Avoiding Idiosyncratic Volatility: Flow Sensitivity to Individual Stock Returns

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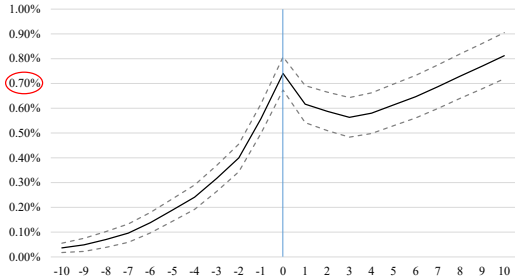
Motivation

- Significant premia are earned ahead of earnings announcements



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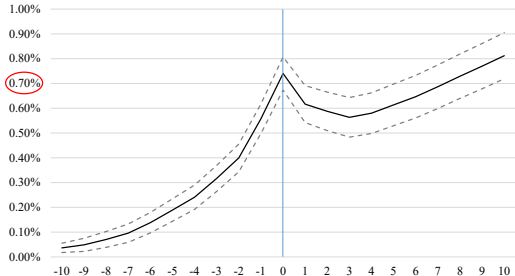

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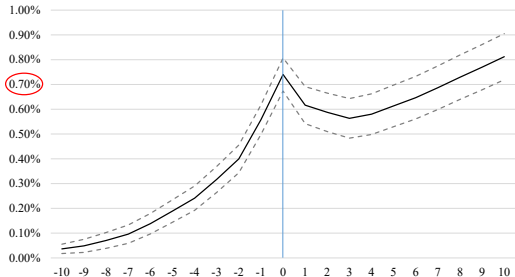

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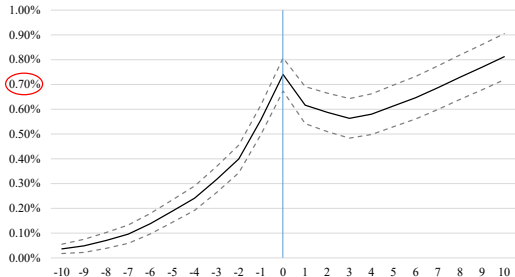

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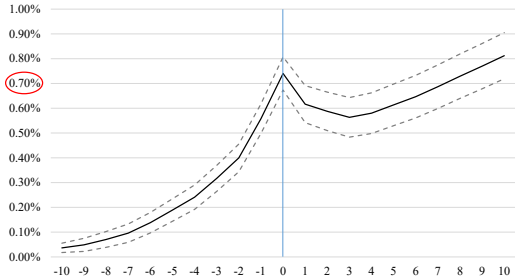

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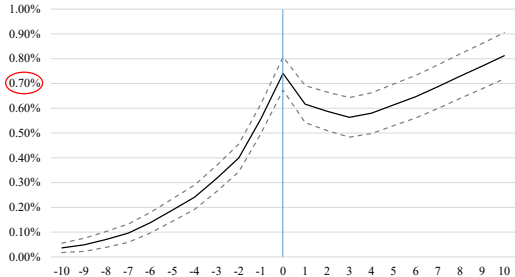

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- Higher idiosyncratic risk during these events
- However, the risk-expected return tradeoff improves at these times
- Why does idiosyncratic risk matter for well-diversified institutional investors?

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Institutional investors hold about 80% of the stock market

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  - In particular, institutions may withdraw from the market before news releases
- What frictions hinder institutional market participation?

Main Findings

- Institutions reduce their exposure to stocks ahead of earnings announcements
  - They do not aggressively trade to capture the premium
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Relevance for persistence of the announcement premium

- Stocks sold the most by institutions have a substantially larger announcement premium

Literature

Trading of institutions around news releases

- *Conditional on direction:* Institutions anticipate the direction of the news (Baker et al., 2010; Campbell et al., 2009; Hendershott et al., 2015; Huang et al., 2020; Irvine et al., 2007)
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Origins of pre-announcement premium

- Systematic risk (Savor and Wilson, 2016) and resolution of uncertainty (Ai et al., 2021; Hu et al., 2021; Laarits, 2020)
- Idiosyncratic risk (Barber et al., 2013; Cohen et al., 2007; Yang et al., 2020)
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Limits of Arbitrage and Institutional Asset Pricing

- Our contribution: Fear of redemptions limits ability to capture profit opportunities. Consistent with Shleifer and Vishny (1997)

The Data

Institutional Transaction Data

Transaction data (Ancerno): 1999-2014

- mutual funds, hedge funds, pension funds

Hedge funds: 99 managing firms identified

- Lipper/TASS HF Database, Morningstar CISDM, HF Research

Mutual funds: 417 managing firms identified

Mutual fund daily holding data: 332 funds identified, 1999-2010

- Merge Ancerno transactions with quarterly holdings from Thomson Reuters MF Data to identify funds
- Fund characteristics from CRSP MF Data and Morningstar Direct

Summary Statistics of Transaction Data

	Mean	Std
Panel A: Daily data		
Number of managing firms	266	31
Number of funds	4,010	2,974
Number of fund-stock-day obs.	37,783	34,554
Daily Volume ($million)	13,443	4,846
No. distinct stocks traded per day	3,362	426
Panel B: Fund-stock-day level data		
Volume per fund-stock-day ($000)	358	3,914
Volume of net purchases ($000)	335	2,757
Volume of net sales ($000)	387	4,927
Panel C: Fund-level data		
No. fund-stock-day obs. (per fund)	688	11,162
No. fund-stock-day obs. (per firm)	151,170	1,105,703
Panel D: Measures of Institutional Trades		
Stock-day level	0.060	1.789
Fund-stock-day level	0.055	1.310

Main Fact:
Institutional Trading around Announcements

Measuring Institutional Order Imabalance

- Institutional order imbalance in stock j on day t
  standardized by the past 6 months average absolute daily imbalance

$$trades_{j,t} = (Buys_{j,t} - Sells_{j,t}) \Big/ \frac{\sum_{s=-146}^{-21} |Buys_{j,s} - Sells_{j,s}|}{126}$$

- Focus on abnormal order imbalance within the event window [-20, 20]

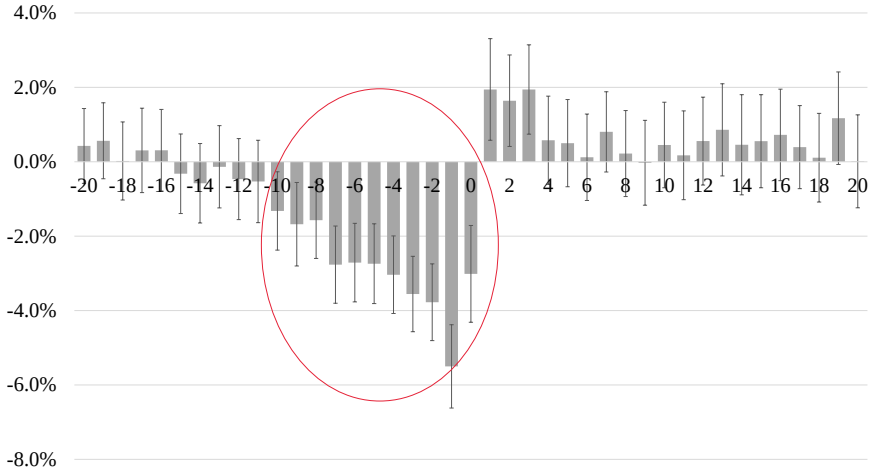
$$trades_{j,t} = a + b * EarningDay_{j,t} + \varepsilon_{j,t},$$

  $EarningDay_{j,t}$ equals one for the day under investigation (e.g., day [-1]) and zero for days outside the event window

  Standard errors are clustered by day

- $\hat{a}$ is positive because of the growth in the asset management sector over the period

