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Creditor Rights and Accounting Quality: Evidence from a Natural Experiment

Siddharth M. Bhambhwani

University of Miami, sbhambhwani@bus.miami.edu

UNIVERSITY OF MIAMI

CREDITOR RIGHTS AND ACCOUNTING QUALITY: EVIDENCE FROM A
NATURAL EXPERIMENT

By

Siddharth M. Bhambhwani

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Siddharth M. Bhambhwani

Approved:

_____
Dhananjay Nanda, Ph.D.
Professor of Accounting

_____
Miguel Minutti-Meza, Ph.D.
Associate Professor of Accounting

_____
Sundaresh Ramnath, Ph.D.
Associate Professor of Accounting

_____
Guillermo Prado, Ph.D.
Dean of the Graduate School

_____
George Korniotis, Ph.D.
Professor of Finance

BHAMBHWANI, SIDDHARTH M.   (Ph.D., Accounting)

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I investigate whether increases in creditor rights affect borrowers' accounting quality. I hypothesize that creditors monitor borrowers' financial statements to a greater extent when they have stronger enforcement rights, which induces increases in borrowers' accounting quality. Exploiting a landmark reform that increased secured creditor enforcement rights, I find that borrowers with high levels of secured debt (i.e., treated borrowers) increased accounting quality following passage of the reform. The accounting quality improvements are driven by a tightening of working capital. These improvements subsequently lower the cost of debt for borrowers. The effect of creditor rights on borrowers' accounting quality is stronger when borrowers risk missing loan payments and when creditors have greater negotiating power. My results are consistent with 1) lenders increasing their reliance on financial statements under an arm's length contracting regime and 2) accounting information serving as an instrument in enforcing debt contracts.

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Chapter 1: Introduction

The literature examining debt contracting and financial reporting quality finds that borrowers with superior accounting quality obtain financing from a broader set of lenders and receive better contract terms than their counterparts with inferior accounting quality (Bharath, Sunder, and Sunder, 2008; Armstrong, Guay, and Weber, 2010). Accounting information serves in assessing the debt repaying capacity of a firm and is the basis for setting contractual terms. However, we have limited evidence on the effects of debt contracting on the accounting quality of borrowers.

Armstrong et al. (2010) suggest that the current knowledge of the effect of debt contracting on accounting quality is limited in three areas. These areas are 1) establishing causal inferences, 2) documenting the effects of changes in accounting quality, and 3) understanding the interplay between debt contracts and financial reports in negotiations. My study exploits a natural experiment which significantly increased **secured creditor** rights in enforcing debt contracts against delinquent **secured borrowers** to investigate how creditor rights affect borrowers' accounting quality. Using a difference-in-differences design, I examine whether changes in the debt contract enforcement regime are associated with changes in borrowers' accounting quality. I also explore whether such changes affect borrowers' cost of debt.

The question of how debt contract enforcement affects accounting quality is not without tension. One strand of literature finds that firms close to covenant violations manage earnings upward (i.e., they lower accounting quality) in order to avoid triggering covenant violations (Sweeney, 1994; Dichev and Skinner, 2002; Franz, HassabElnaby,

and Lobo, 2014). This negative relation between debt contracting rights and accounting quality stems from changes in borrowers' incentives without concurrent changes in the contracting regime.

Conversely, cross-country evidence shows that regimes with stronger creditor protections are associated with lower levels of earnings management along with a greater reliance on accounting quality (Leuz, Nanda, and Wysocki, 2003; Burgstahler, Hail, and Leuz, 2006; Biddle and Hilary, 2006; Bushman and Piotroski, 2006; Gopalan and Jayaraman, 2012). This documented positive association between debt contracting and accounting quality is potentially confounded by the simultaneous development of legal and capital market institutions.

While prior studies on debt contracting have built a strong foundation for examining my proposed research question, the evidence they use is largely cross-sectional and relies on cross- country analysis. Further, our understanding of the channels through which debt contracting impacts accounting is limited. Using a regulatory shock to creditor enforcement rights along with a difference-in-differences design, I analyze a specific aspect of debt contracting. In particular, I examine whether contract enforcement induces borrowers to make accounting changes, along with the channel for these changes.[1] Next, I examine whether these changes in accounting quality translate into lower borrowing costs for affected firms. The results in my study complement existing literature and serve as a step towards evidencing a causal relation between creditor rights and financial reporting.

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[1] While enforcement acts as the main channel for my paper, it is not independent of other debt contracting channels such as setting of covenants, demand for collateral, and reporting requirements. In particular, banks generally use all channels simultaneously. However, strengthening of enforcement increases the bank's ability to institute the covenants, collateral, and the reporting requirements.

My work is motivated by the intuition of Rajan and Winton (1995), who postulate that strengthening creditor rights increases creditors' incentives to scrutinize borrowers' financial statements. A regime where lenders have greater bargaining power encourages the collection and processing of accounting information in order to make optimal liquidation or renegotiation decisions (Diamond, 1984). Regimes with stronger creditor rights place greater reliance on accounting information for contracting purposes and banks in such regimes transact at an arm's length (Biddle and Hilary, 2006; Bhue, Prabhala, and Tantri, 2015).[2] Accordingly, I hypothesize that an increase in creditor enforcement rights increases their monitoring of borrowers' financial statements, which in turn induces borrowers to increase accounting quality.

My hypothesis can be explained by two complementary and non-exclusive mechanisms. First, in a repeated game, it is optimal for a firm to improve accounting quality when creditors have greater negotiating power. For example, Roberts (2015) finds that the average loan contract is renegotiated five times and often involves changes in accounting-based measures. Successfully negotiated loan renewals are accompanied by positive market reactions for borrowers (Lummer and McConnell, 1989).[3] Second, an increase in creditor rights raises banks' willingness to lend (Qian and Strahan, 2007; Haselmann, Pistor, and Vig, 2009). As banks primarily rely on financial statements for monitoring loan contracts, I expect borrowers to increase their accounting quality due to banks' superior information processing abilities (James, 1987; Ma, Stice, and Williams, 2018).

To test my hypothesis, I exploit a landmark creditor rights reform in India. The SAR- FAESI Act of 2002 is a natural experiment to test whether changes in debt

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[2] Increases in creditor rights can draw banks away from relying on soft information and increase their usage of hard information (Manove, Padilla, and Pagano, 2001; Rajan, 1992). In a cross-country study, Jayaraman and Thakor (2014) find that banks are less likely to engage in debt contracts that require higher levels of relationship-style lending when creditor rights are stronger.

[3] Subsequently, Bharath et al. (2008) and Kim, Song, and Zhang (2011) find that borrowers with superior accounting quality and those that remediate internal control weaknesses obtain lower loan spreads.

contracting rights affect accounting quality. The reform empowered creditors to seize the assets of a delinquent borrower within 60 days and bypass the judicial process. Since the prior judicial process for debt-related cases typically took about two to seven years, the Act was a boon for banks seeking to recover their claims.[4] Further, as legal rights granted were solely for the enforcement of **secured loans**, the reform allows me to examine the effect of creditor rights on firms that were *differentially affected* by the reform (i.e., borrowers with high levels of secured debt are my treatment firms).[5] Any observed changes in the treated borrowers' accounting quality over and above that of the control group after the reform can therefore be attributed to the change in secured creditors' rights.

To measure accounting quality, I use the principal components of several accruals quality measures following Bharath et al. (2008). I also use other measures of accounting quality such as conditional conservatism and residuals from accrual models (Ball and Shivakumar, 2006; Stubben, 2010; Bushee, Goodman, and Sunder, 2018). My empirical analyses are based on data from the Centre for Monitoring Indian Economy. India serves as an interesting setting for examining the effects of contractual enforcement on accounting, as the country has historically been ranked low in creditor rights (Leuz et al., 2003). Moreover, India's public debt markets have been relatively underdeveloped (Sharma, Sinha, et al., 2006).

Using a sample of 1,088 unique publicly listed firms corresponding to 6,964 firm-year observations, I find that increases in secured creditor enforcement rights are associated

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[4] Provisions for nonperforming assets fell greatly after passage of the Act, as did the amount of time for seizing collateral (Djankov, McLiesh, and Klein, 2006; Vig, 2013). Visaria (2009) provides an excellent discussion of the long processing times for debt related cases in the Indian judicial system.

[5] Although all firms are technically affected by the Act (all firms with non-zero secured debt), I refer to firms with high levels of secured debt just before the passage of the reform as the *treated* firms for parsimony.

with increases in the treated borrowers' accounting quality. The finding that this relation is especially stronger when the treated borrowers have a higher risk of asset seizure suggests that creditors more intensely scrutinize financial statements when making a liquidation or renegotiation decision (Diamond, 1984). In line with this intuition, Nikolaev (2018) finds that renegotiations are more stringent for financially constrained borrowers. Moreover, the effects of creditor rights on accounting quality are greater when the creditor is the sole lender to the firm, which is consistent with greater bargaining power, and lower enforcement coordination costs increasing creditor scrutiny of financial statements (Roberts and Sufi, 2009; Minnis and Sutherland, 2017; Bird, Ertan, Karolyi, and Ruchti, 2017). Specifically, I find that the treated firms have higher quality accruals, seem to enhance their underlying working capital processes, and exhibit more conservative accounting choices after the reform.

Next, I examine whether the Act affected borrowing costs. I find that borrowers that increased accounting quality the most were able to lower their borrowing costs post-reform. To conduct this analysis, I use the level of tangible assets as a measure for the indirect effect of the SARFAESI Act following Vig (2013).[6] I find that borrowers with high levels of tangible assets that increased accounting quality after the Act received a lower cost of debt. This result provides evidence confirming the liquidity channel of higher accounting quality, consistent with Bharath et al. (2008) and Kim et al. (2011).

To alleviate concerns that borrowers change their debt structures after the Act (documented in Vig (2013)) or banks increasing their lending to higher quality borrowers (documented in Kulkarni (2017)), I conduct all the empirical analyses using the pre-reform

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[6] A secured interest under the SARFAESI Act could only be created on identifiable assets and not on future claims and intangible assets. In practice, tangible assets generally serve as the pledged collateral.

levels of secured borrowings. In particular, I assign borrowers into treated and control groups based on their level of secured borrowings reported in the period just before the passage of the SARFAESI Act. To mitigate survivor bias, I ensure that all firms in the sample had at least two consecutive observations immediately pre-reform and two consecutive observations immediately post-reform.[7] My findings are not sensitive to a variety of robustness checks.

An alternative explanation for my findings is that borrowers manage earnings *downwards* to obtain lenient terms from their creditors.[8] To mitigate this concern, I first examine changes in borrowers' underlying working capital accounts that may affect the quality of their accruals. Specifically, I find a reduction in trade receivables and inventories along with an increase in accounts payables, which is indicative of tighter working capital management rather than downwards earnings management.

Second, I conjecture that any finding of downward earnings management by secured borrowers post-reform suggests that the contractibility of accounting increases because positive earnings are scrutinized more than negative earnings.[9] For example, in a survey of loan officers, Donelson, Jennings, and Mcinnis (2017) report that lenders generally look for *abnormal increases* in working capital that do not match underlying revenue patterns. The manner in which the properties of accruals link to superior accounting quality is debatable (Dechow, Ge, and Schrand, 2010). However, I posit that

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[7] Gormley, Gupta, and Jha (2018) note that a large number of bankruptcies were filed in India in 2003 and 2004, which is the period immediately after the passage of the SARFAESI Act.

[8] While firms may record more negative accruals to reflect lower future growth prospects, I find a general increase in the profitability and financial state of the treated borrowers after the Act.

[9] Gopalan, Martin, and Srinivasan (2017) find that firms in India intentionally managed earnings downward to seek bankruptcy protection. Interestingly, they find that such downwards earnings management weakly fell after the passage of the SARFAESI Act, as the reform made it more difficult for borrowers to strategically file for bankruptcy.

reducing extreme positive accruals under a greater threat of creditor enforcement suggests that accounting plays a key role in negotiations. My position is consistent with Roberts (2015) and Nikolaev (2018).

The papers most related to my work are Aier, Chen, and Pevzner (2014) and Aghamolla and Li (2018). These authors use legal reforms that increase debt contracting rights to demonstrate *general increases in accounting conservatism*. Aier et al. (2014) use the staggered adoption of U.S. state laws that increase directors' fiduciary duty towards creditors. Aghamolla and Li (2018) exploit the staggered passage of expedited courts in India that increased the ability of creditors to recover claims from *all* borrowers via the judiciary.

My paper is focused on how the enforcement process drives changes in borrowers' accruals processes. I primarily examine *short-term changes in borrowers' accounting quality* and further investigate whether borrowers' repayment risk and creditors' bargaining power influence accounting changes. My paper complements prior work by first demonstrating that affected firms that increased their accounting quality were able to raise more debt. Second, I postulate that the shift towards arm's length banking serves as a mechanism that drives accounting changes (Bhue et al., 2015). The results in Aier et al. (2014) and Aghamolla and Li (2018) also reassure my findings of an increase in creditor rights resulting in an increase in accounting quality.

My paper contributes to the literature on debt contracting and accounting by demonstrating that financial reporting has greater contractual value when lenders are able to enforce contracts against borrowers more efficiently. Further, my work contributes to the international accounting and investor rights literature by using within-country analysis

to demonstrate that increased creditor enforcement rights have economically meaningful effects on accounting. Finally, I identify lender enforcement and the increase in lending as two complementary avenues that increase the contracting value of accounting.

I organize the rest of this paper as follows. In Section 2, I present a brief background of the SARFAESI Act. In Section 3, I review the creditor monitoring of financial reporting literature and set up the main hypothesis. In Section 4, I describe the sources of data and explain the research design. In Section 5, I present the key findings along with the cross-sectional analysis. I briefly discuss the implications of the results in Section 6. I conclude the paper in Section 7.

Chapter 2: Institutional Background

I use passage of the SARFAESI Act of 2002 in India as a natural experiment to examine whether a regulatory increase in secured creditor enforcement rights led to changes in the accounting quality of treated secured borrowers. This regulatory regime shift provides an opportune setting to examine exogenous changes in the debt contracting environment that disproportionately impacted a subset of firms. I begin this section with a brief note on the passage of the SARFAESI Act. Then, I touch upon the broader impact of the SARFAESI Act for the Indian banking sector. I end this section with a review of the extent academic literature related to the SARFAESI Act.

2.1. The SARFAESI Act of 2002

Historically, the Indian judicial system has been inefficient in processing creditor claims with case settlement times of up to seven years (Visaria, 2009). In order to liquidate or take over control of a firm's assets, creditors would have to go through a lengthy judicial process over which the value of collateral depreciated. Weak creditor enforcement rights stymied the ability of lenders to enforce their security interests (collateral claims) and led to a buildup of nonperforming loans on bank balance sheets.

Passage of the Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act (SARFAESI Act) on June 21, 2002, dramatically improved the rights of secured lenders by allowing them to seize the assets of defaulting

debtors while bypassing the formal cumbersome judicial process.[10] Specifically, a secured creditor could seize assets within 60 days after nonpayment of interest or principal. The Act did not apply to loans below Indian Rupees 100,000 (U.S.$ 2,100 at 2002 rates), and the minimum required amount in default was set at 20% of the outstanding amount. Furthermore, the Act was retroactive in nature in that secured loans contracted prior to its passage were also affected.

