

Legal Reform and Loan Repayment: The Microeconomic Impact of Debt Recovery Tribunals in India

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Abstract

This paper uses a loan-level dataset from a large Indian bank to estimate the impact of a unique policy experiment. The passing of the 1993 Debt Recovery Tribunal Act allowed for the establishment of new quasi-legal institutions aimed at helping banks recover non-performing loans. I exploit the monetary threshold for claims to be eligible for these Tribunals, and the staggered introduction of the Tribunals across Indian regions to estimate their impact. I find that the presence of the Tribunals reduces the probability that borrowers become delinquent by 2-14 percent. Interest rates on newly sanctioned loans are lower by 0.7-1.4 percentage points. I conclude that in developing countries improved loan contract enforcement and the protection of banks' property rights can reduce borrower delinquency, which can lead banks to provide cheaper credit.

1 Introduction

A growing literature has highlighted the importance of institutions in determining economic outcomes. Institutions that protect property rights and enforce contracts provide incentives for socially efficient transactions to occur, and stimulate economic growth (North 1990).

Empirical work has also established a link between institutional quality and economic performance. Since institutional characteristics are largely determined at the national level, the literature has largely studied differences across countries. It has shown that countries with superior institutions have higher rates of GDP per capita (Barro 1996, Acemoglu, Johnson and Robinson 2001, Rodrick, Subramaniam and Trebbi 2002, Rigobon and Rodrick 2004). However institutional quality at a point in time is likely to be a function of a country's economic performance, and therefore identification of the effect has depended upon valid instruments for institutional quality which are orthogonal to contemporary economic growth. Acemoglu, Johnson and Robinson (2001) use the mortality rates of sixteenth century sailors in the colonies as instruments for institutional quality, and identify its positive effects on economic performance. La Porta, Shleifer, Vishny and Lopez-de-Silanes (1998) and Demirguc-Kunt & Maksimovic (1998) show that contemporary differences in legal systems across countries can be largely explained by their legal origins. Using these as instruments, they show that poor protection of shareholder and creditor rights lead to high concentration of share-holding and low external financing of firm investment.

Cross-country studies require that institutional quality be measured by an internationally comparable index. Several such indexes are available and have been used by the authors cited above: the "law and order" index, the index of judicial quality based on the World Bank Environment Survey of small business owners ,

and the judicial efficiency measure based on the International Country Risk Guide. To the extent these indexes are subjective evaluations of a nation's judicial quality by its users, and/or are aggregate indicators of very complex mechanisms computed by analysts, they are subject to measurement error. La Porta et al. avoid the subjectivity when they construct an index of procedural formalism based on detailed surveys of law firms in eighty different countries, where lawyers provide detailed information on their country's judicial procedure. However, Pistor and Wellons (1999) argue against their use of legal traditions as the instrument for economic outcomes. Using case studies from six Asian economies they describe how economic policy often governs how the legal system evolves, even while the country remains within the same legal tradition. Changes in economic policy coincide with the passage of new laws, the implementation of laws that may have existed but were not applied, and the disuse of rules that were applied previously. Thus different countries within the legal tradition may employ very different sets of laws, and these laws are likely to be endogenously determined.

Further, it is sometimes difficult to draw policy conclusions from studies where institutional quality is measured by aggregate indexes, because there is a host of different variables which if changed could change the judicial quality index. Presumably their interaction is an important determinant of the existing judicial quality and prescriptions for legal reform are not straightforward. Given the challenges of major institutional reform in most countries, this is an important issue.

Therefore there is a strong case for choosing as an explanatory variable an easily measurable change in institutions at a sub-country level. While institutional change is largely endogenous at the national level, sub-national variations in the implementation of institutional change may arise. If it can be argued that these are

exogenous, they can provide the setting to carry out this analysis. For example, recent papers have studied the impact of freedom of the press and political competition on economic performance across states in India (Besley and Burgess 2002), the impact of urban land titling on labor supply and credit access across cities in Peru (Field 2003, 2004), and the impact of land tenure systems on agricultural outcomes across districts in India (Banerjee and Iyer 2004).

This paper uses a unique policy experiment in India to provide micro-level evidence of the impact of the judicial system. While keeping substantive law the same, the Indian government undertook reforms aimed at facilitating debt recovery by speeding up dispute resolution. A new institution called Debt Recovery Tribunals was created and a new streamlined legal procedure was framed. This was aimed at reducing the time taken to resolve disputes between banks and defaulting borrowers, and increased amounts recovered. By making it quicker and easier to liquidate collateral and hence collect on a non-performing loan, these Tribunals facilitate the enforcement of loan contracts. Using a unique loan-level data set, I examine here the impact of this reform on the loan repayment behavior of corporate borrowers. Further I also investigate the impact on future lending behavior, and draw some conclusions about the implications of this reform for future bank lending in India.

Several features of DRTs make this policy change a good candidate for this study. One, DRTs represent an easily measurable institutional change within one country, where procedural aspects of the legal system were reformed but substantive laws were not changed. They thus allow us to isolate the importance of procedure in determining institutional quality and outcomes. Two, the DRT Act and its implementation pattern led to some exogenous sources of variation that aid in the identification of the effect of DRTs. The monetary threshold set for

DRT claims was Rupees 1 million. This number was chosen rather arbitrarily to restrict the number of cases that could be filed in DRTs. A comparison of potential claims above and below this threshold provides a useful source of variation in the treatment of loans. Further, the central government has the authority to establish DRTs across regions in India. As I show later in this paper, certain factors outside the control of the central or state governments caused delays in the establishment of DRTs in some regions. Hence the timing of DRT establishment can be argued to be exogenous to other unobservable factors driving loan repayment. This allows us to verify the main results and provides further evidence of their impact. Three, an evaluation of DRTs has important policy implications. If a streamlined legal procedure leads to better judicial outcomes and improved debt recovery, developing countries aiming to reduce their non-performing loans can adopt this mechanism. Further, if faster justice can lead to a behavioral change in borrowers and reduce the incidence of non-performance, this will reduce the credit risk faced by banks. By increasing the profitability of lending, this can increase the volume of credit in the economy and stimulate economic growth.

Why does the quality of courts matter for the behavior of economic agents? It could be argued that in the absence of effective formal contract enforcement, economic agents will rely on informal or traditional exchange mechanisms to avoid disputes. For example, lenders may lend only to borrowers with a good reputation for repayment, or to borrowers with whom they have a relationship of trust. Alternatively they may use extra-legal sanctions to recover loans in the event of default. According to North (1990), as societies become more complex, there are greater returns to the formalization of constraints. Formal rules lower information, monitoring and enforcement costs and thus reduce transactions costs of exchange and production, thus facilitating economic transactions. Formal courts allow parties

to trade even when they are anonymous; no history or reputation must be known to ensure that the other party will adhere to the contract. By removing this cost of information, greater gains from trade can be reaped. In a study of five Eastern European countries, Johnson, McMillan and Woodruff (2002) show that firms that believe they can rely on courts are more likely to switch to new trading partners than other firms. By thus encouraging entrepreneurial behavior and reducing the monopoly of coteries, courts can improve economic efficiency.

Bank lending, and project lending in particular is inherently an exercise in risk-taking. In the Stiglitz-Weiss asymmetric information model (Stiglitz and Weiss 1981), since banks do not know the borrower's type they ration credit, thus leading to a sub-optimal solution. Bester (1985) shows that if borrowers can provide collateral, this inefficiency can be resolved and credit-rationing will not occur. The premise in this paper is that legal systems and the effectiveness of courts at resolving disputes determine the usefulness of collateral as a screening device. When disputes over loan default and collateral liquidation are resolved quicker, banks can truly expect to recover some of their loan losses via collateral. This will then remove the inefficiency created by the information asymmetry and increase social welfare.

2 Banking and the Recovery of Debts in India

At independence in 1947, India adopted a socialist vision for development. It intended that the banking sector would promote India's development objectives by fulfilling a redistributive function. It would provide credit to agriculture, small industries and exports, encourage new entrepreneurs and help to develop backward areas. In 1969 fourteen commercial banks were nationalized, another six were nationalized in 1980. No new private banks were allowed to enter the market.

Interest rates were regulated by the Reserve Bank of India. All commercial banks were required to make 40 percent of their loans to the “priority sector”.¹ There were no clear guidelines on how banks should evaluate their non-performing loans (NPLs). Poorly performing public sector banks could expect to be recapitalized by the government, and hence had little incentive to maintain a healthy balance sheet. As a result recovering non-performing loans or preventing loans from becoming non-performing was not a high priority for these banks. Although private banks did not face this soft budget constraint and may have attempted recovery of non-performing loans more aggressively, the procedure was tedious and had low returns.

