

Foreign investors under stress: Firm level evidence

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Questions

- 1 How do foreign investors respond to extreme economic events?
- 2 When do foreign investors behave in extreme ways?
- 3 When foreign investors behave in extreme ways, what are the consequences?
- 4 In sum: Do foreign investors possess a strong investment technology so that they do rational things?
And, what are the consequences of the things that they do?

The importance of extreme events

- If you put all the data together and estimate linear models there isn't much going on.
- But the fact that the average response is zero is cold consolation for a policy maker.
- What foreign investors do on most days is not interesting.
- The real concerns are about extreme days. Possible hypotheses:
 - Big fish in a small pond?
 - Calm and rational?
 - Keep their heads when everyone is losing theirs?
 - Positive feedback traders?

Recent work

- *Foreign Investors under Stress: Evidence from India*, in *International Finance*, 2013.
- Identify tail events, and do an event study around them, with bootstrap inference.
- Identify extreme events where there is no other extreme event in the event window; fuse multiple extreme events in the same direction so as to arrive at an uncontaminated window.
- Worked with daily data for macroeconomic facts: Nifty, INR/USD, VIX, and the daily net FII purchase.
- Key findings:
 - 1 *Investment technology*: Positive feedback trading by FII; vector of transmission of good news from abroad but not the other way around. Statistically significant but small effects.
 - 2 *Consequences*: None.

Going from macro data to firm data

- While the overall results are benign, could there be cross sectional variation?
- Maybe Infosys and ITC are well integrated into financial globalisation. Maybe smaller firms are not.
- Maybe FIIs are big fish in a small pond for small stocks.
- Maybe FIIs possess strong investment technology for the top stocks of India but suffer from asymmetric information and the standard maladies of the international finance literature when it comes to small stocks.
- This motivates an examination of firm data.

A unique dataset

- From 2003 to 2011, net buy by all FIIs for every listed company.
- There is home bias. Number of firms that add up to $x\%$ of total FII turnover:

	$x = 85\%$	$x = 90\%$	$x = 99\%$
2003	21	26	81
2004	29	38	114
2005	51	74	246
2006	61	85	303
2007	82	117	367
2008	73	105	341
2009	68	95	297
2010	105	144	428
2011	92	128	384

Partition into size and liquidity quintiles

	All	Large	Quintile 2	Quintile 3	Quintile 4	Small
Size (INR Bln)	24.03	287.29	59.32	23.58	11.89	4.79
			\$1B			\$0.1B
Liquidity (TR)	0.38	1.58	0.68	0.37	0.23	0.10

Purging stock returns of macroeconomic fluctuations

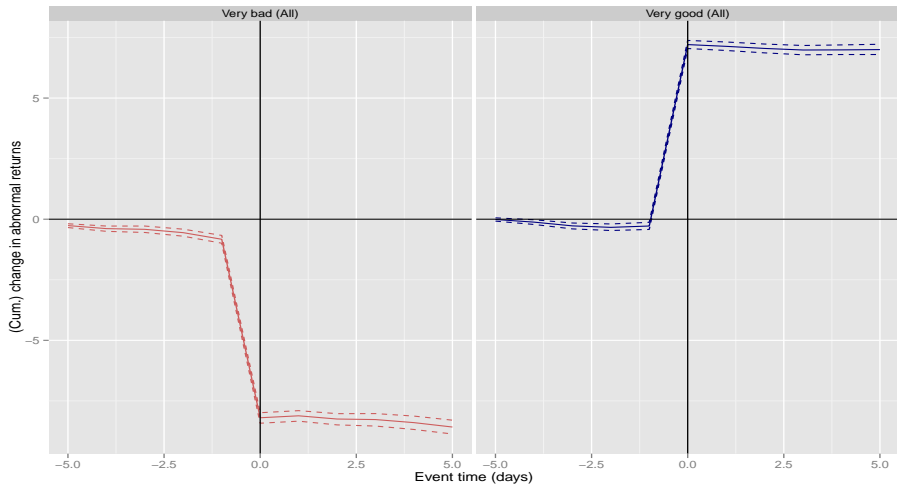
- Conventional event study methodology: market model
- We obtain better variance reduction using an augmented market model that controls for Nifty and for the exchange rate.
- Extreme events are tail values for the residual, they are bad news or goods news *for the firm*.

