## The Labor Costs of Pro-Labor Bias in Bankruptcy: Evidence from Brazil

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#### Abstract

Judicial bias favoring reorganizations over liquidations is widespread and often justified on the basis of preserving employment in financially distressed firms. We show that such pro-labor bias might actually be detrimental for workers' earnings and their employment trajectories. We use detailed hand-collected information on the universe of bankruptcy cases filed in the state of São Paulo between 2000 and 2015. We construct a new measure of pro-labor bias based on past judicial decisions and show that more pro-labor courts are less likely to turn reorganizations into liquidations. Although employees of liquidated firms experience a larger initial drop in earnings upon bankruptcy, they also experience a faster convergence of earnings to their pre-bankruptcy level. On the other hand, the earnings of employees of reorganized firms remain significantly below their pre-bankruptcy level in the long run.

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## I INTRODUCTION

Bankruptcy institutions play an important role in the reallocation of production factors of distressed firms and have broader implications for economic growth and aggregate productivity. The objective of a well-functioning bankruptcy system is to prevent the exit of viable firms and the inefficient continuation of non-viable ones, while facilitating the reallocation of resources from distressed firms to more productive ones. However, numerous frictions tend to characterize the reallocative efficiency of the bankruptcy process, especially in developing countries. Courts are often congested and thus slow at processing cases, judges lack the specialized knowledge necessary to deal with complex cases and – in some instances – are subject to political influence. An important friction that has received little attention is pro-labor bias in the interpretation of the law. In particular, judges may opt for reorganizing or delaying the liquidation of non-viable firm – even if that means deviating from the actual wording of the law – in order to protect workers' jobs. Despite pro-labor bias in bankruptcy is considered widespread, especially in developing countries, there is no direct empirical evidence on how it affects workers' employment and earnings.

In this paper, we study the labor market effects of pro-labor bias in bankruptcy. In particular, we establish the link between pro-labor bias in bankruptcy and observed earnings dynamics of workers in financially distressed firms. This investigation poses numerous empirical challenges. It requires a measure of pro-labor bias capturing decision-level differences in the interpretation of bankruptcy laws across courts. It requires data on both liquidated and reorganized firms, as well as detailed information on their workers followed over time, including wages and individual characteristics. Finally, it requires an empirical approach that mitigates selection concerns.

To overcome these challenges, we focus on the bankruptcy process in Brazil. Brazil provides a well-suited setting for a number of reasons. First, labor protection has historically been an important determinant of policy-making: Brazil is one of the countries with the strictest labor regulations and highest employment protection worldwide (Botero et al., 2004). Second, there is large variation in the degree of pro-labor bias across its courts. For example, some courts tend to routinely deviate from the actual wording of the law when adjudicating bankruptcy cases, often with the intent to protect workers' employment. Finally, this setting allows us to combine manually-collected information on judicial decisions in bankruptcy cases and a comprehensive administrative employer-employee dataset that allows us to follow all formal workers over time.

Let us now describe the data and our setting in more detail. We collected a novel dataset covering the universe of bankruptcy cases filed in the state of São Paulo, the largest state in Brazil, between 2000 and 2015. For each case we observe all the intermediate decisions taken by the judge in charge of the case. This allows us to observe whether courts deviate from the letter of specific articles of the law in order to facilitate

the survival of an insolvent firm. Such deviations are often justified by judges on the predicament of preserving employment. We use these intermediate decisions to create a new measure of pro-labor judicial bias. We then match our dataset on bankruptcy cases with an employer-employee dataset that consists of the universe of formal employment and provides detailed information on employment status, wages and a large set of individual employee characteristics. This allows us to capture a thorough depiction of the evolution of employment and earnings for employees in bankrupt firms and characterize the extent and direction of their post-bankruptcy labor market outcomes.

We start by highlighting the role of pro-labor bias in facilitating the continuation of insolvent firms through a set of stylized facts. We document that pro-labor courts are less likely to subsequently liquidate a firm in reorganization and, if they decide to liquidate, they tend to delay the liquidation decision. Notice that this occurs despite high and low pro-labor courts displaying similar levels of initial court congestion. At the firm level, we document that pro-labor bias is positively associated with a lower decline in employment during bankruptcy and a higher probability of firm continuation.

Next, we study the direct impact of different bankruptcy regimes on employee earnings. There are two main identification challenges in addressing this empirical question. The first is that, for most firms, bankruptcy filings are not exogenous events. To address this selection issue, we implement a matching estimator approach, and compare workers in bankrupt firms with workers in a matched sample of non-bankrupt firms using an event-study difference-in-differences specification.<sup>1</sup> The second challenge arise from the fact that we are interested in comparing labor market outcomes for workers of reorganized versus liquidated firms. We address this challenge by estimating a specification with judicial district times year fixed effects, so that we are effectively comparing the earnings trajectories of workers whose employers are undergoing different bankruptcy regimes but that are facing the same local labor market shocks.

Our main finding is that workers' earnings trajectories differ significantly between liquidations and reorganizations. Workers of liquidated firms experience a larger initial drop in annual labor income. However, their income converges back to its pre-bankruptcy level within 3 to 4 years from the bankruptcy filing. On the other hand, the earnings of employees of reorganized firms remain constantly lower in the long run, at a level that is significantly lower than the pre-bankruptcy one. To the best of our knowledge, this is the first paper to document this differential effect of liquidation versus reorganization on the evolution of workers' earnings.

In a second step of the analysis, we focus on the sources of this earnings adjustment. On the one hand, the large earnings decline in liquidated firms at the time of the bankruptcy filing that is followed by a gradual increase and recovery could be the result of displacement

<sup>&</sup>lt;sup>1</sup>Similar matching strategies have been used in Davis et al., 2014, Olsson and Tåg, 2017 and Graham et al., 2019.

leading to subsequent periods of non-employment and wage declines (e.g. Lachowska et al., 2018). On the other hand, the long-lasting earnings losses observed in reorganizations may materialize through permanent within-firm wage declines for the employees that remain in the firm and through wage declines caused by inefficient delays in the reallocation of employees. To identify the drivers of earnings dynamics, we decompose changes in earnings to a component that reflects changes in employment durations, and a component that captures changes in wage levels. The results suggest that, while short-run earnings losses in liquidations are largely driven by changes in employment status, reorganizations lead to significant and persistent drops in wages that are larger for employees that remain in the reorganized firm relative to those that leave the firm.

Finally, we exploit cross-sectional variation in employee attributes to characterize the extent and direction of the impact of bankruptcy institutions on different groups of employees. Given the importance of outside options in macroeconomic search and bargaining models (e.g. Postel-Vinay and Robin, 2002) and the role of information asymmetry in explaining wage declines due to displacement (e.g. Gibbons and Katz, 1991), we begin by exploring the earnings outcomes by skill level. Interestingly, we find that employees in reorganizations experience a long-lasting decline in earnings that is primarily attributed to wage losses, regardless of the level of skill. On the other hand, post-bankruptcy employee earnings in liquidations exhibit heterogeneous trajectories between high- and low-skill employees in the short-run. Specifically, high-skilled employees are unaffected by the bankruptcy process, while low-skill employees experience a large earnings drop at the time of the bankruptcy event followed by a recovery seven years after the bankruptcy. Next, we exploit information on employees' occupational profiles. We find that, in both reorganizations and liquidations, managers suffer large and prolonged earnings losses, consistent with reputational costs and stigma in the labor market associated with poorlyperforming management. Additionally, the adverse effects of reorganizations on earnings are also present for blue-collar workers, which are precisely the type of workers bankruptcy courts are trying to assist when reorganizing distressed firms.

Overall, our empirical findings suggest that pro-labor bias matters for the type of bankruptcy resolution, which in turn matters for employees' earnings and employment trajectories in developing countries. Given the large initial earnings drop in liquidations and the fact that pro-labor bias affects bankruptcy resolution by increasing the continuation incidence for distressed firms, our results indicate that bankruptcy courts are likely myopic in their decisions to reorganize insolvent firms by weighing more the short-term labor costs associated with initial displacement and failing to consider the long-term effects of inefficient reorganizations. As a result, liquidations appear to be more effective in developing countries that experience important judicial frictions in the application of the bankruptcy law, by initiating a "creative destruction" process.

Finally, our results have important implications about recent temporary changes in in-

solvency regimes adopted by governments to mitigate the economic impact of COVID-19. These changes range from extending the automatic stay periods to temporarily preventing creditor actions against firms and suspending the obligation to file for bankruptcy under certain conditions. Specifically, the Brazilian government prohibited creditors to declare a debtor bankrupt for a 60-day period starting March 20 of 2020, and introduced a 90-day suspension for all obligations established in judicial reorganization plans. These changes – while temporary – may lead to further distortions in the reallocation of labor inputs in downturn periods.

## II RELATED LITERATURE

Excessive reorganization has been the focus of a large literature in the US. Our paper contributes in numerous ways to our understanding on how bankruptcy affects resource reallocation. First, our evidence contribute to the literature on the effect of bankruptcy on employees. Graham et al. (2019) show that bankruptcy is associated with large employee costs and estimate that in US an employee's annual earnings decrease by 10% in the year of bankruptcy and by 67% over a seven year period after the bankruptcy. Our contribution is twofold. First we provide novel evidence on the cost for bankruptcy on employees in developing countries, which is important given both the weaker institutions relative to US and the fact that liquidations are the predominant type of bankruptcy resolution which is in contrast with what is the norm in developed countries. In addition, we highlight the potential role of judicial bias in distorting the labor reallocation process.

In addition, our results relate to the growing literature on the influence of judges' individual characteristics on the bankruptcy process. Bris et al. (2006) examined bankruptcies in Arizona and New York from 1995 to 2001 and found evidence that the particular judges drawn to handle a case differ in terms of the fractions they pay out to creditors, the length of the proceedings and how they adhere to absolute priority. Iverson et al. (2020) use large corporate Chapter 11 filling in US and document that judge experience affects the time spent in bankruptcy, the likelihood of reorganization and refiling, as well as creditor recovery rates. The paper closer to ours is Chang and Schoar (2013), in which the authors use judge fixed effects to create a measure of pro-debtor friendliness and estimate the impact on bankrupt firms. Specifically, they show that pro-debtor judges lead to worse firm outcomes in terms of firm survival, sales and employment growth. Relative to the prior literature, our paper is the first to examine the impact of pro-labor bias in the the application of the bankruptcy law in a developing setting, where these biases are likely to play a stronger role. Additionally, our focus is on employee costs and reallocation, and our granular data allow us to estimate employment outcomes adjusted for employee characteristics and composition effects.

Our paper also relates to the broader literature on bankruptcy and reallocation of

production factors. On the one hand, bankruptcy leads to a reduction in employee earnings (e.g. Graham et al., 2019); however, it also promotes self-employment and new firm creation (e.g. Hacamo and Kleiner, 2016). Moreover, the type of resolution, matters for asset reallocation. Hotchkiss (1995) examines 197 public companies post Chapter 11 and finds that many of them either go bankrupt or go through Chapter 11 again in the future, while Bernstein et al. (2019) find that long-run utilization of assets of liquidated firms is lower relative to assets of reorganized firms. Our contribution is based on the fact that we focus on the reallocation of the labor input compared to physical assets. A fundamental difference between physical assets and human capital is that firms are not residual claimants of employees' human capital (e.g. Hart and Moore, 1990). Therefore, unlike real assets, employees have the opportunity to voluntarily exit from firms in financial and economic distress. This difference between real assets and human capital makes it challenging to draw insights from existing literature on how bankruptcy affects the reallocation and utilization of the labor input.

Finally, our paper contributes to the literature that explores the impact of institutional frictions on the efficiency of the bankruptcy process. In particular, Ponticelli and Alencar (2016) demonstrates the significant effects of court congestion in the firms' access to finance and the subsequent effects on investment, while Li and Ponticelli (2020) focuses on political influence on courts' decisions and highlight the role of specialized courts in leading to faster bankruptcy resolution and a decline in the share of zombie firms in China. Our paper contributes to this literature by introducing a measure of judicial bias and demonstrating its role in affecting bankruptcy resolution in Brazil.

## III INSTITUTIONAL BACKGROUND

#### III.A THE BANKRUPTCY SYSTEM

The Brazilian Bankruptcy Law shares important similarities with the U.S. Bankruptcy Code by allowing for two types of in-court formal proceedings for insolvent firms, namely judicial reorganization ("Recuperação Judicial") and liquidation ("Falência").

Liquidations are predominantly involuntary proceedings initiated by one of the firm's creditors, although a debtor itself that experiences both financial and economic distress has the opportunity to voluntarily request the commencement of formal liquidation proceedings. The procedure is analogous to Chapter 7 of the U.S. Bankruptcy Code. Once a petition for involuntary bankruptcy is filed with the court, the debtor has the opportunity to submit a defense, and/or file for an in-court restructuring within 15 days. If the liquidation case is not dismissed and the court accepts the request, a court-appointed trustee replaces the management and the debtor's assets are sold though public auctions, sealed bids or public proclamations based on guidance from the judicial trustee. The proceeds

are used to repay the existing liabilities pursuant to the statutory absolute priority order: (i) labor-related claims (capped at 150 minimum wages per employee), (ii) secured credits, (iii) tax liabilities, and (iv) unsecured claims.

In contrast, reorganizations are initiated only voluntarily by the debtor itself and the underlying procedures are largely analogous to the ones followed in Chapter 11 of the U.S. Bankruptcy Code. The reorganization process is a court-supervised procedure that was formally introduced in Brazil as part of the 2005 bankruptcy law reform in an attempt to modernize and replace the previously inefficient and rarely used reorganization-like process ("Concordata") that basically only postponed debt repayment with no renegotiation between parties. The purpose of the judicial reorganization process is to enable economically viable (albeit financially distressed) firms to effectively restructure and overcome insolvency so as to preserve production, employment and the interests of creditors.<sup>2</sup> The stages and the time frame of the reorganization procedure are shown in Appendix Figure A1.

