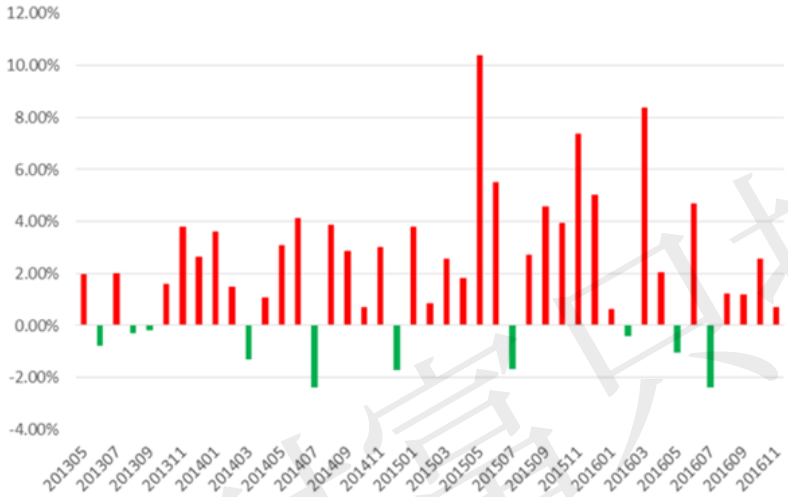
5、跟踪聪明钱的SMART组合

样本外跟踪（截至2016-11-30）



组合月度超额收益（基准：中证500）

时间区间	2013 年 5 月至今	今年以来
年化收益	28. 9%	20. 4%
年化波动	8. 6%	7. 9%
信息比率	3. 4	2. 6
最大回撤	6. 7%	6. 7%
收益回撤比	4. 3	3. 0
月度胜率	76. 7%	72. 7%

