
Inexperienced Investors and Bubbles

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Motivation

Are inexperienced investors more likely than experienced investors to buy overpriced assets during financial bubbles?

- **Historical anecdotes**

- Mackay (1852)

- “Even chimney-sweeps and old clotheswomen dabbled in tulips”*

- Kindleberger (1979)

- Bubbles bring in *“segments of the population that are normally aloof from such ventures”*

- Brooks (1973)

- “Youth had taken over Wall Street”*

- Lewis (2009)

- Icelandic fisherman and the yen carry trade

Motivation

Are inexperienced investors more likely than experienced investors to buy overpriced assets during financial bubbles?

- **Survey evidence**

Young and inexperienced investors had the highest return expectations in the late 1990s (Vissing-Jorgensen 2003)

- **Experimental asset markets**

- Bubbles are less likely to occur when traders are experienced.
- Inexperienced subjects are “trend-chasers”
(Smith, Suchanek, Williams 1988; Haruvy, Lahav, and Noussair 2006).

Motivation

Open questions

- Does inexperience affect market decisions, outside of the laboratory?
- Does inexperience affect decisions of professional investors?
- How do inexperienced investors form their expectations?

Our approach

- Study mutual fund managers during the technology bubble
- Age as a proxy for experience

Hypothesis

- Young managers more likely to buy tech stocks during tech bubble
- Young managers show trend-chasing behavior

Preview of Results

1. Younger managers bet more heavily on tech.
2. Younger managers are trend chasers.
3. Younger managers get enormous inflows, exacerbating their biases.
4. Subject to caveats, younger managers underperform.

Data

Sample

- Domestic U.S. equity funds, excluding specialty funds, in existence in December 1997.

Morningstar

- Manager characteristics (age, number of mgrs., ...) in Dec 1997
- Style category (“small value”, “large growth”, ...)

Thomson Mutual Fund Filings & CRSP stocks

- Calculate price/sales ratios for each fund each quarter

CRSP Mutual Funds Database

- Fund Returns, NAV, ...

Measuring technology exposure

1. Portfolio holdings data

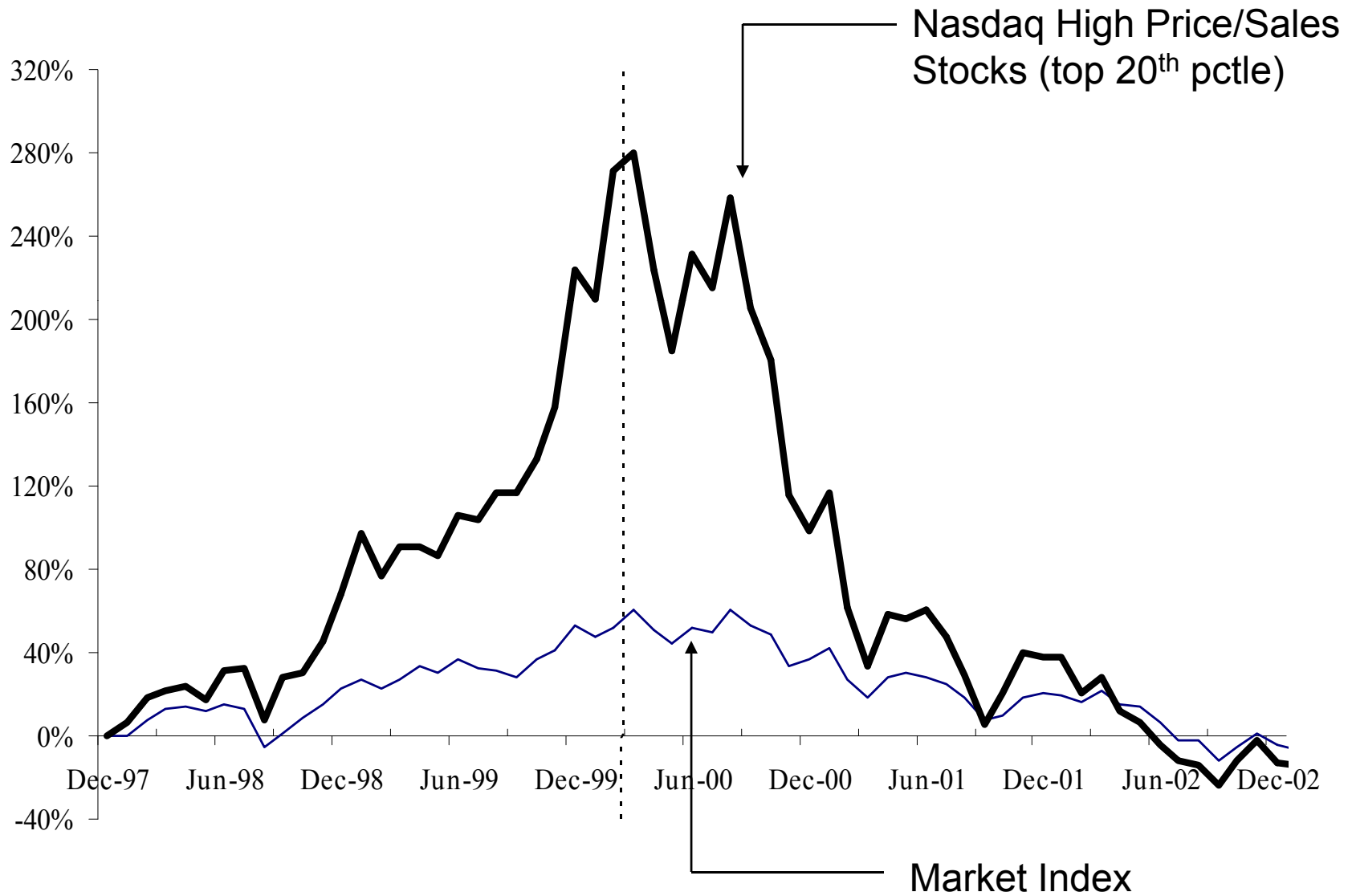
- Average price/sales ratios of stocks held by a fund
 - Continuous measure (unlike technology index or industry membership)
 - During sample period closely related to tech stock holdings

