# Creditor Rights and Allocative Distortions – Evidence from India

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# Research Question

- Does stronger creditor rights enable **reallocation of credit from low quality firms to high quality firms?**
  - Does this reallocation have **real effects?**
    - **Positive spillover effects** on high quality firms?
      - **Impact on Capital Investments and Employment**

# The Big Picture

- Creative Destruction is important for efficient functioning of an economy
  - Allows for exit of inefficient firms
  - Frees up resources for more productive firms
  - Efficient reallocation of capital -> can spur employemnt, investments, and economic growth
- An optimal bankruptcy regime
  - Should preclude liquidation of firms with positive continuation value
  - Allow for liquidation of firms if liquidation value is greater than continuation value
  - Provides optimal ex-ante incentives for firms
- Strengthening creditor rights can potentially achieve these objectives
- A fundamental Question: How legal rules governing the financial contracting environment in general and the protection of creditor rights in particular affect real economic outcomes ?

# What do we know?

- **Broader Economy**: A large literature documents
  - stronger creditor rights are associated with larger capital markets, and greater economic growth (La Porta et al. (1997, 1998); Levine (1998, 1999)).
  - extent of creditor rights protection is linked with higher ratios of private credit to GDP (Djankov et al. (2007)), greater access to external finance (Beck et al. (2005)), increased lending (Haselmann et al. (2010)), and lower cost of debt (Visaria (2009))
- **Evidence** regarding the impact of creditor rights **on firm level outcomes is mixed**.
  - **On the one hand** - > strengthening creditor rights can increase the supply of credit and lower the cost of debt (Visaria (2009), Haselmann et al. (2010)).
    - can enhance the ability of firms to borrow long-term, increase leverage, and consequently the level, quality, and horizon of capital investments (Giannetti (2003), Benmelech and Bergman (2011), and Gopalan et al. (2016)).
  - **On the other hand** -> stronger creditor rights can also decrease the supply of credit to small borrowers (Lilienfeld et al. (2012)) and increase the threat of liquidation for firms (Acharya et al. (2011)).
    - (Acharya et al. (2011)) -> sub-optimally "excessive" liquidations of firms with positive continuation value.
    - imposes deadweight costs on firms and can adversely impact their demand for credit and distort their investment decisions.
    - **Evidence:** adverse impact on the demand for debt, asset growth, risk-taking, and reduce both the amount and quality of innovation pursued by firms (Acharya and Subramanian (2009), Acharya et al. (2011), and Vig (2013)).
- This paper contributes to the strand on positive effects of strengthening creditor rights

# Brief Summary

- **Research Question:** *Does stronger creditor rights enable reallocation of credit from low quality firms to high quality firms?*
- *Does this reallocation have real effects?*
  - *Positive spillover effects on high quality firms?*
- **Experimental Setup:** Exploit the passage of Securitization and Reconstruction of Financial Assets and Enforcement of Security Interests Act of 2002 (SARFAESI)
  - Allowed creditors to seize and liquidate collateral
  - Applied only to secured debt, by banks, and even to pre-existing loans
- **Naive Identification Strategy:** Compare the change in secured debt for **low quality borrowers** relative to **high quality borrowers** around the passage of SARFAESI

$$y_{it} = \alpha_i + \gamma_t + \eta \times \mathbb{1}_{Post} \times \mathbb{1}_{(LowQ)} + \beta \times X_{it} + \epsilon_{ijt}$$

- **Specific Empirical Questions:**
  1. Is there a **decrease** in **secured borrowings** for **low quality borrowers** relative to **high quality borrowers** following the act?
  2. Does this credit get allocated to high quality borrowers? If, so how does it impact **capital expenditure and employment in firms?**

  - But low quality borrowers may be trending differently from high quality borrowers
  - Paper acknowledges this issue

# Empirical Strategy

- **Refined Identification:** Uses a difference-in-differences-in-differences strategy.
- Follows Vig (2013)
  - **Key Idea:** The law applies to secured lending
  - Exploit the cross-sectional variation in a firms' ability to collateralize assets to generate variation in the intensity of treatment.
  - Firms with greater fraction of tangible (collateralizable) assets will be more affected by SARFAESI
  - **Treatment (Control) Group: Firms with above (below) median asset tangibility in the pre-event period**
  - Compare the change in secured debt for **low quality borrowers** relative to **high quality borrowers (DID estimate)** around the passage of SARFAESI for the **high tangibility firms** relative to the similar **DID estimate** for the **low tangibility firms**