Dataset of extreme events

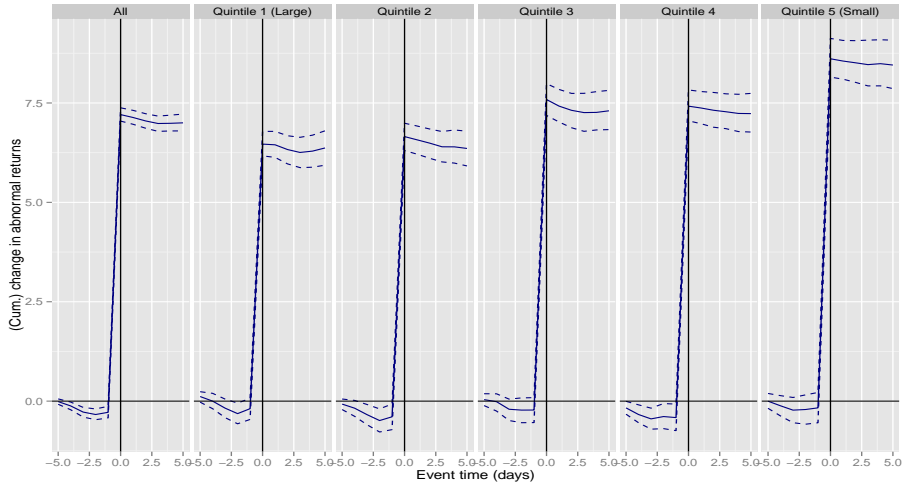
- Totally we have roughly 7000 events in each tail.
- For each quintile, approximately we have 1400 events in each tail
- Very strong dataset; ability to resolve fairly small events.

How efficient is the market?

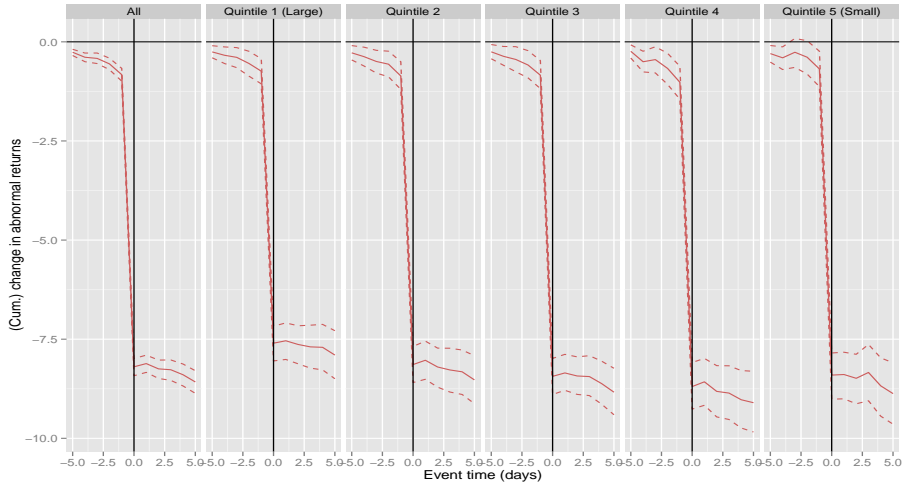
All extreme events



Size quintiles (very good event)



Size quintiles (very bad event)



Very good days; size quintiles: From event date to 5 days later

	Lower bound	Mean	Upper bound	p-value
All	-0.48	-0.21	0.07	0.14
Large	-0.63	-0.10	0.43	0.72
Quintile 2	-0.86	-0.30	0.26	0.29
Quintile 3	-0.91	-0.28	0.35	0.38
Quintile 4	-0.83	-0.19	0.45	0.57
Small	-0.96	-0.16	0.64	0.70