## [Insert Appendix Figure A1 Here]

Following the filing of the reorganization request, the court decides its eligibility based on a set of statutory requirements. In most cases, the decision is primarily based on whether or not the firm has attached to the petition the required documentation, including current and previous financial statements and a complete list of creditors. An assessment of economic viability is done in a later stage with the participation of creditors. If the request is accepted, the firm is granted an automatic stay on its assets and creditors are prevented from pursuing their claims or repossessing any collateral for a period of 180 days.<sup>3</sup> In addition, the court appoints a trustee to oversee the proceedings and monitor the debtors' activities.

Within the first 60 days, the debtor is expected to present a reorganization plan containing: i) a strategy<sup>4</sup> for the recovery of the firm; ii) estimates of the firm's long-term economic and financial prospects under the proposed terms; and iii) an independent appraisal report with the estimated value of the firm's existent assets. Claims with voting rights and subject to automatic stay are grouped together according to their types; labor claims, secured credits, unsecured credits and claims from small businesses.<sup>5</sup> Debt renegotiation offers cannot discriminate between creditors in the same class.<sup>6</sup>

 $<sup>^2\</sup>mathrm{Article}$  47 of the Brazilian Bankruptcy Law No. 11.101/2005

<sup>&</sup>lt;sup>3</sup>Brazilian law allows some exceptions to automatic stay during reorganization. For example, claims originated from lease contracts, chattel mortgages and accounts receivable lines of credit are not subject to automatic stay. However, during the first 180 days of the automatic stay, creditors holding these types of claims cannot sell "productive capital goods" (such as production plants, machinery or vehicles) that are deemed essential to the firm's recovery.

<sup>&</sup>lt;sup>4</sup>The proposed strategies involve a mix of debt renegotiation, asset divestitures, workforce downsizing and any attempt to obtain additional funding.

<sup>&</sup>lt;sup>5</sup>Creditors whose claims are not subject to automatic stay do not vote on the reorganization plan but are allowed to veto the sale of any collateral supporting their claims.

 $<sup>^{6}</sup>$  The law makes an exception for trade creditors that keep supplying the firm during its reorganization.

After the reorganization plan is submitted, each creditor has 30 days to raise objections. If no objections are raised, the plan is considered to be approved. Otherwise, the court schedules a meeting that includes creditors with voting rights to vote on the proposed plan. If the plan is rejected by creditors that hold more than 50% of the total value of claims in any given class of claims, the firm is liquidated. If the plan is approved, reorganization starts and the firm begins implementing the proposal restructuring plan.<sup>7</sup>

During the next two years, the firm is expected to adhere to the reorganization plan and any major change that deviates from the initial proposed plan must be approved by creditors. At the end of this two-year period, if everything has gone according to plan, the court declares the end of the reorganization period and the firm is considered to have recovered from insolvency. Otherwise, if at any point in this period the firm is considered to have failed to follow the reorganization plan, the court orders the conversion of its reorganization into a liquidation. Figure I provides information on the reorganization outcomes from 2005 to 2015. In general, the percentage of cases that are converted to liquidations ranges between 25 percent in 2014 to 40 percent in 2007, while the percentage of cases that are granted recovery ranges from 32 percent in 2005 to 10 percent in 2013 and 7 percent in 2014. Notice though that reorganization involves a lengthy resolution process and thus, part of the cases from 2013 and 2014 are expected to lead to recovery.

#### III.B ASSIGNMENT OF CASES TO DISTRICT COURTS

Bankruptcy cases are adjudicated in state courts. Any liquidation or reorganization request has to be filed in the judicial district that has jurisdiction over the location of a firm's primary establishment, which is predominantly where the firm's headquarters are located. This restriction limits the ability of the debtor to engage in forum shopping by filing the petition in jurisdictions perceived as consisting of pro-debtor courts. The same restriction applies to any creditor that considers filing a liquidation request.

After a bankruptcy request is filed, it is randomly assigned to a district court within the debtor's judicial district. Judicial districts vary with regard to how many courts have jurisdiction over bankruptcy cases. For instance, while a case filed in the judicial district of Santos will be assigned to one of 12 general civil courts, bankruptcies filed in Serrana are automatically designated to its one and only district court. This can be seen in Figure A2, that reports the geographical location and the number of courts in the state of São Paulo for the bankruptcy requests filed between 2000 and 2015. Municipalities are divided in quartiles based on the number of courts present with the ones colored in white representing municipalities that have no bankruptcy court - and for which the cases are

<sup>&</sup>lt;sup>7</sup>The court can still allow the firm to continue with its reorganization even though the plan has been voted down. For that to happen, the plan must have been approved by: i) creditors in attendance representing at least half of the total value of claims in all classes; ii) half of the classes with creditors in attendance; and iii) more than a third of creditors in the classes in which it was rejected.

allocated to a neighboring municipality within the same judicial district. Figures A3 and A4 report the geographical distribution of the total number of bankruptcy requests and the average number of requests per court, respectively.

[Insert Appendix Figure A2 Here][Insert Appendix Figure A3 Here][Insert Appendix Figure A4 Here]

## IV MEASURE OF PRO-LABOR BIAS

To examine the implications of pro-labor bias in bankruptcy, we construct a courtlevel measure based on the courts' decisions over the course of the reorganization process. The measure captures the tendency of bankruptcy judges to deviate from the statutory legal provisions. Judges most commonly cite preserving employment as an important consideration underlying the courts' decision to grant a distressed firm the opportunity to reorganize or reject creditors' liquidation requests. This observation is consistent with the importance of labor protection in determining policy-making in Brazil. Indeed, Brazil is one of the countries with the strictest labor regulations and highest employment protection worldwide (Botero et al., 2004), while the Brazilian Bankruptcy Law explicitly recognizes the importance of preserving employment in shaping the reorganization process. Thus we will be using interchangeably the terms "pro-debtor" and "pro-labor" when we observe deviations from the provisions which are pro-firm.

There are several instances over the course of the reorganization process when a court is called to make a decision. For example, in the early stages, courts decide whether to grant bankruptcy protection; rule on the right of particular secured creditors to seize collateral; decide whether trade creditors are allowed to discontinue supply during the stay period; and determine if the 180 days stay period should be extended. In the later stages, it is up to the court to rule on any creditors objections to the proposed plan; to decide on whether to uphold the outcomes of creditors' votes; to determine whether any particular actions taken by the debtor's management merit their removal; and to conclude if the reorganization should be resolved or should be turned into a liquidation.

When making these decisions, bankruptcy courts typically have some discretion leading to instances where courts make two different (and in some cases, opposite) rulings, while still referring to the same article of the legislation. This relative freedom was in part granted by design by lawmakers to allow judges to decide based on the specifics of each case, while adhering to the general spirit of the law. However, at least in some degree, it also allows them to make choices more aligned with their preferences and beliefs.

Therefore, we construct our measure using data manually extracted from reorganization decisions from the Justice Courts in the State of Sao Paulo. In particular, we collected the text of any decisions made by bankruptcy courts until March 2020 regarding reorganization cases from 2008 to 2017. We searched the decisions' text for mentions to specific legal provisions that judges use to exercise their discretion either in favor or against the firm. For each mention to one of these provisions, we read the ruling and classify it as being either pro-creditor, pro-firm or neutral. In Appendix we provide information on the legal provisions we searched for and the criteria we used when categorizing the decisions. It also highlights some examples of decisions labeled as pro-creditor and pro-debtor.

One of the legal provisions where courts exercise discretion is Article 49 A.3 of the Brazilian Bankruptcy Law, which explicitly excludes from automatic stay specific types of secured claims, including claims originated from lease contracts, chattel mortgages and accounts receivable lines of credit. However, the same article also precludes creditors holding these types of claims from selling "productive capital goods" (e.g. production plants, machinery or vehicles) that the court deems essential to the firm's recovery. Additionally, the law also states that reorganization has the general objective of "maintaining jobs and creditors interests while promoting the preservation of the firm, its social function while stimulating economic activity".<sup>8</sup> When deciding not to uphold the exclusion of these credit claims, courts routinely cite this general objective and argue that limiting bankruptcy protection would harm the firm's chances of survival. In this case, for each mention to article 49 by a judge in a reorganization case, we read the decision and classify it as "pro-debtor" when the judge allowed creditors to seize the assets given as collateral, and as "pro-debtor" when the request to seize the collateral was denied.

Another important legal provision where courts exercise discretion is the length of the automatic stay period. In principle, Article 6 A.4 of the Brazilian Bankruptcy Law states that the stay period is non-extendable.<sup>9</sup> However, courts have been allowing its extension upon certain conditions, notably when the debtor itself is not responsible for the delay in the reorganization procedure. Thus, in constructing our judicial bias measure, we consider as "pro-debtor" any decision that extends the automatic stay period.

Finally, we repeat the same procedure for the following three legal provisions. Specifically, Article 73 and Article 61 A.1 pertain to the conditions under which a reorganization can be turned into a liquidation, while Article 64 states the necessary conditions for the removal of a debtor's management over the reorganization period.

To estimate our measure, we first aggregate pro-debtor and pro-creditor decisions at the court level within a judicial district (where the random assignment of courts occurs) by assigning a value of 1 to pro-debtor decisions and a value of -1 to pro-creditor ones, and then divide the outcome by the total number of decisions of the judicial district.

<sup>&</sup>lt;sup>8</sup>Article 47

 $<sup>^{9}\</sup>mathrm{Article}$  6 A.4 of the Brazilian Bankruptcy Law states that under no circumstances the automatic stay period should exceed 180 days.

Therefore, for a decision at time t pertaining to subject s in court c of judicial district j, our pro-labor bias index is computed as:

$$Pro-LaborBias_{cj} = \frac{1}{N_{cj}} \sum_{t} \sum_{s} D_{cjts}$$

in which  $N_{cj}$  is the number of total decisions of court c in judicial district j in our sample and  $D_{cjts}$  is the sum of pro-debtor and pro-creditor decisions. A pro-labor bias value of 1 implies that a court always deviated from the letter of the law in a pro-debtor direction whenever one of legal provisions above has been used in a reorganization. On the other hand, a value of -1 implies that a court always deviated in a pro-creditor direction. Panel A of Table III reports summary statistics of the pro-labor measure for the 382 courts that have handled reorganization cases. Courts make on average 5 decisions over the course of the reorganization process regarding the legal provisions above, and tend to rule in favor of debtors when using one of these articles.

## V Data

This paper uses two primary data sources for the analysis. First, we manually construct a dataset of bankruptcy requests in the state of São Paulo between 2005 and 2011. Second, we use matched employer-employee records that consist of nearly the universe of formal employment in Brazil from the *Relacão Anual de Informacões Sociais (RAIS)* from the Brazilian Ministry of Labor (MTE).

#### V.A BANKRUPTCY DATA

Information on bankruptcy requests was collected from the electronic records of the *Tribunal de Justica de São Paulo (TJSP)*, which include detailed information on court decisions related to judicial cases filed and adjudicated in the state of São Paulo. We collected information on the type of the bankruptcy petition, the identity of the debtor, and the case's intermediate decisions for all bankruptcy requests filed between 2005 and 2011. The sample consists of 7,715 bankruptcy petitions, out of which 6,130 correspond to liquidation requests and 1,585 are reorganization requests.

The electronic records contain detailed case-level information that includes the filing date, the type of the bankruptcy request (liquidation or reorganization), the judicial district and the court to which the case was assigned, the name of the judge responsible for the case, and finally, the names of the claimant and the defendant. Additionally, we collected information on any intermediate court decisions, including the decision date and the decision outcome (e.g. decision to approve the reorganization, or to convert the reorganization to liquidation). We follow decision updates to the bankruptcy cases from the time they are filed up to March 2020.

#### V.B RAIS DATA

Information on linked employer-employee relationships is obtained from RAIS that is collected by the Brazilian Ministry of Labor (*Ministério de Trabalho e Emprego - MTE*) since 1976. RAIS is a longitudinal administrative dataset that is compiled at an annual basis from information collected directly by formally-registered, public or private firms and includes comprehensive information on labor contracts. The objective of the RAIS dataset is to administer and monitor access to unemployment insurance and payment of benefits to eligible employees, and, therefore, firms have strong incentives to provide comprehensive and accurate information in MTE. In addition, control mechanisms are in place to ensure mandatory compliance to the requirements of RAIS. Based on estimates of the Ministry of Labor, RAIS includes over 95% percent of formally-employed individuals in Brazil.

The unit of observation in RAIS is a job entry that is identified by an employee-level identifier (PIS) and an establishment-level identifier (CNPJ), and enables us to track individuals over time and across firms. Specifically, the establishment-level identifier, CNPJ, consists of fourteen digits, the first eight of which identify the registration number of the firm and digits nine through twelve determine whether the registered entity is a firm's headquarters or a branch office. The firm name has been used to identify firms filing for a bankruptcy request using information on the debtor's name extracted from the TJSP.

In addition, RAIS includes information regarding the start and end date of the specific job entry, occupation type, wage level, and demographic characteristics. Additionally, RAIS contains information on the terminations of labor contracts which allows us to identify exits from the labor force due to retirement or death. The occupation type is coded according to the *Classificação Brasileira de Ocupações* (CBO). Following the approach developed by Muendler et al., 2004, we map occupational codes to the International Standard Classification of Occupations (ISCO). At the establishment-level, RAIS contains information on the geographical location of the establishment, and the sector that the specific establishment operates. At the individual-level, available demographic characteristics include gender, age, race and education level.

