Hedge Fund Innovation

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Paper @ **zmks.co/hfi** Slides @ **zmks.co/hfi/slides**

In short

- Can we classify funds into more precise groups than style?
- Are there first-mover advantages?
- Is innovation meaningful for investors?

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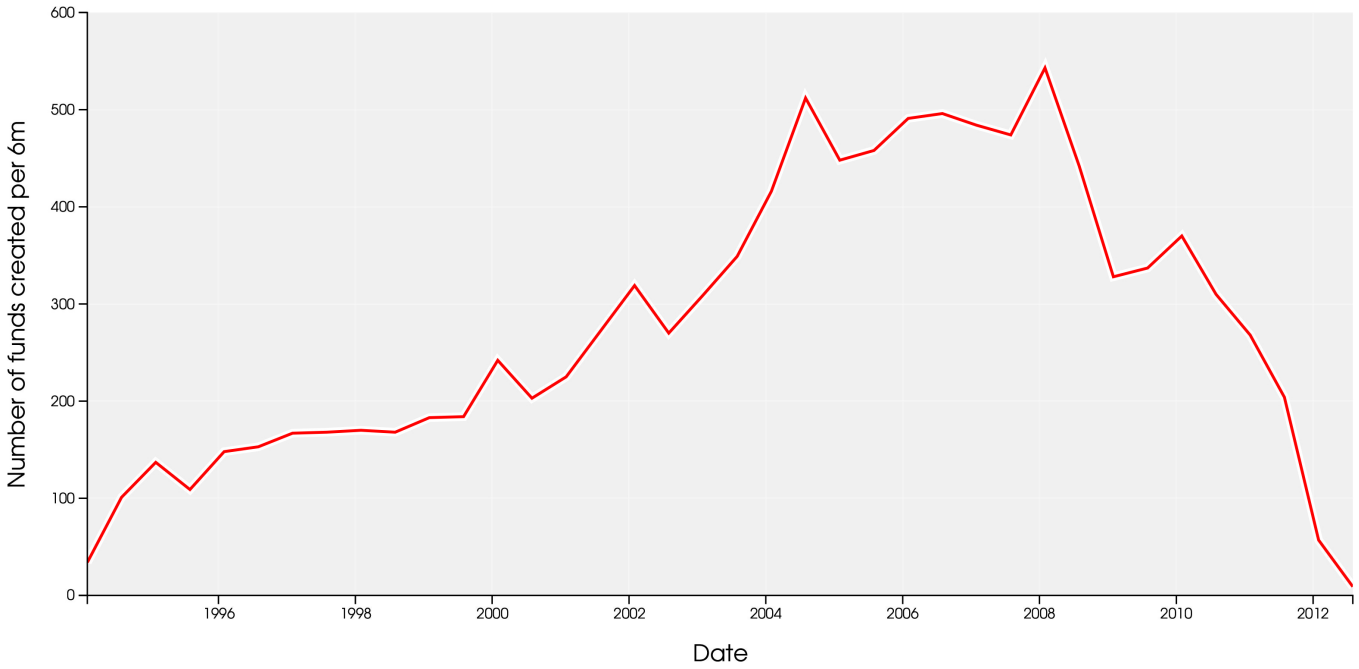
- Is innovation meaningful for investors? **Yes.**

Outline

- Motivation
- Method
- Data and its quality
- Results
- Conclusions

A successful industry



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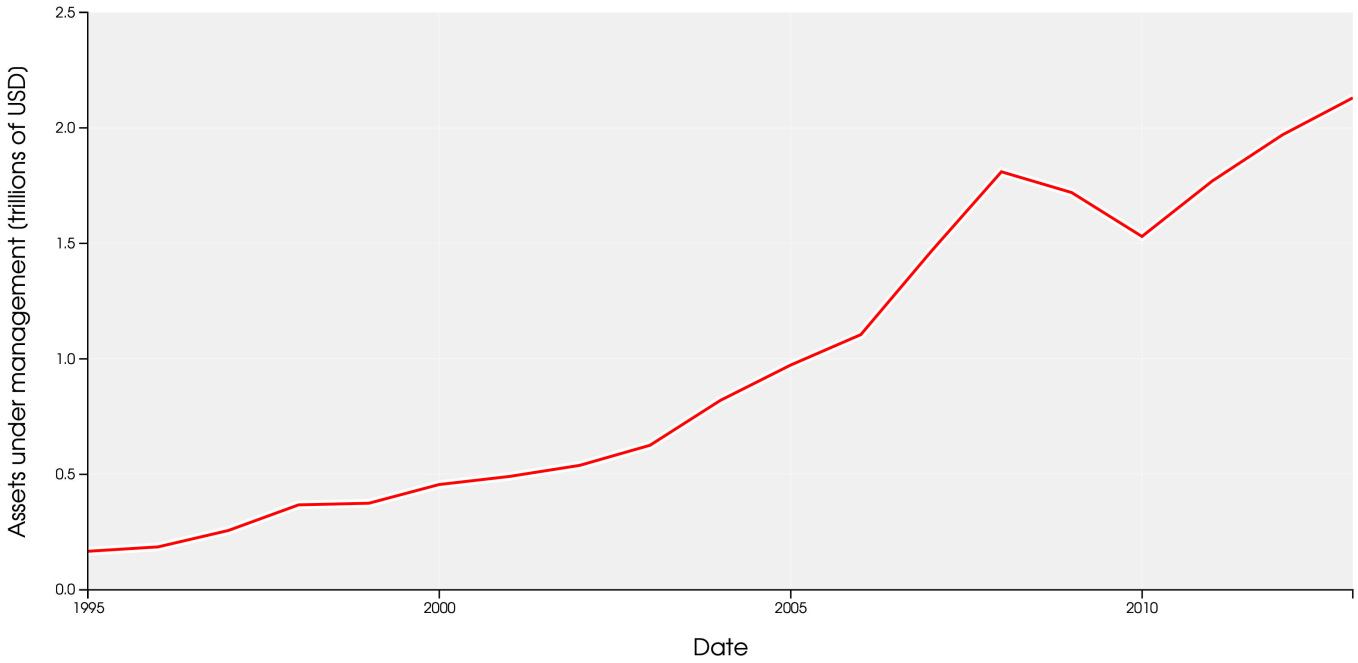

Between 1994 and 2012 the total AUM have grown almost 13-fold, from USD167b to USD2.13t.

Behind a veil of secrecy

- Hedge funds employ dynamic strategies
    - changing risk exposures - Fung and Hsieh (1997), Brunnermeier and Nagel (2004), Criton and Scaillet (2011), Patton and Ramadorai (2013).

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- Outperforming funds produce stable (Criton and Scaillet, 2011) albeit not necessarily the highest (Patton et al., 2012) returns and do not take extra-ordinary risks (Boyson, 2010).
- The hedge fund industry is dynamic
  - High intensity of entry and exit, low median age — Aggarwal and Jorion (2010), Getmansky (2012).
  - If hedge funds can quickly adapt to new opportunities, why do new hedge funds enter the market so often?

Behind a veil of secrecy

- Managers are consistent in their investment approach (Fung and Hsieh, 2002; Chen and Liang 2007; Agarwal and Naik, 2004).

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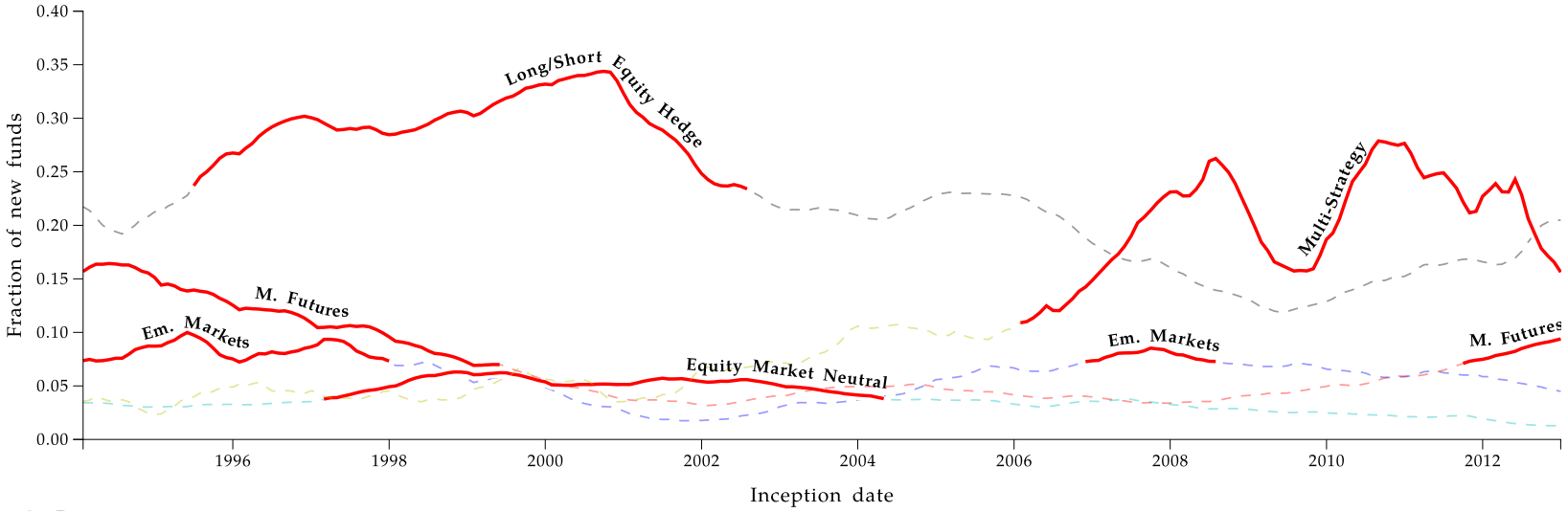
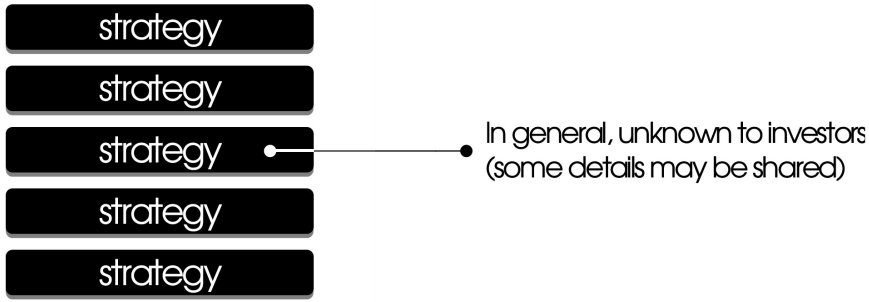
- Funds with `distinct' returns tend to out-perform (Sun, Wang, and Zheng, 2012; Titman and Tiu, 2011).
- Non-standard contracts with `most favoured nation' provisions.
- `As a matter of law and practice, the funds typically make disclosures sufficient for investors to make informed decisions.'

