

Creditor Rights and Allocative Distortions – Evidence from India

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Creditor rights and Allocative Distortions

- ▶ Large literature on creditor rights and impact on credit access
 - ▶ +: Due to higher payoffs (La Porta et. al (1998)).
 - ▶ -: Due to liquidation bias ((Hart and Moore (1994), Vig (2012))).
 - ▶ -: Heterogeneous impact (Lilienfeld-Toal, Mookherjee and Visaria (2012)).
- ▶ This paper: focuses on the general equilibrium effects of creditor rights.
- ▶ Delays in creditors' ability to seize defaulters' assets prevents reallocation of resources to their best use.
 - ▶ ↓ creative destruction \implies spurious allocation of resources.
 - ▶ "Evergreening" and "zombie" distortions (Caballero et al. (2008)).

Do improvements in creditor rights lead to a better allocation of debt (and other resources)?

This paper . . .

My setting: Exploit a collateral reform in 2002 in India that made it easier for creditors to seize secured assets.

- ▶ Step 1: Examine reallocation of debt away from low quality borrowers to high quality borrowers (Partial Equilibrium).
- ▶ Step 2: Examine whether this is partly driven by the reduction in zombie firms.
- ▶ Step 3: Examine spillovers on non-zombies due to reduction in zombie distortions (General Equilibrium).
- ▶ Step 4: Examine productive efficiency at the industry level.

Preview of Findings

1. Reallocate secured debt away from “low quality” borrowers: ↓ INR 39 million (75 %).
 - ▶ No similar impact on *unsecured* borrowing, ↑ in interest rates by 72 bps ⇒ NOT driven by liquidation bias.
2. 59% reduction in secured borrowing due to reduction in zombie lending (“evergreening”).
3. Spillover effects on non-zombies due to reduction in zombie distortions.
 - ▶ ↑ Secured Debt (62%), CapEx (39%) and employment (6%, admin.) of non-zombies.
4. Improvement in productive efficiency:
 - ▶ Reallocation of labor and capital to firms with higher marginal products of labor and capital.

Relation to Literature

- ▶ Literature focuses on creditor rights and partial equilibrium effects on
 - ▶ Leverage (Acharya, Sundaram and John (2004))
 - ▶ Corporate risk-taking (Acharya, Amihud, Litov (2009))
 - ▶ On aggregate lending (Djankov, McLeish, and Shleifer (2007, 2008); Haselmann, Pistor and Vig (2006)); (Hart and Moore (1994); Lilienfeld-Toal, Mookherjee and Visaria (2012).
 - ▶ Vig (2012): Same collateral reform to show high tangibility firms have lower debt to assets.
- ▶ Misallocation of resources
 - ▶ Hsieh and Klenow (2009), Duranton, Ghani, Goswami and Kerr (2015).
- ▶ Zombie distortions
 - ▶ Caballero, Hoshi, and Kashyap (2008) look at zombie distortion in Japan in 90's, Acharya et. al (2017).

This paper examines how improvement in creditor rights corrects allocative distortions.

Data & Institutional Details

Data

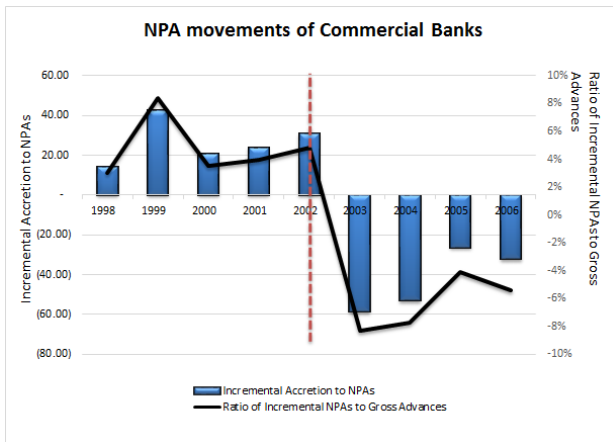
- ▶ Firm-level data: Prowess Database.
- ▶ [For baseline focus on 1997–2007.](#)
- ▶ Supplement: Employment data at establishment level of manufacturing firms from Annual Survey of Industries (ASI) data from 1999-2007.

