Do Creditor Rights Reduce Tunneling? Evidence From India's Bankruptcy Law Reforms*

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Abstract

We study the impact of a bankruptcy reform that improved creditor rights and legal efficiency on the tunneling of funds through related party transactions within corporate group in India. We exploit a triple difference estimation strategy comparing related party transactions between a 'treatment' and 'control' group of financially distressed firms, before and after reform, and in Indian states where court systems were less efficient relative to other states. Improved creditor rights reduced tunneling by inducing borrowers to willingly cut back on bank debt, financial related party transactions, and dividend payouts.

JEL Codes: G21, G33, G38, K22, O16.

Keywords: Tunneling, bankruptcy reform, creditor rights, corporate governance.

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1 Introduction

Can improved creditor rights diminish "tunneling", the tendency for managers to expropriate a firm's resources for private gains at the expense of shareholders? Tunneling typically occurs through mispriced transactions in assets, goods, and loans that take place on preferential terms between firms within a manager's control.[1] Sustained tunneling can lead firms to financial distress, increase future bankruptcy probability, and can diminish growth prospects for countries through increased misallocation as financial malaise among firms contaminates creditor balance sheets.

The negative effects of tunneling can be amplified in a setting with weak creditor rights where the recoveries are delayed or are expected to be low. A creditor in such a regime is inclined to rollover (i.e., evergreen) large bad loans, as recognizing default has a more adverse impact on the balance sheet (**?**). Moreover, firm managers stand to lose very little (or can even benefit further) if the firm actually faces bankruptcy (**?**). This reinforces a manager's incentive to conduct tunneling ex-ante and derive private gains. Nevertheless, whether improvements in creditor rights lead to a fall in tunneling is an open question that has not been explored.

Our paper draws on a natural experiment – the introduction of a major bankruptcy reform (the Insolvency and Bankruptcy Code, or IBC, enacted in 2016) that improved creditor rights in India – to study this issue. The IBC reform dramatically empowered creditors by expanding the right-to-file to all creditors, increased creditors' expected recoveries, and reduced insiders' post-filing payoffs. To test our key hypothesis, we examine the impact of the reform on related party transactions (RPT) *outflows* among financially weak firms in corporate groups. A change in RPT outflows is a useful proxy for change in tunneling in our empirical setting – it is difficult to see, without resorting to a tunneling explanation, why financially weak group firms alter how they transfer funds to related firms after the reform.

Our main finding is that financial RPTs, as distinct from operational RPTs, fell due to the reform. Related party loan outflows and asset outflows formed the main components of the decline in financial RPTs. We provide evidence to suggest that creditor empowerment following IBC forced borrowers to repay bank credit by cutting down on RPT outflows. However, we do not find evidence for managers bringing in external funds to repay creditors, including through RPT *inflows*.

India provides an ideal setting, since previous literature has established significant levels of capital misallocation among Indian firms (**?**); presumably, tunneling worsens misallocation over time. Furthermore, insiders taking advantage of creditors was a major concern after the global financial crisis of 2007. Banks' non-performing assets (NPAs) increased from a low of just over two percent in 2011 to over 11 percent in 2018, pointing to high levels of evergreening before the reform (**??**). A large part of banks' NPAs was concentrated among a handful of corporate groups.[2] Our sample of financially weak group firms zooms in on the impact of the reform on exactly the set of firms where tunneling can be presumed to be severe.

Empirical Design. Our empirical design uses a triple-difference approach. We compare financially distressed firms with continued access to low-cost credit ('treated' firms henceforth) with a control group of other financially distressed firms. In a regime with weak creditor rights, banks may delay recognizing financial distress to avoid provisioning requirements (**?**). Distressed firms can remain on bank balance sheets as 'evergreened' loans for long periods.[3] The treated firms are more affected by IBC because: a. higher

[1] For example, a manager in Firm A may give out underpriced loans to Firm B where they have greater cash flow rights and give themselves dividends in Firm B.

[2] Only twelve corporate groups accounted for 25 percent of all NPAs in the banking sector.

[3] Evergreening refers to the continued extension of credit, typically by banks, to financially weak firms. Banks can be induced to do so due to political interference (in publicly-owned banks) or if the bank's balance sheet weakness renders it unable to

expected recovery rates reduced banks' willingness to evergreen further; and b. IBC reduced managers' incentives to rely on evergreened funds to conduct tunneling. We restrict the control group to not include healthy firms, both because the law did not directly affect them, and to avoid contamination due to time-varying unobserved firm-level factors that may differ systematically across distressed and healthy firms. The second difference is from comparing after and before the reform.

The third difference is used to invalidate other nationwide policies that were implemented around the same time as the IBC law. These policies include a major indirect tax reform, implementation of an inflation-targeting monetary policy regime, and a demonetization policy that removed large denomination banknotes from circulation. Each of these policies could potentially impact the treated firms differently relative to the control group. We exploit the variation in judicial efficacy in debt recovery tribunals (DRTs) across states in India before the IBC reform as the third difference in the same spirit as **?**[4]. Since parallel courts were established under the IBC to explicitly deal with corporate insolvency issues, they were more efficient than the court system that preceded them. This resulted in a larger increase in efficiency in states with previously less efficient debt recovery courts. Importantly, the efficiency of the earlier court regime is not related to policies other than the IBC. We verify that parallel trends hold prior to the reform, providing empirical validation for our identification strategy.

The estimated effects are statistically significant and economically meaningful. Total financial RPTs among group firms fell by 91 percent more in low court efficiency states after the reform, relative to high court efficiency states. We decompose the total fall in financial RPT outflows into its components – loan RPTs, asset RPTs, and investment RPTs. In each of these cases, outflow corresponds to the direction of the flow of cash. For example, loan RPTs correspond to the extension of loans by the firm in consideration to another related party. In the triple-difference sense, the total effect is dominated by a fall in related party loan outflows, which fell by 87 percent. The other component that fell is asset purchases from related parties, which fell by 56 percent. We do not find any statistically significant effect on investment-purchase RPTs. Operational RPTs, which include purchases of goods and non-financial services from related parties, were unaffected by the reform.

The focus on RPT outflows, coupled with the empirical design, gives us a unique vantage point to highlight the impact of the reform on tunneling, which remains notoriously difficult to measure.[5] To be sure, not all RPT outflows are tunneling; our assertion is that *changes* to RPT outflows among the treated firms relative to the control group after the IBC, in low versus high court efficiency states, reflect *changes* in tunneling. Furthermore, the fact that financially weak firms gave out loans to related firms strongly points to tunneling (**?**). It is difficult to offer alternate explanations that do not involve tunneling for why a financially distressed firm reduces RPT loan outflows in our setting.

We also decompose the total fall in financial RPT into that driven by a complete stop (extensive margin) and a partial reduction (intensive margin) in RPT outflows. We find strong evidence for the extensive margin – the coefficient is negative and statistically significant – the triple difference point estimate indicates a 30 percent fall in the likelihood of RPT outflows. The coefficient on the intensive margin is negative (the coefficient magnitude is comparable to the total effect), but it is estimated imprecisely and is not statistically significant.

Channels. We also delve into the channels underlying the fall in financial RPT outflows. Two factors guide

absorb losses due to the firm's failure. In fact, we show that in the pre-period, financial RPT outflows among our 'treated' firms were higher in case of firms exposed to weak banks.

[4]Figure A1 in the Appendix shows the variation in recovery effectiveness of DRT courts across states in India.

[5]Improvements in RPT disclosure regulations do not necessarily improve tunneling detection. Creditors, investors, and regulators often resort to forensic audits to detect tunneling.

us towards channels that operate through creditors. First, the IBC is a creditor empowerment reform, so channels that operate through firms' shareholders or boards are unlikely.[6] Second, our decomposition shows that loan RPT outflows led the total effect, and that there is no effect on operational RPT outflows. Our interpretation of these results is that creditors can more easily detect mispricing in loan contracts, which are relatively homogeneous across types of firms and industries, and where creditors have some expertise. Operational contracts are highly firm-specific, which makes it difficult to establish mispricing even when it is detected by a creditor.[7]

We first look at the impact of the reform on firm credit to test for the creditor-empowerment channel. We find that credit, measured by the change in total borrowings to total assets of the firm, falls after IBC for the treated firms in ex-ante low efficiency states. The change in total borrowings, as a ratio of total assets, fell by 76 percent in the triple-difference sense. The fall is driven by bank credit.