Transient popularity of styles



Given the broadest possible indicator of what hedge funds are doing, *the self-reported* style, we see that at different points in time hedge funds pursue different strategies.

Microstyles based on institutional design



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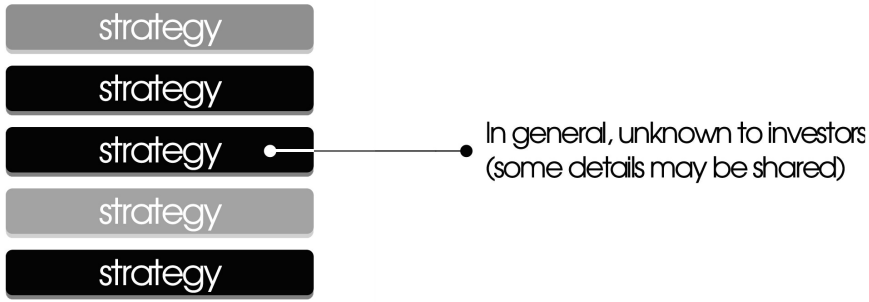

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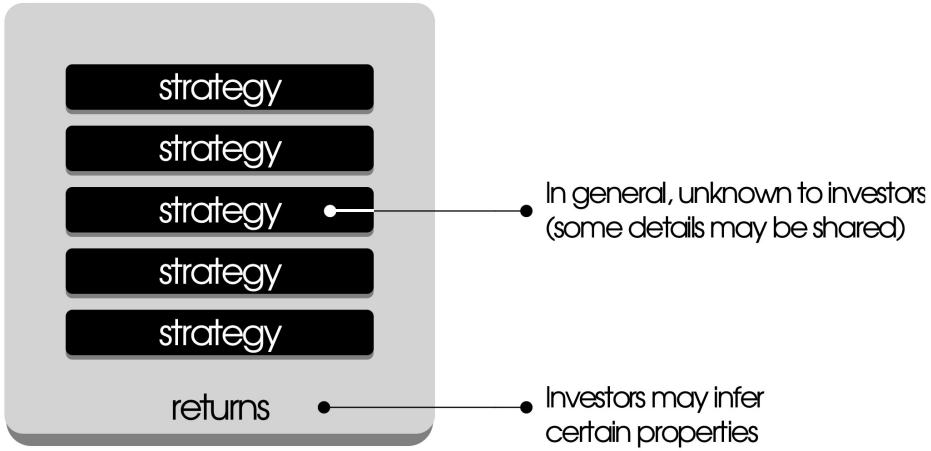

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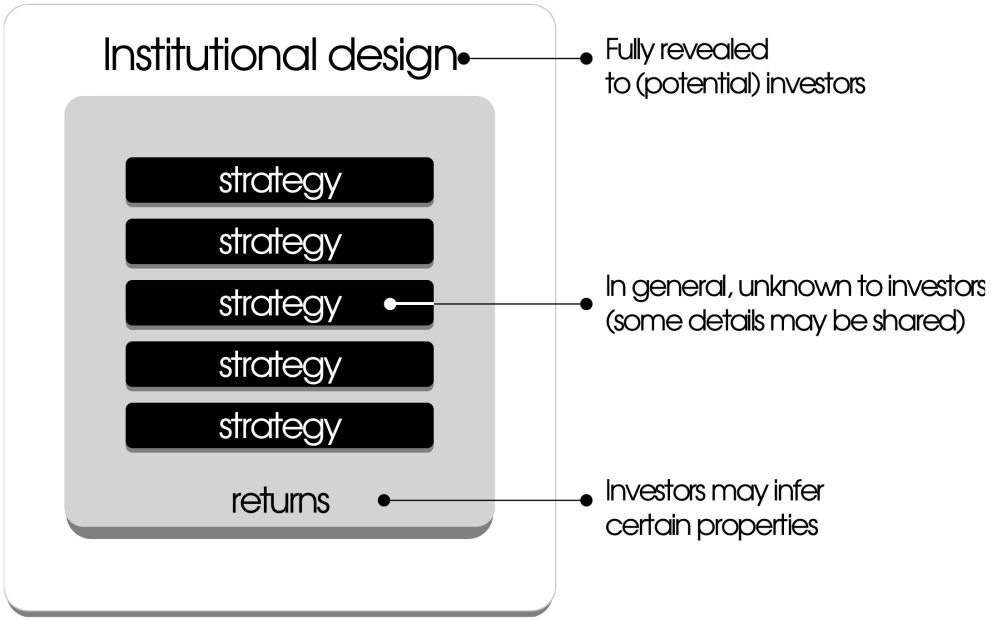
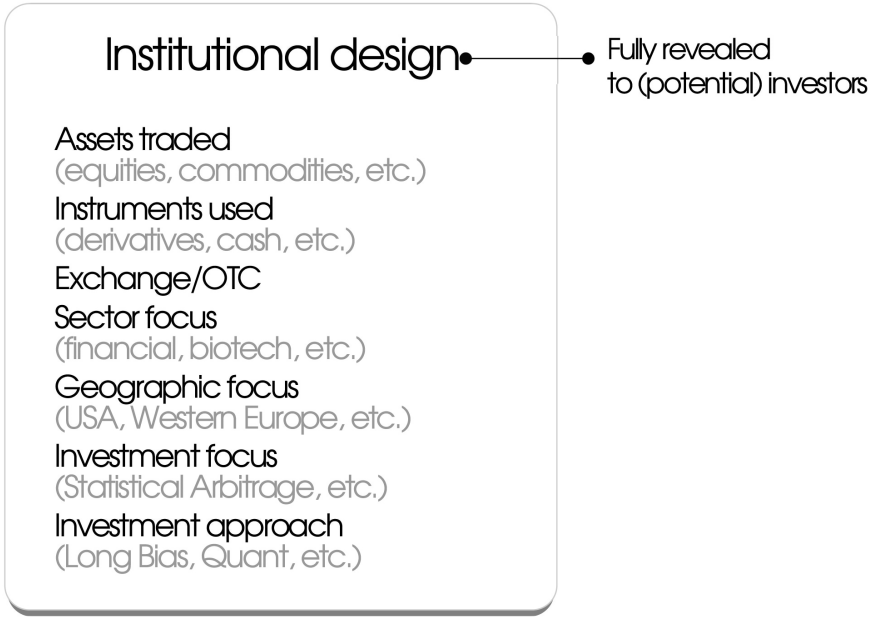


Institutional design; data



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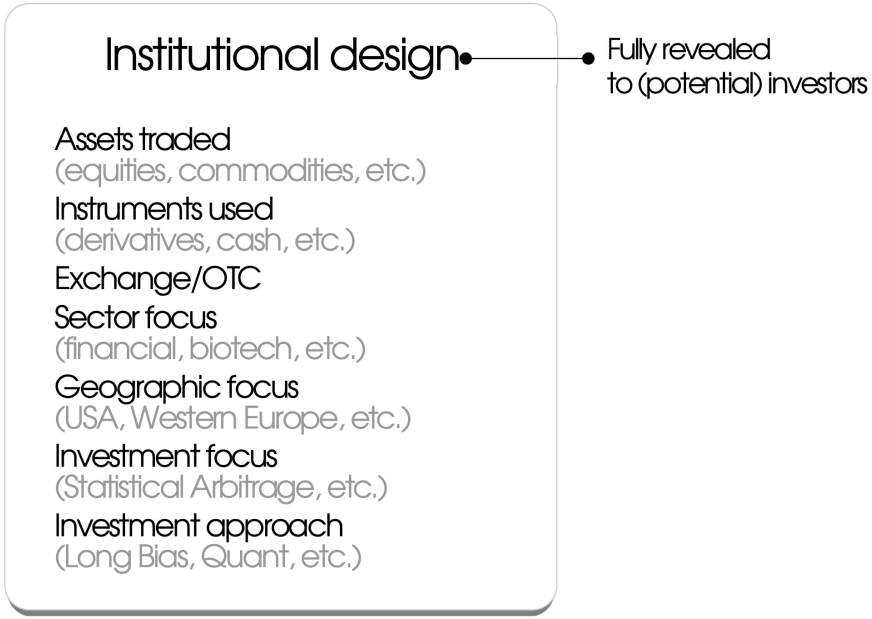

- Lipper TASS database 1994–2012: 15,961 funds.

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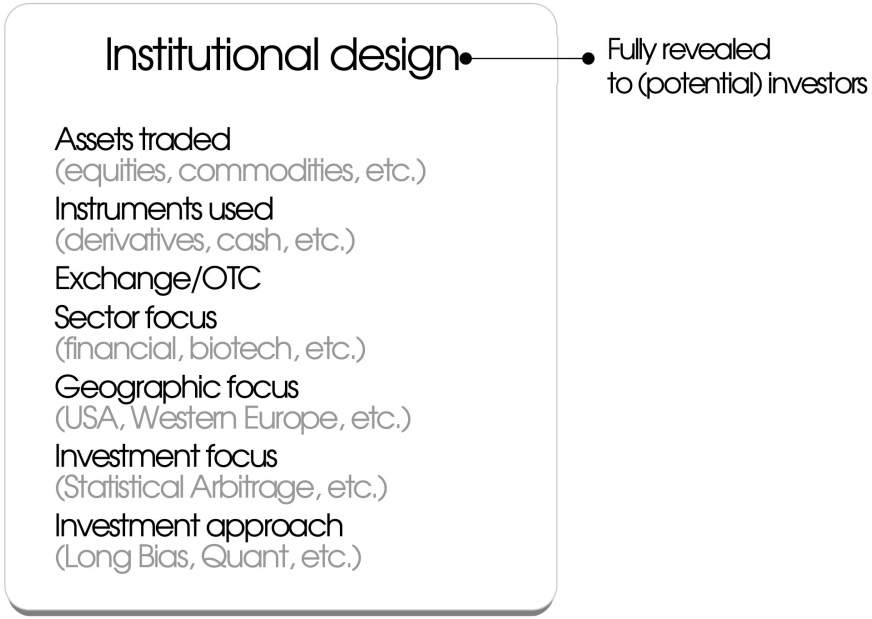

- Lipper TASS database 1994–2012: 15,961 funds.

- 144 strategy indicators (0/1).