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

$$+\phi \times \mathbb{1}_{Post} \times \mathbb{1}_{(LowQ)} \times \mathbb{1}_{(HighT)} + \beta \times X_{it} + \epsilon_{ijt}$$

# Main Findings

- **Increase** (**Decrease**) in **secured borrowings** of **high** (**Low**) quality firms
  - Argues: Driven by **decrease in demand for credit** in light of increased threat of liquidation
- **Increase** (**Decrease**) in **secured borrowings** of **Non-Zombie** (**Zombie**) Firms
  - Argues: Driven by **decrease in supply of credit** to zombie firms
- Real effects: Increase (decrease) in capital expenditure and employment at high (low) quality firms
  - Redeployment of capital and labor to firms with higher marginal products of capital and labor.

# Bankruptcy Regime and Creditor Rights In India

- Historically - regulatory bottlenecks and judicial delays in the recovery of secured assets
  - Loan recovery cases were filed in the civil court system
    Had to follow the tedious Code of Civil Procedure Act of 1908
    Large depreciation in the value of secured assets held as collateral by the bank
- Debt Recovery Tribunal Act of 1993 (DRT Act)
  - Establishment of fast-track specialized courts all over India for debt recovery cases - [Visaria (2009)]
  - Even after establishment of DRT Act, secured creditors could not seize security of a defaulting firm without a court/tribunal order
- SARFAESI
- If a firm (borrower) defaulted on payments for more than 6 months, the secured creditor (bank) could give a notice of 60 days and:
  - **Bypass the lengthy court/tribunal** proceedings and seize and **liquidate the assets of the defaulting firm**
  - **Take over the management** of the business of the borrower
  - **retrospective** - applied to both new and old contracts
  - **Limited appeal rights to borrower**

# Marginal Contribution

- In settings with inefficient insolvency laws → Longer and uncertain bankruptcy process
- If creditor rights are strengthened → creditors would choose to avoid the insolvency process and prefer liquidation
- **DRT:** On supply side - higher expected debt recovery → lower interest rate (Visaria (2009))
- **SARFAESI:** On demand side - higher likelihood of liquidation → higher expected bankruptcy cost -> lower demand for loans and Lower capital expenditure (Vig (2013))
  - Alok, Chaurey and Nukala (2016)
    - Firms preemptively substitute formal credit with trade credit
    - Substitute tangible assets (plant and machinery, land etc) that can be seized and liquidated with intangible assets (labor/human capital)
    - Increase in profitability and productivity in the post-SARFAESI regime
- This Paper:
  1. Shows that lower demand for credit documented in Vig (2013) is driven primarily by low quality firms
  2. Not just a demand side explanation -> Argues banks reduce supply of credit to zombie firms and increase supply of credit to non-zombie firms -> Positive spillover effects
     - **In my view this aspect is where the paper can have most impact**
     - **Put more effort to nail down the supply side explanation**
     - **Potential to solve an important, interesting, and empirically challenging problem**

# Key Idea

- Lets take a step back
  - At any given time how should we expect banks to behave with regards to new loans?
  - In an unconstrained world
    - Increase credit to high quality borrowers and decrease credit to low quality borrowers
  - This aspect is not surprising!
- Key Argument in the paper: In India banks did not have means to recover loans (Pre-SARFAESI)
  - Constraints on loan recovery
  - So reluctance to recognize NPAs -> Evergreening of loans to zombie firms -> Limited credit for non-zombies
  - Post-SARFAESI -> Liquidate assets of Zombie firms ->reduce evergreening -> reallocate credit to better firms
  - Important and interesting but Difficult to provide causal evidence!

