

# Market Convexity and the Failure of Risk Control: What Happened to China's Quant Hedge Funds

观澜·事前风控的失效：中性化真能中性化吗

The Failure of Ex Ante Risk Control:

Can Neutralisation Really Neutralised Risk Exposure?

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# What Happened to China's Quant Hedge Funds

- Rumours flying and searches skyrocketing
- Misaligned search trend of "Quantitative" (量化) with the "A Share" (a股)

**量化是如何崩盘的**

这也可以理解量化策略融资的一种方式。2、叫停这项业务的意图？暂时无法揣摩，原因在：dma业务既有多头、也有空头，不是单纯的市场理解的减少做空力量；

调研纪要 2天前

**Crashes?**

市场企稳下微盘仍跌10%：有公募量化一个月崩近30% 两年白干

同时，进来布局量化的资金越多，市场风格积累的风险就越来越多，一旦有资金开始抽离，就会引发崩盘，中性、指数增强、dma都无处藏身。因而此前股指期货极度深贴水，也是...

第一财经资讯 3天前

一文读懂最近量化发生了啥？从股指期货贴水到量化微盘崩盘！

这个深贴水是量化超额崩盘和微盘股崩盘前最强烈的信号！原因很简单，今天财联社也讲了，量化中性以及dma（中性加杠杆）的产品带来一整年丰厚的收益来源有两个重要基差...

