

Labor Courts, Job Search and Employment: Evidence from a Labor Reform in Brazil

Raphael Corbi* Rafael Ferreira[†] Renata Narita[‡] Danilo Souza[§]

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This paper studies the role of labor courts in determining labor market outcomes in the Brazilian economy. First, by exploring the fact that judges are assigned randomly to cases and using the universe of labor lawsuits filed in the country's largest labor court from 2008 to 2013, we show that small firms that draw a more pro-worker judge hire less, experience greater financial distress and exhibit lower survival rates. Second, we develop and calibrate a search-matching model in which laid-off workers decide whether to take firms to court or not. The model is then used to conduct counterfactual exercises simulating the changes brought by a large labor reform in 2017 that transferred part of the legal costs from firms to workers if plaintiff's case is dismissed. Our model replicates well a set of features of the Brazilian labor market. The counterfactual analysis suggests that this cost-shifting policy implied significant positive effects on employment and aggregate output.

Keywords: employment protection, labor costs, firm survival, search frictions.

JEL Codes: J3, J63, J64, J65, J83, K31.

*Department of Economics, University of São Paulo, Brazil. Corresponding author. E-mail: rcorbi@usp.br

[†]Department of Economics, University of São Paulo, Brazil. E-mail: rafaelferreira@usp.br

[‡]Department of Economics, University of São Paulo, Brazil. E-mail: rnarita@usp.br

[§]Department of Economics, Insper, Brazil. E-mail: danilops2@insper.edu.br

1 Introduction

Employment protection (EP) systems encompass the set of institutional arrangements and regulations that place limits to the faculties of firms to hire and fire workers. These may be fully grounded in the law, or may originate from collective bargaining arrangements or, not the least, court interpretations of legislative and contractual provisions.¹

Protective courts increase the expected labor costs and thus may restrict workers' employment opportunities and wages. Proponents of stronger regulations often point to inequities in the distribution of surplus between employer and employee and argue that market frictions inevitably reduce worker welfare. In contrast, the opposing side usually cautions that poorly designed labor market regulations can also be detrimental to labor productivity and welfare and points to the heterogeneous effects these regulations can have on the well-being of different types of workers, with permanent full-time employees usually benefiting at the expense of temporary, unemployed or part-time workers.² The extent to which each side is correct is ultimately an empirical matter.

Understanding the labor market impacts of labor courts is difficult as they likely depend on many factors. The extent to which judicial decisions favor workers, which tends to increase the number of cases brought to courts, create uncertainty regarding labor costs.³ Thus detailed jurisprudence information is required for analyzing the role of labor courts. Also, the effects on employment are unclear as wages may fully adjust to changes in the costs firms face, despite its potentially distortionary nature. The consequences for productivity and output are even less understood in imperfect labor markets where unemployment and vacancy creation are key to determine whether courts are beneficial to the economy.

In this paper, we study the role of labor courts in determining labor market outcomes in the Brazilian economy. We build our argument in two parts. First, we take advantage of random case assignment to document that judges that are relatively more pro-workers

¹In the U.S. where flexible labor regulations usually indicate workers can be fired *at will*, state-courts introduced rules to limit the employers' ability to dismiss (Autor, Donohue and Schwab, 2006). In France, Germany, New Zealand and the UK where dismissals have to be justified, labor courts have long existed and jurisprudence acts to increase the uncertainty among employers when they could terminate workers for an unfair cause or even for a fair cause, depending on the dispersion of the jurisprudence (Bertola, Boeri and Cazes, 1999).

²See, e.g. OECD (2018), Boeri (2011), Centeno and Novo (2012), Hijzen, Mondauto and Scarpetta (2017), Kahn (2010), Bartelsman, Gautier and De Wind (2016), and Bjuggren (2018).