Data Item	Variables Used	Source
1	Secured Borrowing = Change in Secured Debt	Derived from Prowess
2	Unsecured Borrowing = Change in Unsecured Debt	Derived from Prowess
3	Interest Rate Expense	Prowess
4	Prime Lending Rate for Long-term Loans	SBI
5	Interest Expense	Prowess
6	Lending Rate for Short-term Loans	RBI/Prowess
7	Interest Coverage Ratio (ICR) = $\frac{EBITDA}{\text{Interest Expense}}$	Prowess
8	Op. Margin = $\frac{EBITDA}{\text{Sales}}$	Prowess
9	Plant and Machinery	Prowess
10	Land and Building	Prowess
11	Capital Work in Progress	Prowess
12	Other Fixed Assets	Prowess
13	Cash and Bank Balance	Prowess
14	Marketable Securities	Prowess
15	Specific Assets = 9 + 12	Derived from Prowess
16	Non-specific Assets = 10 + 13 + 14	Derived from Prowess
17	Tangibility = Specific assets / (Specific + Non-specific assets)	Derived from Prowess

Collateral Reform 2002

- ▶ Securitization and Reconstruction of Financial Assets and Enforcement of Security Interests Act of 2002 made it easier for secured lenders to seize secured assets of defaulting borrowers.
 - ▶ Pre: Lender subject to elaborate legal process.
 - ▶ Post: Lender can start liquidation process on defaulted borrowers (secured only).
- ▶ Effective on June 21, 2002.
- ▶ Board for Industrial and Financial Reconstruction (BIFR) in 1985 & Debt Recovery Tribunals (DRT) 90's
 - ▶ DRTs: specialized institutions to reduce delays in debt recovery suits.
 - ▶ DRT weak in effect because firms delay using BIFR (Baijal (2008)).
- ▶ 2002 collateral reform (till 2008) was “working” in that debtors were paying up (Raghuram Rajan Report 2009).

Collateral reform had an immediate impact . . .



Significant non-performing asset (NPA) reductions post the collateral reform.

1. Collateral reform and Low Quality Borrowers

Low Quality Borrowers: Definition

- ▶ Define low quality borrowers in terms of interest coverage ratio (ICR).

$$\text{Interest Coverage Ratio}_i = \frac{\text{Earning Before Interest and Taxes}}{\text{Interest Expense}}$$

- ▶ Captures ability of firms to service existing debt.
- ▶ Borrowers are considered to be low quality if ICR below 1 in 2001.
- ▶ Baseline results robust to other profitability measures (ROA, Tobin's Q, persistent and within industry).

Summary Statistics

By quality of borrowers

	1	2	3	4	5	6	7	8
	All		Low Quality			High Quality		
Variables	Mean	SD	Pre	Post	t-stat dif.	Pre	Post	t-stat dif.
Sec. Borr. ⁺	45.23	191.6	51.74	37.54	-4.78***	30.96	56.52	12.91***
Unsec. Borr. ⁺	3.160	17.20	1.020	4.260	13.33***	1.530	4.730	18.28***
CapEx ⁺	83.45	259.2	59.81	59.19	-0.18	78.02	106.7	10.11
Total Debt ⁺	1058	6552	1059	1363	3.38***	770.7	1141	5.35***
Sec. Debt ⁺	506.1	1202	486.0	644.7	7.72***	393.6	538.1	10.69***
Unsec. Debt ⁺	253.6	802.7	246.7	311.5	4.45***	186.1	282.3	10.21***
$\frac{Debt}{Assets}$ ⁺	0.340	0.340	0.450	0.560	14.39***	0.260	0.250	-2.94***
LogSales	5.370	2.420	4.840	4.850	0.12	5.410	5.750	13.11
$\frac{EBITDA}{Total\ Assets}$	0.100	0.110	0.0300	0.0700	23.56***	0.130	0.110	-14.54***
All Emp.	292	1061	306	312	-0.52	251	308	-7.08
Perm. Emp.	48	153	47	61	-7.65***	37	50	-13.05***
Contr. Emp.	38	121	22	36	-12.62***	28	49	-24.16***
Staff Emp.	53	91	59	63	-3.73***	43	54	-16.90***
Obs.	52152		16457			35695		

⁺ INR million.