The Act created a means of private enforcement in contrast to the lengthy public (i.e., judicial) enforcement process. In particular, by private enforcement, the Act gave creditors the right to solicit "the Chief Metropolitan Magistrate or the District Magistrate within whose jurisdiction any such secured asset may be situated or found, to take possession." The 2006- 2007 Reserve Bank of India Report on Banking Trends in India stated that the SARFAESI Act had been the most effective channel for recovering nonperforming assets (NPAs) in India. The high efficacy of the SARFAESI Act is consistent with La Porta, Lopez-de Silanes, and Shleifer (2006) who find evidence that private enforcement is more effective than public enforcement.[11] Following the reform, the

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[10] While the Act went into effect on June 21, 2002, Vig (2013) notes that around June 2001, legislators began discussing a reform that would allow banks to bypass the judicial process in enforcing debt-related claims. To validate June 21, 2002, as an event date, I follow Berkowitz, Lin, and Ma (2015) who use 5-day window returns of Chinese firms to validate December 29, 2006, as an event date for the passage of China's 2007 Property Law. In particular, the Law was approved on December 29, 2006, but passed on March 16, 2007. I find evidence of a strong positive market reaction for the 5-day window between June 21, 2002, and June 27, 2002 (I examine returns until June 27th, as June 21st was a Friday), relative to other 5-day windows in 2002 for stocks listed on the Bombay Stock Exchange. Moreover, the June 21st 5-day window returns were monotonically increasing in quartiles of secured borrowing.

[11] The Government of India set up specialized Debt Recovery Tribunals (DRTs) between 1994 and 1999 to facilitate faster processing of debt-related claims. Table A1 of appendix 9.1 shows that the SARFAESI Act was a significant complement to the Debt Recovery Tribunals. In particular, greater amounts were recovered under the SARFAESI Act than under the DRTs. See Visaria (2009), Gopalan, Mukherjee, and Singh (2016) and Aghamolla and Li (2018) for more information on the DRTs.

average time to collect collateral decreased from about ten years to six months (Djankov et al., 2006).[12]

The SARFAESI Act substantially reduced enforcement costs for banks to lend on a secured basis.[13] Prior to the reform, the liquidation option for banks was significantly costlier and secured lenders would generally have to impair the loan or renegotiate the terms (on a weaker footing) if the borrower was unable to repay the loan. In contrast, after the reform, secured lenders had the ability to liquidate the assets of secured borrowers almost immediately. Therefore, the Act disproportionately affected borrowers with higher levels of secured debt relative to borrowers less reliant on secured debt. Further, the Act allowed secured creditors to place a defaulting debtor in receivership; a scenario where the firm's operations and assets would be managed by a third party appointed by creditors.[14]

2.2. Macroeconomic Effects of the SARFAESI Act

The act was a boon for banks, as evidenced by the significant drop in nonperforming assets (known as nonperforming loans in the U.S.) after the reform (Please see Figure 1, first documented in Vig (2013)). After passage of the Act, banks increased their levels of secured lending. In Figure 2, I plot the levels of secured lending of banks scaled by their book assets. The visual evidence suggests that banks increased the proportion of secured loans as a percentage of bank assets from approximately 35% of

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[12] Kang and Nayar (2004) note that liquidation proceedings, on average, lasted 10 to 15 years and that the SARFASI Act was passed to significantly reduce this number.

[13] Appendix 9.2 presents an example of a bank taking over the secured assets of a borrower in default. Prior to the reform, such an option was unavailable to creditors, as they had to go through the judicial process.

[14] The SARFAESI Act gives borrowers the right to halt proceedings of the asset sale under the condition that the borrower can make a deposit of 25% of the amount in dispute. Such cases are rare, however, and anecdotal evidence suggests that the threat of receiving a seizure notice from the firm's lender, with the related costs to firm reputation, serves as an important channel through which creditors can enforce their rights without actually seizing the assets.

assets to 40% of assets after the law's passage.[15] Such a regime shift was a landmark change for creditor rights, which are vital to supporting vibrant capital markets (Djankov, McLiesh, and Shleifer, 2007).[16]

2.3. Literature on the Effects of the SARFAESI Act

Vig (2013) finds that the SARFAESI Act potentially introduced a liquidation bias by inducing borrowers to reduce their reliance on secured credit. More specifically, he finds that borrowers with high levels of tangible assets (i.e., indirectly affected borrowers) reduced their secured borrowing. However, recent evidence by Kulkarni (2017) shows that borrowers with a high ability to pay back debt (proxied by interest coverage ratio) greatly increased their secured borrowing after the Act. Moreover, she finds that borrowers that had lower interest coverage ratios reduced their reliance on secured borrowings. Banks effectively shifted lending towards higher quality borrowers which concurred with a decrease in lending towards "zombie" firms in the Indian economy.

Gormley, Kim, and Martin (2012) support the evidence in Vig (2013) and Kulkarni (2017) by noting that a significant number of bankruptcies were filed in India just after the passage of the SARFAESI Act. When examining changes in the choice of lenders, Bhue et al. (2015) show that the Act led borrowers to increase their affiliations with banks with which they had no prior relationship. They use their evidence to postulate that the Act led to a shift away from relationship banking and towards arm's length banking. Overall, the

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[15] From the perspective of borrowers, Mann (2018) finds that increases in creditor rights over intangible patent assets in the U.S. allowed firms with high patent values to raise more debt by increasing the pledgable value of their assets.

[16] The executive director of one of India's largest banks stated that "The initiation of an enforcement action on the company will change the credit recovery scenario" (Appendix 9.3).

SARFAESI Act was a landmark reform that increased the rights of secured creditors. The

Act served as the primary means for enforcing contracts against delinquent borrowers.

Chapter 3: Literature and Hypothesis Development

I begin this section with a review of the literature on creditor monitoring of financial statements. Next, I lay out my hypothesis from the creditor's point of view and follow it up with the potential responses of the borrower under heightened creditor monitoring. I end this section by presenting the paper's central hypothesis.

3.1. Literature Review

Bank information collection resolves the ambiguity behind the causes of weak short-run performance, allowing creditors to make an efficient liquidation or renegotiation decision (Diamond, 1984). In line with the framework in Diamond (1984), Chava and Roberts (2008) and Nini, Smith, and Sufi (2012) show that pressure from creditors after covenant violations can significantly impact the firm's operating and financing decisions. In particular, Nini et al. (2012) find that after covenant violations, firms improve their performance and reduce dividends due to the pressure imposed on them by creditors.

When theoretically examining the link between banks and their borrowers, Rajan (1992) posits that banks hold "soft information" monopolies over firms in a relationship banking framework. Such information monopolies are less valuable in an environment where creditors have greater control rights over borrowers (Boot, 2000). Increasing creditor rights can magnify the competition between banks and allow for a shift towards

arm's length banking, which is characterized by a greater reliance on accounting information (Biddle and Hilary, 2006; Jayaraman and Thakor, 2014; Bhue et al., 2015).[17]

More recently, Cerqueiro, Ongena, and Roszbach (2014) find that when the value of the collateral pledged by borrowers was exogenously diminished (i.e., a decrease in creditor rights), the lending bank reduced its levels of financial information collection).[18] In important empirical work, Breuer, Hombach, and Müller (2017) and Sutherland (2018) find that increased financial reporting regulation (an increase in investor rights) shifts banks from relationship banking towards arm's length ("transactional") banking. Similarly, Minnis and Sutherland (2017) show that a lower cost of seizing collateral (i.e., higher creditor rights) is associated with greater financial statement demand by creditors.[19]

Bharath et al. (2008) provide empirical evidence that firms with superior accounting quality are able to obtain lending from a greater set of lenders and receive better contractual terms. Kim et al. (2011) note that firms that remediate past financial reporting weaknesses are offered lower spreads by their lenders. In support of prior evidence, Chen (2015) notes that lenders continually keep track of their borrowers' financial statements in deciding whether to extend new loans or renegotiate terms on current loans.

When examining the association between debt contracting rights and accounting, Gopalan et al. (2017) demonstrate that firms game accounting numbers when creditor rights are weaker to gain contractual benefits during bankruptcy proceedings. Aier et al. (2014) and Aghamolla and Li (2018) find that staggered increases in debt contracting rights

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[17] Campbell, Loumioti, and Wittenberg Moerman (2017) show that lending based on soft information has a dark side where loan officers are more likely to provide loans to members of their own social group. They also provide evidence that these loans have higher delinquency ratios.

[18] Cerqueiro et al. (2014) use proprietary data from a Swedish bank to conduct their study. They exploit the passage of a reform that reduced the number of assets that a creditors could seize in a bankruptcy.

[19] The authors rely on within-state lending in the U.S. for their analysis and show that banks demand more information from their secured borrowers in "recovery-friendly" states.

are associated with a general increase in the levels of accounting conservatism for the affected firms. Overall, the accounting literature suggests that conservative accounting by borrowers may be an optimal response to stronger creditor rights and greater monitoring.

The empirical literature confirms this notion by showing that creditors more intensely monitor the financial statements of borrowers when their control rights are stronger. The debt contracting literature's premise is that accounting serves as a tool for setting and enforcing contractual terms, but requires more evidence on the contracting value of accounting information. Specifically, the immediate effect of creditor enforcement rights on accounting quality is left as an open empirical question.

3.2. Hypothesis: Contracting Process of the Secured Creditor

The SARFAESI Act gave secured lenders the option to liquidate, take control over, or restructure a firm's assets. It also allowed the lender to sell the loan to qualified institutional buyers. Prior to the reform, the lack of a liquidation option made reliance on the financial information of secured debtors less valuable, as credibly acting on financial information was significantly costlier (or less beneficial). For example, a contract written between a creditor and a borrower set on accounting ratios or cash flows would arguably be an incomplete contract prior to the reform, as any violations would be difficult to enforce. The reform increases the value of the contract by making any cash flow violations enforceable.

3.2.1. Financial Statement Monitoring

It is crucial for creditors to possess current and relevant knowledge of borrowers' financial status as a precondition to any enforcement action (Diamond, 1984). Lack of information could lead to suboptimal decisions by creditors when choosing whether to

enforce (i.e., liquidate) or renegotiate the contract. Therefore, I argue that the marginal benefit of information collection increased dramatically after passage of the SARFAESI Act, with likely very little effect on the marginal cost of collection.[20] Anecdotal evidence from Indian bank practitioners and survey data from Donelson et al. (2017) suggest that corporate borrowers' financial statements are the primary source of information used by banks in making lending decisions and monitoring loan contracts. Accordingly, I expect borrowers to provide higher quality financial reports in response to creditors' demand for information after the Act's passage.
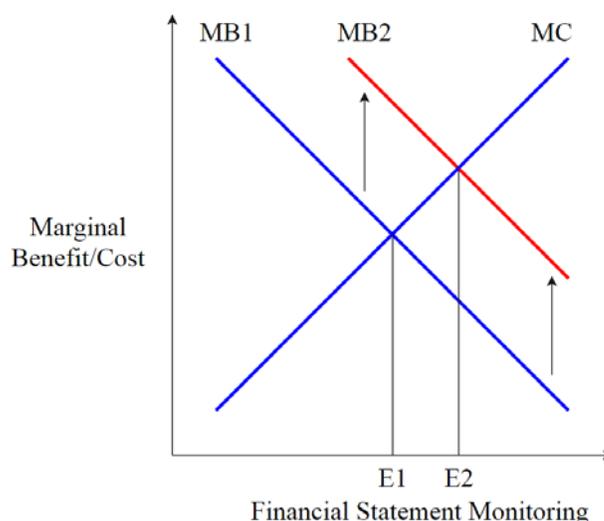
The figure above illustrates the effect of the SARFAESI Act on financial statement monitoring. The pre-reform equilibrium level of financial statement reliance is denoted as E1. At E1, the marginal benefit (MB1) equals the marginal cost (MC) of monitoring borrower's financial statements. The SARFAESI Act increases the marginal benefit of financial statement monitoring for creditors (MB2), shifting the equilibrium level to E2 (MB2 = MC). The intuition is that lenders that have greater power to act on accounting information rely on it more intensively and extensively (Biddle and Hilary, 2006; Jayaraman and Thakor, 2014).

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[20] The cost of information collection includes the expenditures on analysis along with administrative costs. The costs of information collection could even fall, as borrowers may willingly provide more information to strengthened creditors. An increase in the marginal benefit of (hard) information collection is sufficient for the hypothesis outlined in this study. A reduction in the marginal cost of information collection would only affect the magnitude rather than the direction of the equilibrium shift.

3.2.2. Arm's-Length Banking

Increases in creditor rights reduce the depth and value of relationship banking (Rajan, 1992; Boot, 2000).[21] As a result, the value of "hard" financial information increases due to its greater contractual value under an arm's length regime (Biddle and Hilary, 2006). In cross- country studies, Leuz et al. (2003), Biddle and Hilary (2006), and Jayaraman and Thakor (2014) find that greater creditor and investor protections are associated with greater financial reporting quality and more pertinently, a greater reliance on accounting information by lenders. Bharath et al. (2008) and Kim et al. (2011) find that borrowers benefit from providing higher quality financial reports, in the form of lower loan spreads.

I hypothesize that because the financial statements of secured borrowers are subject to increased scrutiny under this new regime, the value of accounting information in contracting increases for creditors. The increased scrutiny of accounting information could induce changes in the accounting quality of borrowers. Furthermore, I argue that borrowers have incentives to improve their accounting quality under greater creditor scrutiny in order to receive potential liquidity benefits.

3.3. Hypothesis: Accounting Response of the Borrower

Firms potentially have incentives to misreport their financial status (i.e., provide imprecise financial statements) under certain scenarios. Using a survey of CFOs from multinational corporations, Graham, Harvey, and Rajgopal (2005) find that firms make accounting choices to avoid missing targets. DeFond and Jiambalvo (1994) document that firms' abnormal accruals are significantly positive in the period prior to covenant

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[21] Under greater inter-bank competition, Boot (2000) shows that while relationship banking's value decreases, its *likelihood* increases, as it provides a means of fending off competition. However, capital market competition creates the opposite effect, in which the value of relationship banking rises while the number of relationships falls.

violations. Sweeney (1994) and Franz et al. (2014) demonstrate that firms increase their earnings management and real activities manipulation when they are closer to covenant violations.

A trigger for creditors seizing assets in my setting is when borrowers miss payments on their secured loans. Anecdotal evidence from legal and industry practitioners in India suggests that banks generally use the SARFAESI Act as a *credible* threat in negotiations with borrowers.[22] Empirical evidence by Bird et al. (2017) using U.S. data suggests that lenders exercise forbearance when borrowers violate covenants in about 89% of cases (i.e., lenders actually enforce debt contracts against marginal borrowers in only 11% of cases). The anecdotal and empirical evidence suggest that borrower distress is not necessarily a trigger for seizure or enforcement, but rather can act as a trigger for negotiation. These negotiations are based largely on accounting information (Roberts, 2015; Nikolaev, 2018).

3.3.1. Renegotiations
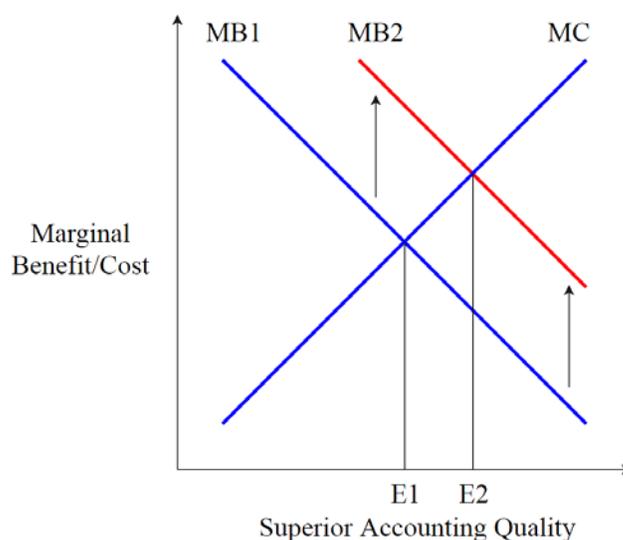
The figure above illustrates the effect of the SARFAESI Act on borrowers' accounting quality. The pre-reform equilibrium level of accounting quality is denoted as E1. At E1,

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[22] One practitioner noted that sometimes banks don't *intend* to seize assets preemptively, as such actions can damage the reputation of the bank and alarm prospective borrowers. In appendix 9.4, I present a report regarding an enforcement *threat* by a major Indian bank against one of its delinquent borrowers.

the accounting quality of the borrower is the point where the marginal benefits (MB1) equal marginal costs (MC) of devoting resources to accounting quality. The SARFAESI Act increases the marginal benefit (MB2) of having superior accounting quality, thereby shifting the equilibrium level to E2 (MB2 = MC). Superior accounting quality is beneficial for borrowers in terms of lower borrowing costs, greater access to lenders, and a greater likelihood of loan contract renewal (Bharath et al., 2008; Kim et al., 2011; Roberts, 2015; Nikolaev, 2018).