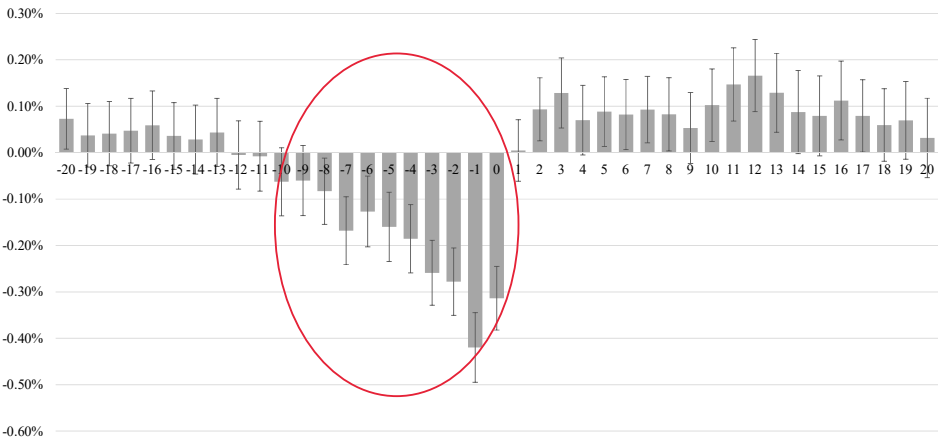
Institutional Imbalance Flow around Earnings Announcements



– Abnormal sales on days [-10, 0]. 5.5% of average imbalance on day -1
– Abnormal purchases after the announcement, but smaller

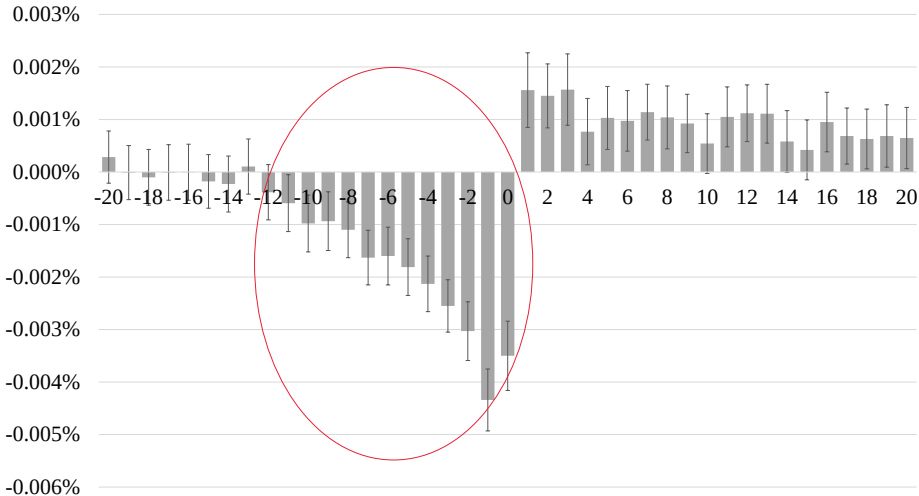
Standardizing by CRSP Total Volume

$$trades_{j,t} = (Buys_{j,t} - Sells_{j,t})/Volume_{j,t}$$



Standardizing by Shares Outstanding

$$trades_{j,t} = (Buys_{j,t} - Sells_{j,t})/Shares\ Outstanding_{j,t}$$



Stock-Day Analysis

Panel A: Stock-day level regressions

Dependent Variable	(1) [-3]	(2) [-2]	(3) [-1]	(4) [0]	(5) [1]
	Signed Trading Volume (Stock-Day Level)				
Earning Dummy	-0.036***	-0.038***	-0.055***	-0.030***	0.019***
	(-6.87)	(-7.17)	(-9.62)	(-4.54)	(2.79)
Constant	0.068***	0.068***	0.068***	0.068***	0.068***
	(23.51)	(23.51)	(23.51)	(23.51)	(23.51)
Observations	4,559,425	4,559,608	4,560,283	4,561,150	4,561,423
Adjusted R^2	0.000	0.000	0.000	0.000	0.000

Panel B: Regressions with fixed effects

	Stock Fixed Effects				
Earning Dummy	-0.038***	-0.040***	-0.057***	-0.033***	0.017**
	(-7.26)	(-7.51)	(-9.94)	(-4.83)	(2.43)
Adjusted R^2	0.010	0.010	0.010	0.010	0.010
	Day Fixed Effects				
Earning Dummy	-0.019***	-0.019***	-0.033***	-0.006	0.043***
	(-4.04)	(-3.91)	(-6.45)	(-0.98)	(6.57)
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Fund-Stock-Day Analysis with Fixed Effects

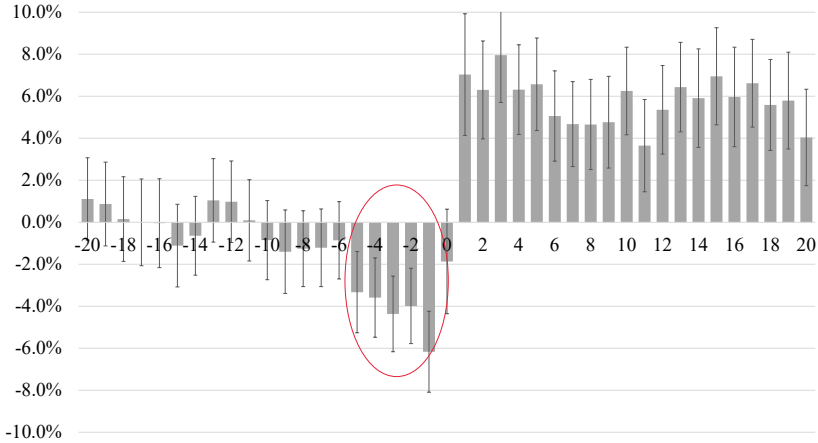
Panel A: Fund-stock-day level regressions conditional on trading

Dependent Variable	(1)	(2)	(3)	(4)	(5)
	Signed Trading Volume (Fund-Stock-Day Level)				
	[-3]	[-2]	[-1]	[0]	[1]
Earning Dummy	-0.019	-0.032*	-0.046***	-0.018	-0.021
	(-1.38)	(-1.65)	(-2.68)	(-1.17)	(-1.04)
Constant	0.051***	0.051***	0.051***	0.051***	0.051***
	(6.19)	(6.19)	(6.19)	(6.19)	(6.19)
Observations	47,994,409	48,036,426	48,056,393	48,413,947	48,644,266
Adjusted R^2	0.000	0.000	0.000	0.000	0.000

Panel B: Regressions with fixed effects

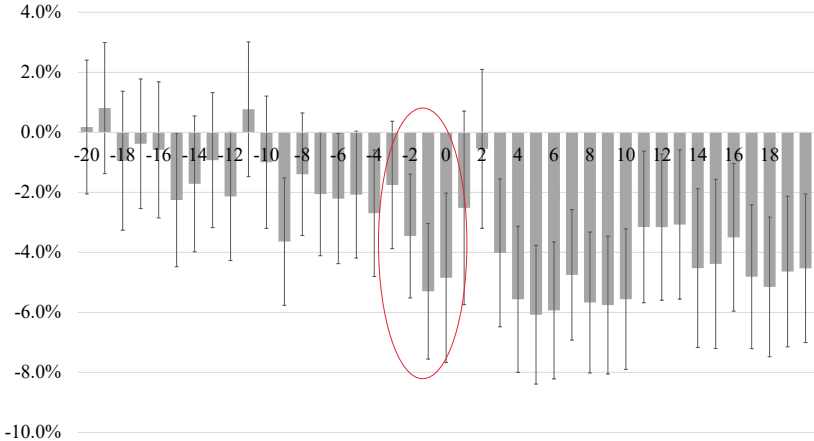
			Manager-Day Fixed Effects		
Earning Dummy	-0.012	-0.022	-0.021***	-0.004	-0.005
	(-1.22)	(-1.04)	(-4.16)	(-0.39)	(-0.21)
Adjusted R^2	0.220	0.220	0.221	0.220	0.218
			Manager-Stock Fixed Effects		
Earning Dummy	-0.006	-0.013	-0.022**	0.015*	0.017
	(-0.70)	(-1.11)	(-2.32)	(1.88)	(1.38)
Adjusted R^2	0.052	0.052	0.052	0.049	0.047

Positive Earnings Surprises (top 25%)