Empirical Specification: Exploit tangibility

Difference-in-Difference-in-Difference (DiDiD)

Use ex-ante tangibility as cross-sectional variation in treatment of collateral reform:

$$y_{it} = \alpha_i + \gamma_t \\ + \eta \times \mathbb{1}_{Post} \times \mathbb{1}_{(LowQ)} + \nu \times \mathbb{1}_{Post} \times \mathbb{1}_{(HighT)} \\ + \phi \times \mathbb{1}_{Post} \times \mathbb{1}_{(LowQ)} \times \mathbb{1}_{(HighT)} + \epsilon_{it}$$

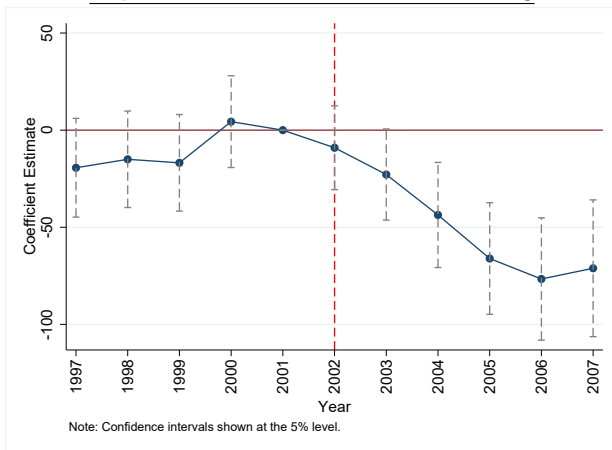
- ▶ where i indexes firms, t indexes time, α_i and γ_t are firm and year fixed effects.
- ▶ $\mathbb{1}_{(HighT)} = 1$ for “High Tangibility” firms, that is, firms with above median Tangibility Ratio in 2001.
- ▶ $\mathbb{1}_{Post} = 1$ for years when SARFAESI is in effect (≥ 2002).
- ▶ $\mathbb{1}_{(LowQ)} = 1$ for “Low Quality” firms, that is, in bottom tercile of Interest Coverage Ratio.
- ▶ ϕ is the estimate of interest.
- ▶ S.E. clustered at the firm level.

Intuition: Control for factors not related to the collateral reform that *differentially* affected LowQ relative to HighQ borrowers by differencing out LowQ-HighQ of low tangibility firms.

Impact of Collateral Reform on Secured Borrowing

$$y_{it} = \alpha_i + \gamma_t + \sum_{\tau} \eta_{\tau} \times \mathbb{1}_{tau} \times \mathbb{1}_{LowQ} + \sum_{\tau} \nu_{\tau} \times \mathbb{1}_{tau} \times \mathbb{1}_{HighT} \\ + \sum_{\tau} \phi_{\tau} \times \mathbb{1}_{tau} \times \mathbb{1}_{LowQ} \times \mathbb{1}_{HighT} + \beta \times X_{it} + \epsilon_{it}$$

Dependent Variable: Secured Borrowing



Impact of Collateral Reform on Secured Borrowing

	(1)	(2)
	Secured Borr.	
Low Quality * Post	-22.19*** (4.869)	-16.49*** (5.003)
High Tangibility * Post	12.41** (4.846)	9.715** (4.810)
Low Quality * Post * High Tangibility	-39.08*** (8.023)	-37.06*** (8.181)
Baseline Mean	51.74	
No. of Obs.	51939	51939
R-sq.	0.359	0.388
Firm FE	Y	Y
Year FE	Y	Y
Industry-Year FE	N	Y
Controls	N	Y

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Low quality firms ↓ secured borrowing by INR 39 million (75%) relative to high quality borrowers after the collateral reform.

2. Collateral reform and Zombie Lending

Interpreting results: Decline in access to cheap credit?

- ▶ Zombies defined as firms that receive subsidized credit.
- ▶ Ideal data: Compare the interest rates of new loans of poor quality borrowers to the interest rates of highest rated firms.
 - ▶ Given our data: Start with Caballero, Hoshi and Kashyap (2008) to identify zombies.
 - ▶ Classified as zombies if Interest expense $<$ interest expense of most creditworthy firms.
 - ▶ Ignores profitability of loans (Fukuda & Nakamura (2011)): ICR of firm $<$ 1.
 - ▶ Ignores evergreening of loans: Borrowing $>$ 0 and LVG $>$ 15%
 - ▶ Highest Rated firms also classified as non-zombies.

Is reduction in borrowing due to reduction in Zombie Lending?