# Specifications and Measures

- Far to many specifications and treatment/control groups
  - Can be a little overwhelming for the reader
- 1. Treatment/Control – Low quality vs High Quality
  - Low quality: Firms with ICR less than 1 as of 2001
  - Important to distinguish between economic and financial distress
  - Refine the measure and show robustness: ICR<1 consistently in the pre-period say for all 3/4/5 years pre-SARFAESI
  - Average ICR<1 in pre-period
- 2. Treatment/Control – Zombie vs Non-Zombie
  - (i) interest rates of the firm is below the minimum prime lending rate,
  - (ii) interest coverage ratio (ICR) below 1,
  - (iii) leverage (total external debt to total assets) is greater than 0.20, and
  - (iv) for which change in debt (both secured and unsecured) was greater than zero.
  - Leverage 0.20 cut-off seems arbitrary (alternate cut-offs are welcome)
  - Banks may continue to provide credit to financially distressed borrowers if they are not economically distressed
    - Again consistent in low ICR ratios in pre-period
    - Consistently getting debt at low rates for more (say 3-5) years to nail down evegreening
- My Suggestion: DIDID is best but focus on Zombie firms
  - In any case this is a subset of low quality firms

# Specifications and Measures

- Treatment/Control – Zombie vs Non-Zombie
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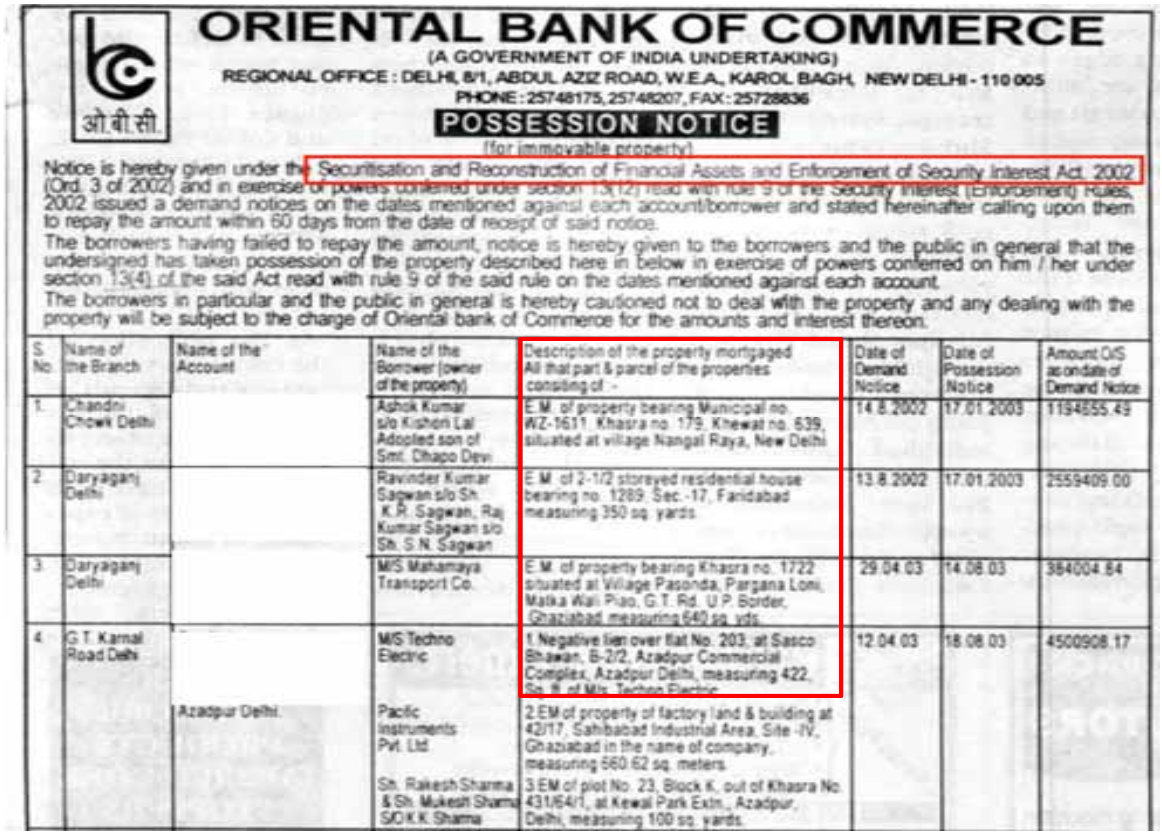
  - (iv) for which change in debt (both secured and unsecured) was greater than zero.
  - Leverage 0.20 cut-off seems arbitrary (alternate cut-offs are welcome)
  - 1) **Banks may continue to provide credit to financially distressed borrowers if they are not economically distressed**
    - Again consistently low ICR ratios in pre-period
    - Consistently getting debt at low rates for more (say 3-5) years to nail down evergreening
  - **2) Why use unsecured loans in defining zombie borrowers?**
    - In fact unsecured zombie borrowing can be a placebo test.
      - Since the law applies only to secured borrowing – banks can recover NPAs and reduce evergreening for such loans
      - We should expect to see continued evergreening of unsecured loans
  - 3) Low Growth vs High Growth Firms/Young vs Old Firms
    - These firms are likely to have lower ICR
    - Prior literature highlights that strengthening creditor rights may reduce supply of credit for small borrowers (Lilienfeld, Mukherjee, and Visaria (2012))
    - Are the results driven by reduction in borrowing by young-high growth firms?
    - The paper deals with it by controlling for Log(Sales) (all specifications) and Tobin's Q (robustness)
  - Suggestions:
    - Control for size, age and growth in baseline
    - But! – This may not be enough if there is not sufficient covariate balance across treatment/control groups
    - So Refine Low Quality/Zombie measures
      - Say ICR<1 but not young or high growth