Negative abnormal order flow ahead of *positive* surprises

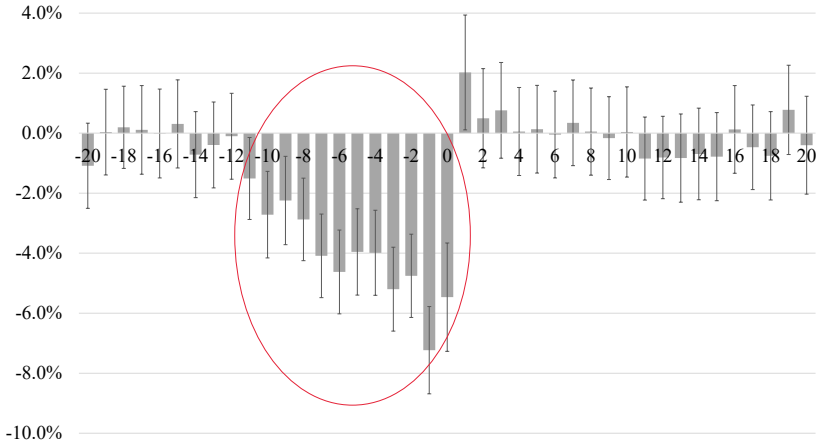
Negative Earnings Surprises (bottom 25%)



– Negative abnormal order flow ahead of *negative* surprises

– More negative order flow than with positive surprises. Consistent with Hendershott et al. (2015)

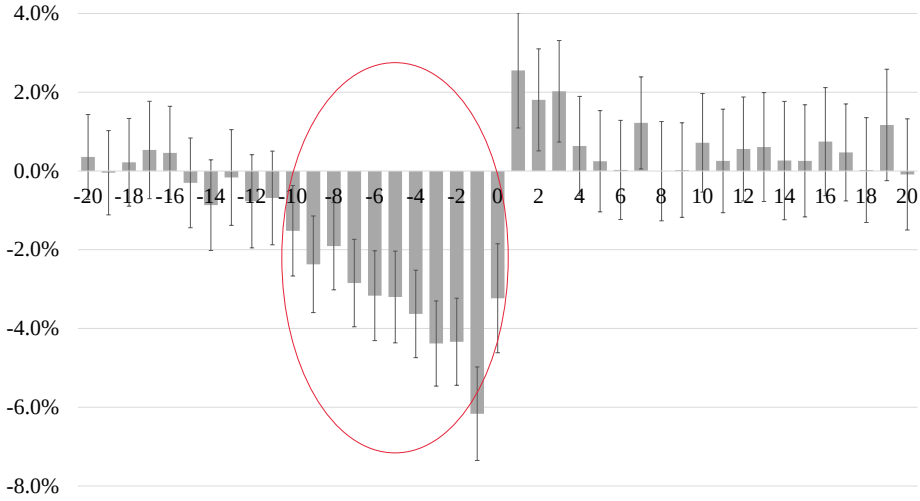
No Surprises (middle 50%)



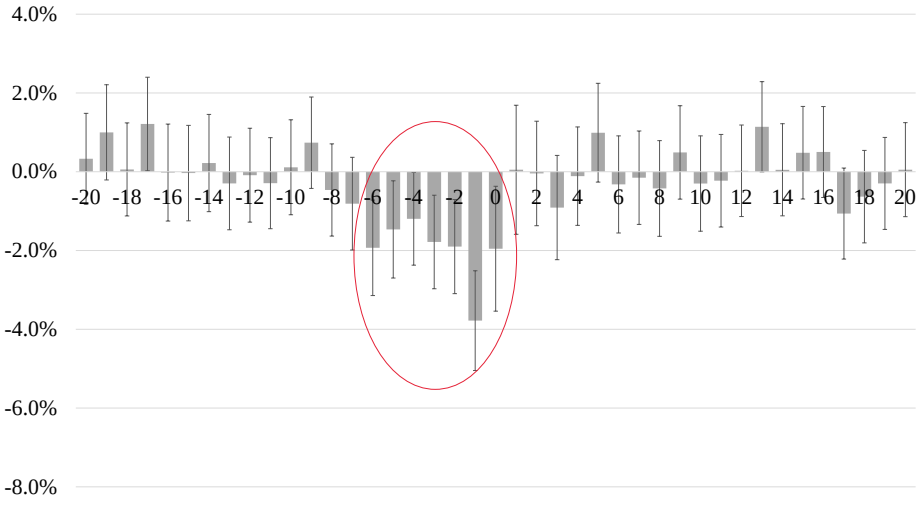
– Negative abnormal order flow ahead of *no surprises*

– No evidence that institutions sell because of information on the direction of the announcement

Order Flow of Mutual Funds



Order Flow of Hedge Funds



The effect is smaller for hedge funds than for mutual funds, but still present

Can it be due to fear of adverse selection?

- Yang et al. (2020) find that information asymmetry increases before earnings announcements
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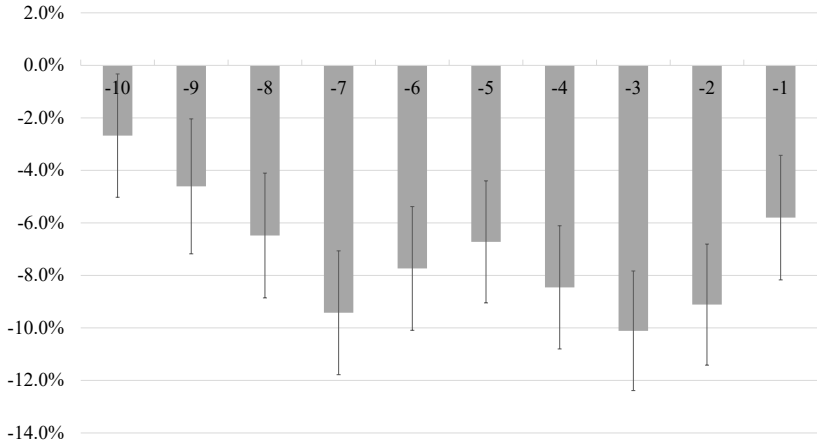
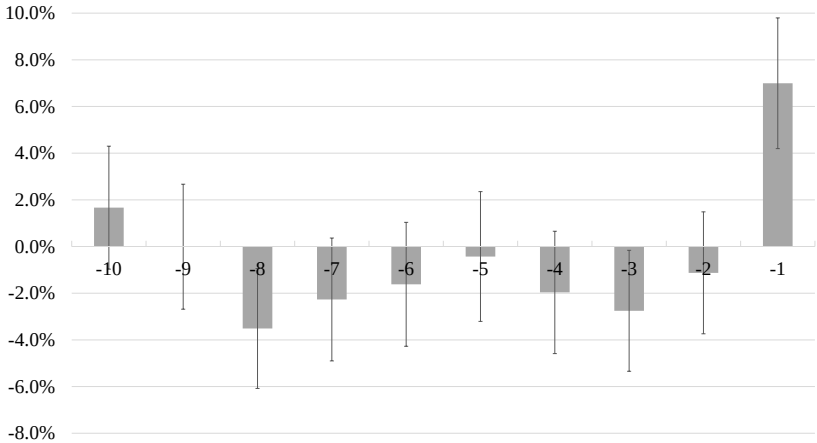
- Yang et al. (2020) find that information asymmetry increases before earnings announcements
- Institutions may withdraw from the market for fear of adverse selection
- This channel predicts that *both purchases and sales* will decrease ahead of the announcement

Purchases on Days [-10, -1] before Earnings Announcements



- Institutions reduce their purchases

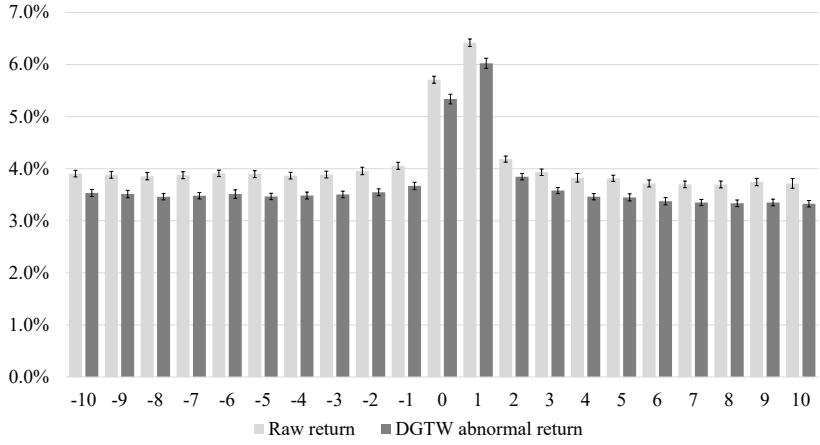
Sales on Days [-10, -1] before Earnings Announcements



- Institutions increase their sales on day -1
- Inconsistent with adverse selection channel

Exploring the Channel

Realized Volatility Spikes around Earnings Announcements



- Volatility spikes around earnings announcements are primarily due to idiosyncratic risk
- Yet, Savor and Wilson (2016) suggest that there is a systematic component in the news

Which component of risk drives institutional trades?

