The Good News is Short Interest

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Introduction

Question

Is the *absense* of short selling informative about future returns?

Introduction

Overview

- Portfolios of lightly shorted stocks have large and significant abnormal returns
- Both bad and *good* news known to short sellers are not incorporated into prices
- Short sellers can identify overvalued stocks and can adequately avoid undervalued stocks

Background

- Short sale constraints can inhibit bad news being incorporated into prices
- Miller (1977) - Stock prices too high on average because of over optimism
- Hong and Stein (2003) - short sale constraints can promote market crashes
- Diamond and Verrecchia (1987) - rational investors know negative info is withheld, account for bad news
- Desai et al. (1995), Senchack and Starks (1993) - High SIR stocks underperform

Background

Previous focus

- Negative information and short selling

Contribution

- What about lightly shorted stocks?
- Is it true that short selling is highly constrained for these stocks?
- Or are short sellers actively avoiding these stocks?
  - If no constraints, perhaps low shorting makes for good news

Data

Short Interest Ratio

- Monthly snapshot of percentage of shares outstanding sold short
  - Some contradictory claims regarding SIR
  - Many studies affirm high SIR is associated with negative returns and under performance
- Data from June 1988 to December 2005 on NYSE, Amex, and Nasdaq

Data

Other

- CRSP monthly returns, trading volumes, shares outstanding and end-of-month prices
- Compustat financial information from annual industrial files
- Common stock, listed for at least one year

Data

- Exclude data with missing monthly returns, trading volume, shares outstanding, or EOM prices
- 930,109 stock-month obs
- 634,583 from Nasdaq
- 285,541 from NYSE
- 9,985 from Amex
- Avg of 4,400 firms per month

Data

SIR Measures

1. Aggregate number of shorted shares
2. Aggregate short interest ratio (aggregate shorting as percentage of total shares outstanding)
3. Median days-to-cover ratio (SIR divided by share turnover)