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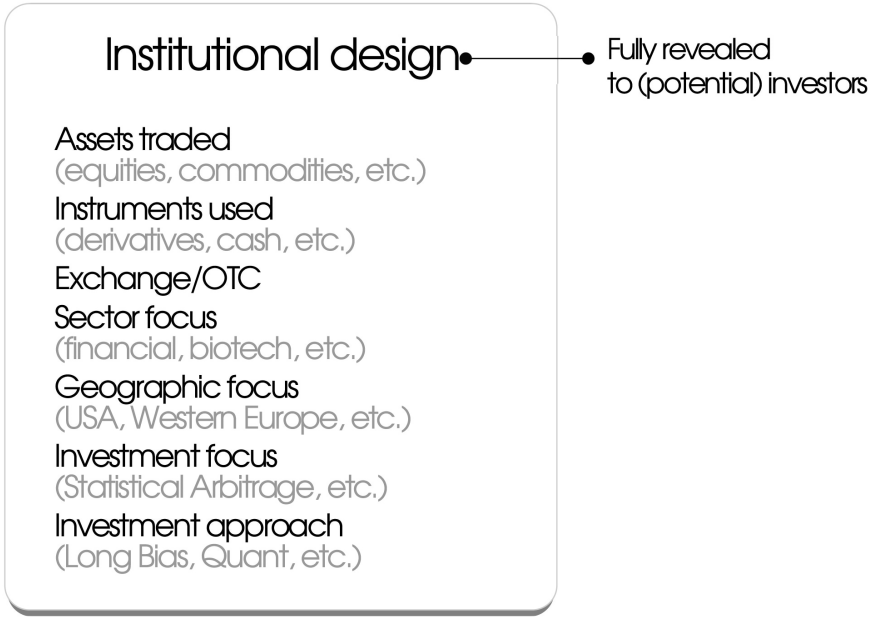
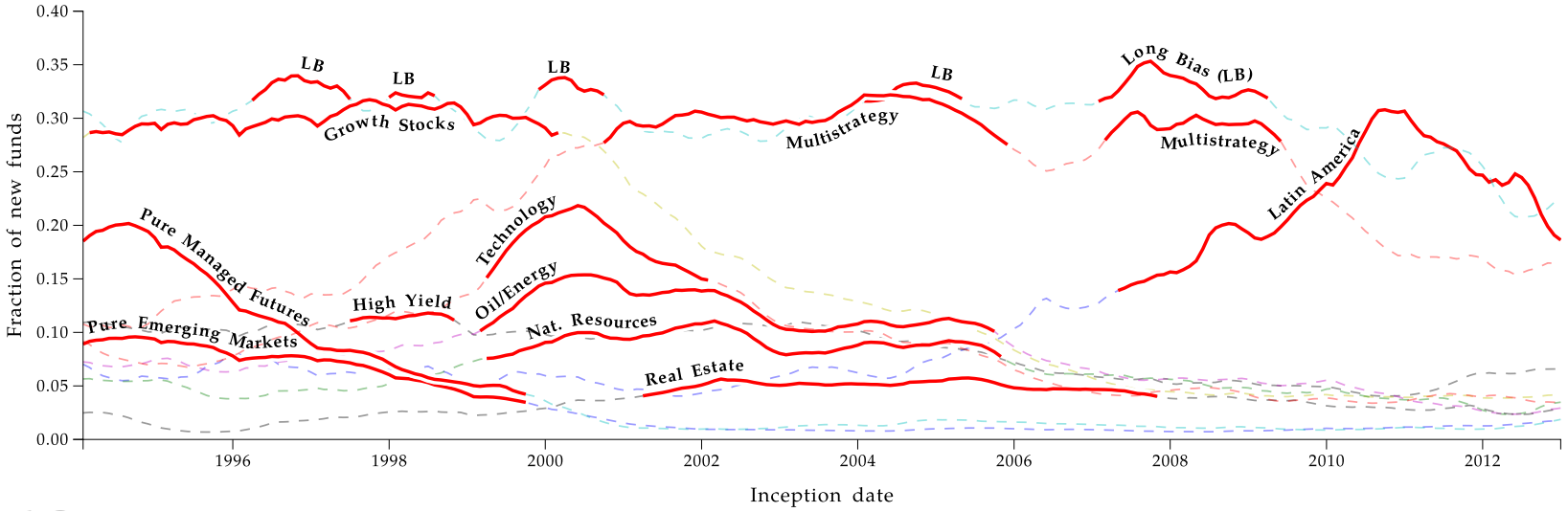
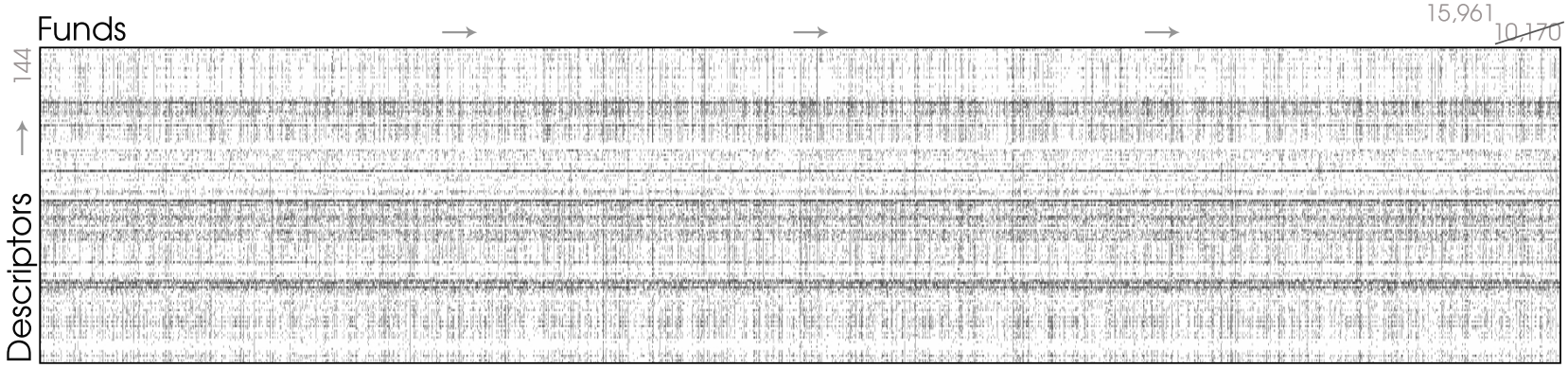


- Lipper TASS database 1994–2012: 15,961 funds.
  - Exclude FoF, leaves 10,170 funds.
  - We do not deduplicate (think Joenväärä, Kosowski, Tolonen, 2014). From investors' perspective, HFs in one family are competitors and exhaust alpha.
  - Other filters used for regressions, but not for clustering.
- 144 strategy indicators (0/1).

Microstyles in action



Our approach



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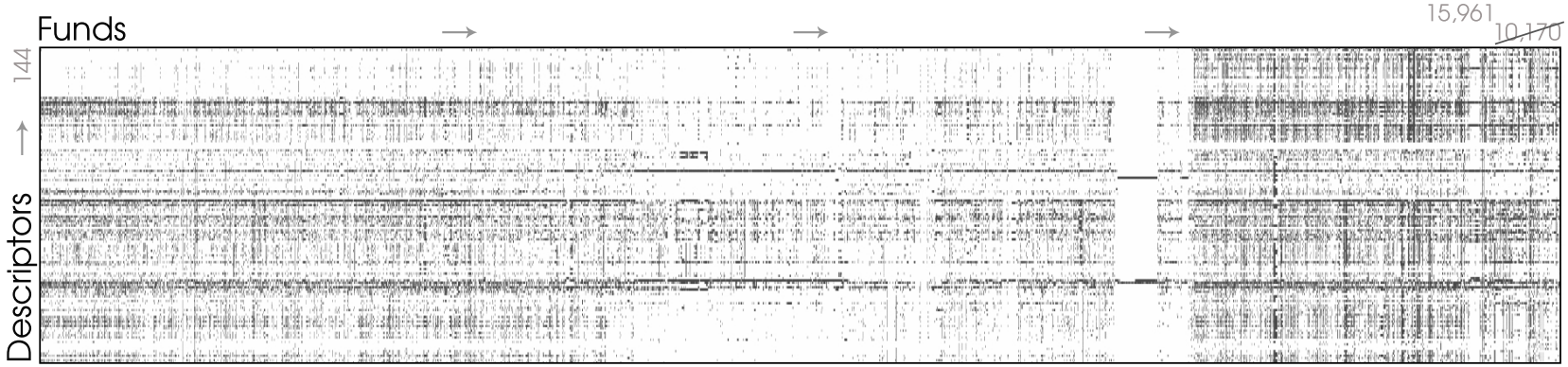

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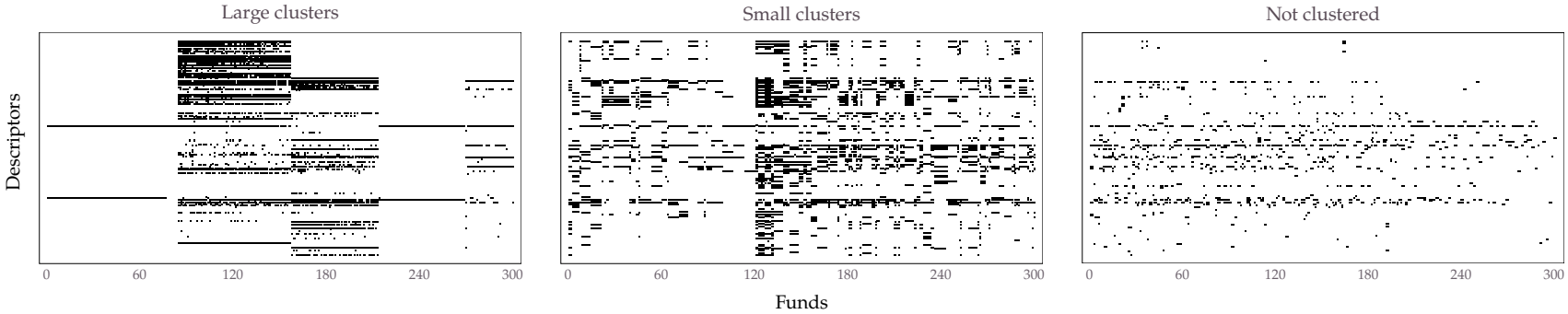