Estimate systematic and idiosyncratic components of earnings announcements returns' volatility

$$Ret[0,1]_{j,t} = \alpha_j + \underbrace{\beta_{1,j} MKT_t + \beta_{2,j} SMB_t + \beta_{3,j} HML_t + \beta_{4,j} MOM_t}_{\text{systematic}} + \underbrace{\varepsilon_{j,t}}_{\text{idiosyncratic}}$$

Regress trades during earnings announcements on the two components

$$\begin{aligned} trades_{j,t} =& a + b_1 * SD\ Ret[0,1]\ (Syst.)_j \times EarningDay_{j,t} \\ &+ b_2 * SD\ Ret[0,1]\ (Idio.)_j \times EarningDay_{j,t} \\ &+ b_3 * ln(MarketCap)_{j,t} \times EarningDay_{j,t} \\ &+ b_4 * SD\ Ret[0,1]\ (Syst.)_j + b_5 * SD\ Ret[0,1]\ (Idio.)_j \\ &+ b_6 * ln(MarketCap)_{j,t} + b_7 * EarningDay_{j,t} + \upsilon_j + \varepsilon_{j,t} \end{aligned}$$

Idiosyncratic Risk Matters. Systematic Risk Does Not

Dependent Variable:	Signed Trading Volume (Stock-Day Level)				
	[-3]	[-2]	[-1]	[0]	[1]
SD Ret[0,1] (Idio.) * Earnings Day	-0.016**	-0.027***	-0.021***	-0.019**	0.016
	(-2.36)	(-3.88)	(-2.90)	(-2.11)	(1.52)
SD Ret[0,1] (Syst.) * Earnings Day	0.010*	0.014**	0.008	0.009	-0.000
	(1.69)	(2.35)	(1.25)	(1.12)	(-0.00)
ln(Market-Cap) * Earnings Day	-0.007	-0.005	-0.015***	-0.014**	0.010
	(-1.27)	(-0.94)	(-2.62)	(-2.12)	(1.39)
Controls	Yes	Yes	Yes	Yes	Yes
Stock Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	3,160,050	3,160,241	3,160,809	3,161,546	3,161,643
Adjusted R^2	0.010	0.010	0.010	0.010	0.010

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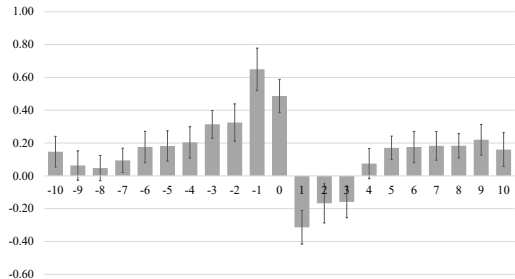
- The average U.S. active mutual fund holds 94 stocks in its portfolio
- A spike in idiosyncratic volatility is diversified away in the portfolio

- Moreover, due to the high announcement premium (75 bps), the risk-expected return tradeoff improves for announcing stocks



Information Ratio

New conjecture

- Capital Flows into institutional investors respond negatively to extreme realizations of portfolio holdings' announcement returns

New conjecture

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  - For example, if clients have limited attention and focus on salient events to learn about managerial skill and risk taking
  - Evidence in Solomon et al. (2014) that investors respond to media coverage of holdings

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- We provide a reduce-form model that features holding-level flow-performance sensitivity and generates liquidations ahead of volatility spikes

New conjecture

- Capital Flows into institutional investors respond negatively to extreme realizations of portfolio holdings' announcement returns
  - For example, if clients have limited attention and focus on salient events to learn about managerial skill and risk taking
  - Evidence in Solomon et al. (2014) that investors respond to media coverage of holdings
- We provide a reduce-form model that features holding-level flow-performance sensitivity and generates liquidations ahead of volatility spikes
- A necessary condition for clients to react to portfolio holdings' performance is that they can observe the holdings

Do Fund Clients Have Information on Holdings' Performance?

- At the latest, in the following quarter mutual funds' holdings are known to investors
  - The second and fourth fiscal quarter ends' holdings in the N-CSR form no later than 10 days after quarter end
  - The first and third quarter end holdings in the N-PORT form no later than 60 days after quarter end

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  - In our sample, 2,438 out of 2,989 mutual funds report holdings monthly to Morningstar
- Some funds do targeted and timely communications of their holdings and trades Link

Model with Holding-Level FPS

Earnings announcement stock returns (event time)

$$r^e = \alpha^e + \varepsilon^e$$

Model with Holding-Level FPS

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$$r^e = \alpha^e + \varepsilon^e$$

A fund's flow-performance sensitivity (FPS)

$$flow = \rho\,(h'r + \Delta x' r^e) + \eta \sum_j [(h_j + \Delta x_j) g(\varepsilon_j^e)]$$

r : quarterly returns

h : portfolio holdings at the beginning of the period in \$

Δx : traded amount before earnings announcement in \$

ρ : fund-level FPS

η: flow sensitivity to each holding j's earnings announcement unexpected return ε_j^e
$g(\cdot)$: non-positive and concave function. Assume: $g(\varepsilon_j^e) = -\varepsilon_j^{e2}$

Model with Holding-Level FPS (continued)

A risk-neutral manager maximizes the expected change in fund size

$$\max_{\Delta x} E(\Delta q) = (1+\rho)\left(h'\alpha_0 + \Delta x'\alpha^e\right) - \eta \sum_j [(h_j + \Delta x_j)\sigma_j^2] - \frac{1}{2}\lambda \Delta x' \Delta x$$

Convex trading costs: $\frac{1}{2}\lambda \Delta x' \Delta x$

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Convex trading costs: $\frac{1}{2}\lambda \Delta x' \Delta x$

Taking the F.O.C with respect to Δx gives

$$\Delta x_j^* = \frac{\alpha_j^e(1+\rho) - \sigma_j^2 \eta}{\lambda}$$

– Higher earnings-announcement return volatility can induce sales

– Trading costs (λ) only affect the magnitude of the trade, *not the direction*

Is there evidence of Holding-Level FPS?

- We can validate the assumption of Holding-Level FPS
- Use sample of 332 mutual funds with daily-transaction data

$$
\begin{aligned}
\mathit{Flow}_{i,t} = & b_1 * \mathit{SD\ Ret}[0,1]_{i,t-1} \\
& + b_2 * \mathit{SD\ Ret}[0,1]_{i,t-1} \times \mathit{Signed\ Volume}[-10,-1]_{i,t-1} \\
& + b_3 * \mathit{SD\ Ret}[0,1]_{i,t-1} \times \mathit{Signed\ Volume}[0,10]_{i,t-1} \\
& + b_4 * \mathit{Signed\ Volume}[-10,-1]_{i,t-1} + b_5 * \mathit{Signed\ Volume}[0,10]_{i,t-1} \\
& + b_6 * \mathit{Past\ Ranks}_{i,t-1} + b_7 * \mathit{Past\ Returns}_{i,t-1} \\
& + b_8 * \mathit{Fund\ Characteristics}_{i,t-1} + \upsilon_t + \varepsilon_{i,t},
\end{aligned}
$$

$\mathit{SD\ Ret}[0,1]_{i,t-1}$: cross-sectional standard deviation of holdings' returns on days [0, 1]