2. Fund returns data

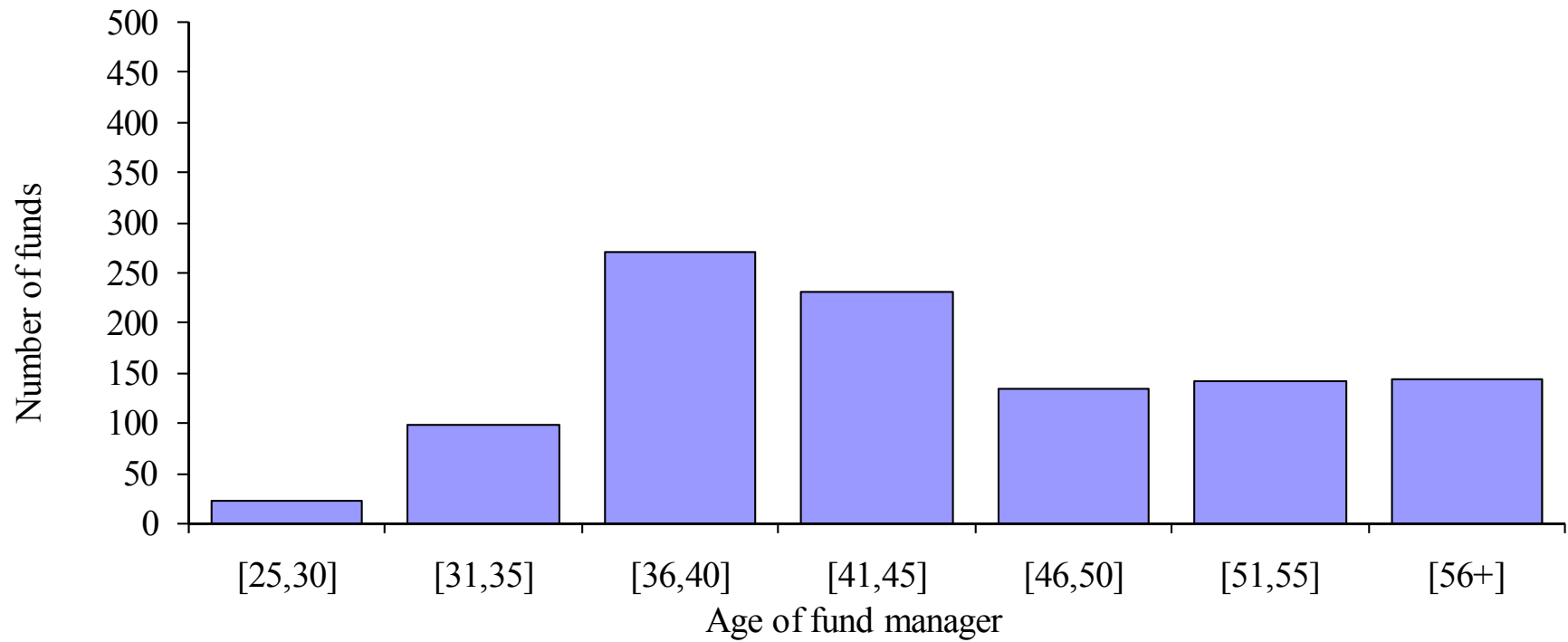
- Loading of fund returns on high-P/S-Nasdaq-stocks minus R_M factor

$$R_t = \alpha + \beta R_{Mt} + \gamma_{Tech} (R_{Tt} - R_{Mt}) + \varepsilon_t$$

The technology bubble



Age distribution of managers: December 1997



Funds have different benchmarks...