Data

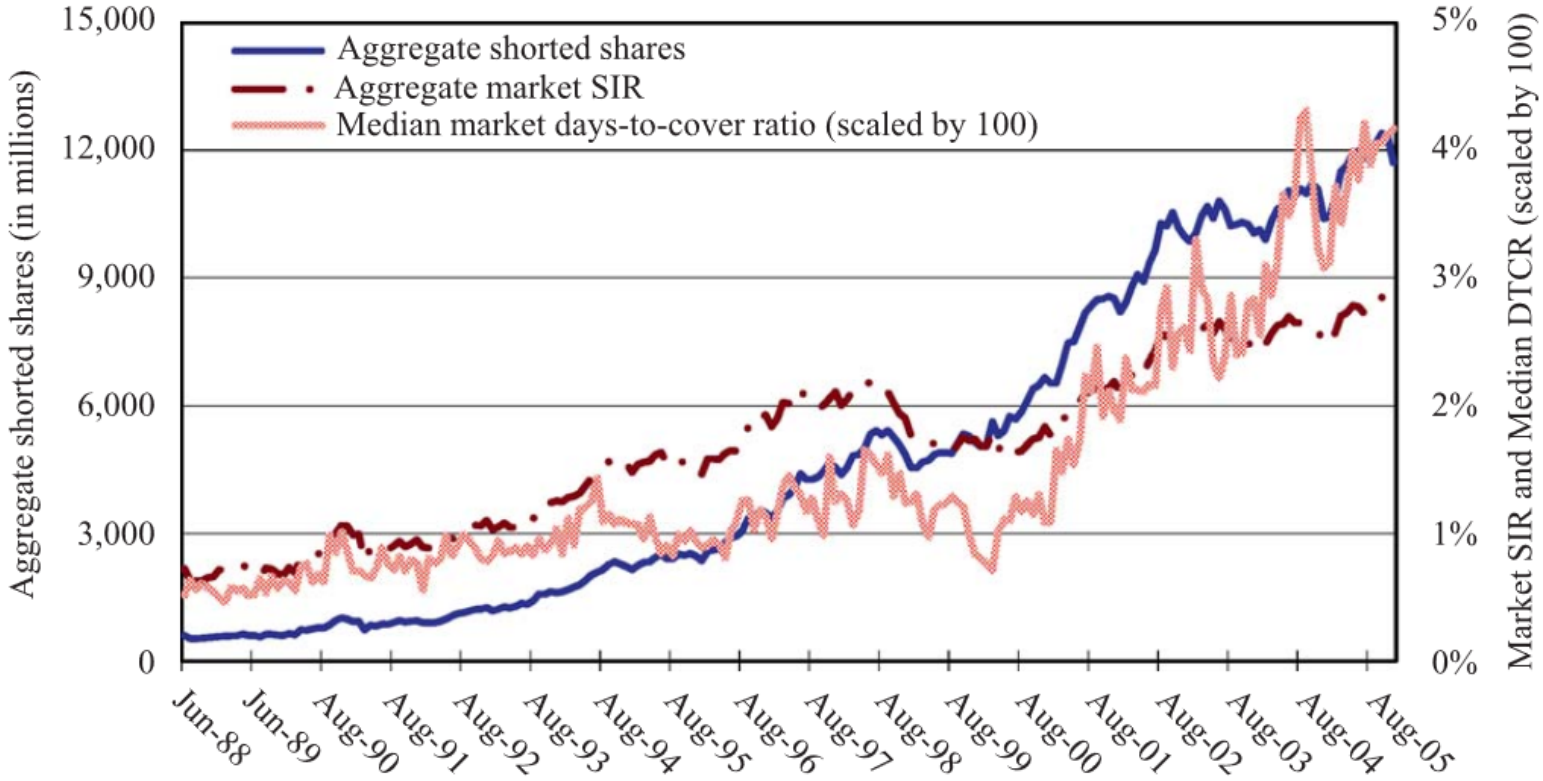

Figure 1: Time-Series market aggregate shorted shares, SIR, and median days-to-cover ratio