Yes. Significant evidence of Holding-Level FPS

Dependent Variable	Quarterly Fund Flow					
	Raw return			FFC 4 factor alpha		
	(1)	(2)	(3)	(4)	(5)	(6)
SD Ret[0,1]	-0.178**	-0.148	-0.114	-0.252***	-0.183	-0.159
	(-2.60)	(-1.34)	(-1.07)	(-3.59)	(-1.45)	(-1.29)
SD Ret[0,1] * Signed Volume[-10, -1]		-0.114**			-0.125**	
		(-2.10)			(-2.29)	
SD Ret[0,1] * Signed Volume[0, 10]			-0.102			-0.108
			(-1.37)			(-1.51)
Signed Volume[-10, -1]		0.018***			0.018***	
		(4.31)			(4.26)	
Signed Volume[0, 10]			0.017***			0.017***
			(3.19)			(3.27)
Controls for the past ranks	Yes	Yes	Yes	Yes	Yes	Yes
Controls for the past returns	Yes	Yes	Yes	Yes	Yes	Yes
Controls for fund characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Quarterly Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,840	2,572	2,590	7,620	2,567	2,585
Adjusted R-squared	0.135	0.183	0.184	0.135	0.162	0.163

– Controlling for the standard determinants of the fund-level FPS
– The magnitude is significant: 20% of fund-level FPS

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Asymmetric shape of the Holding-Level FPS

Dependent Variable	Quarterly Fund Flow (in bps)									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Lowest Ret[0,1] (std)	39.7***									26.7***
	(4.96)									(3.22)
Pctile 5 (std)		39.2***								5.3
		(3.81)								(0.58)
Pctile 10 (std)			39.7***							14.3
			(3.20)							(0.91)
Pctile 25 (std)				24.5**						2.5
				(2.29)						(0.19)
Pctile 50 (std)					-4.2					-6.5
					(-0.51)					(-0.60)
Pctile 75 (std)						-24.7**				-0.9
						(-2.42)				(-0.08)
Pctile 90 (std)							-35.7***			-6.1
							(-3.40)			(-0.43)
Pctile 95 (std)								-35.2***		-11.7
								(-3.47)		(-1.00)
Highest Ret[0,1] (std)									-14.2**	-7.5
									(-2.32)	(-0.81)
Controls for the past ranks	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls for the past returns	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls for fund characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarterly Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	61,881	61,881	61,881	61,881	61,881	61,881	61,881	61,881	61,881	61,881
Adjusted R-squared	0.151	0.151	0.151	0.151	0.151	0.151	0.151	0.151	0.151	0.151

– Consistent with negative and concave holding-level FPS

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– Consistent with negative and concave holding-level FPS
– But most weight onto the lowest performing stock: $g(\cdot)$ is asymmetric

Calibrating the Tradeoff

$$\Delta x_j^* = \frac{\alpha_j^e(1+\rho) - \sigma_j^2 \eta}{\lambda}$$

Focusing on the sign of the numerator, we use the estimates of the FPS to study the funds' incentive ahead of the announcement

$$\begin{aligned} \Delta x_j^* &= \frac{0.0075 \times (1 + 0.116) - 0.073 \times 1.541}{\lambda} \\ &= \frac{0.0084 - 0.112}{\lambda} \\ &< 0 \end{aligned}$$

The calibration delivers the prediction that the disincentive to buy by far outweighs the incentive to buy, which is consistent with the empirical evidence

Summary of the Channel

- Sales of announcing stocks are consistent with the avoidance of extremely negative announcement returns
- Very poor performance of an individual portfolio holding triggers outflows
  - Novel finding: holding-level flow-performance sensitivity
  - Orthogonal to the typical fund-level flow-performance sensitivity
- New perspective on investor behavior
  - Concavity of holding-level FPS runs counter to the well-known convexity of flows

Heterogeneity Across Institutions

The Effect of the Exposure to Redemptions

- It appears that institutions reduce exposure ahead of announcements to preempt outflows
- We expect that institutions that are more prone to redemptions are more likely to do that

The Effect of the Exposure to Redemptions

- It appears that institutions reduce exposure ahead of announcements to preempt outflows
- We expect that institutions that are more prone to redemptions are more likely to do that
- Hedge funds have more fleeting capital base at times of crisis (Ben-David et al., 2012)
- On the other hand, some hedge funds thrive on volatility
- Hence, we expect more heterogeneity within hedge funds than mutual funds

Heterogeneity in Trading Behavior of Hedge/Mutual Funds

- We study order flow as a function of exposure to redemptions (*Constrained*)

$$\begin{aligned} trades_{i,j,t} = & a + b_1 * Constrained_{i,t} \times EarningDay_{j,t} \\ & + b_2 * Constrained_{i,t} \\ & + b_3 * EarningDay_{j,t} \\ & + v_j + \varepsilon_{i,j,t}, \end{aligned}$$

- We standardize each definition of $Constrained_{i,t}$ to a mean of zero and a standard deviation of one

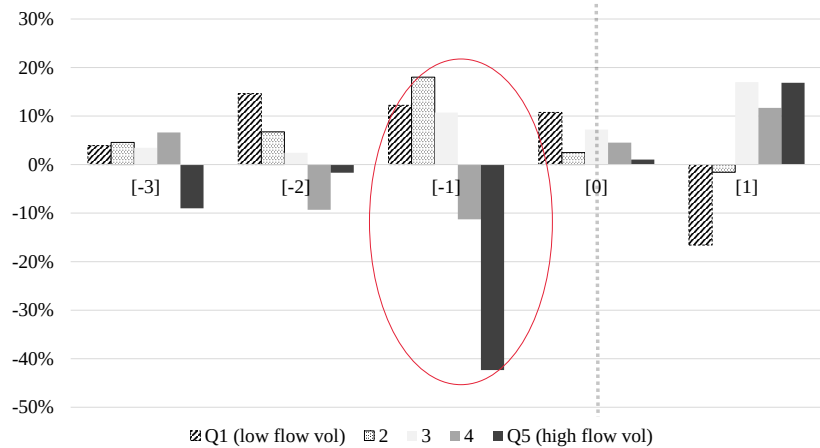
- Primary measure of constraints is *FlowVol*: the standard deviation of the fund's monthly flows in the past two years

Hedge Funds' Trades and Flow Volatility

Dependent Variable:	Signed Trading Volume (Fund-Stock-Day Level)				
	[-3]	[-2]	[-1]	[0]	[1]
FlowVol × Earning Day	-0.040	-0.064*	-0.228***	-0.038	0.134***
	(-1.17)	(-1.87)	(-6.38)	(-1.27)	(4.15)
FlowVol	-0.008	-0.007	-0.005	-0.006	-0.012
	(-0.58)	(-0.51)	(-0.39)	(-0.46)	(-0.87)
Earning Day	0.003	-0.006	-0.054	0.042	0.013
	(0.10)	(-0.14)	(-1.38)	(1.22)	(0.38)
Stock Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	80,237	80,366	80,679	82,234	82,750
Adjusted R-squared	0.064	0.064	0.062	0.057	0.056

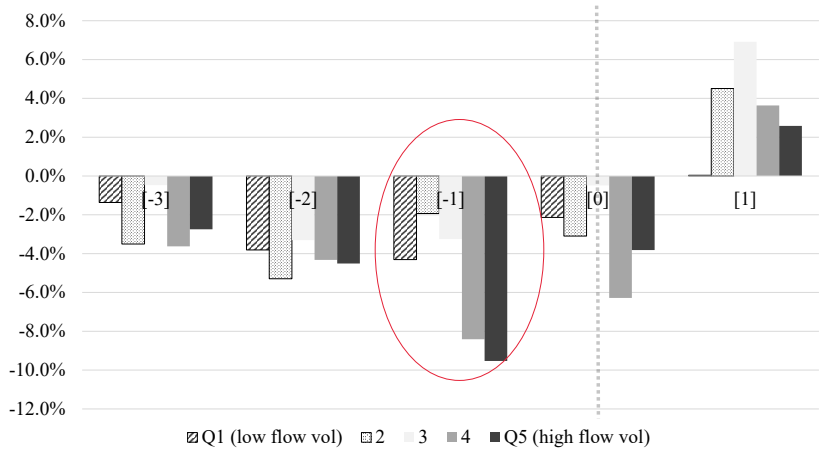
Hedge funds with a flow volatility one-standard-deviation higher sell 22.8% of average daily trading volume more on day -1

Hedge Funds' Trades by Flow Volatility Quintiles



– Hedge funds with high flow volatility have abnormal sales of -42.3% on day -1
– Hedge funds with low flow volatility are on the buy side