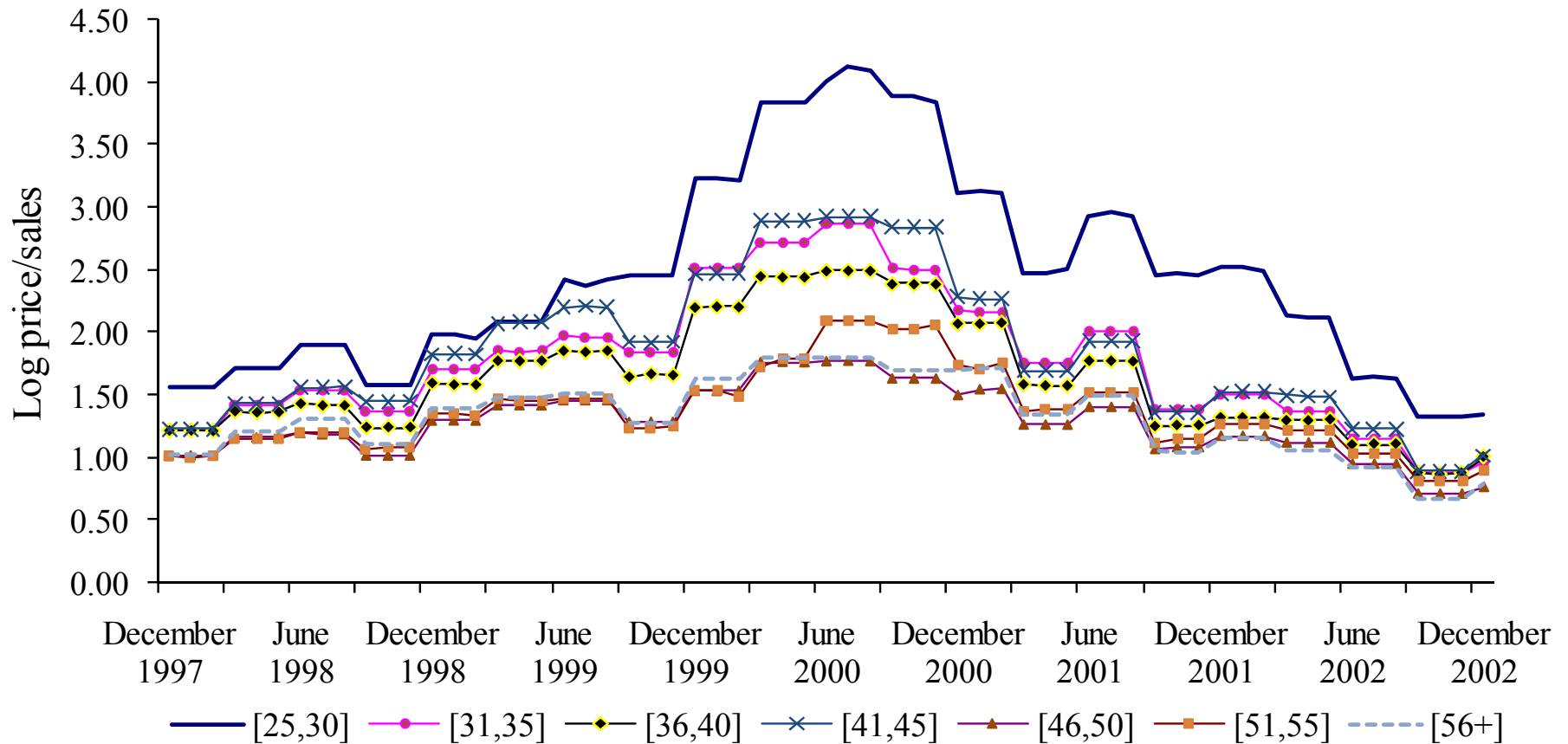
	[25,30]	[31,35]	[36,40]	[41,45]	[46,50]	[51,55]	[56,90]
Panel C. Benchmark distribution by fund manager age, in percent, for funds reporting holdings in March 2000 (N=835)							
Conservative allocation	11	1	2	4	4	2	3
Large blend	22	18	14	22	15	16	26
Large growth	11	15	15	14	15	19	18
Large value	0	17	15	16	17	18	13
Mid-cap blend	0	3	5	4	1	5	4
Mid-cap growth	28	9	9	12	8	6	6
Mid-cap value	11	2	4	4	4	4	4
Moderate allocation	6	8	11	9	20	15	10
Small blend	0	10	8	2	7	6	3
Small growth	11	15	12	12	8	7	8
Small value	0	2	5	1	3	2	4
	100%	100%	100%	100%	100%	100%	100%

Two approaches to control for benchmarks:

- Demean by benchmark group mean (fixed effect)
- Control for β_{HML} , β_{SMB} from 1995 to 1997 period