#### V.C FINAL SAMPLE

We begin with 7,714 bankruptcy requests from 2000 to 2015 and use debtor names as reported in TJSP to determine firm-level identifiers. Specifically, for liquidations initiated by one of the creditors, we rely on the name of the defendant, while for reorganizations (that are always initiated by the debtor) the relevant entity is identified using the name of the claimant. Firms based in Brazil are assigned an identification number from the Department of Federal Revenue (*Secretaria da Receita Federal do Brasil*), namely the National Registry of Legal Entities Number or CNPJ (*Cadastro Nacional da Pessoa Jurídica*) Number. To determine the identification number attached to firms involved in a bankruptcy request, we first match by firm name to RAIS where the CNPJ information is readily available. In case there is no match available, we manually searched and collected the CNPJ information. Following this process, we were able to collect the CNPJ of around 87% of the filings involving 5,334 liquidation and 1,388 reorganization requests.

Out of the 6,722 bankruptcy requests, there are cases where a debtor appears in multiple requests. This can primarily occur for the following reasons. First, since a liquidation request is primarily initiated by a creditor, it is likely that multiple creditors file for a liquidation petition. Second, one of the potential reasons that a liquidation request is dismissed by a court is if the debtor files for a reorganization request that is subsequently accepted by the court. Finally, the Brazilian Bankruptcy Law allows a debtor to refile for bankruptcy five years after a reorganization has been granted. Though uncommon in our sample, in principle, it is possible to find multiple reorganization cases for the same firm in different time periods. Therefore, to deal with multiple requests, we used the following steps. First, within a year, we prioritize the requests with the status of "ongoing." Second, we prioritize reorganization over liquidation requests. Finally, for multiple within-year liquidation requests, we keep the one with the earliest filing date. As a result, our sample includes 6,247 bankruptcy requests corresponding to to 5,828 unique firms.

For the purposes of the empirical analysis, we focus on the 2,014 bankruptcy cases from June 2005 (after the Bankruptcy Law Reform was introduced) to 2011 and restrict our employee-employer sample to the years 2000 to 2016 so that employee-level information is available for five years before and at least five years after the bankruptcy request. We exclude bankruptcy cases where the debtor has no employment information reported in RAIS in the year before the bankruptcy request. To identify firms that are economically active, we only include bankrupt firms with at least five employees in RAIS one year before the bankruptcy request. Finally, we exclude cases where debtors demonstrate irregular patterns in employment growth in the pre-bankruptcy period. Specifically, we exclude bankrupt firms that either (i) exhibit an average employment growth rate of greater than 100% in the three-year period prior to the year before the bankruptcy, or (ii) experience an employment change in continuous years from above 100 employees to below 10 employees at any point in the three-year period prior the year before the bankruptcy. As a result, our final sample includes 882 bankruptcy requests involving 847 insolvent firms.

## VI Empirical Methodology

#### VI.A TREATMENT AND CONTROL GROUP

A key econometric challenge in analyzing the impact of bankruptcy institutions on employees' labor market outcomes, is that the decision of a firm to file for bankruptcy is not an exogenous event. Insolvent firms are potentially different from firms that are not involved in a bankruptcy case both in terms of observable and unobservable characteristics<sup>10</sup>. Indeed, distressed firms in our sample are disproportionally larger compared to the average population of firms and are concentrated in specific industries.

To address the potential selection issue, we implement a matching estimator approach, and construct a matched sample of firms that have never experienced bankruptcy during the period under study based on location, employment, sector, business type, and multi-establishment status. This matching strategy has been extensively used in the literature (e.g. Davis et al., 2014; Olsson and Tåg, 2017; Graham et al., 2019).

Specifically, for each firm that filed for bankruptcy in year t, we select a potential counterfactual firm that is located in São Paulo, and (i) has never experienced a bankruptcy event, (ii) operates in the same two-digit sector, (iii) is registered as the same business type as the bankrupt firm, (iv) has the same multi-establishment status, (v) the firm is in the same size decile in the year prior to the bankruptcy event as the bankrupt firm, (vi) the firm is in the same quintile of average employment growth for the three-year period prior to the year before the bankruptcy petition, and (vii) has been present in RAIS for precisely the same pre-bankruptcy period as the treated firm. In case there are multiple potential control firms, we select the two firms that experience the closest three-year employment growth prior to the year before the bankruptcy event.

#### VI.B SUMMARY STATISTICS FOR POPULATION, BANKRUPT AND CONTROL FIRMS

Figure II provides information on the distribution of bankruptcy requests in our matched sample from June 2005 to 2011, highlighting an increase in reorganization petitions following the introduction of the Brazilian Bankruptcy Law Reform in 2005.

#### [Insert Figure II Here]

Table I separates bankrupt firms based on the type of bankruptcy filing and provides information on firm- and employee-level characteristics one year prior to the bankruptcy event. Panel A of Table I indicates that firms that file for reorganization are larger both in terms of employment and total wage expenses. The estimates in Panel B demonstrate that in terms of worker characteristics, while the differences between firms in liquidation

<sup>&</sup>lt;sup>10</sup>Appendix Table A3 and Appendix Figure A5 demonstrate that bankrupt firms are on average larger than the population of firms, and are concentrated in manufacturing relative to the population of firm.

and reorganization are statistically significant, they are small in terms of economic magnitude. The only exception is the average wage, which is larger in firms in reorganization, consistent with the well-documented employer size-wage effect (Brown and Medoff (1989); Idson and Oi (1999)), given these firms are larger as Panel A shows. Panel C documents that firms that file for liquidation exhibit minor differences in the industry distribution compared to firms in reorganization.

#### [Insert Table I Here]

Importantly, Table II presents firm-level and employee-level summary statistics for treated and matched firms. Panel A reports firm-level employment-related characteristics and documents that control and treated firms are similar in terms of total employment, total wage bill and labor structure. This is consistent with the matching procedure finding comparable counterfactuals. Panel B of Table II presents employee-level descriptive statistics for the 1,338,039 workers of treated and control firms. As shown, workers display similar characteristics in terms of education, gender, age, tenure and average log wage.Table II shows that treated and matched (control) firms are similar both in terms of firm and employee characteristics.

#### [Insert Table II Here]

#### VI.C EMPIRICAL SPECIFICATION

To examine the impact of bankruptcy on employees' labor market outcomes, we employ a difference-in-differences specification around the timing of the bankruptcy event by comparing outcomes for employees of firms filing for bankruptcy relative to outcomes for employees of counterfactual firms. In particular, we restrict our focus on a five-year period before and a seven-year period after the bankruptcy. In selecting the timing of the bankruptcy, we use the filing date as provided by TJSP.

Specifically, we estimate the following specification using the individual employee as the unit of analysis:

$$Y_{jt} = \alpha_j + \alpha_t + \alpha_b + \alpha_{dt} + \sum_{p=-5}^{p=+7} \lambda_p d_{jt}(p) + \sum_{p=-5}^{p=+7} \delta_p d_{jt}(p) \times I_j^{Treated} + \beta X'_{jt} + \varepsilon_{jt}$$
(1)

where  $Y_{jt}$  is earnings for the individual j in calendar year t, and p is used to index normalized time expressed in years relative to the bankruptcy filing and ranges from -5 to +7. The indicator variable  $d_{jt}(p)$  is equal to 1 if  $d_{jt}(p) = p$  and is used to identify leads and lags around the time of the bankruptcy event.  $I_j^{Treated}$  is an indicator function equal to 1 for employees of firms that have experienced a bankruptcy event at any point in time, and equal to 0 for employees of counterfactual firms.  $\alpha_j$  denotes worker fixed effects to absorb unobservable time-invariant differences across individuals.  $\alpha_t$  is year fixed effects to absorb aggregate macroeconomic shocks. Moreover, we also present results adding judicial district × year fixed effects, so as to absorb unobservable time-varying differences across judicial districts d. We include bankruptcy fixed effects to ensure that each treated firm is matched with its respective control firms. Finally,  $X'_{jt}$  includes the following timevarying worker characteristics: years of experience (defined as Age - 2\*Education - 4), years of experience × years of education, and years of experience × female indicator.<sup>11</sup> The coefficients of interest ( $\delta_p$ ) capture the average difference in the outcome variable between employees in treated and control firms when  $d_{jt}(p) = p$  and are normalized to zero at p = -1. The standard errors are clustered at the transaction and the firm level. To account for changes in the composition of workers in the post-bankruptcy period and make sure that we estimate the effects for workers who experience bankruptcy, for the estimation we only consider employees that were present in treated and control firms in the year prior to the bankruptcy event (t = -1).

The identifying assumptions that allow a plausibly causal interpretation of the estimated treatment effect in a difference-in-differences specification are the parallel trend assumption and the stable unit value treatment assumption (SUVTA). In our empirical analysis, we document the existence of pre-bankruptcy parallel trends of the outcome variables, implying that pre-bankruptcy shocks have affected treated and control workers in a similar manner. Notice, that our matching estimator approach includes a variable that captures a pre-bankruptcy employment growth trend.<sup>12</sup> However, the variable is coarse in the sense that is based on averaging over a three-year period and matching by quintiles.<sup>13</sup>

The SUVTA requires that bankruptcies have no general equilibrium effects on workerrelated outcomes of counterfactual firms. For example, the bankruptcy of a firm that employs a large share of the local labor market may affect the employment decisions of control firms located in the same local labor market and compete in the same product market. However, given that the set of counterfactual firms has been selected using a broad definition of sector within the State of São Paulo, where there is a sufficient number of firms, it is unlikely that any of the firms included in the sample constitutes a large fraction of the sector in the State of São Paulo.

 $<sup>^{11}</sup>$ The Education and Gender variables are not included in the estimation because they are constant at the individual level and thus, are absorbed by the worker fixed effects

 $<sup>^{12}</sup>$ One of the observable firm characteristics we use is the quintile of average three-year employment growth prior to the year before the bankruptcy.

<sup>&</sup>lt;sup>13</sup>In addition, in unreported results, earnings trajectories are similar when our matching estimator excludes this variable.

## VII EMPIRICAL RESULTS

#### VII.A LINKING PRO-LABOR BIAS WITH BANKRUPTCY RESOLUTION

We start our empirical analysis by investigating the role of pro-labor bias in shaping bankruptcy resolution. In countries like Brazil, where employment protection is an important determinant of policy-making, and Bankruptcy Law explicitly acknowledges employment preservation as one of the primary objectives in insolvency resolution, employment and labor-related considerations potentially play an important role in the courts' decision to initially allow and subsequently prolong the continuation of a firm.

In particular, we argue that courts with pro-labor bias affect bankruptcy resolution by being less inclined to subsequently liquidate a firm in reorganization, or plausibly delaying the liquidation decision of non-viable firms and protracting the reorganization process on the basis of preserving employment. As described in Section IV, pro-labor bias materializes itself in several critical stages of the bankruptcy process, as courts routinely deviate from the letter of the law to protect debtors and prolong the continuation of insolvent firms. If pro-labor bias is relevant in shaping bankruptcy resolution, there are significant implications for the reallocative efficiency of the bankruptcy process.

To examine the role of pro-labor bias in bankruptcy resolution, we follow the methodology described in Section IV to construct a court-level measure of bias, and classify courts in our sample into high and low pro-labor courts based on the median value of our measure. We start by describing a set of stylized facts that provides insight into the link between our pro-labor bias measure and bankruptcy resolution. Panel B of Table III provides information on court-level characteristics that include measures of court efficiency and incidences of different bankruptcy outcomes, by classifying courts based on the level of pro-labor bias. The estimates indicate that high pro-labor courts are characterized by practices that strongly tend to prolong the resolution of bankruptcy. While there are no significant differences in terms of court efficiency (as measured by the backlog of pending cases), there are important differences in the composition of outcomes of the reorganization process. In particular, high pro-labor courts are less likely to resolve a reorganization request – either by subsequently liquidating an insolvent firm, or by granting recovery to a firm in reorganization. The difference is particularly large in the case of converting a reorganization case to liquidation, highlighting the role of pro-labor bias in contributing to the continuation of an insolvent firm.

#### [Insert Table III Here]

Taken together, the stylized facts are in line with our hypothesis that pro-labor bias affects bankruptcy resolution. High pro-labor bias courts are less likely to liquidate firms that have filed for reorganization, while leading to prolonged bankruptcy resolutions. To formally test our hypotheses, Panels A and B of Table IV provide estimates of a regression specification that focuses on the set of reorganization cases and examines the relation between the judicial bias measure and the outcomes of the reorganization process. Specifically, we use the following specification:

$$Y_{c} = \alpha_{d} + \delta \times \text{Pro-Labor Bias Measure}_{c} + \beta X_{c}' + \varepsilon_{c}$$
 (2)

where  $Y_c$  is a variable that captures either the outcome of the reorganization case c filed in judicial district d, or the share of a reorganization outcome in court c that belongs to the judicial district d. The coefficient of interest is  $\delta$  that captures the impact of a higher level of pro-labor bias on bankruptcy resolution. We use both the continuous measure of pro-labor bias at the court-level – as estimated in Section IV – or an indicator variable that is equal to 1 for courts with a pro-labor labor bias measure that is larger than the median value, and 0 otherwise. Our sample includes the universe of reorganization cases that were filed in São Paulo from 2005 to 2017. We have collected information on the outcome of the reorganization process (e.g. liquidation, recovery) until March 2020 along with the decision date, the court and the judge that has ruled on the case.

#### [Insert Table IV Here]

Panel A of Table IV provides estimates from Equation (2) using the case-level sample of reorganizations. Notice that we employ judicial district fixed effects so that the identifying variation is based on reorganizations from courts within a judicial district that differ on the level of pro-labor bias. In Columns (1) and (2) the outcome variable is an indicator variable that is equal to 1 for requests that were subsequently converted to liquidation and 0 otherwise. The outcome variable in Columns (3) and (4) is an indicator variable that is equal to 1 for cases that were resolved in the three-year period following the request, and 0 otherwise. As shown, reorganization requests in high pro-labor courts are associated with a significantly lower incidence of conversion to liquidation and are less likely to be resolved in a timely manner. The magnitudes of the coefficient estimates in Columns (2) and (4) indicate that reorganization cases filed in high pro-labor courts are 9.1 percent less likely to be converted into liquidations, and they are 5.6 percent less likely to be resolved within three years after the reorganization request.