Mutual Funds' Trades by Flow Volatility Quintiles



Less heterogeneity among mutual funds. They are mostly on the sell side

Other Measures of Financial Constraints for Hedge Funds

- LOCKUP: minus lockup period
  (0 to 12 months)
- RED NOTICE: minus the redemption notice period
  (1 week to 3 months)
- RED FREQ: minus the redemption frequency
  (1 week to 12 months)
- YOUNG: minus the age of the fund
- BAD: minus the past year performance
- *Constrained Index*: Sum of all these standardized measures

Hedge Funds' Trades and Constrained Index

Dependent Variable:	Signed Trading Volume (Fund-Stock-Day Level)				
	[-3]	[-2]	[-1]	[0]	[1]
Constrained Index × Earning Day	-0.018	-0.105***	-0.126***	-0.047	0.107***
	(-0.52)	(-3.23)	(-3.84)	(-1.54)	(3.39)
Constrained Index	0.007	0.009	0.006	0.006	0.007
	(0.64)	(0.79)	(0.55)	(0.50)	(0.59)
Earning Day	-0.012	-0.036	-0.012	0.059**	0.017
	(-0.35)	(-0.94)	(-0.36)	(1.97)	(0.61)
Stock Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	100,879	101,018	101,520	103,331	103,749
Adjusted R^2	0.05	0.05	0.05	0.05	0.05

Hedge funds with a more fleeting capital base have more negative order flow

Pre-Announcement Trades and the Announcement Premium

Announcement Premium and Institutional Trades

- On average, institutions are not trading to capture the premium
- Financial constraints appear to limit their arbitrage capacity
- Is there a relationship between institutional trades and the announcement premium?

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- On average, institutions are not trading to capture the premium
- Financial constraints appear to limit their arbitrage capacity
- Is there a relationship between institutional trades and the announcement premium?
- Group stocks by quintiles of institutional order flow on [-10,-1]
  standardized by the total number of shares outstanding

$$trades_{j,t} = \frac{Buys_{j,t} - Sells_{j,t}}{Shares\ Outstanding_{j,t}}$$

- Compute announcement premium between -1 and 0 for each quintile

Announcement Premium by Quintiles of Trades

	trades [-10, -1]	DGTW[0]	t-stat
1 (sales)	-0.75%	0.27%	6.74
2	-0.06%	0.23%	5.16
3	0.00%	0.18%	3.27
4	0.08%	0.11%	3.55
5 (purchases)	0.70%	0.07%	2.03
1-5		**0.21%**	**3.94**

- Stocks sold the most by institutions have the highest announcement premium
- Consistent with institutional frictions allowing the premium to persist

Conclusion

- We find that institutions on average reduce their exposure to stocks ahead of earnings announcements and other anticipated volatility spikes
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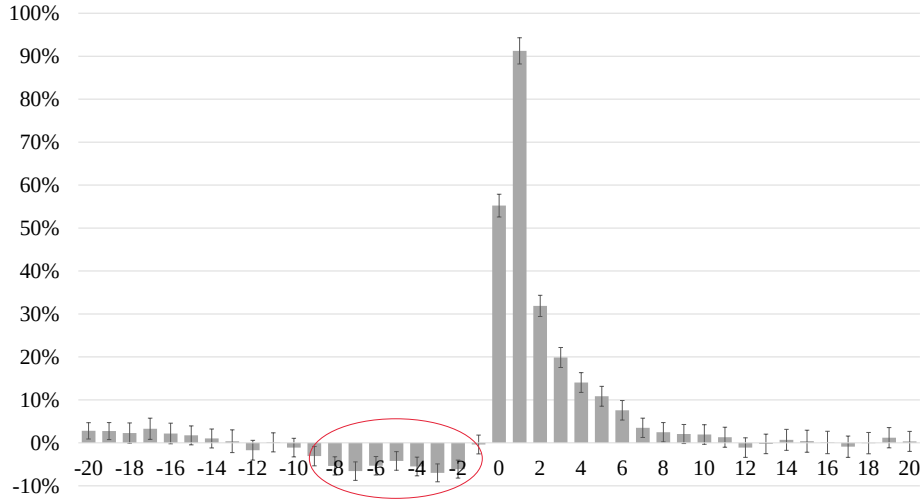
- Institutional frictions allow pre-announcement premia to persist