# Specification and Measures

- 3. Treatment/Control – High Tangibility vs Low Tangibility (For DIDID (**preferred Specification**))
  - Tangibility measure is from Rajan and Zingales (1995) is the ratio of specific assets to the total specific Assets plus non-specific assets.
  - Specific assets is the sum of plant and machinery and other fixed assets.
  - Non-specific assets is the sum of land and building; cash and bank balance; and marketable securities.
- Suggestion: Include land and buildings in numerator

# Specification and Measures

- Include land and buildings in numerator
  - Most of SARFAESI possession notices appear to be for land/buildings/real estate



**ORIENTAL BANK OF COMMERCE**

(A GOVERNMENT OF INDIA UNDERTAKING)

REGIONAL OFFICE : DELHI, 8/1, ABDUL AZIZ ROAD, W.E.A., KAROL BAGH, NEW DELHI - 110 005

PHONE : 25748175, 25748207, FAX : 25728836

**POSSESSION NOTICE**

(for immovable property)

Notice is hereby given under the Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002 (Ord. 3 of 2002) and in exercise of powers conferred under section 13(12) read with rule 9 of the Security Interest (Enforcement) Rules, 2002 issued a demand notices on the dates mentioned against each account/borrower and stated hereinafter calling upon them to repay the amount within 60 days from the date of receipt of said notice.

The borrowers having failed to repay the amount, notice is hereby given to the borrowers and the public in general that the undersigned has taken possession of the property described here in below in exercise of powers conferred on him / her under section 13(4) of the said Act read with rule 9 of the said rule on the dates mentioned against each account.

The borrowers in particular and the public in general is hereby cautioned not to deal with the property and any dealing with the property will be subject to the charge of Oriental bank of Commerce for the amounts and interest thereon.

| S. No. | Name of the Branch | Name of the Account | Name of the Borrower (owner of the property) | Description of the property mortgaged All that part & parcel of the properties consisting of :- | Date of Demand Notice | Date of Possession Notice | Amount O/S as on date of Demand Notice |
|---|---|---|---|---|---|---|---|
| 1. | Chandni Chowk Delhi | | Ashok Kumar s/o Kishori Lal Adopted son of Smt. Dhapo Devi | E.M. of property bearing Municipal no. WZ-1611, Khasra no. 179, Khewat no. 639, situated at village Nangal Raya, New Delhi | 14.8.2002 | 17.01.2003 | 1194655.49 |
| 2. | Daryaganj Delhi | | Ravinder Kumar Sagwan s/o Sh. K.R. Sagwan, Raj Kumar Sagwan s/o Sh. S.N. Sagwan | E.M. of 2-1/2 storeyed residential house bearing no. 1289, Sec.-17, Faridabad measuring 350 sq. yards. | 13.8.2002 | 17.01.2003 | 2559409.00 |
| 3. | Daryaganj Delhi | | M/S Mahamaya Transport Co. | E.M. of property bearing Khasra no. 1722 situated at Village Pasonda, Pargana Loni, Matka Wali Piao, G.T. Rd. U.P. Border, Ghaziabad, measuring 640 sq. yds. | 29.04.03 | 14.08.03 | 384004.84 |
| 4. | G.T. Karnal Road Delhi | Azadpur Delhi. | M/S Techno Electric | 1. Negative lien over flat No. 203, at Sasco Bhawan, B-2/2, Azadpur Commercial Complex, Azadpur Delhi, measuring 422. Sq. ft. of M/s. Techno Electric | 12.04.03 | 18.08.03 | 4500908.17 |
| | | | Pacific Instruments Pvt. Ltd. | 2.EM of property of factory land & building at 42/17, Sahibabad Industrial Area, Site -IV, Ghaziabad in the name of company, measuring 660.62 sq. meters. | | | |
| | | | Sh. Rakesh Sharma & Sh. Mukesh Sharma S/O K.K. Sharma | 3.EM of plot No. 23, Block K, out of Khasra No. 431/64/1, at Kewal Park Extn., Azadpur, Delhi, measuring 100 sq. yards. | | | |

