Firm heterogeneity in foreign investors under stress

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Part I

Motivation

Motivation

- Policymakers in developing countries have important concerns over capital account liberalisation.
- What foreign investors do on most days is not interesting.
- The real concerns are about extreme days.

Questions at the aggregative level

1. Are foreign investors fair weather friends?
2. Are foreign investors big fish in a small pond?
3. Are foreign investors calm and rational?
4. Do foreign investors respond differently to good and bad days?
5. Are foreign investors vectors of crisis transmission from world markets to domestic markets?

Previous work

Foreign Investors under Stress: Evidence from India, in *International Finance*, 2013. Results:

Responses of FIIs to extreme events Positive feedback trading by FII; vector of transmission of good news from abroad but not the other way around.
Statistically significant but small effects.

Consequences of FII extreme days None.

Implementation is in the R package 'eventstudies'.

Identifying the impact of foreign investment flows upon stock prices, Muley & Shah, WP, 2016. Results: No causal impact.

Questions at the firm level

1. Does the tail behaviour of FIIs vary across firms?
2. Acute asymmetric information with smaller stocks kicks off a different kind of behaviour there?
3. Do foreign investors think that investing in small firms is akin to FDI?

Implications for firms

- The old prescription for firms is: It is good to overcome home bias as this generally gives you a lower cost of capital.
- Perhaps there is a dark side to this. Perhaps small firms experience problems when FIIs come in, owing to high asymmetric information.

Part II

Data

Data construction

- FII transaction data, daily, from SEBI. From 2003 on, for around 3307 firms. Express net buy of the day as basis points of market cap.
- Returns, and market capitalisation, data from the CMIE ProwessDX database.
- Impact cost data from the NSE data at IGIDR FRG.

Sample selection

- There are 3307 firms in which FIIs invested over the course of 12 years.
- 710 firms contain 99% of the activity.
- Difficulties in database linking take us to 543 firms.

Part III

Methodology

Key ideas

- How to identify extreme events? Focus on tail events; extreme movements in returns. For individual stocks, shift from returns to augmented market model residuals.
- How to identify impact? Treat tail events as a shock, and use an event study to measure the impact.

This is non-causal. What we are seeing are correlations.

Clustered events

- It is possible to have extreme event dates as a cluster. Two possibilities arise:
    1. Very high (or, low) returns may occur on consecutive days.
    2. Mixed returns may occur on consecutive days.
- We handle the first type by fusing the cluster and treating them as a single event. This allows us to avoid losing observations.
- We handle the second type by identifying these events and discarding them from our analysis.

Bootstrap Inference Strategy

- Suppose there are N events. Each event is expressed as a time-series of cumulative returns (CR) in event time, within the event window. The overall summary statistic of interest is $\overline{CR}$, the average of all the CR time-series.

- We do sampling with replacement at the level of the events. For each event, its corresponding CR time-series is taken. This yields a time-series $\overline{CR}$, which is one draw from the distribution of the statistic.

- This procedure is repeated 1000 times in order to obtain the full distribution of $\overline{CR}$. This gives us the confidence intervals for our estimates.

Part IV

Results

Distribution of events

Extreme return movements

Distribution of extreme events across months
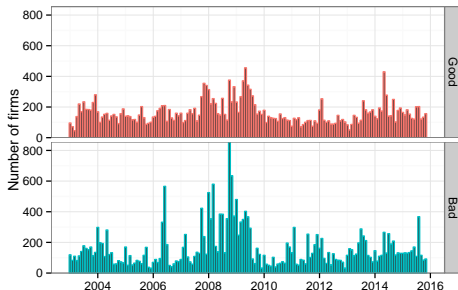
1. We have 25320 good firm events. These are evenly distributed across the time period of our study.
2. We have 25051 bad firm events. These are fairly distributed across the time period, albeit with some concentration in GFC.

Average behaviour across all firms

Event study plots: All extreme return events
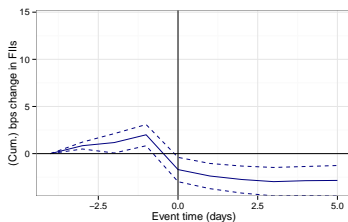
(a) Bad events
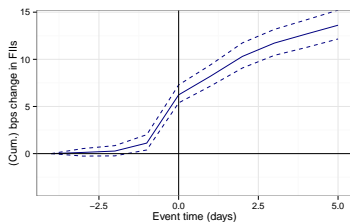
(b) Good events

- FIIs did not have any a-priori information of negative days.
- FIIs are positive feedback traders after good days.

Heterogeneity by liquidity

- Two main liquidity measures:
    1. Amihud's illiquidity measure: Ratio of absolute value of return to the rupee trading volume (Lower ratio $\implies$ Higher liquidity)
    2. Turnover ratio: Ratio of number of shares traded to the total outstanding shares (Higher ratio $\implies$ Higher liquidity)
- We split the data into five quintiles and perform event study on each of the quintiles.
- Q1 is the most liquid quintile and Q5 is the least liquid quintile.