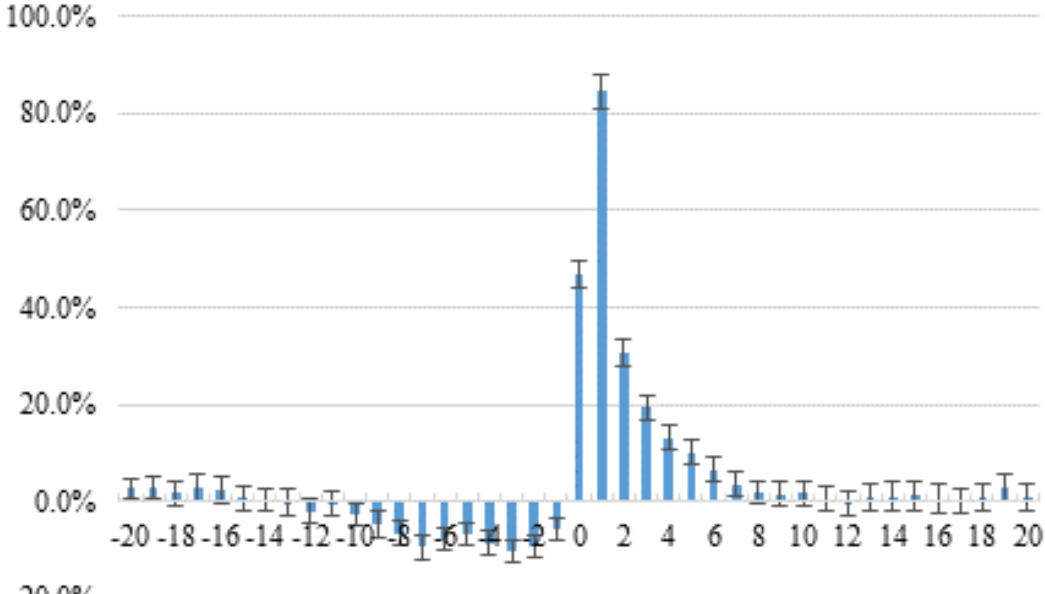
Appendix Slides

Total Volume around Announcements

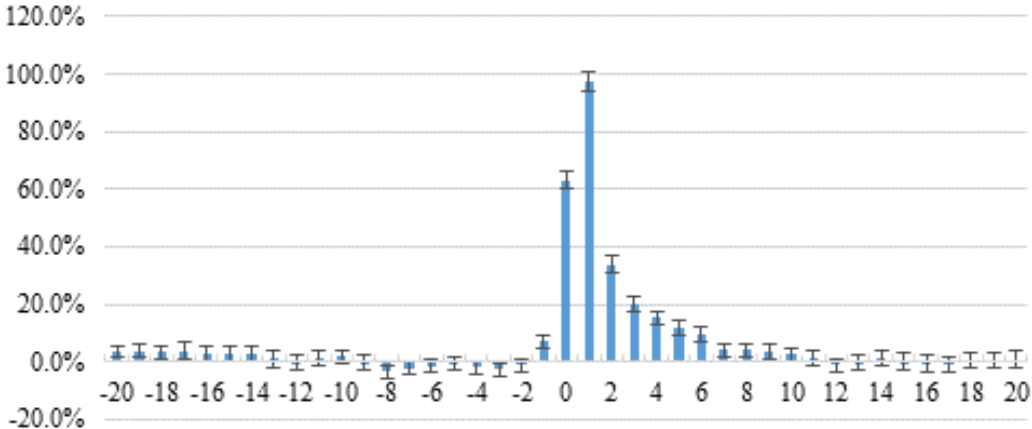


Institutions are less likely to trade before earning announcements

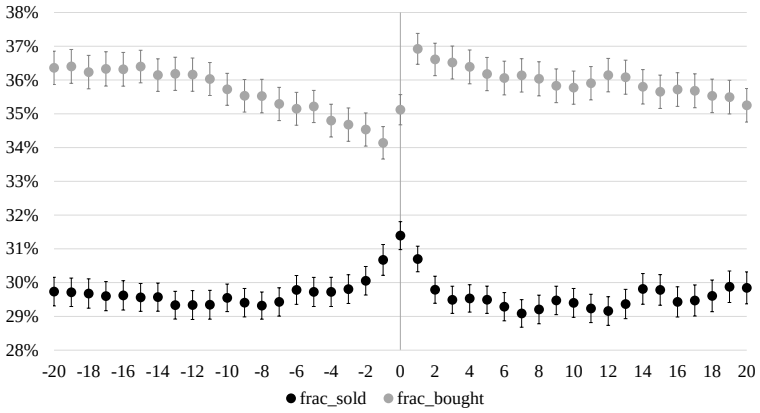
Purchases around earnings announcements



Sales around earnings announcements



Probability of Sales/Buys goes Up/Down

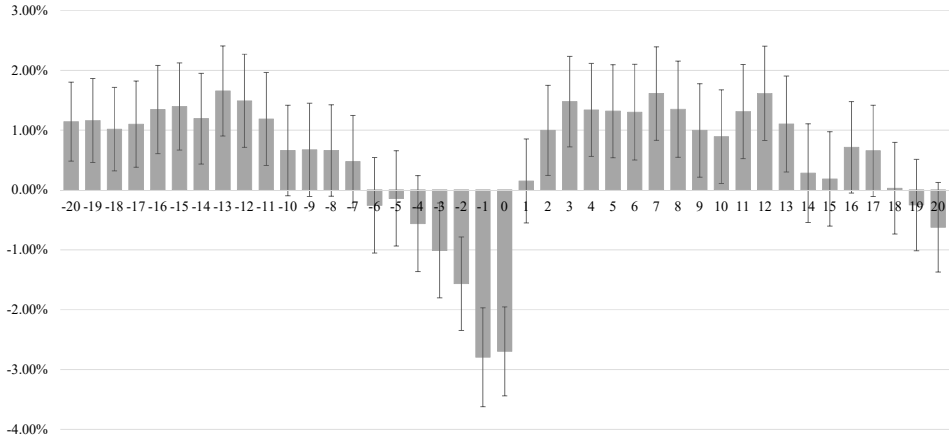


Summary Statistics of 332 Mutual Funds Identified

Year	Num. of Funds	Fund TNA ($mn)	Stock Holding (%)	Cash Holding (%)	Turnover (%)	Expense Ratio (%)	Manage -ment Fee (%)	Fund Age
Panel A: 332 funds merged								
1999-2010	332	1,288	93.2	4.0	92.8	1.51	0.71	7.8
2001	94	1,190	-	-	120.4	1.60	0.69	6.2
2005	208	1,604	93.4	4.1	87.3	1.54	0.69	7.7
2010	79	844	89.7	3.2	89.6	1.41	0.73	8.4
Panel B: All equity funds in the CRSP mutual fund database								
1999-2010	5,486	1,092	94.1	3.7	97.0	1.39	0.73	7.6
2001	3,427	887	-	-	116.7	1.42	0.75	6.3
2005	3,990	1,125	95.4	3.4	87.9	1.43	0.74	7.8
2010	4,104	1,313	89.9	3.1	87.2	1.26	0.68	9.6

Standardizing by Contemporaneous Order Flow

$$trades_{j,t} = \Delta shares_{j,t} / \{Buys_{j,t} + Sells_{j,t}\}$$



Flows and Extreme Returns – All Controls

Dependent Variable	Quarterly Fund Flow					
	Raw return			FFC 4 factor alpha		
	(1)	(2)	(3)	(4)	(5)	(6)
Lowest Ret[0,1]	0.041***	0.033***	0.057***	0.012***	0.016***	0.023***
	(6.36)	(5.15)	(7.22)	(2.69)	(3.39)	(3.88)
Highest Ret[0,1]		-0.019***			0.009	
		(-2.72)			(1.62)	
Lowest Ret[0,1] * Sell Dummy			-0.041***			-0.029***
			(-6.18)			(-5.20)
Sell Dummy			-0.021***			-0.018***
			(-12.64)			(-11.97)
Past Quarter Rank	0.007	0.008	0.008	0.005	0.005	0.006
	(1.43)	(1.51)	(1.59)	(1.29)	(1.25)	(1.43)
Past Halfyear Rank	0.019***	0.020***	0.020***	0.015***	0.015***	0.015***
	(3.76)	(3.86)	(3.86)	(3.23)	(3.21)	(3.27)
Past Year Rank	0.044***	0.044***	0.043***	0.039***	0.039***	0.039***
	(8.39)	(8.48)	(8.39)	(8.40)	(8.40)	(8.38)
Past 3years Rank	0.073***	0.073***	0.071***	0.080***	0.080***	0.078***
	(18.29)	(18.36)	(17.91)	(20.86)	(20.89)	(20.26)
Past Quarter Ret	0.016	0.016	0.016	0.002	0.002	0.002
	(0.89)	(0.90)	(0.87)	(0.25)	(0.25)	(0.19)
Past Halfyear Ret	0.000	0.000	0.001	0.002	0.002	0.002
	(0.05)	(0.02)	(0.07)	(0.22)	(0.23)	(0.30)
Past Year Ret	-0.001	-0.002	-0.001	-0.002	-0.002	-0.003
	(-0.21)	(-0.23)	(-0.19)	(-0.38)	(-0.37)	(-0.41)
Past 3years Ret	0.004	0.004	0.004	0.004	0.004	0.004
	(1.31)	(1.30)	(1.28)	(0.89)	(0.90)	(0.91)
Same Quarter Ret	0.040*	0.040*	0.040*	0.104*	0.104*	0.104*
	(1.70)	(1.70)	(1.69)	(1.93)	(1.93)	(1.95)
ln(Age)	-0.018***	-0.018***	-0.018***	-0.019***	-0.019***	-0.019***
	(-16.41)	(-16.38)	(-16.38)	(-15.95)	(-15.97)	(-15.88)
Turnover	-0.001	-0.001	0.001	0.000	0.000	0.002**
	(-1.04)	(-0.96)	(0.95)	(0.38)	(0.36)	(2.41)
Exp Ratio	-0.712***	-0.721***	-0.750***	-0.523***	-0.520***	-0.564***
	(-4.11)	(-4.15)	(-4.35)	(-3.18)	(-3.16)	(-3.45)
ln(TNA)	-0.002***	-0.002***	-0.002***	-0.003***	-0.003***	-0.003***
	(-6.00)	(-5.77)	(-5.86)	(-8.66)	(-8.70)	(-8.47)
Flow Vol Past1y	0.326***	0.326***	0.327***	0.303***	0.303***	0.304***
	(11.92)	(11.94)	(11.96)	(11.09)	(11.09)	(11.14)
Ret Vol Past1y	-0.244***	-0.216**	-0.240**	-0.325***	-0.337***	-0.326***
	(-2.66)	(-2.43)	(-2.63)	(-4.24)	(-4.31)	(-4.17)
Quarterly Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	80,913	80,913	80,913	78,705	78,705	78,705
Adjusted R-squared	0.159	0.160	0.163	0.162	0.162	0.165

Sales of Mutual Funds and Past-Year Flow Volatility

Dependent Variable:	Signed Trading Volume (Fund-Stock-Day Level)				
	[-3]	[-2]	[-1]	[0]	[1]
FlowVol × Earning Day	-0.003	-0.018**	-0.021**	-0.000	-0.004
	(-0.38)	(-2.02)	(-2.25)	(-0.00)	(-0.37)
FlowVol	0.016***	0.017***	0.017***	0.017***	0.017***
	(4.19)	(4.19)	(4.20)	(4.23)	(4.21)
Earning Day	-0.027***	-0.047***	-0.053***	-0.036***	0.027***
	(-2.66)	(-4.80)	(-5.41)	(-3.54)	(2.66)
Stock Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	1,107,006	1,106,910	1,108,413	1,123,169	1,128,079
Adjusted R^2	0.01	0.01	0.01	0.01	0.01

Mutual funds with a flow volatility one standard deviation higher sell 2.1% of average daily trading volume more on day -1

Institutional Trades and Implied Volatility

- Does the finding generalize to instances of anticipated spikes in short-term volatility?

Institutional Trades and Implied Volatility

- Does the finding generalize to instances of anticipated spikes in short-term volatility?