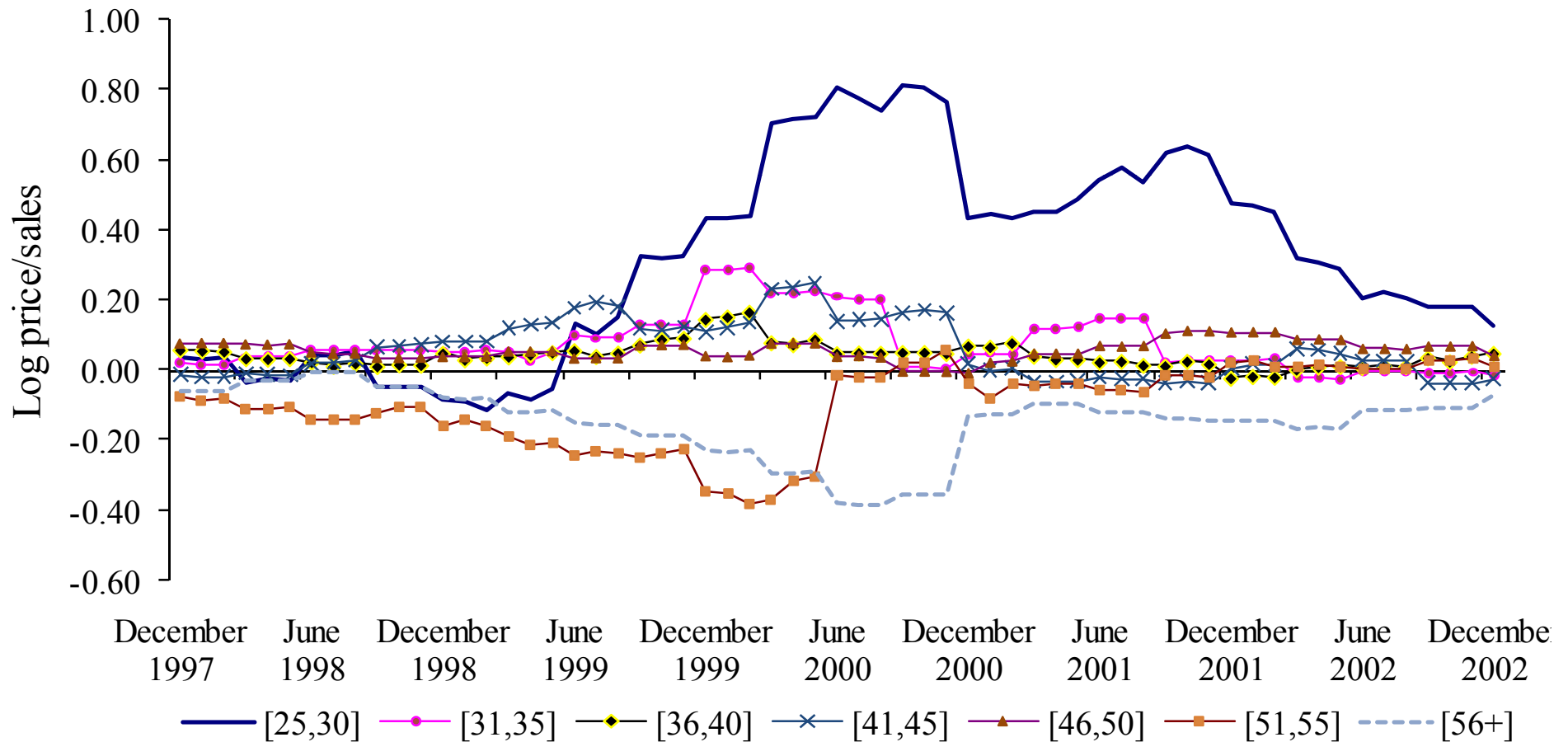
Fact 1: Young managers bet more heavily on tech

Figure 3. Panel A: Value-weighted log P/S



Fact 1: Young managers bet more heavily on tech

Figure 3, Panel B: Vw. log P/S, Morningstar benchmark adj.



Fact 1: Young managers bet more heavily on tech

Economic Magnitude:

Regress $\text{Log}(P/S)$ on Age, Controlling for Style: Coefficient $\beta = -0.019$

Consider spread between 25 and 65-year old manager = 40 years

$$40 \times -0.019 = -0.76 =$$

Approximately one quarter of median log P/S of 2.47

Approximately 0.70 Standard Deviations (benchmark adjusted) of log P/S

Robustness:

- Simple P/S ratio instead of log P/S
- Single vs. multi-manager funds
- P/S Quintiles
- Within younger/older cohorts
- Quantile based age measures
- Large funds only

Trend-chasing

How do inexperienced managers form their beliefs?

- In experiments, inexperienced subjects tend to extrapolate past price movements (trend-chasing)
 - Smith, Suchanek, and Williams (1988)
 - Haruvy, Lahav, and Noussair (2006)
- Prediction: Inexperienced managers more likely to increase tech weightings following high returns
- **Measure:** **Active** change in price/sales ratio

Log P/S_{it} vs. Log $P/S_{it}^{\text{Passive}}$

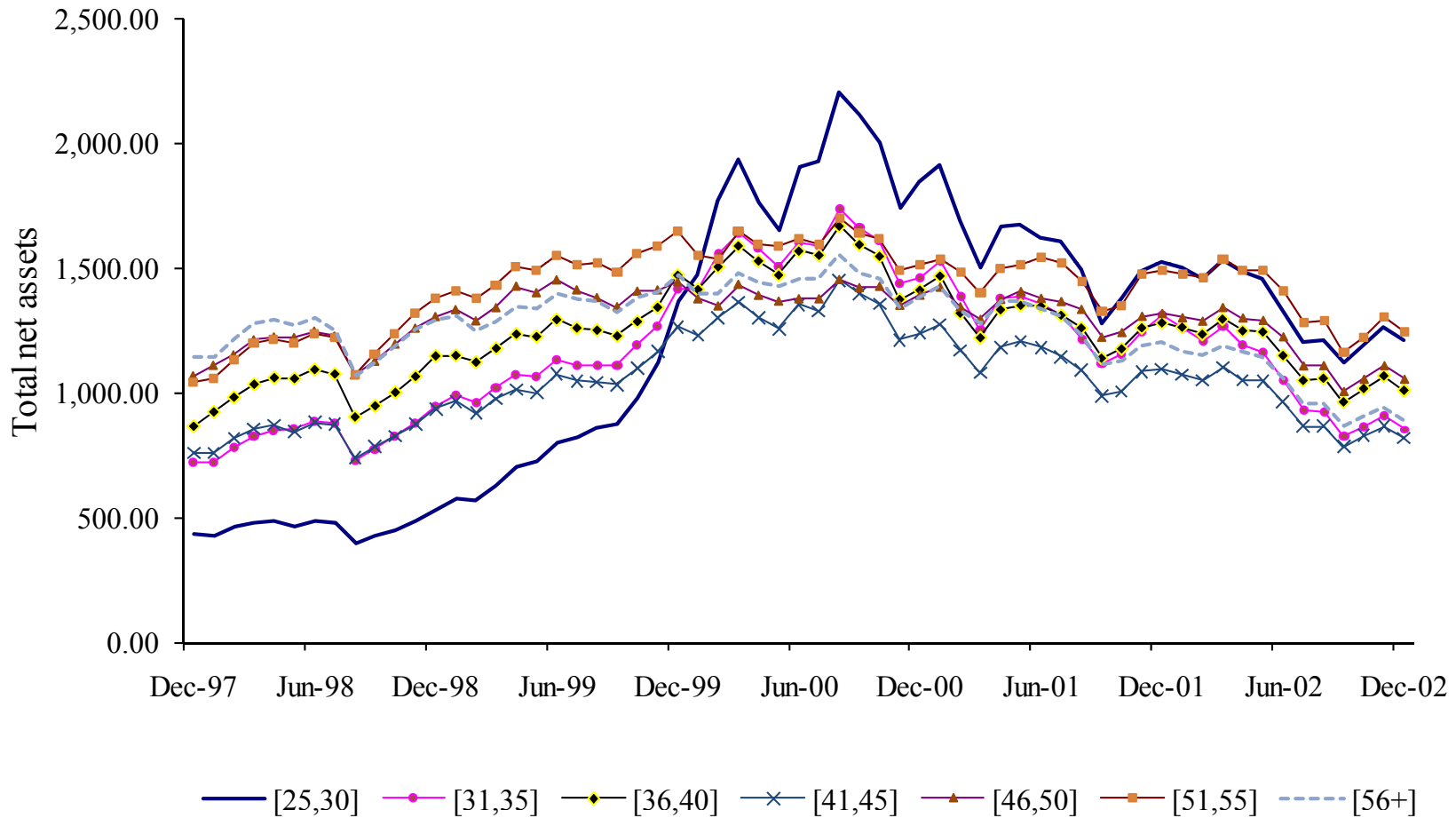
Fact 2: Young managers are trend chasers