Very bad days; size quintiles; From event date to 5 days later

	Lower bound	Mean	Upper bound	p-value
All	-0.76	-0.38*	-0.01	0.05
Large	-1.05	-0.30	0.45	0.43
Quintile 2	-1.16	-0.39	0.39	0.33
Quintile 3	-1.19	-0.40	0.39	0.32
Quintile 4	-1.40	-0.41	0.59	0.42
Small	-1.44	-0.47	0.51	0.35

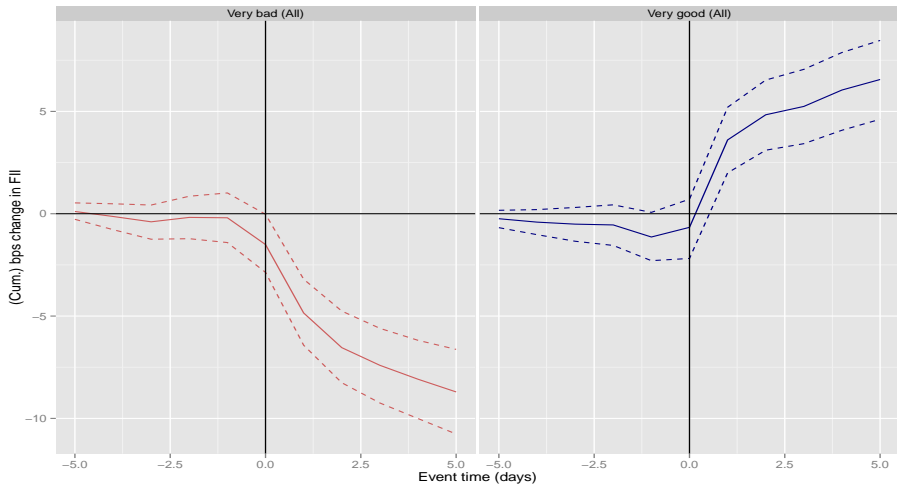
Liquidity quintiles

Nothing is statistically significant.

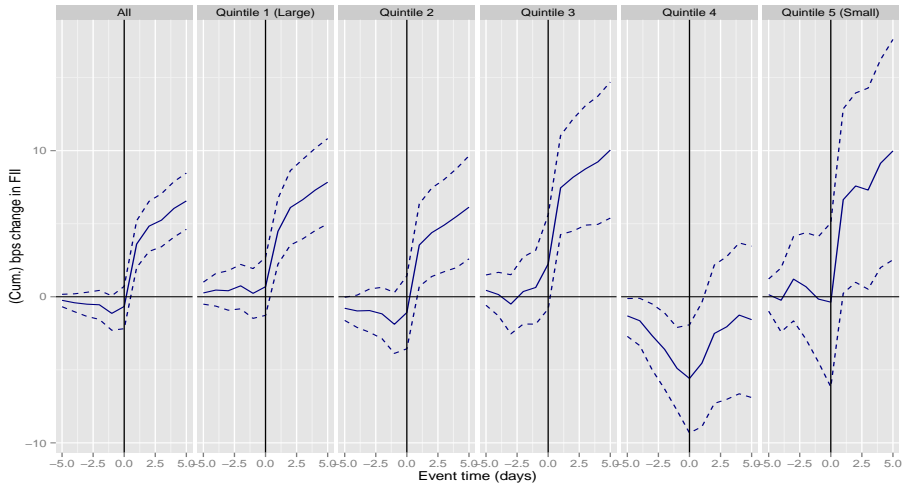
What's a rational trader to do?

- There is no obvious undershooting or overshooting – on average – around an extreme date.
- There is no trading strategy that makes money, on average, net of transactions costs.

