

Reponse of firms to listing: evidence from small and medium enterprise exchanges

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The question

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- ▶ Size is correlated with productivity.
- ▶ Firms in the Indian landscape: few small sized firms manage to break it into the ranks of large and productive firms.
- ▶ Standard finance reasoning: Small firms face greater financing constraints.
Potentially a bigger problem in EMs.
- ▶ The information produced by stock market trading can help alleviate this.
- ▶ Can listing jump start more firms out of stagnation, and into the ranks of firms with better access to finance?

The opportunity

- ▶ In 2010, the Securities and Exchange Board of India (SEBI) issued guidelines to setup **dedicated** SME exchanges.
- ▶ In March 2012, the two leading stock exchanges in India launched SME exchanges.
- ▶ SME exchange microstructure feature: Diluted listing criteria compared to the main board: lower net worth, paid-up capital, assets, lower issue size and shorter track record.
- ▶ By March 2016:
 - ▶ 129 firms listed on the BSE SME exchange.
Of which, 16 firms have migrated to listing and trading on the main board.
 - ▶ 15 firms listed on the NSE SME exchange

Eligibility criteria

	Main board	BSE SME	NSE Emerge
Net Worth	> 1 cr in each of the preceding 3 years	>3 cr as per the latest audited results	>0
Track Record	Distributable profits in 3 out of 5 years	Distributable profits in 2 out of 3 years	Track record of at least 3 years & >0 EBDT in at least 2 preceding years
Post issue paid up capital	>10 cr	>3cr	
Net tangible assets	>3cr in preceding 3 years	>3 cr as per the latest audited results	
Issue size	>10 cr		
Market cap	>25 cr		
Remarks		Or Net worth > 5cr	

The paper

- ▶ Exploits the opportunity to measure the impact of listing on the financial structure and post-listing growth of listed firms relative to *unlisted peers*.
- ▶ The key identification opportunity: We are able to observe matched companies that did not list.

Research design

- ▶ Set up a difference-in-difference estimation framework to capture impact of listing, where
 - ▶ **Treated sample** is all firms listed on SME exchanges from 2012 until Mar 2015. This gives us 54 firms.
 - ▶ **Control pool**: All 16,638 unlisted firms using which to find a matched sample for the treated firms.
- ▶ Data cleaning:
 - ▶ Exclude firm years with data unavailable / negative values for total assets, paid up equity capital, total capital, sales, and incorporation year.
 - ▶ Excluded firms if data unavailable for less than 1 year prior listing.
 - ▶ Excluded firms if data unavailable for period after listing.
 - ▶ Winsorised all variables at 1% and 99% for the final sample.

This gives a control pool of 9990 firms.

- ▶ Period of analysis: three years before and three years after listing.

Approach to find a matched sample

- ▶ **Matching covariates:** Firm size, age, industry.
- ▶ **Matching methodology:** Propensity score matching with a caliper of 0.05.
- ▶ **Matching year:** Match on covariates in the year preceeding the listing.
- ▶ Matching **with** replacement.

Final samples: Treated = 43, Matched = 41 firms.

Data problem: less than three years of data after the matching year for some of the the matched firms.

Measurement variables

- ▶ Measures of access to finance:
 - Debt (Borrowings, Bank borrowings in total capital employed, proportion of institutional borrowing, proportion of promoter loans),
 - Equity or total capital,
 - Proportion of trade credit in total capital employed,
 - Leverage (debt to equity),
 - Proportion of working capital to total assets,
 - Cash holdings to total assets, Dividend to operating profit.
- ▶ Measures of efficiency: Operating profit to total assets, Profit before tax to total assets, return on assets

Findings

- ▶ Firms that listed on the SME exchange saw little impact on access to finance for upto three years after listing, other than a growth in equity capital in the raise.
- ▶ Firms that listed on the SME exchanges had significantly higher assets, sales, working capital and net worth after listing.
- ▶ Firms continue to hold high cash holdings even after listing.

The analysis

Sources of financing for firms that listed on the SME exchange

	Listed (50 firms)			
	(In %)		(In Rs. million)	
	Pre-listing	Post-listing	Pre-listing	Post-listing
Owners capital	14.79	29.26	33.90	107.40
Capital input by govt.	0.00	0.00	0.00	
Bank borr	42.45	32.70	97.30	120.00
Fin Inst borr	0.39	0.30	0.90	1.10
Trade credit	28.05	29.35	64.30	107.70
Loans by promoters	1.96	0.79	4.50	2.90
Debentures	0.00	0.71	0.00	2.60
FD: Public	0.00	0.00	0.00	0.00
Govt. borr	0.00	0.00	0.00	0.00
Others	12.35	6.89	28.30	25.30
Total	100.00	100.00	229.20	367.00

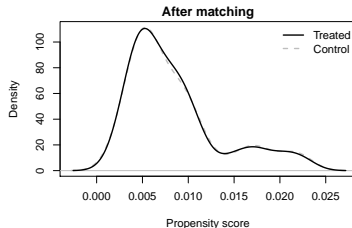
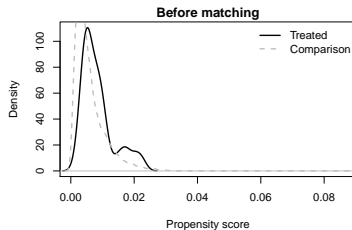
'Others' comprises of firms paidup forfeited equity capital, convertible warrants, paidup preference capital, foreign currency borrowings, inter-corporate loans, commercial papers, subordinated debt, hire-purchase loans.