# Dependent Variable (Secured Debt)

- Change in secured debt (or increase/decrease in new borrowings) by both banks and NBFCs?
- In a DID setting, this could imply that there is a decrease in annual increase in secured borrowings of low quality/zombie firms relative to control group
- Not necessarily a decrease in debt?
- Comment 1:
  - Mean Reversion: Low quality/Zombie firms are highly leveraged, so they may borrow less going forward
    - This does not necessarily imply a reduction in their overall debt
      - Summary stats allude to this!
    - Why not just use total secured debt as the dependent variable rather than the change?

# Dependent Variable (Secured Debt)

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | All | | Low Quality | | | High Quality | | |
| Variables | Mean | SD | Pre | Post | t-stat on Diff. | Pre | Post | t-stat on Diff. |
| Secured Borrowings$^{+}$ | 45.23 | 191.6 | 51.74 | 37.54 | (-4.78***) | 30.96 | 56.52 | (12.91***) |
| Unsecured Borrowings$^{+}$ | 3.160 | 17.20 | 1.020 | 4.260 | (13.33***) | 1.530 | 4.730 | (18.28***) |
| Capital Expenditure$^{+}$ | 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***) |
| Secured Debt $^{+}$ | 506.1 | 1202 | 486.0 | 644.7 | (7.72***) | 393.6 | 538.1 | (10.69***) |
| Unsecured Debt$^{+}$ | 253.6 | 802.7 | 246.7 | 311.5 | (4.45***) | 186.1 | 282.3 | (10.21***) |
| Debt to Assets$^{+}$ | 0.340 | 0.340 | 0.450 | 0.560 | (14.39***) | 0.260 | 0.250 | (-2.94***) |
| Log(Sales) | 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***) |
| **Observations** | 52152 | | 16457 | | | 35695 | | |

$^{+}$ *INR million.*

- New Borrowings/ Change in debt goes down for low quality borrowers. But!
- Total debt, both secured and unsecured goes up
- Debt to Assets increases for low quality but decreases for high quality
  - Probably worth explaining/exploring?
- **Minor query: Why is the sum of secured and unsecured debt != total debt**
  - **Trade credit?**
- Comment 2: SARFAESI applied only to banks loans and not to loans by NBFCs
  - Prowess provides information at firm level on secured borrowings from both banks and NBFCs
  - Perhaps already done but the key dependent variable should not include secured borrowings from NBFC
  - In fact, secured borrowings from NBFCs may acts as a placebo.
    - However, tricky due to spillovers from bank behavior

# Dependent Variable (Capex and Employment)

- Need to be consistent across variables
  - Debt is measured in Changes
  - But capex and employment in levels
  - Either measure both in levels or use changes for capex/employments as well
- Or explain why?
  - Perhaps I misunderstood?

# Results and Interpretation (Low vs High Quality)

Single Dif analysis

Naive DID: Low quality vs High Quality

**Panel A: Dependent Variable - Change in Secured Debt**

| | (1) Low Quality | (2) High Quality | (3) Change in Secured Debt (INR million) | (4) | (5) Change in Secured Debt / Assets | (6) |
|---|---|---|---|---|---|---|
| Post | -19.68*** | 18.29*** | | | | |
| | (3.824) | (2.237) | | | | |
| Low Quality Borrower * Post | | | -46.11*** | -39.79*** | -0.0280*** | -0.0239*** |
| | | | (4.320) | (4.490) | (0.00286) | (0.00292) |
| Baseline Mean | 51.74 | 30.96 | 51.74 | 51.74 | 0.043 | 0.043 |
| No. of Obs. | 16457 | 35695 | 52152 | 52152 | 45840 | 45840 |
| R squared | 0.399 | 0.341 | 0.360 | 0.362 | 0.261 | 0.265 |
| Firm Fixed Effects | Y | Y | Y | Y | Y | Y |
| Year Fixed Effects | N | N | Y | Y | Y | Y |
| Controls | N | N | N | Y | N | Y |