	(1)	(2)	(3)
	Secured Borr.		$\mathbb{1}_{\text{zombie current}}$
High Tangibility * Post	3.699 (4.288)	2.559 (4.238)	0.0336*** (0.0120)
Zombie * Post	-22.40*** (7.281)	-17.28** (7.433)	-0.204*** (0.0575)
Zombie * Post * High Tangibility	-36.65*** (10.63)	-37.75*** (10.83)	-0.139* (0.0718)
Baseline Mean	62.34		0.08
No. of Obs.	51939	51939	11975
R-sq.	0.358	0.387	0.677
Firm FE	Y	Y	Y
Year FE	Y	Y	Y
Industry-Year FE	N	Y	N
Controls	N	Y	N

Note: Zombie if firm received zombie lending in 2001.

59% reduction in secured borrowing attributable to reduction in evergreening. Summ. Stats

3. Spillovers Effects of the Collateral Reform

Analyzing Spillovers

Industry-level Analysis

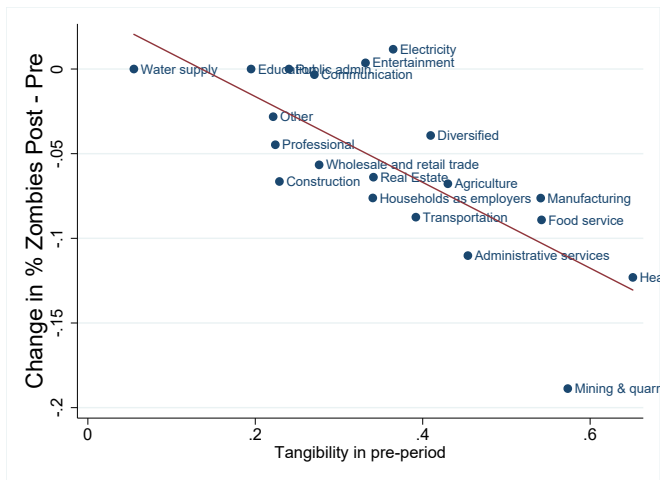
- ▶ Examine spillovers on non-zombie firms:

$$y_{it} = \alpha_i + \gamma_t + \beta_1 \times \mathbb{1}_{High\ Ind.\ Tangibility} \times \mathbb{1}_{Post} \\ + \beta_2 \times \mathbb{1}_{Non\ Zombie} \times \mathbb{1}_{Post} \\ + \beta_3 \times \mathbb{1}_{Non\ Zombie} \times \mathbb{1}_{High\ Ind.\ Tangibility} \times \mathbb{1}_{Post} \\ + \beta \times X_{it} + \epsilon_{ijt}$$

- ▶ where i indexes firms, t indexes time, j indexes sectors, α_i and γ_t are firm and year fixed effects.
- ▶ y_{ijt} is the outcome of interest (change in debt, CapEx, employment) from t to $t - 1$.
- ▶ $\mathbb{1}_{Post} = 1$ for years when the collateral reform is in effect (≥ 2002).
- ▶ $\mathbb{1}_{Non\ Zombie} = 1$ for “Non-Zombie” firms.
- ▶ $\mathbb{1}_{High\ Ind.\ Tangibility} = 1$ if the sector had a average tangibility in the period before the collateral reform.
- ▶ β_3 is the estimate of interest, S.E. clustered at the firm level.

Exploit industry-level variation in treatment: pre-period tangibility.

Towards Causality: Exploit tangibility



Impact of collateral law on change in percentage of firms receiving subsidized credit higher in sectors with higher tangibility of assets!

Spillovers: Secured Borrowing and CapEx

	(1)	(2)	(3)	(4)
	Secured Debt		CapEx	
$\mathbb{1}_{High\ Ind.\ Tang.} * Post$	-29.65*** (9.326)	-33.44*** (10.12)	-17.81 (10.97)	-28.25** (11.53)
Post*Non-Zombie	23.73*** (5.826)	19.25*** (5.822)	30.76*** (8.754)	17.93** (8.567)
Non-Zombie* $\mathbb{1}_{High\ Ind.\ Tang.} * Post$	38.61*** (10.25)	38.99*** (10.27)	27.92** (12.05)	33.76*** (11.89)
Baseline Mean	62.34		71.84	
No. of Obs.	52152	52152	52152	52152
R-sq.	0.359	0.366	0.617	0.625
Firm FE	Y	Y	N	N
Year FE	Y	Y	Y	Y
Industry-Year FE	N	Y	N	Y
Controls	N	Y	N	Y

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Spillovers on non-zombie firms: \uparrow in secured borrowing (62%) and CapEx (39%).