³France and Spain, countries where tribunals are the most frequently involved in labour disputes arising from the termination of contracts (0.51% and 0.54% of employees, respec.) tend also to be those to have the highest percentage cases favorable to employees (74% and 72%, respec.). These numbers contrast to those for the U.S., Ireland and Canada, where less than 50% of cases are won by workers and the number of cases brought to court are rather infrequent (Bertola, Boeri and Cazes, 1999).

affect negatively firm performance including employment, wages, financial distress and survival rates. Second, we interpret these estimates within a search and matching framework in which workers decide whether to take firms to court by comparing the expected gains from litigation against the expected worsening of employment prospects due to blacklisting. Then we use the model to conduct counterfactual exercises emulating the changes brought by the 2017 Labor Reform in Brazil that significantly altered labor relations. In particular, we examine the aspect of the reform in which workers may now be responsible for payment of court-related fees as well as attorney's fee and damages for the opposing side in the event of case dismissal by the court.

Brazil is an interesting showcase to study because of its legal framework with strict and detailed rules for what an employment relationship should look like - often overtly pro-worker in the way legal proceedings are done - differing significantly from other fields of Law. Judges have a lot of freedom to determine the pace and the specifics of the legal process, and often base their decisions on personal political views and the pursuit of social justice.⁴ Importantly, until recently workers normally faced no direct costs from litigation, usually being excused from paying any court fees, expert witnesses' fees or attorney's fees. Put together, these characteristics created large incentives for litigation⁵, impose high costs on firms, and place many restrictions on the demand for labor.⁶

Labor market reforms have been recently used by governments across the world to limit economic uncertainty and guard against dramatic outcomes as well as to address the negative effects of the 2008 global financial crisis. The Brazilian Labor Reform of 2017 followed this trend towards relaxing the existing levels of EP regulation.⁷ Among other channels, these changes were expected to reduce labor costs by removing from procedural labor law its most noticeable incentives for groundless litigation, including the establishment of higher standards for granting exemption from payment of court-

⁴Castelar-Pinheiro (2003) ran a survey with 741 Brazilian judges, from 11 different states and found that 45.1% of respondents considered that, in labor cases, decisions are often or very often based more on the judge's political views than on the "strict reading of the law." They also found that 45.8% of labor judges believe that "the seeking of social justice sometimes justifies decisions that violate contracts."

⁵According to the *National Justice Council* (CNJ), 26.4% of all new cases filed in 2016 in the Labor, State, and Federal Justice were labor cases.

⁶In fact, the 2009 World Bank Enterprise Survey with business owners and top managers from 1,802 Brazilian firms found that 63.2% of firms identify labor regulations as a major constraint, compared to only 16.7% of firms of all of Latin America and the Caribbean, and 11.2% of firms from all of the 143 surveyed countries. Of all of these countries, Brazil was the one with the highest share of firms mentioning labor regulations as a major issue, with Argentina in a distant second with 49%.

⁷Using the experience from 111 developed and developing countries, Adascalitei and Pignatti-Morano (2015) show that such reforms since 2008 have been more likely introduced in countries facing higher than usual unemployment rates, lower or lack of GDP growth and high levels of government debt. More stringent existing EP regulations have also increased the likelihood that countries implement reforms to relax them (Bernal-Verdugo, Furceri and Guillaume, 2012).

related fees for some workers and of attorney's fee and damages for the opposing side.

We start our analysis by building an original data set of over 1.5 million first instance judicial decisions from judges of the largest jurisdiction of labor courts in Brazil, covering the city of São Paulo and its neighboring municipalities from 2008 to 2013. Using judges decisions, we compute a residualized leave-one-out measure of relative pro-worker judicial bias to capture the difference between the judge's decision and the average decision pattern in her jurisdiction - as usual in this literature (Dahl, Kostol and Mogstad, 2014; Dobbie, Goldin and Yang, 2018; Bhuller et al., 2020; Cahuc et al., 2020). Next, we link this data to other rich administrative data sets with matched employer-employee records and information on bankruptcy filings. By exploiting the random assignment of cases to judges within the same jurisdiction, we are able to estimate the causal effect of higher labor costs on several labor market and firm performance outcomes.