Data

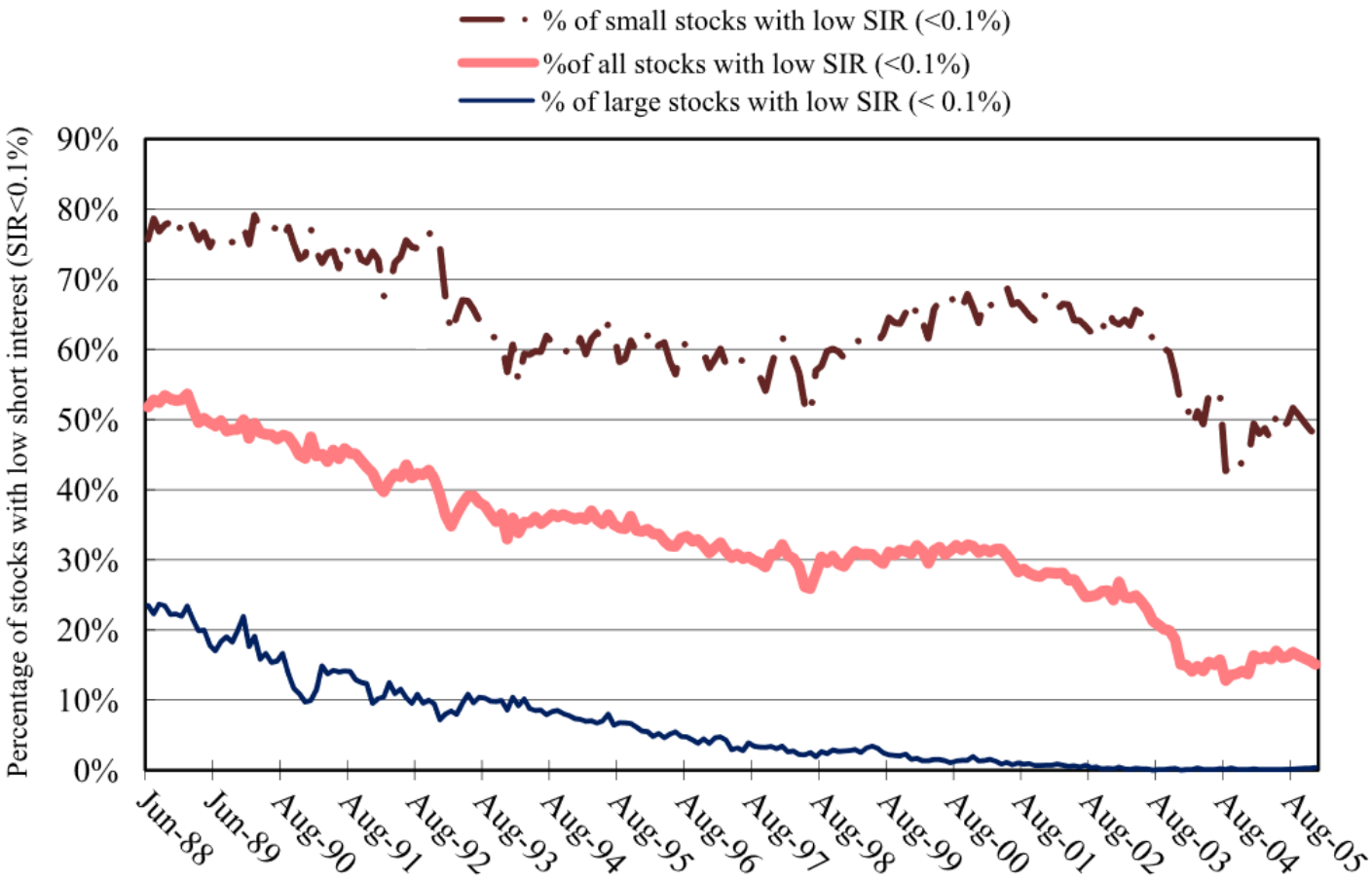

Figure 2: Time-series of percentage of stocks with short interest below 0.1%

Method

- Test for abnormal returns during calendar month following WSJ publications of SIR data
- Create portfolios of lightly and heavily shorted stocks
  - 99th, 95th, 90th, 10th, 5th, 1st percentiles for SIR
- Use Fama-French-Carhart Four Factor model to test for abnormal returns for portfolios
- Use both equal and value weighted portfolios

Baseline Results

Notable Results

- Large, significant positive abnormal returns for lightly shorted stock portfolio
- Lightly shorted portfolio contains small cap value stocks
- Long/short portfolio has positive returns and negative beta
- Equal weighted has stronger results than value weighted portfolio

Baseline Results

Portfolios/# *Stocks*	Raw ret.	Excess ret.	Intercept	RMRF	SMB	HML	MOM
Panel A: Monthly equal-weighted returns of high and low SIR stock portfolios							
SIR 99%	−0.001	−0.005	−0.012	1.359	1.239	−0.202	−0.282
# 45 Stocks			*<.001*	*<.001*	*<.001*	*0.041*	*<.001*
SIR 95%	0.004	0.000	−0.005	1.303	1.102	−0.144	−0.387
# 221 Stocks			*0.002*	*<.001*	*<.001*	*0.019*	*<.001*
SIR 90%	0.005	0.002	−0.004	1.298	1.001	−0.087	−0.381
# 441 Stocks			*0.007*	*<.001*	*<.001*	*0.084*	*<.001*
SIR1%	0.021	0.017	0.014	0.563	0.701	0.383	−0.319
# 232 Stocks			*<.001*	*<.001*	*<.001*	*<.001*	*<.001*
SIR 5%	0.020	0.017	0.013	0.592	0.722	0.415	−0.282
# 302 Stocks			*<.001*	*<.001*	*<.001*	*<.001*	*<.001*
SIR10%	0.020	0.017	0.013	0.607	0.769	0.412	−0.251
# 473 Stocks			*<.001*	*<.001*	*<.001*	*<.001*	*<.001*
SIR1%–SIR99%	0.022		0.026	−0.796	−0.538	0.585	−0.037
			<.001	*<.001*	*<.001*	*<.001*	*0.581*
SIR5%–SIR95%	0.017		0.019	−0.710	−0.380	0.558	0.105
			<.001	*<.001*	*<.001*	*<.001*	*0.026*
SIR10%–SIR90%	0.015		0.016	−0.690	−0.233	0.499	0.130
			<.001	*<.001*	*<.001*	*<.001*	*0.002*