Spillovers: Employment

	(1)	(2)	(3)	(4)
	All		Staff	
$\mathbb{1}_{High\ Ind.\ Tang.} * Post$	7.519 (6.377)	67.62** (27.43)	-4.734** (2.089)	4.337 (4.457)
Post*Non-Zombie	27.43*** (2.973)	25.44*** (2.885)	8.251*** (0.934)	7.657*** (0.903)
Non-Zombie* $\mathbb{1}_{High\ Ind.\ Tang.} * Post$	6.685 (6.165)	0.668 (6.006)	4.377** (2.014)	3.609* (1.985)
Baseline Mean	226		68.62	
No. of Obs.	113414	113414	113414	113414
R-sq.	0.919	0.922	0.921	0.923
Firm FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Industry-Year FE	N	Y	N	Y
Controls	N	Y	N	Y

Effect concentrated in staff (6% \uparrow). Effects potentially muted because firms substitute from capital to labor (Alok et al. (2017)).

Conclusion

4. Productive Efficiency and the Collateral Reform

Reallocation of Capital and Labor

Within Industries

- ▶ Examine whether capital is allocated to firms with higher marginal product of capital within an industry

$$\Delta \text{Capital Share}_{ijt} = \gamma_{jt} + \delta_t + \beta_0 \times \text{MPK}_{ijt} \\ + \beta_1 \times \mathbb{1}_{\text{Post}} \times \text{MPK}_{ijt} + \beta_2 \times X_{ijt} + \epsilon_{ijt}$$

- ▶ i indexes firms, t indexes time, j indexes the industry in which the firm operates.
- ▶ γ_{jt} , δ_t are industry-year and time fixed effects.
- ▶ $\mathbb{1}_{\text{Post}} = 1$ for years when the reform is in effect (≥ 2002).
- ▶ $\text{Capital Share}_{ijt}$ is the capital share of firm i in industry j and time t .
 $\Delta \text{Capital Share}_{ijt}$ is the log of the difference of this share between t and $t - 1$.
- ▶ MPK_{ijt} is the log of the marginal product of capital calculated as total sales divided by capital (can be motivated assuming a Cobb-Douglas production function).
- ▶ X_{ijt} includes age controls one-year lag of age and its squared value and ensures that the specification controls for important life-cycle patterns in productivity in addition to sales and return on assets. Standard errors are clustered at the firm level.
- ▶ β_1 is coefficient estimate of interest and tells us the sensitivity of capital reallocation to the marginal product of capital before the reform relative to after the reform.

Reallocation of Capital

	(1)	(2)
MPK * Post	0.359*** (0.0359)	0.365*** (0.0392)
High Tangibility * Post		0.493*** (0.0753)
High Tangibility * MPK		-0.149** (0.0738)
MPK * Post * High Tangibility		0.151* (0.0773)
MPK	-0.604*** (0.0341)	-0.576*** (0.0356)
No. of Obs.	14910	14910
R squared	0.379	0.384
Industry * Year FE	Y	Y
Age controls	Y	Y

Post the collateral reform, capital allocated to firms with higher marginal product of capital.

Reallocation of Labor

	(1)	(2)
MPL * Post	0.0475*** (0.00949)	0.0289** (0.0122)
High Tangibility * Post		-1.087*** (0.251)
High Tangibility * MPL		0.0424*** (0.000303)
MPL * Post * High Tangibility		0.0577*** (0.0192)
MPL	-0.0541*** (0.000712)	-0.0856*** (0.000901)
No. of Obs.	19044	19044
R-sq.	0.802	0.805
Industry * Year FE	Y	Y
Age controls	Y	Y

Post the collateral reform, labor allocated to firms with higher marginal product of labor.

Other results and Robustness

- ▶ Bank-level exposure: Low quality firms whose primary lender were banks with greatest pre-reform exposure to zombies witnessed the lower secured borrowing. **Bank**
- ▶ Alternate control group: Results robust when using Non-Banking Financial Companies as control group. **NBFC**
- ▶ External validity: Use prior improvement in creditor rights and show results hold. Though, over time law is weaker due to loopholes (BIFR). **DRT**
- ▶ Low quality borrowers cut back on capital expenditure and employment (**Real Outcomes**) and improve profitability (**Profitability**).

