

Rules vs. discretion: Impact of trading rules on market quality and trader behavior

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Presentation at the NSE-NYU Conference on Indian Financial Markets, Bombay

December 11, 2019

- Preserving market integrity and protecting investors' interest are the key justifications for securities market regulation
- Significant resources allocated to govern financial market conduct
- However, the effectiveness of securities market regulation is a subject of academic debate, and an important issue in policy making
- Empirical research primarily focussing on insider trading rules and stricter disclosure norms, shows limited effectiveness of such rules
- **This paper:** Examines the impact of a new surveillance mechanism introduced by the Indian securities market regulator on firm value, trading activity, liquidity and trader behavior

The Graded Surveillance Measure (GSM)

- The GSM framework, announced by the regulator on February 23, 2017, came into effect from March 14, 2017
- Part of pre-emptive steps to reduce/check instances of market manipulation in identified stocks
- Securities that witness abnormal price rise, not commensurate with the financial health and fundamentals of the firm are subjected to special trading rules
- Alert investors from dealing in such securities and advice to carry out due diligence

Research questions

- **Q.1:** Which are the firms that enter the mechanism, and do they meet the criteria laid out for GSM security selection?
- **Q.2:** What is the impact of such measures on firm value and liquidity of such stocks?
- **Q.3:** What is the impact of such measures on order placement and trader composition?

With a prime goal of understanding the effectiveness of such measures

- Not all firms that enter the GSM framework necessarily satisfy the criteria laid out for security selection
- Evidence of decline in firm value after the inclusion into GSM framework
- Deterioration in liquidity and trading activity

The setting

Security selection in the GSM framework

- Two criteria for inclusion of securities into the GSM framework
 - **Criteria I:** Net Worth $<$ Rs. 10 crore & Net Fixed Assets \leq Rs. 25 crore & PE $<$ 0 or PE $\geq 2 \times$ Nifty500 PE
 - **Criteria II:** Market cap $<$ Rs. 25 crore & PE $<$ 0 or PE $\geq 2 \times$ Nifty500 PE
- Identification / review of securities done on a quarterly basis
- Financials taken for the latest available quarterly consolidated / standalone results

Trading rules for securities placed into the GSM framework

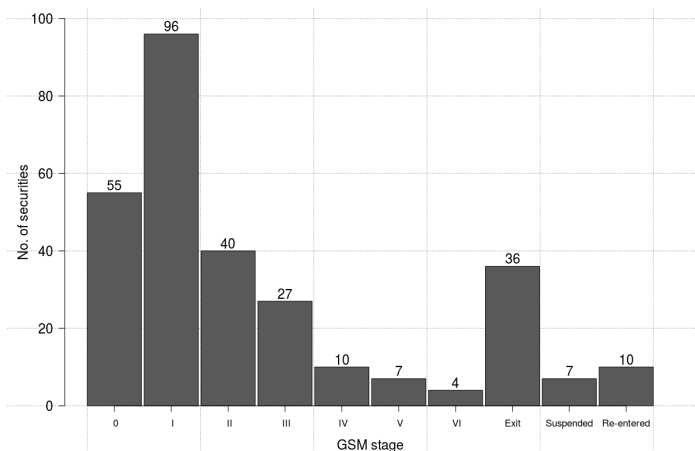
Stage	Consequences
0	Market participants advised to be extra cautious and diligent when dealing in these securities.
I	Transferred to Trade for Trade window with a price band of 5% or lower, as applicable.
II	<ol style="list-style-type: none">1 Transferred to the Trade for Trade window, with a price band of 5% or lower as applicable; and2 Additional deposit of 100% (of trade value) by the buyer
III	<ol style="list-style-type: none">1 Trading permitted once a week; and2 Additional deposit of 100% of the trade value
IV	<ol style="list-style-type: none">1 Trading permitted once a week.2 Additional deposit of 200% of the trade value
V	<ol style="list-style-type: none">1 Trading permitted once a month.2 Additional deposit of 200% of the trade value
VI	<ol style="list-style-type: none">1 Trading permitted once a month with no upward price movement.2 Additional deposit of 200% of the trade value

GSM implementation details

- Once a firm is identified, it goes in to one of the six stages of the GSM, attracting the corresponding surveillance action
- Firms selected under criteria II are directly included into Stage I
- Else, all firms enter into Stage 0, unless stated otherwise
- No clarity on the criteria for inter-stage movement beyond Stage I