We find that judges rule in favor of workers in 72% of cases, and that the average amount of compensation granted is equivalent to 9.2 months of the worker's last reported monthly wage in Brazil. On average, the majority of plaintiffs have less than college degree (82%) and earn around 3 times the average minimum wage in the analyzed period. Firms employ on average 17 workers, but 50% of them employ up to 5 workers. In spite of being small, the median firm is around 8 years old.

Our estimates relating our measure of judge bias and labor market outcomes indicate negative and significant effects of labor regulation costs on employment and wages of new hires. Specifically, the growth rate of employment decreases by 2.1 percentage points and the growth of the average wage of new hires by 0.8 percentage points if we increase the judge pro-worker bias in one standard deviation. We also find evidence that these costs increase the likelihood that firms experience financial distress or go out of business.

In a second step, we calibrate a search-matching-bargaining model with heterogeneous match quality by allowing workers who are laid off to decide whether to file a lawsuit against the firm. We use data moments on labor cases, macroeconomic parameters, and policies for the Brazilian economy to inform the model and proceed with a quantitative analysis. First, we show that our model replicates our empirical results on judge bias: as we increase the average judge bias towards workers the employment rate decreases. We then perform counterfactual exercises by partially or totally shifting attorney fees to employees if they lose the case, in line with one of the main changes brought by the 2017 Labor Reform in Brazil. Simulation results show that, by reducing the workers' incentives to litigate and the firms' expected cost with lawsuits, the unemployment rate decreases by 1.7 percentage points and the number of lawsuits filed each year by 861,000, which replicates almost perfectly the drop in the number of lawsuits observed in the data two years after the 2017 Labor Reform implementation. We also show that a full shift

of lawsuit costs to workers if they lose the case increases net output by 2% due to more vacancy creation.

Literature and Contribution. This paper contributes to three branches of the literature. The first studies the labor market effects of EP legislation (e.g. Lazear (1990), Di Tella and MacCulloch (2005), Grubb and Wells (1997), Bertola (1990), Jackman, Layard and Nickell (1996), Garibaldi, Konings and Pissarides (1997), Gregg and Manning (1997), Emerson (1988), Boeri (1999)). These works generally find a negative or an ambiguous impact of EP legislation on employment, because both flows in and out of employment reduce.

More closely related to our paper, the second branch analyzes EP jurisprudence and labor market outcomes (e.g. Cahuc et al. (2020), Bamieh (2017), Autor, Donohue and Schwab (2006) and Autor, Kerr and Kugler (2007)). For France, Cahuc et al. (2020) document that some judges are more pro-worker than others, meaning that conditional on observables, they are more likely to consider more often that dismissals are wrongful and to set higher compensation levels conditional on characteristics of cases. By exploiting the quasi-random assignment of judges to cases they show that pro-worker judge bias has negative effects on survival, employment, and sales of small low-performing firms. For Italy, Bamieh (2017) explores a similar identification strategy and shows that an increase in expected firing costs induced by the past experience of a longer trial reduces the hazard of hiring or firing, and increases employment. He also shows that results do not depend on how much the firm is liquidity constrained such that only changes in expected firing costs matters for the firm's future decisions. For the U.S., Autor, Donohue and Schwab (2006) and Autor, Kerr and Kugler (2007) exploit variation in the extent and timing of adoption of employment protections across U.S. states, and show that wrongful-discharge protections reduce state employment rates where the initial impact is driven by female and less-educated workers (who change jobs frequently), while the longer-term effect is greater for older and more-educated workers (those more likely to litigate). There is also evidence of negative effects on labor and total factor productivity.