Conclusion

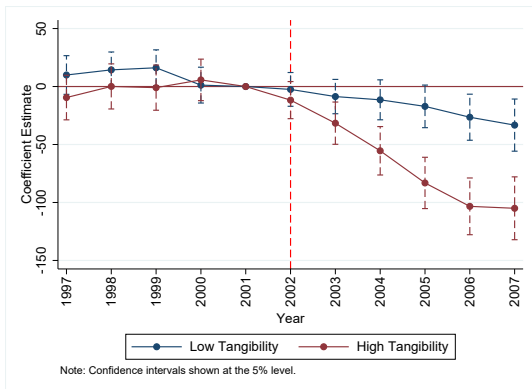
- ▶ Improved creditor rights reallocate resources away from impaired debtors.
- ▶ Spillover effects on “good” firms: CapEx and Employment.
- ▶ Productive efficiency improves.
- ▶ Important for developing countries
 - ▶ Brazil, China and India introduced new bankruptcy laws in the last decade increasing the legal protection of creditors.
- ▶ Highlights the *spillovers* of improved creditor rights on “good” firms.

Thank You!

Towards Causality: Exploit tangibility

DiD

$$y_{it} = \alpha_i + \gamma_t + \sum_{\tau} \eta_{\tau} \times (\mathbb{1}_{\tau} \times \mathbb{1}_{(LowQ)}) + \epsilon_{ijt}$$



Identification: Exploit collateral reform which only applies to secured borrowers (ex-ante tangibility of firms).

Main

Impact of Collateral Reform on Real Outcomes

	(1)		(2)	
	CapEx		Employment	
Low Quality * Post	-21.86*** (6.181)	-7.694 (6.178)	-26.85*** (2.874)	-24.16*** (2.799)
High Tangibility * Post	19.63*** (5.759)	19.37*** (5.740)	11.10*** (3.707)	9.204** (3.638)
Low Quality * Post * High Tangibility	-36.77*** (9.276)	-38.84*** (9.096)	-15.13** (7.439)	-13.19* (7.267)
Baseline Mean	59.81		306	
No. of Obs.	51939	51939	113424	113424
R-sq.	0.617	0.640	0.919	0.922
Firm FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Industry-Year FE	N	Y	N	Y
Controls	N	Y	N	Y

Low quality firms ↓ capital expenditure by INR 21 million (41%).

Main

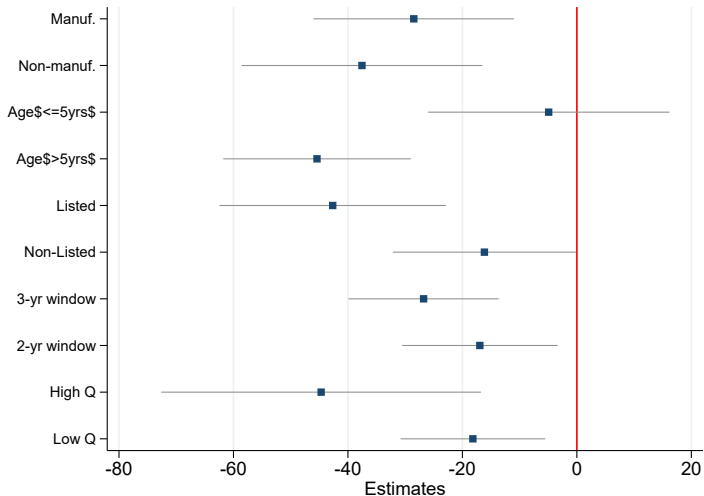
Robustness

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
	Tobin's Q	Alt. Spec.	Ln(Sec. Borr.)	2001	ROA	Alt. LQ Definitions	Tobin's Q	Within Ind.	Persist
		<i>Sec. Borr. Assets</i>							
LQ*P.*High T.	-50.58*** (18.96)	-0.0147*** (0.00571)	-0.248** (0.100)	-22.95*** (8.101)	-24.88*** (7.943)	-54.49*** (13.86)	-35.60*** (8.237)	-29.11*** (11.06)	
No. of Obs.	21080	42506	35385	47870	47870	47870	47870	47870	
R-sq.	0.362	0.257	0.650	0.356	0.355	0.355	0.356	0.355	
Firm FE	Y	Y	Y	Y	Y	Y	Y	Y	
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	
Controls	Y	Y	Y	Y	Y	Y	Y	Y	

Robust to different specifications.