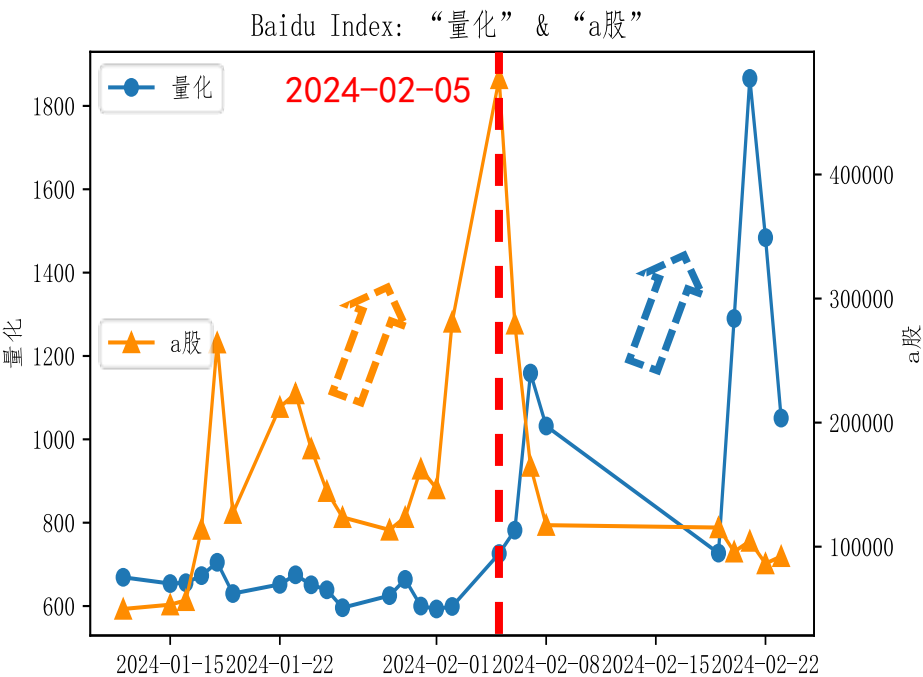
愚公尽调 6天前

一周回撤15%+，量化指增集体崩了。。。

其实这些年，量化为中小盘个股提供了流动性，大多公募并不会买中小盘个股，或者持有的规模很小，而这段时间，量化也被搞崩了，小票流动性也就没了。

资管工厂 4天前

公众号 · 飞花札记

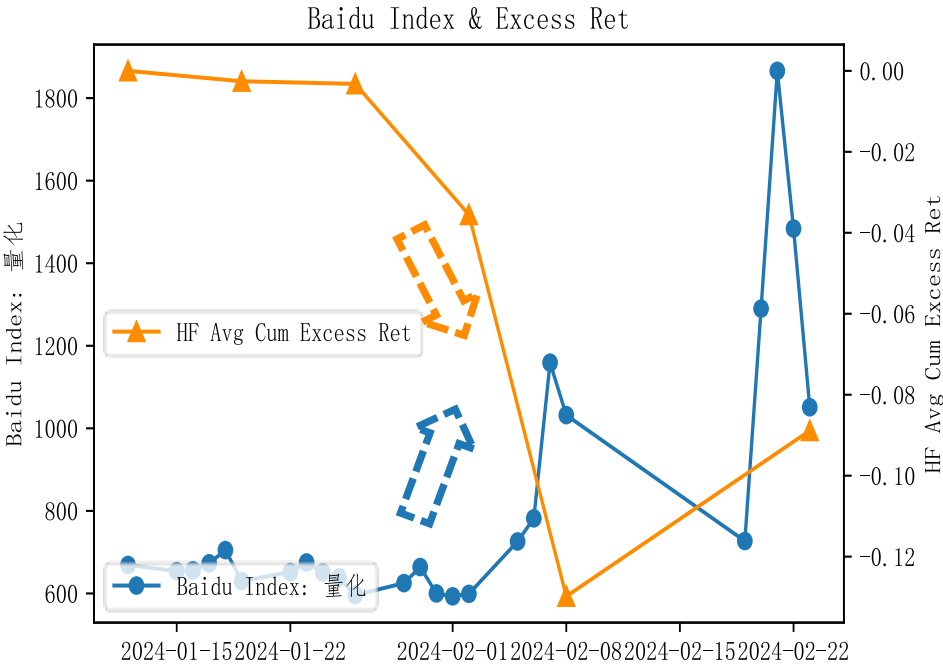


Data Source: Baidu Index

# What Happened to China's Quant Hedge Funds

## ■ Some representative hedge funds and their excess returns

- Selection based on AUM and reputations
- Average cumulative excess return of CSI 500 Enhanced Fund
- CSI 500 Enhanced Fund is the most popular product among hedge funds



Data Sources: Baidu Index & PRIVATE  
ARRANGEMENT NET (私募排排网)