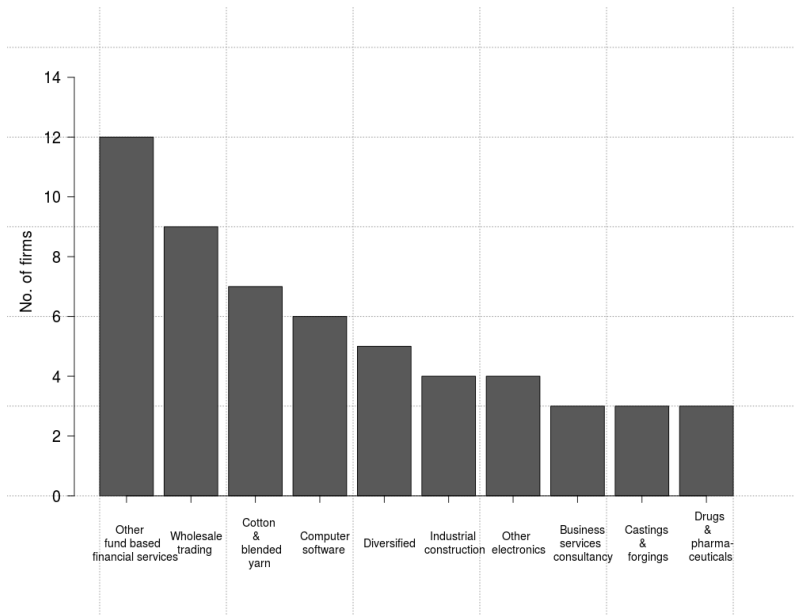
- Hand-collect data on GSM securities from NSE circulars
- Sample period: March 2017 to March 2019
- Financial statements and market variables data from CMIE Prowess
- Order placement and trader composition data: Trades and Orders files from NSE

Stage-wise distribution of firms in GSM framework: (Mar '17 - Mar '19)



Total number of firms that entered into the GSM framework: 111.
55 firms entered in Stage 0 and 56 in Stage 1.

Industry composition of GSM firms (top 10)



Equity ownership structure of GSM firms (%)

Quarter-Year	Promoters	Indian promoters	Foreign promoters	Non-promoters	Non-promoter institutions	Non-promoter non-institutions
Jun-2017	42.32	41.10	1.22	57.68	6.95	50.73
Sep-2017	46.67	44.98	1.69	53.33	5.89	47.41
Dec-2017	41.63	39.47	2.16	58.37	3.61	54.71
Mar-2018	45.03	42.05	2.98	54.97	4.09	50.84
Jun-2018	41.98	39.98	2.01	58.02	4.04	53.91
Sep-2018	42.36	40.21	2.15	57.64	7.51	49.77
Dec-2018	41.66	38.91	2.75	58.34	4.22	54.11
Mar-2019	45.93	43.04	2.89	54.07	5.41	48.14

Rules vs. discretion: Which firms met the criteria?

Stage 0	Criterion	Applicable (#)	Not (#)	Applicable (%)	Not (%)
I	Net worth \leq 10 cr	41	4	91.1	8.90
II	Net fixed assets \leq 25 cr	41	4	91.1	8.90
III	PE $>$ 2*Nifty PE or -PE	44	1	97.8	2.2
IV	I, II and III	37	8	82.2	17.8

Stage I	Criterion	Applicable (#)	Not (#)	Applicable (%)	Not (%)
I	Market Cap $<$ 25 cr	37	19	66.1	33.9
II	PE $>$ 2*Nifty PE ¹	39	17	69.6	30.4
III	I and II	25	31	44.6	55.4

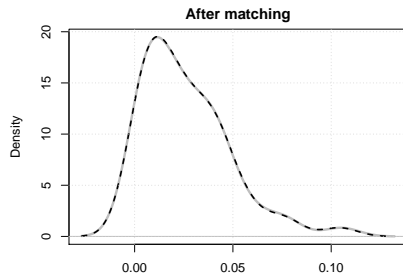
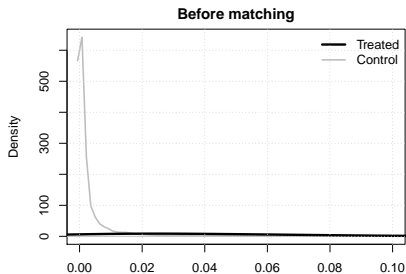
¹or -PE & PB $>$ 2*Nifty PB / -PE & -PB