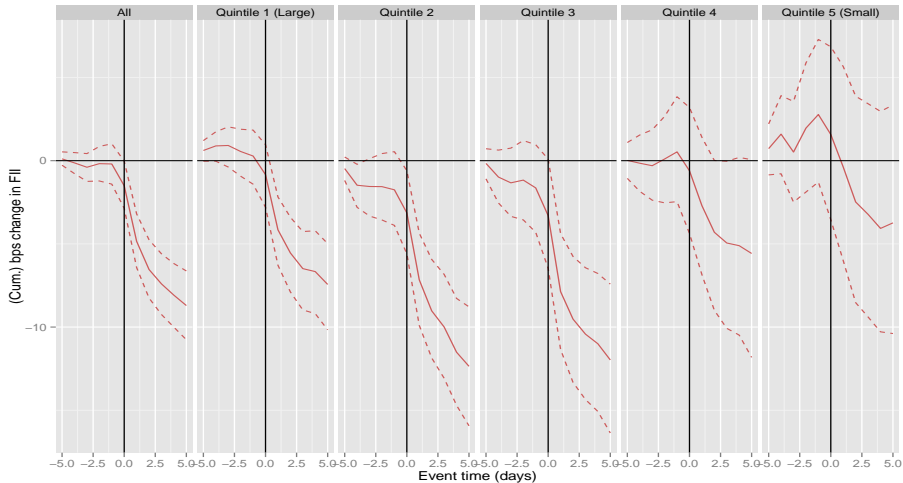
Event on abnormal returns and response of FII



Size quintiles; very good event



Size quintiles; very bad event



Size quintiles

Mean and confidence intervals (t=0 to t=5)

Very good event on abnormal returns and response of FII

	Lower bound	Mean	Upper bound	p-value
All	4.77	7.22*	9.68	0.00
Large	3.65	7.15*	10.65	0.00
Quintile 2	2.97	7.21*	11.45	0.00
Quintile 3	2.34	7.80*	13.26	0.01
Quintile 4	-2.21	4.02	10.26	0.21
Small	0.78	10.35*	19.92	0.03