To recover non-performing loans, secured or not, a bank must first obtain a court order. Before 1994, this involved filing a written plaint in the civil court. Moog’s (1987) case study of two district courts in northern India describes in great detail the various aspects of civil litigation in India that render it highly ineffective. It is reasonable to expect litigation to continue for eight to ten years before a verdict is arrived at (Pistor and Wellons 1999). Legal scholars in India have blamed several factors for the inefficiency and long delays in the Indian court system: the excessive litigiousness of the Indian population, the perverse incentives of lawyers, the inadequacy of court infrastructure, insufficient judges as well as procedural loopholes. Procedure in civil courts follows the Code of Civil Procedure (1908), a code that allows for numerous applications, counter-applications and special leaves by both parties, and hence several opportunities for delays. Both central and state legislatures have attempted to reform the Code by enacting amendments to it, however the general consensus is that these attempts have been futile.² In this

¹The main categories that are classified in the priority sector are agriculture and allied services, small scale industries and minority communities.

²The most recent amendment was the Code of Civil Procedure Amendment Act 2002, which decreased the time allowed for issuing summons and filing defense, reduced the allowed number of applications for postponement, and simplified the procedure for recording evidence. It met with opposition from various Bar Associations, and although implemented, has shown few signs

setting, the benefit from filing a legal suit against a defaulting borrower has been low, and the cost has been high. In addition, bankruptcy laws provide corporate borrowers protection against creditors. Under the Sick Industrial Companies Act, a firm can apply to the Board of Industrial and Financial Reconstruction (BIFR) and request that it be declared “sick”. As the name suggests, the BIFR’s primary purpose is to help rehabilitate the firm. While it is undergoing rehabilitation, the firm’s creditors cannot recover their loans from it. Bankers complain that often firms mismanage their funds and then apply for rehabilitation in an attempt to dodge their creditors.

These factors have all contributed to a high volume of non-performing loans in the Indian banking system. The problem was highlighted when India embarked upon economic reforms and financial liberalization in 1991. The Narasimham Committee on the Financial System (Government of India 1991) drew attention to the high magnitude of bad loans and argued that it was responsible for the low profitability of several banks. They warned that if allowed to continue, it could jeopardize the entire financial system. In 1992, based on recommendations of the Narasimham Committee, the Reserve Bank of India issued prudential norms on income recognition, asset classification and provisioning, to be phased in over a three-year period. Unlike the earlier subjective Health Code System for classifying bank assets, these norms provided an objective definition for non-performing loans. According to these guidelines, a loan would be classified as non-performing if payment of interest or repayment of instalment of principal or both had remained unpaid for a certain pre-specified period or more. This pre-specified period was fixed at four quarters for the financial year ending on March 31, 1993. It was to be decreased to three quarters in 1994 and to two quarters in 1995 and thereafter

of actually decreasing court delays.

(Reserve Bank of India 1999, 2004).³

The norms also stipulated that income earned against loans should only be booked when actually received, instead of when it accrued. Provisioning requirements were made more stringent: banks were now required to provision 100 percent of the outstanding amount for unrecoverable assets as well as unsecured loans that remained non-performing for longer than 18 months. Lower provisioning rates were specified for loans of lower grade non-performance. For standard assets, 0.25 percent of the loan value was to be provisioned. Simultaneously, the annual reporting requirements of commercial banks were expanded: all banks were now required to report the total gross value of non-performing loans. (The total gross value is the total value of NPLs before any provisions or write-offs are made against it.) With tighter guidelines for provisioning, banks are likely to find their capital stretched further. At the same time, in accordance with the international standards adopted by the Bank of International Settlements in the Basle Accord, commercial banks were required to maintain a capital adequacy ratio (CAR) of 8 percent or above.

Together, these policy changes created incentives for banks to reduce the magnitude of their non-performing loans. NPLs as they appear on the accounts of banks can be reduced in different ways: restructuring of the loan, use of legal channels to recover the loan and/or liquidate the collateral, or write-offs. The legal channel requires that the bank file a plaint in court, requesting a money decree, as well as requesting the court to “wind up” the firm and distribute the proceeds from liquidation among all creditors according to priority, and/or to enforce its security interest, i.e. allow the sale of collateral so that the bank may recover some of the payment. To facilitate recovery, the Government of India introduced a new institution known as Debt Recovery Tribunals.

The goal of this paper is to study the impact of this new institution. I ask two

³A further notification since then has decreased it to one quarter (90 days) beginning 2004.

questions:

1. Do borrowers improve repayment behavior and become delinquent less often under the new regime?
2. Has this reform had an impact on the terms of future loans, and can we draw any conclusions about its impact on credit rationing by banks?

3 The Reform: Institutional Details

The Tiwari Committee established in 1981 had investigated the legal difficulties faced by banks and recommended the establishment of special tribunals for the recovery of debt. It had suggested that “The tribunals constituted, however, should not be bogged down by the Code of Civil Procedure, 1908 but have a simple procedure guided only by the principles of natural justice.” (Government of India, 1981). The Narasimham Committee also endorsed this proposal, leading the Government of India to pass a new act in 1993, known as the Recovery of Debts due to Banks and Financial Institutions Act (DRT Act).

3.1 The Act

The DRT Act came into force on June 24, 1993.⁴ It allows the Government of India to establish debt recovery tribunals (DRTs) “for expeditious adjudication and recovery of debts due to banks and financial institutions”, and specify their territorial jurisdiction.

The Act only applies when the bank’s claim exceeds Rupees 1 million (approximately \$20,000). The rationale for choosing this threshold appears to have been as

⁴The records of parliamentary proceedings from the period show that the bill was introduced into the lower house of parliament (Lok Sabha) on May 13, 1993. It appears to have met with no opposition in parliament, and was passed on August 10 1993. It came into effect retrospectively.

follows. First, by restricting the size of the claim that would be eligible for DRTs, the Act avoids overcrowding the DRTs. For banks, the larger NPLs are also the ones that are most attractive to recover, since the marginal benefit of litigation is higher. The DRTs were envisioned as helping the banks recover bad loans from the larger corporate borrowers. The exact number for this threshold appears to have been chosen purely because it was a convenient round number.⁵

Debt Recovery Tribunals are quasi-legal institutions which exclusively deal with debt recovery cases, cases where the bank or financial institution claims a loan is to be recovered from the defendant. They are “quasi-legal” because they are established by the executive arm of the government, unlike civil and criminal courts which are part of the judiciary. Thus DRTs fall under the purview of the Ministry of Finance, instead of the Supreme Court of India. However, the substantive laws governing debt recovery cases remain the same as they did before. The judge in a DRT (called the presiding officer) must be qualified to be a district judge in the judicial system, and the same lawyers who are qualified to appear in civil courts are also qualified to argue in DRTs.

As the Act envisions it, the main distinction is that the DRT follows a more streamlined “summary” procedure. This procedure is laid out in the DRT Act as well as the Debt Recovery Tribunal (Procedure) Rules (1993). Once the DRT issues summons to the defendant he has only thirty days in which to respond by showing cause why the claim should not be granted. A written statement of the defence must be presented to the DRT on or before the first hearing; if the defendant has a counter-claim against the bank he must make that claim at the

⁵In fact, a recent amendment bill to the DRT Act introduced in the Lok Sabha, if passed, will reduce the monetary threshold to Rupees 500 thousand. If the Bill is passed it will allow a further test of the hypotheses. In addition, since cases above Rupees 1 million will remain in the jurisdiction of DRTs both before and after, it may allow us to estimate the effect of an increased DRT case load on the repayment behavior of borrowers.

first hearing but cannot do so afterwards, and no separate application is required for the counter-claim.⁶ In this way the new procedure demands faster movement and greater accountability by the defendant in an attempt to reduce avoidable delays.

DRTs are allowed to make interim orders before the final judgement in order to prevent defendants from transferring or alienating the assets in question. At any time, if the DRT is persuaded that the defendant is about to dispose of or damage the assets, it may require the defendant to furnish security to the DRT. Unlike the civil courts, the DRT also has a recovery officer, whose job is to execute the order passed by the presiding officer. He has the authority to attach and sell the property of the defendant, appoint a receiver for the management of the property of the defendant, or arrest the defendant and detain him in prison. To maintain the judgement-debtor's right to an appeal, the Act also provides for Debt Recovery Appellate Tribunals (DRATs). The judge of a DRAT has the qualifications to be a high court judge. If a defendant appeals to the DRAT against a DRT's recovery order he is required to deposit 75 percent of the amount decided before the hearing can take place. The DRAT holds this amount in its possession while the appeal is pending and it is remitted to either party depending on the final decision. The Act thus concentrates more power in the DRT and DRAT than civil courts had.