Panel B repeats the analysis at the court level using instead percentage shares of liquidation conversions and bankruptcy resolutions in the three-year post-filing period. Our findings confirm our hypotheses by documenting that higher pro-labor bias on judicial decisions in reorganizations is negatively correlated with both the outcome shares. The empirical estimates in Columns (2) and (4) indicate high pro-labor courts have a 13.7 lower share of cases converted into liquidations and 10 percentage points lower share of cases closed within three years.

In a second step of our analysis, we explore the relation between pro-labor bias and firm-level outcomes for different types of bankruptcy regimes. In Figure III we explore whether firms continue to operate in the seven-year period following the bankruptcy filing, while Figure IV provides evidence on the importance of pro-labor bias on employment rates in bankruptcy. We define a firm's continuation incidence to be equal to 1 if the firm is present in RAIS and employs at least one individual. The employment rate is calculated as the ratio of a firm's employment at a specific year over the employment level at the year prior to the bankruptcy. Notice that a liquidation request is not automatically followed by the exit of the insolvent firm. In fact, we observe that around 19 percent of the firms that experience liquidation in a high pro-labor bias court and 12 percent of the firms in a low pro-labor bias court continue to report employment seven years after the filing. In principle, once a liquidation request is filed by a creditor, the court decides whether to either grant or reject the request. Until the court's decision is determined, the firm remains in operation.

#### [Insert Figure III Here]

#### [Insert Figure IV Here]

Panel (a) of Figure III focuses on the set of firms that have a bankruptcy request in courts at the high pro-labor bias category, while Panel (b) reports the estimates for firms with bankruptcy cases in low pro-labor bias courts. We find that pro-labor bias matters for the continuation of bankrupt firms. Specifically, in courts with low levels of judicial bias, around 30 percent of firms exits RAIS in the year of the liquidation request, an additional 23 percent exits in the year after the filing, and 16 percent exits two years after the liquidation request. Thus, in low pro-labor bias courts, around 70 percent of firms with a liquidation filing formally exit the market within 2 years from the request. In contrast, in courts with high pro-labor judicial bias, we find that only 17 percent of firms in liquidation exit in the year of the request, 27 percent exit in the following year and around 13 percent exit two years after the liquidation request. These results are consistent with high pro-labor bias courts being less likely to grant a liquidation request from creditors within a relatively short time period. This could be either because high pro-labor courts are more likely to reject the liquidation requests, or because the creditors themselves decide to drop the request when they realize to be facing courts with higher levels of pro-labor bias.

An analogous picture emerges when examining continuation rates of firms in reorganization cases. As discussed in Section III, if a reorganization request is granted by the court and the plan is voted by the creditors' committee, the firm has generally two years to implement the plan before a decision on whether to liquidate the firm or not is taken. The continuation rates in Figure III are consistent with this timing. In particular, while continuation rates are high in the two-year period following the reorganization request, there is large drop in the continuation rate in low pro-labor bias courts three years after the request relative to high pro-labor bias courts. The magnitudes of the estimates indicate that 31 percent of the firms in low pro-labor bias courts exit three years after the reorganization filing compared to only 16 percent of the firms in high pro-labor bias courts.

Panels (a) and (b) of Figure IV provide evidence on the link between pro-labor bias and employment rates in bankruptcy. The observed employment dynamics for high and low pro-labor courts are in line with the findings for the continuation rates. Compared to Figure III, the results on employment highlight the extent of the post-bankruptcy firmlevel adjustment in operations. Strikingly, three years after the reorganization request, firms in high pro-labor bias courts not only exhibit higher continuation rates – as already demonstrated in Figure III – but also maintain an employment level of 83 percent relative to employment at the year prior to the bankruptcy, while firms in reorganization in low pro-labor bias courts exhibit an employment level of only 58 percent.

Finally, in Panel C of Table IV we estimate the extent of the impact of pro-labor bias on employment and continuation dynamics of bankrupt firms relative to the set of counterfactual firms around the filing using the following specification:

$$Y_{it} = \alpha_i + \alpha_t + \alpha_b + \gamma Post_p + \beta Post_p \times I_i^{Treated} + \zeta Post_p \times ProLaborBias_i + \delta Post_p \times I_i^{Treated} \times ProLaborBias_i + \varepsilon_{it}$$
(3)

The outcome variable in Column (1) is the logarithm of a firm's number of employees at a specific year around the bankruptcy event, while in Columns (2) to (4) we examine firm continuation by using an indicator variable that equals 1 in the years when the firm reports non-zero employment in RAIS, and 0 for the year that the firm exits our sample.

The estimates in Columns (1) to (4) show that firms with a bankruptcy request in high pro-labor courts experience a lower decline in employment, and are less likely to exit in any time window in the seven-year post-bankruptcy period. Notice that our estimates are relative to both control firms and firms that file for bankruptcy in courts with low pro-labor bias. In particular, the magnitudes of the coefficient estimates indicate that the effects are economically large with a one-standard-deviation increase in the prolabor bias measure to be associated with a 7 percentage points higher employment and a 2 percentage points higher probability of continuation in the seven-year period after the request. Taken together, our empirical findings in this section document that prolabor bias is an important determinant of the type of bankruptcy resolution, which has important implications for the labor market outcomes of employees in bankrupt firms.

#### VII.B THE EFFECT OF BANKRUPTCY ON WORKERS EARNINGS

Having established that pro-labor bias matters for the type of bankruptcy resolution, we attempt to characterize the direct impact of different bankruptcy regimes on employee earnings. We begin our analysis by examining the evolution of workers' earnings in the post-bankruptcy period. Specifically, we measure earnings as the logarithm of an individual's aggregate annual earnings across all employers.<sup>14</sup>

The magnitudes of the bankruptcy impact on earnings are reported in Figure V, which plots the estimated  $\delta_p$ s from estimating Equation (1) along with 95% confidence intervals. The horizontal line in Figure V represents the timing of the bankruptcy event, that it the distance in years from the year in which the bankruptcy request was filed. We focus on a five-year period prior to the bankruptcy event and up to a seven-year post-bankruptcy period so as to document the long-term dynamics of employee earnings. The  $\delta_p$  estimates exclude the year in which p is equal to -5. This implies that the difference in earnings between employees of bankrupt and non-bankrupt firms are expressed relative to the employee earnings observed five years prior to the bankruptcy request.

## [Insert Figure V Here]

As illustrated in Figure V, in support of the parallel trends assumption, there are no significant differences in the earnings trajectory between treated and control workers in the five-year period preceding bankruptcy. This implies that the matching process is potentially effective in mitigating concerns related to selection bias. However, relative to the control group, employees of firms that file for bankruptcy experience a statistically significant and persistent decline in earnings over the post-bankruptcy period. In particular, treated employees' earnings dropped sharply at the year of the filing and gradually increased in the seven-year period following the request; however, the labor income of treated employees never recovered in the period under study, remaining constantly at a lower level compared to earnings prior to the bankruptcy.

Columns (1) and (2) of Table V report magnitudes of the earnings estimates for specifications that use a different set of fixed effects. Using Equation (1) with employee, year and bankruptcy fixed effects, the magnitudes of the coefficient estimates in Column (1) of Table V, indicate that employees in treated firms experienced an outsize decline of 15 percent in annual total earnings in the year of the bankruptcy request that remains large in the short-run at a level between 11 and 6 percent from year 1 to year 3 relative to the earnings at the benchmark year (p = -5) and to the set of employees in control firms. The magnitude of the relative decline in workers' earnings is comparable to the one documented in the US by Graham et al (2019). In Brazil, as in the US, the effect is

<sup>&</sup>lt;sup>14</sup>This is because an individual can be employed at more than one firms over a year. An important advantage of RAIS data is that it includes the universe of formal employment in Brazil along with detailed information on the reason for the labor contract termination.

persistent; seven years after bankruptcy, workers still have around 4 percent lower labor earnings relative to the control group. The effect remains similar when we include judicial district x year fixed effects in Column (2).

#### [Insert Table V Here]

Next, we present the central result of our paper. Namely, we study the impact of different types of bankruptcy resolutions (reorganization vs liquidation) on workers' earnings. In the previous section, we documented that pro-labor bias matters for bankruptcy resolution. Courts with higher pro-labor bias as captured by judicial decisions aimed at preserving employment tend to have a higher incidence of reorganizations. In this section, we explore the earnings trajectories of employees of liquidated vs reorganized firms. This is important to shed light on whether pro-labor bias actually benefit workers in practice.

Figure VI and Columns (3) to (6) of Table V present the results of estimating equation (1) separately for liquidations and reorganizations. The classification of bankruptcies is based on the nature of the initial bankruptcy request. The estimates reveal significant heterogeneity in the post-bankruptcy earnings trajectory of treated employees based on the type of the bankruptcy process. Specifically, we find that, in the year of bankruptcy filing, workers of liquidated firms experience a larger decline in earnings relative to workers of reorganized firms. Annual labor income drops by around 18 percent for workers in liquidated firms, against the 11 percent decline for those in reorganized firms. Importantly though, there are fundamental differences in the persistence of these effects between the two types of bankruptcy. In particular, annual labor earnings of workers of liquidated firms increase gradually and converge back to their pre-bankruptcy level within 3 to 4 years after the liquidation request. On the other hand, workers of reorganized firms tend to earn consistently lower earnings – around 10 percent – in the post-bankruptcy period relative to the control group. These effects are long-lasting and persistent, with no sign of an upward trajectory or convergence even after seven years from the filing of reorganization.

#### [Insert Figure VI Here]

Table V provides estimates of the present value (PV) of earnings losses for the sevenyear post-bankruptcy period. To estimate Present Values (PV) of earnings changes, we follow Walker (2013) and calculate the discounted sum of the coefficients ( $\delta_p$ ) using a 4% annual discount rate. The estimates show that employees of bankrupt firms experience on average earnings losses of around 53%, and that reorganizations are associated with larger long-term earnings losses compared to liquidations: 71% vs 40%. Overall, our results demonstrate that liquidations are associated with an initially larger but transitory impact on employee earnings, while reorganizations lead to a steady decline in earnings that persists in the long-run. Next, in Columns (2), (4) and (6) of Table V, we augment our specification with judicial district times year fixed effects. Thus, the identifying variation originates from comparing workers facing the same local labor market shocks. As shown, our results are stable to this more conservative specification.

Finally, in column (7) of Table V, we restrict our sample to employees of bankrupt firms (i.e. removing the matched control employees) and estimate a specification in which the treatment dummy captures employees of reorganized firms. We estimate this specification with judicial district times year fixed effects, so that we are effectively comparing the earnings trajectories of employees of reorganized vs liquidated firms facing the same local labor market shocks. The estimated coefficients in column (7) capture the differential effect of bankruptcy on earnings for employees of reorganized firms relative to those in liquidated firms. Consistent with our previous results, the earnings of employees in reorganized firms are about 10 percent higher than those of liquidated firms in the year of bankruptcy filings. However, this gap is quickly closed already in the first post-bankruptcy year. Then, starting from the third year after bankruptcy, employees of reorganized firms facing the same local labor market shocks. The difference increases up to about 5 to 6 percentage points five years after bankruptcy.

Taken together, our findings in this section have significant implications about the link between different bankruptcy regimes and labor markets and the role of pro-labor judicial bias in the cost of bankruptcy resolutions for employees. First, our empirical results are consistent with liquidations acting as a vehicle of "creative destruction" in developing countries overburdened by frictions in the application of the bankruptcy law. Second, prolabor bias appears to lead to bankruptcy resolutions that are associated with long-term adverse outcomes for employees, which is precisely the opposite outcome from what is the intention of the courts when deciding to allow the continuation of an insolvent firm. A potential interpretation is that pro-labor courts overweight the immediate large earnings declines observed in liquidations when allowing a firm to reorganize and continue to operate, lacking foresight in assessing the long-term costs and consequences for employees of keeping an inefficient firm active.

## VII.C DRIVERS OF DIFFERENT EARNINGS ADJUSTMENTS IN LIQUIDATIONS VS RE-ORGANIZATIONS

The baseline estimates for the impact of bankruptcy on earnings dynamics document a large decline in the post-bankruptcy period. In addition, earnings dynamics differ substantially between liquidations and reorganizations. For example, in liquidations, we document a large initial drop in employee earnings at the time of the bankruptcy request that is followed by a sharp increase in earnings in the three-year post-bankruptcy period and a subsequent recovery to the pre-bankruptcy earnings levels. These earnings changes may be the result of forced displacement induced by non-continuation of liquidated firms, leading to subsequent periods of non-employment and/or declines in wages (e.g. Jacobson et al., 1993; Lachowska et al., 2018) due to labor market frictions associated with the process of searching for employment. In contrast, earnings declines is reorganizations are steady, persistent and long-lasting with no signs of an upward trajectory in the post-bankruptcy period. Since reorganizations are associated with a higher likelihood of firm continuation, the observed earnings losses may occur even in the absence of displacement through permanent within-firm wage declines for employees of the reorganized firm.