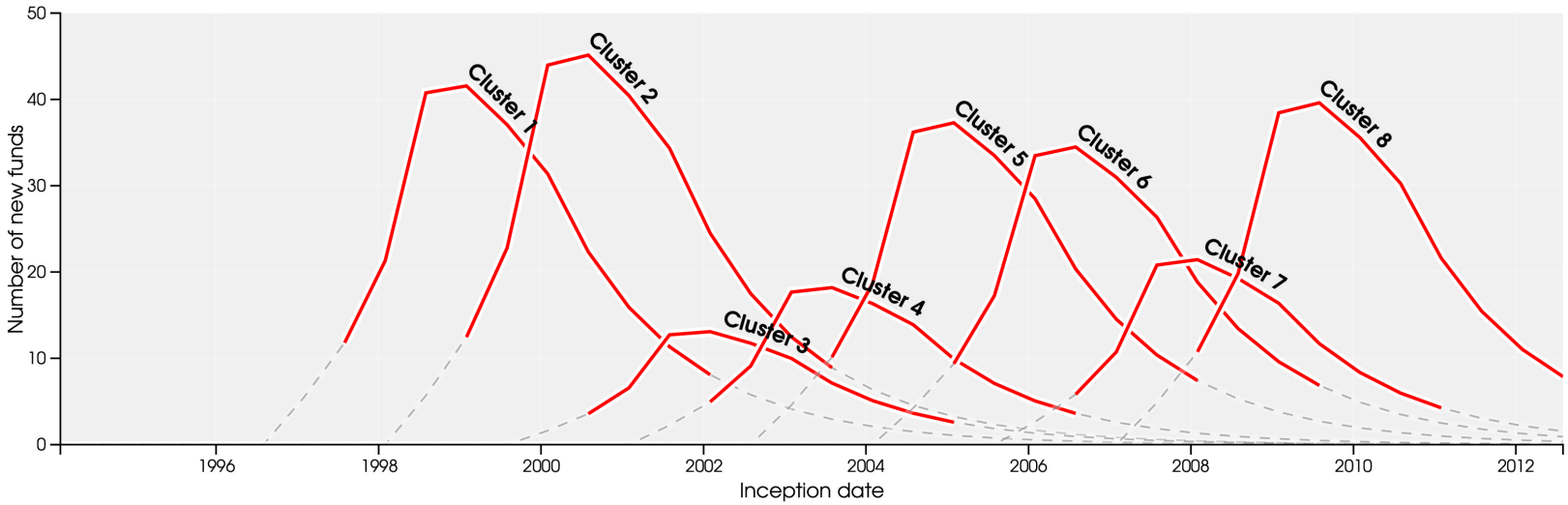

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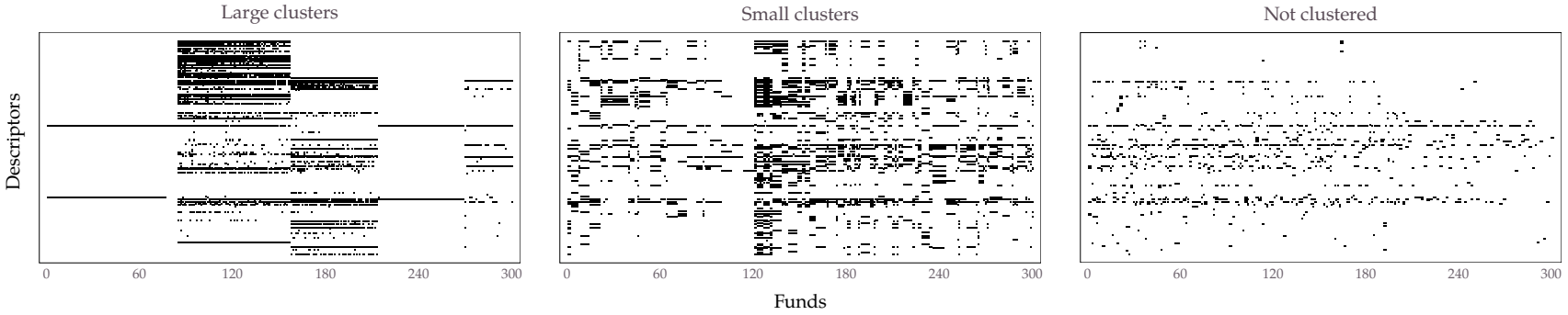

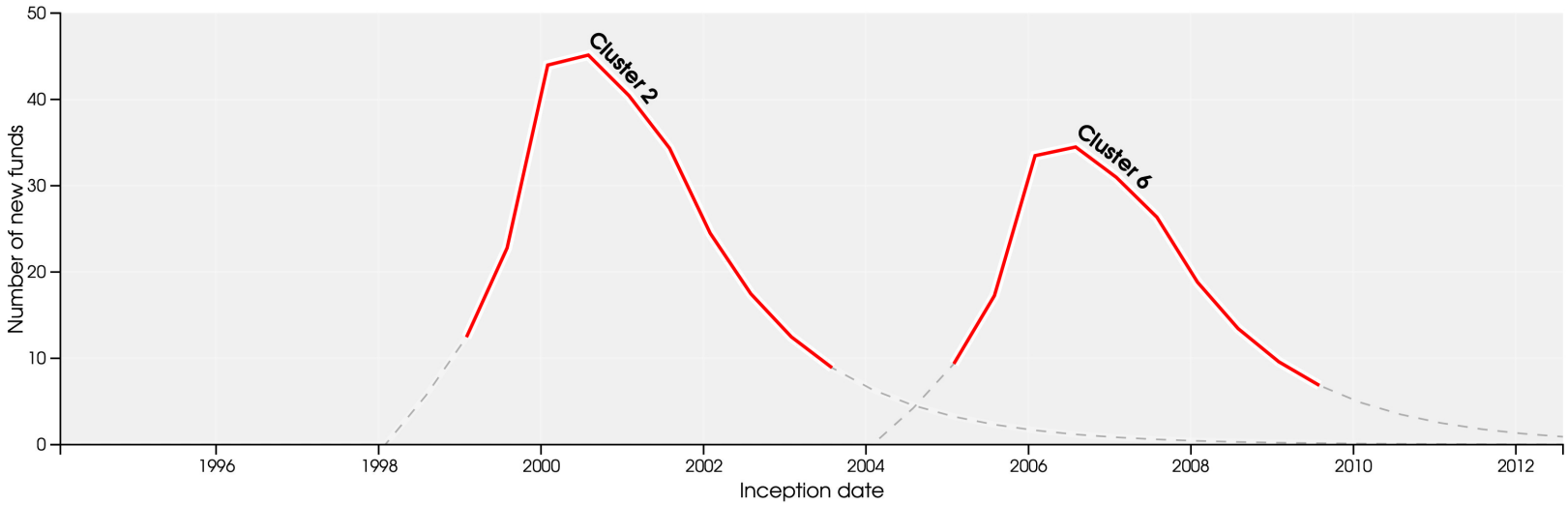

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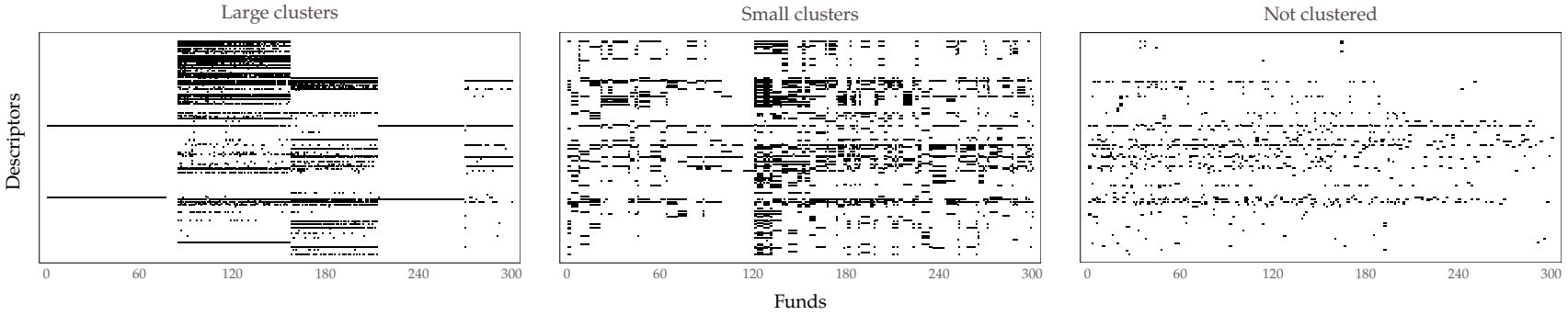

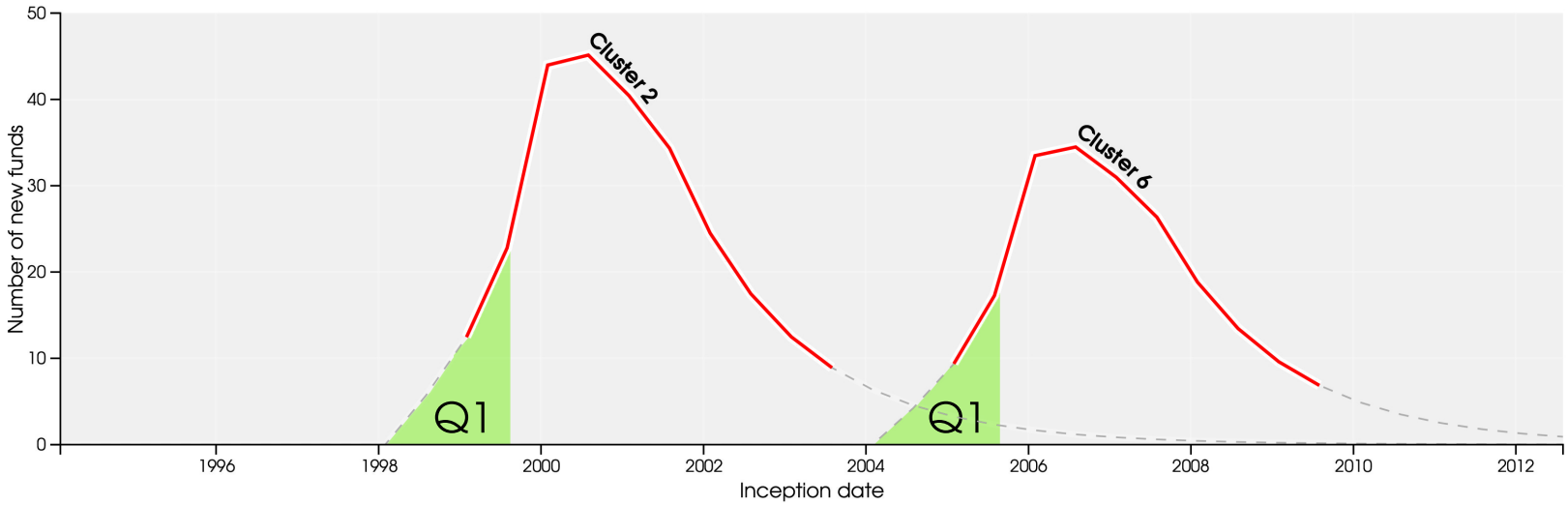

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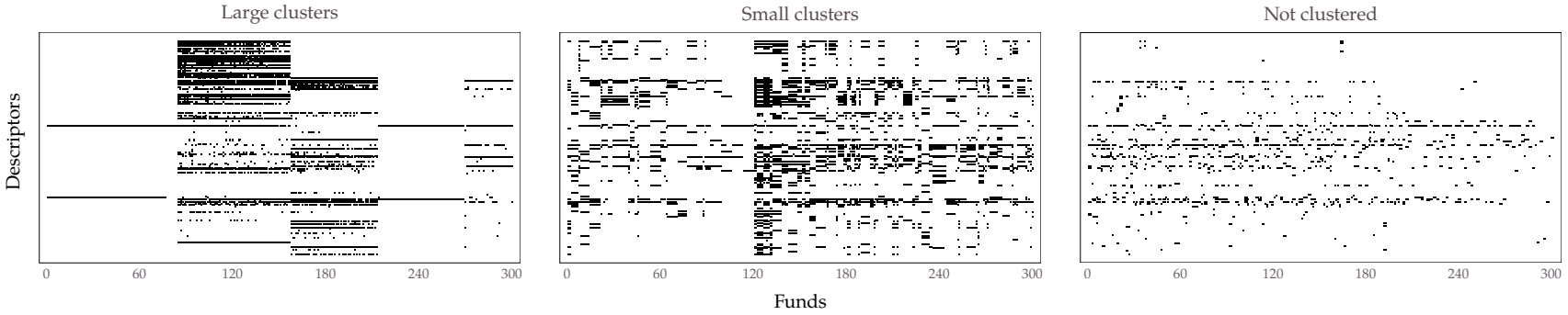