Debt Recovery Tribunals only admit cases filed by banks attempting to recover debt from borrowers; a borrower cannot file a DRT application against a bank. Further, in these cases the bank is the plaintiff demanding money from the borrower, and hence delays in the case would benefit the borrower more than the bank. Therefore a reduction in delays also benefits the bank at the cost of the borrower. Thus DRTs have reversed the earlier bent of government policy and

⁶The original DRT Act 1993 did not allow counter-claims. These were introduced in the 2000 Amendment, described in detail later.

are pro-creditor rather than pro-borrower. Further, they remove certain disputes from the jurisdiction of civil courts and place them in a newly created jurisdiction which is not under the purview of the independent judiciary. These issues caused a controversy soon after the Act was passed.

3.2 DRT Establishment and Opposition to the Act

The establishment of DRTs began in April 1994. The central government's objective appears to have been to provide Tribunals to all regions of India as quickly as possible, thus five DRTs were set up in quick succession between April and December 1994, often with multiple states sharing a DRT. Table 1 in the Appendix describes the time-line of DRT establishment. Soon after Tribunal in Delhi was established, the Delhi Bar Association filed a suit in the Delhi High Court, with the plaint that the Act be declared unconstitutional. It argued that the Act violated the independence of the judiciary, was discriminatory because it did not provide for counter-claims by borrowers, that there was no rationale for making suits admissible differentially on the basis of their pecuniary claim, and that the Constitution did not allow the legislature to establish tribunals for the purpose of debt recovery. In August 1994 the High Court stated that it was of the prima facie view that the Act may not be valid, and required the Delhi DRT to stay its operations pending the final verdict. The final verdict was delivered on 10 March 1995. The High Court accepted the plea that Act was unconstitutional, on the grounds that the Executive appointed presiding officers, thus violating the Directive Principle of State Policy which recommends that the executive and judiciary be independent. It also ruled that the lack of provisions for counter-claims or transfer of cases from one DRT to another were flaws in the Act. It disagreed with the plaintiffs on the issue of whether the legislature had the authority to pass this Act, but it took exception to another aspect that had not been part of the plea. Whereas earlier

all claims between Rupees 100,000 and 50,000 were in the jurisdiction of the Delhi High Court, the DRT had been given a higher threshold of monetary jurisdiction, viz. Rupees 1 million. And yet the judge of a DRT was only required to have the qualifications of a district court judge. Thus DRTs had been placed on a higher pedestal than High Courts, which was considered unacceptable.

During 1995 no new DRTs were established by the Government of India. Instead it moved the Supreme Court against this judgement in a special leave petition. On March 18 1996 the Supreme Court issued an interim order that notwithstanding any stay order passed in any writ petitions, DRTs should resume functions. Beginning in 1997, Debt Recovery Tribunals began to be established again. Between 1997 and 1999 five new DRTs were set up and all the remaining regions received access to DRTs.⁷

Cases were also filed against the DRT Act in other high courts. In 1999 the Guwahati High Court ruled that since there was provision for only one DRAT, the Act did not truly allow for judicial review, and hence was unconstitutional. It also stated that there were no guidelines for or control over the methods the recovery officer could use to recover debts and hence the Act was arbitrary. The Karnataka High Court ruled in 2001 that the Act was unconstitutional and the Bangalore High Court's cases should be transferred back to civil courts. However given the previous interim order of the Supreme Court, these rulings of the Guwahati and Karnataka High Courts could not have been implemented.

In the meanwhile, the Government of India submitted before the Supreme Court that it would amend the Act to address the legal anomalies, while ensuring that the dedicated nature of the recovery system was not diluted. An Ordinance to

⁷Following that, new DRTs continued to be established and earlier jurisdictions sub-divided among the new and the old, thus reducing the number of cases each DRT would handle. However since at any point in time a loan always faces only one DRT, in the main results I define treatment as when a loan goes from no exposure to DRTs to exposure to a DRT.

this effect was passed by the President of India on 17 January 2000. Its main provisions were to allow set-offs and counter-claims by the defendant, appointment of receivers and commissioners by the DRT, transfer of cases and recovery certificates across Tribunals, appointment of more than one recovery officer, greater clarification of modes of recovery and empowering DRTs to distribute sales proceeds among secured creditors. Further, in an attempt to maintain the independence of the judiciary from the executive, the Chief Justice of India would be the ex-officio Chair of the selection committee for presiding officers. The Ordinance was replaced by the DRT Amendment Act 2000.

4 Data

I use a unique loan-level data set from a large Indian bank with a national presence. This bank was established in 1994 as a wholly-owned subsidiary of a public sector development finance institution. Between 1998 and 2002 the development finance institution reduced its share-holding in the bank to 46 percent through public offerings of shares in India and American Depository Receipts on the NYSE, amalgamation with a private sector bank and secondary market sales to institutional investors. In 2002 the bank bought its parent institution and since then all financing and banking operations have been under a single entity.

The development finance institution had been set up in 1955 through an initiative of the Government of India, the World Bank and representatives of Indian industry. Its mandate was to offer medium-term and long-term project financing to Indian businesses. In the 1990s it diversified its operations to offer a wider range of products and services, including retail banking. After the merger the bank has inherited the portfolio of project loans from its parent institution, and continues to manage and sanction new project loans. The data being used in this paper

pertain to these project loans.

The data set includes detailed records of the entire history of all project loans that were active on the bank's accounts as of September 2000. These are loans given to corporate borrowers for various long-term purposes such as the setting up of new projects, expansion and modernization of pre-existing projects, diversification of business and guarantees. They also include some long-term loans given to rehabilitate firms, or adjust over-runs on previous loans. It is the bank's policy that project lending would always be secured senior debt, and hence in the event of firm liquidation it would have high priority in receiving its share of the proceeds.

The process of issuing a project loan is as follows. A client must submit a loan application to its relationship manager, who is a loan manager in the relevant region or business group. The application must describe the amount requested, the purpose for which the loan will be used, evidence that the project is viable, and the collateral to be offered in exchange. After detailed discussion between the bank's department and the applicant, the department may sanction the loan. At this point the loan information enters the bank's database, and a loan agreement is issued to the borrower. The borrower must sign the agreement, provide all documents and information requested and provide collateral.⁸ After these steps are completed, an amount is "committed" by the bank. The bank could either commit the entire sanctioned amount at once, or break it up into multiple commitments. In our data, the average number of commitments per sanction is 1.03. Although the terms of the loan are determined initially at the time of the sanction, the interest rate, tax rates and penalty rates may change at the time of the commitment.

Once an amount is committed, it is disbursed to the borrower in instalments

⁸This is done by creating a legal charge on the security. Depending on the nature of collateral and the agreement between borrower and bank, the collateral could be given in the form of a mortgage, equitable mortgage, hypothecation or pledge. Each legal charge is characterized by different control rights.

(known as draw-downs). If the interest rate is floating it is determined at the time of the disbursement. Attached to each draw-down is a repayment schedule. After a certain pre-determined moratorium period has elapsed, the borrower must begin to repay the loan in instalments. Each quarter, on a pre-specified due date the bank sends the borrower an invoice specifying the amount that has become due. When the borrower sends in a payment, the amount outstanding is adjusted downwards accordingly. When the entire invoice amount has been paid, the amount outstanding becomes zero, and the accounts officer enters the date of final settlement. In the data I observe a snapshot of the repayment accounts. I observe the due date for the entire repayment schedule, the amount billed, the amount currently outstanding, and the date of final settlement if the entire amount has been settled. A positive number outstanding indicates that the entire amount had not been paid at the time of data collection.

I use this information to compute the following two dependent variables at the level of commitment-quarter:

1. **allpaid**: a binary variable that takes value 1 if for all invoices issued in quarter t for commitment i , repayment has occurred within 180 days of due date.
2. **dayslate**: a continuous variable left-censored at zero, defined only if payment did not occur within 180 days, which measures the average number of days that payment is late.

Figure 1 illustrates the data structure.

4.1 Descriptive Statistics and Definition of Treatment

Table 1 presents descriptive statistics. The data consist of loans taken by 1831 firms. The average number of loans sanctioned to a borrower is 3.14. The majority

of sanctions were given out in one commitment, the average number of commitments per sanction is 1.03. We observe repayment on commitments for an average of 10.6 quarters.