### Representative Hedge Funds

代表性量化私募综合规模和关注度等因素选择，详细清单（拼音顺序）为：白鹭、诚奇、黑翼、**幻方**、**九坤**、聚宽、量锐、**灵均**、**茂源**、**明汜**、鸣石、念空、启林、前沿、锐天、思勰、天演、稳博、信弘、衍复、因诺和卓识。仅考虑这些代表性样本私募的中证500指数增强产品。

1分钟卖出25亿！做空国家队！**灵均**投资是何方神圣？ **Big Four**

号称私募四大天王之一的**灵均**，在开盘一分钟之内卖出25.67亿股票砸盘，公开做空国家...

七禾网 4天前

# What's Happening in the Market

## A Factor Return Perspective

### Too Large Cross-Section to Analyze

中国上市公司协会会长宋志平：充分发挥资本市场功能 推动上市公司高质量发展



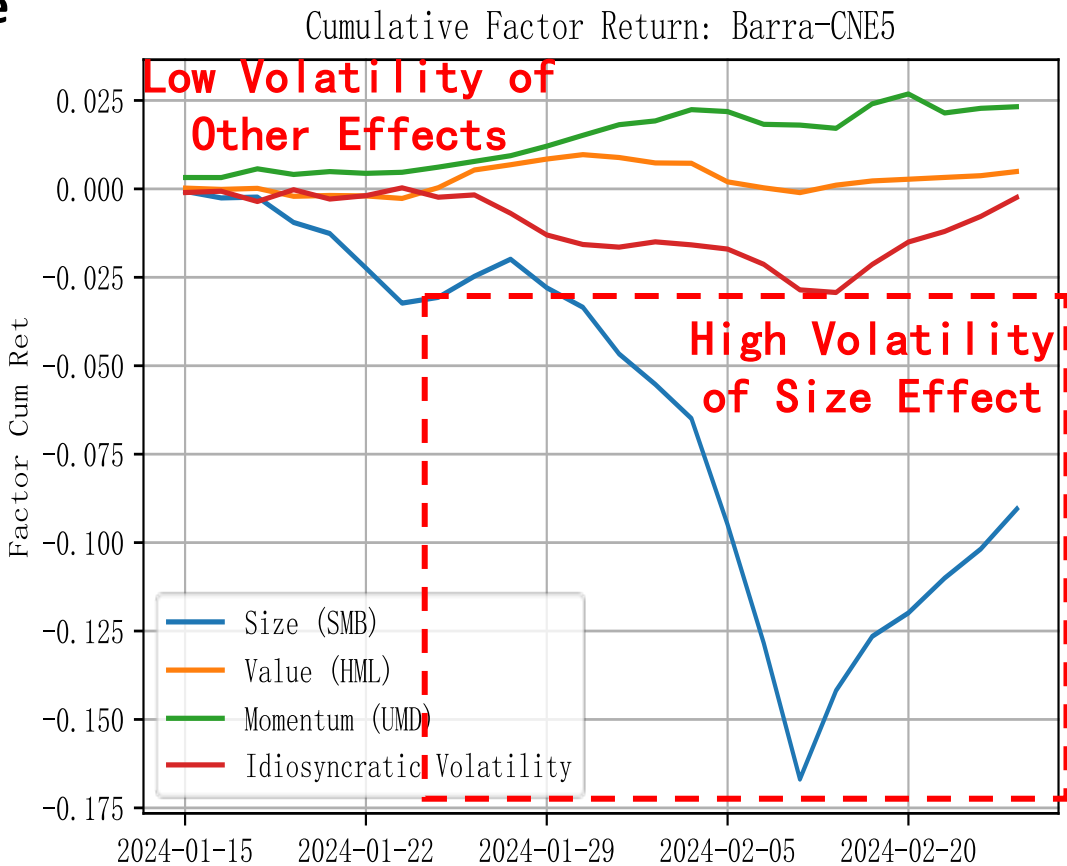
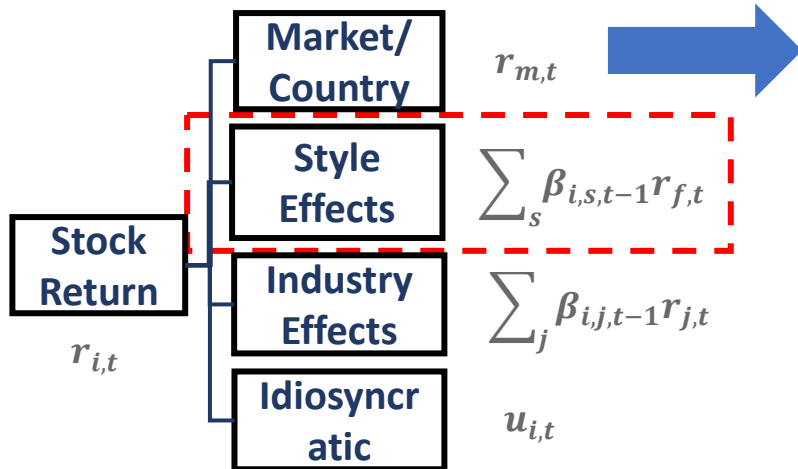
截至2023年10月份，我国上市公司数量已超过5300家，总市值80多万亿元，约占gdp的...