In a repeated game, a borrower may improve his/her accounting quality when creditors have greater power in negotiations. In a single period model, cash flows are equal to net income and a multi-period setting is key to understanding the role of accrual accounting (Lambert, 2001). Imprecise financial reporting in one period may be revealed in subsequent periods, potentially prompting adverse outcomes for borrowers in the form of more stringent contractual terms or lower debt availability.

For example, distressed borrowers may report inflated receivables and contend that the cash flows will materialize in the next period. On the other hand, borrowers under duress may also provide (or commit to providing) more precise records of their working capital management in order to successfully renew or negotiate loan contracts. Furthermore, borrowers that are *not* distressed would also find it optimal to increase their accounting quality when creditors increase scrutiny in order to receive better contractual terms.

Borrowers reporting more precisely can serve as an optimal response, as banks have superior information processing capabilities. In support of this argument, James (1987), Lummer and McConnell (1989), Ma et al. (2018), and Nikolaev (2018) provide empirical evidence that the granting of new loans and successful loan renewals by banks are associated with a positive stock price response and lower public bond yields for the firm.

3.3.2. The Information Processing Capabilities of Banks

As banks possess superior information processing and monitoring capabilities, it is not surprising that borrowers with external financing needs may be incentivized to report more precisely. Roberts and Sufi (2009) note that over 90% of private long-term loans are renegotiated before their maturity, and renegotiations are associated with significant changes in loan spreads. Roberts (2015) finds that the average loan contract is renegotiated five times and frequently involves changes in accounting-based measures. This evidence is suggestive of the key role that accounting information plays in debt contract negotiations.

To shed light on the prevalence of the use of accounting information, Donelson et al. (2017) use survey evidence to report that 93% of loan officers rate financial statement quality as "important" or "very important." The loan officers in the survey also report that they look for *abnormal increases* in working capital that do not match underlying revenue patterns when examining accounting quality. An increase in creditors' rights to enforce contracts potentially triggers greater scrutiny of borrowers' accounting during the negotiation process. An indirect channel through which borrowers could be induced to make changes to their accounting quality is through the increase in loan availability due to the increase in creditor rights.[23] Bharath et al. (2008) argue that borrowers that provide superior information through higher quality financial statements reduce the adverse selection costs for their lenders. These borrowers consequently increase their likelihood of receiving and renewing loans. Kim et al. (2011) document that lenders provide lower loan spreads to borrowers that remediate prior internal control weaknesses. Furthermore, Chan,

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[23]In Figure 2, I plot the levels of secured lending of Indian banks scaled by assets. Consistent with Qian and Strahan (2007) and Haselmann et al. (2009), I find a general increase in secured loan availability after the passage of the secured creditor rights reform.

Chen, and Chen (2013) find that firms that take actions to reduce accounting obfuscation receive better loan contractual terms.[24]

From the bank's point of view, Breuer et al. (2017) find that borrower financial statements substitute for banks' own information production. Using the SARFAESI Act as an exogenous shock to secured creditor rights, I argue that the Act allows secured creditors to negotiate on a stronger footing. More specifically, the Act substantially reduces enforcement costs by providing creditors with a private enforcement channel in contrast to the lengthy public (judicial) enforcement channel. Greater scrutiny by lenders due to enhanced enforcement powers along with borrowers' incentives to successfully renegotiate loan contracts could induce an increase in borrowers' accounting quality. With the above arguments, I present my central hypothesis:

Hypothesis 1. *Increases in creditor enforcement rights are not associated with increases in borrowers' accounting quality.*

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[24] Chan et al. (2013) use the initiation of clawback provisions to find evidence of lower spreads and longer loan maturities for the initiating firms. The initiation of clawback provisions potentially increase the costs of accounting manipulation for managers and can reduce the adverse selection costs for lenders.

Chapter 4: Data and Research Design

I begin this section by providing details on the main database used in this paper along with an explanation of the procedures used in the construction of my sample. Next, I provide summary statistics of the sample along with the univariate differences between the treated and control groups of borrowers. Next, I lay out my research design. I end this section by explaining the methodology used in the cross-sectional and supplemental analyses.

4.1. CMIE Prowess IQ

For my study, I use the Prowess IQ Dataset, compiled by the Centre for Monitoring Indian Economy (CMIE). The Prowess database is commonly used for empirical analyses involving Indian firms. Chhibber and Majumdar (1999), Bertrand, Mehta, and Mullainathan (2000), Khanna and Palepu (2000), Gopalan, Nanda, and Seru (2007), Gormley et al. (2012), and Vig (2013) are examples of published papers that have used the Prowess Dataset from CMIE. The CMIE Prowess Dataset provides information on key firm characteristics required for my analysis, such as secured debt, assets, operating cash flows, and information on the name of the lending bank. In addition, the CMIE database also provides data on whether a firm is listed on the Bombay Stock Exchange or the National Stock Exchange, is government owned, or is part of a business group.[25]

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[25] Unlisted companies with book assets above Indian Rupees 2.5 million (U.S.$52,000 at Rs. 48/U.S.$ in 2003) file audited financial statements and are covered by Prowess. I exclude these firms from the main analysis, as there are differences in reporting requirements and accounting standards between listed and unlisted firms.

4.2. Sample Composition

I include all non-financial firms listed on the Bombay Stock Exchange or the National Stock Exchange in my main analysis.[26] My main analysis also excludes firms that are part of a larger conglomerate, business group, or are government owned.[27] I use the CMIE Prowess snapshot (or vintage) as of March, 2017 in my paper (Please see the narrative in Section 8.1 for details on the CMIE vintages). I delete firm-years with missing data on assets, secured debt, and other variables used in the regression analysis. The sample selection procedures are detailed in Section 8.1 and the definitions of the variables are presented in Section 8.2.

As the SARFAESI Act was passed in June, 2002, I categorize all observations after June 21, 2002 as the post period. My sample consists of firm-year observations between 1999 to 2006, similar to Vig (2013) and Bhue et al. (2015) that examine the effects of the SARFAESI Act. My data collection procedures leave me 1,088 unique listed firms corresponding to 6,964 listed firm-year observations between 1999 and 2006 (i.e., fiscal years 1998 through 2005 for most firms) that have non-missing data for the main analysis.[28]

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[26] Financial firms are excluded, as their borrowings may not be collateralized by physical assets. Many financial institutions' liabilities are generally in the form of deposits and their loans are secured by cash flow obligations which presents a different contracting dynamic beyond the scope of this paper.

[27] The financial reporting of business group or government firms can be affected by the accounting choices of their business group or government affiliation, and can potentially confound the empirical design, as documented in Bertrand et al. (2000). Removing business group firms from the main analysis is a common practice among papers using Indian data (For example, see Gormley et al. (2012) and Bhue et al. (2015)).

[28] The Prowess dataset generally reports financial statement data as of March 31st of the calendar year. While many Prowess-based studies classify observations by their fiscal year, I classify observations by their calendar year ended March 31st. For example, classifying by fiscal year would categorize a firm observation on March 31st, 2002, as an observation for 2001, while I classify the observation for 2002. I use this convention as 52 out of the 1,088 (5% of firms) firms in my sample during calendar year 2002 report after the passage of the SARFAESI Act. This calendar year classifying procedure places these 52 firm-year observations in the post-reform period but in the calendar year of 2002. The sample effectively covers fiscal years 1998 through 2005 for March 31st reporting firms.

To create treated and control groups, I split firm-years by the median values of secured debt scaled by assets immediately before the passage of the reform. For example, say firm A (B) had secured debt reported as 40% (20%) and 50% (30%) of assets on March 31st, 2002 (pre-reform), and March, 31st 2003 (post-reform), respectively. I use the 40% (20%) value reported on March 31st, 2002 for the assignment of treatment and control groups for firm A (B). In particular, firm A (B) would be assigned as the treated (control) firm, as the median secured debt used for treatment assignment is 30% (median of 40% and 20%). In particular, the post-reform reported values of 50% and 30% for firms A and B, respectively are excluded in the determination of treatment. This procedure leaves me with 3,583 treated firm-year observations and 3,381 control firm-year observations.[29]

I further restrict my sample to firms that had two reported observations immediately prior to the passage of the SARFAESI Act, and two reported observations immediately after the passage of the SARFAESI Act. That is, a firm reporting as of March 31st, would be required to have observations on March 31st, 2001, 2002, 2003, and 2004 to be part of the sample. I impose this restriction to mitigate survivorship bias.

4.3. Summary Statistics

In Table 1, I present the descriptive statistics for all the listed firm-years in the sample through years 1999 and 2006. My sample consists of 1,088 unique listed firms corresponding to 6,964 firm-year observations. The average listed firm in my sample has book assets of U.S. $18.3 million and the median firm has about $6.6 million in book assets. The average firm posts a loss of about 0.8% of assets while the median firm is profitable

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[29] The number of treated and control firms is not exactly balanced, as treatment is assigned before the passage of the reform rather than by each year. As all firms in the sample have a minimum of four years of observations, some firms may have all eight years between 1999 through 2006 creating this imbalance.

at the rate of 1.5% of assets.[30] Secured borrowings equal to 23% of assets with a standard deviation of 22% on my sample of 6,964 listed firm-year observations, which is similar to Vig (2013), who reports mean secured debt equaling 29% with a standard deviation of 17% using a sample of 13,427 listed firm-years.

About 40% of a firm's assets are in the form of property, plant, and equipment. The average firm's accruals are -4.2% of assets, similar to the -4.6% documented in the sample of U.S. firms used by Dechow and Dichev (2002). The operating cash flows of my sample account for 6% of book assets. The firms, on average, pay interest expense amounting to 4.5% of book assets, consistent with Vig (2013)'s reported mean of 4.7%. The median firm in my sample has 2 bank lenders, which is the same as the reported median in Vig (2013).

4.4. Univariate Differences

In Panel A (B) of Table 2, I present the univariate differences between the treated (control) group before and after the passage of the SARFAESI Act. The evidence in Panel A suggests that the treated firms increased their profitability, increased secured borrowings, and increased their levels of accounts payables to suppliers. More pertinently, the treated firms experienced an increase in their accounting quality, as evidenced by the more negative values of *AccQual* and discretionary accruals after the reform. For example, the composite accounting quality measure (*AccQual*) increases (negative values signify higher accounting quality) from +0.4 to -1.6 for the treated firms after the reform. This difference is significant at the 1% level. I also find a significant increase in the number of banks from 2.1 to 2.4 that the treated firms borrow from, consistent with Bhue et al. (2015).

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[30] Approximately 30% of firms record negative profits before interest, depreciation and taxes. I find that the EBITDA (PBDITA in Prowess) equals 10% of assets (unreported in my paper), similar to Vig (2013), who also reports EBITDA equaling 10% of profits. While his study uses EBITDA, I use profits after interest and taxes, as my main variables of interest are accruals-based.

When examining the effects of the reform on control firms in Panel B, I find that the control firms also became larger, more profitable, and increased secured borrowings. However, I find no significant changes in their accounting quality unlike the treated firms. For example, the accounting quality (*AccQual*) of the control firms actually decreases (positive values signify lower accounting quality) from +0.4 to +1.0. Next, I move to regression analysis to confirm these preliminary results.

4.5. Research Design

Cross-sectional OLS regressions and other econometric tests are generally insufficient to establish a causal relationship between creditor rights and accounting quality. Debt structures are jointly determined by a combination of factors that are related to a firm's investor base, managerial characteristics, business model, and risk profile. The literature has established that these factors are also associated with the firm's accounting quality. Exploiting exogenous shocks that disproportionately (or only) affect a subset of the sample is one way to conduct analyses that can allow for causal inferences. In particular, exogenously shocking the enforcement rights of a firm's lender can serve as a powerful tool in establishing a link between creditor rights and a particular dependent variable.

4.5.1. Main Model

The SARFAESI Act primarily affects borrowers with high levels of secured debt, which allows me to construct treated (*disproportionately affected*) and control groups of firms. Moreover, the SARFAESI Act was intended to increase the power of secured creditors, and not to impact the accounting of borrowers, thereby providing an ideal setting to examine the effect of creditor enforcement rights on borrowers' accounting quality.

I assign firms into treated and control groups based on their *immediate pre-reform levels of secured debt* scaled by assets, following Vig (2013).[31] For example, say secured debt as of March 31st reporting dates is measured at 20, 25, 30, and 35% of assets in 2001 (pre-reform), 2002 (pre-reform), 2003 (post-reform), and 2004 (post-reform), respectively. The *SecuredDebt*(*Pre*) value used would be 20, 25, 25, and 25% of assets in years 2001, 2002, 2003, and 2004, respectively. Similarly, the *Treated* variable is a binary version of treatment at the immediate pre-reform level (i.e., March 31st, 2002 for most firms) split at the median.[32] In particular, I run the following main model:

$$AccQual_{i,t} = \alpha + \beta_1 \times ((SecuredDebt(Pre) \text{ or } Treated) \times Post) + \beta_2 \times Profit$$

$$+ \beta_3 \times Log(Assets) + \beta_4 \times \Delta Sales + \beta_5 \times IntExp + \beta_6 \times PPE$$

$$+ \beta_k \times (Controls \times Post) + \gamma_1 \times FirmFE + \gamma_2 \times YearFE + \varepsilon. \qquad (1)$$

To conduct my empirical analyses, I use the above difference-in-differences design (model 1) to test the effects of increases in creditor rights on accounting quality on the sample of 6,964 firm-year observations. In the empirical design, the *Post* indicator proxies for the stronger contractual enforcement regime for secured creditors. The *SecuredDebt (Pre)* and *Treated* variables proxy for the intensity of creditor enforcement rights. The coefficient of interest is the interaction term of *SecuredDebt(Pre)/Treated* and *Post* (β_1).[33] I note that the

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[31] Vig (2013) uses tangibility for treatment assignment, as secured debt is his main dependent variable. In contrast, I use secured debt for treatment assignment, as accounting quality is my dependent variable.

[32] For example, say firm A (B) reports secured debt scaled by assets equaling 40% (20%) as of March 31st, 2002, which is just before the passage of the Act in June, 2002. Firm A (B) would be classified as treated (control) throughout the sample period, as it falls above the median (30%) level of secured debt.

[33] Intercepts are not reported in the tabulated analysis due to the inclusion of firm and year fixed-effects. In regressions that include firm and year fixed-effects, I report the number of singletons automatically dropped out using the *reghdfe* command in STATA that allows for multiple fixed-effects. In particular, Correia (2018) finds evidence that the presence of singletons (groups with only one observation) can overstate the statistical significance of coefficients. In regressions using the full sample, the number of singletons in my study are miniscule and do not exceed 15 (i.e., 0.2% of 6,964 firm-year observations).

coefficient on the *SecuredDebt (Pre)* variable is not reported due to the inclusion of firm fixed-effects, similar to the econometric design in Vig (2013).[34] In particular, *SecuredDebt (Pre)* values are held constant for the same firm in the post-reform period. Moreover the *Treated* variable is assigned throughout the sample period. Therefore, the two variables behave like firm fixed-effects.