Table 4, dependent variable: $\text{Log}(P/S)_{it}$

	$R_{t-1} = \text{Tech return}$		$R_{t-1} = \text{Tech return} - \text{CRSP VW return}$	
	(1)	(2)	(3)	(4)
Constant	0.156 [10.46]	0.098 [6.75]	0.158 [10.44]	0.095 [6.45]
$\text{Log}(P/S)^{\text{Passive}}$	-0.063 [-11.21]	-0.028 [-5.91]	-0.062 [-11.11]	-0.026 [-5.18]
Age in 1997	-0.001 [-2.50]	-0.001 [-1.83]	-0.001 [-2.66]	-0.001 [-1.85]
R_{t-1}	0.347 [3.53]	0.344 [3.11]	0.248 [1.86]	0.357 [2.31]
$R_{t-1} \times \text{Age in 1997}$	-0.006 [-2.84]	-0.005 [-2.09]	-0.003 [-1.03]	-0.005 [-1.66]
Fixed effects	Yes	Yes	Yes	Yes
Weighting	EW	VW	EW	VW
N observations	16,865	16,855	16,865	16,855
R^2	0.03	0.02	0.03	0.02

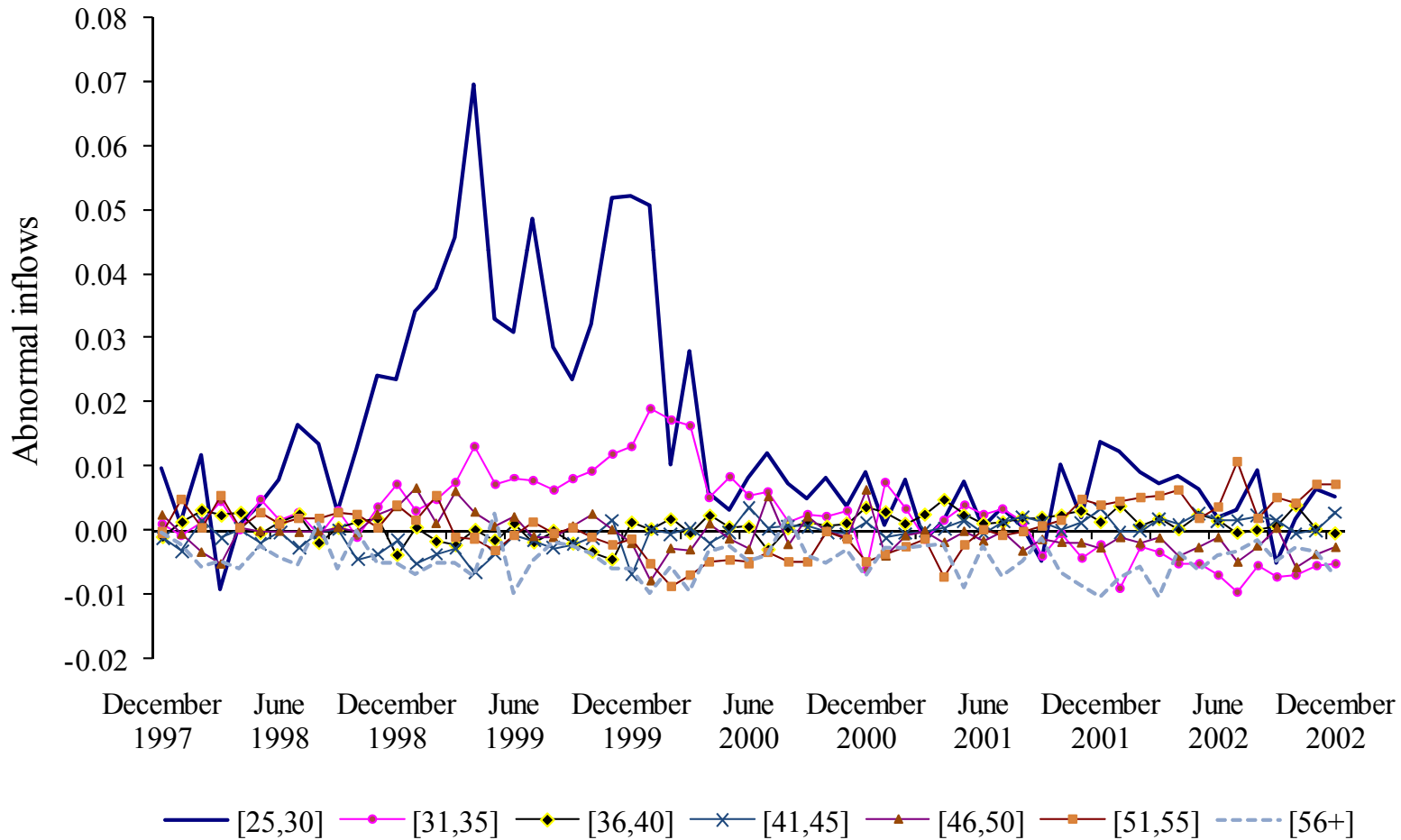
Fact 3: Young managers get inflows

Figure 5, Panel A: Total Net Assets (\$millions)



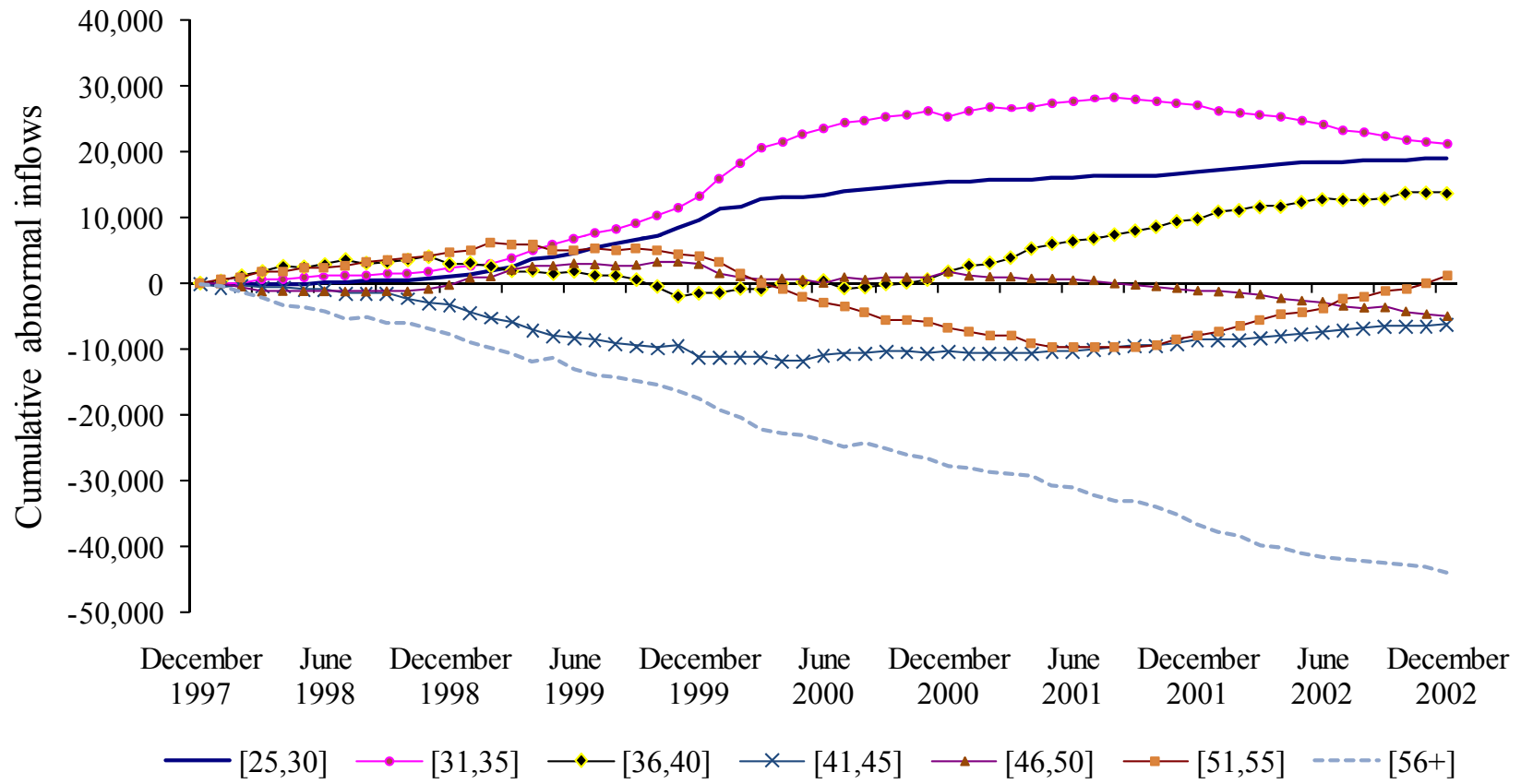
Fact 3: Young managers get inflows

Figure 5, Panel B: Abnormal Flows by month (as fraction of TNA)



Fact 3: Young managers get inflows

Figure 5, Panel C: Cumulative Abnormal Flows (\$millions)