证券日报之声 5个月前 最近读过  
**More than 5000 stocks!**

MSCI



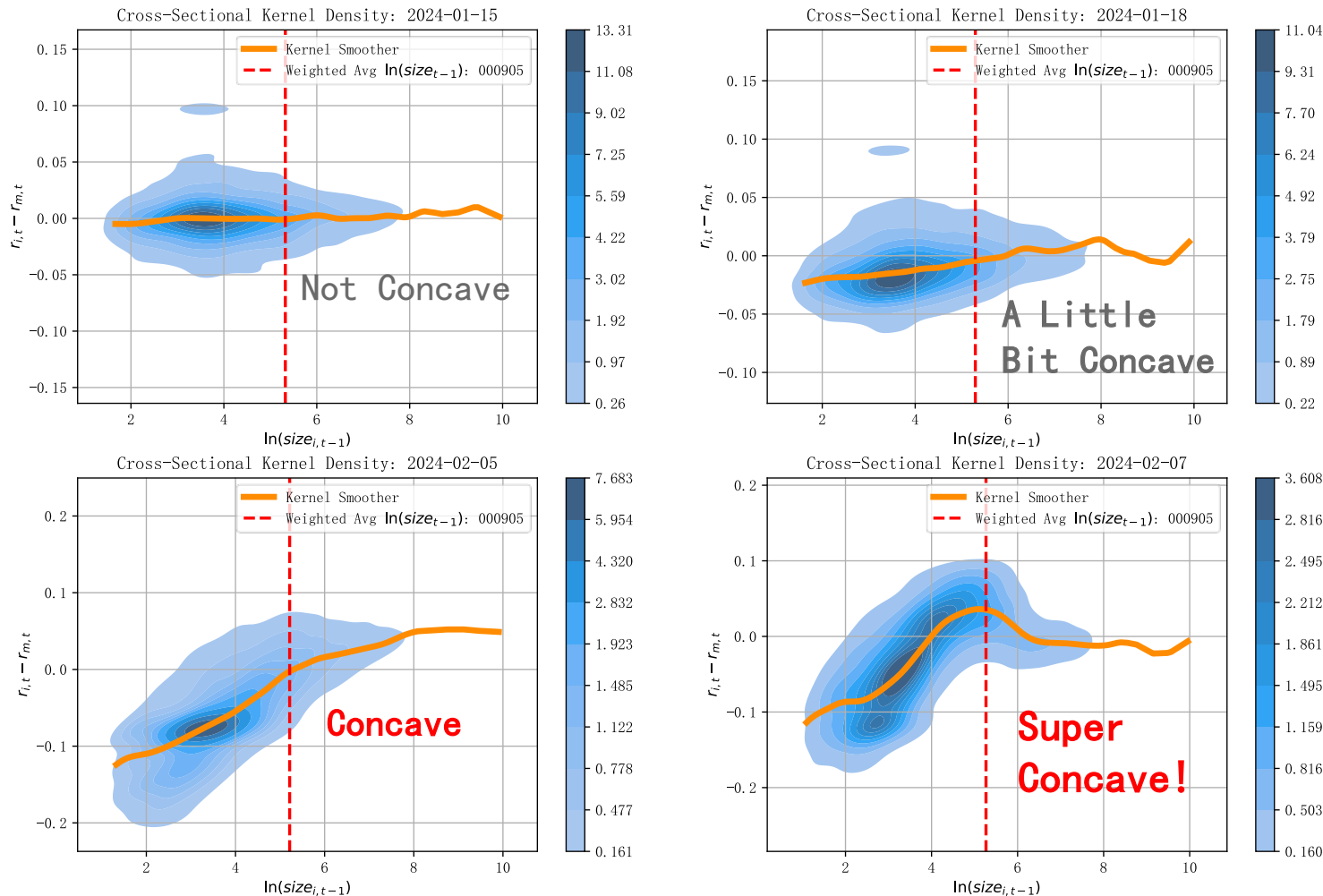
### Barra CNE5 Factor Model



Data Source: JoinQuant

# What's Happening in the Market