A key question that follows is whether borrowings fell because creditors refused to extend further credit (supply-driven), or firms willingly reduced or repaid borrowings (demand-driven, as in **?**). The IBC, which is a comprehensive corporate bankruptcy reform, has forces acting on both sides. On the one hand, equipping creditors with greater rights should impart discipline by restricting credit to rogue managers. In other words, higher expected recoveries can empower lenders to refuse loan evergreening. On the other hand, punitive actions on managers after bankruptcy-filing can discipline borrowers to reduce credit exposure. We test for this by looking at the impact on firm interest rates – one way to restrict credit supply is to charge higher interest rates. We find no impact on interest rates on bank loans. While this points to borrower-driven repayment, this result cannot unequivocally refute the possibility that banks ration credit to treated firms without an associated increase in interest rates.

To further distinguish between these two mechanisms, we estimate the impact on RPTs separately for firms borrowing predominantly from healthy versus less healthy banks. Less healthy banks do not have the capital buffers to be able to absorb the required provisioning even with higher recoveries after the reform, so they cannot credibly threaten borrowers with bankruptcy (**?**). Given this, the supply-driven channel would imply that RPT outflows fall only for firms that borrow from healthy banks. Our results show that the fall in financial RPT outflows is not statistically significantly different for the two sets of firms. The point estimates for the two sets of firms are quite similar for loan RPT outflows. The fact that RPT outflows fall even among firms connected to weak banks strengthens the case for borrower-led repayments.

We then examine whether firms use other sources of funds to repay credit and avoid bankruptcies. We test if firms raise external finance, increase financial incomes, generate RPT inflows, or reduce dividend payouts. We find a statistically significant fall in dividend payouts. There is no impact on the firm's external finances or on financial incomes. Similarly, there is no impact on financial and operational RPT inflows. Put together, the evidence suggests firms use *internal* funds to repay bank credit.

Finally, we explore effects on real outcomes by examining firm performance measures. We find no improvements in financial indicators such as return on assets, return on equity, or on profits. Similarly, there are no real effects in the form of an improvement in sales, salaries paid to employees, or on real investments.

Collectively, our evidence is consistent with an improvement in creditor rights following the bankruptcy reform curtailing the practice of corporate tunneling of funds via related party loans and asset purchases, funded with evergreened loans from banks.[8] We conclude that, after the implementation of IBC, the threat

[6] We test this formally by testing the outcomes within the firms' directors (remuneration and churn-related measures). We find that the reform did not impact outcomes for firms' directors.

[7] **?** show that even corporate governance characteristics, with the exception of audit committees, fail to deter mispricing in operational related party transactions.

[8] This is unlinked to another phenomenon known as "indirect evergreening" documented in the literature (**?**). Corporate

of bankruptcy and subsequent loss of control forces firms to repay banks by cutting down on RPTs and dividend payments. It is noteworthy in the context of literature that identifies related party loans and loan guarantees as a prominent form of tunneling (**???**).

Literature Review. Our paper contributes to three different strands of literature. First, our study relates to the literature on tunneling. Our approach exploits RPT data to capture tunneling activity, which is challenging to pin down (**?**). RPT flows can be used to more directly examine transactions between firms of a corporate group that may be used for expropriation (**?**). Further, we highlight the importance of creditor rights as a crucial driver of tunneling behavior.

Second, the paper relates to the literature on the impacts of stronger creditor rights. Improved creditor rights can empower them to enforce contracts and promote the expansion of credit. **?** find that legislation improving creditor rights through collateral reform increases the supply of credit and encourages firms towards more debt financing. **?** suggests that the relationship between stronger creditor rights and credit expansion need not be positive. He explores an earlier Indian reform aimed at strengthening creditor rights and shows that additional creditor protection imposes extra costs on borrowers leading to a decrease in the use of secured debt by firms. **?** find that firms operating in Brazilian municipalities with less congested courts experience a larger increase in loan use and performance measures after a bankruptcy reform that involved improvement in creditor rights. Our paper demonstrates the impacts of improved creditor rights on a different set of outcomes – loan evergreening and tunneling.

Third, we underscore the importance of reforms that promote allocative efficiency by facilitating the ability of banks to monitor the financial health of their borrowers. The literature on misallocation in developing countries highlights factor market imperfections as a key determinant (**???**). We suggest that creditor empowerment can mitigate misallocation of credit to non-performing firms, with implications for aggregate gains. As such, we reinforce the argument that legal institutions and corporate governance are central to economic development (**?**).

2 Institutional Background and Mechanisms

In this section, we provide an overview of the bankruptcy reform in India. We first describe the complex insolvency laws that existed before the reform in 2016. We then explain how the different provisions under the IBC law act as a deterrent to tunneling.

2.1 Institutional Background

The Insolvency and Bankruptcy Code (IBC) of 2016, heralded a comprehensive reform of the Indian insolvency and bankruptcy regime, sweeping away obsolete and contradictory laws that complicated judicial decision making. In some instances, insolvency laws were debtor-friendly, aimed at minimizing employment losses and limiting the claims of creditors. In others, legislation was creditor-friendly, but failed to empower creditors adequately and tackle insolvency directly.[9] An important aim of the IBC, therefore, was to codify bankruptcy laws and to generate significant improvements in creditor rights and time-bound asset recovery.

groups sometimes borrow on the balance of healthy firms to then lend to financially distressed firms within the group to keep the recipient afloat. We posit that in our case, the distressed firm's credit was evergreened directly by the lenders.

[9]The Sick Industrial Companies (Special Provisions) Act, 1985, is an example of a debtor-friendly legislation. Creditor-friendly laws include the Recovery of Debt Due to Banks and Financial Institutions (RDDBFI) Act, 1993 and the Securitization and Reconstruction of Financial Assets and Enforcement of Security Interests (SARFAESI) Act, 2002.

Reforms to the court system. Recognizing that contradictory laws in the previous bankruptcy regime were being used strategically by debtors to delay judicial processes, the IBC mandated that all corporate insolvency cases be addressed within a strict 180-day window. Additionally, a parallel set of courts was established to explicitly handle corporate insolvency. These National Company Law Tribunals (NCLTs) comprised judges with expertise in banking and/or insolvency resolution and liquidation. Once the case is admitted by the NCLT, certified "insolvency professionals" take over the ailing firm to develop the best implementable strategy towards resolution or liquidation. The overall aim was, therefore, to improve and hasten the corporate bankruptcy process.

The IBC also removed several discretionary powers from the judiciary. It mandated that petitions filed be automatically admitted, and that courts automatically approve any resolution or liquidation plan negotiated between debtors and creditors. By eliminating judicial discretion, the IBC sought to reduce the time taken to resolve stressed assets and encourage creditors to approach the NCLTs relative to the inefficient Debt Recovery Tribunals (DRTs) that previously dealt with bankruptcy.

Stylized evidence supports the notion that establishing NCLTs improved the efficiency of recovery and resolution for creditors. The Reserve Bank of India's 'Report on Trend and Progress of Banking in India' in December 2020 points to a sharp increase in the recovery of non-performing assets under the IBC relative to cases under the earlier DRTs and SARFAESI Act. In March 2019, while overall recovery of non-performing assets was 16.3 percent, the recoveries under DRTs, SARFAESI, and IBC were 3.9, 15, and 45.7 percent respectively. In March 2020, the overall recovery increased to 23.2 percent. The recoveries under DRTs, SARFAESI, and IBC stood at 4.1, 26.7, and 45.5 percents respectively.

2.2 Mechanisms – IBC as a Deterrent to Tunneling

Impact on borrowers. The contradictory laws prior to 2016 allowed firms to become "strategically insolvent", i.e. strategically manipulate cash flows and declare default. An Indian newspaper Business Standard article, reproduced on the Insolvency and Bankruptcy Board of India website, summarizes the ideas:[10]

'Perverse incentives for promoter-managers are higher when the company is in the "twilight zone" where there is acute financial distress and insolvency is imminent. At that stage there is a clear information asymmetry between promoter-managers and external stakeholders such as banks. Being aware of incipient stress, promoter-managers are prone to indulging in desperate practices such as asset stripping, off-market related-party transactions and creation of fresh encumbrances for friendly lenders to divert assets from the bankruptcy estate.'

In the academic literature, **?** provide evidence suggesting that managers manipulate the firm's cash flow downwards in the years preceding bankruptcy declaration. They note that several firms with weak balance sheets and continued access to low-cost credit did not require their inside shareholders to add their own equity.