Impact of GSM framework on firm value, trading activity and liquidity

Empirical strategy

- Certain securities exempted from the GSM framework
- Create a set of non GSM firms similar in firm characteristics and market variables as the GSM firms (**control**)
 - Firms with net worth and PE in the same range as the GSM firms
 - # of comparison group firms after filtering: 1336
- Match stocks based on data before the entry of the firm into the GSM framework:
 - Distance measure: estimated propensity scores
 - Covariates: market cap, price
 - One to one matching on distance measure using the nearest neighbor algorithm (without replacement) and a caliper of 0.05
- Final sample: 57 treated firms matched with 48 control firms

Matching diagnostics

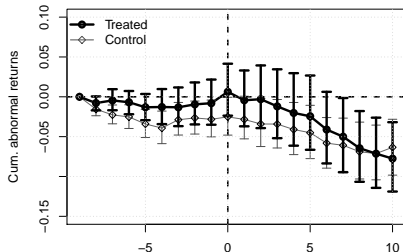
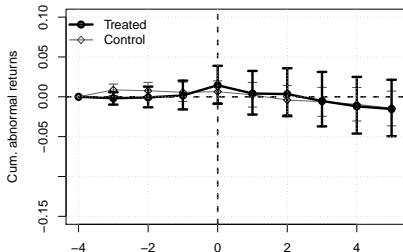


Pre-treatment characteristics of matched set

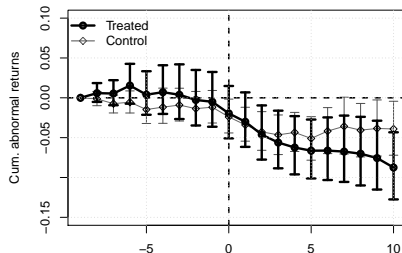
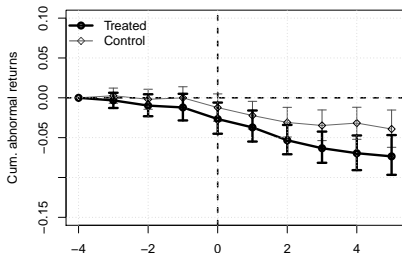
	Treated	Control	<i>t</i> -statistic	<i>p</i> -value
Market cap (log)	20.07	20.05	-0.35	0.73
Price (log)	2.40	2.55	-1.15	0.25
Traded value (log)	12.52	12.59	0.22	0.82
Net Fixed Assets (log)	19.38	19.08	0.47	0.64
P/E	-1.93	30.35	0.50	0.62
Net Worth (Rs. Mn)	-2527.21	-1813.57	-2.83	0.01

Results

Impact on firm value after announcement



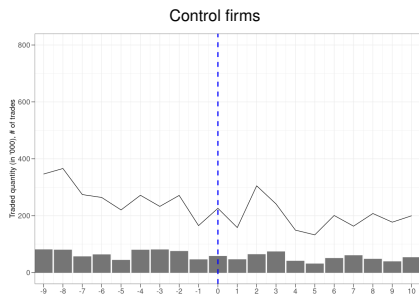
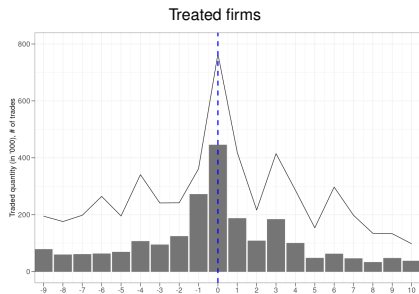
Impact on firm value after effective date



Difference in difference results: Impact on firm value (effective date)

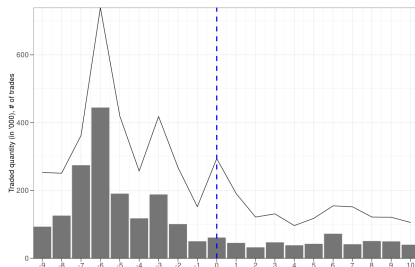
	<i>Dependent variable:</i>							
	$CAR_{(-4,5)}$				$CAR_{(-9,10)}$			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	-0.039** (0.012)	-0.115** (0.042)	-0.040** (0.012)	-0.113** (0.042)	-0.039** (0.017)	-0.087 (0.058)	-0.040** (0.017)	-0.086 (0.058)
$D_{Treated}$	-0.034** (0.017)	-0.031* (0.017)	-0.033* (0.017)	-0.030* (0.017)	-0.048* (0.027)	-0.046* (0.028)	-0.048* (0.027)	-0.046 (0.028)
ln(MCap)		0.012** (0.006)		0.012* (0.006)		0.008 (0.008)		0.008 (0.008)
P/E			-0.00002** (0.00001)	-0.00001** (0.00000)			-0.00001 (0.00001)	-0.00001 (0.00001)
Obs.	105	105	105	105	105	105	105	105
R ²	0.04	0.07	0.05	0.08	0.03	0.04	0.03	0.04