The loans observed were sanctioned between 1980 and 2003. The average year of sanction is 1993. The average time to maturity for the loans is 7 years.

Recall that the prudential norms specify that a loan which has payment overdue for longer than 180 days is non-performing. In 80 percent of the commitment-quarters, invoices are paid up within 180 days. Thus repayment is late 20 percent of the time. We expect that treated commitments should repay within 180 days more often than untreated commitments.

The variable `dayslate` is only defined for commitment quarters where not all invoices are paid within 180 days. It is a measure of how late repayment is, *conditional* on being late. Conditional on being late, repayment tends to be an average of two years late. In the regressions where this is used as the dependent variable, we ask whether treatment causes delinquent borrowers to reduce the extent of their delinquency. It is important to emphasize that the two dependent variables defined here capture two different phenomena. The variable `allpaid` asks whether borrowers repay within 180 days and thus avoid delinquency of their loan repayment. The variable `dayslate` measures the extent of delinquency of the delinquent loans. Thus, we expect that borrowers respond to Debt Recovery Tribunals by reducing the probability that they become delinquent on a loan. On the other hand, given that a loan is delinquent, it is unclear whether the borrower has the incentive to improve behavior and reduce the extent of delinquency, or no incentive to change behavior and thus allow the number of days that payment is late to increase.

In the main results, I use the date when the DRT Act was enforced as the

event date. I restrict the sample to commitments that had been sanctioned before the event date. It is possible that after the treatment, the bank itself modified its lending behavior and hence loans made after the treatment are systematically different from those made before. By restricting the sample in this way I isolate the impact of this institutional change on repayment behavior and avoid confounding it with the possibility that new loans are made to better borrowers. Since new commitments sanctioned after the event date may be systematically different from those sanctioned before, this prevents us from picking up these effects. These commitments are treated in quarters that occur after the event date, and are not treated in the quarters that occur before. Other controls include the borrower's cash flow, industry dummies for the borrower's industry, state dummies and year dummies.

4.2 Two Data Issues

4.2.1 Attrition

In September 2000, the bank moved its project loan database from an old database system to a new one. Only loans that were active at the time of migration were transferred to the new system. All loans sanctioned after the date of migration are in the new system. For any active loan the entire repayment schedule is available and hence can be used to reconstruct the history of repayment as described above. My data consist of all loans that existed in the new database at the time of data collection (May 2003), currently active or not. However, the removal of currently inactive loans at the time of database migration causes the following problem due to systematic attrition in the data.

The objective of this paper is to examine delinquency, or delays in loan repayment. If a loan is delinquent, the account will remain active for longer since the bank will employ various methods to obtain the payment before the payment is

made, or else the loan is written off the books. Therefore among the cohort of loans sanctioned before the date of database migration, the active ones are disproportionately likely to be delinquent. This biases the data in favor of finding that delinquency has decreased over time.

To remove this problem, I restrict my sample to loans whose last invoice date was scheduled to occur after the date of migration. Barring pre-payment, all of these loans would have to be in the new database regardless of past performance.⁹

4.2.2 Survival

The snapshot nature of the data also introduce the issue of survival probabilities. When computing the variable `dayslate` for invoices that were not repaid by the time of data collection I can only say that repayment is *atleast* x number of days late, but cannot accurately measure the actual number of days late. Since newer loans begin issuing invoices later in the time period, the variable `dayslate` will tend to show that their payment is less late than for older loans. In all specifications I include the year of sanction as a control. In addition to picking up cohort effects, it will controls for the problem that newer sanctions that are delinquent have systematically different `dayslate` than older delinquent sanctions.

5 Empirical Strategy

The institutional change being studied in this paper is a move from an inefficient and slow-moving legal system which favored borrowers disproportionately, to a more efficient system which produced speedier justice and as a result was relatively creditor-friendly.

⁹Among the loans sanctioned since the date of migration, very few invoices are pre-paid. Assuming that the incidence of pre-payment was if anything lower in the past, the loss of prepaid invoices should not bias the results appreciably.

An essential question in this exercise is to determine how treatment should be defined. A legal system potentially affects all entities that fall under its jurisdiction, even if they do not avail of its services. In the current context, the shift from civil courts to Debt Recovery Tribunals could change a borrower's marginal cost of delaying repayment on a loan, and hence change his behavior. The question being asked is: do borrowers change their repayment behavior in response to the DRT Act?

Thus the explanatory variable DRT_t takes the value 1 in quarters that occur after the DRT Act was enforced. It takes the value 0 in the quarters that occur before. An additional source of variation is permitted by the monetary threshold of claims for which the DRT Act applies. Only claims above Rupees 1 million can be filed in a DRT. Therefore I construct an indicator variable for whether on the date of the DRT Act, more than Rupees 1 million is late on a commitment, Above_i . The effect of the Debt Recovery Tribunal is the coefficient on the interaction term $\text{DRT}_t \times \text{Above}_i$.

The regressions are of the following form:

$$y_{it} = \alpha + J_j + T_t + \beta_1 \text{DRT}_t + \beta_2 \text{Above}_i + \beta_3 (\text{DRT}_t \times \text{Above}_i) + \gamma X_{it} + \epsilon_{it} \quad (1)$$

Here y_{it} is the value of the dependent variable for commitment i in quarter t . Additional controls include the year of sanction, the borrower's cash flow, industry dummies for the borrowing firm, state dummies for the state where the borrower's project is located and year dummies.

The results are presented in Table 2. A total of 15034 commitments were sanctioned before the DRT Act date. Panel A shows the results for the variable `allpaid`. We begin by introducing the variable DRT_t in column 1. In quarters that fall after the DRT Act was passed, repayment was 14 percent more likely to

occur within 180 days.¹⁰ In column 2 I add the variable `Abovei`. Commitments which have more than Rs. 1 million late are on average less likely to pay within 180 days, which is to be expected. Commitments which are worse at repayment are also the ones which have a large outstanding balance. In column 3 I introduce the interaction between size of outstanding claim and the passing of the DRT Act. The coefficient β_3 is positive and significant. Commitments which have more than 1 million outstanding increase the probability of repayment by 14 percent in response to the DRT Act. The coefficient of the main DRT effect remains significant and positive at a lower 6 percent. Commitments with outstanding claims above and below Rs. 1 million are inherently different and may also behave differently over time. Therefore in columns (4) through (8) I restrict the sample to narrow bands around Rs. 1 million. Column 4 presents estimates from the band of Rupees 1 million \pm Rupees 500 thousand. Subsequent bands narrow the bands by Rupees 100 thousand sequentially. Within these bands commitments are fairly homogeneous, and hence if there is a differential impact of DRTs on commitments above and below the threshold, it can be attributed to the DRT Act. The narrow bands contain substantially fewer data points and hence the effect cannot be estimated precisely. However the effect remains positive.

Panel B presents the results for `dayslate`. Although in columns (1) and (2) the effect of the DRT is not significant, in column (3) the interaction is negative and significant, suggesting that although on the whole repayment does not become faster on delinquent commitments, when commitments are above the threshold it does become faster. Within the bands, the effect remains negative although insignificant.

¹⁰In all tables I report the simple, robust and block bootstrapped standard errors. The robust standard errors use White's correction matrix for heteroskedasticity, and the bootstrapped standard errors control for autocorrelation in the errors as discussed in Bertrand, Duflo and Mullainathan (2004).

So far I have used the date of the DRT Act enforcement as the true event which affects repayment. However, as we know the actual establishment of DRTs began later: the first DRT was set up only on April 27 1994. The actual establishment of DRTs may lead borrowers to improve repayment behavior over and above the enforcement of the Act. Since different regions received Debt Recovery Tribunals at different times, this allows us to estimate the effect of actual establishment of DRTs. As described earlier, the Government of India began to establish DRTs soon after the DRT Act was enforced. Within eight months, five DRTs had been established in quick succession, covering nine states. This process was interrupted by the Delhi High Court’s ruling that the Act was unconstitutional, but resumed again after the Supreme Court’s ruling that all DRTs must resume functions. The timing of both rulings are likely to have been outside the control of the Central government. Therefore, this allows a differences-in-differences estimation as follows:

$$y_{ijt} = \alpha + \beta_1 \text{Post-Quarter} + \beta_2 \text{Post-DRT} + \beta_3 \text{Post-Quarter} \times \text{Post-DRT} + \gamma X_{it} + \epsilon_{ijt} \quad (2)$$

The coefficient on the interaction term is the parameter of interest. Table 3 shows the results. In Panel A the dependent variable is `allpaid`. In column (3), the interaction term is positive and significant. The establishment of a DRT increases the probability that the borrower will repay within 180 days by 3 percent. In Panel B, the dependent variable is `dayslate`. Even among the delinquent commitments, the establishment of a DRT reduces the number of days that payment is late by 100 days.