Figure 3: Regression Analysis of monthly returns on Equal Weighted Portfolios

Baseline Results

Portfolios/# *Stocks*	Raw ret.	Excess ret.	Intercept	RMRF	SMB	HML	MOM
Panel B: Monthly value-weighted returns of high and low SIR stock portfolios							
SIR 99%	0.004	0.001	−0.009	1.436	0.985	−0.298	−0.030
# 45 Stocks			*0.005*	*<.001*	*<.001*	*0.007*	*0.642*
SIR 95%	0.010	0.006	−0.001	1.358	0.584	−0.380	−0.040
# 221 Stocks			*0.452*	*<.001*	*<.001*	*<.001*	*0.276*
SIR 90%	0.011	0.007	0.000	1.332	0.448	−0.319	−0.101
# 441 Stocks			*0.937*	*<.001*	*<.001*	*<.001*	*0.001*
SIR1%	0.013	0.009	0.005	0.544	0.521	0.484	−0.128
# 232 Stocks			*0.003*	*<.001*	*<.001*	*<.001*	*<.001*
SIR 5%	0.014	0.010	0.005	0.590	0.543	0.514	−0.110
# 302 Stocks			*0.001*	*<.001*	*<.001*	*<.001*	*<.001*
SIR10%	0.014	0.010	0.004	0.614	0.566	0.510	−0.090
# 473 Stocks			*0.002*	*<.001*	*<.001*	*<.001*	*0.002*
SIR1%–SIR99%	0.009		0.013	−0.892	−0.464	0.782	−0.099
			<.001	*<.001*	*<.001*	*<.001*	*0.149*
SIR5%–SIR95%	0.004		0.006	−0.767	−0.041	0.894	−0.069
			0.013	*<.001*	*0.561*	*<.001*	*0.179*
SIR10%–SIR90%	0.003		0.004	−0.718	0.118	0.830	0.011
			0.049	*<.001*	*0.060*	*<.001*	*0.811*