Main

Heterogeneity of effects



Persist in different sub-samples and not driven by young firms.

Main

Bank Exposure

	(1)	(2)
Low Quality * Post * High Exposure	-113.5*** (20.25)	-123.6*** (16.77)
No. of Obs.	17587	17587
R-sq.	0.432	0.482
Firm FE	Y	Y
Year FE	Y	Y
Industry-Year FE	N	Y
Controls	Y	Y

Results similar when we look at bank level exposure.

Main

External validity and alternate controls

	(1)	(2)	(3)	(4)
	External Validity		non-NBFC	
Low Quality Borrower * DRT	-24.03** (12.13)	-21.57* (12.08)		
Low Quality * Post * non-NBFC			-31.90*** (11.33)	-29.49* (17.28)
No. of Obs.	21869	21869	28156	28156
R-sq.	0.320	0.332	0.357	0.388
Firm FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Industry-Year FE	N	Y	N	Y
Controls	Y	Y	Y	Y

Results robust when using Non-Banking Financial Companies as control group. Using setting up of the Debt Recovery Tribunals (DRT) yields similar results.

Main

Profitability

	(1)	(2)	(3)	(4)
	Op. Margin=	$\frac{EBITDA}{Sales}$	ROA=	$\frac{EBIT}{Assets}$
Low Quality * Post	4.275** (1.715)	4.540*** (1.745)	3.642*** (0.343)	3.550*** (0.342)
High Tangibility * Post	-0.514 (0.659)	0.268 (0.785)	-0.311* (0.180)	-0.283 (0.206)
Low Quality * Post * High Tangibility	3.661* (2.010)	3.464* (2.048)	0.777* (0.423)	0.938** (0.425)
No. of Obs.	45689	45689	45689	45689
R squared	0.0672	0.0953	0.0661	0.102
Firm FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Industry FE	N	Y	N	Y

Profitability of low quality borrowers improved post the collateral reform.

SARFAESI (more detail)

- ▶ Under the SARFAESI Act (section 13 (2)), after a loan has been classified as a non- performing asset (NPA) by the secured creditor, a notice is sent to the relevant borrower.
- ▶ If the borrower fails to discharge his liability in repayment of any secured debt within 60 days from the date of notice by the secured creditor, the creditor is entitled to
 1. Take possession of the secured assets of the borrower.
 2. Takeover of the management of the business of the borrower.
 3. Appoint any person to manage the secured assets, possession of which is taken by the secured creditor.
 4. Require any person who has acquired any of the secured assets from the borrower and from whom money is due to the borrower to directly pay the secured creditor to cover the secured debt owed to the creditor.

Summary Statistics

By Zombie Status

Variables	All		Zombies			Non-Zombies		
	Mean	SD	Pre	Post	t-stat on Diff.	Pre	Post	t-stat on Diff.
Secured Borrowings	45.23	191.6	62.34	41.31	(-4.82***)	32.41	52.65	(11.40***)
Unsecured Borrowings	3.160	17.20	1.100	5.110	(10.91***)	1.410	4.490	(19.96***)
Capital Expenditure	83.45	259.2	71.84	63.71	(-1.56)	71.81	97.89	(10.55)
Total Debt	1058	6552	1373	1835	(2.82***)	752.1	1093	(5.90***)
Secured Debt	506.1	1202	533.5	724.0	(6.39***)	400.8	542.2	(11.63***)
Unsecured Debt	253.6	802.7	316.5	401.7	(3.77***)	178.8	267.7	(10.83***)
Debt to Assets	0.340	0.340	0.510	0.610	(9.05***)	0.280	0.300	(4.69***)
Log(Sales)	5.370	2.420	4.720	4.870	(3.00***)	5.340	5.590	(11.22***)
$\frac{EBITDA}{Total\ Assets}$	0.100	0.110	0.0200	0.0700	(17.10***)	0.110	0.110	(-4.03***)
Observations	52152		8791			43361		

Firm classified as zombie if it received zombie lending in 2001.

Main