**Panel B: Dependent Variable - Change in Secured Debt**

| | (1) Low Quality | (2) High Quality | (3) | (4) |
|---|---|---|---|---|
| Low Quality * Post | | | -22.19*** | -16.77*** |
| | | | (4.869) | (4.931) |
| High Tangibility * Post | -26.59*** | 12.01** | 12.41** | 12.19** |
| | (6.411) | (4.783) | (4.846) | (4.805) |
| Low Quality * Post * High Tangibility | | | -39.08*** | -37.81*** |
| | | | (8.023) | (8.059) |
| No. of Obs. | 16437 | 35502 | 51939 | 51939 |
| R squared | 0.403 | 0.347 | 0.359 | 0.361 |
| Firm Fixed Effects | Y | Y | Y | Y |
| Year Fixed Effects | Y | Y | Y | Y |
| Controls | Y | Y | N | Y |

Missing here?

Refined DID: Low quality vs High Quality within tangibility

DIDID: Main specification

# Results and Interpretation

- As I said, too many specifications
- Single Difference results are not very informative
  - Not surprising that low quality firms borrow less, decrease capex and employment
- Naive DID estimates are not very informative as well
  - Difference in trends of low and high quality borrowers
- Drop the above two specifications
- Sub-sample DID within high/low tangibility are interesting
  - Tells us where the results are coming from
  - Focus on these and the main DIDID
- Debt/Assets – Either use this in all specifications or drop it!
- Interpretation (In paper): Low quality firms preemptively reduce secured borrowings!

# Results and Interpretation (Zombie vs Others)

**Panel A: Dependent Variable - Change in Secured Debt**

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | Zombies | Non-Zombies | Secured | | $1_{zombie\ current}$ | |
| | *(INR million)* | | *(INR million)* | | | |
| Post | -27.63*** | 20.15*** | | | | |
| | (5.241) | (2.165) | | | | |
| Zombie * Post | | | -47.07*** | -43.02*** | -0.0939*** | -0.0974*** |
| | | | (5.688) | (5.824) | (0.0110) | (0.0109) |
| Baseline Mean | 62.34 | 32.41 | 62.34 | 62.34 | 0.800 | 0.800 |
| No. of Obs. | 8791 | 43361 | 52152 | 52152 | 52152 | 52152 |
| R squared | 0.413 | 0.339 | 0.359 | 0.361 | 0.292 | 0.295 |
| Firm Fixed Effects | Y | Y | Y | Y | Y | Y |
| Year Fixed Effects | Y | Y | Y | Y | Y | Y |
| Controls | N | N | N | Y | N | Y |

**Panel B: Dependent Variable - Change in Secured Debt**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Zombie | Non-zombie | | |
| Zombie * Post | | | -22.40*** | -19.49*** |
| | | | (7.281) | (7.292) |
| High Tangibility * Post | -32.46*** | 4.391 | 3.699 | 4.374 |
| | (9.827) | (4.252) | (4.288) | (4.257) |
| Zombie * Post * High Tangibility | | | -36.65*** | -35.22*** |
| | | | (10.63) | (10.66) |
| No. of Obs. | 8784 | 43155 | 51939 | 51939 |
| R squared | 0.418 | 0.348 | 0.358 | 0.360 |
| Firm Fixed Effects | Y | Y | Y | Y |
| Year Fixed Effects | Y | Y | Y | Y |
| Controls | Y | Y | N | Y |

Refined DID: Zombie vs Non-Zombie within tangibility

DIDID: Main specification

# Results and Interpretation

- Decrease in secured debt of Zombie-high tangibility firms
- However, no corresponding increase in secured debt of Non-Zombie-high tangibility firms
- No positive spillover here?
- Interpretation (In paper): Banks reduce (increase) credit supply to zombie (non-zombie firms)
  - Interpreted as drop in evergreening of loans
- How do we know its not driven by lack of demand for credit from zombie firms?
  - Need to disentangle demand side and supply side
- Suggestion: Provide More direct evidence of reduction in evergreening!
  - Tantri (2017) – Uses bank loan-level data to show loan officer career concerns results in evergreening
  - Can you use some account-loan level data to provide micro level evidence that evergreening went down post-SARFAESI
  - This would really help you nail down your story!