The main dependent variable is accounting quality (*AccQual*) calculated using a principal components analysis following Bharath et al. (2008). The measure is calculated using a composite measure of the three accruals models of Teoh, Welch, and Wong (1998), Dechow and Dichev (2002), and Kothari, Leone, and Wasley (2005). A statistically *negative* significant coefficient on β_1 would lead to a rejection of the hypothesis that increases in creditor rights are associated with no increases in borrowers' accounting quality. Further, I note that the dependent variable used for my study is appropriate given that Donelson et al. (2017) report that abnormal accruals and working capital accruals are reasonable proxies for accounting quality in debt contracting studies.[35]

The principal components used in this paper are *AccQual* = 0.5551 × *DiscWCapAcc* + 0.5923 × *AccTWW* + 0.5840 × *DiscAcc*. These principal components are not materially different from those used by Bharath et al. (2008). In particular, the principal components in Bharath et al. (2008) are *AccQual* = 0.5709 × *DiscWCap* + 0.6020 × *AccTWW* + 0.5583 × *DiscAcc*. In this study, I use the Kothari et al. (2005) measure instead of the Jones (1991) measure, as including performance improves model specification. I use the signed values

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[34] For parsimony, I exclude the *Post* coefficient by itself following the presentation in Vig (2013). I note that the *Post* coefficient is statistically insignificant throughout the analysis, which may be a byproduct of including year fixed-effects.

[35] More than 90% of loan officers surveyed in their study reported that abnormal changes in working capital were important indicators of financial statement quality.

of the accruals quality measures, as tests using unsigned measures possess over-rejection bias (Hribar and Craig Nichols, 2007).

Following prior studies that examine accounting quality, I control for the size of the firm (*Log*(*Assets*)), the profitability of the firm (*Profit*), the change in sales as a proxy for firm growth (Δ*Sales*), interest expense (*IntExp*), and property plant and equipment (*PPE*). These variables are highly populated in the Prowess data set and are generally correlated with accounting quality in most samples used in accounting research. I also include firm and year fixed-effects to control for time-invariant firm characteristics and annual variation in the data, respectively.[36] Standard errors are clustered by firm to account for serial correlation in estimation errors (Petersen, 2009).

4.5.2. Cross-sectional Tests: Borrower Default Risk

I examine two channels through which creditor enforcement rights impact the accounting quality of borrowers. First, I look at the credit risk channel to analyze whether borrowers at the risk of missing interest payments are more strongly affected by creditor enforcement. A default event (i.e., a missed loan payment) triggers either a liquidation of the borrower's assets or a renegotiation of the loan contract (Diamond, 1984; Bird et al., 2017). Prior literature shows that borrowers have incentives to obfuscate accounting reports to avoid asset liquidations, or receive beneficial terms in renegotiations (Sweeney, 1994; Franz et al., 2014).

However, borrowers are incentivized to successfully renegotiate loans and renew contracts with their lenders, as renegotiations and the granting of loan contracts are generally associated with positive market responses (James, 1987; Lummer and

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[36] I do not include industry fixed-effects, as firm fixed-effects subsume the industry fixed effect. However, I find results of similar statistical significance when using *industry-year* fixed-effects.

McConnell, 1989). Recent evidence suggests that lenders exercise forbearance in 89% of cases (Bird et al., 2017) and greater creditor control is associated with more intense negotiations (Nikolaev, 2018). I hypothesize that the effects of creditor enforcement are stronger for *secured borrowers with higher credit risk,* as their assets are susceptible to immediate seizure potentially triggering a renegotiation of the loan. To conduct an analysis of this channel, I split the regressions in model (1) between firms that risk missing interest payments measured by their interest coverage ratio (Bharath et al., 2008; Kulkarni, 2017). As missing cash payments is the trigger for an immediate enforcement, I use operating cash flows rather than profit after tax as the numerator for calculating the interest coverage ratio.

I hypothesize that creditors with greater bargaining power and stronger incentives to enforce claims against borrowers would induce greater changes in accounting quality. In a repeated game, borrowers are incentivized to report more accurately, as failure to negotiate is costly. Specifically, borrowers could receive stricter contractual terms, be forced to relinquish control rights, make mandatory corporate changes, and be penalized by the market (Lummer and McConnell, 1989; Nini, Smith, and Sufi, 2009; Bird et al., 2017). Lenders also provide lower spreads to borrowers that have higher accounting quality and borrowers that remediate past financial reporting weaknesses (Bharath et al., 2008; Kim et al., 2011).

4.5.3. Cross-sectional Tests: Creditor Bargaining Power

Next, I examine how creditors' negotiating power and relationship with borrowers affects the association between creditor enforcement rights and accounting quality. I split the main analysis among firms that had a single bank lender compared to firms that had multiple bank lenders. Firms with a single bank lender are exposed to lower enforcement

coordination costs by their lenders (Nikolaev, 2018). Their lenders also hold virtually all of the secured collateral rights. More pertinently, under the SARFAESI Act, an agreement among 75% of the creditors (by value of the loan) is required for the liquidation to be triggered. Arguably, borrowers that borrow from a single bank are arguably constrained in their potential set of lenders. I hypothesize that the effects of creditor rights on accounting quality are stronger for borrowers that have lower bargaining power *vis-`a-vis* their lenders.

This hypothesis may be tenuous, as borrowers with multiple lenders report to a larger number of banks, which increases the number of external monitors. A greater number of external monitors generally has positive effects on accounting quality (Fang, Huang, and Karpoff, 2016). However, I argue that a borrower with a single bank lender may be induced to increase accounting quality more in order to access a greater potential set of lenders (Bharath et al., 2008).

4.5.4. Accounting Quality and Debt Capacity

To analyze whether changes in accounting were associated with better contractual terms for borrowers, I turn to firms that were indirectly affected by the SARFAESI Act due to their high potential for raising secured debt. Following Vig (2013) and Bhue et al. (2015), I use tangible assets to measure the firm's potential to pledge assets for raising secured debt as tangible assets are a precursor for secured borrowing. I hypothesize that borrowers with higher levels of tangible (i.e., pledgable) assets that increased their accounting quality and tightened working capital management were able to lower their cost of debt. Empirically, I estimate the following model separately in the pre and post periods with β_1 as the coefficient of interest.

$$\text{IntExp/Borr}_{i,t} = \alpha + \beta_1 \times \text{HighTang} \times (\text{AccQual or } \Delta\text{WCap})$$

$$+ \beta_2 \times (\text{AccQual or } \Delta\text{WCap}) + \beta_3$$

$$\times \text{HighTang} + \beta_k \times \text{Controls} + \varepsilon. \qquad (2)$$

The model examines whether an increase in accounting quality (negative values of *AccQual*) for borrowers *indirectly* affected by the creditor rights reform (*HighTang*) allowed for raising more debt.[37] The dependent variable for the effects of accounting changes is the interest expense scaled by bank borrowings (*Int/Borr*).[38] A statistically significant *positive* coefficient on β_1 would suggest that borrowers with high levels of tangible assets that increased accounting quality and tightened working capital (negative values signify higher accounting quality and tighter working capital management) were able to reduce their cost of borrowing. I test the differences in the means of β_1 in the pre and post period to test my argument.

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[37] I do not use secured debt on the right hand side, as the pledging of assets directly factors into the interest expense and contractual terms in the secured loan (Rauh and Sufi, 2010).

[38] As the specific amount of interest on secured borrowings is not generally available, I simply use interest expense scaled by total borrowings.

Chapter 5: Results

I begin this section by examining how increases in creditor rights affect the accounting quality of their borrowers. I then investigate the channel for my main findings. After presenting my main results, I perform cross-sectional tests to examine whether my main findings are influenced by the default risk of borrowers and the bargaining power of creditors. Next, I test for the financial effects of the changes in accounting quality. My final analysis examines the effects of increases in creditor rights on another major construct of financial reporting, conditional conservatism.

5.1. Accounting Quality

I examine the effects of creditor rights on borrowers' accounting quality in Table 3. I use Model 1 from section 4.5.1 to estimate the effects of a change in creditor enforcement rights on borrowers' accounting quality. The analysis includes controls for size, profitability, interest expense, asset tangibility, and change in sales.[39] The dependent variable in Table 3 is accounting quality (*AccQual*) following Bharath et al. (2008). I find that an increase in creditor rights leads to an increase in borrowers' accounting quality, as evidenced by the statistically significant negative coefficients on *SecuredDebt*(*Pre*) × *Post* on accounting quality in columns 1 through 3.[40] For example, the coefficient of *SecuredDebt*(*Pre*) × *Post* on *AccQual* in column 1 is -0.06 with a *t*-statistic of -2.40. Including controls and interactions leads to an increase in the coefficient to -0.08 in

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[39] I do not control for leverage, as many firms in the sample have liabilities almost equal to assets. It is a common practice for papers using CMIE Prowess data to not control directly for leverage. For example, Gopalan et al. (2016) use interest coverage ratio (EBIT/Interest Expense) as a control, while my study simply uses interest expense scaled by assets while controlling for profitability.

[40] To verify that the results are not sensitive to the inclusion of fixed-effects, I run the regressions in columns and (6) without fixed-effects and find qualitatively similar results.

column 3, with a *t*-statistic of -3.84.[41] This estimate is significant at the 1% level and is economically important. A one-standard-deviation increase in secured debt translates to a -1.26 (−0.08 × 15.73) change in *AccQual*, which is equivalent to 9% of one-standard-deviation change in accounting quality.[42]

Similarly, when using the binary treatment assignment (*Treat*), I estimate a coefficient of -2.85 (*t*-statistic = -4.27) on accounting quality in column 6. This estimate translates to 21% of a one- standard-deviation (-2.85/13.83) change in the value of *AccQual*.[43] The explanatory power within firm-years of my main model for accounting quality is 8.4%.[44] The evidence from the analysis in Table 3 leads me to reject the hypothesis that increases in creditor rights have no association with increases in the accounting quality of borrowers.

5.2. The Working Capital Channel

To analyze the underlying processes through which creditor rights affect accounting quality, I analyze a set of accounts that ultimately reflect in the quality of accruals. In particular, I examine the working capital changes and working capital accruals of borrowers in Table 4. I employ model (1) in Section 4.5.1 and use the working capital accounts as the dependent variables. Specifically, I analyze, changes in working capital ($\Delta WCap$), discretionary working capital accruals (*DiscWCapAcc*), trade receivables,

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[41] I analyze the variance inflation factors (VIF) of the coefficients of interest as a precautionary check for multicollinearity. The VIF estimates are consistently below 10. A VIF estimate above 10 is indicative of potential multicollinearity induced by the inclusion of the independent variable.

[42] When calculating economic significance, I use the standard deviation of *SecuredDebt*(*Pre*) *Post* in contrast to using the standard deviation of the secured debt contemporaneous value.

[43] I find qualitatively similar results when using tercile splits for treatment, as in Vig (2013).

[44] I report within R^2 in contrast to adjusted R^2 in regressions that include firm fixed-effects. The within R^2 is a measure of the explanatory power of my model within a firm itself and is also more pertinent given that my analysis requires that each firm have at minimum 4 observations over the sample period. This presentation follows Vig (2013).

accounts payable, and inventories. A negative coefficient on the main independent variable (*SecuredDebt*(*Pre*) × *Post*; positive coefficient for accounts payable) signifies a tightening of working capital as a result of greater creditor enforcement rights.

I find that the treated borrowers tightened the management of their working capital in response to an increase in creditor rights. In Table 4, I find significant negative (positive for accounts payable) coefficients for *SecuredDebt*(*Pre*) × *Post* on the working capital accounts. For example, I estimate a statistically significant negative coefficient for *SecuredDebt*(*Pre*) × *Post* of -0.04 (*t*-statistic = -3.59) for changes in working capital in column 1. A one-standard-deviation increase in *SecuredDebt*(*Pre*) × *Post* translates to a 0.63 (−0.04 × 15.73) reduction in working capital, which is equivalent to 7.5% of a one-standard-deviation change in working capital. I also estimate statistically significant coefficients on receivables, discretionary working capital accruals, and accounts payable in the hypothesized direction.

The evidence suggests that the improvements in accounting quality potentially manifested from the tightening of working capital as opposed to lesser earnings management. For example, firms could tighten credit policies on new sales in an ability to increase their cash collections when faced with increased creditor scrutiny. This finding is striking given that the univariate evidence shows that sales growth increased for the treated firms post-reform (See Panel A of Table 2). Fazzari and Petersen (1993) argues that such policies translate into lower than normal accounts receivables. Overall, the evidence in Table 4 suggests that one key channel for the observed improvements in accounting quality is through better management of working capital.

5.3. Cross-sectional Analysis: Borrower Default Risk

In my cross-sectional analysis, I analyze how the risk of asset seizure affects the accounting quality of borrowers. High-risk firms are at a greater risk of liquidation by their creditors in the post-reform regime due to the stronger enforcement rights. High-risk firms may also have to renegotiate or alter the terms of their loan contracts under creditor enforcement threats. A missed payment or default triggers negotiation with lenders, and lenders can ultimately choose to either enforce liquidation or renew the loan.

In Table 5, I split borrowers by their risk of missing interest payments, proxied by their interest coverage ratios. I measure the interest coverage ratio, as operating cash flows divided by interest expense since missing cash flows is the trigger for enforcement as opposed to violating an EBDITA ratio based covenant. The dependent variable is *AccQual* ($\Delta WCap$) in columns 1 and 2 (3 and 4). Columns 1 and 3 (2 and 4) conduct the analysis on firms with low (high) interest coverage ratios. I find that the coefficient on *SecuredDebt*(*Pre*) × *Post* is statistically significant only for firms at risk of missing interest payments.[45] For example, the coefficients of *SecuredDebt*(*Pre*) × *Post* on the accounting quality and working capital changes of the riskier borrowers are -0.17 and -0.09 (*t*-statistics = -3.18 and -2.81, respectively) in columns 1 and 3, respectively. I do not find a significant coefficient for borrowers with a lower risk of missing interest payments in columns 2 and 4. The differences between the coefficients estimated for *SecuredDebt*(*Pre*) × *Post* in columns 1 and 2 (3 and 4) are also statistically significant.

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[45] I exclude firms with 0 interest expense ($n = 195$) in the calculation of interest coverage ratio due to the zero denominator effect.

A one-standard-deviation increase in *SecuredDebt*(*Pre*) × *Post* for firms with low interest coverage translates to a -2.97 (−0.17 × 17.46) improvement in *AccQual*. This estimate translates to a 19% standard deviation improvement in accounting quality, which is greater than the 9% standard deviation estimate documented in Table 3 for the full sample. Similarly, a one-standard- deviation increase in *SecuredDebt*(*Pre*) × *Post* for firms with low interest coverage translates to a -1.57 (−0.09 × 17.46) improvement in working capital changes (Δ*WCap*). This estimate translates to a 16% standard deviation improvement in working capital, which is greater than the 7.5% standard deviation estimate documented for the full sample (see Table 4).

The results indicate that the effects of creditor rights on accounting quality are stronger for firms that are potentially threatened by an immediate asset seizure. These results support my central intuition that increases in creditor rights lead to increases in the accounting quality of borrowers. The mechanism for firms increasing accounting quality due to increases in creditor enforcement rights flows through a greater reliance on accounting information in negotiations and enforcement, consistent with Nikolaev (2018). These findings reinforce the notion that accounting serves as a contractual tool in monitoring and enforcing debt contracts, consistent with Armstrong et al. (2010) and Donelson et al. (2017).

5.4. Cross-sectional Analysis: Creditor Bargaining Power

While borrower credit risk plays a role in the debt contract enforcement process, the creditor's own negotiating power over the borrower may significantly impact the contracting process. In the case of secured lending, a bank that is the sole lender to the firm holds virtually all the collateral rights, which may affect the intensity of negotiations

(Nikolaev, 2018). Under the SARFAESI Act, no single secured creditor can enforce a liquidation without agreement of 75% of creditors in a jointly financed secured loan. The sole-lending bank, therefore, faces no costly coordination costs in deciding whether to liquidate or seize the assets of the borrower and can make a more credible enforcement threat (Bird et al., 2017). Arguably, borrowers that borrow from a smaller set of lenders are more constrained in their financing capacity, exacerbating the effects of creditor rights over them.