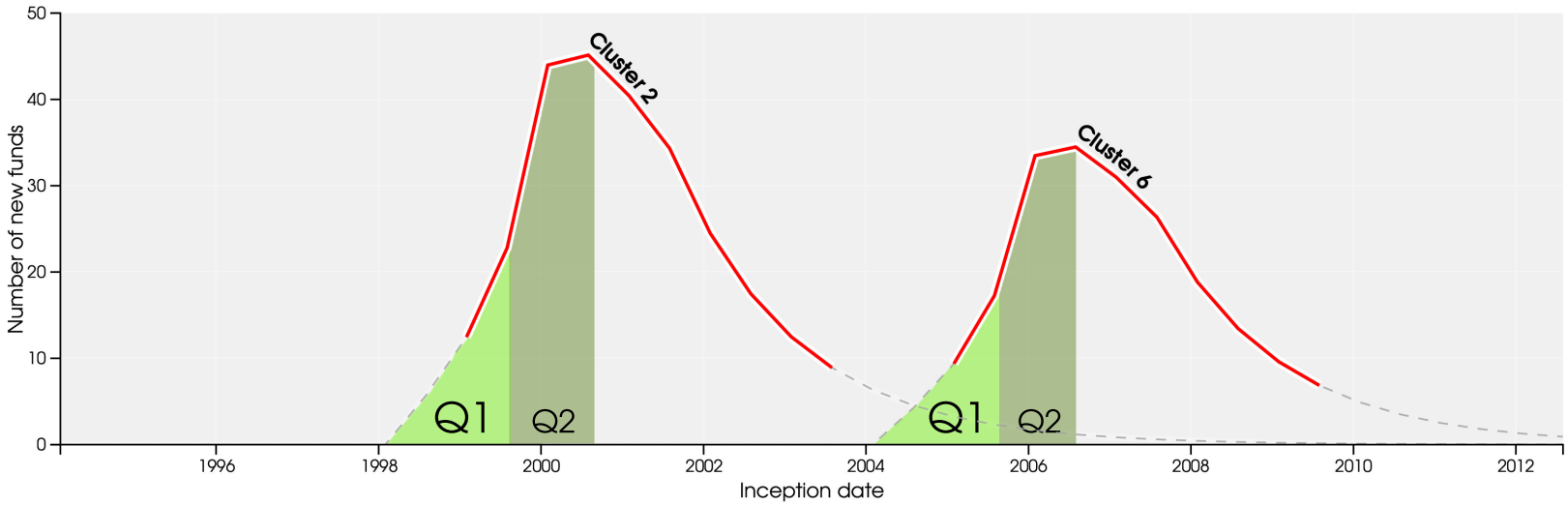

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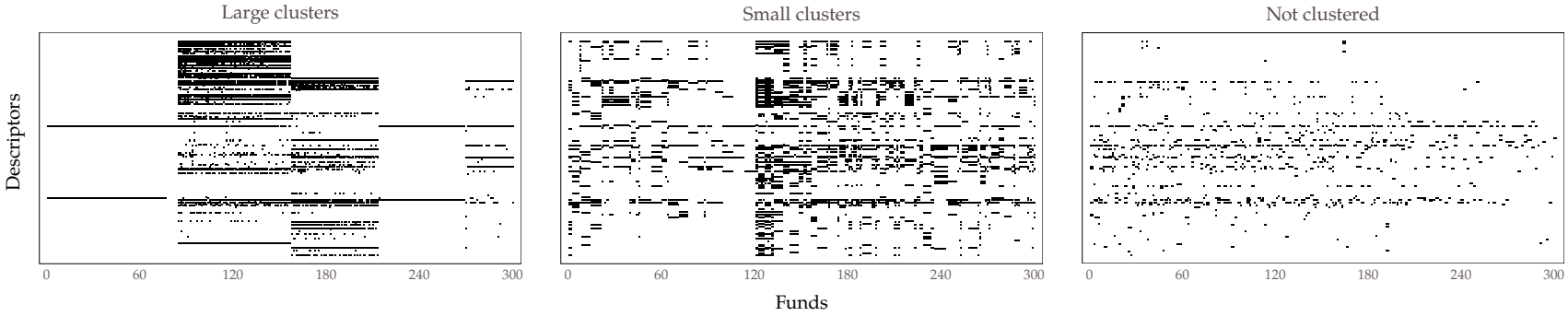

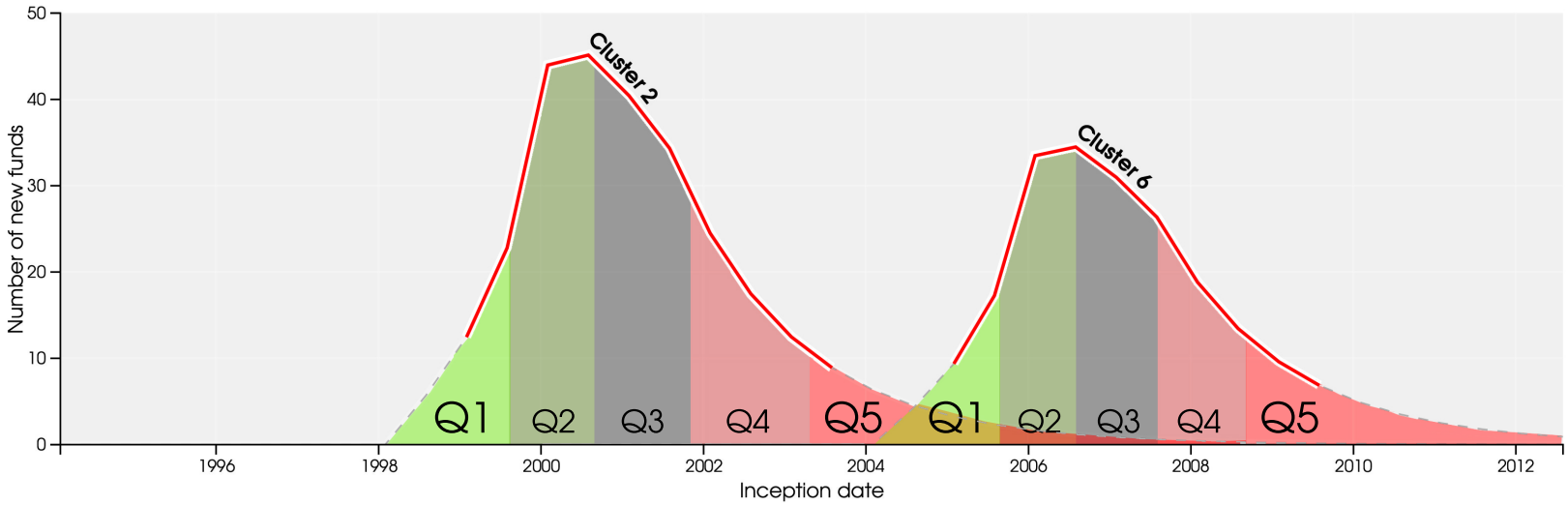

Can we trust the data?

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Variable	Funds with 1+ edits (%)
Returns	48.96

Patton, Ramadorai, Streatfield (2013)

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Variable	Funds with 1+ edits (%)
Returns	48.96 → 41.01
Incentive Fee	6.40
Management Fee	2.98
Payout period	2.24
Style (pre MS)	6.62
Style (post MS)	5.20