组合对冲中证500指数收益统计表

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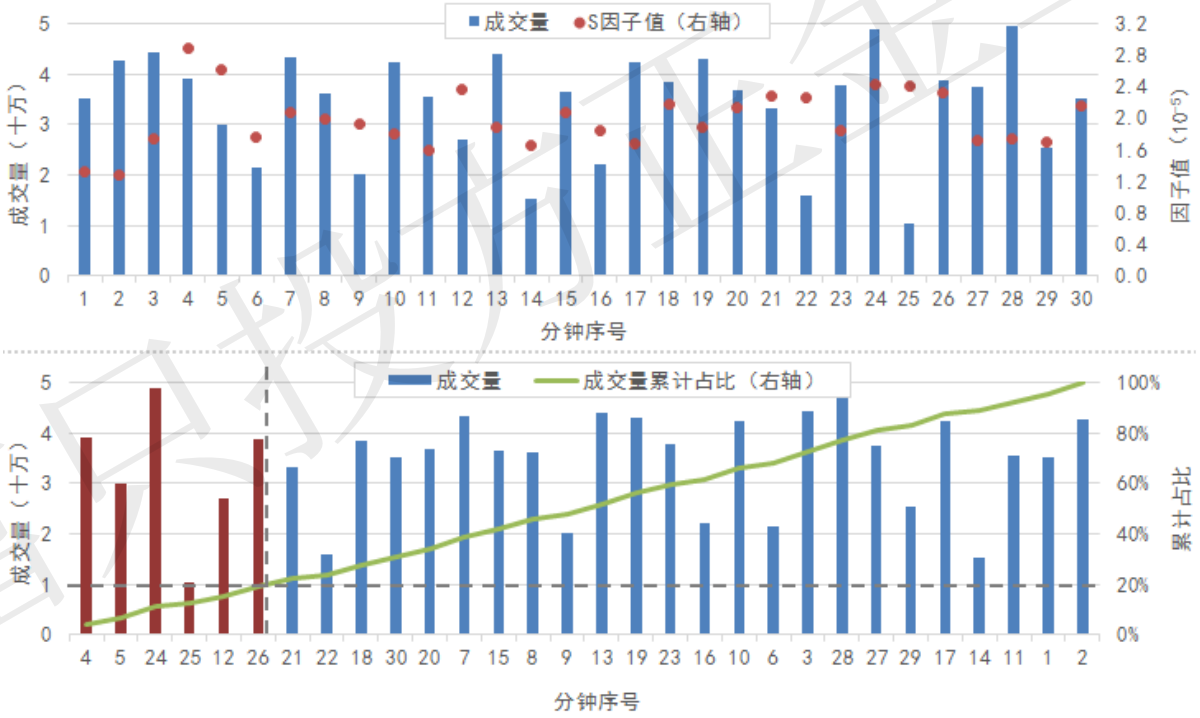
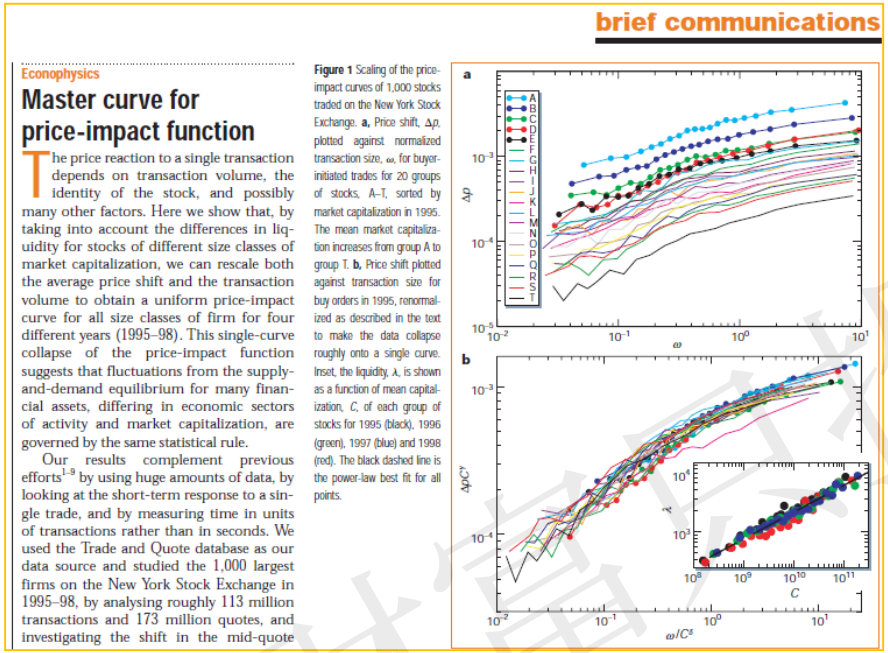
关键问题：为什么要开根号？

$$S_t = |R_t| / \sqrt{V_t}$$



实证结果：价格冲击与根号V成正比



brief communications

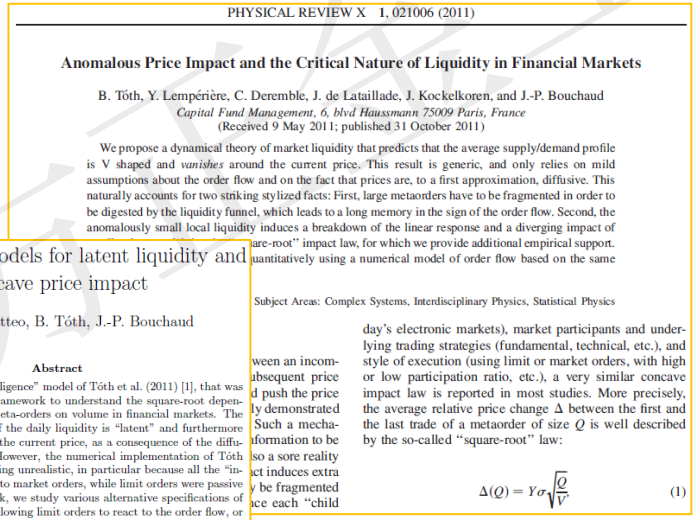
Econophysics

Master curve for price-impact function

The price reaction to a single transaction depends on transaction volume, the identity of the stock, and possibly many other factors. Here we show that, by taking into account the differences in liquidity for stocks of different size classes of market capitalization, we can rescale both the average price shift and the transaction volume to obtain a uniform price-impact curve for all size classes of firm for four different years (1995–98). This single-curve collapse of the price-impact function suggests that fluctuations from the supply-and-demand equilibrium for many financial assets, differing in economic sectors of activity and market capitalization, are governed by the same statistical rule.