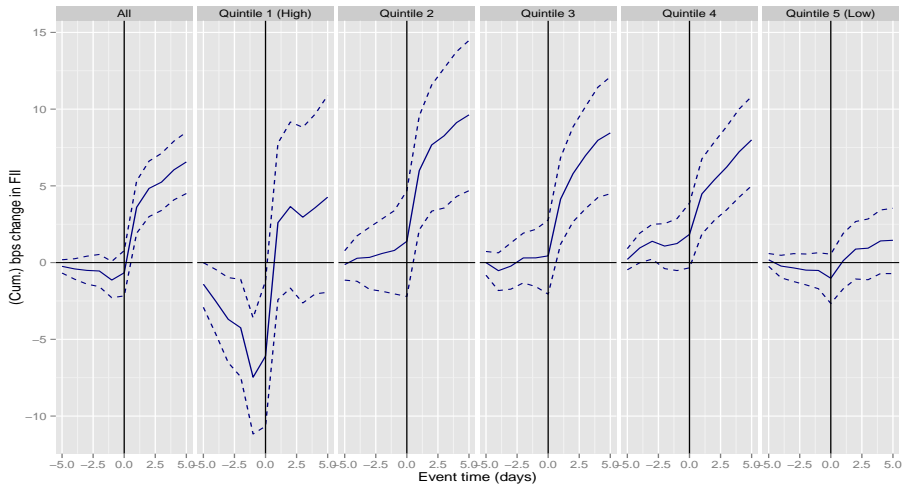
* indicates significance at $p < 0.05$

Very bad event on abnormal returns and response of FII

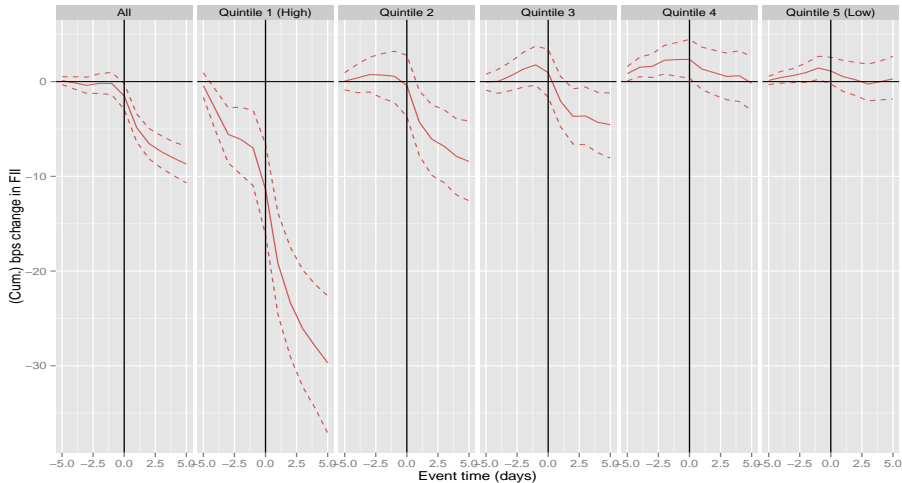
	Lower bound	Mean	Upper bound	p-value
All	-9.64	-7.20*	-4.76	0.00
Large	-9.80	-6.60*	-3.40	0.00
Quintile 2	-13.72	-9.22*	-4.73	0.00
Quintile 3	-14.27	-8.67*	-3.07	0.00
Quintile 4	-11.86	-4.97	1.92	0.16
Small	-14.08	-5.31	3.46	0.24

* indicates significance at $p < 0.05$

Liquidity quintiles; very good event



Liquidity quintiles; very bad event



Liquidity quintiles

Mean and confidence intervals (t=0 to t=5)

Very good event on abnormal returns and response of FII

	Lower bound	Mean	Upper bound	p-value
All	4.77	7.22*	9.68	0.00
High	2.10	10.36*	18.61	0.01
Quintile 2	2.42	8.24*	14.06	0.01
Quintile 3	3.51	8.01*	12.51	0.00
Quintile 4	2.61	6.16*	9.70	0.00
Low	-0.22	2.47	5.16*	0.07

* indicates significance at $p < 0.05$

Very bad event on abnormal returns and response of FII

	Lower bound	Mean	Upper bound	p-value
All	-9.64	-7.20*	-4.76	0.00
High	-26.84	-18.31*	-9.78	0.00
Quintile 2	-13.57	-8.03*	-2.49	0.00
Quintile 3	-9.87	-5.49*	-1.11	0.01
Quintile 4	-5.97	-2.51*	0.95	0.16
Low	-3.54	-0.82*	1.89	0.55

* indicates significance at $p < 0.05$

What have we learned?

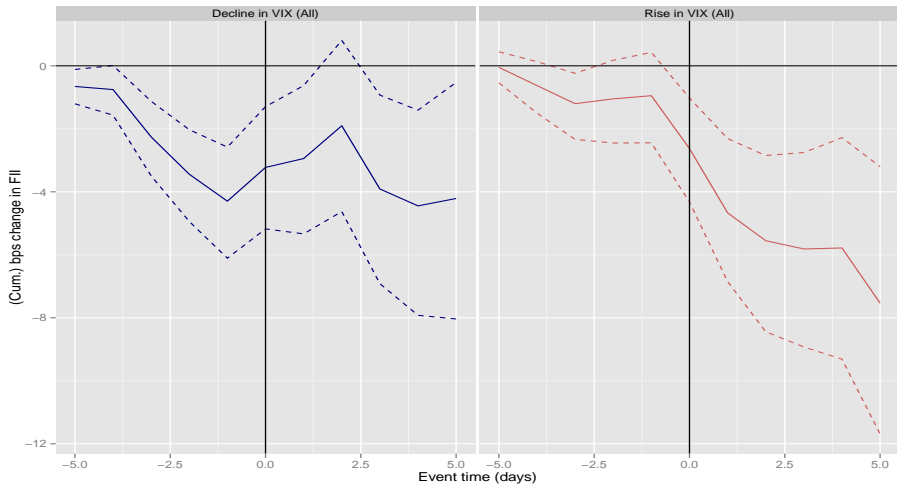
- FIs are positive feedback traders on average.
- They do this with large and liquid stocks but not for small / illiquid stocks.
- With the most liquid stocks, they are *selling* prior to a big +ve day.
- With the most liquid stocks, they are selling prior to a big -ve day.
- Mostly: not a display of superior investment technology.

Impact of VIX on FII behaviour

How might the VIX matter?