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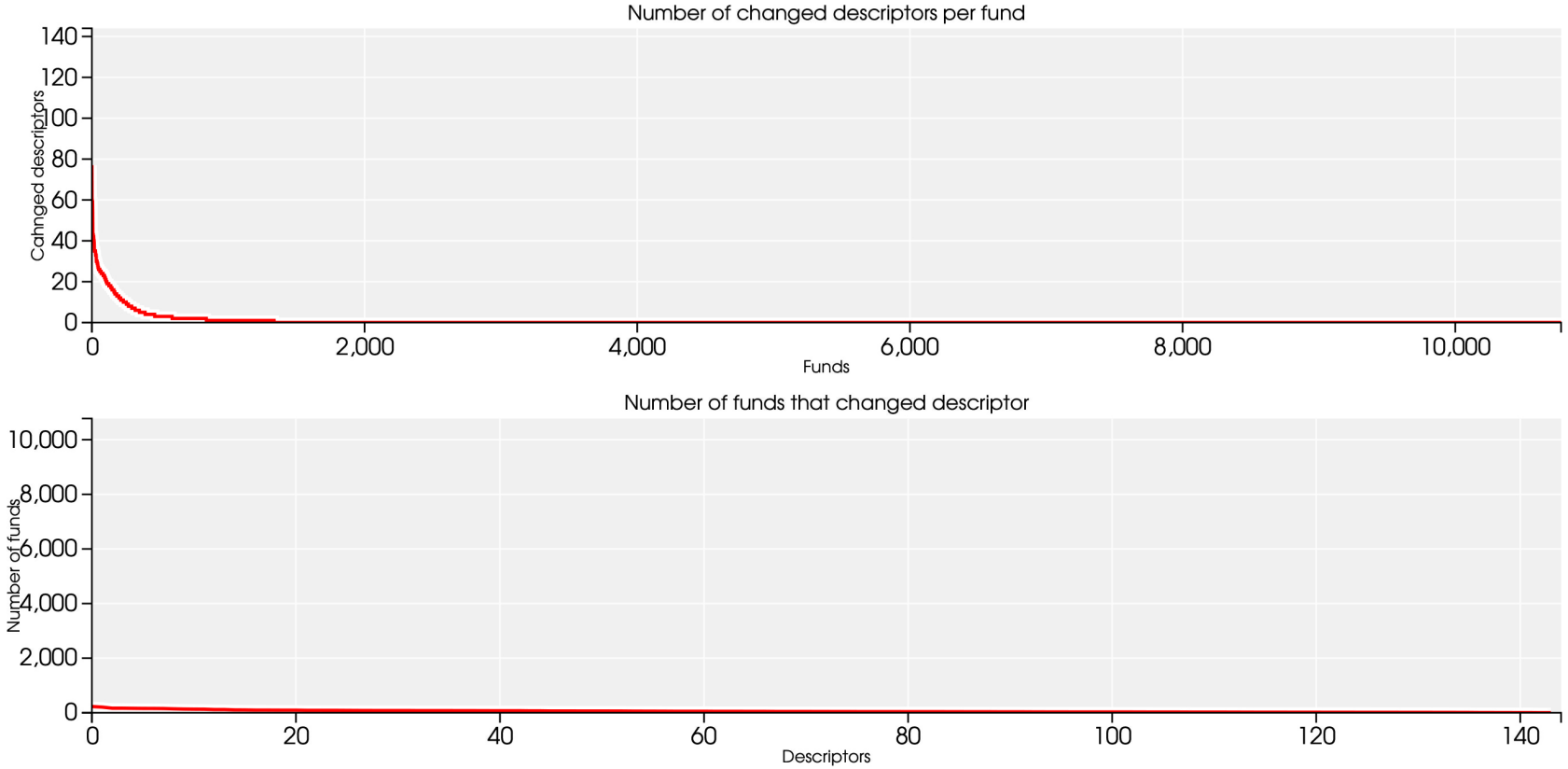
Style (pre MS)	6.62
Style (post MS)	5.20
Levereged (most changed)	2.12
IA_Fundamental (10th most changed)	1.22
SF_LargeCap (20th most changed)	0.81

Can we trust the data?



- 88% of funds do not change a single descriptor (top figure).
- 7470 edits across all funds and all descriptors.

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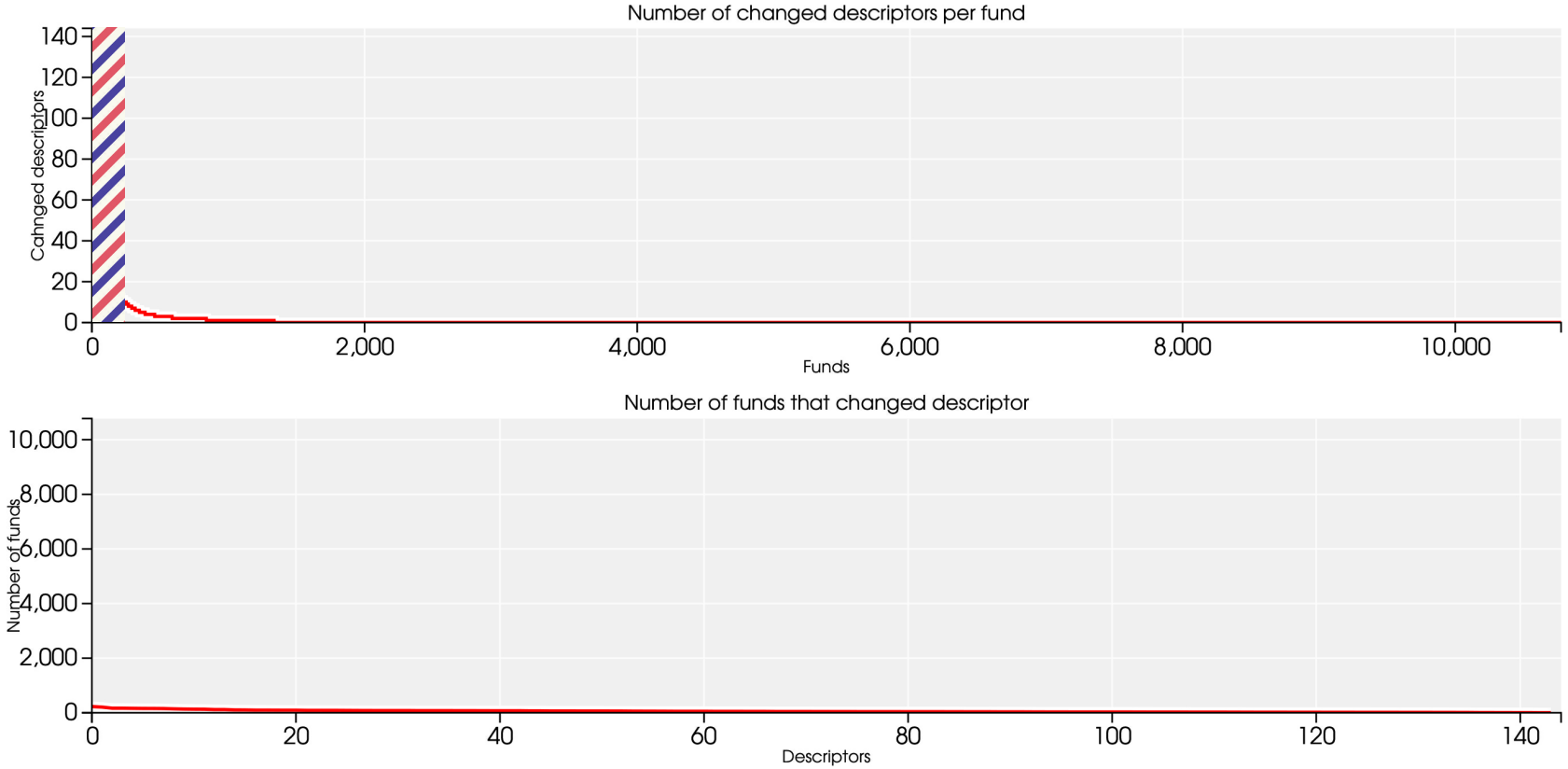

- Remove funds with 10+ edits (221, 2%) $\rightarrow$ 3014 edits (40%).

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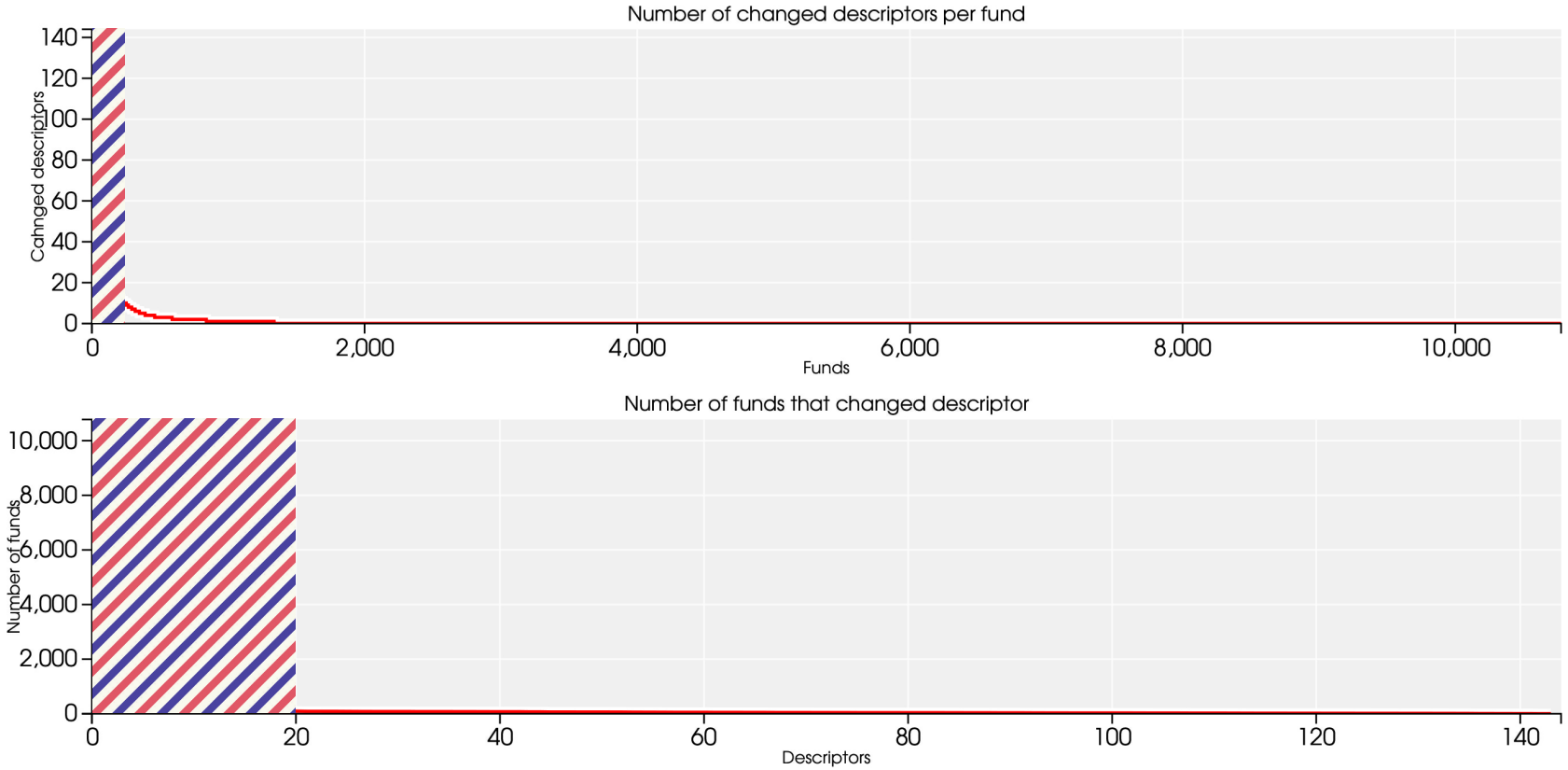
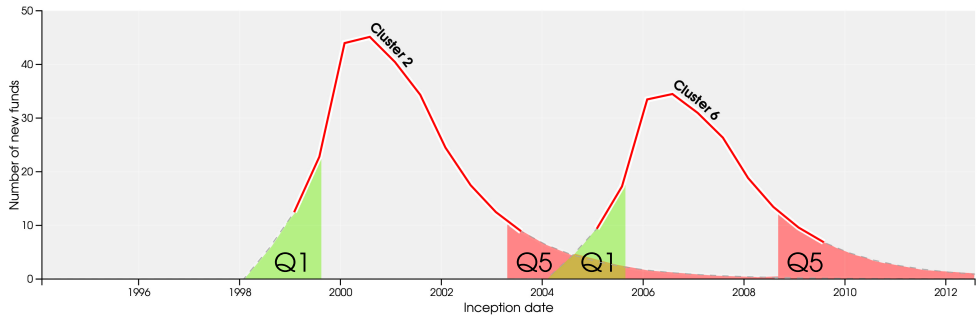


- Further remove top 20 changed descriptors → 1097 edits (15%).