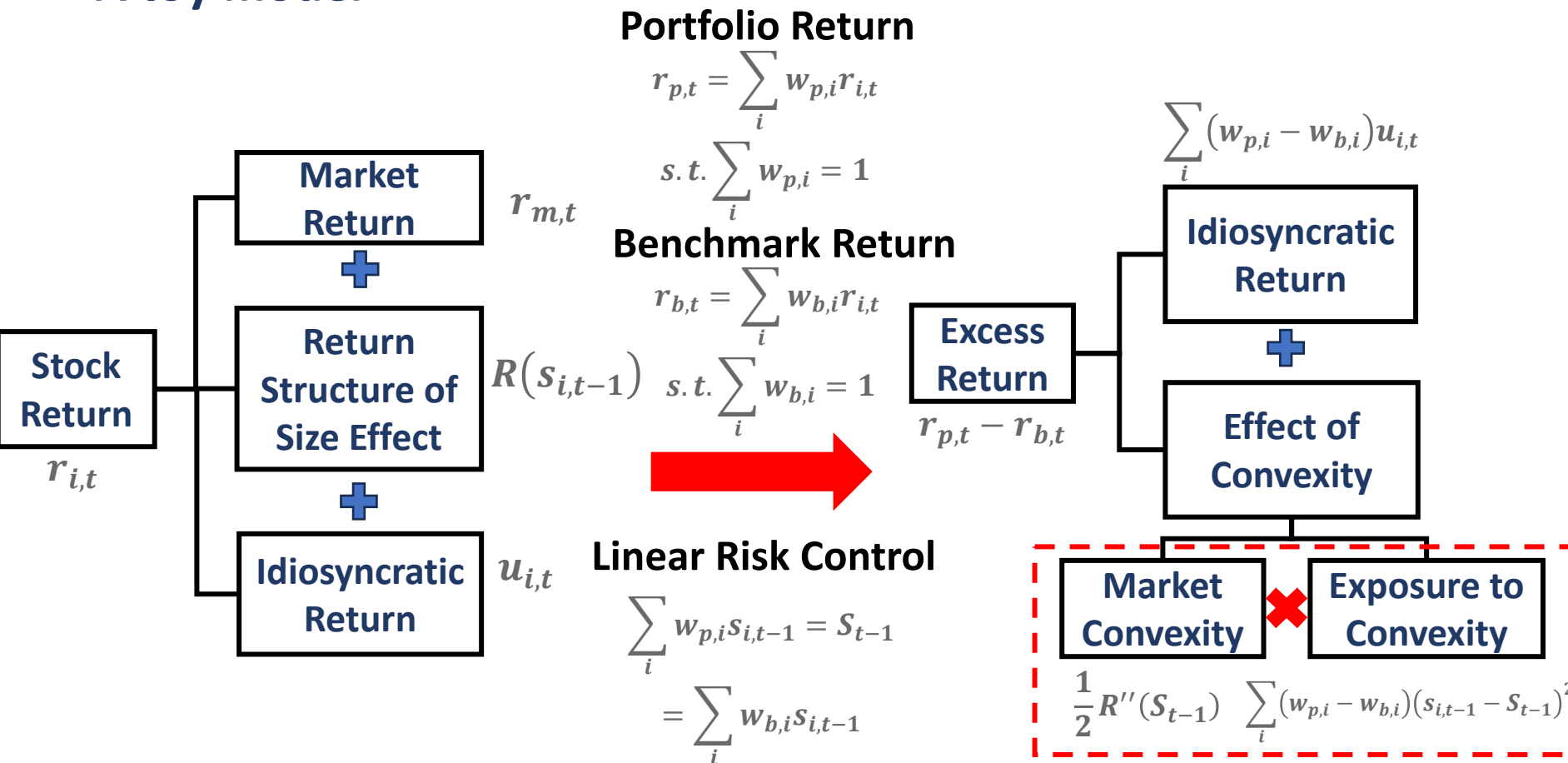
## ■ Evolutions in market convexity



Data Source:  
JoinQuant

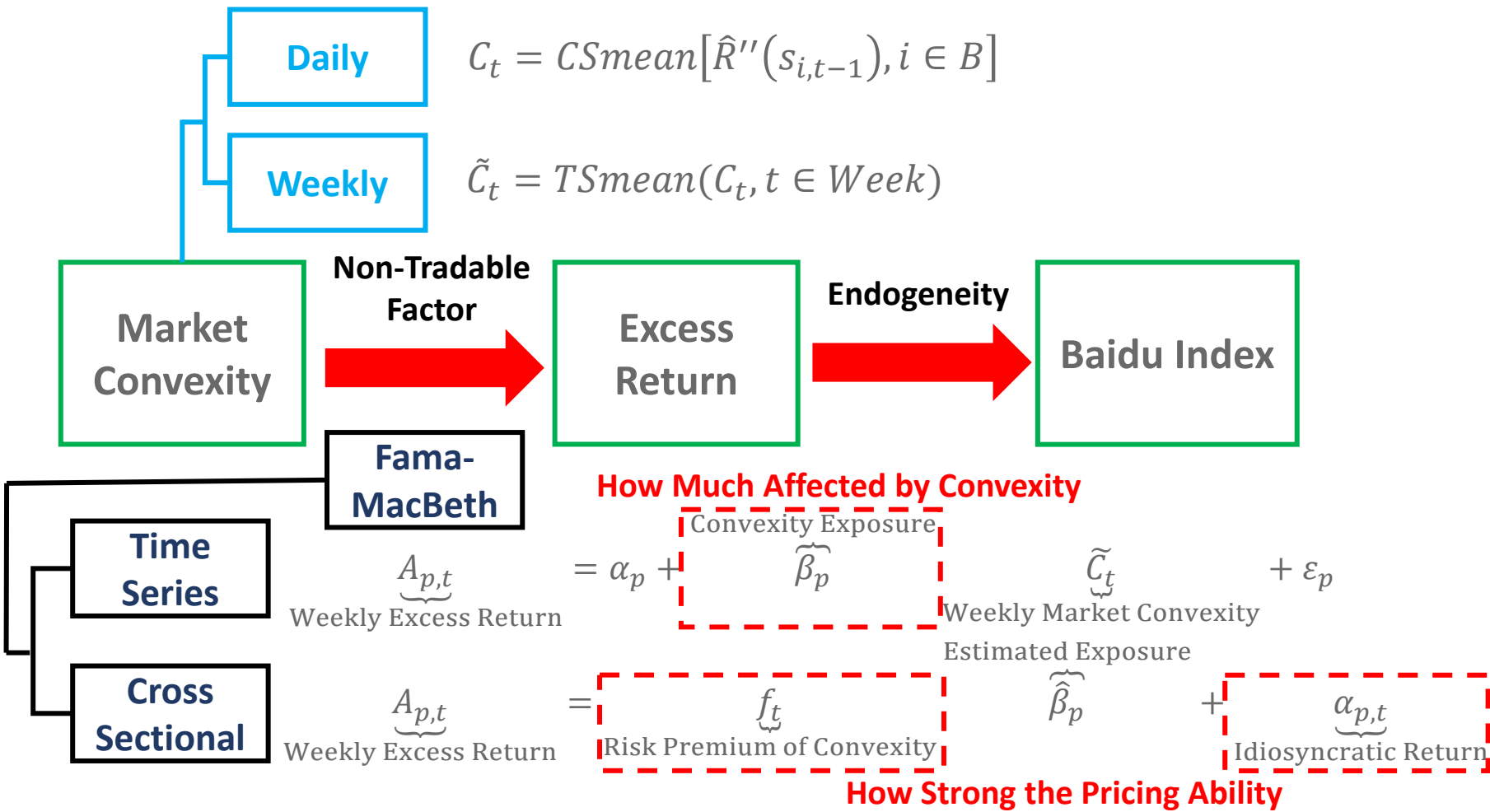
# Effect of Market Convexity on Hedge Funds: Model