Therefore, I examine whether firms that borrow from a single bank differ in their accounting response to the increase in creditor enforcement rights relative to firms that have multiple lenders (SingleBank). Table 6 examines whether the main results found in this paper are affected by the bargaining power of the lender. The sample size for this analysis is smaller than the main analysis due to the requirement of matching firms to their bank lenders using the CMIE Prowess Bankers dataset. The Bankers dataset has lower coverage during my sample period. I run the main model (model 1) in Section 4.5.1 to examine the effects of creditor rights on accounting quality split by the bargaining power of creditors. SingleBank in columns 1 and 3 indicates greater lender bargaining power. The variable of interest is *SecuredDebt*(*Pre*)× *Post* and the dependent variable is *AccQual* (Δ*WCap*) in columns 1 and 2 (3 and 4).

The results demonstrate that borrowers make greater increases to their accounting quality when their creditors have greater bargaining power. The coefficient on *SecuredDebt*(*Pre*) × *Post* for SingleBank firms is 2 times greater than the coefficient on MultiBank firms. The coefficients for SingleBank firms on *AccQual* and Δ*WCap* of -0.12 and -0.07, respectively (*t*-statistics = -2.75 and -2.77, respectively) are statistically

significant and more negative relative to the coefficients for MultiBank firms of -0.05 and -0.03 respectively (t-statistics = -1.27 and -1.19, respectively). For example, a one-standard-deviation increase in *SecuredDebt*(*Pre*) × *Post* translates to a -1.64 (−0.12 × 13.63) improvement in *AccQual*, which is equivalent to 12.2% of a one-standard-deviation change in *AccQual*. This effect is greater than the 9% estimate documented for the full sample (see Table 3). In total, firms that borrow from a single bank increase their accounting quality by a much stronger magnitude than firms that borrow from multiple lenders.[46]

The finding that firms increase accounting quality when they only have a single bank lender is consistent with arm's length regimes being characterized by greater accounting quality (Leuz et al., 2003; Biddle and Hilary, 2006). The intuition is as follows. Firms borrowing from a single bank may have been transacting on a relationship basis pre-reform rather than on an arm's length basis. I argue that while it may be more likely that firms are borrowing on a relationship basis from a single bank, the increased availability of secured lending and a weakening of "soft-information" monopolies could induce firms to make financial reporting changes in order to access a greater set of lenders. This finding is consistent with Rajan (1992) and Bhue et al. (2015). Similarly, as secured loans are considerably "safer" to lend, the lenders themselves expand their set of borrowers, inducing an increase in arm's length lending.

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[46] This result may be puzzling, as a firm that borrows from multiple lenders would have to send its financial reports out to more contracting parties. On the other hand, secured borrowing firms with a single lender are naturally more constrained and arguably benefit the most from improving accounting quality to access greater financing not only from their current bank, but from *potential* lenders too.

5.5. The Liquidity Channel

Increasing accounting quality would develop as a rational response for borrowers if it yields net financial benefits. Examples of financial benefits potentially include greater access to capital and better credit terms (Bharath et al., 2008; Kim et al., 2011). In Table 7, I examine whether the documented improvements in accounting quality allow borrowers to lower their cost of debt. I use model 2 in Section 4.5.4 to test whether borrowers that were indirectly affected by the reform and improved accounting quality were able to lower their cost of debt. I report the results in Table 7. The dependent variable is interest expense scaled by borrowings (*IntExp/Borr*). The main independent variable is *HighTang* × *AccQual* (*HighTang* × *ΔWCap*) in columns 1 and 2 (3 and 4). *HighTang* (above median *PPE*) serves as a proxy for the potential amount of secured debt that a firm can borrow due to the ability of property, plant, and equipment to serve as collateral. A positive coefficient on *HighTang* × *AccQual* and *HighTang* × *ΔWCap* indicates lower borrowing costs, as negative values of *AccQual* and *ΔWCap* signify higher accounting quality and tighter working capital, respectively.

The results indicate that borrowers that increase accounting quality and tighten working capital the most also lower their borrowing costs. The coefficient on *HighTang×AccQual* is 0.04 (*t*-statistic = 2.38). A one-standard-deviation improvement (negative) in *HighTang* × *AccQual* post-reform translates to a 0.40 (0.04 × 0.1) decrease in the cost of debt (*IntExp/Borr*), which is equivalent to a 6.23% standard deviation reduction in *IntExp/Borr*. The difference in the coefficients between columns 1 and 2 is also statistically significant. Similarly, borrowers that tighten working capital also receive a lower cost of debt. The triple differences-in-differences analysis with firm and year fixed-

effects that yields qualitatively similar results is untabulated. The results confirm the liquidity channel of superior accounting quality being associated with better contractual terms such as lower borrowing costs (Bharath et al., 2008; Kim et al., 2011). The results also suggest that accounting quality has greater value when lenders increase their reliance on accounting as a contracting instrument.

5.6. Conditional Conservatism

More timely recognition of accounting losses is considered more informative to stakeholders, as they are informed of potential future losses earlier. I conduct an analysis for the conditional conservatism of borrowers to test whether increases in creditor rights increased the timeliness of loss recognition among borrowers. I use the model in Ball and Shivakumar (2006) and Aghamolla and Li (2018) to conduct the regression analysis. As the analysis in this paper relies on a treated and control group, I estimate the conditional conservatism triple difference-in-differences model for the two groups separately to circumvent running a quadruple DiD model. I present the results of this analysis in Table 8. The dependent variable is Acc and the variable of interest is OPCF × DOPCF × Post, which measures the incremental timeliness of loss recognition attributable to the stronger creditor rights regime. In Table 8, I find that firms generally recognize losses in a more timely fashion post-reform, as evidenced by the positive coefficient on OPCF × DOPCF × Post in column 1. However, this coefficient estimate is not statistically significant.

Interestingly, upon further analysis in columns 2 and 3, I find a significant positive coefficient only for the treated firms. The coefficient on *OPCF × DOPCF × Post* reported in column 2 is 0.33 (*t*-statistic = 2.05; 33.09 displayed in the table due to multiplication by 100). This coefficient is similar to the coefficients estimated in Ball and Shivakumar (2005)

and Ball and Shivakumar (2006). In particular, Ball and Shivakumar (2005) find conditional conservatism coefficients ranging from 0.28 to 0.41 for U.K. private firms. Similarly, Ball and Shivakumar (2006) find coefficients between 0.45 and 0.58 using U.S. Compustat Data.[47] My results on the effects of creditor enforcement rights on accounting conservatism are consistent with Aghamolla and Li (2018) and Gong and Luo (2018) that accounting conservatism serves as an instrument in debt contracting.

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[47] I compare my results to Panel A in Table 3 of Ball and Shivakumar (2006). The differences in the magnitude of coefficients may arise due to this paper using Indian firms which differ in their base level of accounting conservatism than U.S. and U.K. firms, the different accounting standards, and the use of firm and year fixed-effects.

Chapter 6: Discussion of Results and Robustness

In this section, I discuss the implications of my findings. I also briefly review some of the robustness checks that I conduct for the main results.

6.1. Informativeness

I begin by presenting descriptive statistics of my sample alongside that of a database used for international research, Compustat Global, in Table 9. I restrict the Compustat Global sample to firms that have non-missing accruals data and assets less than U.S. $1 billion between the years of 1999 and 2006. I impose this restriction as the main findings of this paper may be most informative to firms with book assets below U.S. $1 billion. I conjecture as such because these firms are representative of private firms in highly developed economies or publicly listed firms in emerging market economies. While the book assets of the firms in the Compustat Global database are significantly greater than the book assets of firms in my sample, the Compustat Global firms are not observed to behave differently along other measures of key importance in accounting research. In particular, the levels of accruals, operating cash flows, asset tangibility, receivables, and discretionary accruals as a percentage of total assets are similar between my sample and the Compustat Global sample.

When comparing the descriptive statistics tabulated in Minnis (2011), I find that the book assets of the listed firms in my sample are significantly greater than that of U.S. private firms using Sageworks data (Please see Panel A of Table 3 of the published paper, Minnis (2011), as I do not tabulate his summary statistics). For example, the average U.S. private firm in the Sageworks dataset has book value of assets equaling approximately U.S. $6 million, while the average firm in my sample has book assets of approximately U.S. $18

million. Similarly, the levels of accounting accruals in my sample (-4.2%) do not exhibit a material difference from the sample in Dechow and Dichev (2002) (-4.6%) and Minnis (2011) (-3%, decimals not reported in his paper).

Next, I extend the informativeness narrative by presenting the coefficients of a seminal construct of accounting quality (i.e., the Dechow and Dichev (2002) working capital accruals measure.) I present the coefficients on lead, lagged, and contemporaneous cash flows on changes in working capital using 113 industry regressions for my sample and two-digit (SIC) industry for the Compustat Global sample in Table 10. I also supplement the above by presenting coefficients for the Dechow and Dichev (2002) sample itself from their paper. I note that the coefficients of lead, lagged, and contemporaneous cash flows on changes in working capital in my sample match closely with the reported coefficients in Dechow and Dichev (2002). Dechow and Dichev (2002) find coefficients of 19, 15, and -51 respectively, and I find coefficients of 12, 12, and -34, respectively in my sample (Table 10). Furthermore, when examining firms in the Compustat Global database with less than U.S.$1 billion in assets, I find coefficients of 10, 7, and -21 compared with 12, 12, and -34 in my sample.[48] The exposition in Table 10 suggests that the mapping of cash flows to the accruals of the publicly listed firms in my sample are not observed to be significantly different from that of U.S. and internationally listed firms. I use these findings to infer that the results in my study are pertinent to private firms in developed economies and publicly listed firms in emerging market economies.

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[48] The (untabulated) differences in coefficients do not change significantly when using OLS regressions across my sample and across the Compustat Global sample.

6.2. Sensitivity Analyses

I touch upon several robustness checks and additional analyses that I conduct to examine the sensitivity of the main results in my paper.

6.2.1. Propensity-score Matching

I first examine whether firm characteristics affect my findings. To conduct this analysis, I use propensity-score matching following Lawrence, Minutti-Meza, and Zhang (2011). In particular, I use one-to-one matching (without replacement) using a 0.01 caliper. I report the estimated results in appendix Table A2. For parsimony, I only report the results using accounting quality as the dependent variable. The evidence in Table A2 suggests that the main results are not particularly sensitive to firm characteristics. I note that the results on changes in working capital ($\Delta WCap$) are also robust to this procedure.

6.2.2. Alternate Scalars

I use an alternate measure to assign borrowers into treatment and control groups. Specifically, I scale secured debt separately by borrowings and by property, plant, and equipment. I report the results using this estimation procedure in Table A3. The main results are qualitatively similar when scaling secured debt by either borrowings or property, plant, and equipment.[49] In fact, I note that the economic effects implied by coefficients on the continuous variable of pre-Act secured debt (untabulated) are greater when scaling by borrowings and tangible assets relative to scaling by book assets.

6.2.3. Alternate Measures of Accounting Quality

I test the sensitivity of my findings to alternate measures of accounting quality. These measures are the discretionary revenue measure proposed by Stubben (2010) and

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[49] I exclude firms with zero borrowings and zero tangibility due to the zero denominator effect.

the financial reporting quality measure used in Bushee et al. (2018). I measure discretionary revenues using the residuals from the following model run for each of the 113 industries identified by Prowess: $\Delta Receivables = \alpha + \beta_1 \times \Delta Sales + s$.[50] My main findings are similar using the Stubben (2010) measure of discretionary revenues. For parsimony, I do not tabulate these results.

While Bushee et al. (2018) use the standard deviation of accruals to measure financial reporting quality, I use the residuals from the following model run for each of the 113 industries identified by Prowess: $\Delta Accruals = \alpha + \beta_1 \times OPCF_{t-1} + \beta_2 \times OPCF_t + \beta_3 \times OPCF_{t+1} + \beta_4 \times \Delta Sales + \beta_4 \times PPE + s$. I use the residuals due to the lack of quarterly data for the firms in my sample. I find qualitatively similar results using the Bushee et al. (2018) measure. For parsimony, I do not tabulate these results.

6.2.4. Other Analyses

As approximately 5% of firms (52 out of 1,088) report on dates after June 21st, 2002 in the year 2002, I exclude these observations for all years in untabulated analysis. I find that my results are not sensitive to the inclusion of these firms in the main sample. I note that 31 out of the 6,964 observations have secured debt greater than 90% of assets. Due to the potential of an outliers problem, as highlighted in Leone, Minutti-Meza, and Wasley (2019), I exclude these observations in untabulated analysis. I find that my results are not sensitive to the inclusion of these observations.

I find similar results using entropy-balanced discretionary accruals proposed by McMullin and Schonberger (2017). My main findings for accounting quality are also

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[50] While Stubben (2010) uses Fama-Macbeth regressions, I use regressions across the 113 industries identified by Prowess by name. I perform this procedure due to a maximum of 8 observations per firm and a lack of quarterly data.

robust (i.e., insignificant) to placebo treatments (randomly assigned treatment). Moreover, the main findings hold when conducting the analysis for a sample of unlisted firms. When restricting the analysis to firms that had all 8 years of data in my sample (1999 through 2006), I find that the results on accounting quality and working capital changes hold. For parsimony, I do not tabulate these results.

Chapter 7: Conclusion

I examine whether increases in creditor rights affect the accounting quality of borrowers. I motivate this study using Armstrong et al. (2010)'s call for exogenous shocks in achieving a causal link between the effects of debt contracting on accounting. The SARFAESI Act of 2002 in India empowered secured creditors to seize the assets of their secured borrowers within 60 days of delinquency and bypass the formal cumbersome judicial process. Using a difference-in-differences design, I find that the increase in creditor enforcement rights led to an increase in the accounting quality of treated borrowers. Furthermore, I find that the results flow through borrowers tightening working capital, which ultimately reflects in accruals quality.

The effects of creditor rights are especially stronger when borrowers risk having assets seized and when creditors have greater bargaining power. The improvements in accounting quality by borrowers are accompanied by a lower cost of debt. The findings are consistent with 1) creditors increasing their reliance on accounting information under an arm's length regime and 2) accounting information serving as a valuable tool in monitoring and enforcing debt contracts.

My study contributes to the debt contracting and accounting literature by demonstrating that financial reporting has greater contractual value when lenders are able to enforce contracts against borrowers efficiently. My work also contributes to the international accounting and investor rights literature by providing within-country evidence that increased creditor rights have meaningful effects on accounting. Lastly, I

identify lender enforcement and the increase in lending based on accounting information as two mechanisms that increase the contractual value of accounting.

My findings are most pertinent to 1) settings where lenders rely on financial statements to monitor and enforce loan contracts, 2) private firms in developed economies, and 3) emerging market economies with gradually increasing creditor rights. A potential extension for future research is an examination of the effects of the changes in borrowers' accounting quality on the financial reporting quality of banks.

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Sample selection and variable definitions

S.1. Sample selection

This table details the sample selection process from the CMIE Prowess Dataset as of the March, 2017 vintage. The data fields within each vintage remain same and do not change. However, the same data field can change from one vintage to the next while keeping the data field in past vintages the same. For example, data in the March, 2017 vintage will remain the same, though data fields recorded in the March, 2017 vintage can be edited for the September, 2017 vintage and thereafter, without any changes in the March, 2017 vintage. This may occur if there was a realized error or a required change. This procedure ensures replication and consistency within studies by vintage as explained by a CMIE official. CMIE creates a vintage every March, September and December.

Step #	Selection Process	N
Step 1	All non-financial firm-years between 1999 and 2006	90,984
Step 2	Remove firm-years without data on secured debt	56,613
Step 3	Restrict to listed firm-years on either the Bombay Stock Exchange or National Stock Exchange that have non-missing data on assets, interest expense, profitability, sales growth, and asset tangibility	15,704
Step 5	Firm-year observations with 1) sufficient data to calculate the requisite variables used in regression analyses and 2) firms with four consecutive observations from 2001 to 2004 (2 years pre-reform and 2 years post-reform) *Firm-year observations are used for my analysis since the quarterly data fields are negligibly populated*	**6,964**

S.2. Variable definitions

This table describes variables used in the analyses. All continuous variables are trimmed at 0.5 and 99.5% levels.