- A well established idea in international finance: When VIX goes up, money gets pulled back from EMs.
- Effects seen with macro data were muted.
- Does the picture change when we go down to firm data?

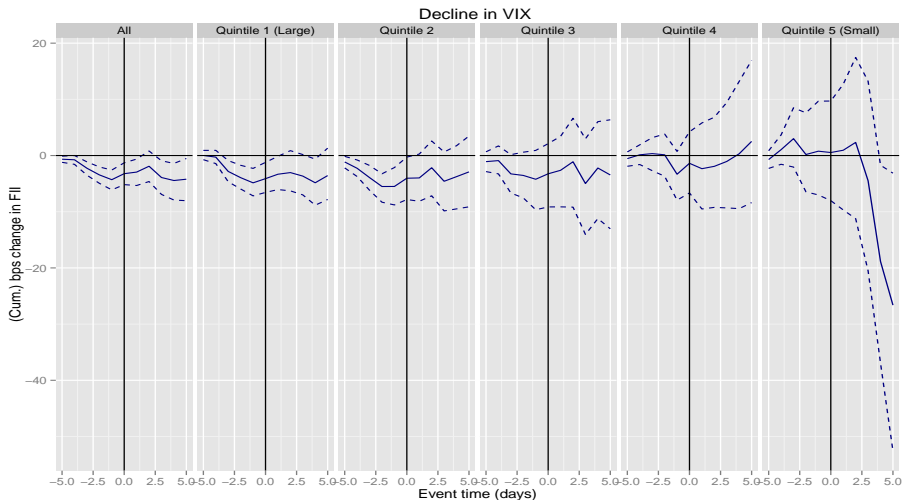
Event on VIX and response of FII



Size quintiles; strong rise in VIX



Size quintiles; strong drop in VIX



Liquidity quintiles; strong rise in VIX



Liquidity quintiles; strong drop in VIX

Decline in VIX and response of FII

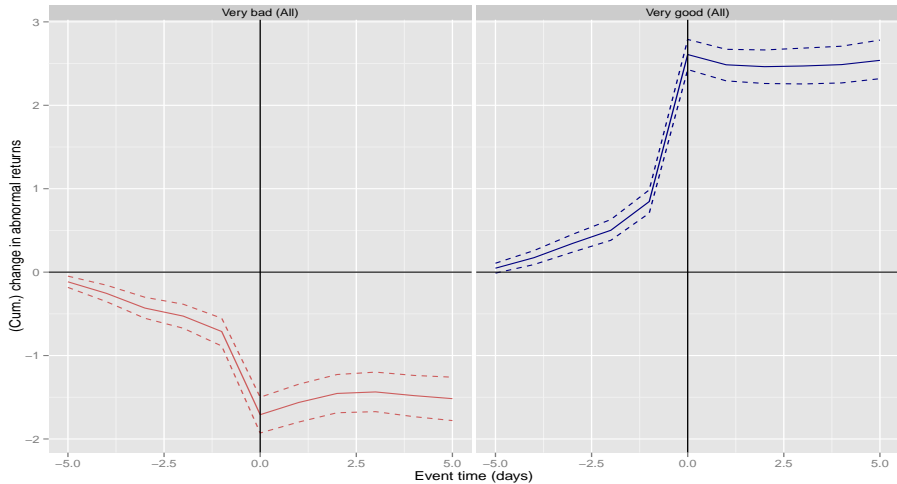


Interpretation

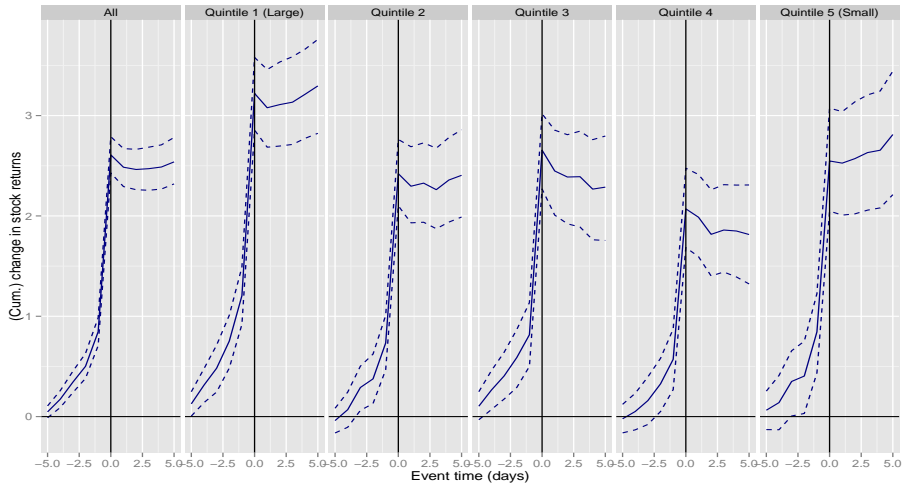
- FII's sell after days of a big rise in VIX
- This is expressed through the most liquid firms.