To identify the drivers of the earnings adjustment, we decompose changes in earnings into a wage component and a labor market participation component. The wage component captures any adjustment driven by changes in average monthly wages.<sup>15</sup> The labor market participation component captures the number of months of employment in a given year.<sup>16</sup>

The magnitudes of the estimated coefficients from using Equation (1) are reported in Figures VII and VIII and summarized in Table VI. Figure VII examines the differential impact of the two bankruptcy regimes on wages. We find that, in the first two years of bankruptcy filing, there is an initial decline in wages that is larger for employees in reorganized firms. Specifically, employees in liquidated firms experience a drop of 3.6 percent in the year after the bankruptcy request, while employees in reorganized firms sustain a larger wage decline of 6.3 percent. However, we document important heterogeneity in the long-run dynamics of the bankruptcy effects on wages between bankruptcy types. In particular, the decline in wages of workers of liquidated firms is short-run and gradually recovers, by converging to the pre-bankruptcy levels within five years after the liquidation request. On the other hand, workers of reorganized firms tend to earn consistently lower wages. In addition, the magnitudes continue to increase over time resulting in a 7.4 percent decline seven years after the reorganization filing relative to the benchmark wages five years prior to the bankruptcy request and to the set of employees in control firms. As a result, the effects of reorganization on wage levels are long-lasting and persistent, with no sign of convergence even in the long run.

## [Insert Table VI Here]

## [Insert Figure VII Here]

In Figure VIII we characterize the impact of the bankruptcy type on employment months. Contrary to the wage estimates, we document that the extent and direction

<sup>&</sup>lt;sup>15</sup>Since RAIS reports the number of hours assigned to a specific labor contract, we can also use the average hourly wage of employee i in year t. The results are unchanged.

<sup>&</sup>lt;sup>16</sup>To estimate the impact of bankruptcy on employment months, we follow the displacement literature and start with a balanced sample where we consider years with no information in RAIS to correspond to zero months of employment. As a result, we implicitly assume that an individual with no employment information in RAIS at a specific year is unemployed and the estimates represent a lower bound. The advantage of RAIS is that we are able to capture exits due to retirement or death. As a result, we drop years with zero employment months after we detect a separation that corresponds to retirement or death.

of the employment trajectory are analogous for reorganizations and liquidations. While employees in liquidations exhibit a larger initial decline in employment months in the year of the bankruptcy filing compared to employees in reorganizations, both bankruptcy types are followed by an upward employment trajectory in the post-bankruptcy period.

#### [Insert Figure VIII Here]

Overall, these results demonstrate that, while bankruptcy is generally followed by displacement, reorganization is additionally characterized by a large and persistent decline in employee wages. Specifically, our findings suggest that post-bankruptcy earnings losses in liquidations are largely driven by changes in the employment duration in the short-run through a displacement channel induced by the bankruptcy event. Employees of liquidated firms gradually recover the initially large earnings losses by reallocating to firms that pay similar wages in the post-bankruptcy period. In contrast, employees of reorganized firms experience both an initial decline in employment – albeit not as large as employees in liquidated firms – and a significant long-lasting drop in wages. This implies that reorganization has important adverse effects for employees by leading to persistent wage declines in the long-run.

To better understand the sources of the persistent wage decline in reorganizations, we explore the differential impact of the reorganizations on employees that remain and employees that separate from the firm in the post-bankruptcy period. In particular, we argue that the persistent and long-lasting effects in reorganizations occur because employees are willing to accept lower wages to preserve the continuation of the firm instead of experiencing displacement and searching for employment. In case reorganizations are driven by pro-labor bias – thus potentially allowing the continuation of otherwise nonviable firms – employees likely bear the costs of an inefficient continuation in the form of lower within-firm wages and worse subsequent labor matching quality. As a result, while liquidations are followed by large costs in the year of the filing due to displacement, they likely lead to better long-term outcomes by forcing individuals to search for employment and increasing the efficiency of the labor market matching.

The results from estimating Equation (1) for employees who are stayers and leavers in reorganizations are reported in Figure IX and Table VII. We define as stayers employees that remain in the firm where they were employed at the year prior to the bankruptcy request for at least the two-year period after the reorganization request. As shown in Figure IX, employees that stay in reorganized firms experience persistent within-firm wage declines that gradually increase over time. In fact, reorganizations result in lower wages for stayers seven years after the filing compared to employees that separate from reorganized firms in the two-year period after the request. Specifically, stayers experience an initial decline of around 3 percent in the year of the filling – though not statistically significant – that increases over the post-bankruptcy period, resulting in a 10.4 percent

wage loss seven years after the request. In contrast, employees that separate from the firm experience a steady wage decline in the post-bankruptcy period of around 6 percent.

Therefore, the observed differences in the earnings trajectory between liquidations and reorganizations primarily reflect differences in the wage trajectory of employees that stay in the bankrupt firms. In Table A4, we then explore whether there are systematic differences in employee characteristics between stayers and leavers in reorganizations. Consistent with theories that highlight the role of search costs and firm-specific human capital in explaining earnings losses after displacement (e.g. Becker, 1962; Topel, 1991), we observe that employees that remain in reorganized firms are older with substantially longer tenures, which are precisely the type of employees that are expected to experience larger earnings losses after displacement.

#### VII.D EMPLOYEE-LEVEL HETEROGENEITY

Finally, we exploit cross-sectional employee-level variation to characterize the extent and direction of the impact of bankruptcy institutions on different groups of employees. The selection of the conditioning characteristics that we explore are motivated by theoretical predictions from the bankruptcy and the displacement literature, and extends our understanding of the sources of frictions in explaining the post-bankruptcy earnings dynamics.

#### VII.D.1 Skill Level

We begin by exploring the post-bankruptcy labor market outcomes for high-skilled and low-skilled workers. The focus on the level of skill is motivated by the fact that outside options play a significant role in macroeconomic search and bargaining models (e.g. Postel-Vinay and Robin, 2002; Cahuc et al., 2006). High-skilled workers are a scarce and redeployable resource, especially in developing countries, with outsize contribution to firm productivity and value creation (Abowd et al., 2005). On the contrary, given the abundance of low-skilled labor in Brazil, the demand for low-skilled employees is likely lower. As a result, the outside options and opportunities in the labor market are better for high-skilled employees (e.g. Caldwell and Harmon, 2019) and thus, we expect the labor market dynamics to differ significantly between high- and low-skilled employees. In addition, since information asymmetry is an important factor in explaining wage declines from displacement (e.g. Gibbons and Katz, 1991), we hypothesize that asymmetric information about potential productivity is lower for high-skilled employees, limiting postbankruptcy earnings losses though a decline in the incidence of unemployment or better matching. Finally, since barriers to mobility are considered to be comparatively higher for low-skilled workers, the adverse effects of bankruptcy may be more binding for individuals with lower levels of human capital.

To proxy for skill, we use information on educational attainment of the individual as reported in RAIS. Specifically, we define as high-skilled any employee that has completed at least undergraduate education, while we define as low-skilled any employee not having completed high-school education. The results from estimating Equation (1) on the differential effects of the two bankruptcy regimes on employees with different levels of skill are reported in Figure X, while Table VIII summarizes the results including estimates for wages and employment months.

[Insert Figure X Here]

[Insert Table VIII Here]

Panel (a) of Figure X presents the estimates for liquidations, while Panel (b) reports the estimated coefficients for reorganizations. As demonstrated in Panel (a), high-skilled employees experience a minor decline in earnings in the year of liquidation request that is not statistically significant followed by an upward trajectory in the post-liquidation period. On the contrary, low-skilled employees experience a large earnings drop at the time of the bankruptcy event followed by a gradual recovery in the seven-year post-liquidation period. The magnitudes of our estimates indicate that low-skilled labor experience earnings losses of around 20 percent in the year of the bankruptcy, which are primarily driven by a decrease in employment months. However, conditional on employment, there is evidence of a short-run decline in wages as well, as there is a drop ranging from 4.1 percent in the year of the filing to 3.7 percent three years after the request. Overall though, labor income eventually converges to pre-bankruptcy levels even for low-skilled employees seven years after the liquidation event.

In contrast, in reorganizations, employees exhibit a completely different earnings trajectory after the bankruptcy request. Interestingly, the dynamics and the magnitudes are equivalent regardless of the level of skill. In particular, reorganization has negative and persistent effects on workers' earnings for both types of employees leading to a longterm earnings decline of around 9 percent. The effects are attributed to long-lasting and persistent wage losses – primarily in the long run – and non-employment in the short-run.

The empirical results are consistent with liquidations leading to better labor market outcomes for employees compared to reorganizations regardless of the skill. A potential interpretation is that, in the presence of frictions in the bankruptcy process (e.g. pro-labor bias), reorganizations lead to the continuation of low-productivity firms, thus preventing the efficient reallocation of employees in higher-productivity firms, since employees appear to be willing to accept lower long-term earnings instead of experiencing a short-term earnings drop and reallocating to better matches.

#### VII.D.2 Occupations

Next, we explore the role of occupations in explaining differences in earnings dynamics. We classify employees to occupational categories by exploiting information on the occupational code assigned to the labor contract at t = -1. Following the approach developed by Muendler et al., 2004, we map CBO codes to International Standard Classification of Occupations (ISCO) codes, and we use ISCO-88 codes to classify employees into managers, blue collar workers, and white collar workers.<sup>17</sup> The results are reported in Figure XI and summarized in Table IX for the two types of bankruptcy request. The estimates for liquidations are reported in Panel A of Table IX, while Panel B of Table IX provides the estimates for reorganizations.

[Insert Figure XI Here]

[Insert Table IX Here]

We begin by examining earnings changes for managers in the post-bankruptcy period. On the one hand, managers are high-skilled individuals and are expected to have better outside options. On the other hand, bankruptcies may lead to significant reputational costs for managers by holding them responsible for the firm's distress. This implies that in the post-bankruptcy period, managers may encounter adverse labor market outcomes, including increased displacement, occupational downgrading, and non-employment due to negative signaling or a stigma effect (e.g. Vishwanath, 1989).

The results are reported in Panel (a) of Figure XI and Column (1) of Table IX. Interestingly, the type of bankruptcy process does not appear to matter for the earnings trajectory of managers. Managers experience a large earnings decline relative to managers in control firms that is persistent in the seven-year post-bankruptcy period. The point estimates indicate a large decline in earnings ranging from 10 percent for managers in reorganization to 16.4 percent for managers in liquidations in the year of the bankruptcy filing. In addition, the effects are long-lasting, as seven years after the bankruptcy request earnings remain consistently and significantly lower than the pre-bankruptcy levels. In addition, 53 percent of the managers are displaced in the first year of the bankruptcy and 57 percent experience occupational downgrade by reallocating to non-managerial positions. The findings are consistent with labor markets disciplining managers that were displaced due to bankruptcy, pointing to the existence of a stigma effect.

Finally, Panels (b) and (c) of Figure XI and Columns (2) and (3) of Table IX explore the differential impact of the two bankruptcy regimes on the labor market outcomes of white- and blue-collar workers. We find that reorganizations are associated with significant labor costs for both white- and blue-collar workers. However, relative to

<sup>&</sup>lt;sup>17</sup>Manages: Occupational Codes 12-13, Blue Collar: Occupational Codes 6-9, White Collar: Occupational Codes 2-5.

blue-collar workers that experience a persistent earnings decline of around 10 percent in the post-bankruptcy period, white-collar workers appear to gradually recover part of the initial earnings losses seven years after the filing. On the other hand, liquidations are associated primarily with a large effect at the year of the liquidation request due to displacement, ranging from around 21 percent for blue-collar workers to around 11 percent for white-collar workers. However, both groups recover the initial earnings losses within the three-year period after the filing. Overall, these findings confirm that the type of bankruptcy resolution in Brazil matters for the labor market outcomes of employees.

## VIII SELECTION CONCERNS

In our baseline results, we document that employee earnings exhibit different dynamics in liquidated versus reorganized firms. A potential concern with the analysis is that the observed differences are not due to the different policies and levels of judicial bias underlying the two bankruptcy regimes, but due to the fact that firms that file for liquidation and their employees are fundamentally different in terms of observable and unobservable characteristics compared to firms and employees that experience reorganization. For example, Table I suggests that liquidated firms are smaller both in terms of number of employees and total wage bill. The observable differences in their employee characteristics – though statistically significant – are small in terms of economic magnitude with the only exception of the average employee wage level.

To partially address the selection of firms into a bankruptcy regime, we present an additional exercise in which we focus exclusively on firms that initially filed for reorganization and separate firms based on the outcome of the bankruptcy process. First, in Table A5 we report summary statistics in the year prior to the reorganization request for firms that experience conversion of the reorganization to liquidation, relative to firms in reorganization which were not converted to liquidation. While subsequently liquidated firms employ slightly less workers, the estimates for the firm-level characteristics are not statistically significant. In addition, employee characteristics are largely comparable across the two types.

In a second step, we compare the earnings trajectories for employees in firms that were subsequently liquidated within a two-year period with firms in reorganizations that did not.<sup>18</sup> Figure XII reports the magnitudes of the  $\delta_p$  coefficients from estimating equation (1) in the two subsamples along with 95% confidence intervals.

#### [Insert Figure XII Here]

<sup>&</sup>lt;sup>18</sup>The reason we focus on firms that were subsequently liquidated in the first two years after the reorganization request is so that we have enough years in the post-bankruptcy period to examine the reallocation effects of liquidations.

As shown, we observe an analogous pattern as in Figure VI between liquidations and reorganizations. Employees in reorganized firms that are subsequently liquidated in the two-year post-bankruptcy period experience a larger initial decline in labor earnings but their earnings converge to the pre-bankruptcy levels over the seven-year period after the reorganization request. In contrast, employees of firms that remained in reorganization experience a smaller initial decline but earn consistently lower earnings in the postbankruptcy period. Additionally, the effects are long-lasting as earnings are constantly lower and never converge to the pre-bankruptcy levels in the seven-year period after the request. Although this test does not fully address the selection concern, it indicates that the different dynamics observed between the two bankruptcy regimes are not entirely driven by selection.