Our paper complements this literature by analyzing a middle-income country, Brazil, where EP laws are stricter compared to the average of OECD countries⁸, and where judges rule favorably to workers in the majority of cases, thus imposing large labor costs

⁸Using the OECD employment protection index, job security of permanent workers against individual dismissals is very low in the U.S. (0.5) compared to Brazil (1.84), which is a little below the average of OECD countries (2.05). Source: OECD EPL. Index values range from 0 to 6 depending on several sub-indicators of strictness of the firing regulations for individual workers. Data for the U.S. and OECD average (2014) and Brazil (2012).

on firms.⁹ We differ from this literature, however, in using legal and administrative employment data to calibrate a search and matching model with workers' litigation decision which corroborates our reduced-form findings that pro-worker judge bias, by raising the worker's expected winning probability, reduces employment.¹⁰

A more recent strand of the literature analyzes how parties in a lawsuit are affected by judge characteristics. For example, there is evidence that ethnicity bias (Gazal-Ayal and Sulitzeanu-Kenan, 2010; Shayo and Zussman, 2011; Depew, Eren and Mocan, 2017; Arnold, Dobbie and Yang, 2018), gender bias (Knepper, 2018) and the judge's experience on the bench (Iverson et al., 2018) all influence judicial decisions. Such variation in labor judges' characteristics potentially induces dispersion the judges' treatment of labor cases. Ideally, justice should be served in consistent and systematic manners to all parties. The judge's characteristics, being unrelated to the merits of each case, should play no part in its outcome. Therefore, measuring the variation in judicial decision patterns in cases, on average, similar to one another gives a good sense of how large judicial uncertainty is in a given legal system. In our setting, we find considerable variation in the decision patterns of Brazilian labor judges. Compared to one of the 10% least pro-worker judges, being assigned to one of the 10% most pro-worker judges increases the expected amount granted by the judge from 5.5 to 13.1 monthly wages. It also increases the likelihood that the complaint will be accepted by 21 percentage points, from 61% to 82%. As a comparison, for French labor appellate courts, Cahuc et al. (2020) finds a smaller variation, with only a five percentage point difference in this likelihood between the median-biased judge and one of the 10% most pro-worker judges.

We proceed as follows. The next section presents the institutional setting of our empirical exercise, outlining how labor justice is administered in Brazil and describing a recent labor reform that significantly changed the labor legal environment. Section 3 describes the empirical strategy, how we build the instrument, and the first-stage results. We show our reduced-form results on the effect of judge pro-worker bias on firm survival and firm outcomes in section 3.1. In section 4 we present a search and matching model. Section 5 discusses the model calibration and counterfactual results. Specifically, we analyze the labor market and welfare impacts of one component of the 2017 Labor Reform that shifted part of the legal costs to the losing party. We conclude in section 6.

⁹The 2009 World Bank Enterprise Survey with business owners and top managers from 1,802 Brazilian firms show that 63.2% of firms identify labor regulations as a major constraint, compared to only 16.7% of firms of all of Latin America and the Caribbean, and 11.2% of firms from all of the 143 surveyed countries.

¹⁰We also relate to the literature on the effects of severance pay on labor market outcomes, productivity and welfare building on search and matching models calibrated for developing countries (e.g. Albrecht, Navarro and Vroman (2009), Ulyssea (2010)).

2 Institutional Framework and Data

When an employee decides to sue a current or former employer in Brazil, her case will be heard in an specialized branch of the Federal Judiciary called *Justiça do Trabalho*. This branch is divided into 24 regional jurisdictions, called regions (or *regiões*), that in most cases coincide with the geographic territory of Brazilian states.¹¹ Each of these regions has its own set of first instance courts (grouped together into courthouses) and its own appellate court. Together these courts form a *Tribunal Regional do Trabalho (TRT)*.