## ■ A toy model



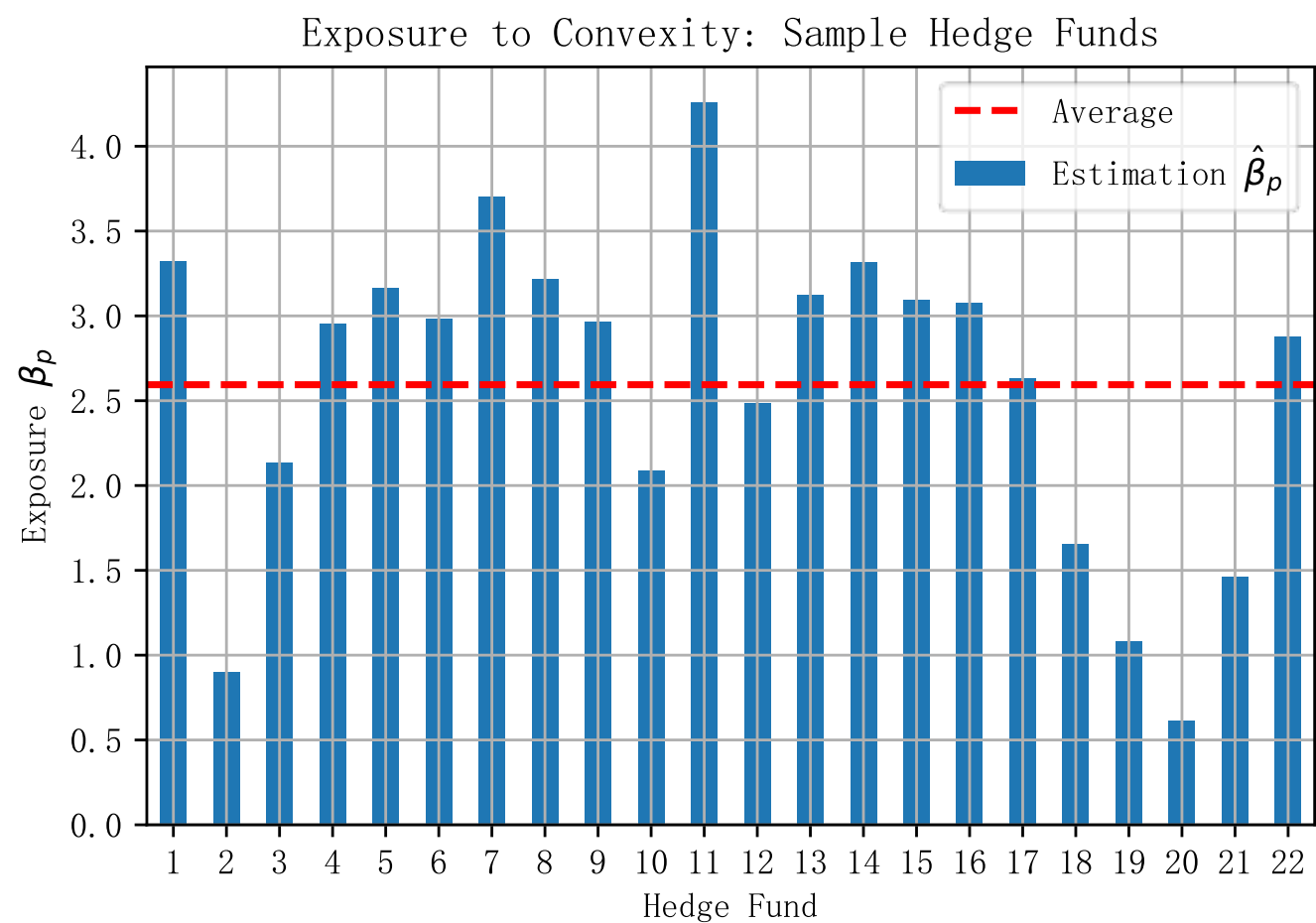
# Effect of Market Convexity on Hedge Funds: Identification