Figure 4: Regression Analysis of monthly returns on Value Weighted Portfolios

Baseline Results

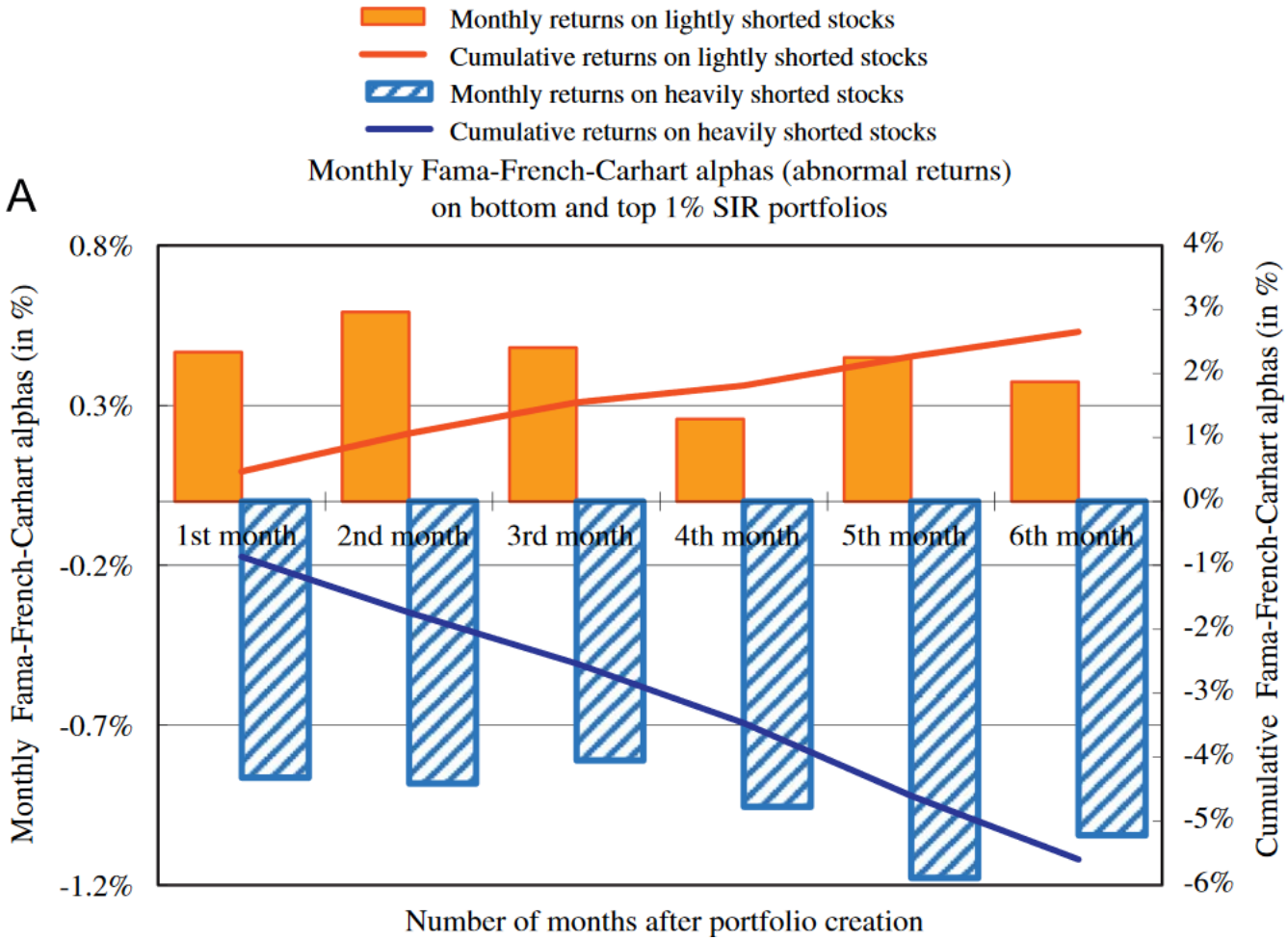

Figure 5: Monthly alphas on equal weighted portfolios

Baseline Results

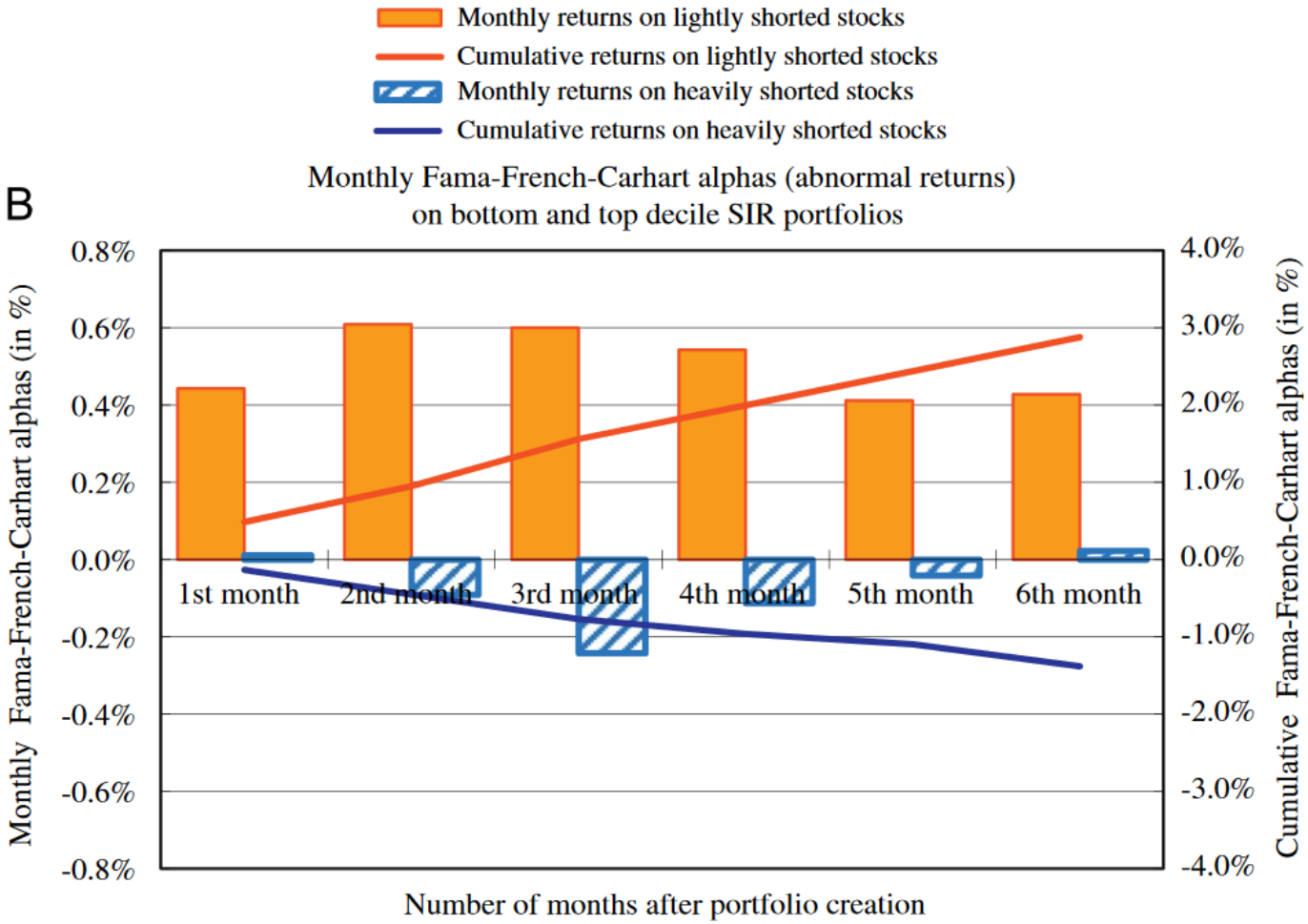

Figure 6: Monthly alphas on value weighted portfolios

NYSE-Amex vs Nasdaq

- Nasdaq-only returns similar to baseline due to size
- NYSE-Amex sample has smaller returns
  - Not all abnormal returns are significant
- Stocks more heavily shorted in smaller NYSE portfolio
- But, results are more attributed to trading activity and firm size then venue