Alternative Explanations

Other potential differences between young and old managers

- Mechanical effects
- Technology-specific human capital
- Career concerns
- Window-dressing

None of these explanations appears consistent with our findings

Alternative Explanations: Mechanical effects

Table 5, dependent variable: $\sum_{1998 \text{ to } 2000} \text{Log}(P/S)_{it} - \text{Log}(P/S)_{it}^{\text{Passive}}$

	Y= Active allocation to high price/sales stocks			
	(1)	(2)	(3)	(4)
Constant	0.909 [2.34]	1.160 [2.94]	0.968 [2.43]	1.541 [2.78]
Age in 1997	-0.012 [-3.51]	-0.012 [-3.69]	-0.013 [-3.94]	-0.010 [-2.15]
β_{RMRF}		-0.165 [-1.37]		
β_{SMB}		-0.141 [-1.46]		
β_{HML}		-0.002 [-0.02]		
Category F.E	No	No	Yes	Yes
Weighting	EW	EW	EW	VW
N observations	835	821	835	835
R^2	0.02	0.03	0.04	0.13

Alternative Explanations: Human Capital

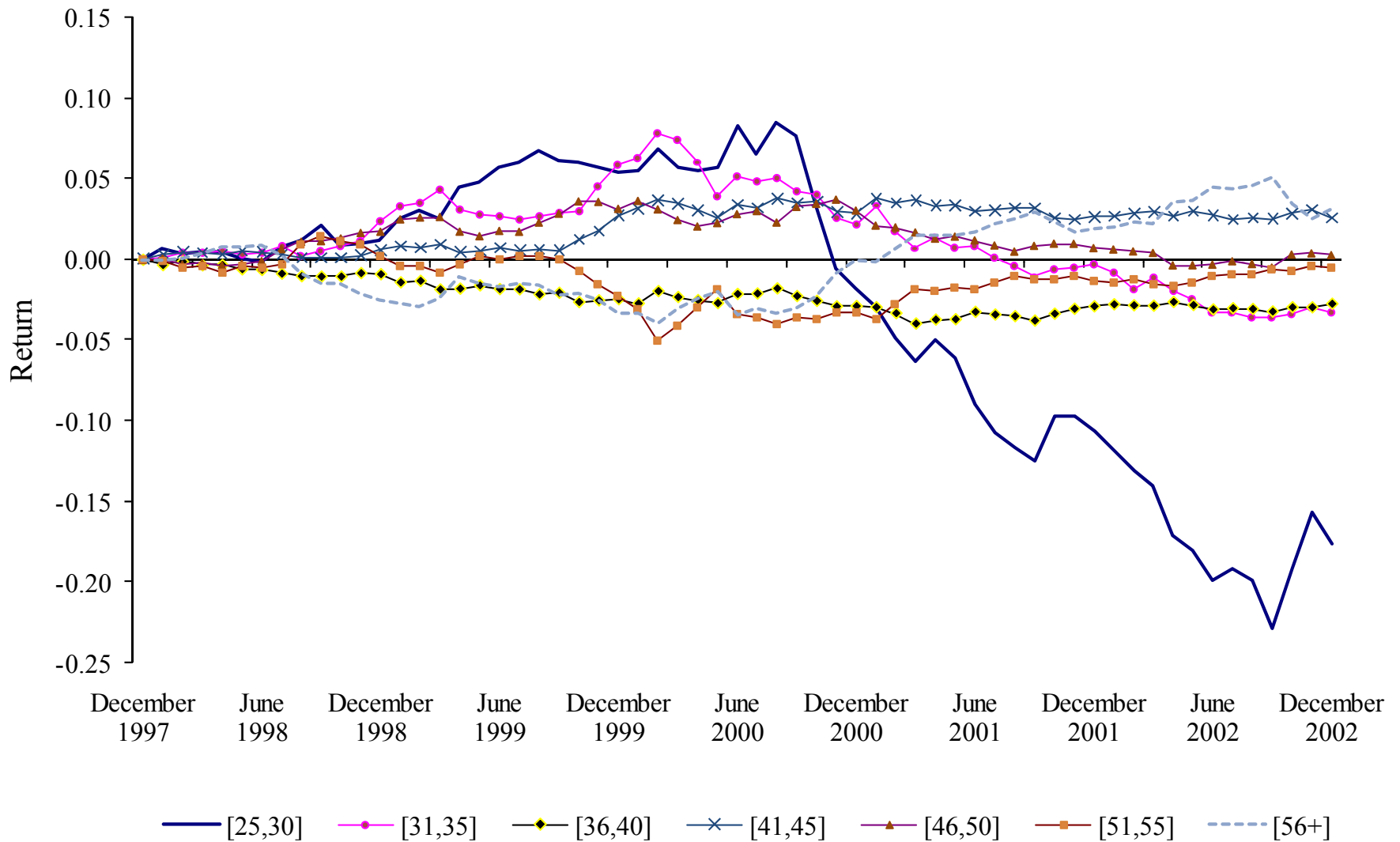
Do young managers overweight tech because they are more skilled at selecting within the universe of new economy stocks?