Labor courthouses usually handle cases coming from one or more municipalities, so that a case originated in a certain municipality might have to be filed in a courthouse located in a neighboring town. Once filed, the case is then randomly assigned to one of the first instance labor courts (or *Varas do Trabalho*) in the courthouse. Each of these courts consists of a regular judge (*juiz titular*) and a substitute judge. The position of a substitute judge is an entry-level position for recently admitted judges,¹² who are responsible for replacing regular judges when they are on leave.¹³ With time, as regular judge positions become vacant, a substitute judge with long enough tenure and good performance reviews tends to be promoted to regular judge and assigned to one *Vara do Trabalho*. As her career progresses, she might be elevated to a position of appellate judge, reviewing appeals from cases coming from lower level courts.

In this paper, we focus on decisions made by first instance judges from the TRT for the 2nd Region (henceforth TRT2), the largest one in the country, with nearly 500,000 new cases filed per year. It has jurisdiction over the capital of São Paulo state and 45 of its neighboring municipalities, covering a total of 217 labor courts. Table 1 shows how these courts are grouped into jurisdictions, courthouses and sub-regions. This is relevant mostly because our identification strategy takes advantage of the random assignment of

¹¹Most states have their own region of the *Justiça do Trabalho*, the exceptions being the states of Acre and Rondônia (14th Region), Amazonas and Roraima (11th Region), Tocantins and the Federal District (10th Region) and Pará and Amapá (8th Region). All of these regions contain at least one state that is too small to merit its own jurisdiction. The state of São Paulo is the only one with two regions: the 2nd Region, for the state capital and its neighboring municipalities; and the 15th region, for the state's remaining municipalities.

¹²Judges are admitted into the profession through a competitive civil service selection process that includes written and oral exams and the evaluation of academic and professional credentials. Labor judges are paid wages that put them above the 99th percentile in the distribution of labor income in Brazil.

¹³A substitute judge might be appointed to one or more temporary posts in a set of contiguous jurisdictions called judicial circumscription or sub-region. Therefore, while a more senior judge is most likely in charge of only one *Vara do Trabalho* (in one jurisdiction), a substitute judge often rotates between different courts, in different jurisdictions within the same sub-region. Positions of substitute labor judges are filled according to the ranking in the entrance exam, with each judge being able to choose an unfilled position that has not been previously chosen by a higher-ranking individual.

Table 1: First instance courts in jurisdictions with two or more courts in the 2nd Region

| Sub-region | Courthouse | Jurisdiction | Courts |
|------------|-----------------------|---|--------|
| Capital | Capital (Central) | Downtown and the North and West parts of São Paulo | 90 |
| | Capital (Zona Sul) | South part of São Paulo | 20 |
| | Capital (Zona Leste) | East part of São Paulo | 14 |
| Guarulhos | Guarulhos | Guarulhos | 13 |
| | Mogi das Cruzes | Mogi das Cruzes, Biritiba-Mirim, Guararema and Salesópolis | 4 |
| | Suzano | Suzano | 2 |
| ABC | São Bernardo do Campo | São Bernardo do Campo | 8 |
| | Santo André | Santo André | 5 |
| | Diadema | Diadema | 4 |
| | Mauá | Mauá | 3 |
| | São Caetano do Sul | São Caetano do Sul | 3 |
| Santos | Santos | Santos | 7 |
| | Cubatão | Cubatão | 3 |
| | Guarujá | Guarujá and Bertioga | 3 |
| | Praia Grande | Praia Grande | 2 |
| | São Vicente | São Vicente | 2 |
| Osasco | Osasco | Osasco | 6 |
| | Barueri | Barueri | 5 |
| | Carapicuíba | Carapicuíba | 2 |
| | Cotia | Cotia | 2 |
| | Franco da Rocha | Franco da Rocha, Francisco Morato and Mairiporã | 2 |
| | Itapeçerica da Serra | Itapeçerica da Serra, Embu Guaçu, Juquitiba and São Lourenço da Serra | 2 |
| | Itaquaquecetuba | Itaquaquecetuba | 2 |
| | Santana de Parnaíba | Santana de Parnaíba and Pirapora do Bom Jesus | 2 |
| | Taboão da Serra | Taboão da Serra | 2 |

Notes: Courthouses with jurisdiction over the municipalities of Arujá, Caieiras, Cajamar, Embu das Artes, Ferraz de Vasconcelos, Itapevi, Jandira, Poá, Ribeirão Pires, Rio Grande da Serra and Santa Isabel have only one court.

cases to courts, which takes place at the courthouse level.