Our results complement previous efforts[1–9] by using huge amounts of data, by looking at the short-term response to a single trade, and by measuring time in units of transactions rather than in seconds. We used the Trade and Quote database as our data source and studied the 1,000 largest firms on the New York Stock Exchange in 1995–98, by analysing roughly 113 million transactions and 173 million quotes, and investigating the shift in the mid-quote

Figure 1 Scaling of the price-impact curves of 1,000 stocks traded on the New York Stock Exchange. **a**, Price shift, Δp, plotted against normalized transaction size, ω, for buyer-initiated trades for 20 groups of stocks, A–T, sorted by market capitalization in 1995. The mean market capitalization increases from group A to group T. **b**, Price shift plotted against transaction size for buy orders in 1995, renormalized as described in the text to make the data collapse roughly onto a single curve. Inset, the liquidity, λ, is shown as a function of mean capitalization, C, of each group of stocks for 1995 (black), 1996 (green), 1997 (blue) and 1998 (red). The black dashed line is the power-law best fit for all points.



PHYSICAL REVIEW X 1, 021006 (2011)

Anomalous Price Impact and the Critical Nature of Liquidity in Financial Markets

B. Tóth, Y. Lempérière, C. Deremble, J. de Lataillade, J. Kockelkoren, and J.-P. Bouchaud
Capital Fund Management, 6, blvd Haussmann 75009 Paris, France
(Received 9 May 2011; published 31 October 2011)

We propose a dynamical theory of market liquidity that predicts that the average supply/demand profile is V shaped and *vanishes* around the current price. This result is generic, and only relies on mild assumptions about the order flow and on the fact that prices are, to a first approximation, diffusive. This naturally accounts for two striking stylized facts: First, large metaorders have to be fragmented in order to be digested by the liquidity funnel, which leads to a long memory in the sign of the order flow. Second, the anomalously small local liquidity induces a breakdown of the linear response and a diverging impact of ure-root" impact law, for which we provide additional empirical support. uantitatively using a numerical model of order flow based on the same

Subject Areas: Complex Systems, Interdisciplinary Physics, Statistical Physics

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Such a mecha-
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day's electronic markets), market participants and underlying trading strategies (fundamental, technical, etc.), and style of execution (using limit or market orders, with high or low participation ratio, etc.), a very similar concave impact law is reported in most studies. More precisely, the average relative price change Δ between the first and the last trade of a metaorder of size Q is well described by the so-called "square-root" law:

$$\Delta(Q) = Y\sigma\sqrt{\frac{Q}{V}} \qquad (1)$$

Agent-based models for latent liquidity and concave price impact

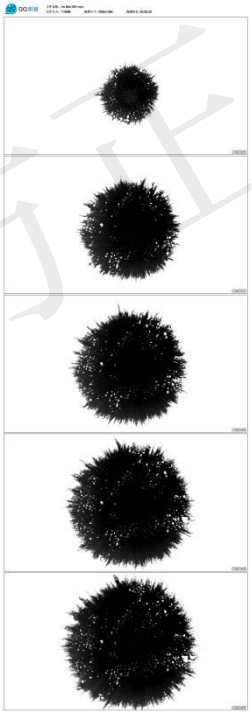
I. Mastromatteo, B. Tóth, J.-P. Bouchaud

Abstract

We revisit the "ε-intelligence" model of Tóth et al. (2011) [1], that was proposed as a minimal framework to understand the square-root dependence of the impact of meta-orders on volume in financial markets. The basic idea is that most of the daily liquidity is "latent" and furthermore vanishes linearly around the current price, as a consequence of the diffusion of the price itself. However, the numerical implementation of Tóth et al. was criticised as being unrealistic, in particular because all the "intelligence" was conferred to market orders, while limit orders were passive and random. In this work, we study various alternative specifications of the model, for example allowing limit orders to react to the order flow, or changing the execution protocols. By and large, our study lends strong support to the idea that the square-root impact law is a very generic and robust property that requires very few ingredients to be valid. We also show that the transition from super-diffusion to sub-diffusion reported in [1] is in fact a cross-over, but that the original model can be slightly altered in order to give rise to a genuine phase transition, which is of interest on its own. We finally propose a general theoretical framework to understand how a non-linear impact may appear even in the limit where the bias in the order flow is vanishingly small.