Next, we can utilize the variation provided by the actual date of DRT establishment in each state. DRT establishment began in April 1994 and continued

until July 1999 before all states received coverage (see Table in Appendix). As described before, the main difference in timing was caused by the legal challenges to the Act. Further, we see that before the interruption in 1995, the establishment proceeded at a rapid pace. Once the Supreme Court required all DRTs to resume functions, the establishment continued, however at a slower pace. Although this introduces the exogenous difference in timing as described above, there is also a question of what determined the sequence of DRT establishment, especially in the states that received DRTs in 1996 and after. In Table A.1 in the appendix I run a regression to understand what drove the pattern of DRT establishment. As described there, in levels no variable appears to be significant, other than the year dummies. However within states, the increase in credit per capita coincides with the receipt of a DRT. Further, within states, establishment of a DRT coincides with the Communist party winning the state election. I therefore include these two variables as additional explanatory variables in the regression.

I estimate a generalized differences-in-differences strategy as follows.

$$y_{ijt} = \alpha + J_j + T_t + \beta \text{DRT}_{jt} + \gamma X_{it} + \epsilon_{ijt} \quad (3)$$

As we see in Column (1) of Table 4, repayment on a commitment is 2 percent more likely to occur within 180 days once a state DRT is established. Among delinquent commitments however, the establishment of a DRT coincides with an increase in number of days that payment is late.

6 Robustness Checks

Legal Dispute over the DRT Act One could argue that DRTs may not have been very effective before the Supreme Court gave its final verdict in 2002, finally settling all legal controversy surrounding the Act. Although we do

find that borrowers improve repayment behavior even in response to the enforcement of the DRT Act and the establishment of DRTs, I have not so far presented any evidence on how their behavior responds to the actual functioning of DRTs. In order to do this, I utilize data obtained from the Ministry of Finance on the number of cases filed and disposed in the various DRTs. I then construct an index of DRT effectiveness as of 2002, as the ratio of number of cases disposed to the number of cases filed in the DRT from its inception until 2002. This is a measure of the DRT's success at disposing off its cases, and hence the borrower's expectation of the speed with which a new case filed in the DRT in 2002 would be handled. The effectiveness of the DRTs until 2002 was determined by two main factors: (1) when they were established, and (2) whether their functioning was interrupted by the legal challenges to the Act. Since as argued before both of these were largely determined by the timing of the High Court and Supreme Court rulings, to a large extent this effectiveness as of 2002 can be argued to be exogenous. Using commitment-quarters that occur in 2002, I utilize this continuous treatment variable to estimate the DRT effect. The results are reported in Table 4 column (1). We find that in states where the DRT has been 1 percent more effective, borrowers are likely to repay within 180 days with a 6 percent higher probability.

Different timing As an additional robustness check I check if loans with more than Rupees 1 million overdue were shower larger improvements in repayment even before the DRT Act occurred. I run the same specification as in Table 2 on the sub-sample of quarters that occurred before the true DRT Act date. I define a fake event date as one year before the actual DRT Act. As we see in Table 5 Panel A, the coefficient on the interaction term is insignifi-

cant. This reassures us that the effect observed in Table 2 can be attributed to the DRT Act.

7 Behavioral Explanation

I now ask if we can learn more about the improved repayment behavior. Are the borrowers who repay faster different from those who do not, or do we observe the improvement in behavior within borrowers as well? Since in the data we observe roughly 3 commitments per borrower, this allows me to run the main results with borrower fixed effects.

In Table 6 Panel A columns (1)-(3) correspond to the DRT Act event date. Column (1) is identical to Table 2 column (2). Next I run a regression with only borrowers who have multiple commitments, and find that the treatment effect is slightly larger at 17 percent (column 2). Finally column (3) presents borrower fixed effects results. The coefficient is still a high 14 percent. The DRT effect we estimated in column (2) is not restricted to certain borrowers – the average borrower does improve his repayment behavior upon treatment. In columns (4)-(6) I use the variation in the timing of DRT establishment as in Table 3. Column (4) is identical to column (3) in Table 3. In column (5) the sample is restricted to borrowers who have more than one commitment and the interaction effect is a larger 0.05. Once again the borrower fixed effects result is also positive and significant and the effect is even larger than when we look across borrowers.

In Panel B the effect is not significant, but in columns (4) through (6) we still see a negative effect on `dayslate`. This is evidence that the borrowers who repay faster now are not different from the ones who were delinquent earlier, in fact individual borrowers who used to be delinquent are now less likely to be delinquent after the Debt Recovery Tribunals became effective.

8 Future Lending Behavior

I now ask what implications this faster repayment has for future loans. If borrowers are less likely to be delinquent on their loans then banks face a lower default risk than before. In the Stiglitz-Weiss model we can expect that as a result credit rationing is reduced. Therefore we might expect that loan volumes increase and interest rates fall as a result of this change. Since I only observe actual loans that were sanctioned I cannot examine changes in the demand and supply side of lending behavior individually. Instead I can study the characteristics of the new equilibrium as compared to the old one.

In Table 7 I examine the terms of new loans sanctioned after the event date. In Panel A the dependent variable is the size of the sanction. Columns (1) and (2) I consider loans sanctioned after the date of the DRT Act. In column (1) I find that the average sanction size is larger after the DRT Act is passed. Column (2) suggests that this is not merely because of a change in the type of borrower, since the same borrower is likely to get a larger loan if it is sanctioned after the DRT Act. However these two columns do not control for a time trend that is leading average sanction size to increase over this period. In the next set of results (columns 3-6) I use the variation provided by the 1995 interruption of DRT establishment. Column (3) does not include time trends and the effect is positive and numerically close to that in column (1). However once I introduce the year of sanction is controlled for, the effect becomes non-significant. Similarly the borrower fixed effects results show no significant change in the size of sanctions in column (6). Columns (7)-(10) utilize the actual date of DRT establishment as a source of variation. The results are similar to those before, with the exception that now even after controlling for the year of sanction, the same borrowers do appear to get larger loans than before.

Panel B examines the effect on the interest rate. Since in practice the interest

rate and sanction size are simultaneously determined, I include the size of the sanction as an additional control in these specifications. The various columns are analogous to those in Panel A. With the exception of column (4), we find that In specifications exactly analogous to those in Panel A, we find that the interest rate on new loans is lower in all cases. The decrease is between 0.7 and 1.4 percentage points as a result of the Debt Recovery Tribunals.

9 Conclusion

In this paper I use a micro data set on project loans to examine the effect of a recent reform in India, aimed at speeding up the formal legal system of dispute settlement between banks and defaulting borrowers. My results show that that borrowers are 2-14 percent less likely to become delinquent on loans as a result of this reform. Further, there is evidence that the interest rates on future loans have fallen by 0.7-1.5 percentage points due to this legal reform.

In the Stiglitz-Weiss model banks charge high interest rates and ration out creditors because of information asymmetry and because borrowers cannot signal their type credibly. As Bester (1985) shows, this inefficient outcome can be removed if borrowers can provide collateral to secure their loan. However in the absence of effective enforcement of loan contracts, the existence of collateral alone cannot solve the problem. In fact it is very likely that the extremely inefficient legal system has caused firms to face credit constraints in India. Although their focus is smaller firms than those studied here, Banerjee, Duflo and Cole (2003) have found evidence that Indian borrowers face credit constraints. The reform studied here was aimed at improving court efficiency to allow faster resolution of loan recovery disputes and effective enforcement of security interests. The results indicate that this legal reform may have moved the equilibrium closer to the efficient solution

proposed by Bester (1985).

10 Limitations and Future Research

The absence of micro data about the debt recovery cases that this bank has filed with civil courts and Debt Recovery Tribunals prevents me from providing micro-level evidence that dispute resolution process is faster than before. Aggregate data regarding the resolution of debt recovery cases is only available for Debt Recovery Tribunals and not for the civil courts where these cases were filed earlier. Thus I am forced to rely on anecdotal evidence that the Tribunals have been more effective than the earlier courts.

Since DRTs provide superior enforcement of security interests, they reduce the uncertainty surrounding loan recovery. In the event of default banks now recover a larger proportion of the collateral than before. It would be interesting to see whether this causes them to require lower collateral than before at the time of sanction. If this is so, this could indicate that borrowers with lower assets may receive credit than before. In this way this legal reform may have also spurred entrepreneurial activity and benefitted smaller borrowers.