- Less liquid firms slumber on.

Impact of extreme FII days on AR?

Event on FII and response of abnormal returns

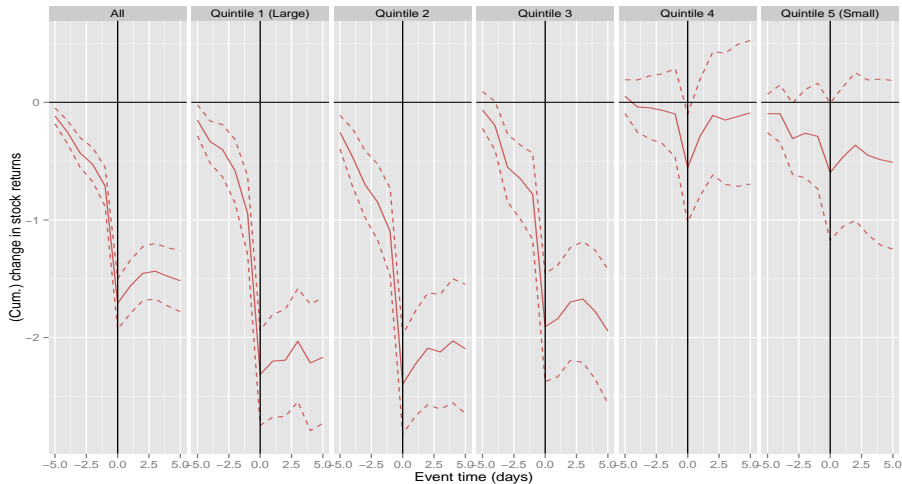


Size quintiles; very good event



Size quintiles; very bad event

Very bad event on FII and response of abnormal returns



Size quintiles

Mean and confidence intervals (t=0 to t=5)

Very good event on FII and response of abnormal returns

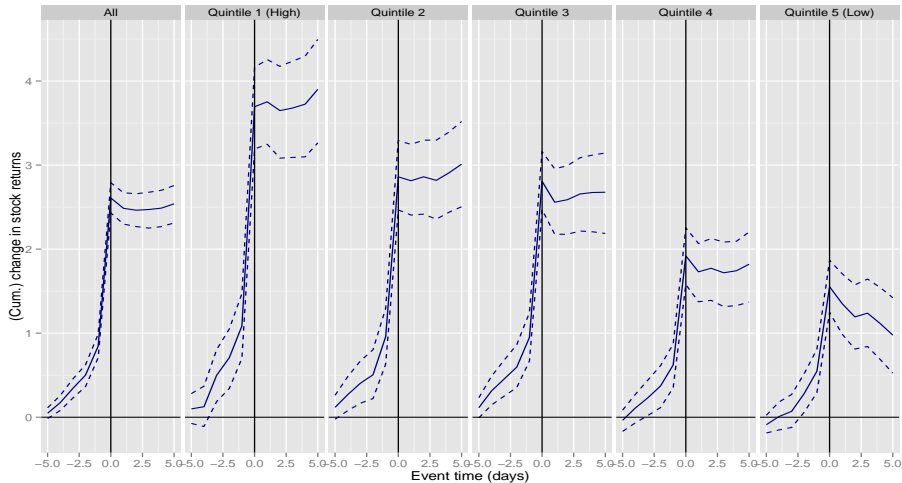
	Lower bound	Mean	Upper bound	p-value
All	-0.36	-0.07	0.22	0.63
Large	-0.52	0.07	0.67	0.81
Quintile 2	-0.57	-0.02	0.54	0.95
Quintile 3	-1.02	-0.37	0.29	0.27
Quintile 4	-0.90	-0.26	0.39	0.44
Small	-0.54	0.26	1.07	0.52