Impact on trading activity after announcement

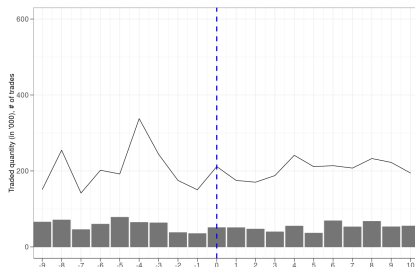


Impact on trading activity after effective date

Treated firms

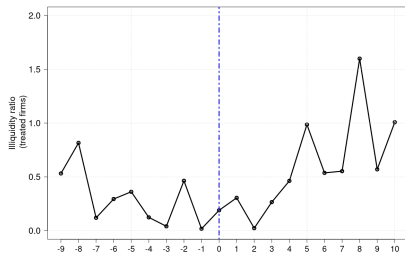


Control firms

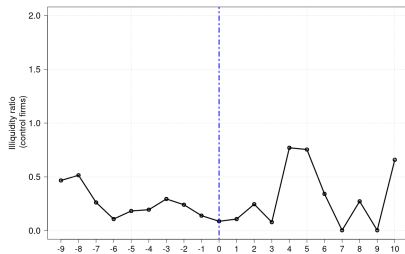


Impact on liquidity after announcement

Treated firms

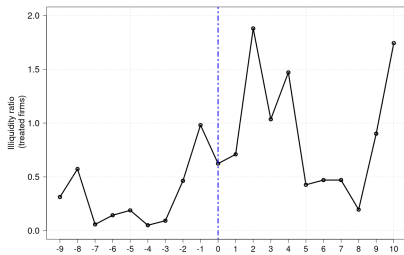


Control firms

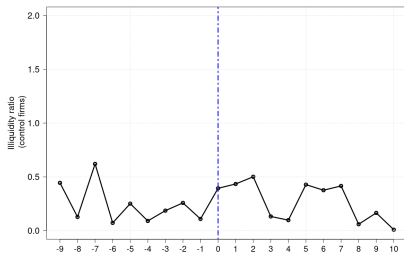


Impact on liquidity after effective date

Treated firms



Control firms



Difference in differences estimates

Announcement	Mean Treatment Difference (After - Before)	Mean Control Difference (After - Before)	Mean DiD Estimator (Treat - Control)
# of trades	-10.98	-74.45	63.47
Traded volumes	-17770.56	-16650.73	-1119.83
Illiquidity ratio	0.32	0.06	0.27
Effective	Mean Treatment Difference (After - Before)	Mean Control Difference (After - Before)	Mean DiD Estimator (Treat - Control)
# of trades	-215.44	0.27	-215.71**
Traded volumes	-130161.45	-5338.38	-124823.07**
Illiquidity ratio	0.61	0.02	0.59**

Summary and further work

- Firms that enter into the GSM framework experience a decline in value in the period immediately following the inclusion
- Similar deterioration in trading activity and liquidity
- Not all firms meet the criteria used for the inclusion of firms into the framework
- Further analysis will focus on:
 - Intra stage movement of firms and their behavior
 - Firms that exited and their behavior
 - Impact on transactions costs measures of liquidity
 - Impact on trader composition
 - Impact on order placement strategies of traders

Thank you

Comments / Questions?

Summary statistics

Summary statistics of GSM firms

Indicator	Q1	Median	Mean	Q3	SD
Close price (Rs.)	2.6	5.8	15.0	13.9	29.6
Traded quantity	1588.8	20132.0	65529.7	59427.9	146360.7
Traded value (Rs. Mn)	0.0	0.1	0.9	0.4	3.0
No. of transactions	6.0	51.8	132.0	123.9	286.8
Market cap (Rs. Mn)	90.1	209.3	883.6	445.8	4601.3
P/E ratio	-2.9	-0.4	10.9	-0.1	161.5
P/B ratio	0.5	1.6	4.0	4.4	7.6
Shareholder's funds	-3015.8	-712.2	-3215.2	44.1	9774.3
Net fixed assets	85.5	356.7	1394.4	1226.7	3018.1
Age since listing (years)	7.5	12.0	13.1	18.5	7.1
Age since incorp (years)	22.8	32.5	38.6	48.8	23.1