NYSE-Amex vs Nasdaq

Details

- NYSE-Amex Equal Weighted
  - Lightly shorted stocks have sig. positive excess returns 0.4% per month for SIR 5% and 10%
  - SIR 1% is not significant
  - 1% minus 99% is significant with 2.1% excess return and beta -0.659
- NYSE-Amex Value Weighted
  - Not significant
  - Long/short portfolio still has significant return, with beta -0.682

Subperiod Results

- Returns do not appear period specific with 48 month rolling returns
- Rolling betas appear quite stable as well
  - Heavy shorted stocks 1.2 to 1.4 with tight standard errors
  - Lightly shorted stocks 0.4 to 0.8 with tight standard errors
- Dividing into two subperiods give similar results to one whole period

Subperiod Results

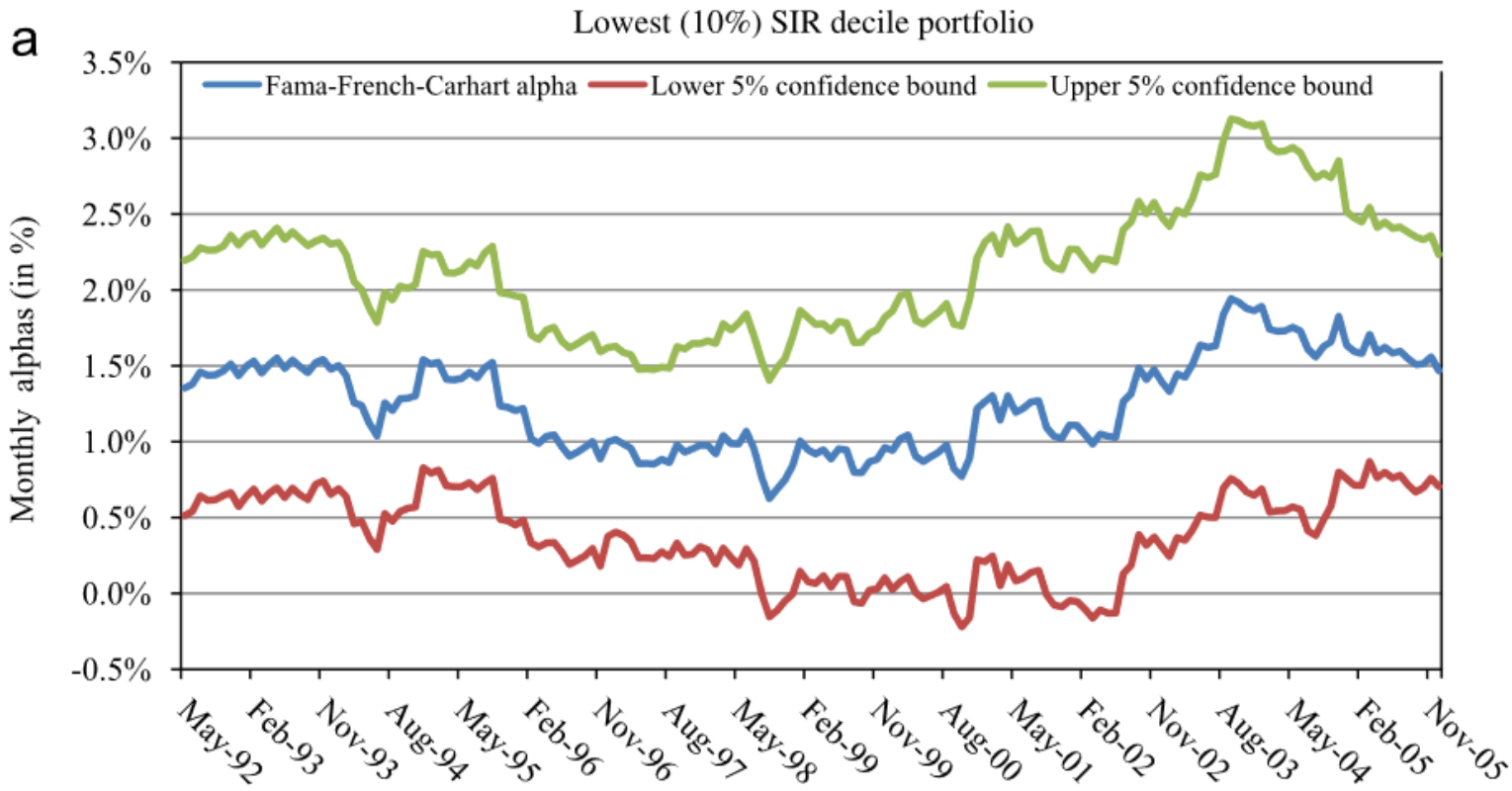

Figure 7: FF-Carhart alphas on rolling 48 month intervals Lowest decile

Subperiod Results

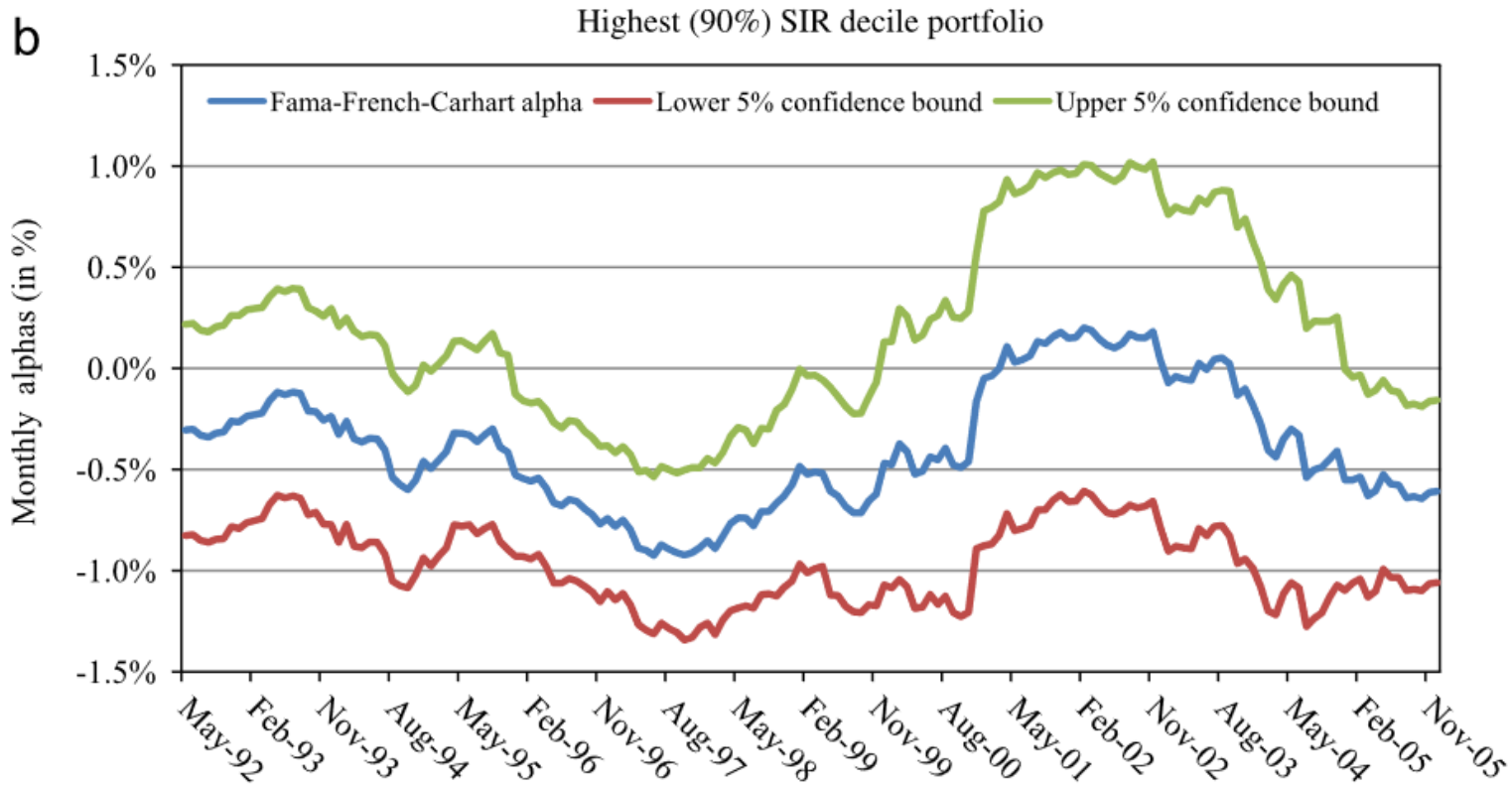

Figure 8: FF-Carhart alphas on rolling 48 month intervals Highest decile

Sorts on Firm Characteristics

- High SIR stocks have larger market caps
- High SIR stocks have higher prices
- High SIR stocks have lower B/M ratios
- High SIR stocks have lower median earnings yields and median profit margins
- High SIR stocks have weaker fundamentals, and are more heavily traded

Does this imply that size and liquidity are driving results?

Sorts on Firm Characteristics

	Low SIR stocks		High SIR stocks		Means *t*-test	Sign test
	Mean	Median	Mean	Median	*p*-value	*p*-value
Market capitalization	58.312	28.848	1,125.094	410.403	*<.001*	*<.001*
Total sales	93.857	37.235	1,233.294	299.407	*<.001*	*<.001*
Book-to-market (equity)	0.998	0.831	0.612	0.427	*<.001*	*<.001*
Book-to-market (asset)	0.932	0.868	0.569	0.507	*<.001*	*<.001*
Debt-equity ratio	1.563	0.416	2.462	0.545	*<.001*	*<.001*
Earnings-price ratio	−0.149	0.038	−0.170	0.026	0.154	*<.001*
Profit margin	−0.724	0.026	−5.547	0.029	*<.001*	0.051
Turnover	0.035	0.019	0.274	0.182	*<.001*	*<.001*
SIR	0.000	0.000	0.089	0.071	N/A	N/A
Share price	8.619	5.303	22.594	18.357	*<.001*	*<.001*

Figure 9: Comparison of Low/High SIR firms

Sorts on Firm Characteristics

Concerning size, breakpoints in construction of SMB may be of issue. All smaller Nasdaq stocks ended up in a single portfolio

Joint Effects of Size and Trading

- Construct size and trading intensity with 4x4x4 sort on:
  1. Size
  2. Turnover
  3. SIR

Sorts on Firm Characteristics