The IBC has three provisions that tackle and deter strategic cash flow manipulation on the borrowers' side. First, upon default, managers lose control over the firm – when a case is admitted by an NCLT, control rights pass to a resolution professional. Second, the RPTs of the firm in the two years prior are subject to forensic audit. If suspect transactions are detected, punitive action can follow and creditors can claw back the value of these transactions from beneficiaries, including management or firms in the same corporate group. Individuals' assets can be liquidated to recoup obligations arising from illegal RPTs. And, finally,

[10]Link to the article (accessed on January 24, 2024): https://ibbi.gov.in/webadmin/pdf/media/2018/Jul/https___www.business-standard.com_article_printer-friendly-version_article_id=118060900745_1.pdf.

there is increased liability for responsible individuals since they cannot bid for the assets of other companies going through the insolvency process.[11] So, we expect the IBC to exert a disciplining effect on managers' propensity to tunnel.

Impact on creditors. The absence of a strong bankruptcy regime prior to 2016 restricted the ability of creditors to recover stressed loans. Many of these loans, especially among large corporates, stemmed from evergreening during the era of forbearance. Indeed, **?** use the administrative Central Repository of Information on Large Creditors (CRILC) database and find that banks were unwilling to recognize stressed loans as non-performing loans.

The IBC expanded creditor rights in the following ways. First, it put creditors at the forefront of the recovery process by replacing the firm's managers with a resolution professional once the insolvency case is admitted by the court. Second, it markedly expanded creditor coverage, enabling both financial and operational creditors to pursue insolvent firms in court for defaults over INR 10 million. Previous legislation, notably SARFAESI, only enabled financial creditors with secured tangible assets to initiate bankruptcy proceedings. The advent of the IBC resulted in a significant number of cases being filed by operational creditors. **?** report that, as of June 2018, 65 percent of the 6,668 insolvency cases nationwide were filed by operational creditors. These provisions empowered creditors to recover stressed loans and cease stressed loan evergreening. We examine these channels empirically in subsequent sections.

3 Empirical Methodology

We identify the impact of the IBC on RPT outflows using a triple-difference strategy. First, we define "treated firms", which are firms that are operational in spite of weak balance sheets with the help of low-cost credit. We are motivated by evidence, both in India and internationally, that weak recovery prospects induce banks to evergreen bad loans to avoid provisioning requirements (**??**). In the case of India, cumulative losses on large infrastructure lending before the global financial crisis of 2008 and the prolonged regulatory forbearance policy resulted in large and unhealthy borrowers which were kept alive through evergreening. The assumption is that such firms are the most exposed to the IBC because creditor incentives to take them to court are the strongest. The control group comprises other financially distressed firms; we exclude healthy firms because they may be very different from our treated firms, and because they are not directly affected by the IBC law. The control group firms are those with insufficient cashflows to meet interest payment obligations (interest rate coverage ratio < 1), but are not sustained with evergreened loans.

Our indicator for treated firms equals one if a firm meets all of the following five criteria in any of the years between 2014-16: i. has insufficient cashflows to meet credit costs (interest rate coverage ratio < 1); ii. credit costs are below the prime lending rates of the largest public sector bank (State Bank of India); iii. saw an increase in borrowings between 2014 and 2016; iv. the debt to assets ratio is above 20 percent; and v. debt is not AAA rated.[12] The first three criteria narrow down the unhealthy firms that are sustained by continued low-cost borrowing. The fourth criteria is added to narrow down on firms that have high debt levels. The fifth criterion ensures that information missing to an econometrician, but available to rating agencies does not classify some firms incorrectly as treated.

Second, we examine the difference in RPT outflows before and after the IBC implementation in May 2016.

[11] Responsible individuals under the IBC include promoters (a sub-class of shareholders) of defaulting firms, directors, their related entities, or anyone whose accounts are delinquent for more than a year, individuals who default on their personal guarantees, and those imprisoned for more than two years.

[12] We conduct robustness to classification criteria in Table 6.

Third, to account for other major policies implemented around the same time as the IBC, we exploit variation across Indian states in the intensity of treatment.[13] We capture this by considering how ineffective existing DRTs were before the reform as a third difference.[14] Intuitively, IBC treatment intensity should be highest in those states where DRTs are least efficient, meaning that the creation of a parallel system of NCLTs should have the most impact. We measure DRT effectiveness as the ratio of loan recoveries to the pending amount. A higher value indicates that a court is better at recovery because it disposes cases in a time-bound manner or can exploit other operational efficiencies. **?** report data on pendency at NCLTs, defined as the number of cases filed but not yet disposed of by the court. We verify that DRT effectiveness is positively related to pendency with a correlation of 0.3. In other words, greater DRT inefficiency is associated with lower pendency in the relevant NCLT.

We consider a state to be treated if its DRT has low recovery ex-ante – it has a below-median ratio of loan recovery to pending amount. We then examine differential changes in RPT outflows before and after the reform, in the treated states relative to other states. The equation to be estimated is:

$$\log(y_{i(s)t}) = \beta_1 \text{Treated}_i \times \text{Post}_t + \beta_2 \text{Treated}_i \times \text{Post}_t \times \text{Low Recovery}_s + \delta X_{it} + \gamma_f + \gamma_s \times \gamma_t + \gamma_d \times \gamma_t + \epsilon_{it} \quad (1)$$

where y_{it} is the dependent variable defined at the firm-year level; Treated_i indicates whether firm i was in the treated category during 2014-16; Post_t indicates years 2017-19; Low Recovery_s indicates whether the firm is registered in a state which has DRT court with low recovery; and X_{it} are firm-year controls which include firm age in years and age square, log of total assets and its square, log of cash-in-hand to control for the consequences of a large demonetization policy, tangible assets to total assets ratio, and firm profitability proxied by the ratio of EBITDA to total assets.[15] The coefficients $\gamma_j,\ j \in \{f = \text{firm}, s = \text{state}, t = \text{time}, d = \text{industry}\}$, indicate various fixed effects. The fixed effects absorb industry- and state-specific shocks such as productivity shocks and other local shocks that may bias the main estimate. ϵ_{it} is the idiosyncratic error term.

4 Data and Summary Statistics

We make use of four primary data sources. The first is the Prowess-Dx dataset that contains firms' detailed financial statements including related party transactions.[16] We limit our analysis to firms that are part of a corporate group and to the period 2014-19. Tunneling is typically linked to corporate groups where the network of companies within the group facilitates the movement of funds and where ownership structure opacity potentially helps conceal such transactions. We focus on the period from 2014 to exploit the regula-

[13] Three other major policies were implemented during our sample period. First, a new flexible inflation targeting monetary regime was adopted during October 2016. Second, a demonetization policy which removed 86 percent of the notes in circulation was implemented in November 2016. Third, a new goods and service taxes regime that removed differential tax rates across states was adopted during July 2017.

[14] **?** use a similar strategy to identify the impact of the 2002 SARFAESI law on firms' mix of capital and labor used in production. They assume that states with slower courts before 2002 are more affected by the SARFAESI law. Drawing from **?**, they classify states with below-median scores on the fraction of cases disposed off within one year as 'low-efficiency' states.

[15] The demonetization policy, announced at 8 pm local time on November 8, 2016, canceled as a legal tender 86 percent of banknotes in circulation as of the following midnight. The cash-in-hand measure controls for the possibility that firms with higher cash in hand could drive financial RPT outflows after 2016.

[16] Related parties include insider individuals and their family members, promoters and their family members, shareholders, immediate to ultimate holding companies, and subsidiaries, among others.

tion under the Companies Act in 2013 that mandated RPT disclosures. And we do not focus on the period after 2019 since these data were affected by the COVID-19 pandemic.

Missing RPT observations are replaced with a zero if a firm reported other RPT information in that year and we disregard cases where all RPTs are reported as missing – the assumption is that if a firm reports one type of RPT, it must have disclosed all of them in that year. This addresses the concern that a given missing observation indicates strategic non-compliance as opposed to it being zero. We also restrict our analysis to RPT outflows since they are more comprehensively captured by the Prowess-Dx dataset. RPT outflows are defined as outflows of cash. For instance, asset outflows refer to purchases of assets resulting in an outflow of cash from the firm.