1. Master curve for price-impact function[J]. **Nature**, 2003, 421(6919): 129-130.
2. Anomalous price impact and the critical nature of liquidity in financial markets[J]. **Physical Review X**, 2011, 1(2): 021006.
3. Agent-based models for latent liquidity and concave price impact[J]. **Physical Review E**, 2014, 89(4): 042805-042805.

物理图景：扩散过程



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- 高频数据，低频信号

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3. 跟踪聪明钱：从分钟行情数据到选股因子
4. 持仓量的奥义：从交易行为到CTA策略
5. 凤鸣朝阳：股价日内模式中蕴藏的选股因子

微信公众号：量化零距离

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THANKS

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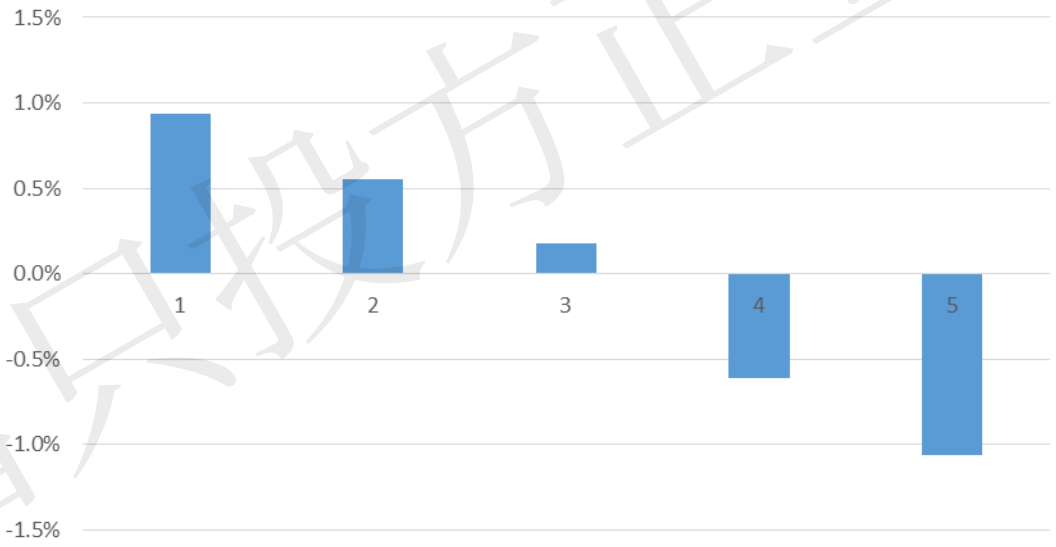
Xicheng District,Beijing,China

各组的超额收益

- 多头、空头基本持平



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多空对冲的分年度表现

年度	年度收益	信息比率	最大回撤	收益回撤比	月度胜率
2013	2.6%	0.62	5.2%	0.5	62.5%
2014	24.8%	4.13	3.4%	7.3	83.3%
2015	47.1%	3.18	8.0%	5.9	83.3%
2016	8.2%	2.75	5.4%	1.5	60.0%