Loan covenants may also change as a result of improved enforcement of security interests. In the incomplete contract framework, when an outcome is unverifiable, parties gain from having direct control over the project. In our context, it is possible that in the past the legal charge created over collateral was such that the bank got possession of the land titles or the actual goods (e.g. pledge, equitable mortgage). Now with greater reliability of the legal system it should be easier to liquidate collateral and banks may be less likely to ask for direct control. To the extent that project loans are often secured by the plants and machinery that have been funded by the loan and that must be kept in production in order to repay it,

the reduced requirement for handing over direct control may benefit the borrower. Unfortunately the choice of legal charge is influenced by the stamp duties that the bank must pay for creating them, and these stamp duties are levied by the state. It appears that states modified these stamp duties in 1995 (Pistor and Wellons 1999). Therefore an estimation of this effect is not possible using this data set. However it would make an interesting area for future research.

Appendix: Dates of DRT Establishment

City of DRT	Date of est.	Jurisdiction
Kolkata 1	Apr 27 1994	West Bengal & Andaman & Nicobar Islands
Delhi 1	Jul 5 1994	Delhi
Jaipur	Aug 30 1994	Rajasthan, Himachal Pradesh, Haryana, Punjab, Chandigarh
Bangalore	Nov 30 1994	Karnataka, Andhra Pradesh
Ahmedabad	Dec 21 1994	Gujarat, Dadra & Nagar Haveli Daman & Diu
Chennai 1	Nov 4 1996	Tamil Nadu, Kerala, Pondicherry ¹
Guwahati	Jan 7 1997	Assam, Meghalaya, Manipur, Mizoram, Tripura, Arunachal Pradesh & Nagaland
Patna	Jan 24 1997	Bihar, Orissa ²
Jabalpur	Apr 7 1998	Madhya Pradesh, Uttar Pradesh
Mumbai 1	Jul 16 1999	Maharashtra, Goa

Notes:

1. Chennai 1's jurisdiction expanded to include Lakshadweep on Dec 5 1997.

Here I describe the empirical exercise to predict the pattern of DRT Establishment. The dependent variable is binary, taking value 1 if the state j has a DRT in year t and 0 otherwise. Note that once a DRT was established it was not removed. All regressions have robust standard errors. The results are presented in Table A.1. I considered a set of different variables that could explain the pattern of DRT establishment. These include state GDP, credit, number of cases pending, number of high court judges, and political variables such as the political party in power in the state government, and its relationship with the central government.

A state with good economic conditions would exhibit better repayment behavior, and the central government might institute a Debt Recovery Tribunal here earlier on, since it might appear more effective. However in column (1) the effect of state GDP per capita is insignificant. In column (2) I use credit per capita as an alternative, since it is also more relevant to banking and DRTs. The effect remains insignificant. Since DRTs are a substitute for the court system, the central government may also target states which have poorly functioning courts, as exhibited by the number of cases per capita pending in the courts. However this has no effect either.

Based on the Delhi High Court's opposition to the DRT Act because it placed DRTs on a higher pedestal than high courts, I explore the hypothesis that states where the high courts were more powerful (as measured by the number of high court judges) may have received DRTs later. However this appears not to be the case. In columns (5) and (6) I include political variables to measure whether the political party in the state (and therefore its stated economic policy) influenced the center's decision to place a Tribunal there, or whether the relationship between the state and central governments influenced this decision. Since 1996 no political party has won an absolute majority in the lower house of parliament in the national

elections, and hence governments have been formed through coalitions. Since at any time a member of the coalition may withdraw support to the largest party, these coalitions have made for fragile governments. As a result, parties that were hitherto important only in state politics have begun to wield considerable influence at the center. There is the possibility therefore that if the state government's party is an ally of the Central government that may either hinder to help the pace at which a DRT is established there. However this variable also has no effect.

In columns (7)-(9) I include multiple variables, and in columns (10) and (11) I estimate a Probit equation. In all cross-sectional specification, none of the explanatory variables is a good predictor of the timing of DRT establishment.

In columns (12) and (13) I estimate state fixed effects regressions. Now we find that within states, when credit per capita is high the probability of receiving a DRT is low. Also in column (12) one of the dummies for the political party is significant. States were more likely to receive a DRT at a time when the Communist party was in power. The two states where the Communist Party of India (Marxist) formed the state government during this period were Kerala and West Bengal. There is some indication from parliamentary debates that leaders of this party support quick liquidation of defaulting firms because this would also help workers of these firms receive their overdue wages. This may explain why the establishment of these governments coincided the state receiving DRTs. In column (14) and (15) I estimate court fixed effects regressions. In India some states share high courts. When the DRTs were established states which shared high courts also shared a Debt Recovery Tribunal. Therefore I construct groups of states which share a High Court and use these to run a fixed effects regression. Once again no variable is significant.

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Table A.1: Predicting the pattern of DRT establishment, dependent variable = 1 if state i had a debt recovery tribunal in year t .

	-----Cross-sectional OLS-----									Probit		State fixed effects		Court fixed effects	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
GDP per capita	0.000 (0.001)														
Credit per capita		0.000 (0.000)					0.001 (0.000)	-0.000 (0.001)	-0.001 (0.001)	-0.002 (0.005)	-0.005 (0.005)	-0.008** (0.004)	-0.006* (0.003)	-0.004 (0.003)	-0.003 (0.003)
Cases pending per capita			-0.006 (0.013)				-0.015 (0.016)	0.014 (0.026)	0.027 (0.024)	0.062 (0.099)	0.113 (0.093)	0.045 (0.056)	0.012 (0.051)	0.035 (0.053)	0.021 (0.049)
Judges per capita				52.860 (55.903)											
<i>State government</i>															
Congress & allies					-0.095 (0.127)			-0.020 (0.133)		-0.096 (0.422)		0.165 (0.167)		-0.049 (0.128)	
Janata & allies					0.140 (0.163)			0.185 (0.165)		0.727 (0.582)		0.400 (0.382)		0.236 (0.362)	
Communist party					0.095 (0.142)			0.157 (0.151)		0.753 (0.584)		0.726* (0.384)		0.047 (0.193)	
Regional party					0.094 (0.127)			0.162 (0.131)		0.760 (0.474)		0.050 (0.244)		-0.141 (0.177)	
Center's ally						-0.092 (0.073)			-0.068 (0.074)		-0.259 (0.274)		-0.116 (0.074)		-0.079 (0.066)
Constant	0.426*** (0.142)	0.457*** (0.132)	0.492*** (0.144)	0.408** (0.191)	0.379*** (0.142)	0.415*** (0.109)	0.513*** (0.146)	0.366* (0.190)	0.411*** (0.155)	-0.511 (0.567)	-0.325 (0.459)	0.296 (0.248)	0.588** (0.237)	0.427* (0.233)	0.491** (0.227)
<i>Observations</i>	123	139	139	131	125	125	139	115	115	115	115	115	115	115	115
<i>R-squared</i>	0.28	0.23	0.22	0.23	0.34	0.31	0.23	0.32	0.29			0.52	0.50	0.49	0.48
<i>Groups</i>												25	25	17	17

Robust standard errors in parentheses. Year dummies in all columns not reported.

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 1: Summary Statistics

Variable	N	Mean	Std. Deviation
Number of commitments	4725		
Number of sanctions	4615		
Number of borrowers	1831		
Commitments per sanction		1.03	
Sanctions per borrower		3.14	
Sanction size	47575	7.74e+07	3.14e+08
Interest rate	47575	15.28	5.34
Year of sanction	47575	1993	4.39
Borrower's cash flow	34200	11787.46	18424.78
Borrower's assets	31772	12109.79	21753.99
Allpaid	47575	0.80	0.40
Dayslate	9555	798.89	655.16
<i>Treatment</i>			
DRT Act	21170	0.92	0.28
Above Rs. 1 million	21170	0.27	0.44
DRT Act X Above 1 million		0.22	0.41
After 1995	34897	0.87	0.33
DRT Est. post-1995	34897	0.59	0.49
DRT post-1995 X After 1995	34897	0.53	0.50
DRT Establishment	34897	0.27	0.44
<i>Project type</i>			
New project		0.37	
Expansion		0.24	
Equipment financing		0.12	
Modernization		0.09	
Diversification		0.06	
Overrun		0.06	
Working capital		0.04	
Rehabilitation		0.01	
Guarantee devolvement		0.01	
Acquisition		0.01	
Conversion of loan type		0.0005	
<i>Industry</i>			
Textiles, leather etc.		0.22	
Chemicals, drugs		0.11	
Machinery & equipment		0.11	
Metal products		0.10	
Non-metal manufactures		0.09	
Agriculture & allied		0.07	
Miscellaneous		0.07	
Service industry		0.06	
Vehicle manufactures		0.05	

Construction, infrastructure	0.04
Transport/post/ telecom	0.03
Furniture, consumer durables	0.03
Mining & petroleum	0.01

Project state

Maharashtra	0.18
Tamil Nadu	0.16
Andhra Pradesh	0.14
Gujarat	0.12
Uttar Pradesh	0.08
Madhya Pradesh	0.05
West Bengal	0.05
Rajasthan	0.05
Karnataka	0.04
Haryana	0.04
Punjab	0.03
Delhi	0.02
North-eastern states	0.01
Bihar	0.01
Goa	0.01
Himachal Pradesh	0.01
Kerala	0.01
Orissa	0.01
Sikkim	0.0004

Note: All monetary values are in Indian Rupees (1 USD = 46.32 INR as of September 5, 2004.).