Clustering results

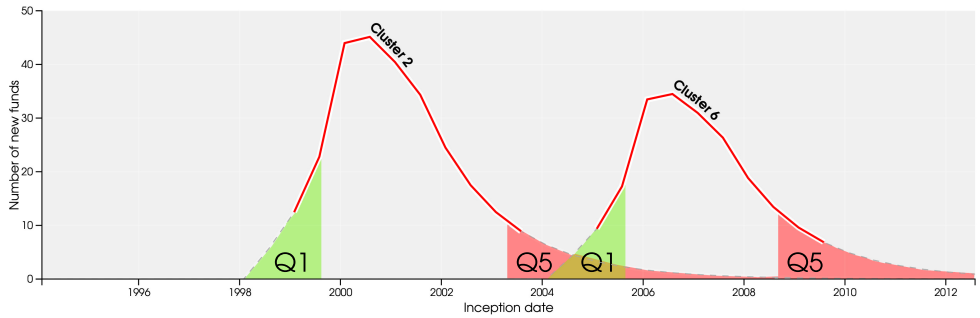
- We find 172 clusters of which 94 originate after 2002.
- Every year we see 8–20 new clusters.
- We can cluster 2,771 funds, 7,786 funds are not clustered. Out of these 4,233 are not in any cluster while 3,553 are in clusters that do not meet the minimum size criterion.
- On average there are 8-10 funds per cluster, the median is 7.
- On average it takes two years between the first and last entry, the median is less than a year.

Results for individual funds



Q_1
Q_5
No Cluster

Results for individual funds



Q_1
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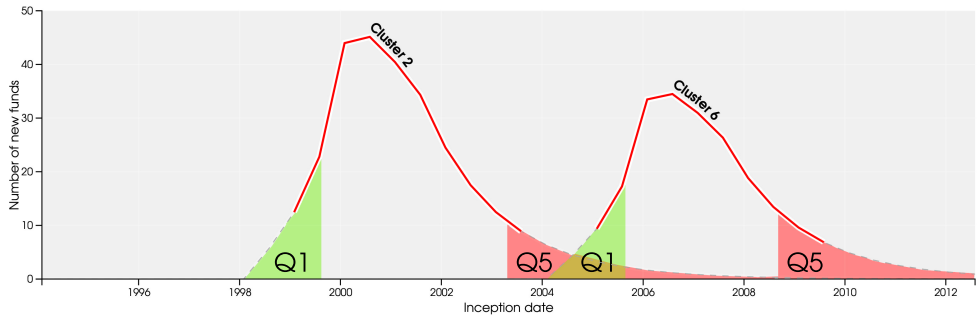
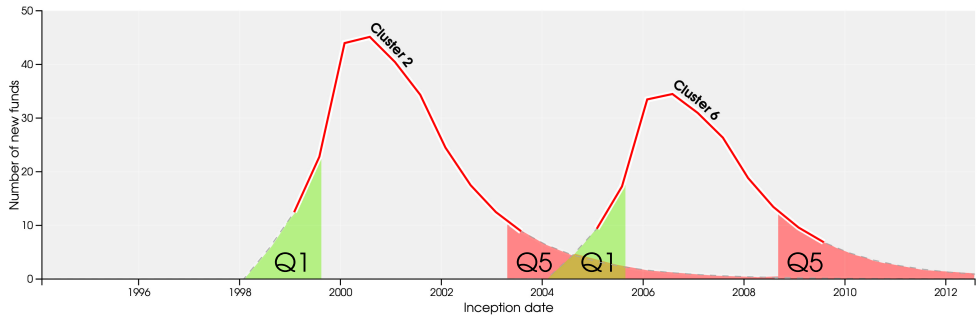
No Cluster
$Q_1 - Q_5$
Q_1 — No Cluster

Results for individual funds



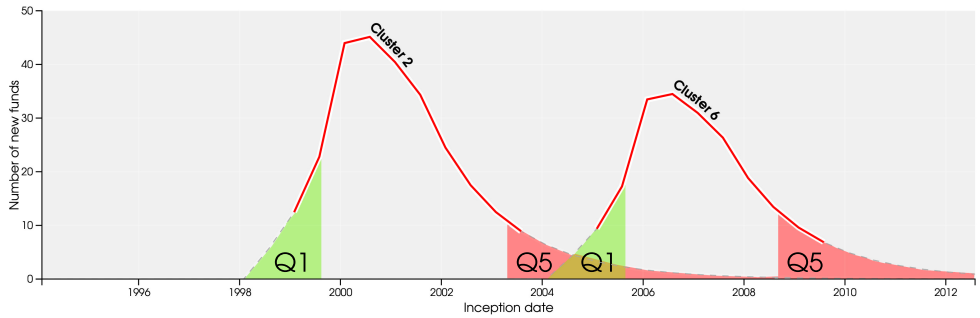
	Returns (%)
Q_1	0.63
Q_5	0.35
No Cluster	0.47
$Q_1 - Q_5$	0.28 ***
Q_1 — No Cluster	0.16 *

Results for individual funds



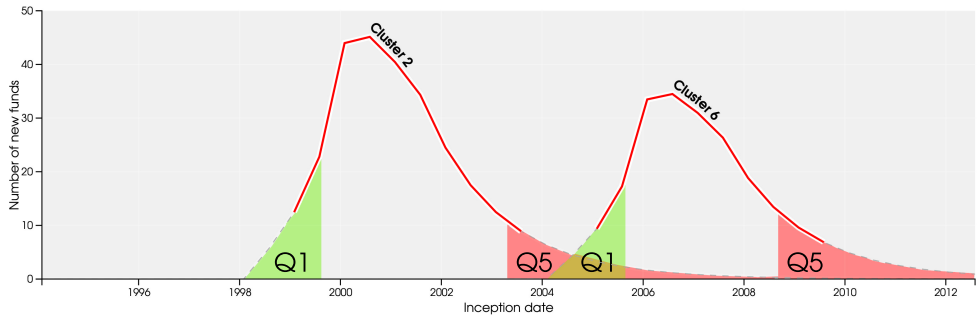
	Returns (%)	Alpha (%)
Q_1	0.63	0.64
Q_5	0.35	0.32
No Cluster	0.47	0.40
$Q_1 - Q_5$	0.28 ***	0.32 ***
Q_1 — No Cluster	0.16 *	0.24 ***

Results for individual funds



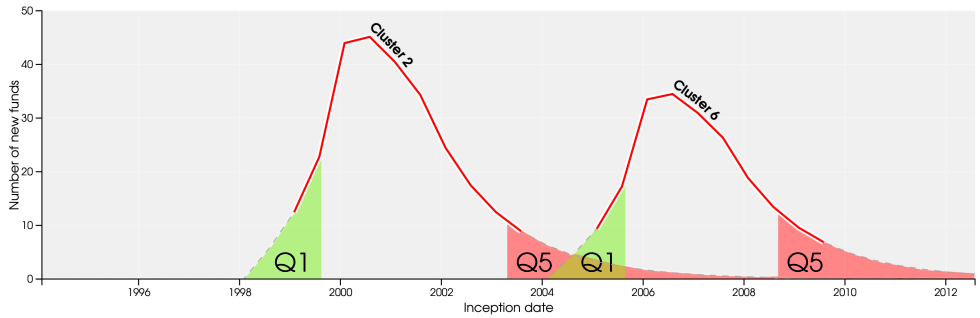
	Returns (%)	Alpha (%)	Survival (m)
Q_1	0.63	0.64	38.55
Q_5	0.35	0.32	21.92
No Cluster	0.47	0.40	36.86
$Q_1 - Q_5$	0.28 ***	0.32 ***	16.63 ***
Q_1 — No Cluster	0.16 *	0.24 ***	1.69

Results for individual funds



	Returns (%)	Alpha (%)	Survival (m)	Incentive fee (%)
Q_1	0.63	0.64	38.55	15.25
Q_5	0.35	0.32	21.92	12.84
No Cluster	0.47	0.40	36.86	17.72
$Q_1 - Q_5$	0.28 ***	0.32 ***	16.63 ***	2.41 ***
Q_1 — No Cluster	0.16 *	0.24 ***	1.69	-2.48 ***

Results for individual funds



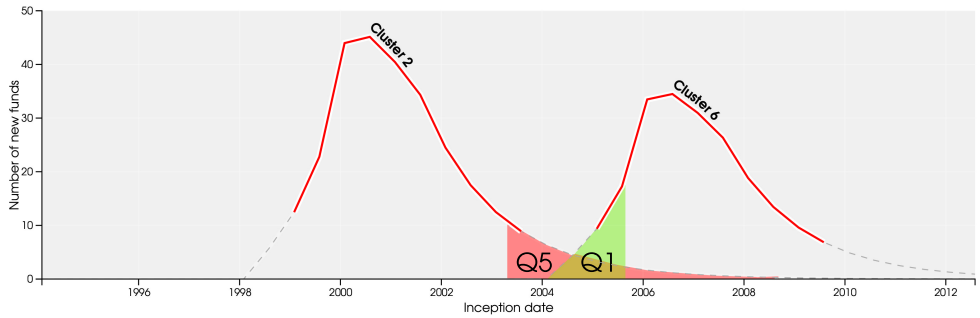
	Returns (%)	Alpha (%)	Survival (m)	Incentive fee (%)	Management fee (%)
Q_1	0.63	0.64	38.55	15.25	1.37
Q_5	0.35	0.32	21.92	12.84	1.61
No Cluster	0.47	0.40	36.86	17.72	1.58
$Q_1 - Q_5$	0.28 ***	0.32 ***	16.63 ***	2.41 ***	-0.24 ***
Q_1 — No Cluster	0.16 *	0.24 ***	1.69	-2.48 ***	-0.21 ***

Cross-sectional regressions

	(2)	(3)
Q_1	0.56 ***	0.39 ***
Q_1 × Age	-0.14 **	-0.11 ***
Q_1 × Flow$_{t-1}$		0.04 ***

- Alphas obtained from 24 months rolling-window estimation with Fung and Hsieh (2004) factors.
- Various controls included (fees, lock-up period, leverage, personal capital, etc.).
- The early-mover advantage diminishes with the age of the fund.
  - Information leakage or decreasing returns to scale.
  - Together with the fee-structure effects, it brings further evidence that there is a competitive market for hedge fund assets, with decreasing returns to scale.
- Net flows into early-mover funds are predictive of performance.
  - Investors seem to be able to identify successful innovators.
  - Evidence of rational hedge fund flows, as in Berk and Green (2004).