The second data source is the data on loan originations for the universe of secured loans available from the Ministry of Corporate Affairs (MCA). The data is collected when a borrower registers the right over collateral in favor of a lender when the loan is in effect. The secured lenders have a strong incentive to ensure registration – they lose the right to liquidate the collateral on default by the borrower if the collateral is not registered in this way. Past research has shown that secured loans are over 75 percent of all loans in India (**?**) and that, in this particular dataset, the loans to listed firms cover over 50 percent of all private commercial credit (**?**).

The third and fourth datasets provide information about the quality of legal infrastructure. From a creditor perspective, a court is judged by how much it can help recover. We, therefore, construct a measure of DRT effectiveness by dividing the recoveries from these courts by total dues. The data on these variables is available from Indiastat. We also use data on congestion in civil courts, which have little to do with bankruptcy law, to conduct placebo tests. Court congestion data are available from **?**.

Our final sample has 222 groups. Of these, 45 groups have at least one 'treated' firm. On the firm's side, there are 440 unique firms in the sample; 80 unique firms are classified as treated. Table 1 summarises the data. Roughly 34 percent of the observations report loan RPT outflows, compared to 17 percent and 18 percent, respectively, for asset and investment outflows. Related party loans formed the highest share of total financial RPTs at 60 percent, followed by 21 percent for asset RPTs and 19 percent for investment RPTs. The RPT flows were a significant share of total assets, with the mean loan RPT outflow being some 4.3 percent of total assets. The shares of asset and investment RPT outflows are significantly smaller.

The baseline approach to classify treated firms leads to 14 percent of the firms being classified as treated. However, these are large firms. For example, as of 2016, the treated firms accounted for nearly 38 percent, 33 percent, and 28 percent, respectively, of the total borrowings, bank borrowings, and total assets in the sample.

5 Main Results

In this section, we describe our empirical results. To set the stage, we first describe the patterns in financial RPT in the years before the reform. We then describe the benchmark results related to the fall in financial RPT outflows and then describe the mechanisms.

5.1 Tunneling in the Pre-Period

Before we describe the results on the impact of IBC on tunneling, we set the stage in terms of the patterns in RPTs before IBC. We conduct this as a descriptive exercise and the estimates do not carry a causal

interpretation. In particular, we test whether financial RPTs varied systematically between firms connected to weak versus healthy banks. Firms are more likely to tunnel funds using evergreened loans if the lender has low bargaining power relative to the firm. In this context, the lender's bargaining power is a function of their balance sheet health. A financially healthy lender is less likely to evergreen if they can absorb the losses arising from default/bankruptcy, which is the alternative to evergreening. Therefore, our hypothesis is that the treated firms that were connected to weak banks conducted higher financial RPT outflows in the pre-period.

We combine datasets on the universe of collateralized loans and bank health to study this issue. Following **?**, a bank is classified to be 'weak' if its Common Equity Tier 1 capital adequacy ratio according to Basel III norms was in the bottom tercile across all banks; the weak bank dummy is assigned a value of zero if a bank is the top tercile; banks in the middle tercile are assigned a missing value. We follow **?** to construct a firm-bank-year loans panel dataset from 2006 to 2015 using the MCA data. We then construct a dummy for firm exposures to weak banks (where weak banks are defined as those in the lowest tercile of capitalization) that takes the value one if a firm had above median exposure to any weak bank between 2006 and 2016.

We then estimate the following specification,

$$\log(y_{i(s)t}) = \beta_1 \text{Treated}_i \times \text{Weak Bank Exposure}_i \times \text{Asset Quintile}_i + \delta \hat{X}_{it} + \gamma_d + \epsilon_{it} \quad (2)$$

where Weak Bank Exposure$_i$ is a time-invariant indicator for whether a given firm i had an above median exposure to a weak bank between 2006 and 2015 and Asset Quintile$_i$ indicates dummies for quintile of total assets that the firm i belonged to between 2014 and 2016. The controls $\hat{X}_{it}$ include all the controls specified in Equation 1 except total assets. The other variables, including the fixed effects, are as described in Equation 1. We omit presenting the interaction terms between the main variables of interest for conciseness, but they are included in the regression. Standard errors are clustered at the firm level.

The results are presented in Table 2. In column one, we present results from regressing log financial RPT outflows on the treated firm of an average size linked to a weak bank; i.e., we estimate Equation 2 where the asset quintile dummy is not interacted. In column two, we estimate the full specification in Equation 2 with log financial RPT outflows as a dependent variable.

The results are informative and match academic literature related to tunneling. In column one, the coefficient is positive (2.23) and statistically significant, indicating that a treated firm of an average size, linked to a weak bank, is associated with higher financial RPT outflows. In column two, we find that large firms, specifically those in the fourth and fifth quintiles, are driving the result in column one.

5.2 The Impact of IBC on Tunneling

Table 3 reports the results from estimating Equation 1. In column one, we regress the log of total financial RPT outflows on the triple interaction term (we include all the associated terms in the regression but do not report them for conciseness), firm-year level controls, and firm, industry-year, and state-year fixed effects. In columns two through four, respectively, the dependent variables are loan, asset, and investment RPT outflows. In column five, the dependent variable is operational RPT outflows.

Looking at the triple interaction coefficient in column one, there is a statistically significant fall in the total financial RPTs in treated firms in low recovery states after the implementation of IBC. The coefficient size (-2.41) implies that total RPT outflows fell by 91 percent following the reform in the states with low DRT court recovery. Interestingly, we find an increase in financial RPT outflows among the treated firms in the

high DRT recovery states; the treated × post coefficient is positive (effect size is 1.16) and statistically significant at the 5 percent level. Other policies that were implemented around the same time as the IBC law could incentivize the treated firms to conduct more tunneling. Nevertheless, the positive coefficient is smaller in magnitude compared to the negative triple interaction coefficient, so financial RPT fell after IBC in states with low recovery in the pre-period.

Figure 1 illustrates the decomposition of the baseline estimate into year-by-year effects. The triple interaction effects are negative but are not statistically significant in the pre-IBC years (2014 and 2015). This reinforces our identification strategy – there are no significant pre-trends in differential financial RPT outflows between treated firms relative to control firms, in states with less efficient courts prior to the reform. The coefficient of interest is strongly negative in the first two years after the policy. In the third year, the effect size is smaller and is less precisely estimated. This might indicate that the deterrence brought in by IBC is limited to the large borrowers (as indicated by policy reports such as **?**) who are the subject of this paper due to its focus on group firms. Alternatively, the new court system could be catching up to its predecessor in terms of judicial inefficiency and delay, driven possibly by under-staffed courts, which is against the spirit and letter of the IBC legislation (**?**).

Looking at the results in columns two through four in Table 3, the fall in financial RPTs is driven by a fall in related party loans (column two) and asset flows (column three), but there is no impact on investment outflows (column four). The triple interaction coefficients in columns two and three imply 87 percent and 58 percent reduction in loan and asset RPTs, respectively. The fall in loan RPTs is quite relevant since it forms over half (58.6 percent) of all financial RPT outflows. Moreover, loan and asset RPTs together form over 80 percent of all financial RPTs. There is also no impact on operational RPT outflows (column five).

The fact that loan RPTs form the biggest share of the decline in financial RPT outflows squares with existing literature on tunneling. For example, **?** and **?** argue that related party loan transactions are a dominant form of tunneling among firms in Hong Kong and Korea. In the case of India, too, the large ex-ante share of loan RPTs and the dramatic fall following the reform point towards a similar pattern.

Also, given the context, one can expect that it is the loan RPTs that should fall. Notwithstanding its high share ex-ante, the fall in loan RPTs can be explained by the fact that creditors have a comparative advantage in identifying the mispricing of credit products. This is different when compared to RPTs where operational transactions are mispriced.[17] Pricing of goods and non-financial services can be highly industry-specific. A creditor is unlikely to be able to establish such mispricing even if they detect it.

Discussion – using RPT outflows to detect tunneling. Our paper differs from other papers that analyze tunneling in the context of India. In their seminal paper, **?** used the estimated lower sensitivity of a group firm's profits to industry shocks, as compared to standalone firms, and interpret that as an indicator for tunneling. **?**, however, show that much of the differences between group and standalone firms in **?** is explained by differences in business strategy. Our setting and empirical approach takes care of the issues raised by **?**. First, we look within group firms, where differences in business strategy are less of a concern. Second, we consider RPT outflows and do not rely on measuring tunneling using sensitivity of firm profits to industry or macroeconomic shocks, which can be affected by a firm's business strategy.