Table 2: Differences-in-differences

Variation 1: Quarters after the DRT Act was passed; Variation 2: Amount late on sanction above Rupees 1 million

Panel A: Dependent variable: allpaid

		Add Above	Add interaction	5 lakhs	4 lakhs	Within band		
	(1)	(2)	(3)	(4)	(5)	3 lakhs	2 lakhs	1 lakh
DRT	0.14*** (0.03)	0.14*** (0.03)	0.06* (0.03)	0.17*** (0.06)	0.12* (0.07)	0.08 (0.08)	0.07 (0.09)	0.04 (0.12)
Above late		-0.10*** (0.01)	-0.22*** (0.02)	-0.11** (0.06)	-0.10 (0.06)	-0.10 (0.07)	-0.06 (0.10)	-0.44*** (0.17)
DRT X Above late			0.14*** (0.03)	0.07 (0.06)	0.12* (0.06)	0.09 (0.07)	0.32*** (0.10)	0.30* (0.16)
Borrower's cash flow	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00** (0.00)	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)
Year of sanction	0.03*** (0.00)	0.02*** (0.00)	0.02*** (0.00)	0.03*** (0.00)	0.02*** (0.00)	0.02*** (0.01)	0.02** (0.01)	-0.04*** (0.01)
Constant	-57.30*** (2.68)	-45.19*** (2.92)	-47.01*** (2.94)	-52.85*** (7.68)	-48.40*** (8.48)	-32.77*** (11.54)	-35.75** (15.01)	75.68*** (19.84)
<i>Alt. standard errors</i>								
Robust			(0.02)	(0.05)	(0.05)	(0.06)	(0.09)	(0.16)
Block bootstrap								
Observations	15034	15034	15034	2142	1700	1097	651	352
R-squared	0.18	0.18	0.19	0.27	0.29	0.35	0.45	0.52

Panel B: Depvar=dayslate

		Add Above	Add interaction	5 lakhs	4 lakhs	Within band	
	(1)	(2)	(3)	(4)	(5)	3 lakhs	(6)
DRT	20.84 (52.15)	27.08 (52.11)	254.99*** (58.75)	60.91 (99.44)	117.76 (101.85)	71.02 (117.20)	
Above		74.52*** (20.14)	343.03*** (38.32)	-18.87 (80.15)	102.85 (81.87)	197.24* (107.04)	
DRT X Above			-353.59*** (43.03)	148.86* (88.23)	-111.65 (90.46)	-154.98 (113.46)	
Borrower's cash flow	-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	-0.03*** (0.00)	-0.00 (0.00)	
Year of sanction	-20.32*** (2.86)	-15.89*** (3.10)	-19.45*** (3.11)	29.69*** (9.04)	44.33*** (9.21)	61.91*** (11.41)	
Constant	43178.12*** (5670.17)	34361.19*** (6144.41)	41313.22*** (6164.37)	-55466.98*** (18006.31)	-84077.74*** (18355.72)	-119796.70*** (22727.88)	
<i>Alt. standard errors</i>							
Robust			(44.22)	(94.71)	(94.11)	(129.17)	
Block bootstrap							
Observations	5327	5327	5327	899	750	537	
R-squared	0.25	0.25	0.26	0.36	0.46	0.51	

Standard errors in parentheses/

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 3: State level DRT establishment: pre-and post-1995
 Panel A: Dependent variable: allpaid

	(1)	Add DRT Est. post-1995 (2)	Add interaction (3)
Quarter post-1995	0.03 (0.02)	0.03 (0.02)	0.01 (0.02)
DRT Est. post-1995		0.13*** (0.03)	0.11*** (0.03)
Quarter X DRT Est. post-1995			0.03* (0.02)
Borrower cash flow	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)
Year of sanction	0.02*** (0.00)	0.02*** (0.00)	0.02*** (0.00)
Constant	-48.27*** (1.82)	-48.27*** (1.82)	-48.11*** (1.82)
<i>Alternate standard errors</i>			
Robust			(0.02)
Block bootstrap			
<i>Observations</i>	25495	25495	25495
<i>R-squared</i>	0.17	0.17	0.17

Panel B: Dependent variable: dayslate

	(1)	Add DRT Est. post-1995 (2)	Add interaction (3)
Quarter post-1995	6.51 (51.26)	6.51 (51.26)	57.26 (53.50)
DRT Est. post-1995		-363.73*** (82.05)	-298.98*** (84.32)
Quarter X DRT est. post-1995			-99.93*** (30.39)
Borrower cash flow	-0.01*** (0.00)	-0.01*** (0.00)	-0.01*** (0.00)
Year of sanction	-21.39*** (2.16)	-21.39*** (2.16)	-20.75*** (2.17)
Constant	45266.35*** (4292.65)	45266.35*** (4292.65)	43977.32*** (4307.44)
<i>Alternate standard errors</i>			
Robust			(35.03)
Block bootstrap			
<i>Observations</i>	6859	6859	6859
<i>R-squared</i>	0.27	0.27	0.27

Standard errors in parentheses. Other controls include industry dummies, state dummies and year dummies in all columns.

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 4: Robustness checks

Panel A: Dependent variable: allpaid

	Include sigregressors (1)	Treatment starts after SC's final verdict State level continuous (2)
DRT	0.02* (0.01)	0.06* (0.04)
Borrower cash flow	0.00*** (0.00)	0.00*** (0.00)
Year of sanction	0.03*** (0.00)	0.00* (0.00)
Credit per capita	-0.00* (0.00)	
<i>State political party</i>		
Congress & allies	0.01 (0.02)	
Janata & allies	-0.06 (0.07)	
Communist party	-0.01 (0.10)	
Regional party	0.08** (0.04)	
Constant	-60.56*** (2.58)	-4.31 (2.94)
<i>Alternate std. errors</i>		
Robust	(0.01)	(0.03)
Block bootstrap		
<i>Observations</i>	14826	1652
<i>R-squared</i>	0.10	0.04

Panel B: Dependent variable: dayslate

	Include sigregressors (1)	Treatment starts after SC's final verdict State level continuous (2)
DRT	81.49** (36.36)	18.24 (55.20)
Borrower cash flow	-0.01*** (0.00)	-0.00 (0.00)
Year of sanction	-32.33*** (2.97)	-2.26 (1.58)
Credit per capita	0.13 (2.06)	
<i>State political party</i>		
Congress & allies	14.97 (49.90)	
Janata & allies	120.58 (164.73)	
Communist party	-498.38** (197.63)	
Regional party	-176.34** (80.00)	
Constant	65184.17*** (5917.86)	4714.85 (3162.72)
<i>Alternate standard errors</i>		
Robust	(34.20)	(56.60)
Block bootstrap		
<i>Observations</i>	3811	67
<i>R-squared</i>	0.24	0.28

Standard errors in parentheses. Other controls include

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 5: Pretend treatment began 1 year before it did
 Panel A: Dependent variable: allpaid

		Within band		
		+/- 500000	+/- 400000	+/- 300000
	(1)	(2)	(3)	(4)
Lead DRT Act	0.19*** (0.04)	0.20*** (0.05)	0.17*** (0.07)	0.16* (0.08)
Above	-0.07 (0.03)	-0.05 (0.05)	-0.16 (0.11)	0.25 (1.78)
Lead DRT Act X Above	-0.01 (0.05)	-0.06 (0.06)	-0.01 (0.08)	0.05 (0.10)
Borrower's cash flow	-0.00*** (0.00)	-0.00 (0.00)	0.00 (0.00)	-0.00 (0.00)
Year of sanction	0.01** (0.00)	0.00 (0.01)	0.01 (0.01)	-0.02 (0.16)
Constant	-18.53** (8.32)	-8.95 (13.35)	-16.81 (21.32)	47.83 (319.85)
<i>Alternate standard errors</i>				
Robust	(0.05)	(0.07)	(0.10)	(0.14)
Block bootstrap				
<i>Observations</i>	1166	298	142	106
<i>R-squared</i>	0.24	0.64	0.66	0.70