## ■ Identification framework



# Effect of Market Convexity on Hedge Funds: Results

■ Almost all of these hedge funds have large exposure to convexity

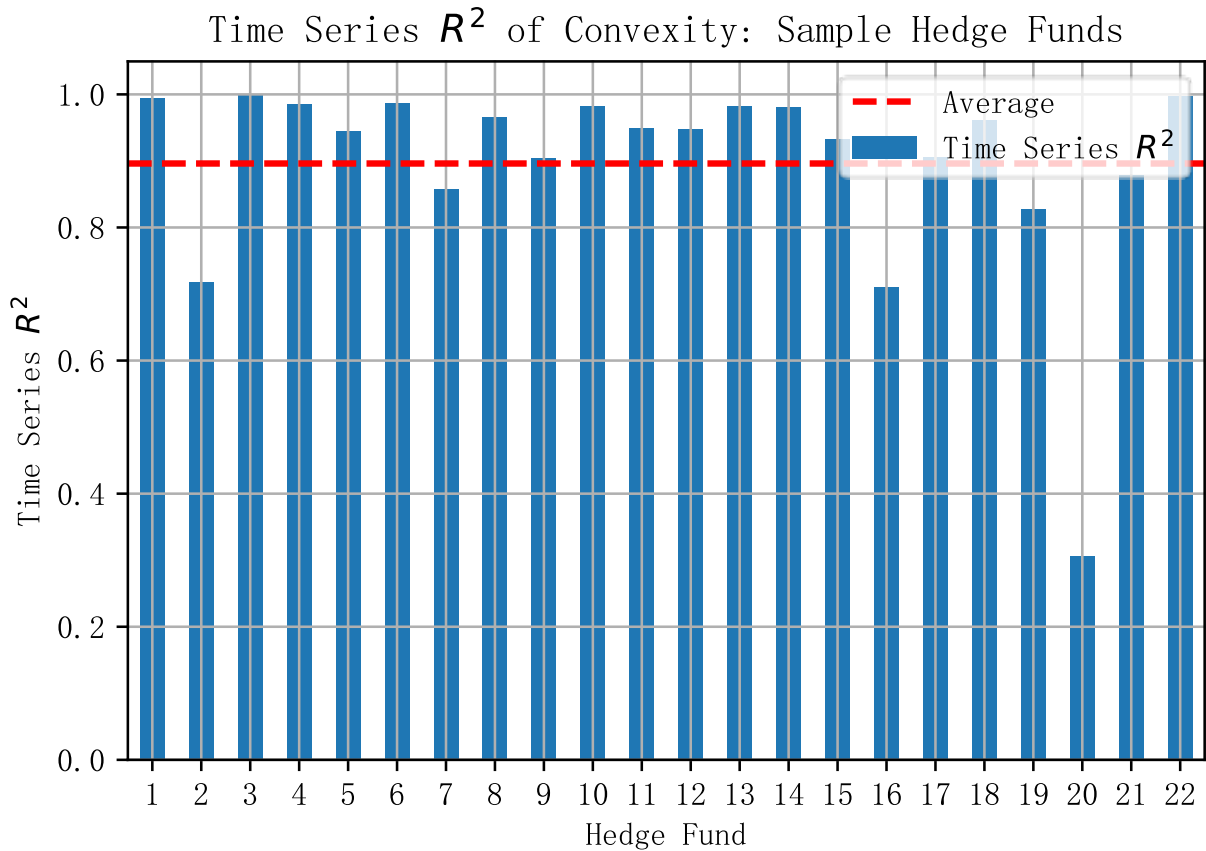




# Effect of Market Convexity on Hedge Funds: Results

## ■ Explaining the time-series variance very well

- Use results of the second step to calculate time-series  $R_p^2 = 1 - \frac{\mathbb{E}_t \hat{a}_{p,t}^2}{\text{Var}_t(A_{p,t})}$

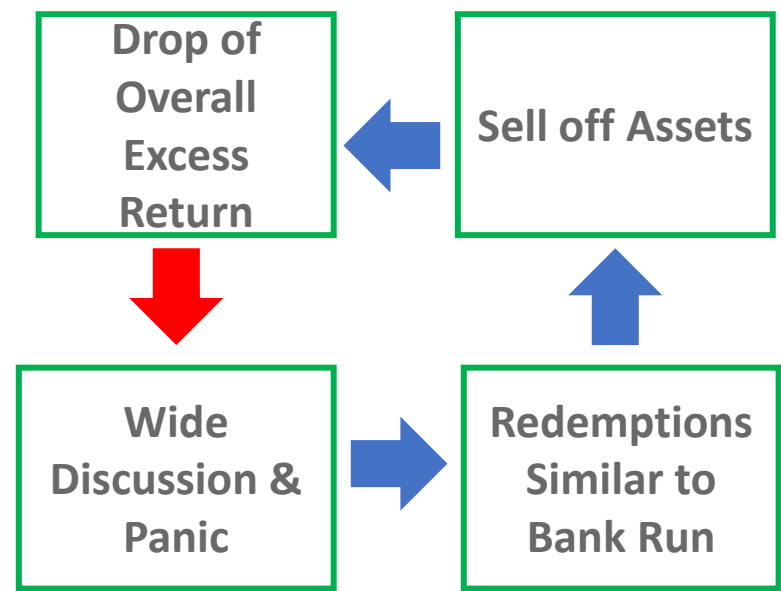


# Effect of Convexity from a Perspective of Communication

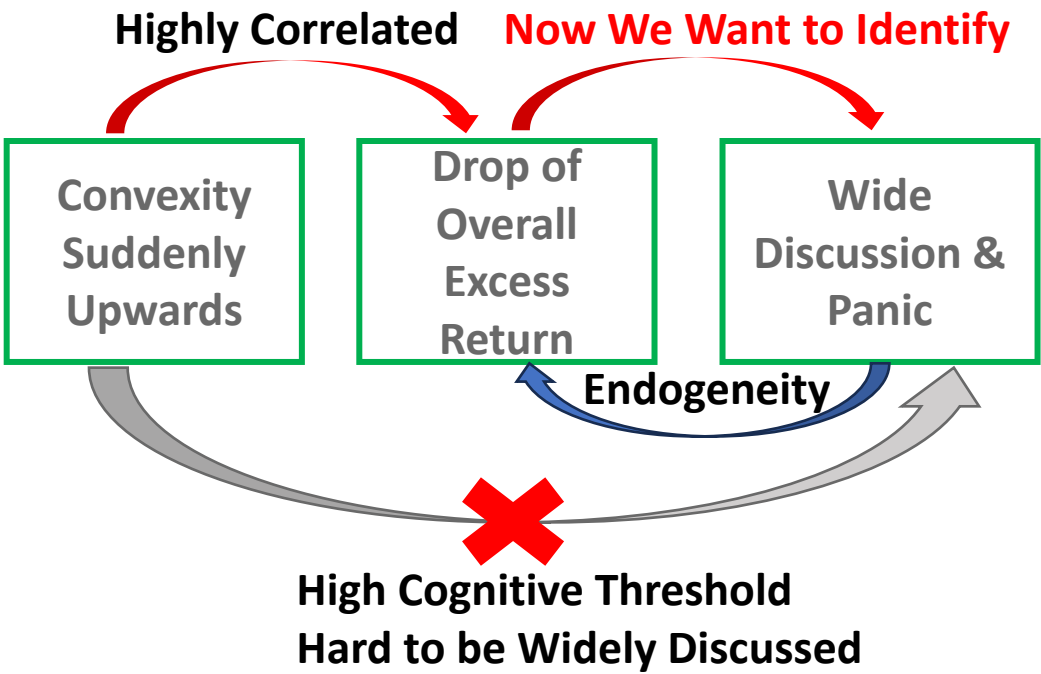
## ■ How much does excess return brought by convexity affect the Baidu Index

- How to identify? Directly regress?