Variable	Definition	Source
	Treatment variables	
SecD	Secured borrowings from banks scaled by assets	CMIE Prowess
Treated (Control)	Above (below) median *SecD* in the reporting period just before the passing of the SARFAESI Act (i.e., before June 21st, 2002). The firm is characterized as treated (control) throughout the sample period based on the *immediate pre-reform value* (i.e., March 31st, 2002 reported value for most firms).	
Post	Indicator equal to 1 (0) for observations after (before) June 21st, 2002.	
SecuredDebt(Pre)	*SecD* value recorded on the reporting period just prior to passage of the SARFAESI Act. The pre-reform value of *SecD* is used for the firm-year observations prior to the Act. The immediate pre-reform value is used for firm-year observations after passage of the Act. For example, say, *SecD* as of March 31st reporting dates is measured at 20, 25, 30, and 35 in 2001 (pre), 2002 (pre), 2003 (post), and 2004 (post), respectively. The *SecuredDebt(Pre)* value is then 20, 25, 25, and 25 in years 2001, 2002, 2003, and 2004, respectively	
	Dependent variables	
AccQual	Principal component analysis: $AccQual = 0.5551 \times DiscWCapAcc + 0.5923 \times AccTWW + 0.5840 \times DiscAcc$	Following Bharath et al. (2008)
DiscWCapAcc	Residuals from $\Delta WCap_{i,t} = OPCF_{i,t} + OPCF_{i,t-1} + OPCF_{i,t+1}$. Calculated using regressions within each of the 113 industries defined by "industry name" in Prowess. While Prowess identifies approximately 150 industries, only 113 industries remain in my sample after sample selection procedures.	Following Dechow and Dichev (2002)
DiscAcc	Residuals from $Accruals_{i,t} = \alpha + \beta_1 \times (1/A_{i,t-1}) + \beta_2 \times (\Delta Sales_{i,t}) + \beta_3 \times PPE_{i,t} + \beta_4 \times Profit_{i,t}$ (A = Assets)	Following Kothari et al. (2005)
AccTWW	Industry modified version of Jones (1991). Calculated running the Jones (1991) regression by 113 industries defined by industry name in Prowess.	Following Teoh et al. (1998)
Accruals	$\Delta Inventories + \Delta Receivables - \Delta AccPayable - Depreciation$. I exclude other assets from the calculation of accruals due to the small sample of firms with available data on this variable.	
$\Delta WCap$	Δ(Current assets - current liabilities) scaled by assets	
Receivables	Trade bills receivables	CMIE Prowess
AccPayable	Sundry creditors	CMIE Prowess
Inventories	Inventories	CMIE Prowess
Int/Borr	Interest expense scaled by borrowings	CMIE Prowess

Variable	Definition	Source
	Main independent variables	
$HighTang \times AccQual$	Borrowers with above median tangible assets (PPE) interacted with accounting quality ($AccQual$)	
$HighTang \times \Delta WCap$	Borrowers with above median tangible assets (PPE) interacted with changes in working capital ($\Delta WCap$)	
	Control, binary, and cross-sectional variables	
$Log(Assets)$	Log(1 + assets in U.S. dollars)	CMIE Prowess
Listed firms	Firms that publicly trade on either the Bombay Stock Exchange or National Stock Exchange or *both* and are not affiliated with a larger business group nor are government owned	CMIE Prowess
PPE	Net fixed assets	CMIE Prowess
$IntExp$	Interest expense	CMIE Prowess
$WCap$	Current assets - current liabilities	
$Profit$	PAT (profit after tax)	CMIE Prowess
$OPCF$	Net cash flow from operating activities	CMIE Prowess
High (Low) IntCov	Top (bottom) quartile of $OPCF$ divided by $IntExp$	
Num(Banks)	Number of bank lenders	CMIE Prowess Bankers
SingleBank	Binary indicator equal to 1 (0) if the firm had only 1 (2 or more) bank lender	

Figure 1: Bank net nonperforming assets (NPA)

The figure below plots levels of net nonperforming assets scaled by total assets of Indian banks using calendar year observations reported as of March 31st, between 2001 and 2004. The vertical black line marks passage of the SARFAESI Act. Loans on the bank's balance sheet are classified as nonperforming if the interest or payment on the principal are overdue for a period greater than 90 days under the definition of the Reserve Bank of India. Net nonperforming assets are calculated as gross nonperforming assets less the provision for nonperforming assets. Data are obtained from the CMIE Prowess Bank Disclosures dataset.

Net nonperforming assets of Indian banks
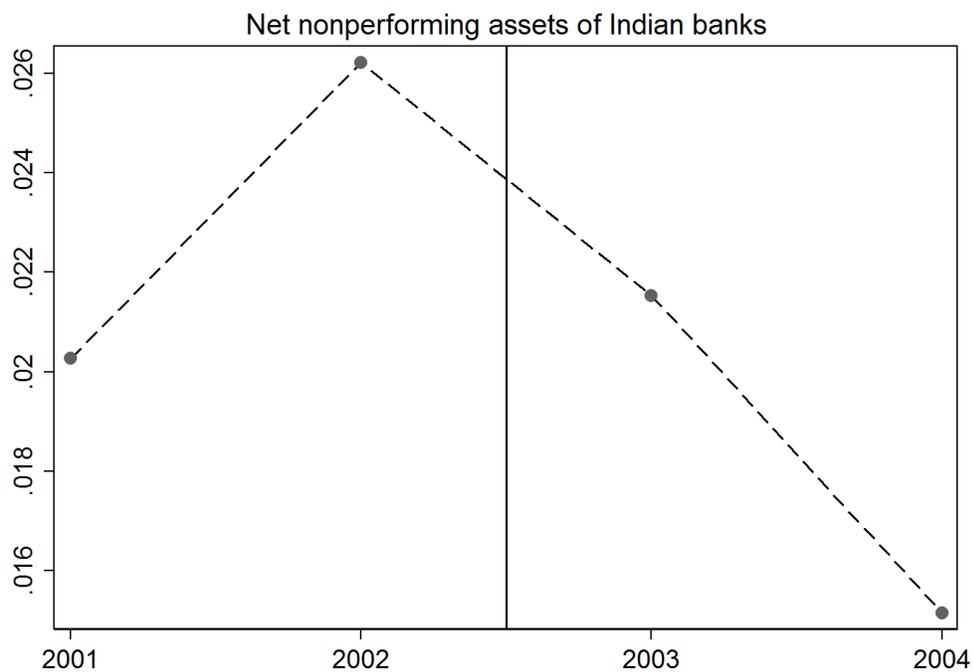
Figure 2: Secured lending as a proportion of total bank assets

The figure below plots the levels of secured lending of all banks in Prowess reported as of March 31st, between 2000 and 2005. The vertical black line marks passage of the SARFAESI Act on June 21st, 2002 (i.e., between the reporting periods of March 31st, 2002 and March 31st, 2003). Data are obtained from the CMIE Prowess Bank Disclosures dataset.

Secured lending scaled by bank assets
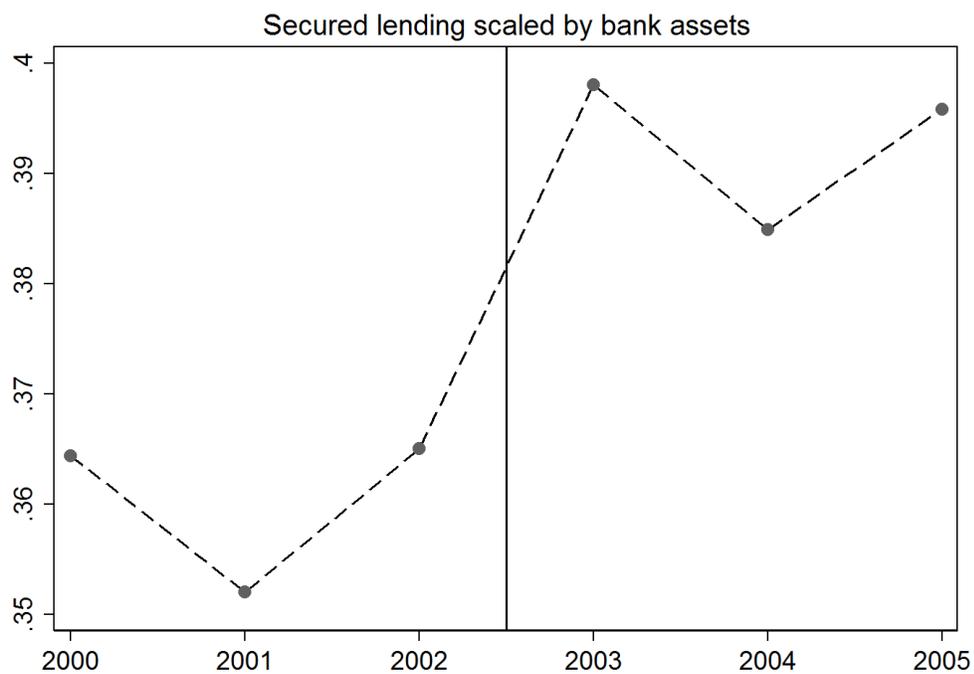
Figure 3: Accounting quality of treated and control borrowers

The figure below plots values of the main dependent variable, accounting quality (AQ, *AccQual*) for treated and control borrowers. The vertical black line marks passage of the SARFAESI Act on June 21st, 2002 (between reporting periods of March 31st, 2002 and March 31st, 2003). Negative values signify higher accounting quality. The empirical regressions that document this result are presented in Table 3.

Accounting quality of differentially affected borrowers
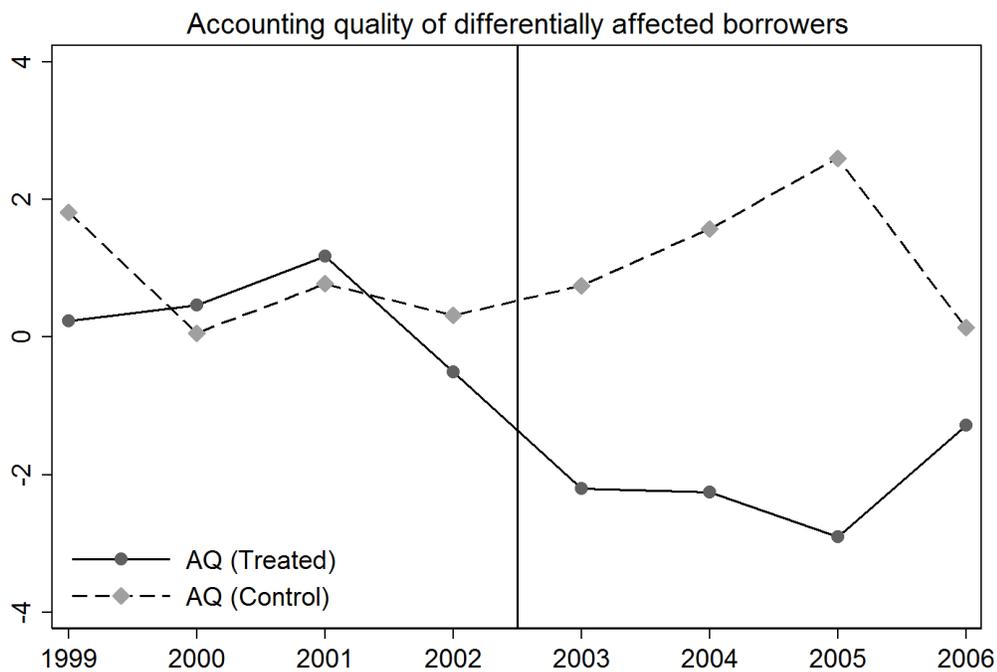
Table 1: Descriptive statistics

This table presents the descriptive statistics for the listed firms in the sample between years 1999 and 2006 that have the requisite data for the empirical analysis. The sample consists of 1,088 unique firms. Listed firms are defined as those that trade on either the Bombay or the National Stock Exchange and excludes firms that are government owned or a subsidiary of a larger business group. Variables are scaled by assets and trimmed at the 0.5% and 99.5% levels. Assets are reported in U.S. \$ millions. (×100) indicates that the variable has been multiplied by 100 for visual comparability. Variable definitions are presented in Section 8.2.

	Mean	Median	SD	N
$Assets(U.S.Dollars)$	18.367	6.636	62.257	6964
$Log(Assets)$	2.207	2.033	1.034	6964
$SecD$	23.038	18.078	22.145	6964
$Profit$	-0.805	1.493	14.169	6964
$\Delta Sales$	1.09	1.18	31.452	6964
$IntExp$	4.510	3.319	4.843	6964
PPE	39.811	38.304	19.320	6964
$WCap$	24.103	24.915	19.424	6964
$\Delta WCap$	-0.600	-0.105	8.419	6964
$Inventories$	19.095	16.924	12.826	6964
$Receivables$	19.790	17.898	13.040	6964
$AccPayable$	13.576	11.011	10.872	6964
$OPCF$	6.012	5.741	9.695	6964
$Accruals$	-4.194	-3.632	9.034	6964
$DiscWCapAcc$ (× 100)	0.012	0.586	7.835	6964
$DiscAcc$ (× 100)	0.284	0.907	8.446	6964
$AccQual$	0.029	0.905	13.828	6964
$IntExp/Borr$	11.637	11.005	9.643	6964
$Num(Banks)$	2.143	2	1.692	5722

Table 2: Univariate differences between treated and control borrowers

This table presents univariate differences between treated (control) firms before and after passage of the SARFAESI Act in Panel A (B). Treated firms are characterized as those firms with above median secured debt scaled by assets in the reporting period just prior to passage of the SARFAESI Act of 2002. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 level, respectively. Variable definitions are presented in Section 8.2.

| **Panel A: Treated** | $Post = 0$ | | $Post = 1$ | | |
	Mean	N	Mean	N	Diff. in means
$Assets(U.S.Dollars)$	12.1	1840	20.2	1743	8.1***
$Log(Assets)$	2.1	1840	2.4	1743	0.3***
$SecD$	30.6	1840	36.5	1743	5.9***
$Profit$	-4.6	1840	-1.1	1743	3.5***
$\Delta Sales$	0.4	1840	1.2	1743	0.8
$IntExp$	6.9	1840	4.7	1743	-2.2***
PPE	41.5	1840	39.9	1743	-1.6*
$WCap$	25.7	1840	24.3	1743	-1.4*
$\Delta WCap$	**-0.6**	1840	**-1.2**	1743	**-0.6***
$Inventories$	20.6	1840	20.9	1743	0.3
$Receivables$	20.2	1840	20.7	1743	0.5
$AccPayable$	13.7	1840	15.4	1743	1.7***
$OPCF$	5.4	1840	6.1	1743	0.7*
$Accruals$	**-4.0**	1840	**-5.6**	1743	**-1.6***
$DiscWCapAcc$ ($\times$ 100)	**-0.1**	1840	**-0.5**	1743	**-0.4**
$DiscAcc$ ($\times$ 100)	**0.9**	1840	**-0.6**	1743	**-1.5***
$AccQual$	**0.4**	1840	**-1.6**	1743	**-2.0***
$IntExp/Borr$	13.2	1840	9.0	1743	-4.2***
$Num(Banks)$	2.1	1564	2.4	1436	0.3***
Observations	1840		1743		3583

| **Panel B: Control** | $Post = 0$ | | $Post = 1$ | | |
	Mean	N	Mean	N	Diff. in means
$Assets(U.S.Dollars)$	14.1	1743	28.0	1638	13.9***
$Log(Assets)$	2.0	1743	2.3	1638	0.3***
$Profit$	0.7	1743	2.2	1638	1.5***
$SecD$	10.6	1743	13.6	1638	3.0***
PPE	40.6	1743	37.0	1638	-3.6***
$\Delta Sales$	1.2	1840	1.7	1743	0.5
$Inventories$	17.0	1743	17.7	1638	0.7
$Receivables$	18.8	1743	19.4	1638	0.6
$AccPayable$	12.4	1743	12.8	1638	0.4
$OPCF$	6.8	1743	5.7	1638	-1.1***
$WCap$	22.7	1743	23.5	1638	0.8
$\Delta WCap$	**-0.7**	1743	**0.1**	1638	**0.8***
$Accruals$	**-3.7**	1743	**-3.6**	1638	**0.1**
$DiscWCapAcc$ ($\times$ 100)	**0.0**	1743	**0.6**	1638	**0.6***
$DiscAcc$ ($\times$ 100)	**0.2**	1743	**0.7**	1638	**0.5**
$AccQual$	**0.4**	1743	**1.0**	1638	**0.6**
$IntExp$	3.8	1743	2.4	1638	-1.4***
$IntExp/Borr$	14.7	1743	9.4	1638	-5.3***
$Num(Banks)$	2.0	1382	2.1	1340	0.1*
Observations	1743		1638		3381

Table 3: Creditor rights and accounting quality

This table examines effects of creditor rights on borrowers' accounting quality. I restrict the analysis to listed firms between 1999 and 2006 that had four consecutive firm-year observations between 2001 and 2004 (2 years pre-reform and 2 years post-reform). The variables of interest are $SecuredDebt(Pre) \times Post$ and $Treated \times Post$. Negative coefficients signify increases in accounting quality. The dependent variable is accounting quality, $AccQual$, calculated using principal components analysis following Bharath et al. (2008). As $SecuredDebt(Pre)$ and $Treated$ behave liked firm fixed-effects, the coefficients are excluded following Vig (2013). The $Post$ coefficient is excluded for parsimony. t-statistics reported in parentheses are based on robust standard errors clustered by firm. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 level, respectively. Variable definitions are presented in Section 8.2.