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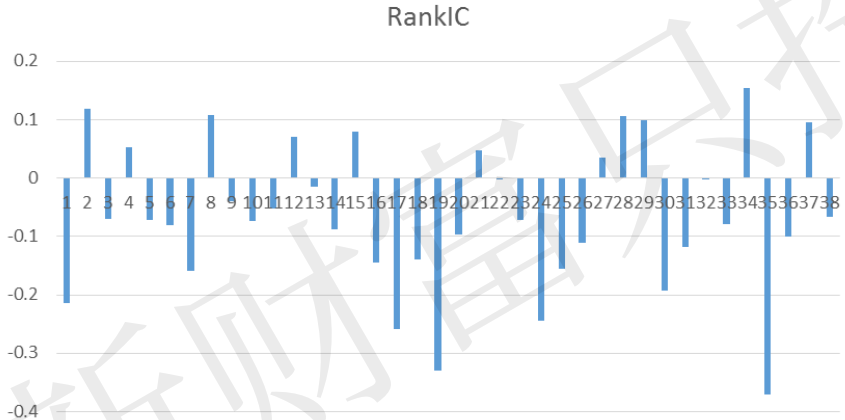
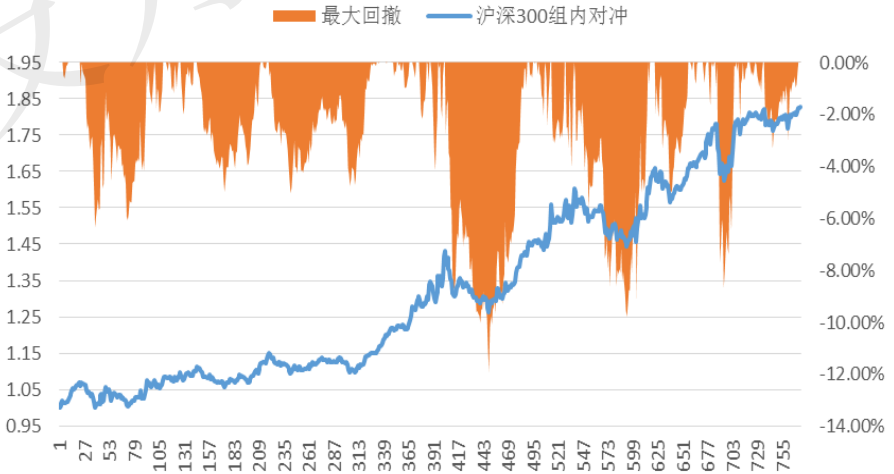
沪深300成分股内的选股能力

- 信息比率：1.5
- 最大回撤：12%





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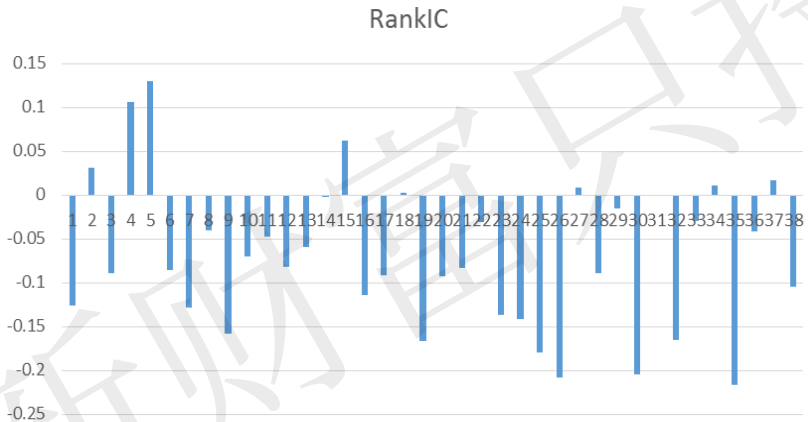
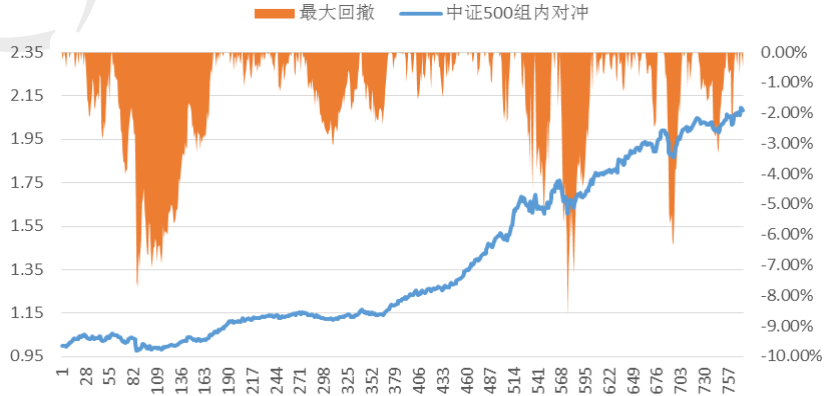
中证500成分股内的选股能力

- 信息比率：2.5
- 最大回撤：8.7%





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