Margins of the fall in tunneling. Next, we decompose the fall in tunneling into change due to a complete stop (extensive margin) versus partial reductions (intensive margin) in tunneling. For the intensive margin, we drop zero RPT values by taking log(financial RPT); for the extensive margin, we use a dummy

[17] Deliberate manipulation of transfer pricing is understood to be widespread in transactions within multinational companies to skirt tax jurisdictions (see **?** and **?** for surveys of this literature). In comparison, while the shareholders might benefit from tax-avoidance by multinationals, the minority shareholders and creditors are at a loss from tunneling.

for positive financial RPTs. In columns two and three of Table 4, we find that the effect is statistically significant only for the extensive margin. The extensive margin coefficient implies that the probability of conducting financial RPT outflows falls by 30 percent after the reform in the triple difference sense. The coefficient remains negative for the intensive margin, but it is not statistically significant. This estimator is robust to the biases created by zero values. To verify that the main results are not driven by zero values in financial RPT outflows, we run a pseudo-Poisson maximum likelihood estimator on the level of financial RPTs with zeros as part of the sample. The results are reported in column four. We find that the estimated coefficient (in column four) is negative and remains statistically significant.

Placebo regressions and robustness. While the benchmark results are robust to specifications with, and without, controls and fixed effects, spurious correlations can still generate the same results. Table 5 reports the results of a suite of robustness checks. First, we run a placebo regression, restricting the sample to before 2016 and replacing the post indicator with a 'pseudo treatment' period dummy with 2015 as the treatment year. The estimated triple-interaction coefficient is not significantly different from zero.

We then test to see if there is a fall in financial RPT outflows for standalone firms. Tunneling is of particular concern among group firms, which explains the results in column two in Table 5 indicating no such effect among non-group firms. Finally, we ask if the results hold for an alternate 'treatment intensity' variable. In the baseline model, the ex-ante efficiency of DRT courts is used as a measure of treatment intensity. We replace this with a measure of congestion in civil courts. Since we argue that the IBC worked by improving creditor rights, what should matter for impacts is the congestion or inefficiency in debt recovery courts, not civil courts engaged in broader legal issues. Column three of Table 5 confirms that our results are not influenced by firms' ability to access civil courts.

Further, we evaluate the robustness of our baseline result to alternate criteria used to identify treated firms (Table 6) and for outliers in the RPT data by winsorizing the data at 5% (Table 7). The results are robust to broader definitions of treated firms that do not restrict treatment based on credit ratings or on an increase in debt during the pre-period. Similarly, outliers in the RPT data do not bias the main results in an important way. We then test the validity of pre-period parallel trends for other relevant variables (Appendix Figure A2). Across the other variables, the impact is visible only after the enactment of the IBC law, which strengthens the causal interpretation of our results.

6 Channel – Creditor Empowerment and Tunneling

We next consider the mechanisms through which the IBC reduced tunneling. We consider two factors that indicate that channels that operate through creditors, as opposed to shareholders, should be at play. First, the IBC empowered creditors in the form of higher expected recoveries and faster resolution timelines.[18] Second, the fact that related party loan RPTs dominated the fall in total financial RPTs, as well as the non-impact on operational RPT outflows, points towards a role for creditors. As argued in Section 5.2, creditors are less able to establish mispricing in operational RPTs.

We proceed with the analysis as follows. First, we confirm, using our baseline specification, that borrowings indeed fell after the implementation of IBC. Table 8 considers the impact of the IBC on firms' borrowings and the cost of borrowing using Equation 1. In columns one and two, the dependent variable is the change in the stock of total firm borrowing as a ratio of total assets. In columns three and four, the dependent variable

[18]The Companies Act of 2013 is one example of a shareholder-empowerment regulation in India. Note that our empirical methodology allows us to control for other policies that can potentially bias the results.

is the change in the stock of bank borrowing as a ratio of total assets. The triple-interaction coefficient in column one is negative and significant at the 10 percent level. The coefficient magnitude in column one (-1.41) indicates a 76 percent fall in the dependent variable in a triple difference sense. The effect is stronger, in terms of both coefficient magnitude and precision (5 percent level of significance), in the first year following the IBC. Columns three and four show that the fall is driven primarily by bank borrowings. The coefficient in column three (-1.21) indicates that bank borrowings fell by 70 percent in the triple difference sense. The coefficients are negative and statistically significant at the 5 percent level in the first year following the IBC reform.

While the fall in bank borrowings points to the role of creditors, the results above do not confirm whether the bank refused to extend credit (supply-driven channel) or if the borrowers willingly repaid credit (demand-driven channel) to avoid the threat of bankruptcy in the future. Because IBC is a comprehensive bankruptcy reform, the law contains enablers on both sides. On the creditor's front, quicker and higher recoveries reduce the creditor's own funds required for provisioning for bad loans. On the borrower's front, punitive regulations, including loss of control over the firm, increase the insider's cost of entering bankruptcy.

Our first test to distinguish between the two channels involves measuring the impact of the reform on firms' borrowing rates. We test if the interest cost goes up, which serves as one test for creditor-led disciplining. The treated firms had low-interest debt in the pre-period, possibly because the lenders were unwilling to charge interest rates commensurate with the risk to avoid bankruptcy. With higher expected recoveries after the IBC, the lender will be less sensitive to a firm's bankruptcy. The fall in credit is, however, not driven by an increase in the interest rate charged by banks, as seen in columns five and six.

Our second test involves testing for differential impact on financial RPT outflows among firms connected to financially weak versus healthy banks. As explained in Section 5.1, we classify firms in terms of their pre-IBC exposure to weak banks. We then estimate Equation 1 separately for the two sets of firms. To reiterate, the idea here is that less healthy banks are less able to credibly threaten borrowers with bankruptcy. Therefore, if the supply-driven channel were operational, we would expect RPT outflows to fall only for firms that borrow from healthy banks.

The results are in Table 9. In columns one and two, the dependent variable is log of financial RPT outflows; in columns three and four, the dependent variable is the log of loan RPT outflows. The different firm subsamples based on firm exposure to weak banks is as follows. Columns one and three correspond to regressions with firms exposed to weak banks, and columns two and four corresponds to the complement of this set of firms.

We find that while the fall in total financial RPTs is estimated with a greater precision for firms connected to weak banks, the coefficient is not statistically different compared to the set of firms which do not have such exposure. The coefficients in column one and two are, respectively, -3.62 and -1.68, and the associated standard errors reject the possibility that the two coefficients are different from each other. This is even more apparent in the case of loan RPTs. The coefficients in columns three and four are much closer (-2.45 and -2.52, respectively), and each coefficient is statistically significant at 10 percent level. Nevertheless, they are not statistically different from each other. Therefore, we conclude that the results are more in favor of the borrower-led mechanism, rather than a supplier-led one.

6.1 Other Sources of Funds

Are firms finding other sources to supplement funds from a fall in RPTs to fund credit repayment? We test if the treated firms experienced higher inflows or lower outflows in Table 10. In particular, we test for

funds generated from all financial activities (column one), non-borrowing financial activities (column two), financial income (column three), financial RPT inflows (column four), operational RPT inflows (column five), and dividend payments (column six). We find no impact on firms raising money externally in the form of equity or debt, and there is no evidence of prior RPTs being returned by the beneficiaries in the form of RPT inflows (whether as financial or operational RPTs) after IBC.

Interestingly, there is a statistically significant fall in dividend payouts. Dividend payouts themselves can be a form of tunneling (**??**), and our evidence suggests that the IBC had a mitigating effect on dividend payouts from these distressed firms.

Taken together, the results in Tables 8, 10, and 9 support the notion that creditor empowerment played an important role in deterring tunneling activity. We conclude that the treated firms cut down on related party transactions and dividend payouts to repay bank credit.

6.2 Discussion

Creditor- versus borrower-led debt reduction. Our result that debt reduction is not creditor-led squares with existing literature that has documented causal effects during this period. **?** use regulatory credit repository data to show that banks were reluctant to recognize NPAs even after the reform. Dissatisfied with banks' reluctance, the Reserve Bank of India eventually issued a circular that forced banks to recognize loans overdue by even a single day as NPAs. Our results in this paper suggest that firms themselves nevertheless reduced bank loans following the reform in order to reduce the risk of facing bankruptcy under the new law.

Tunneling Versus Propping. A number of papers suggest that weak firms in groups, including in India during our sample period, are propped up with funds accessed from related parties (**??**). In this paper, however, we explicitly look at tunneling and not propping. Consider the fact that we evaluate the impact of the reform on RPT *outflows* from financially weak firms. Propping would imply an inflow to such firms, which we to not find evidence for.