FII response to extreme +ve stock returns (1,2,3)
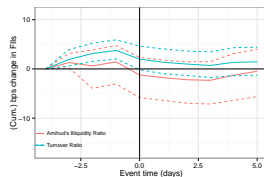
Event study plots: Quintile-wise analysis
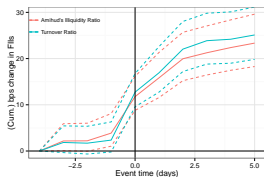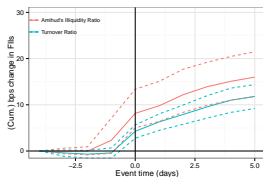
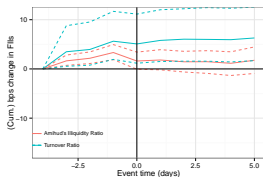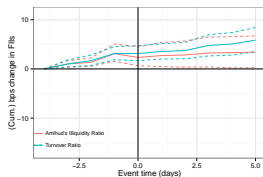
(a) Quintile 1 (High)   (b) Quintile 2   (c) Quintile 3
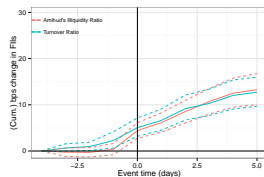
FII response to extreme +ve stock returns (4,5)

Event study plots: Quintile-wise analysis (Contd.)

(a) Quintile 4

(b) Quintile 5 (Low)

Event study plots: Quintile-wise analysis

(a) Quintile 1 (High) (b) Quintile 2 (c) Quintile 3

FII response to extreme -ve returns (4,5)

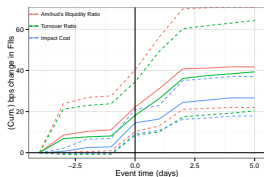Event study plots: Quintile-wise analysis (Contd.)

(a) Quintile 4

(b) Quintile 5 (Low)

An alternative measure of liquidity

- Impact cost (IC) represents the cost of executing a transaction in a given stock, for a specific predefined order size, at any given point of time.
- It is closer to the true cost of execution faced by a trader in comparison to the bid-ask spread.
- Data on buy and sell IC is available from July-12 to Feb-17 for all the stocks.
- We find the IC by taking the average of buy and sell IC for each stock on each transaction size.
- We find the median IC and divide the stocks into liquidity quintiles, similar to earlier liquidity analysis (Lower IC $\implies$ Higher liquidity).
- Next, we perform a robustness check for quintile wise analysis with a smaller data set from July-12 to Nov-15 with three liquidity measures: Amihud's measure, Turnover ratio and Impact cost.

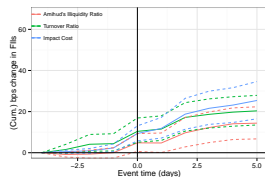# FII response to +ve extreme returns (1,2,3)

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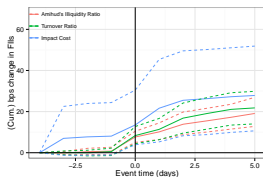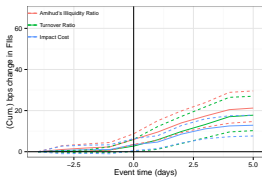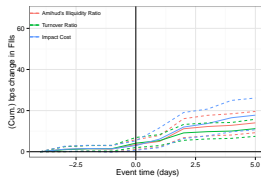

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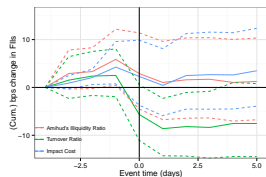
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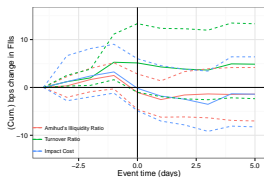

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(b) Quintile 5 (Low)

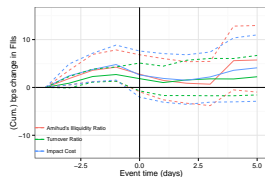# FII response to +ve extreme returns (1,2,3)

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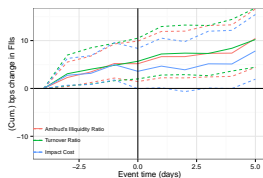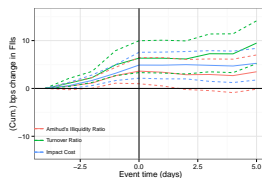

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(a) Quintile 4

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Part V

Conclusion

What have we learned?

- The FII response to extreme news about a firm is very sensitive to firm liquidity.
- With extreme +ve days, they are positive feedback traders, strongly with liquid stocks and weakly with illiquid stocks.
- They shrug off extreme -ve days for liquid stocks.
- They buy after extreme -ve days for illiquid stocks.

Thank you.