* indicates significance at $p < 0.05$

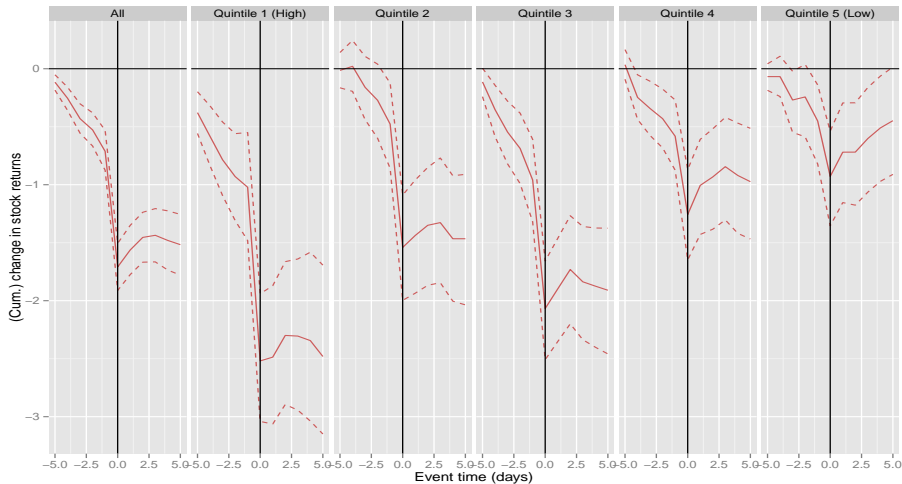
Very bad event on FII and response of abnormal returns

	Lower bound	Mean	Upper bound	p-value
All	-0.14	0.19	0.52	0.26
Large	-0.50	0.15	0.79	0.66
Quintile 2	-0.40	0.30	1.00	0.40
Quintile 3	-0.76	-0.04	0.68	0.92
Quintile 4	-0.32	0.46	1.25	0.24
Small	-0.84	0.09	1.01	0.86

Liquidity quintiles; very good event



Liquidity quintiles; very bad event



Liquidity quintiles

Mean and confidence intervals (t=0 to t=5)

Very good event on FII and response of stock returns

	Lower bound	Mean	Upper bound	p-value
All	-0.36	-0.07	0.22	0.63
High	-0.59	0.21	1.00	0.61
Quintile 2	-0.49	0.15	0.80	0.65
Quintile 3	-0.73	-0.13	0.47	0.67
Quintile 4	-0.65	-0.10	0.45	0.72
Low	-1.12	-0.58	-0.03	0.04

Very bad event on FII and response of stock returns

	Lower bound	Mean	Upper bound	p-value
All	-0.14	0.19	0.52	0.26
High	-0.86	0.04	0.93	0.93
Quintile 2	-0.66	0.07	0.81	0.84
Quintile 3	-0.54	0.16	0.85	0.66
Quintile 4	-0.34	0.28	0.90	0.37
Low	-0.14	0.48	1.11	0.13

* indicates significance at $p < 0.05$

Findings

- *FII*s don't possess a great investment technology: They are positive feedback traders.
Consistent with *The investment technology of foreign and domestic institutional investors in an emerging market*, in *Journal of International Money and Finance*, 2013.
- They express their decisions through the most liquid stocks e.g. in response to a rise in VIX.
- They are mindful of liquidity in transacting.
- Their extreme days do not kick off temporary price pressure with overshooting/undershooting.

Conclusions

- Novel dataset; novel methodology
- Novel facts.
- We need to think deeper about causes and consequences.

Thank You