# Impact on Capex and Employment

**Panel B: Dependent Variable - Capital Expenditure**

| | (1) Low Quality | (2) High Quality | (3) | (4) |
|---|---|---|---|---|
| | *(INR million)* | | *(INR million)* | |
| Low Quality * Post | | | -29.77*** | -20.38*** |
| | | | (5.666) | (5.781) |
| High Tangibility * Post | -10.85 | 8.534* | 9.108* | 9.024* |
| | (6.759) | (5.112) | (5.226) | (5.133) |
| Low Quality * Post * High Tangibility | | | -21.45** | -20.68** |
| | | | (8.583) | (8.586) |
| No. of Obs. | 14714 | 32700 | 47414 | 47414 |
| R squared | 0.560 | 0.644 | 0.621 | 0.625 |
| Firm Fixed Effects | Y | Y | Y | Y |
| Year Fixed Effects | Y | Y | Y | Y |
| Controls | Y | Y | N | Y |

**Panel B: Dependent Variable - Employment**

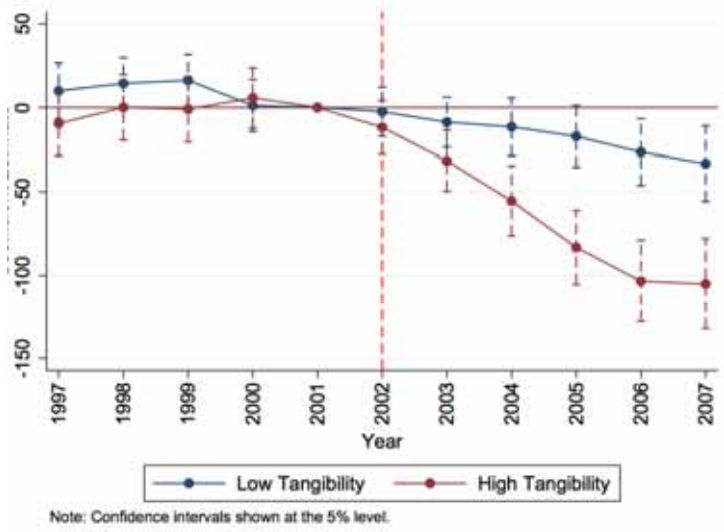
| | (1) Low Quality | (2) High Quality | (3) | (4) |
|---|---|---|---|---|
| | *(INR million)* | | *(INR million)* | |
| Low Quality * Post | | | -27.27*** | -24.42*** |
| | | | (2.909) | (2.832) |
| High Tangibility * Post | -2.553 | 8.388** | 10.96*** | 9.064** |
| | (6.230) | (3.647) | (3.718) | (3.648) |
| Low Quality * Post * High Tangibility | | | -14.88** | -12.95* |
| | | | (7.466) | (7.293) |
| No. of Obs. | 30239 | 83185 | 113424 | 113424 |
| R sq. | 0.913 | 0.925 | 0.919 | 0.921 |
| Firm FE | Y | Y | Y | Y |
| Year FE | Y | Y | Y | Y |
| Controls | N | Y | N | Y |

# Impact on Capex and Employment

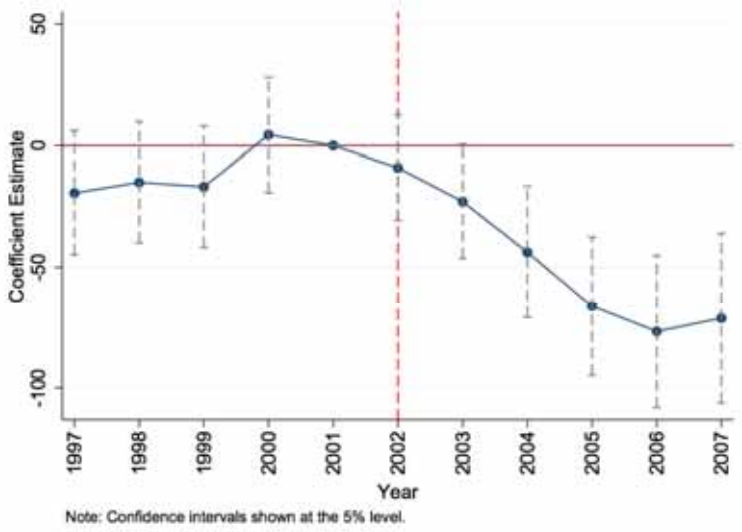
- These results are really driven by increase in capex and employment at high quality-high tangibility firms relative to high quality firms-low tangibility firms
- However no corresponding decrease for low quality-high tangibility firms relative to low quality firms-low tangibility firms
  - Perhaps the counterfactual is that in absence of SARFAESI, low quality-high tangibility firms would have increased capex and employment
  - However, not immediately obvious why one would expect differential increase in capex and employment at low quality-high tangibility firms relative to low quality firms-low tangibility firms absent SARFAESI
  - Absent SARFAESI, there shouldn't be much difference between high tangibility and low tangibility firms
- Suggestion: I don't have an answer but Worth discussing these and spending some time on
- Concern: DIDID estimates
  - for secured borrowings driven mostly by drop in borrowings of low quality firms
  - For capex and employment driven mostly by increase in expenditure of high quality firms