Process

1. Look at entire sample
2. Leave out Nasdaq
3. Leave out NYSE-Amex

Results

For three smaller size quartiles:

- Large abnormal returns for low SIR stocks in higher turnover groups
- returns in low SIR and larger than returns on high SIR portfolios across all turnover quantiles

For large size quartile:

- weaker results across the board, but still significant results
- portfolio with long high turnover, low SIR, and short high turnover, high SIR has 1.9% monthly return

Results

For NYSE only stocks, results are much the same

- long/short portfolio with high turnover has 2.6% monthly abnormal return
- Significant negative abnormal returns in highly shorted stocks are outside largest quartile

Overall, results most pronounced in smaller stocks

Results

For Nasdaq only stocks:

- Most shorted portfolios tend not to have significant abnormal returns
- Least shorted portfolios have significant positive returns for all but one portfolio
  - Smallest, highest turnover have highest returns

Results

- For low SIR stocks, high turnover is important
- Also, smaller firms is important - Venue does not appear to matter

Robustness

- Nasdaq bubble period of 1998 - 2000
  - Exclude cheap stocks and dates 1998 - 2000
  - large, positive abnormal returns for low SIR, high turnover stocks
- Optionable Stocks
  - Stocks without options more difficult to short
  - Low short interest could be a function of constraints
  - Eliminating stocks with options still gives consistent results (eliminates large firms)

Robustness

- Lagging
  - smaller results in some value-weighting, but still significant
- Momentum
  - Divide winners from losers, sharpens results especially for low SIR

Robustness

- Positive information in low short interest stock could precede the short interest
- Look at large decrease in short interest (25%) across three months for each stock
- Level of short interest is persistent
- Conclusions unaffected by excluding stocks with larger changes in SIR

Summary and Extensions

- Short sellers can not only identify overvalued stocks but undervalued ones too
- Stocks are highly traded (high turnover) despite being small, so constraints don't appear problematic
- Does the act of focusing on losers necessarily bring the ability to identify winners?
  - Why don't short sellers arbitrage this away?
- Repeat study with longer time period, Recession included