## ■ Endogeneity



## Convexity as an instrument variable

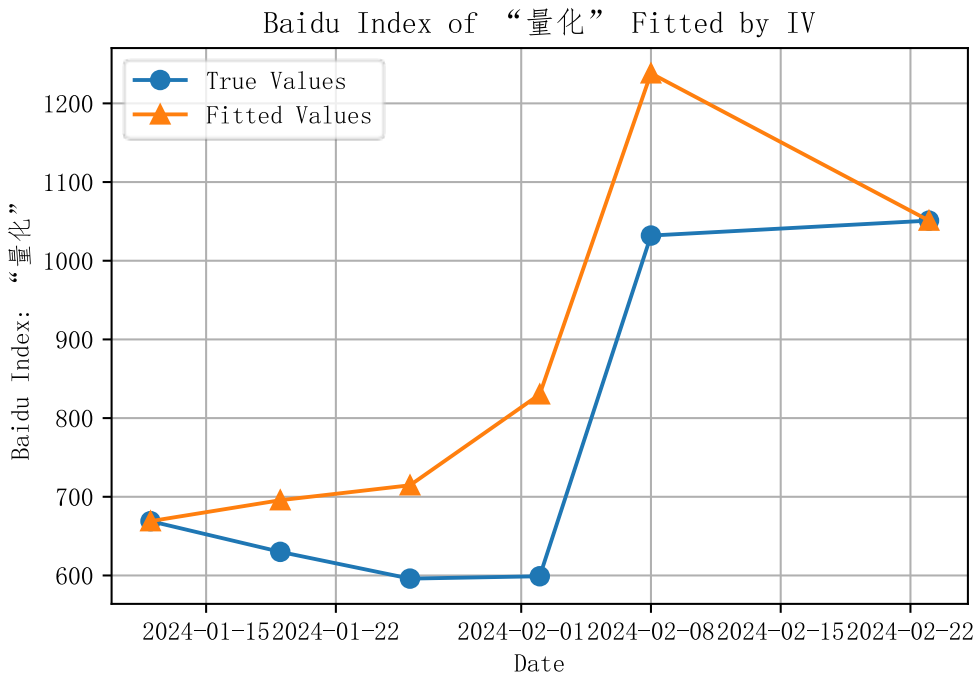


# Effect of Convexity from a Perspective of Communication

## ■ Time-Series Regression

$$\underbrace{\Delta \ln I_t}_{\text{Weekly Log Changes}} = \alpha + \beta \underbrace{\hat{A}_t}_{\text{Weekly Overall Excess Return}} + \varepsilon_t$$

- $\hat{A}_t$  is cross-sectional mean of  $\hat{A}_{p,t}$  in the cross-sectional regression
- Transform  $\widehat{\Delta \ln I_t}$  to  $\hat{I}_t$  by using  $I_t$  of 2024-01-12



# Reference

- Orr, D. J., I. Mashtaler, and A. Nagy (2012). The Barra China Equity Model (CNE5) Empirical Notes. MSCI.  
<https://www.msci.com/www/research-report/the-barra-china-equity-model/014459336>
- The Failure of Ex Ante Risk Control: Can Neutralisation Really Neutralised Risk Exposure?  
[https://mp.weixin.qq.com/s/wCoS\\_PsybBNcKBbGPn-GaA](https://mp.weixin.qq.com/s/wCoS_PsybBNcKBbGPn-GaA)

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前言

此文为昨夜中文报告《[洪灏：道与中国市场投机艺术](#)》的英文原版

# Appendix

## ■ Calculation of Convexity

- Sort CSI 500 Index Constituents List  $B$  by MV  $s_{i,t-1}$  in ascending order
- Calculate the first-order derivative  $D_{i,t}$ , where  $\hat{R}$  is the Return Structure of MV estimated by the kernel function smoothing

$$D_{i,t} = \frac{\hat{R}(s_{i+1,t-1}) - \hat{R}(s_{i-1,t-1})}{s_{i+1,t-1} - s_{i-1,t-1}}$$

- Calculate the second-order derivative  $C_{i,t}$

$$C_{i,t} = \frac{D(s_{i+1,t-1}) - D(s_{i-1,t-1})}{s_{i+1,t-1} - s_{i-1,t-1}}$$

- The equal-weighted mean of  $R''(s_{i,t-1})$  in a certain region is regarded as the convexity of the return structure in this region

$$C_t = \frac{1}{|B| - 4} \sum_{i \in B} C_{i,t}$$