	(1)	(2)	(3)	(4)	(5)	(6)
			Dependent Variable = AccQual			
$SecuredDebt(Pre) \times Post$	**-0.06****	**-0.08*****	**-0.08*****			
	(-2.40)	(-4.37)	(-3.84)			
$Treated \times Post$				**-3.09*****	**-2.99*****	**-2.85*****
				(-4.60)	(-4.68)	(-4.27)
$Log(Assets)$		0.14	-0.46		0.32	-0.46
		(0.18)	(-0.50)		(0.40)	(-0.51)
$Profit$		0.26***	0.27***		0.25***	0.26***
		(5.94)	(4.88)		(5.91)	(4.88)
$\Delta Sales$		0.08***	0.07***		0.08***	0.07***
		(9.40)	(6.15)		(9.38)	(6.10)
$IntExp$		0.23**	0.30**		0.22**	0.32***
		(2.15)	(2.57)		(2.10)	(2.68)
PPE		-0.07**	-0.09***		-0.07**	-0.08***
		(-2.56)	(-2.84)		(-2.48)	(-2.79)
$Log(Assets) \times Post$			0.71**			0.79***
			(2.37)			(2.61)
$Profit \times Post$			-0.03			-0.02
			(-0.34)			(-0.26)
$\Delta Sales \times Post$			1.41			1.45
			(0.87)			(0.89)
$IntExp \times Post$			-13.43			-17.15
			(-0.91)			(-1.17)
$PPE \times Post$			0.02			0.02
			(1.02)			(1.05)
Firm FEs	Yes	Yes	Yes	Yes	Yes	Yes
Year. FEs	Yes	Yes	Yes	Yes	Yes	Yes
Within R^2	.00	.083	.084	.00	.083	.084
Observations	6,949	6,949	6,949	6,949	6,949	6,949
Singletons	15	15	15	15	15	15

Table 4: Creditor rights and working capital changes

This table examines effects of creditor rights on the working capital of borrowers. I restrict the analysis to listed firms between 1999 and 2006 that had four consecutive firm-year observations between 2001 and 2004 (2 years pre-reform and 2 years post-reform). The variable of interest is $SecuredDebt(Pre) \times Post$. The dependent variables in columns 1 through 5 are are changes in working capital ($\Delta WCap$), the Dechow and Dichev (2002) measure of discretionary working capital accruals ($DiscWCapAcc$), accounts receivables ($Receivables$), accounts payable ($AccPayable$), and inventories ($Inventories$), respectively. As $SecuredDebt(Pre)$ behaves like a firm fixed-effect, the coefficient is excluded following Vig (2013). The $Post$ coefficient is excluded for parsimony. t-statistics reported in parentheses are based on robust standard errors clustered by firm. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 level, respectively. Variable definitions are presented in Section 8.2.

	(1) $\Delta WCap$	(2) $DiscWCapAcc$	(3) $Receivables$	(4) $AccPayable$	(5) $Inventories$
$SecuredDebt(Pre) \times Post$	**-0.04*****	**-0.04*****	**-0.03****	**0.03***	**-0.02**
	(-3.59)	(-3.54)	(-2.13)	(1.81)	(-1.13)
$Log(Assets)$	-0.98*	-1.82***	-0.90	-0.08	0.29
	(-1.84)	(-3.34)	(-1.33)	(-0.10)	(0.43)
$Profit$	0.16***	0.20***	0.01	-0.01	0.01
	(4.74)	(4.52)	(0.55)	(-0.89)	(0.95)
$\Delta Sales$	0.02**	0.03***	0.01**	0.00	-0.00
	(2.26)	(4.43)	(2.17)	(0.94)	(-1.43)
$IntExp$	0.16**	0.21**	0.08*	-0.03	0.07
	(2.19)	(2.58)	(1.90)	(-0.71)	(1.58)
PPE	-0.07***	-0.04**	-0.24***	-0.07***	-0.19***
	(-3.81)	(-2.27)	(-11.53)	(-4.65)	(-9.25)
$Log(Assets) \times Post$	0.41**	0.47**	-0.30	-0.03	-0.28
	(2.11)	(2.39)	(-1.48)	(-0.18)	(-1.35)
$Profit \times Post$	-0.01	0.00	-0.00	-0.09***	0.00
	(-0.18)	(0.05)	(-0.20)	(-4.48)	(0.01)
$\Delta Sales \times Post$	0.93	0.77	1.22**	0.64	1.40**
	(0.91)	(0.81)	(2.27)	(0.90)	(2.52)
$IntExp \times Post$	-4.62	-3.46	0.07	-6.55	-7.78
	(-0.54)	(-0.37)	(0.01)	(-1.11)	(-1.32)
$PPE \times Post$	0.01	0.01	-0.01	-0.00	0.02**
	(1.27)	(1.08)	(-0.87)	(-0.12)	(2.19)
Firm FEs	Yes	Yes	Yes	Yes	Yes
Year. FEs	Yes	Yes	Yes	Yes	Yes
Within R^2	.054	.11	.12	.03	.07
Observations	6,949	6,949	6,949	6,949	6,949
Singletons	15	15	15	15	15

Table 5: Cross-sectional tests: Borrower default risk

This table examines effects of creditor rights on the cross-section of borrowers split by their risk of missing payments. I restrict the analysis to listed firms between 1999 and 2006 that had four consecutive firm-year observations between 2001 and 2004 (2 years pre-reform and 2 years post-reform). The variable of interest is $SecuredDebt(Pre) \times Post$. The dependent variables are accounting quality ($AccQual$) and changes in working capital ($\Delta WCap$). Negative coefficients signify increases in accounting quality. LowIntCov (HighIntCov) refers to firms in the lowest (highest) quartile of interest coverage ratios defined as operating cash flows divided by interest expense. Firms with 0 interest expense ($n = 195$) are excluded in calculation of interest coverage ratios due to the zero denominator effect. The F-test measures whether differences in coefficients between columns 1 and 2, and 3 and 4, respectively, are statistically different. As $SecuredDebt(Pre)$ behaves like a firm fixed-effect, the coefficient is excluded following Vig (2013). The $Post$ coefficient is excluded for parsimony. t-statistics reported in parentheses are based on robust standard errors clustered by firm. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 level, respectively. Variable definitions are presented in Section 8.2.

	(1) LowIntCov $AccQual$	(2) HighIntCov $AccQual$	(3) LowIntCov $\Delta WCap$	(4) HighIntCov $\Delta WCap$
$SecuredDebt(Pre) \times Post$	**-0.17*****	**-0.09**	**-0.09*****	**-0.03**
	(-3.18)	(-1.12)	(-2.81)	(-0.62)
$Log(Assets)$	-5.01**	-0.98	-3.66**	-0.81
	(-2.27)	(-0.44)	(-2.58)	(-0.67)
$Profit$	0.42***	0.06	0.23***	0.03
	(7.11)	(0.49)	(5.72)	(0.36)
$\Delta Sales$	0.09***	0.05**	0.02	0.01
	(3.31)	(2.34)	(1.44)	(1.00)
PPE	0.02	-0.01	0.00	0.00
	(0.23)	(-0.13)	(0.07)	(0.06)
$Log(Assets) \times Post$	1.26	-0.21	0.65	-0.17
	(1.41)	(-0.37)	(1.16)	(-0.45)
$Profit \times Post$	-0.14	0.29*	-0.04	0.16*
	(-1.15)	(1.80)	(-0.67)	(1.92)
$\Delta Sales \times Post$	-2.74	6.41**	-1.24	4.18**
	(-0.80)	(2.12)	(-0.60)	(2.42)
$PPE \times Post$	-0.03	0.03	-0.02	0.02
	(-0.71)	(0.72)	(-0.73)	(0.73)
F-test of means: (1)-(2) and (3)-(4)	**-0.08****		**0.06****	
Firm FEs	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes
Within R^2	.16	.08	.12	.05
Observations	1,421	1,459	1,421	1,459
Singletons	272	233	272	233

Table 6: Cross-sectional tests: Lender bargaining power

This table examines effects of creditor rights on the cross-section of borrowers split by bargaining power of their lenders. I restrict the analysis to listed firms between 1999 and 2006 that had four consecutive firm-year observations between 2001 and 2004 (2 years pre-Act and 2 years post-reform). The variable of interest is $SecuredDebt(Pre) \times Post$. The dependent variables are accounting quality ($AccQual$) and changes in working capital ($\Delta WCap$). Negative coefficients signify increases in accounting quality. SingleBank (MultiBank) firms refers to borrowers that have one (greater than one) bank lender. The F-test measures whether differences in coefficients between columns 1 and 2, and 3 and 4, respectively, are statistically different. As $SecuredDebt(Pre)$ behaves like a firm fixed-effect, the coefficient is excluded following Vig (2013). The $Post$ coefficient is excluded for parsimony. t-statistics reported in parentheses are based on robust standard errors clustered by firm. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 level, respectively. Variable definitions are presented in Section 8.2.

	(1) SingleBank $AccQual$	(2) MultiBank $AccQual$	(3) SingleBank $\Delta WCap$	(4) MultiBank $\Delta WCap$
$SecuredDebt(Pre) \times Post$	**-0.12*****	**-0.05**	**-0.07*****	**-0.03**
	(-2.75)	(-1.27)	(-2.77)	(-1.19)
$Log(Assets)$	-1.89	1.19	-1.62*	-0.38
	(-1.07)	(0.75)	(-1.72)	(-0.39)
$Profit$	0.32***	0.19**	0.15***	0.11**
	(5.29)	(2.13)	(4.44)	(2.08)
$\Delta Sales$	0.08***	0.06***	0.02*	0.01
	(4.75)	(3.24)	(1.86)	(1.19)
PPE	-0.07	-0.13**	-0.06*	-0.10***
	(-1.24)	(-2.51)	(-1.88)	(-3.10)
$IntExp$	0.27	0.30*	0.15	0.13
	(1.25)	(1.82)	(1.25)	(1.29)
$Log(Assets) \times Post$	0.49	0.57	-0.08	0.40
	(0.62)	(1.06)	(-0.17)	(1.18)
$Profit \times Post$	-0.12	0.03	0.00	0.02
	(-1.21)	(0.23)	(0.07)	(0.22)
$\Delta Sales \times Post$	2.04	0.60	1.53	0.17
	(0.77)	(0.25)	(0.91)	(0.11)
$PPE \times Post$	-0.02	-0.00	-0.01	-0.00
	(-0.69)	(-0.07)	(-0.31)	(-0.24)
$IntExp \times Post$	-8.17	-9.56	5.32	-5.76
	(-0.39)	(-0.38)	(0.46)	(-0.37)
F-test of means: (1)-(2) and (3)-(4)	**-0.07***		**-0.04***	
Firm FEs	Yes	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes	Yes
Within R^2	.09	.06	.06	.04
Observations	2,679	2,895	2,679	2,895
Singletons	78	70	78	70

Table 7: Liquidity channel of accounting quality

This table examines effects of changes in accounting quality and working capital on borrowers' cost of debt. I restrict the analysis to listed firms between 1999 and 2006 that had four consecutive firm-year observations between 2001 and 2004 (2 years pre-reform and 2 years post-reform). $HighTang$ refers to firms with above median levels of PPE. The dependent variable is cost of debt, measured using interest expense scaled by borrowings ($IntExp/Borr$). Variables of interest are $HighTang \times AccQual$ and $HighTang \times \Delta WCap$, with positive coefficients signifying a lower cost of debt. The F-test measures whether differences in coefficients between columns 1 and 2, and 3 and 4, respectively, are statistically different. t-statistics reported in parentheses are based on robust standard errors clustered by firm. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 level, respectively. Variable definitions are presented in Section 8.2.

	(1) $Post = 1$	(2) $Post = 0$	(3) $Post = 1$	(4) $Post = 0$
		Dependent Variable $= IntExp/Borr$		
$HighTang \times AccQual$	**0.04****	**0.01**		
	(2.38)	(0.22)		
$HighTang \times \Delta WCap$			**0.09****	**-0.03**
			(3.31)	(-0.74)
$HighTang$	-0.81***	-1.33***	-0.77***	-1.30***
	(-3.68)	(-3.43)	(-3.50)	(-3.35)
$AccQual$	-0.04***	-0.06***		
	(-3.42)	(-2.81)		
$\Delta WCap$			-0.09***	-0.09***
			(-4.93)	(-2.71)
$Log(Assets)$	-0.37***	-0.46**	-0.36***	-0.45**
	(-3.63)	(-2.26)	(-3.59)	(-2.21)
$Profit$	-0.02**	0.02	-0.02**	0.02
	(-2.47)	(1.30)	(-2.41)	(1.49)
$\Delta Sales$	0.02***	0.03***	0.02***	0.02***
	(6.54)	(4.05)	(6.50)	(3.79)
F-test of means: (1)-(2) and (3)-(4)	**0.03***		**0.12****	
Firm FEs	No	No	No	No
Year FEs	No	No	No	No
Adj. R^2	.023	.0096	.027	.012
Observations	3,381	3,583	3,381	3,583

Table 8: Creditor rights and accounting conservatism

This table examines effects of creditor rights on the timeliness of loss recognition (Ball and Shivakumar, 2006). The model used in this table follows Aghamolla and Li (2018). I restrict the analysis to listed firms between 1999 and 2006 that had 4 consecutive observations between 2001 and 2004 (2 years pre-reform and 2 years post-reform). The dependent variable is total accruals (*Accruals*). Variable of interest is the triple interaction term ($OPCF \times DOPCF \times Post$) with positive coefficients indicating increases in conservatism (more timely loss recognition). Column 1 runs the analysis on the full sample of firms. Columns 2 and 3 run the analysis separately for the treated and control firms, respectively. I compare the statistical significance of coefficients on $OPCF \times DOPCF \times Post$ between treated and control firms in columns 2 and 3. *t*-statistics reported in parentheses are based on robust standard errors clustered by firm. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 level, respectively. Variable definitions are presented in Section 8.2.