## IX CONCLUDING REMARKS

Bankruptcy institutions play an important role in the reallocation of production factor of insolvent and financially distressed firms and have broader implications for economic growth and aggregate productivity. An important friction that has received little attention in the context of developing countries is judicial bias in the interpretation of the law. In particular, judges may disproportionally consider the adverse effects of liquidating a firm on employees, and delay the liquidation of insolvent firms, even if that means deviating from the actual wording of the law. In this paper, we used detailed handcollected information on the universe if bankruptcy cases filed in the state of Sao Paolo, between 2000 and 2015, to understand how pro-labor bias affects bankruptcy resolution and employees' labor market outcomes. We first establish that pro-labor bias matters for the type of bankruptcy resolution by leading to a lower incidence of liquidations and a larger share of prolonged resolutions. Second, we estimate the direct impact of different bankruptcy regimes on employee earnings and document that the effect of bankruptcy on employees' earnings differ significantly between liquidations and reorganizations. Workers of liquidated firms experience a larger initial drop in annual labor income. However, their income converges back to its pre-bankruptcy level within 3 to 4 years from the bankruptcy filing. On the other hand, we document that the earnings of employees of reorganized firms remain constantly lower in the long-run, at a level that is significantly lower than the pre-bankruptcy one.

Overall, our empirical findings suggest that judicial bias and the type of bankruptcy matter for employees' earnings and employment trajectories in developing countries and have important policy implication for the efficiency of bankruptcy institutions. First, the liquidation process acts as a vehicle of "creative destruction" in a developing setting overburdened by frictions in the application of the bankruptcy law, by allowing the efficient reallocation of employees. Second, pro-labor bias appears to lead to bankruptcy resolutions that are associated with long-term adverse outcomes for employees, which serves the opposite purpose from what the intentions of the courts are when deciding to allow the continuation of an insolvent firm. A potential interpretation is that pro-labor courts either overweigh the immediate large earnings declines observed in liquidations when allowing a firm to reorganize and continue to operate, or are myopic by lacking foresight in assessing the long-term costs for employees of keeping an inefficient firm active.

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FIGURE I: REORGANIZATION OUTCOMES FROM 2005 TO 2014

**Notes:** The figure reports shares of different outcomes for reorganization cases in Brazil from 2005 to 2014..



Figure II: Final Matched Sample of Bankruptcy Cases in Brazil from 6/2005 to 12/2011

Notes: The figure reports the number of bankruptcy cases by the type of request in our matched sample from 6/2005 to 12/2011.



FIGURE III: PRO-LABOR BIAS AND FIRM CONTINUATION



(a) High Pro-Labor Bias



(b) Low Pro-Labor Bias

Notes: The figure reports the percentage of firms that continue to operate in the seven-year period following the bankruptcy filing. Panel (a) includes the set of firms with bankruptcy cases in high prolabor courts, while Panel (b) includes firms that filed for bankruptcy in low pro-labor courts.



FIGURE IV: PRO-LABOR BIAS AND FIRM EMPLOYMENT



(a) High Pro-Labor Bias



Notes: The figure reports estimates for the firms' total employment as a percentage of employment in year t = -1. Panel (a) includes the set of firms with bankruptcy cases in high pro-labor courts, while Panel (b) includes firms that filed for bankruptcy in low pro-labor courts.

FIGURE V: DYNAMIC EFFECTS OF BANKRUPTCY ON EMPLOYEE EARNINGS



**Notes:** The figure reports estimates from Equation (1) using the log of employee earnings as the dependent variable.

FIGURE VI: DYNAMIC EFFECTS OF BANKRUPTCY ON EMPLOYEE EARNINGS BY BANKRUPTCY PROCESS



**Notes:** The figure reports estimates from Equation (1) by splitting the sample based on the type of bankruptcy request using the log of employee earnings as the dependent variable.

## FIGURE VII: DYNAMIC EFFECTS OF BANKRUPTCY ON EMPLOYEE WAGES BY BANKRUPTCY PROCESS



**Notes:** The figure reports estimates from Equation (1) by splitting the sample based on the type of bankruptcy request using the log of employee wage as the dependent variable.

# Figure VIII: Dynamic Effects of Bankruptcy on Employment Months by Bankruptcy Process



**Notes:** The figure reports estimates from Equation (1) by splitting the sample based on the type of bankruptcy request using the log of employment months as the dependent variable.

# FIGURE IX: DYNAMIC EFFECTS OF REORGANIZATION REQUEST ON WAGES - STAYERS VS. LEAVERS



**Notes:** The figure reports estimates from Equation (1) for the subsample of reorganizations using the log of employee wage as the dependent variable. Stayers are defined as employees that remain in the firm where they were employed in the year prior to the bankruptcy, where leavers are defined as employees that separate from their firm at t=-1.

FIGURE X: DYNAMIC EFFECTS OF BANKRUPTCY ON EMPLOYEE EARNINGS BY SKILL



**Notes:** The figure reports estimates from Equation (1) for high- and low-skill employees using the log of employee earnings as the dependent variable. Panel (a) shows the results for liquidations and Panel (b) reports the estimates for reorganizations. High-skill employees are employees that have completed at least undergraduate education, while low-skill employees are employees not having completed high-school education.

# FIGURE XI: DYNAMIC EFFECTS OF BANKRUPTCY ON EMPLOYEE EARNINGS BY OCCUPATION



**Notes:** The figure reports estimates from Equation (1) for employees with different occupations in the year prior to the bankruptcy using the log of employee earnings as the dependent variable by splitting the sample based on the type of bankruptcy request. Panel (a) shows the results for managers, Panel (b) for white-collar workers, and Panel (c) for blue-collar workers.

FIGURE XII: TOTAL WORKERS' EARNINGS - REORGANIZATIONS TURNED TO LIQUIDATION WITHIN TWO YEARS VS. NOT



**Notes:** The figure reports estimates from Equation (1) using the log of employee earnings as the dependent variable. The estimates are based on the subsample of reorganization cases and compare the earnings trajectory of employees in reorganizations that converted to liquidations within the two-year post-bankruptcy period with the earnings trajectory of employees in the rest of reorganizations.

TABLE I: BANKRUPT FIRM
------------------------

	Firms in Liquidation			Firms in Reorganization			
Variables	p50	Mean	Std Dev.	p50	Mean	Std Dev.	Difference
Number of Employees	22.5	90	228	44	138	259	-48**
Total Wage Bill (R\$)	20,545	127,185	418,888	47,265	175,775	374,905	-48,590
Log Employment	3.1	3.4	1.3	3.8	3.9	1.4	-0.55***
Log Total Wage Bill	9.9	10.2	1.6	10.8	10.8	1.6	-0.60***
High-Skill Share	0.055	0.093	0.136	0.069	0.108	0.132	-0.015
Number of Firms	420			220			

Panel B: Characteristics of Workers in Bankrupt Firms at $t = -1$							
	Firms in Liquidation			Firms	s in Reorg		
Variables	p50	Mean	Std Dev.	p50	Mean	Std Dev.	Difference
Education	7	5.98	1.77	7	6.00	1.75	-0.02
Female	0	0.25	0.44	0	0.27	0.45	-0.03***
Age	33	34.6	10.6	33	34.9	10.7	-0.32***
Tenure (in Months)	27	47.79	56.24	27	50.46	61.13	-2.66***
Log(Wage)	7.16	7.25	0.68	7.12	7.22	0.62	$0.04^{***}$
Number of Workers	$35,\!663$			$25,\!817$			

#### Panel C: Bankrupt Firms by Sector

	Firms in	Liquidation	Firms in Reorganization		
Sector	Number of Firms	Percentage Share	Number of Firms	Percentage Share	
Agriculture/Mining	0	0.00	1	0.00	
Low-Tech Manufacturing	163	0.37	82	0.35	
High-Tech Manufacturing	71	0.16	33	0.14	
Construction	19	0.04	10	0.04	
Trade	125	0.29	76	0.33	
Transportation/Utilities/Communications	26	0.06	7	0.03	
Services	31	0.07	22	0.10	

**Notes:** The table reports descriptive statistics. In Panel A the table reports descriptive statistics for treated firms at the year prior to the bankruptcy event based on the type of bankruptcy request. In Panel B the table reports descriptive statistics for treated employees at the year prior to the bankruptcy event based on the type of bankruptcy request. In Panel C the table reports the number and percentage of firms by sector for firms that file for bankruptcy based on the type of bankruptcy request. Education takes values from 1 to 11 ranging from Illiteracy to Doctoral Degree. An education level of 7 reflects completion of high school education.

Significance Levels: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

TABLE II: TREATED	Vs.	Control	FIRMS
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Panel A: Firm Cha	racterist	ics					
	Treated Firms		Control Firms				
Variables	$\mathbf{p50}$	Mean	Std Dev.	p50	Mean	Std Dev.	Difference
Number of Employees	35	114	252	26	96	208	18
Total Wage Bill (R\$)	35,289	156,302	410,067	24,816	139,776	459,490	16,526
Log Employment	3.6	3.7	1.4	3.3	3.5	1.4	0.2
Log Total Wage Bill	10.5	10.6	1.6	10.1	10.4	1.6	0.2
Number of Firms	$1,\!973$			3,929			
Panel B: Employee	Charact	eristics					
	Tre	ated Emp	oloyees	Cor	ntrol Emp	oloyees	
Variables	p50	Mean	Std Dev.	p50	Mean	Std Dev.	Difference
Education	7	6.1	1.86	7	6	1.85	0.10
Male	1	0.74	0.44	1	0.72	0.45	0.02

Number of Workers 563,858 774,181 Notes: The table reports descriptive statistics: (I) at the firm-level (Panel A), and (II) at the workerlevel (Panel B) for treated and control firms. Education takes values from 1 to 11 ranging from Illiteracy to Doctoral Degree. An education level of 7 reflects completion of high school education. Significance Levels: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

10.54

72

0.79

32

21

6.83

34

45

6.98

10.47

63

0.75

0 7

0.08

32

22

6.96

34

52

7.06

Age

Log(Wage)

Tenure (in Months)

## TABLE III: PRO-LABOR BIAS IN REORGANIZATION CASES

Panel A: Pro-Labor Bias Measure								
Variables	Mean	Std Dev.	p10	p50	p90			
Pro-Labor Bias	0.10	0.46	-0.50	0	0.75			
Decisions	5.03	19.24	1	3	8			

#### Panel B: Court Characteristics

	High Pro-Labor Bias Courts		Low Pro- Co		
Variables	Median	Mean	Median	Mean	Difference
Pro-Labor Bias	0.5	0.51	0	-0.20	0.71***
Log Backlog of Cases in 2009	8.37	8.39	8.31	8.33	0.06
Log Years in Courts for a Bankruptcy Case in 2009	8.62	8.28	8.36	8.32	-0.04
Share of Cases Dismissed	0	0.11	0	0.13	-0.02
Share of Reorganizations Converted to Liquidations	0.16	0.23	0.33	0.34	-0.11***
Share of Reorganizations Granted Recovery	0	0.09	0	0.13	-0.04*
Days to Resolution	$1,\!653$	1,693	1,548	1,643	50
Share of Ongoing Cases $\geq$ Five-Year-Long	0.16	0.24	0	0.18	0.06*

**Notes:** The table reports descriptive statistics related to the pro-labor bias measure. Panel A provides descriptive statistics for the pro-labor bias measure and the number of judicial decisions at the court level. Panel B reports court-level descriptive statistics based on the level of pro-labor bias.

Significance Levels: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

	(1)	(2)	(3)	(4)	
Panel A: Case-Level Res	sults for Reorga	anizations			
Variables	Turned to Liquidation		Bankruptcy Within T	y Resolution hree Years	
Pro-Labor Bias Measure	$-0.160^{***}$ (0.042)		$-0.090^{***}$ (0.033)		
High Pro-Labor Court		$-0.091^{***}$ (0.028)		$-0.056^{***}$ (0.021)	
Judicial District FE	Yes	Yes	Yes	Yes	
Adjusted R <sup>2</sup> Observations	$0.02 \\ 1,572$	$0.02 \\ 1,572$	$0.02 \\ 1,572$	$0.02 \\ 1,572$	
Panel B: Court-Level Re	esults for Reorg	ganizations			
Variables	Liquidat	ion Share	Bankruptcy Resolution Withi Three Years Share		
Pro-Labor Bias Measure	$-0.182^{***}$ (0.049)		$-0.143^{***}$ (0.044)		
High Pro-Labor Court		$-0.137^{***}$ (0.047)		$-0.099^{**}$ (0.042)	
Judicial District FE	Yes	Yes	Yes	Yes	
Adjusted R <sup>2</sup> Observations	$\begin{array}{c} 0.30\\ 362 \end{array}$	$\begin{array}{c} 0.28\\ 362 \end{array}$	$\begin{array}{c} 0.18\\ 362 \end{array}$	$\begin{array}{c} 0.15\\ 362 \end{array}$	
Panel C: Firm-Level Res	sults				
Variables	Log Employment	$\begin{array}{c} \text{Continuation} \\ (-5,  +3) \end{array}$	$\begin{array}{c} { m Continuation} \ (-5,+5) \end{array}$	$egin{array}{c}  ext{Continuation} \ (-5,+7) \end{array}$	
$\text{Post}_{p} \times I_{i}^{\text{Treated}} \times \text{Pro-Labor}$ Bias Measure	$0.196^{**}$ (0.094)	$0.058^{**}$ (0.027)	$0.048^{*}$ (0.026)	$0.067^{***}$ (0.025)	
Firm FE Year FE Bankruptcy FE	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes	Yes Yes Yes	
Adjusted R <sup>2</sup> Observations	$\begin{array}{c} 0.73 \\ 19,400 \end{array}$	$\begin{array}{c} 0.08\\ 14,734\end{array}$	$0.06 \\ 17,215$	$0.06 \\ 19,400$	