# Parallel Trends

- Identification assumption for DIDID:
  - Difference between low-quality and high quality firms should be similar across high tangibility and low tangibility groups
  - Most convincing evidence in my view
- Suggestions:
  - Show the same graphs for zombie vs non-zombies
  - Also plot difference between low quality-high tangibility firms and low quality-low tangibility firms (should decrease)
    - difference between high quality-high tangibility firms and high quality-low tangibility firms (should increase)
    - As of now graphs show that difference between low quality and high quality firms is increasing post-SARFAESI time for high tangibility group
  - But, it doesn't tell us whether this is driven by increase in debt at high quality firms or decrease in debt at low quality firms or both?
  - Also probably useful to useful to plot raw means for low quality vs high quality (zombie vs non-zombies) even if they are trending differently
    - Be upfront about it and get it out of the way – use it to justify why DIDID should be the main specification




(a) **Diff-in-Diff**




(b) **Diff-in-Diff-in-diff**

# Other Suggestions

- Results may be driven by time-varying trends at industry level
  - For instance, some industries may be experiencing financial/economic distress
  - Low quality firms may belong to these industries
  - Author is cognizant and exploit industry level variation in zombie firms to address this
  - Suggestion: using industry X year FEs in baseline specifications not just robustness
- Results on Factory Closures and Substitution Between formal and trade credit
  - Right Now based on simple DID (low vs high quality firms)
  - Use DIDID specification

# Other Suggestions (Bank Level Analysis)

- The hypothesis is that banks with the highest exposure to low quality firms in the pre period should be the most affected by the reform and hence should show the biggest effect on the credit of firms which borrow from them.
  - Links each firm to a primary lender
  - Assumes all loans to the firm given by the primary lender
  - Bank-level exposure is measured as the number of low quality firms a bank was designated as the primary lender in 2001
  - High exposure banks are those with above median exposure measure.

# Other Suggestions (Bank Level Analysis)

- Surprising: low exposure banks increase credit to low quality borrowers
- High exposure banks reduce credit to low quality borrowers
- However DIDID estimate is driven primarily by first and not second effect
  - Check whats going on!
- Suggestion: Can measure exposure more directly: Bank-firm loan level data is available from ministry of Corporate Affairs

| | (1)<br>Low Exposure | (2)<br>High Exposure | (3)<br>All |
|---|---|---|---|
| High Exposure * Low Quality | | | 96.66*** |
| | | | (21.97) |
| Low Quality * Post | 113.3*** | -18.47*** | 94.97*** |
| | (7.802) | (4.572) | (19.59) |
| High Exposure * Post | | | -5.141 |
| | | | (7.732) |
| Low Quality * Post * High Exposure | | | -113.5*** |
| | | | (20.25) |

# Minor Comments

- Prowess has information on around 25000 firms
  - However about 50,000 observations in sample (1997-2006)
  - Explain data filter better
  - How many firms in treatment and control groups?
- Another level of variation: Public vs Private and Small vs Large firms
  - Anecdotal evidence suggests SARFAESI more effective for recovery from smaller private firms

# Overall

- Interesting Paper!
  - reaosnable identification strategy
  - Lot of effort has already gone in
    - Lot of robustness tests
    - Brings together a lot of different datasets to shed light on an important question.
  - Potential to make an important contribution!
- Needs to iron out the creases
  - Strengthen empirical analysis
  - Nail down evergreening
- Look forward to the revised version!