6.3 Other Outcomes

We test for shareholder-led disciplining by considering firm director and firm-level outcomes using Equation 1. Earlier research has shown that corporate governance reforms operate through directors (**?**). Because IBC is a creditor empowerment reform, we do not expect its effects to operate through firms' directors. The results are reported in Appendix Table A1. In columns one to three, we consider director remuneration, entry, and exit of acting directors (where acting is defined as drawing remuneration). As hypothesized, we do not find any impacts on these variables. Surprisingly, we do not find any improvements in the treated firm's financial outcomes as measured by return on equity (ROE), return on assets (ROA) or profits (Appendix Table A2).

Next, we test if the IBC had any impact on real outcomes among treated firms. The results are in Appendix Table A3. In particular, we look at the impact on firm sales (column one), salaries (column two), and investments (column three). We do not find any meaningful differences between the treated and control firms in terms of the financial ratios and other real outcomes.

7 Conclusion

In this paper, we draw on a natural experiment – the introduction of a legal reform in India – to show that strengthened creditor rights can reduce tunneling activity by a firm's managers. We use data on related party transactions among group firms, along with a triple-difference estimation strategy exploiting institutional variation in debt recovery court efficiency across states in India, to show that the advent of the Insolvency and Bankruptcy Code empowering creditors resulted in decreased tunneling. Notably, we find evidence of borrower-led disciplining, whereby firms pay off outstanding loans to avoid the costs of bankruptcy initiated by more empowered creditors.

Our findings highlight the important role of strong judicial institutions in improving resource allocation and promoting economic development. An efficient court system that focuses on hastening bankruptcy resolution and the recovery of non-performing assets is critical in this process.

References

Table 1: Pre-Period Summary Statistics - Related Party Transactions

Variable	Mean	Std. Dev.	Min.	Max.	N
Panel A: Features of the RPT Data (Pre-Period)					
Dummy, Loan RPT > 0	0.352	0.478	0	1	1,168
Dummy, Asset RPT > 0	0.188	0.39	0	1	1,168
Dummy, Investment RPT > 0	0.18	0.384	0	1	1,168
		As a Fraction of Financial RPTs			
Share, Loan RPTs	0.586	0.457	0	1	572
Share, Asset RPTs	0.227	0.403	0	1	572
Share, Investment RPTs	0.188	0.352	0	1	572
		As a Fraction of Total Assets			
Share, Loan RPTs	0.038	0.183	0	4.474	1,168
Share, Asset RPTs	0.006	0.052	0	1.179	1,168
Share, Investment RPTs	0.007	0.038	0	0.612	1,168
Panel B: Summary Statistics (Full Sample)					
Count, Firms (by year)	338.83	59.86	257	407	6
Count, Groups (by year)	57.67	7.84	48	69	6
Treated Dummy	0.14	0.347	0	1	2,033
Low Recovery Dummy	0.558	0.497	0	1	2,033
Legal Congestion Dummy	0.538	0.499	0	1	2,033
Firm Age	25.504	22.374	1	156	2,033
Total Assets (Log)	8.577	1.875	1.065	13.96	2,033
Tangibility	0.334	0.275	0	1.044	2,033
EBITDA	0.048	0.104	-0.672	0.542	2,033
Cash in Hand (Log)	0.859	0.899	0	5.455	2,033
Financial RPT Outflows (Log)	2.317	3.125	0	12.699	2,033
Loan RPT Outflows (Log)	1.721	2.86	0	12.695	2,033
Asset RPT Outflows (Log)	0.567	1.625	0	9.375	2,033
Investment RPT Outflows (Log)	0.805	2.124	0	10.912	2,033
Growth, All Borrowings	-0.074	2.621	-101.632	1.709	1,987
Growth, Bank Borrowings	-0.052	1.922	-84.947	1.755	1,987
Interest Rate (%)	19.083	51.39	0	977.811	1,349
Cash Inflow, Financing (Log)	5.894	2.506	0	12.998	1,553
Cash Inflow, Non-Credit Financing (Log)	1.445	2.647	0	10.647	1,437
Income, Financial Services (Log)	3.119	2.135	0.095	10.904	1,796
Inflow, Financial RPTs (Log)	2.65	3.132	0	12.796	2,033
Inflow, Operational RPTs (Log)	2.747	2.976	0	11.917	2,033
Dividend Payouts (Log)	0.638	1.583	-0.223	9.689	2,033

Notes: This table reports features of the RPT data during 2014-16 (Panel A) and the summary statistics of the important variables in the full sample (Panel B). In Panel A, the first three rows summarize the extensive margin of components of financial RPT, i.e., the probability that a firm-year observation is positive. Rows four to six report the same components of financial RPT as a share of total financial RPTs, which is a sum of the three components. The last three rows summarize the same financial RPT components as a share of firms' total assets.

Table 2: Tunneling – Pre-Period

	(1)	(2)
Treated=1 × Weak Bank Exposure=1	2.23**	-2.25
	(0.91)	(1.59)
Treated=1 × Weak Bank Exposure=1 × Asset Quintile=1		1.64
		(2.27)
Treated=1 × Weak Bank Exposure=1 × Asset Quintile=2		4.06*
		(2.09)
Treated=1 × Weak Bank Exposure=1 × Asset Quintile=4		3.88*
		(2.20)
Treated=1 × Weak Bank Exposure=1 × Asset Quintile=5		4.78**
		(2.09)
Observations	791	791
R^2	0.391	0.518

Notes: This table reports results from estimating Equation 2. It tests whether treated firms were more likely to conduct financial RPT in the pre-period if they were exposed to a weak bank. The weak bank indicator takes a value of one if a firm's exposure to a weak bank was higher-than-median exposure across firm-bank links. We use the loan-level data from the Ministry of Corporate Affairs to construct firm-bank exposures between 2006 to 2016 (**?**). A bank is considered weak if it is in the bottom tercile of the banks' capital ratio distribution between 2014-16; banks in the top tercile are considered healthy (**?**). Column one reports the results from regressing the financial RPTs against the treatment dummy and the weak bank exposure indicator. Column two reports the results from a regression where the treated × weak bank exposure is further interacted with the firm's pre-period asset quintile (the third quintile is taken as the base). The specification includes industry, state, and year fixed effects; controls include age, age squared, cash in hand, tangibility, and profitability. Standard errors in parentheses are clustered at the firm level. * p<0.10, ** p<0.05, *** p<0.01.

Table 3: Results – IBC Reform and RPT Outflows

	(1) All Fin.	(2) Loans	(3) Assets	(4) Investment	(5) Oper.
Treated=1 × Post=1	1.16**	1.22**	0.32	0.71**	
	(0.53)	(0.49)	(0.23)	(0.34)	
Treated=1 × Post=1 × Low Recovery=1	-2.41***	-2.01***	-0.86**	-0.77	-0.09
	(0.71)	(0.61)	(0.36)	(0.61)	(0.54)
Constant	3.79*	3.18	2.33	-0.21	1.06
	(2.18)	(2.16)	(2.43)	(1.81)	(2.24)
Observations	2,031	2,031	2,031	2,031	2,031
R^2	0.725	0.714	0.661	0.662	0.842

Notes: This table reports the results from estimating Equation 1 with the logs of total financial RPTs (column one), loan RPTs (column two), asset RPTs (column three), investment (column four), and operational RPTs (column five) as dependent variables. In each specification, firm, industry-year, and state-year fixed effects are included; controls include age, age squared, log of total assets and its square, cash in hand, tangibility, and profitability. Standard errors in parentheses are clustered at the firm level. * p<0.10, ** p<0.05, *** p<0.01.

Table 4: Results - Margins of Fall in RPTs

	(1) Baseline	(2) Int. Marg	(3) Ext. Marg	(4) PPML
Treated=1 × Post=1 × Low Recovery=1	-2.41***	-2.03	-0.31***	-2.67**
	(0.71)	(1.56)	(0.11)	(1.12)
Observations	2,031	760	2,031	1,444
R^2	0.725	0.773	0.665	

Notes: This table decomposes the benchmark result in Table 3 into extensive and intensive margins as well as tests whether results hold when zero-value robust econometric techniques are used. In column one, we reproduce the baseline result. In column two, we do not add one to financial RPT before taking log. This represents changes along the intensive margin since only the positive financial RPTs are considered. In column three, the dependent variable is a dummy that takes a value of one if the financial RPT is positive. In column four, we conduct a pseudo-Poisson maximum likelihood estimation a zero-value robust procedure recommended in recent research (**??**) with the level of financial RPT as the dependent variable. In each specification, firm, industry-year, and state-year fixed effects are included; controls include age, age squared, log of total assets and its square, cash in hand, tangibility, and profitability. Only the main coefficient of interest – the triple interaction coefficient – is reported for each regression. Standard errors in parentheses are clustered at the firm level. * p<0.10, ** p<0.05, *** p<0.01.