- Construct spikes in implied volatility from OptionMetrics
  - *Dummy dif* 10-30 equals one if *IV* 10 minus *IV* 30 is higher than 95^{th} pctile
  - *Dummy IV shock* 30 equals one if *IV* 30 is higher than the 95^{th} pctile in its past 6-month trailing average

- Regress order flow on volatility spikes indicators in the prior day

$$\begin{aligned} trades_{j,t} = {} & b_1 * Dummy\ dif\ 10\text{-}30_{j,t-1} \\ & + b_2 * trades_{j,t-1} + b_3 * IV\ 30_{i,t-2} + b_4 * IV\ 10_{i,t-2} \\ & + \upsilon_j + \tau_t + \varepsilon_{j,t} \end{aligned}$$

Abnormal Sales and Anticipated Volatility Spikes

Dependent Variable	Signed Trading Volume (Stock-Day Level)			
	(1)	(2)	(3)	(4)
L. Dummy dif 10-30	-0.065***	-0.067***		
	(-3.50)	(-3.04)		
L. Dummy_IV shock 30			-0.042***	-0.022***
			(-7.68)	(-4.21)
L. Signed trading volume		0.219***	0.328***	
		(25.26)	(184.42)	
L2. IV 30		-0.072	0.014**	
		(-0.57)	(2.14)	
L2. IV 10		0.097		
		(0.82)		
Stock Fixed Effects	Yes	Yes	Yes	Yes
Day Fixed Effects	Yes	Yes	Yes	Yes
Observations	111,610	101,204	4,578,489	4,559,558
Adjusted R-squared	0.013	0.061	0.011	0.117

Institutions sell 5.5% more of average daily trading volume one day after a spike in 10-day implied volatility

Abnormal Sales and Anticipated Volatility Spikes

Dependent Variable	Signed Trading Volume (Stock-Day Level)			
	(1)	(2)	(3)	(4)
L. Dummy dif 10-30	-0.065***	-0.067***		
	(-3.50)	(-3.04)		
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Statement of Additional Information: Applied Finance Group

...From time to time, employees of the Adviser may express their views orally or in writing on the Funds' portfolio securities or may state that the Funds have recently purchased or sold, or continues to own, one or more securities. The securities subject to these views and statements may be ones that were purchased or sold since the Funds' most recent quarter-end and therefore may not be reflected on the list of the Funds' most recent quarter-end portfolio holdings. These views and statements may be made to various persons, including members of the press, brokers and other financial intermediaries that sell shares of the Funds, shareholders in the Funds, persons considering investing in the Funds...

Back

What do they do with the money?

- Study trading in stocks with no earnings announcements in the next 10 days as a function of the number of stocks announcing in the next 10 days

Variable	Signed Trading Volume of Stocks with **No** Earning Announcements around (Stock-Day Level)		Stocks with Earning Announcements in 10 days		Total Number of Stocks
	(1)	(2)	Fraction	Number	
Decile 1	-	-	0.013	82	5507
Decile 2	0.035***	0.052***	0.021	133	5666
	(3.74)	(5.48)			
Decile 3	0.034***	0.057***	0.027	168	5634
	(3.17)	(5.21)			
Decile 4	0.043***	0.061***	0.033	209	5586
	(3.71)	(5.08)			
Decile 5	0.023**	0.042***	0.049	316	5641
	(2.03)	(3.68)			
Decile 6	0.033***	0.048***	0.083	535	5659
	(3.04)	(4.30)			
Decile 7	0.039***	0.060***	0.136	861	5662
	(3.50)	(5.30)			
Decile 8	0.050***	0.066***	0.178	1118	5632
	(4.09)	(5.43)			
Decile 9	0.003	0.033***	0.247	1539	5635
	(0.31)	(3.16)			
Decile 10	-0.018*	0.014	0.340	2092	5612
	(-1.76)	(1.31)			
Constant	0.044***	0.030***			
	(6.49)	(4.23)			
Stock Fixed Effects	No	Yes			
Observations	4,378,989	4,378,989			
Adjusted R^2	0.000	0.011			

They buy non-announcing stocks or go into cash

Lowest-performing stock Flow Sensitivity–Transaction Data

Dependent Variable	Quarterly Fund Flow					
	Raw return			FFC 4 factor alpha		
	(1)	(2)	(3)	(4)	(5)	(6)
Lowest Ret[0,1]	0.087***	0.069	0.096**	0.067**	0.133***	0.081*
	(3.50)	(1.34)	(2.32)	(2.53)	(2.76)	(1.86)
Lowest Ret[0,1] × Signed Volume[-10, -1]		0.016**			0.021**	
		(2.23)			(2.24)	
Lowest Ret[0,1] × Signed Volume[0, 10]			0.004			0.012
			(0.68)			(1.61)
Control variables:						
Signed Volume[-10, -1]		0.006**			0.006**	
		(2.64)			(2.31)	
Signed Volume [0, 10]			0.001			0.003
			(0.48)			(1.54)
Controls for the past ranks	Yes	Yes	Yes	Yes	Yes	Yes
Controls for the past returns	Yes	Yes	Yes	Yes	Yes	Yes
Controls for fund characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Quarterly Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,926	768	1,103	1,704	672	781
Adjusted R-squared	0.151	0.177	0.157	0.177	0.234	0.174

A one-standard-deviation decrease in institutional trades in days [-10, -1] decreases the effect of the lowest performing stock on fund flows by about a half (-0.048)

Hedge Funds' Trades and Individual Constraint Measures

Dependent Variable: Signed Trading Volume (Fund-Stock-Day Level)

	Coefficients of "Constrained × Earning Day"				
	[-3]	[-2]	[-1]	[0]	[1]
LOCKUP	0.003	-0.007	-0.026*	-0.047***	-0.035***
	(0.24)	(-0.47)	(-1.79)	(-3.55)	(-2.64)
RED NOTICE	-0.027**	-0.006	-0.087***	-0.047***	0.005
	(-2.26)	(-0.48)	(-6.79)	(-4.08)	(0.43)
RED FREQ	-0.027	-0.049***	-0.079***	-0.045***	0.053***
	(-1.48)	(-2.94)	(-4.37)	(-2.72)	(3.24)
YOUNG	-0.02	-0.055**	-0.121***	-0.045**	0.099***
	(-0.95)	(-2.36)	(-5.07)	(-2.20)	(4.71)
BAD	-0.008	-0.038	-0.092***	0.003	0.069***
	(-0.30)	(-1.46)	(-3.43)	(0.10)	(2.74)
Stock Fixed Effects	Yes	Yes	Yes	Yes	Yes

Consistent results from individual measures

Mutual Funds' Trades and Other Constraints

	Coefficients of "Constrained × Earning Day"				
	[-3]	[-2]	[-1]	[0]	[1]
Panel A: Regressions of individual measures					
YOUNG	-0.002	-0.011	-0.012	-0.017**	-0.013
	(-0.21)	(-1.18)	(-1.36)	(-2.00)	(-1.50)
BAD	-0.005	-0.011	-0.018*	-0.020**	0.000
	(-0.56)	(-1.14)	(-1.94)	(-2.18)	(0.01)
OLD MGR (low risk-taking)	-0.028***	-0.027***	-0.027***	-0.010	-0.021**
	(-2.95)	(-2.76)	(-2.75)	(-1.00)	(-1.99)
Stock Fixed Effects	Yes	Yes	Yes	Yes	Yes
Panel B: Multivariate reg. for "YOUNG" fund and "OLD" manager (Corr = - 0.347)					
YOUNG × EarningDay	-0.015	-0.022**	-0.026***	-0.022**	-0.024**
	(-1.50)	(-2.11)	(-2.59)	(-2.23)	(-2.38)
OLD MGR × EarningDay	-0.035***	-0.036***	-0.038***	-0.017	-0.031***
	(-3.39)	(-3.39)	(-3.53)	(-1.47)	(-2.60)
Other Controls	Yes	Yes	Yes	Yes	Yes
Stock Fixed Effects	Yes	Yes	Yes	Yes	Yes
Observations	869,578	869,649	870,957	884,350	888,679
Adjusted R^2	0.01	0.01	0.01	0.01	0.01

Young mutual funds and *senior portfolio managers* have more negative order flow