Results for portfolios (first 24 months)



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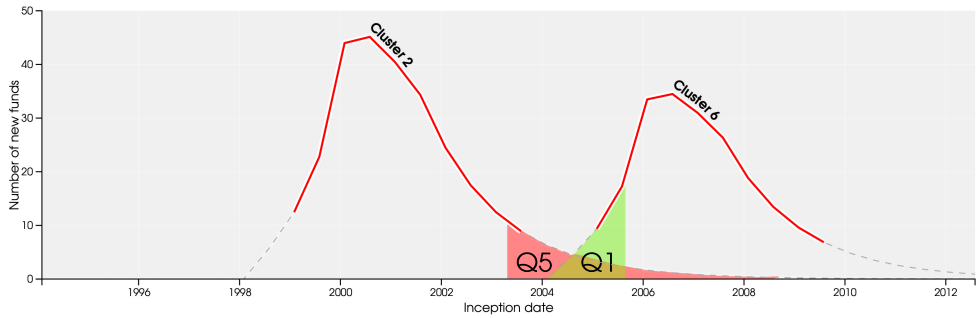
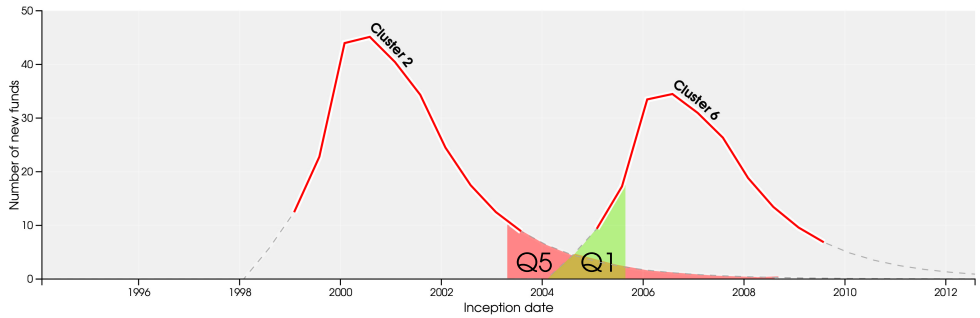


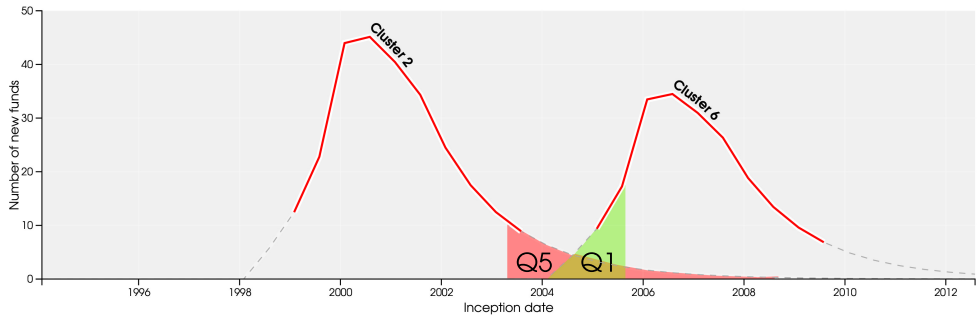
	Returns (%)
Q_1	0.94 ***
Q_5	0.39 *
No Cluster	0.90 ***
$Q_1 - Q_5$	0.55 ***
Q_1 − No Cluster	0.04 *

Results for portfolios (first 24 months)



	Returns (%)	Alpha (%)
Q_1	0.94 ***	0.65 ***
Q_5	0.39 *	0.03
No Cluster	0.90 ***	0.60 ***
$Q_1 - Q_5$	0.55 ***	0.46 **
Q_1 — No Cluster	0.04 *	-0.11

Results for portfolios (first 24 months)



	Returns (%)	Alpha (%)	R^2
Q_1	0.94 ***	0.65 ***	0.12
Q_5	0.39 *	0.03	0.25
No Cluster	0.90 ***	0.60 ***	0.65
$Q_1 - Q_5$	0.55 ***	0.46 **	0.08
Q_1 — No Cluster	0.04 *	-0.11	0.36

Additional factors

	Alpha
Q_1	0.65 ***
Q_5	0.03
No Cluster	0.60 ***

Additional factors

	Alpha	R_{Q_1}	$Alpha_{Q_1}$
Q_1	0.65 ***		
Q_5	0.03	0.50 ***	-0.38
No Cluster	0.60 ***	0.41 ***	0.26 **

- Laggards increasingly try to replicate the systematic exposures of innovators, but fail to generate alpha.
- In regressions with style portfolios, alphas decrease and R-squares increase when the Q1 portfolio is added as a risk factor.

Additional factors

	Alpha	R_{Q_1}	$Alpha_{Q_1}$	R_{Q_5}	$Alpha_{Q_5}$
Q_1	0.65 ***			0.18 ***	0.62 ***
Q_5	0.03	0.50 ***	-0.38		
No Cluster	0.60 ***	0.41 ***	0.26 **	0.26 ***	0.55 ***

- Laggards increasingly try to replicate the systematic exposures of innovators, but fail to generate alpha.
- In regressions with style portfolios, alphas decrease and R-squares increase when the Q1 portfolio is added as a risk factor.
- Controlling for behaviour of Q_5 funds does not impact alphas of other quintiles.

Style regressions

		LSHE	FoF	Multi	Em Mkt	Macro	Neutral
FH2004	Alpha	0.52 ***	0.03	0.59 ***	0.93 ***	0.60 ***	0.27 ***
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with R_{Q_1}	Alpha						
	R_{Q_1}	0.46 ***	0.51 ***	0.32 ***	0.81 ***	0.36 ***	0.13 **
	R^2	0.73	0.66	0.6	0.69	0.35	0.51
with R_{Q_5}	Alpha						
	R_{Q_5}	0.29 ***	0.32 ***	0.24 ***	0.43 ***	0.22 ***	0.12 **
	R^2	0.74	0.68	0.68	0.66	0.37	0.55

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with R_{Q_5}	Alpha	0.47 ***	-0.03	0.54 ***	0.84 ***	0.56 ***	0.25 ***
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Robustness

We test for robustness to:

- backfill bias
- additional risk factors (liquidity, emerging markets index)
- clustering: zero-distance, fewer clustering variables

... with similar results

Are we capturing just fund families?

No: our clusters are different from family-clusters

Backfill bias, incubation

	Returns (%)
Q_1	0.94 ***
Q_5	0.39 *
No Cluster	0.90 ***
$Q_1 - Q_5$	0.55 ***
Q_1 – No Cluster	0.04 *

Backfill bias, incubation

	Returns (%)	Returns (%)
Q_1	0.89 ***	0.94 ***
Q_5	0.45 *	0.39 *
No Cluster	0.73 ***	0.90 ***
$Q_1 - Q_5$	0.44 **	0.55 ***
Q_1 – No Cluster	0.16	0.04 *

Backfill bias, incubation

	Returns (%)	Alpha (%)	Alpha (%)
Q_1	0.89 ***	0.7 ***	0.65 ***
Q_5	0.45 *	0.07	0.03
No Cluster	0.73 ***	0.41 ***	0.60 ***
$Q_1 - Q_5$	0.44 **	0.46 **	0.46 **
Q_1 – No Cluster	0.16	0.12	-0.11

Backfill bias, incubation

	Returns (%)	Alpha (%)	R^2	R^2
Q_1	0.89 ***	0.7 ***	0.12	0.12
Q_5	0.45 *	0.07	0.38	0.25
No Cluster	0.73 ***	0.41 ***	0.71	0.65
$Q_1 - Q_5$	0.44 **	0.46 **	0.3	0.08
Q_1 – No Cluster	0.16	0.12	0.64	0.36

Backfill bias, incubation

	Returns (%)	Alpha (%)	R^2
Q_1	0.89 ***	0.7 ***	0.12
Q_5	0.45 *	0.07	0.38
No Cluster	0.73 ***	0.41 ***	0.71
$Q_1 - Q_5$	0.44 **	0.46 **	0.3
Q_1 – No Cluster	0.16	0.12	0.64

Zero-distance clustering (identical funds)

	Returns (%)	Returns (%)
Q_1	1.06 ***	0.94 ***
Q_5	0.41 *	0.39 *
No Cluster	0.89 ***	0.90 ***
$Q_1 - Q_5$	0.65 ***	0.55 ***
Q_1 – No Cluster	0.17	0.04 *

Zero-distance clustering (identical funds)

	Returns (%)	Alpha (%)	Alpha (%)
Q_1	1.06 ***	0.8 ***	0.65 ***
Q_5	0.41 *	0.14 ***	0.03
No Cluster	0.89 ***	0.58 ***	0.60 ***
$Q_1 - Q_5$	0.65 ***	0.50 **	0.46 **
Q_1 – No Cluster	0.17	0.06	-0.11

Zero-distance clustering (identical funds)

	Returns (%)	Alpha (%)	R^2	R^2
Q_1	1.06 ***	0.8 ***	0.23	0.12
Q_5	0.41 *	0.14 ***	0.4	0.25
No Cluster	0.89 ***	0.58 ***	0.63	0.65
$Q_1 - Q_5$	0.65 ***	0.50 **	0.0	0.08
Q_1 – No Cluster	0.17	0.06	0.2	0.36

Zero-distance clustering (identical funds)

	Returns (%)	Alpha (%)	R^2
Q_1	1.06 ***	0.8 ***	0.23
Q_5	0.41 *	0.14 ***	0.4
No Cluster	0.89 ***	0.58 ***	0.63
$Q_1 - Q_5$	0.65 ***	0.50 **	0.0
Q_1 – No Cluster	0.17	0.06	0.2

Conclusions

- Institutional design can serve as a signal of innovation and form basis of higher resolution classification of hedge funds.
- Distinctiveness is important (skilled managers creating new markets or innovating).
- Destructive impact of followers who, when they are able to replicate a strategy, remove alpha from the market for all players through competition—benefits to imitation are low (or barriers are high)
- Mean returns and alphas are higher for early-entry funds.
- 74% of funds are not clustered: niche/specialization?
- Early-entry is related to the fee structure (signaling device, bargaining power).
- Early-entry benefits decrease with the age of the fund (information leakage or decreasing returns to scale).
- Investors seem to be able to identify successful innovators