Panel B: Dependent variable: dayslate

		Within band	
		+/- 500000	+/- 400000
	(1)	(2)	(3)
Lead DRT Act	25.77 (65.90)	7.43 (55.62)	7.68 (43.81)
Above	172.55*** (53.03)	-115.94** (49.78)	-160.28** (72.13)
Lead DRT Act X Above	-38.56 (76.89)	-180.08*** (67.86)	-176.93*** (53.62)
Borrower's cash flow	-0.01*** (0.00)	-0.01*** (0.00)	-0.02*** (0.00)
Year of sanction	-8.01 (6.87)	32.04*** (7.09)	21.41*** (6.85)
Constant	18239.74 (13638.91)	-62330.35*** (14081.25)	-40215.64*** (13550.71)
<i>Alternate standard errors</i>			
Robust	(76.63)	(77.92)	(66.40)
Block bootstrap			
<i>Observations</i>	945	250	125
<i>R-squared</i>	0.54	0.77	0.90

Standard errors in parentheses. Additional controls include industry dummies, state dummies and year dummies in all columns.

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 6: Behavioral explanation
 Panel A: Dependent variable: allpaid

	-----After DRT Act-----			-----After 1995-----		
		Borrowers with >1 commitment	Borrower fixed effects		Borrowers with >1 commitment	Borrower fixed effect
	(1)	(2)	(3)	(4)	(5)	(6)
After	0.14*** (0.03)	0.17*** (0.03)	0.14*** (0.03)	0.01 (0.02)	-0.03 (0.03)	-0.06*** (0.02)
Group 2 states				0.11*** (0.03)	0.14*** (0.04)	-0.09 (0.16)
After X Group 2 states				0.03* (0.02)	0.06*** (0.02)	0.05*** (0.02)
Borrower cash flow	0.00 (0.00)	0.00 (0.00)	-0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	-0.00*** (0.00)
Year of sanction	0.03*** (0.00)	0.03*** (0.00)	0.00 (0.00)	0.02*** (0.00)	0.02*** (0.00)	0.00 (0.00)
Constant	-57.30*** (2.68)	-55.43*** (3.12)	-3.47 (4.17)	-48.11*** (1.82)	-47.53*** (2.12)	-2.83 (2.82)
<i>Alternate standard errors</i>						
Robust	(0.03)	(0.04)		(0.02)	(0.02)	
Block bootstrap						
<i>Observations</i>	15034	11079	11079	25495	18185	18185
<i>R-squared</i>	0.18	0.20	0.10	0.17	0.19	0.08
<i>Number of bid</i>			270			522

Panel B: Dependent variable: dayslate

	-----After DRT Act-----			-----After 1995-----		
		Borrowers with >1 commitment	Borrower fixed effects		Borrowers with >1 commitments	Borrower fixed effects
	(1)	(2)	(3)	(4)	(5)	(6)
After	20.84 (52.15)	54.75 (59.38)	36.31 (46.03)	57.26 (53.50)	150.23** (62.77)	-9.56 (48.87)
Group 2 states				-298.98*** (84.32)	-70.47 (91.95)	166.40 (612.12)
After X Group 2 states				-99.93*** (30.39)	-233.96*** (34.97)	-23.82 (33.41)
Borrower cash flow	-0.01*** (0.00)	-0.01*** (0.00)	0.00 (0.00)	-0.01*** (0.00)	-0.01*** (0.00)	0.00** (0.00)
Year of sanction	-20.32*** (2.86)	-20.80*** (3.24)	4.99 (4.11)	-20.75*** (2.17)	-18.55*** (2.52)	6.85** (3.23)
Constant	43178.12*** (5670.17)	41333.19*** (6458.39)	-7799.75 (8182.97)	43977.32*** (4307.44)	36873.24*** (5012.98)	- (6420.13)
<i>Alternate standard errors</i>						
Robust	(60.24)	(66.28)		(35.03)	(41.41)	
Block bootstrap						
<i>Observations</i>	5327	3943	3943	6859	4956	4956
<i>R-squared</i>	0.25	0.27	0.24	0.27	0.29	0.24
<i>Number of bid</i>			178			265

Standard errors in parentheses. Additional controls include industry dummies, state dummies and year dummies.

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 7: Implications for sanctions made after the DRT

Panel A: Dependent variable: Size of sanction

	DRT Act date		-----DRT Est. post-1995-----				-----DRT Establishment date-----			
	Borrower fixed effects		Borrower fixed effects		Borrower fixed effects		Borrower fixed effects		Borrower fixed effects	
			Add sanction year	Add sanction year	Add sanction year	Add sanction year	Add sanction year	Add sanction year	Add sanction year	Add sanction year
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Post-DRT	1.00e+08*** (1.87e+07)	1.03e+08*** (2.12e+07)	1.06e+08*** (2.46e+07)	2.53e+07 (2.90e+07)	1.14e+08*** (2.80e+07)	2.97e+07 (3.31e+07)	1.30e+08*** (2.31e+07)	4.92e+07 (3.08e+07)	1.57e+08*** (2.69e+07)	9.11e+07*** (3.30e+07)
Firm's assets	1.31e+03** (6.50e+02)		1.53e+03** (6.48e+02)	8.93e+02 (6.56e+02)			1.21e+03* (6.52e+02)	8.47e+02 (6.56e+02)		
Year of sanction				1.48e+07*** (2.85e+06)		1.60e+07*** (3.40e+06)		1.27e+07*** (3.21e+06)		1.20e+07*** (3.51e+06)
<i>Alternate standard errors</i>										
Robust	(2.03e+07)			(2.59e+07)			(4.46e+07)	(3.08e+07)		
Block bootstrap	(2.04e+07)						(4.34e+07)	(4.43e+07)		
Observations	2173	2620	2173	2173	2620	2620	2173	2173	2620	2620
R-squared	0.14	0.08	0.13	0.14	0.07	0.09	0.14	0.14	0.08	0.09
Number of borrowers		1081			1081	1081			1081	1081

Table 9 contd.

Panel B: Dependent variable: Interest rate

	DRT Act date		-----DRT Est. post-1995-----				-----DRT Establishment date-----			
	Borrower fixed effects		Borrower fixed effects		Borrower fixed effects		Borrower fixed effects		Borrower fixed effects	
			Add sanction year	Add sanction year	Add sanction year	Add sanction year	Add sanction year	Add sanction year	Add sanction year	Add sanction year
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Post-DRT	-0.73*** (0.23)	-0.67** (0.31)	-0.77** (0.30)	-0.58 (0.36)	-1.28*** (0.41)	-1.48*** (0.49)	-1.19*** (0.29)	-1.38*** (0.38)	-1.11*** (0.40)	-1.31*** (0.49)
Size of sanction	-5.03e-10* (2.67e-10)	-4.02e-10 (3.77e-10)	-5.37e-10** (2.66e-10)	-5.07e-10* (2.68e-10)	-3.80e-10 (3.76e-10)	-4.15e-10 (3.79e-10)	-4.65e-10* (2.66e-10)	-4.82e-10* (2.67e-10)	-3.46e-10 (3.79e-10)	-3.69e-10 (3.80e-10)
Firm's assets	-1.41e-05* (8.00e-06)		-1.57e-05** (7.96e-06)	-1.43e-05* (8.10e-06)			-1.21e-05 (8.01e-06)	-1.29e-05 (8.09e-06)		
Year of sanction				-3.47e-02 (3.54e-02)		3.83e-02 (5.03e-02)		0.03 (0.04)		0.04 (0.05)
<i>Alternate standard errors</i>										
Robust	(0.23)						(0.27)	(0.37)		
Block bootstrap			(0.30)	(0.36)						
Observations	2173	2620	2173	2173	2620	2620	2173	2173	2620	2620
R-squared	0.56	0.54	0.56	0.56	0.54	0.54	0.56	0.56	0.54	0.54
Number of borrowers		1081			1081	1081			1081	1081

Standard errors in parentheses. Other controls include state dummies, project type dummies and loan currency dummies in all columns, and industry dummies in columns (1), (3) and (7).

significant at 10%; ** significant at 5%; *** significant at 1%