Only partially consistent with our results

- Young managers disproportionately invest in tech
- ✘ Young managers should demonstrate superior stock selection skills within the universe of tech stocks

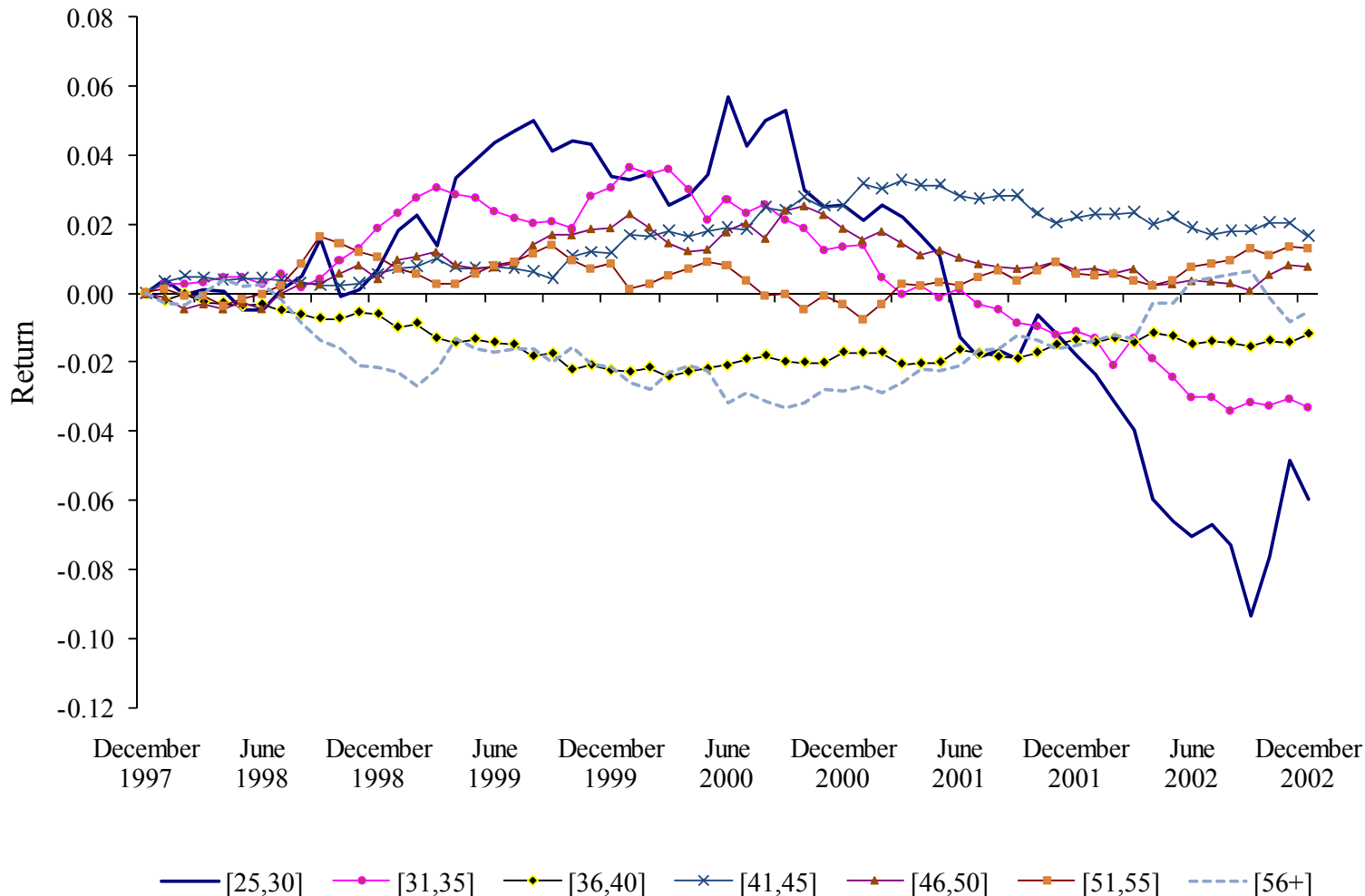
Fact 4: Young managers don't outperform

Figure 6, Panel B: Cumulative vw. holdings-based returns, net of benchmark



Fact 4: Young managers don't outperform

Figure 6: Panel C: Cumulative vw. characteristics-adj. returns, net of benchmark



- Implication: High inflows just before period of sustained underperformance (e.g., Frazzini and Lamont 2007). IRR of investors in these funds was terrible.

Alternative Explanations: Herding

- Career concerns can induce herding
 - Scharfstein and Stein (1990)
 - Zwiebel (1995)
- Funds run by younger managers should have lower benchmark tracking error
 - Chevalier and Ellison (1999)
 - But in our data, younger managers tend to **deviate** more from their benchmarks in terms of tech exposure
- Herding models don't make predictions about direction of deviation from benchmark

Alternative Explanations: Window dressing

Prior evidence on window dressing

- Lakonishok, Shleifer, Thaler, Vishny (1991) document window dressing among pension funds
- Cooper, Dimitrov, and Rau (2003): mutual funds changes their names during the bubble to attract inflows from retail investors.

Can it explain young managers' behavior?

- No reason to be concentrated in funds with younger managers.
- Our results also hold when technology exposure is measured using returns (Technology γ)

Conclusions

Inexperienced (young) managers

- more likely to bet on technology stocks
- more likely to be trend-chasing technology stocks
- receive significant abnormal inflows → Amplifies economic significance of investor biases
- not particularly good at choosing technology stocks

Consistent with experimental work that shows a role for investor inexperience in propagating bubbles.

Consistent with the idea that investors learn by “doing”

Some speculation...

Bubbles seem to occur only every few decades or so...

Possible explanation

- Bubbles can happen if a significant fraction of the investor population has not experienced bubble and crash before