Firm characteristics of treated and control pool

All values in Rs. Mn

Variable	Treated (50 firms)						Control pool (9,900 firms)		
	μ_{pre}	Q2	σ_{pre}	μ_{post}	Q2	σ_{post}	μ	Q2	σ
Assets	351.6	203.6	428.6	565.9	354.4	552.5	1156.2	330.5	4657.7
PBITDA	39.5	18.5	51.7	51.8	25.8	64.2	156.9	40.1	727
PBT	19.0	8.0	29.8	21.7	8.8	33.1	92.9	16	476.5
PAT	14.1	5.4	21.0	15.4	6.1	23.8	68.6	11.5	365.1
Sales	454.8	195.7	660.2	702.3	319.5	1,201.4	1322.8	370.4	5313.4
Capital	33.9	21.8	38.9	107.4	102.6	60.8	56.2	30	219.4
Borrowings	131.0	63.3	233.2	151.9	52.5	274.6	330.2	67.3	1696.4
Working capital	25.2	16.9	133.7	84.2	40.6	125.0	88.7	19.4	1217.4
Cashflow	-11.1	0.0	66.1	-23.4	-0.5	104.9	51.3	0	732.9
Net worth	120.2	67.6	140.7	250.3	206.9	179.8	412.4	111.7	1985.6
Payout ratio	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.2
Cash holdings	21.5	8.1	38.1	40.9	16.2	71.3	148.4	14.3	1112.8
Age@listing	12.9	11.5	7.9	12.9	11.5	7.9	0	0	0

Density of propensity scores, before and after matching



Final sample: 43 treated, 41 control firms.

Match balance statistics

	Before matching			After matching		
	<i>t</i> stat.	<i>t</i> <i>p</i> -value	KS <i>p</i> -value	<i>t</i> stat.	<i>t</i> <i>p</i> -value	KS <i>p</i> -value
pbitda	-14.46	0	0	-0.71	0.48	0.92
pbt	-15	0	0	1.15	0.26	0.75
pat	-15.03	0	0	-0.02	0.99	0.57
retained-earnings	-1.32	0.19	0	0.49	0.63	0.12
sales	-13.42	0	0	0.95	0.35	0.59
turnover-ratio	-2.16	0.04	0.26	-0.27	0.79	0.77
total-capital	-3.96	0	0.08	-1.35	0.18	0.3
borrowings	-9.13	0	0.04	0.62	0.54	0.89
total-assets	-16.29	0	0	-1.09	0.28	0.88
working capital ratio	0.17	0.87	0.29	-0.13	0.9	0.99
net-worth	-14.8	0	0	-0.67	0.51	0.75

Impact of listing on financing and firm variables three years after listing: DiD

$$\text{FIN-CONSTRAINT-VAR}_{i,t} = \alpha + \beta_1 \text{LISTED-DUMMY}_i + \beta_2 \text{LISTING-YEAR-DUMMY}_t + \beta_3 (\text{LISTING-YEAR-DUMMY}_i \times \text{LISTED-DUMMY}_t) + \beta_4 \text{INDUSTRY-DUMMY} + \beta_5 \text{LN}(\text{ASSETS}) + \beta_6 \text{YEAR} + \beta_7 \text{AGE} + \epsilon_{i,t}$$

	$\hat{\beta}_3$	Std. Error	t value	Pr(> t)	R ²	# of Ob
LN-CAPITAL	0.57	0.31	1.86	0.06	0.45	327
LN BORR	-0.41	0.46	-0.88	0.38	0.51	327
PROP. BANK BORR	-1.85	6.08	-0.30	0.76	0.31	327
PROP. INSTITUTIONAL BORR	-0.50	0.70	-0.71	0.48	0.11	327
PROP. PROMOTER LOANS	-0.75	1.74	-0.43	0.66	0.13	327
PROP. TRADE-CREDIT	-4.88	6.75	-0.72	0.47	0.22	327
NET WC TO ASSETS	-0.40	0.34	-1.16	0.25	0.18	327
DEBT-EQUITY	-0.60	0.34	-1.74	0.08	0.26	327
CASH HOLDINGS TO ASSETS	-0.19	2.08	-0.09	0.93	0.22	327
DIVIDEND TO PBITDA	0.00	0.02	0.17	0.87	0.16	327

Impact of listing on growth: DiD for firms on the SME exchange

$$\text{GROWTH-VAR}_{i,t} = \alpha + \beta_1 \text{LISTED-DUMMY}_i + \beta_2 \text{LISTING-YEAR-DUMMY}_t + \beta_3 (\text{LISTING-YEAR-DUMMY}_i \times \text{LISTED-DUMMY}_t) + \beta_4 \text{INDUSTRY-DUMMY} + \beta_5 \text{LN(ASSETS)} + \beta_6 \text{YEAR} + \beta_7 \text{AGE} + \epsilon_{i,t}$$

	$\hat{\beta}_3$	Std. Error	t value	Pr(> t)	R ²	# of Obs.
TURNOVER-RATIO	-0.40	0.34	-1.16	0.25	0.18	327
PBIDTA-ASSETS	-0.01	0.02	-0.66	0.51	0.14	327
PBT-ASSETS	-0.01	0.02	-0.91	0.36	0.14	327
PAT-ASSETS	-0.01	0.01	-1.05	0.30	0.16	327
SALES-GROWTH	55.54	61.75	0.90	0.37	0.06	327
PBITDA-growth	78.57	36.44	2.16	0.03	0.05	325
ASSET-growth	35.51	18.97	1.87	0.06	0.08	327
PAT-GROWTH	107.31	82.82	1.30	0.20	0.08	321

Next steps

- ▶ Which firms chose to list on the SME exchanges?
Identify and test selection bias.
- ▶ Increase sample size to include the latest year.
- ▶ Additional robustness checks?

Thank you

Questions / Comments?

<http://www.ifrogs.org>