The court then schedules an initial hearing, in which the judge inquires if a deal can be reached between the plaintiff worker and the defendant firm. If an agreement is reached and approved by the judge, the firm commits to the agreed upon payment schedule and

the suit is terminated. Otherwise, the judge may choose to continue with the hearing, calling parties and witnesses to testify and lawyers to present their cases. She may also choose to do so in a later date, by scheduling a new hearing if key witnesses are absent, important evidence needs to be produced or the appraisal of an expert is required. After all witnesses and parties have been heard, the judge then once again asks if an agreement can be reached. If not, she may either make her ruling immediately or add the case to the queue of cases waiting for a decision in a later date.

When the judge finally comes to a conclusion, her ruling can be of three types: *procedente*, when all of the worker's requests are granted; *improcedente*, when none of the requests are granted; or *parcialmente procedente*, when the plaintiff's demands are only partially met. After that, any party that is dissatisfied with the judge's ruling may choose to take the case to the next higher level court. Appeals can take the case to even higher courts, such as the highest appellate courts for labor matters, the *Tribunal Superior do Trabalho (TST)* or even the *Supremo Tribunal Federal (STF)*, Brazil's Supreme Court.¹⁴ A judicial ruling is only enforced when it is final and can no longer be appealed.

2.1 Labor Laws and Labor Judges

Consistent with its Civil Law origin,¹⁵ Brazilian Labor Law extensively regulates employment relationships. The core of Brazilian Labor Law consists of a decree from 1943 called Consolidation of Labor Laws, or *Consolidacao das Leis do Trabalho (CLT)*, that has more than 900 provisions and unified several previous labor laws that had been enacted in the 1930's.¹⁶

Another important legislation on this matter is the country's Constitution, adopted in 1988. Brazil's lawmakers decided to add to the Constitution several articles on workers rights and benefits, such as overtime pay, length of work days and work weeks, Christmas and vacation bonuses, maternity leave and minimum wages. The added benefits constituted a major and hard to reverse increase in labor costs.¹⁷

Together, the 1988 Constitution and the CLT created a legal framework with strict

¹⁴Decisions from labor judges in Brazil are often appealed. First instance TRT2 judges are called to review 16.6% of their own decisions and have 71% of their decisions reviewed by second instance appellate judges. In turn, TRT2 appellate judges review 23.6% of their own cases and have 39% of their cases moved up to the TST. This process is depicted in Figure A.1.

¹⁵For a review of the differences between Civil Law and Common Law legal origins and their effect on labor regulation, see Botero et al. (2004).

¹⁶See Gonzaga, Maloney and Mizala (2003).

¹⁷As in most countries, constitutional changes in Brazil are difficult to achieve. Constitutional amendments have to be approved in two rounds of vote in both the lower and the upper houses of Congress, by three-fifths of representatives and senators.

rules for what an employment relationship should look like. They detail which rights workers have and which employment practices are lawful. Up until recently, for example, intermittent work schedules or freelance work contracts were outlawed and companies that had workers in any of these types of employment often faced high risk of litigation. If sued, they would be most likely ordered to compensate the worker for the entire duration of the contract, as if she was a permanent full-time employee. Any mutually agreed and more flexible arrangement between employer and employee had little hope of prevailing over labor laws.