Table 5: Placebo Regressions

	(1) Treat Year = 2015	(2) Standalone Firms	(3) Civil Congestion
Treated=1 × Post2015=1 × Low Recovery=1	-0.19		
	(0.96)		
Treated=1 × Post=1 × Low Recovery=1		0.24	
		(0.38)	
Treated=1 × Post=1 × Civil Congestion=1			-0.49
			(0.77)
Observations	1,150	7,266	2,031
R^2	0.800	0.669	0.722

Notes: This table reports the results from placebo regressions which validate our baseline results. In columns one through three, the dependent variable is financial RPTs. In column one, we test if policies other than IBC, which were implemented in 2015, drive our main results. In column two, we use our baseline specification to test if the IBC law impacted financial RPTs among a sample of non-group (i.e., standalone) firms. In column three, we test if court congestion in civil courts (which are not directly related to IBC law) is important. All columns include firm, industry-year, and state-year fixed effects. Controls include age, age squared, logs of total assets and its square, cash in hand, tangibility, and profitability. Only the main coefficient of interest – the triple interaction coefficient – is reported for each regression. Standard errors in parentheses are clustered at the firm level. * p<0.10, ** p<0.05, *** p<0.01.

Table 6: Robustness to Treated Firms Classification

	(1)	(2)
	Treated = 1 if	
	ICR < 1 + Low Cost	ICR < 1 + Low Cost + Increasing Debt
Treated=1 × Post=1 × Low Recovery=1	-0.89*	
	(0.49)	
Treated=1 × Post=1 × Low Recovery=1		-0.98*
		(0.53)
Observations	2,373	2,373
R^2	0.720	0.720

Notes: This table reports the results testing the robustness of the baseline results in column two of Table 3 to alternate methods of defining the treated set of firms. In the baseline, a firm is classified as treated if it meets all of the following five criteria in any of the years between 2014-16: i. has insufficient cashflows to meet credit costs (interest rate coverage ratio < 1); ii. credit costs are below the prime lending rates of the largest public sector bank (State Bank of India); iii. saw an increase in borrowings between 2014 and 2016; iv. the debt to assets ratio is above 20 percent; and v. debt is not AAA rated. In this table, we define broader measures that impose fewer restrictions. In column one, the firms that meet conditions i and ii are classified as treated; in column two, firms that meet conditions i, ii, and iii are classified as treated. In each specification, firm, industry-year, and state-year fixed effects are included; controls include age, age squared, log of total assets and its square, cash in hand, tangibility, and profitability. Only the main coefficient of interest – the triple interaction coefficient – is reported for each regression. Standard errors in parentheses are clustered at the firm level. * p<0.10, ** p<0.05, *** p<0.01.

Table 7: Robustness to Winsorizing the RPT Data

	(1) All	(2) Loans	(3) Assets	(4) Investment
Treated=1 × Post=1 × Low Recovery=1	-1.69***	-1.38***	-0.14	-0.21
	(0.57)	(0.47)	(0.10)	(0.14)
Observations	2,031	2,031	2,031	2,031
R^2	0.694	0.677	0.645	0.648

Notes: This table reports the results testing the robustness of the baseline results in Table 3 to outliers in the RPT data as seen in the summary statistics Table 1. We winsorize each variable by replacing 5% of observations on each tail. In each specification, firm, industry-year, and state-year fixed effects are included; controls include age, age squared, log of total assets and its square, cash in hand, tangibility, and profitability. Only the main coefficient of interest – the triple interaction coefficient – is reported for each regression. Standard errors in parentheses are clustered at the firm level. * p<0.10, ** p<0.05, *** p<0.01.

Table 8: Firm borrowings and Interest Rates

	(1)	(2)	(3)	(4)	(5)	(6)
	Total Borrowings		Bank Borrowings		Interest Rate	
Treated=1 × Post=1 × Low Recovery=1	-1.41*		-1.21**		16.66	
	(0.74)		(0.62)		(12.77)	
Treated=1 × year=2014 × Low Recovery=1		0.25		0.28		6.37
		(0.53)		(0.43)		(18.44)
Treated=1 × year=2015 × Low Recovery=1		-0.03		-0.02		29.20
		(0.36)		(0.28)		(21.68)
Treated=1 × year=2017 × Low Recovery=1		-1.45**		-1.10**		18.49
		(0.63)		(0.53)		(14.10)
Treated=1 × year=2018 × Low Recovery=1		-1.20		-1.18*		17.10
		(0.77)		(0.62)		(16.12)
Treated=1 × year=2019 × Low Recovery=1		-1.36		-1.12		50.29
		(0.86)		(0.73)		(41.26)
Observations	1,970	1,970	1,970	1,970	1,184	1,184
R^2	0.674	0.675	0.788	0.789	0.621	0.627

Notes: This table reports the results from estimating Equation 1 with (each as a ratio of total assets) the change in total borrowings (columns one and two), the change in bank borrowings (columns three and four), both expressed as a ratio of total assets, as dependent variables. In columns five and six, the dependent variable is the long term interest rate. In each specification, firm, industry-year, and state-year fixed effects are included; controls include age, age squared, log of total assets and its square, cash in hand, tangibility, and profitability. Only the main coefficient of interest – the triple interaction coefficient – is reported for each regression. Standard errors in parentheses are clustered at the firm level. * p<0.10, ** p<0.05, *** p<0.01.

Table 9: Results – Demand Vs. Supply Mechanisms

	(1)	(2)	(3)	(4)
	Weak Bank Exposure?			
	Yes	No	Yes	No
	Financial RPTs		Loan RPTs	
Treated=1 × Post=1 × Low Recovery=1	-3.62***	-1.68	-2.45*	-2.52*
	(1.22)	(1.62)	(1.28)	(1.33)
Observations	553	634	553	634
R^2	0.823	0.782	0.827	0.786

Notes: This table reports the results from estimating the role of demand (i.e., borrower) versus supply (i.e., lender) forces by using firms' links to weak banks. Following **?**, a bank is classified to be 'weak' if its Common Equity Tier 1 capital adequacy ratio according to Basel III norms was in the bottom tercile across all banks; the weak bank dummy is assigned a value of zero if a bank is the top tercile; banks in the middle tercile are assigned a missing value. A firm is said to be linked to a weak bank if its weighted exposure between 2006-2015 to any weak bank was above the median of the firm-bank distribution.

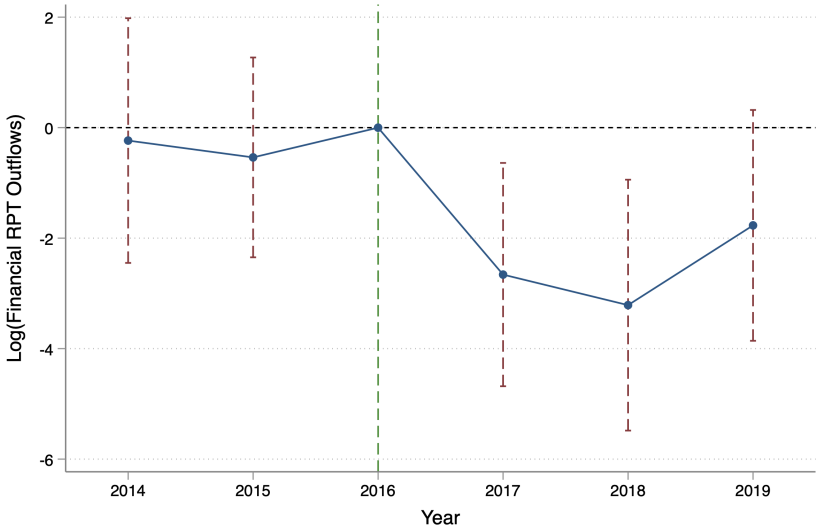
We estimate Equation 1 with the logs of financial RPT outflows (columns one and two) and loan RPT outflows (columns three and four). In each specification, firm, industry-year, and state-year fixed effects are included; controls include age, age squared, log of total assets and its square, cash in hand, tangibility, and profitability. Only the main coefficient of interest – the triple interaction coefficient – is reported for each regression. Standard errors in parentheses are clustered at the firm level. * p<0.10, ** p<0.05, *** p<0.01.