#### TABLE IV: PRO-LABOR BIAS AND BANKRUPTCY RESOLUTION

Notes: The table reports the relation between pro-labor bias and the type of bankruptcy resolution. Panels A and B provides estimates from Equation (2). In Columns (1) and (2) of Panel A, the dependent variable is an indicator variable that is equal to 1 for reorganization cases that were converted to liquidation, and 0 otherwise. In Columns (3) and (4) of Panel A, the dependent variable is an indicator variable that is equal to 1 for reorganization cases that were resolved within three years after the bankruptcy request, and 0 otherwise. In Columns (1) and (2) of Panel B, the dependent variable is the share of reorganization cases that were converted to liquidation, while in Columns (3) and (4) of Panel B, the dependent variable is the share of reorganization cases that were resolved within three years after the bankruptcy request. Panel C reports estimates from Equation (3). The dependent variable in Columns (1) of Panel C is log employment, while in Columns (2) to (4) of Panel C is an indicator that is equal to 1 in the year where firms report non-zero employment in RAIS, and 0 otherwise. Significance Levels: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Dependent Variable	Variable Log Earnings						
	Bankruptcy	Bankruptcy	Liquidations	Liquidations	Reorganizations	Reorganizations	Bankrupt Firms
$d(1) \times ITreated$	0.028	0.027*	0.025*	0 099**	0.010	0.019	0.000
$a_{it}(-1) \wedge I_i$	(0.028)	(0.027)	(0.018)	(0.035)	(0.025)	(0.025)	(0.027)
$d(0) \times I^{Treated}$	0.148***	(0.014)	0.179***	0.196***	0.000	0.120***	0.027)
$u_{it}(0) \wedge I_i$	-0.148	(0.022)	-0.178	-0.130	(0.025)	(0.020)	(0.034)
$d_{11}(1) \times I^{Treated}$	-0.112***	-0.110***	-0.097***	-0.107***	-0.134***	-0.130***	0.004)
$u_{it}(1) \wedge I_i$	(0.015)	(0.013)	(0.097)	(0.017)	-0.154 (0.023)	-0.153	(0.003)
$d_{1}(2) \times I^{Treated}$	-0.072***	-0.078***	-0.057***	-0.067***	-0.002***	_0.006***	0.023)
$u_{it}(2) \wedge I_i$	(0.012)	(0.013)	(0.020)	(0.017)	(0.032)	(0.030)	(0.012)
$d_{1}(3) \times I^{Treated}$	-0.060***	-0.067***	-0.037**	-0.046***	-0.094***	-0.100***	-0.027
$u_{it}(0) \wedge I_i$	(0.014)	(0.012)	(0.051)	(0.015)	(0.021)	(0.017)	(0.021)
$d_{1}(4) \times I^{Treated}$	-0.060***	-0.067***	-0.026	-0.036**	-0 108***	-0.112***	-0.036
$\omega_{it}(1) \times 1_i$	(0.015)	(0.012)	(0.018)	(0.016)	(0.022)	(0.018)	(0.023)
$d_{i*}(5) \times I^{Treated}$	-0.054***	-0.060***	-0.033	-0.042**	-0.084***	-0.090***	-0.026
$u_{ii}(0) \times I_i$	(0.016)	(0.014)	(0.021)	(0.012)	(0.022)	(0.018)	(0.024)
$d_{it}(6) \times I_{i}^{Treated}$	-0.042***	-0.048***	-0.006	-0.015	-0.090***	-0.094***	-0.056**
$\alpha_{ii}(0) = 1_i$	(0.015)	(0.013)	(0.019)	(0.017)	(0.022)	(0.018)	(0.022)
$d_{it}(7) \times I_{i}^{Treated}$	-0.032**	-0.038***	0.012	0.000	-0.089***	-0.093***	-0.062***
	(0.016)	(0.014)	(0.021)	(0.019)	(0.022)	(0.018)	(0.024)
PV	-52.88%	-57.65%	-40.18%	-46.89%	-70.66%	-74.60%	
Event Year Indicators	Ves	Ves	Ves	Ves	Ves	Ves	Ves
Employee Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Employee FF	Vac	Vac	Vac	Vac	Voc	Voq	Vec
Voor FE	Voc	No	Voc	No	Vec	No	No
Bankruntev FE	Ves	Ves	Ves	Ves	Ves	Ves	Ves
Judicial District x Year FE	No	Yes	No	Yes	No	Yes	Yes
Adjusted R <sup>2</sup>	0.82	0.82	0.82	0.83	0.80	0.81	0.77
Observations	1,565,953	1,565,953	910,230	910,228	$655,\!682$	$655,\!682$	$518,\!912$

TABLE V: IMPACT OF BANKRUPTCY ON EMPLOYEE EARNINGS - DYNAMIC SPECIFICATION

Notes: The table reports estimates of the  $\delta$  coefficients from Equation (1). The dependent variable is the log of employee earnings. Post in Equation (1) is an indicator variable that equals 1 for the seven-year period after the bankruptcy request, and 0 for the five-year period prior to the bankruptcy.  $I_j^{Treated}$  in Equation (1) is an indicator function equal to 1 for employees that are employed in bankrupt firms in the year prior to filing, and equal to 0 for employees of control firms that have never experienced a bankruptcy during the period under study. The PV estimates use a 4% annual discount rate. In Column (7) the sample includes only bankrupt firms and  $I_j^{Treated}$  is an indicator function equal to 1 for employees that are employees that are employeed in reorganized firms in the year prior to filing, and equal to 0 for employees of liquidated firms. Standard errors are clustered at the firm level. The sample period is from 2000 to 2016. Significance Levels: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

	(1)	(2)	(3)	(4)	
	Log	g Wage	Log Months		
Variables	Liquidations	Reorganizations	Liquidations	Reorganizations	
$d_{1}(1) \times I^{Treated}$	0.011	0.015	0.052**	0.030	
$u_{it}(-1) \wedge I_i$	(0.011)	(0.010)	(0.000)	(0.030)	
$d_{ii}(0) \times I^{Treated}$	-0.025	-0.040**	-0.410***	-0.330***	
$u_{it}(0) \wedge I_i$	(0.020)	(0.040)	(0.080)	(0.082)	
$d_{it}(1) \times I_{i}^{Treated}$	-0.036***	-0.063***	-0.267***	-0.272***	
$\omega_{ll}(1) \wedge 1_{l}$	(0.014)	(0.016)	(0.061)	(0.040)	
$d_{it}(3) \times I_i^{Treated}$	-0.029**	-0.070***	-0.155***	-0.234***	
	(0.014)	(0.015)	(0.026)	(0.049)	
$d_{it}(5) \times I_i^{Treated}$	-0.026**	-0.073***	-0.119***	-0.194***	
	(0.014)	(0.015)	(0.024)	(0.039)	
$d_{it}(7) \times I_i^{Treated}$	-0.013	-0.074***	-0.080***	0.162***	
e e e e e e e e e e e e e e e e e e e	(0.016)	(0.017)	(0.024)	(0.040)	
Event Year Indicators	Yes	Ves	Yes	Yes	
Employee Controls	Yes	Yes	Yes	Yes	
Employee FE	Yes	Yes	Yes	Yes	
Year FE	Yes	Yes	Yes	Yes	
Bankruptcy FE	Yes	Yes	Yes	Yes	
Adjusted R <sup>2</sup>	0.92	0.91	0.33	0.33	
Observations	909,759	$655,\!489$	$1,\!334,\!018$	$958,\!238$	

## TABLE VI: IMPACT OF BANKRUPTCY ON EMPLOYEE WAGES AND EMPLOYMENT MONTHS

Notes: The table reports estimates of the  $\delta$  coefficients from Equation (1). The dependent variable is the log of employee wage in Columns (1) and (2), and the log of employment months in Columns (3) and (4). Post in Equation (1) is an indicator variable that equals 1 for the seven-year period after the bankruptcy request, and 0 for the five-year period prior to the bankruptcy.  $I_j^{Treated}$  in Equation (1) is an indicator function equal to 1 for employees that are employed in bankrupt firms in the year prior to filing, and equal to 0 for employees of control firms that have never experienced a bankruptcy during the period under study. Standard errors are clustered at the firm level in the regressions with log wage and at the municipality level in the regressions with log employment months. The sample period is from 2000 to 2016.

Significance Levels: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

Reorganizations		
	(1)	(2)
	Dependent	Variable: Log Wage
Variables	Stayers	Leavers
$d_{it}(-1) \times I_i^{Treated}$	-0.020	0.033
	(0.022)	(0.037)
$d_{it}(0) \times I_i^{Treated}$	-0.031	-0.040**
	(0.023)	(0.019)
$d_{it}(1) \times I_i^{Treated}$	-0.034*	-0.064***
	(0.020)	(0.017)
$d_{it}(3) \times I_i^{Treated}$	-0.070***	-0.050***
	(0.020)	(0.016)
$d_{it}(5) \times I_i^{Treated}$	-0.100***	-0.056***
	(0.023)	(0.016)
$d_{it}(7) \times I_i^{Treated}$	-0.104***	-0.065***
	(0.031)	(0.017)
Event Year Indicators	Yes	Ves
Employee Controls	Yes	Yes
Employee FE	Yes	Yes
Year FE	Yes	Yes
Bankruptcy FE	Yes	Yes
Adjusted R <sup>2</sup>	0.94	0.88
Observations	$281,\!918$	$373,\!571$

#### TABLE VII: EMPLOYEE WAGES IN REORGANIZATIONS - STAYERS VS. LEAVERS

**Notes:** The table reports estimates of the  $\delta$  coefficients from Equation (1). The dependent variable is the log of employee wage. *Post* in Equation (1) is an indicator variable that equals 1 for the seven-year period after the bankruptcy request, and 0 for the five-year period prior to the bankruptcy.  $I_j^{Treated}$  in Equation (1) is an indicator function equal to 1 for employees that are employed in bankrupt firms in the year prior to filing, and equal to 0 for employees of control firms that have never experienced a bankruptcy during the period under study. Stayers are employees that remain in the firm employed at the year prior to the bankruptcy for the two-year period after the bankruptcy request. Standard errors are clustered at the firm level. The sample period is from 2000 to 2016. Significance Levels: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

	(1)	(2)	(3)	(4)
	High-Skill Employees		Low-Skil	l Employees
Panel A: Log	Earnings			
Variables	Liquidations	Reorganizations	Liquidations	Reorganizations
$d_{it}(0) \times I_i^{Treated}$	-0.026	-0.099**	-0.199***	-0.110***
	(0.050)	(0.040)	(0.041)	(0.025)
$d_{it}(3) \times I_i^{Treated}$	0.053	-0.112***	-0.047***	-0.090***
	(0.041)	(0.036)	(0.018)	(0.023)
$d_{it}(7) \times I_i^{Treated}$	$0.093^{**}$	-0.086*	0.000	-0.090***
	(0.042)	(0.045)	(0.023)	(0.024)
Adjusted $B^2$	0.85	0.84	0.78	0.78
Observations	139.502	85.905	766.021	566.375
Panel B: Log	Wage	00,000		000,010
Variables	Liquidations	Reorganizations	Liquidations	Reorganizations
$d_{it}(0) \times I_i^{Treated}$	0.082	-0.061**	-0.041***	-0.036**
	(0.085)	(0.029)	(0.013)	(0.018)
$d_{it}(3) \times I_i^{Treated}$	0.033	-0.087***	-0.037***	-0.067***
	(0.028)	(0.027)	(0.014)	(0.016)
$d_{it}(7) \times I_i^{Treated}$	0.054	-0.094***	-0.026	-0.072***
	(0.030)	(0.030)	(0.017)	(0.018)
$\overline{\text{Adjusted } \mathbf{P}^2}$	0.02	0.01	0.00	0.00
Observations	139.461	85 885	765 597	566 202
Panel A: Log	Months	00,000	100,001	500,202
Variables	Liquidations	Reorganizations	Liquidations	Reorganizations
$d_{it}(0) \times I_i^{Treated}$	-0.239***	-0.192***	-0.441***	-0.350***
	(0.087)	(0.054)	(0.085)	(0.089)
$d_{it}(3) \times I_i^{Treated}$	-0.111*	-0.207***	-0.173***	-0.245***
	(0.063)	(0.051)	(0.027)	(0.053)
$d_{it}(7) \times I_i^{Treated}$	-0.070	-0.091*	-0.096***	-0.190***
	(0.050)	(0.050)	(0.027)	(0.045)
Adjusted R <sup>2</sup>	0.36	0.34	0.33	0.34
Observations	191,675	118,192	1,139,789	838,280

#### TABLE VIII: HETEROGENEITY BY SKILL LEVEL

Notes: The table reports estimates of the  $\delta$  coefficients from Equation (1). The dependent variable is the log of employee earnings in Panel A, the log of employee wage in Panel B and the log of employment months in Panel C. *Post* in Equation (1) is an indicator variable that equals 1 for the seven-year period after the bankruptcy request, and 0 for the five-year period prior to the bankruptcy.  $I_j^{Treated}$  in Equation (1) is an indicator function equal to 1 for employees that are employed in bankrupt firms in the year prior to filing, and equal to 0 for employees of control firms that have never experienced a bankruptcy during the period under study. Employees are classified in occupational categories based on the occupational code assigned to the employee's labor contracts in the year prior to the bankruptcy request. Standard errors are clustered at the firm level. The sample period is from 2000 to 2016. Significance Levels: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

	(1)	(2)	(3)					
	Depender	nt Variable: Log	g Earnings					
Panel A: Liquidations								
Variables	Managers	White-Collar	Blue-Collar					
$d_{it}(0) \times I_i^{Treated}$	-0.164***	-0.111***	-0.212***					
	(0.042)	(0.034)	(0.046)					
$d_{it}(3) \times I_i^{Treated}$	-0.149***	-0.012	-0.038*					
	(0.057)	(0.021)	(0.022)					
$d_{it}(7) \times I_i^{Treated}$	$-0.105^{*}$	0.020	0.026					
	(0.062)	(0.023)	(0.027)					
$\overline{\text{Adjusted } \mathbb{R}^2}$	0.89	0.85	0.77					
Observations	30,838	$357,\!587$	$512,\!270$					
Panel B: Reor	ganizations							
Variables	Managers	White-Collar	Blue-Collar					
$d_{it}(0) \times I_i^{Treated}$	-0.100	-0.102***	-0.108***					
	(0.075)	(0.027)	(0.029)					
$d_{it}(3) \times I_i^{Treated}$	0.242***	-0.081***	-0.096***					
	(0.059)	(0.025)	(0.024)					
$d_{it}(7) \times I_i^{Treated}$	-0.170***	-0.064**	-0.106***					
	(0.085)	(0.026)	(0.027)					
$\overline{\text{Adjusted } \mathbb{R}^2}$	0.86	0.81	0.78					
Observations	$23,\!955$	$256,\!986$	366,388					

TABLE IX: HETEROGENEITY BY OCCUPATION

Notes: The table reports estimates of the  $\delta$  coefficients from Equation (1). The dependent variable is the log of employee earnings. Post in Equation (1) is an indicator variable that equals 1 for the seven-year period after the bankruptcy request, and 0 for the five-year period prior to the bankruptcy.  $I_j^{Treated}$ in Equation (1) is an indicator function equal to 1 for employees that are employed in bankrupt firms in the year prior to filing, and equal to 0 for employees of control firms that have never experienced a bankruptcy during the period under study. Highskill are employees that have completed high-school education, while low-skill are employees not having completed high-school education. Standard errors are clustered at the firm level Significance Levels: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.