	(1) Accruals All	(2) Accruals Treated	(3) Accruals Control
$OPCF \times DOPCF \times Post$	**12.50**	**33.09****	**-11.72**
	(1.05)	(2.05)	(-0.76)
$OPCF$	-0.50***	-0.39***	-0.61***
	(-12.93)	(-6.35)	(-18.67)
$OPCF \times Post$	-6.30	-16.99**	4.50
	(-1.23)	(-2.28)	(0.68)
$DOPCF$	0.78	2.10***	-0.61
	(1.49)	(2.68)	(-0.88)
$DOPCF \times Post$	10.32	-0.24	21.78**
	(1.38)	(-0.02)	(2.13)
$OPCF \times DOPCF$	0.57	-0.92	1.92*
	(0.73)	(-0.81)	(1.92)
F-test (Treated - Control)		**44.81****	
Firm FEs	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes
Adj. R^2	.38	.43	.33
Observations	6,949	3,579	3,370
Singletons	15	4	11

Sample comparability and informativeness of results

Table 9: Descriptive statistics of the main sample and Compustat Global.

This table presents selected descriptive statistics for firms in my sample and firms in Compustat global with less than U.S. $1 billion in book assets. Panel A presents descriptive statistics for the listed Indian firms in my sample, also presented in Table 1. Panel B presents descriptive statistics for firms in Compustat Global with less than $1 billion in assets. Variable definitions are presented in Section 8.2.

Panel A: Main sample	Mean	Median	SD	N
Assets (*million U.S. Dollars*)	18.37	6.64	62.26	6964
Log(*Assets*)	2.21	2.03	1.03	6964
Accruals	-4.19	-3.63	9.03	6964
OPCF	6.01	5.74	9.70	6964
PPE	39.81	38.30	19.32	6964
Receivables	19.79	17.90	13.04	6964
AccPayable	13.58	11.01	10.87	6964
DiscWCapAcc ($\times$ 100)	0.01	0.59	7.84	6964

Panel B: Compustat Global	Mean	Median	SD	N
Assets (*million U.S. Dollars*)	293.41	185.45	283.49	27306
Log(*Assets*)	4.95	5.23	1.47	27306
Accruals	-4.38	-3.82	9.35	27306
OPCF	2.52	4.47	15.64	27306
PPE	32.56	29.68	23.38	27306
Receivables	19.93	17.96	14.47	27306
AccPayable	10.59	7.69	10.12	27306
DiscWCapAcc ($\times$ 100)	-0.25	0.47	9.06	27306

Table 10: Comparability of accruals

This table compares the coefficients used to construct working capital accruals across different samples. I present coefficients for the sample used in this paper, the sample used in Dechow and Dichev (2002), and the Compustat Global sample (firms with assets less than U.S.\$1 billion), respectively from the following model: $\Delta WCap = \beta_1 \times OPCF_t + \beta_2 \times OPCF_{t-1} + \beta_3 \times OPCF_{t+1} + \epsilon$ (Dechow and Dichev, 2002). The coefficients for the sample used in this paper are obtained running regressions across 113 industry name groups, as identified by Prowess. The coefficients in the Dechow and Dichev (2002) sample are obtained from their paper. The coefficients in the Compustat Global sample are obtained via industry regressions across two digit SIC industry codes for firms with assets less than U.S. \$1 Billion. I present coefficients in Panel A. The descriptive statistics on assets, accruals, and operating cash flows are presented in Panel B.

Panel A: Coefficients	$\beta_1(OPCF_{t+1})$	$\beta_2(OPCF_t)$	$\beta_3(OPCF_{t-1})$
Coefficients for this sample	12	-34	12
Coefficients for Dechow and Dichev (2002)	19	-51	18
Coefficients for Compustat Global	10	-21	7

Panel B: Descriptive statistics	$Assets(U.S.\$mn)$	$Accruals$	$OPCF$
Sample of this paper	18	-4.2%	6.0%
Sample of Dechow and Dichev (2002)	250	-4.6%	7.5%
Sample of Compustat Global	293	-4.4%	2.5%

Appendix

A.1. SARFAESI Act by the numbers

The table below is constructed using data from the Reserve Bank of India Report on Trend and Progress of Banking in India 2006-07. The table provides an insight into the relative efficacy of the two main debt recovery channels in India. The table presents (1) number of cases filed (notices under the SARFAESI Act), (2) amounts involved in the disputes, (3) amounts recovered under each recovery channel, and (4) percentage of the amount recovered by amount involved. *The amounts are reported in billions of Indian Rupees (Rs.). Rs. 1 billion = U.S. $21.7 million at approximately Rs. 46 per U.S.$ as of July, 2006.*

Table A1: Reserve Bank of India: Amounts recovered by creditors

In billion Rs.	(1)	(2)	(3)	(4)
Year	**Judicial cases**	**Amount involved**	**Amount recovered**	**% (3/2)**
Recoveries under the Debt Recovery Tribunals				
2006	4,028	9,156	3,463	38%
Year	**Private enforcements**	**Amount involved**	**Amount recovered**	**% (3/2)**
Recoveries under the SARFAESI Act of 2002				
2006	60,178*	9,058	3,749	41%
* = SARFAESI notices were sent to borrowers and enforced privately by the bank				

Debt Recovery Tribunals are courts that were set up between 1994 to 1999 solely for handling debt related claims. **The SARFAESI Act has been the source of recovery for over 80% of nonperforming assets in India** and has served as a significant complement to prior reforms such as Debt Recovery Tribunals (DRTs). As case processing times generally took between two to seven years (Visaria, 2009), the SARFAESI Act was a boon for banks since cases were actually not referred to a court but were rather privately enforced. Therefore, creditors could bypass the judicial process and directly enforce their claims against defaulting secured borrowers. While the SARFAESI Act recovery percentage (Row No. 4: 3 as per cent of 2) is similar to that of DRT's, recoveries are processed faster due to the ability of creditors to privately reclaim the assets of defaulting borrowers within sixty days.

A.2. Example of a SARFAESI Act asset seizure

Figure A1: State Bank of India SARFAESI enforcement

STATE BANK OF INDIA
Stressed Assets Recovery Branch,
1st Floor, Bangalore City Branch JC Road Bangalore-56002.
Phone: 25943663,25943677 Fax:25943664

E-AUCTION SALE NOTICE

SALE OF IMMOVABLE ASSETS CHARGED TO THE BANK UNDER THE SECURITISATION AND RECONSTRUCTION OF FINANCIAL ASSETS AND ENFORCEMENT OF SECURITY INTEREST ACT, 2002

The undersigned as Authorized Officer of State Bank of India has taken over possession of the following property/ies u/s 13(4) of the SARFAESI Act.

Public at large is informed that e-auction (under SARFAESI Act, 2002) of the charged property/ies in the below mentioned cases for realization of Bank's dues will be held on **"AS IS WHERE IS BASIS** and **AS IS WHAT IS BASIS"**

S. No.	Name of the Borrower(s)	Name of Guarantor(s)	Outstanding Dues for Recovery of which Propert/ies is/are Being Sold	Description of the Property	Date & Time of E-auction	Reserve Price (Rs. .in Lacs)
1	M/s Canara Minerals Pvt Ltd. Partners: 1) Mr. Anil H Lad 2) Mrs. Aarti Lad	1) Mr. Anil H Lad 2) Mrs. Aarti Lad	Rs. 14,97,08,880.00 plus interest thereon w.e.f.16.05.2014 plus expenses & costs. **Demand Notice** Dated 26.05.2014	All that piece and parcel of the House No.36, 2nd Floor, Paschimi Marg, Vasanth Vihar , New Delhi measuring 839.5 Sq Yard. In the name of Shri. Anil H Lad.	07.08.2015 11.00 a.m. To 12.00 noon with unlimited extensions of 5 Minutes each	1323.00

The above figure presents a notice under the SARFAESI Act from the State Bank of India (the largest bank in India) against Canara Minerals Private Limited. The borrower is in default for dues amounting to approximately Rs. 150 million (U.S.\$ 2.5 Million) as of May 16th, 2014. The State Bank of India issued a demand notice on May 26th, 2014 to claim land pledged by partners, Mr. Anil H. Lad and Mrs. Aarti Lad, for obtaining the secured loan. The bank intended to auction off the property for a reserve price of Rs. 132 million (U.S.\$ 2.2 million).

A.3. Major collateral enforcement immediately post-reform

News article from FinancialExpress.com, November 29, 2002

ICICI bank takes over Mardia Chemicals unit under NPA act

ICICI Bank, which is the merged entity of ICICI Ltd., with its banking subsidiary ICICI Bank, issued a notice to the company in June 2002, under the Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Ordinance, 2002.

ICICI Bank has taken possession of one of the units of Mardia Chemicals Ltd. located at Vatva in Ahmedabad district, as part of exercising its right as a lender under the Securitisation and Reconstruction Act, which was passed by both the Houses of Parliament recently. "The bank has taken possession of the company's unit at 7.30 pm on Wednesday after the order of the chief metropolitan magistrate, Vatva, in Ahmedabad district, allowing the same. **The company owed about Rs 1,450 crore *(U.S.\$302 million)* to over 20 banks, including about Rs 800 crore of principal,**" ICICI executive director S. Mukherji said on Thursday.

Mr Mukherji said: "The initiation of action on the company will change the credit recovery scenario. Being the first to send the notice, we are also the first to initiate action on such a scale."

The company has earlier tried to pre-empt the takeover by the bank by approaching the Supreme Court seeking a stay on the notice issued by the bank and further action of taking possession by it after the mandatory expiry of 60 days period. However, the apex court has granted interim injunction on the part of ICICI, barring it from creating a third party interest (sale) on the assets, but allowed the FI *(Financial Institution, here ICICI Bank)* to take possession of the company's units under the Ordinance in force then.

1 crore = U.S. \$ 208,000 at INR/U.S.D.at 48 Rs./U.S.D as of July 2002

Source: https://www.financialexpress.com/archive/icici...mardia-chemicals.../65938/

[Italics mine]

A.4. Enforcement threat under the SARFAESI Act

Report from Equitybulls.com

S R Industries Ltd receives notice under SARFAESI Act

S R Industries Ltd has received a notice under Section 13 (2) of the SARFAESI Act of 2002 from the State Bank of India to discharge the liabilities due and owing to the Bank to the tune of (U.S.\$ 2.4 million) as on (May 1st, 2018) with future interest and incidental expenses, costs, etc. The bank has further informed that the account of the Company has become NPA.

Further, the Company has been informed that in case the Company fails to repay or discharge the liabilities, the Bank will exercise all or any of the rights detailed under Sub Section (4) of Section 13 and other applicable provisions of the SARFAESI Act.

Source: Equitybulls.com; May 7th, 2018

A.5. Robustness checks

Table A2: Propensity-score matched sample

This table presents analysis for the propensity-score matched sample of treated and control firms. Firms are assigned as treated based on a median split of secured borrowings in the reporting period immediately prior to passage of the SARFAESI Act (i.e., before June 21st, 2002). I match firms on size, asset tangibility, sales growth, profitability, and interest expense. Propensity-score matching is conducted on a one-to-one basis without replacement using a caliper of 0.01. Panel A presents regression analysis and Panel B presents efficiency of the propensity-score matching procedure. As *Treated* behaves like a firm fixed-effect, the coefficient is excluded following Vig (2013). The *Post* coefficient is excluded for parsimony. *t*-statistics reported in parentheses are based on robust standard errors clustered by firm. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 level, respectively. Variable definitions are presented in 8.2.

Panel A: Matched sample	(1) $AccQual$	(2) $AccQual$	(3) $AccQual$
$Treated \times Post$	**-3.36***** (-4.06)	**-3.17***** (-3.92)	**-3.11***** (-3.88)
$Log(Assets)$		-0.30 (-0.31)	-0.77 (-0.71)
$Profit$		0.25*** (4.13)	0.28*** (5.03)
$\Delta Sales$		0.06*** (5.68)	0.05*** (3.62)
$IntExp$		0.52*** (4.08)	0.63*** (4.34)
PPE		-0.07* (-1.93)	-0.08** (-2.04)
$Log(Assets) \times Post$			0.65* (1.79)
$Profit \times Post$			-0.05 (-0.53)
$\Delta Sales \times Post$			1.19 (0.58)
$IntExp \times Post$			-19.36 (-1.20)
$PPE \times Post$			0.01 (0.62)
Firm FEs	Yes	Yes	Yes
Year FEs	Yes	Yes	Yes
Within R^2	.044	.1	.1
Observations	4454	4454	4454
Singletons	108	108	108

Panel B: Matching efficiency	Treated Mean	N	Control Mean	N	Diff. in Means
$SecD$	29.96	2281	13.13	2281	-16.82***
$Log(Assets)$	2.19	2281	2.34	2281	0.15***
$Profit$	0.74	2281	0.69	2281	-0.06
$\Delta Sales$	1.07	2281	0.51	2281	-0.56
$Profit$	0.74	2281	0.69	2281	-0.06
$IntExp$	3.58	2281	3.95	2281	0.37***
PPE	39.48	2281	39.75	2281	0.27
Observations	2281		2281		4562

Table A3: Alternate scaling of secured debt: Borrowing and tangibility

This table examines effects of creditor rights on the accounting quality of borrowers. I restrict the analysis to listed firms between 1999 and 2006 that had four consecutive firm-year observations between 2001 and 2004 (2 years pre-reform and 2 years post-reform). I exclude firms with zero borrowings and zero tangibility due to the zero denominator effect ($n = 186$ for $Borrowing$ and 183 for PPE). The variables of interest are $Treated(SecD/Borrowing) \times Post$ and $Treated(SecD/PPE) \times Post$. The dependent variables are accounting quality ($AccQual$) and changes in working capital ($\Delta WCap$). As $Treated$ behaves like a firm fixed-effect, the coefficient is excluded following Vig (2013). The $Post$ coefficient is excluded for parsimony. t-statistics reported in parentheses are based on robust standard errors clustered by firm. ***, **, and * indicate significance at the 0.01, 0.05, and 0.10 level, respectively. Variable definitions are presented in Section 8.2.

	(1) $AccQual$	(2) $\Delta WCap$	(3) $AccQual$	(4) $\Delta WCap$
$Treated(SecD/Borrowing) \times Post$	-1.55***	-0.74**		
	(-2.64)	(-2.14)		
$Treated(SecD/PPE) \times Post$			-2.36***	-1.35***
			(-3.75)	(-3.66)
$Log(Assets)$	-0.40	-0.93*	-0.42	-0.91*
	(-0.44)	(-1.72)	(-0.46)	(-1.69)
$Profit$	0.27***	0.16***	0.27***	0.16***
	(4.74)	(4.64)	(4.70)	(4.57)
$\Delta Sales$	0.06***	0.01	0.07***	0.01*
	(5.53)	(1.47)	(5.86)	(1.90)
$IntExp$	0.41***	0.22***	0.33***	0.17**
	(3.34)	(2.88)	(2.66)	(2.24)
PPE	-0.08***	-0.07***	-0.07**	-0.06***
	(-2.76)	(-3.75)	(-2.33)	(-3.32)
$Log(Assets) \times Post$	0.71**	0.43**	0.83***	0.47**
	(2.35)	(2.17)	(2.68)	(2.38)
$Profit \times Post$	-0.03	-0.01	-0.02	-0.01
	(-0.33)	(-0.25)	(-0.31)	(-0.19)
$\Delta Sales \times Post$	2.34	1.60	1.72	1.16
	(1.41)	(1.53)	(1.04)	(1.11)
$IntExp \times Post$	-31.38**	-14.67*	-19.74	-7.93
	(-2.10)	(-1.70)	(-1.30)	(-0.90)
$PPE \times Post$	0.02	0.02	0.01	0.01
	(1.02)	(1.37)	(0.33)	(0.75)
Firm FEs	Yes	Yes	Yes	Yes
Year. FEs	Yes	Yes	Yes	Yes
Within R^2	.12	.056	.12	.057
Observations	6,768	6,768	6,771	6,771
Singletons	10	10	10	10