Table 10: Alternate Funding Sources

	(1) Cash Inflow (All Financing)	(2) Cash Inflow (Non-Debt Financing)	(3) Financial Income	(4) Financial RPT Inflow	(5) Operational RPT Inflow	(6) Dividend Payouts
Treated=1 × Post=1 × Low Recovery=1	-0.19	-0.17	-0.45	-0.10	-0.70	-0.67**
	(0.79)	(0.71)	(0.35)	(0.86)	(0.56)	(0.33)
Observations	2,031	2,028	2,031	2,031	2,031	2,031
R^2	0.709	0.545	0.891	0.651	0.833	0.833

Notes: This table reports the results from testing alternate sources of funds accessed by firms' managers. We estimate Equation 1 with the logs of all financing-related cash inflows (column one), debt-financing cash inflows (column two), income from financial activities (column three), inflows from financial RPTs (column four), inflows from operational RPTs (column five), and dividend payouts (column six). In each specification, firm, industry-year, and state-year fixed effects are included; controls include age, age squared, log of total assets and its square, cash in hand, tangibility, and profitability. Only the main coefficient of interest – the triple interaction coefficient – is reported for each regression. Standard errors in parentheses are clustered at the firm level. * p<0.10, ** p<0.05, *** p<0.01.

Figure 1: Effect of IBC Law Over Time



Notes: This figure reports the effect of the IBC law over time. The dependent variable is the log of total financial RPT outflows at the firm-year level. Each point represents the triple interaction coefficient treated × year × low recovery; the dashed lines around each coefficient represent 95 percent confidence intervals. The dashed green vertical line corresponds to the year of IBC law implementation. The dynamic effects for other relevant variables are presented in Figure A2 in the appendix.

8 Online Appendix

Table A1: Results - Directors' Outcomes

	(1) Director Remuneration	(2) New Directors	(3) Director Exits
Treated=1 × Post=1 × Low Recovery=1	-0.56	0.88	0.29
	(1.17)	(0.59)	(0.53)
Observations	1,878	1,878	1,878
R^2	0.801	0.473	0.491

Notes: This table reports the results from estimating Equation 1 for three directors' outcome related variables. In the first column, the dependent variable is the log of the total remuneration paid to the company's directors. In the second and third columns, the outcomes are the total number of new and exiting acting directors. A director is defined as an acting director if they were paid a remuneration. A director is defined as new/exiting if they are not observed in the preceding/following three years. In each specification, firm, industry-year, and state-year fixed effects are included; controls include age, age squared, log of total assets and its square, cash in hand, tangibility, and profitability. Only the main coefficient of interest – the triple interaction coefficient – is reported for each regression. Standard errors in parentheses are clustered at the firm level. * p<0.10, ** p<0.05, *** p<0.01.

Table A2: Results - Firm Financial Outcomes

	(1) RoE	(2) RoA	(3) Profits
Treated=1 × Post=1 × Low Recovery=1	24.09	-0.01	-0.01
	(35.96)	(0.02)	(0.02)
Observations	2,031	2,031	2,031
R^2	0.397	0.884	0.882

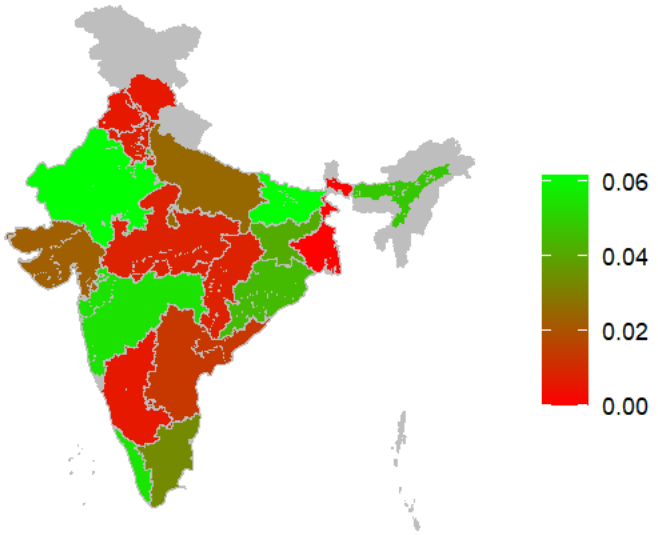
Notes: This table reports the results from estimating Equation 1 for firms' financial outcomes. In columns one through three, the dependent variables are, respectively, return to equity, return to assets, and retained profits to total assets ratio. In each specification, firm, industry-year, and state-year fixed effects are included; controls include age, age squared, log of total assets and its square, cash in hand, tangibility, and profitability. Only the main coefficient of interest – the triple interaction coefficient – is reported for each regression. Standard errors in parentheses are clustered at the firm level. * p<0.10, ** p<0.05, *** p<0.01.

Table A3: Results - Real Effects of IBC

	(1) Sales	(2) Salaries	(3) Investments
Treated=1 × Post=1 × Low Recovery=1	0.10	0.04	-0.44
	(0.31)	(0.17)	(0.56)
Observations	1,968	1,961	1,779
R^2	0.932	0.972	0.812

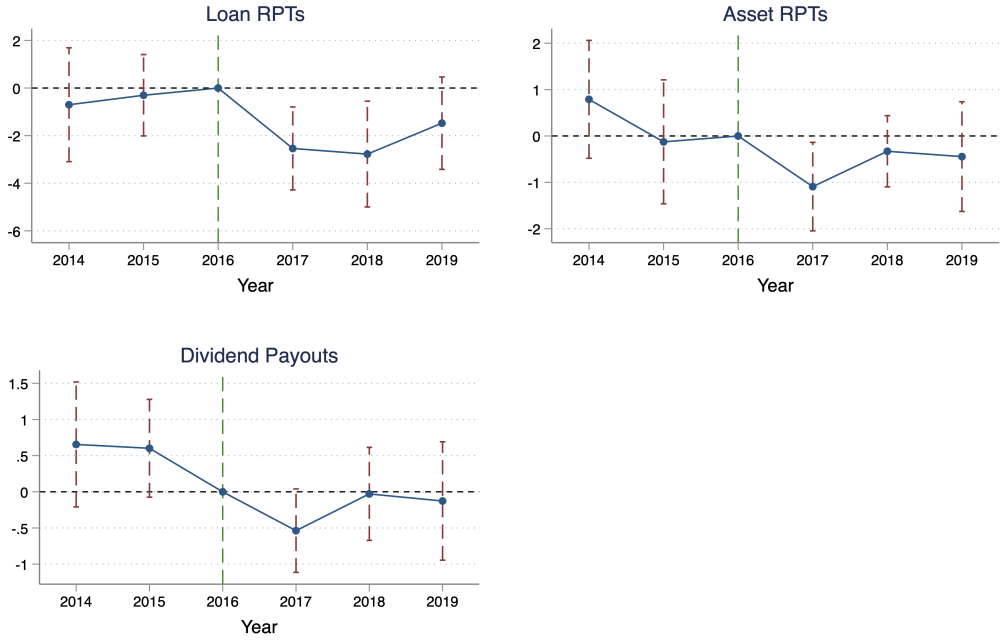
Notes: This table reports the results from estimating Equation 1 with real outcomes. In each specification, firm, industry-year, and state-year fixed effects are included; controls include age, age squared, log of total assets and its square, cash in hand, tangibility, and profitability. Only the main coefficient of interest – the triple interaction coefficient – is reported for each regression. Standard errors in parentheses are clustered at the firm level. * p<0.10, ** p<0.05, *** p<0.01.

Figure A1: Recovery Effectiveness of DRT Courts Across States



Notes: This figure reports the effectiveness of Debt Recovery Tribunals (DRTs) across Indian states. The effectiveness is measured as the total recoveries to total dues. The data is taken from IndiaStat. Gray shades indicate states for which the data is not available.

Figure A2: Effect of IBC Law Over Time – All Relevant Variables



Notes: This figure reports the effect of the IBC law over time for relevant variables (the same test for the main variable, total financial RPTs, is presented in Figure 1). Each point represents the triple interaction coefficient treated × year × low recovery; the dashed lines around each coefficient represent 95 percent confidence intervals. The dashed green vertical line corresponds to the year of IBC law implementation.