Notes: The figure reports the different stages and the timeline of the reorganization process in Brazil.

FIGURE A2: GEOGRAPHICAL DISTRIBUTION OF COURTS



**Notes:** The figure reports the geographical distribution of the number of bankruptcy courts by municipality in the State of São Paulo.

## FIGURE A3: GEOGRAPHICAL DISTRIBUTION OF BANKRUPTCY CASES



**Notes:** The figure reports the geographical distribution of the number of bankruptcy requests filed by municipality in the State of São Paulo.

Figure A4: Geographical Distribution of Average Number of Cases by  $$\operatorname{Court}$ 



**Notes:** The figure reports the geographical distribution of the average number of bankruptcy requests per court by municipality in the State of São Paulo.

### FIGURE A5: SIZE OF BANKRUPT FIRMS VS. POPULATION



**Notes:** The figure reports the size distribution of bankrupt firms relative to the population of firms in Brazil. The size estimates are based on the number of employees as reported in RAIS. The classification into size categories is based on the classification employed by the Brazilian National Statistical Institute (IBGE) that uses firm-level employment levels in a given year to sort firms in four size categories. IBGE defines as "*Micro*", firms that employ between 1 and 9 employees, "*Small*", firms that employ between 10 and 49 employees, "*Medium*", firms that employ between 50 and 99 employees, and "*Large*", firms with 100 or more employees.

## IX.A VARIABLE DEFINITIONS

Variable	Description
Dependent variables	
Earnings	The logarithm of the individual's aggregate annual earnings across all employers in case the individual is employed at more than one firms. Earnings have been deflated using the Brazilian CPI and represent Brazilian Reals in 2000 prices. Source: RAIS
Average Monthly Wage	The average monthly wage of an employee in given year as reported in RAIS

## TABLE A1: Variable Descriptions

Article 6, paragraph 3, of Law 11,101/2005: limits automatic stay to a "non-extendable" period of 180 days, after which creditors rights to collect their claims are reestablished.

#### Pro-creditor decision: Judge denies extension of 180 days period.

Example from case 1007014-08.2016.8.26.0309

I add that its [the Bankruptcy Law's] wording is very clear when disciplining (...) the suspension for 180 non-extendable days. Any different interpretation should be considered contra legem [against the law].

#### Pro-debtor decision: Judge allows for 180 periods to be extended.

#### Example from case 1007014-08.2016.8.26.0309

Although paragraph 4 of Article 6 (...) stipulates that actions and executions against the debtor in reorganizations should be suspended for a non-extendable period of 180 days, the jurisprudence has allowed for the possibility of its extension by systematically interpreting such provision together with other precepts in the aforementioned law, whose scope is the overcoming of the economic crisis experienced by the debtor. One should not forget that the purpose of reorganization is to make it possible for the debtor to overcome its economic and financial crisis in order to preserve its source of production, the employment of workers and the interests of creditors, thus promoting the preservation of the company, its social function and the stimulus of economic activity. In this regard, (...) I extend the period of suspension of individual actions against the recovering party by additional 120 days (totaling 300 days of suspension) ( $\hat{a}$ ).

Article 49, paragraph 3, of Law 11,101/2005: excludes from automatic stay certain types of secured claims.

#### Pro-creditor decision: Judge allows creditors to seize collateral.

#### Example from case 0001589-66.2012.8.26.0629

In spite of the judicious arguments put forward by the company under reorganization, the request for suspension of the execution of collateral warranties regarding the industrial plant cannot be accepted. In fact, considering the information that the firm's industrial plant was given as collateral in a mortgage loan agreement, it is important to note that a possible lawsuit is not suspended due to the judicial reorganization action. In this sense, this court cannot prevent the filing of a search and seizure lawsuit founded on the mortgage contract signed by both parties (...)

#### Pro-debtor decision: Judge creditors' request to seize collateral.

Example from case 0006602-48.2014.8.26.0638

(...) the measures [prohibition of collateral seizure] requested by the company are in line with the purpose of reorganization. Its refusal may result in the infeasibility of its commercial activity and, in consequence, of its recovery. Notwithstanding the controversy in the countryâs doctrine and jurisprudence regarding this request and whether or not the aforementioned contracts are subject to [automatic stay under] reorganization, it is evident that a reorganization must not only overcome the economic crisis of the company ( $\hat{a}$ ) but also [promote] the preservation of its social function, besides ensuring the continuity of the business, the keeping of jobs and payment of suppliers, as well as generating income for the solvency of past suspended debts. (...) I do not deny the existence of understandings that see provisions of article 49,  $\hat{A}$ §3 of Law 11,101/05 as excluding such contracts from the effects of the reorganization. ( $\hat{a}$ ) Thus, the damage to the company under reorganization would be evident if the requested measure were not granted, since its activity may be compromised as well as its attempt to recover and keep operating. (...) In the light of all the foregoing, I GRANT the requests (...) and I do so for the purpose of ordering ( $\hat{a}$ ) [banks] Bradesco and Santander the lifting of "account freezeââ ( $\hat{a}$ ) granting free access to the values, in order to guarantee the activity of the restructuring firm (...).

Article 73 or Article 61, paragraph 1, of Law 11,101/2005: lists the circumstances under which a reorganization can be converted into a liquidation.

#### Pro-creditor decision: Judge grants request to turn reorganization into liquidation.

#### Example from case 0037381-82.2013.8.26.0100

At this point, it should be noted that the State must not try to recover companies that are unable to meet their purpose and that, therefore, do not generate relevant social benefit. Free market structures would condemn companies in unsustainable conditions, for the good of the economic system and for the healthy survival of other companies. In this sense, there is no reason to use state intervention, through the process of reorganization, to revive companies already doomed to bankruptcy. If the economic system is not interested in maintaining nonviable companies, there is reason for the State, through the Judiciary, to work in this direction, maintaining judicial reorganizations for nonviable companies. Once the plan is not complied with, the hypothesis that justifies the bankruptcy judicial recovery. That said, I declare today, under the terms of article 73, IV, of Law 11,101/05, the bankruptcy of (...)

## Pro-debtor decision: Judge denies request to turn reorganization into liquidation.

#### Example from case 1001009-75.2016.8.26.0274

I reject the request to turn this reorganization into a liquidation, since the requirements of article 73 (..) are not present, namely: a) deliberation of the General Assembly of Creditors, pursuant to article 42: the Assembly was not yet summoned for such deliberation; b) failure by the debtor to submit its reorganization plan within the 60-day period provided for in Article 53: the reorganization plan was submitted to pages 2271/2336; c) rejection of the reorganization plan, pursuant to  $\hat{A}$ §4 of article 56: the Assembly has not yet been called to deliberate on the reorganization plan; and d) non-compliance with any obligation assumed in the reorganization plan, pursuant to  $\hat{A}$ §1 of article 61: given that judicial reorganization has not yet been granted by this court, pursuant to article 58, and that the reorganization plan has yet to be submitted to the General Meeting of Creditors. (...)

Article 64 of Law 11,101/2005: lists the circumstances under which creditors can request the removal of the managers in charge of the firm.

#### Pro-creditor decision: Judge grants request to remove managers.

#### Example from case 1000226-37.2018.8.26.0299

The firms under reorganization have repeatedly failed to comply with court orders and failed to present the necessary documents for the trustee to monitor compliance with the reorganization plan. Therefore, under the terms of article 64, V, of Law 11,101/2005, I remove the managers of the firms under reorganization.

#### Pro-debtor decision: Judge denies request to remove managers.

Example from case 1080970-34.2018.8.26.0100

Under article 64 of Law 11.101, there are indications that crimes were committed, which would permit the dismissal of company directors. Considering that the activity has always been linked to the name of said partners and managers, I believe their removal as directors would do more harm than good, as it would remove from the conduction of the activity those who have more information about the reorganization, which could compromise the business. On this point, a conciliatory solution to prevent further damage by the managers to the firm and the creditors (...) would be to limit their powers (...) Even though the law does not explicitly authorize such limitation, if article 64 of the Bankruptcy Law grants broad powers for removal, it also grants powers to limit their capacity. Accordingly, I determine that the managers (...) should only be able to perform management (...) acts for the legal entities – notably the contraction of new obligations, the payment of existing obligations and any form of commitment of the company's cash or reallocation of its equity – with the agreement of the third manager (...)

#### TABLE A3: BANKRUPT FIRMS VS. POPULATION

#### Panel A: Firm Characteristics

	ſ	Population				
Variables	$\mathbf{p50}$	Mean	Std Dev.	$\mathbf{p50}$	Mean	Std Dev.
Number of Employees	128	644	2.580	3	16	884
Total Wage Bill (R\$)	153,577	733,777	2,961,635	1,664	22,134	1,224,640
Log Employment	4.9	4.9	1.8	1.4	1.5	1.1
Log Total Wage Bill	11.9	11.8	2.3	7.4	7.1	2.7
Number of Firms	$2,\!430$	430 3,987,765				

#### Panel B: Firms by Sector

	Treat	ed Firms	Population		
Sector	Number of Firms	Percentage Share	Number of Firms	Percentage Share	
Agriculture/Mining	1	0.00	66.188	0.02	
Low-Tech Manufacturing	241	0.37	442.876	0.10	
High-Tech Manufacturing	102	0.16	75,727	0.02	
Construction	29	0.04	162,058	0.04	
Trade	201	0.31	2,029,279	0.48	
Transportation/Utilities/Communications	33	0.05	212,374	0.05	
Services	52	0.08	1,262,749	0.30	

**Notes:** The table reports descriptive statistics. In Panel A the table reports descriptive statistics for treated firms at the year prior to the bankruptcy event and the population of firms. In Panel B the table reports the number and percentage of firms by sector for firms that file for bankruptcy and the population of firms. Significance Levels: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

	Stayers		Leav		
Variables	Median	Mean	Median	Mean	Difference
Education	7	5.90	7	6.04	-0.14***
Log Wage	7.30	7.36	7.06	7.17	0.18***
Tenure	52	75.9	21	42.6	33.3***
Age	37	37.6	32	34.2	3.4***
Female	0	0.27	0	0.27	0

## TABLE A4: EMPLOYEE CHARACTERISTICS IN REORGANIZATIONS - STAYERS VS. LEAVERS

**Notes:** The table reports descriptive statistics for employee characteristics at the year prior to the bankruptcy in reorganizations. Stayers are defined as employees that remain in the firm where they were employed in the year prior to the bankruptcy, where leavers are defined as employees that separate from their firm at t=-1. Significance Levels: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

		Firm	s in Reorga	anization	1			
Panel A: Firm Characteristics at $t = -1$								
	Turned to Liquidation In Reorganization					Reorganization		
Variables	p50	Mean	Std Dev.	p50	Mean	Std Dev.	Difference	
Number of Employees	38	130	275	44	142	251	-12	
Total Wage Bill (R\$)	38,786	141,647	273,701	48,989	$193,\!427$	417,543	-51,779	
Log Employment	3.6	3.9	1.4	3.8	3.9	1.4	-0.10	
Log Total Wage Bill	10.6	10.7	1.6	10.8	10.9	1.7	-0.17	
High-Skill Share	0.067	0.096	0.113	0.069	0.114	0.140	-0.018	
Number of Firms	75			145				
		Pan	el B: Worke	ers' Cha	racteristi	cs at $t = -1$		
	Turned to Liquidation In Reorganization							
Variables	p50	Mean	Std Dev.	p50	Mean	Std Dev.	Difference	
Education	7	5.98	1.70	7	5.94	1.81	0.05**	
Male	1	0.70	0.46	1	0.72	0.45	-0.02***	
Age	32	34	10.9	33	35	10.6	-0.83***	
Tenure (in Months)	26	46	56	22	46	59	0.21	
Log(Wage)	6.68	6.84	0.58	6.85	6.96	0.65	-0.12***	
Number of Workers	$11,\!275$			$23,\!657$				

## TABLE A5: TURNING TO LIQUIDATION VS. NOT

**Notes:** The table reports descriptive statistics for firms and employees in firms in reorganizations. Reorganizations are separated based on whether reorganizations are converted to liquidations or not. In Panel A the table reports descriptive statistics for treated firms at the year prior to the bankruptcy event.. In Panel B the table reports descriptive statistics for treated employees at the year prior to the bankruptcy event.. In Panel C the table reports the number and percentage of firms by sector for firms that file for bankruptcy based on the type of bankruptcy request. Education takes values from 1 to 11 ranging from Illiteracy to Doctoral Degree. An education level of 7 reflects completion of high school education.

Significance Levels: \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.