In addition to being highly restrictive, Brazilian Labor Law is also notoriously and overtly pro-worker in the way legal proceedings are done, differing significantly from other fields of Law.¹⁸ Historically, Labor Procedural Law, which refers to the rules by which the labor courts hear the cases, has provided several incentives for workers to litigate, such as low requirements for filing a suit, generous exemptions from payment of court fees and rare punishment for frivolous lawsuits.

For example, up until recently, workers could have their lawyers file a generic complaint with a long list of demands and ask for an arbitrary amount of money in compensation from a former employer. Even if the complaint contained unreasonable and groundless demands, plaintiffs were unlikely to be punished. Their lawyers could wait until the defendant had presented its case and then, conditional on having seen the opposing side's defense, decide on whether or not to drop the case, with no consequence to the lawyers or their clients. Lawyers could also ask for their clients to be exempted from paying court fees, expert witnesses' fees or attorney's fees and the judge would most likely grant the request, so workers often faced no direct costs from litigation. This environment provided great incentives for workers and their lawyers to bring lawsuits against former employers. For each demand added to the initial complaint, the worker could end up having her claim accepted by the judge, in which case she would receive a compensation from her former employer; or could have the request denied by the judge, without incurring in any costs.

Another source of litigation risk comes from the judge assigned to the case. From the start, the law grants judges a lot of freedom to determine the pace and the specifics of the legal process.¹⁹ For example, they decide whether or not to dismiss the suit, after the

¹⁸One of the tenets of Brazilian Labor Law is the "Principle of Protection", which indicates that Labor Law should correct or soften the inherent imbalances in labor contracts. This guideline is often interpreted as a suggestion for judges to decide, whenever in doubt, in favor of the worker; and to always enforce the company policy or legal article that is most favorable to the worker, whenever they believe that more than one rule may apply. See Delgado (2012, p 193).

¹⁹According to article 765 of CLT, the labor judge "has ample freedom in the guidance of the case and should ensure its rapid progress". It also says judges can "order any judicial proceeding necessary

initial complaint;²⁰ determine, in many cases, how many hearings are necessary;²¹ decide which witnesses and experts need to be heard; determine which party, if any, should pay for court and court-related fees;²² and decide whether or not additional physical evidence²³ or documents should be presented to court. A labor judge can also nullify settlements or apply pressure to parties unwilling to accept or negotiate a settlement when she believes they should.

In fact, this broad procedural freedom granted to judges goes even further. In labor lawsuits, oral testimonies from parties and witnesses (usually presenting conflicting narratives) play a major role. During hearings, a labor judge can question parties, witnesses and experts directly²⁴ and later base her decision entirely on the testimonials she finds the most convincing, even when formal documents contradict these testimonials. This increases the chances that the judges' implicit and explicit biases play an important role in the outcome of the case. And in fact there is some evidence to that effect. Castelar-Pinheiro (2003) ran a survey with 741 Brazilian judges, from 11 different states and found that 45.1% of respondent judges considered that, in labor cases, decisions are often or very often based more on the judge's political views than on the "strict reading of the law." Only for cases involving privatisation and regulation of public services did a higher percentage of respondents say the same. The same survey also found that 45.8% of labor judges believe that "the seeking of social justice sometimes justifies decisions that violate contracts."

When considered together, Brazil's biased judges and its rigid and pro-worker labor laws create large incentives for litigation²⁵, impose high costs on firms, and place many restrictions on the demand for labor. In fact, the 2009 World Bank Enterprise Survey with business owners and top managers from 1,802 Brazilian firms found that 63.2% of firms identify labor regulations as a major constraint, compared to only 16.7% of firms of all of Latin America and the Caribbean, and 11.2% of firms from all of the 143 surveyed countries. Of all of these countries, Brazil was the one with the highest share of firms mentioning labor regulations as a major issue, with Argentina in a distant second with 49%. Figure 1 shows that Brazil is an outlier even when we take into account the average firm age and size in each country.

to the clarification of cases."

²⁰Art. 840, §1 of the CLT.

²¹Art. 813, §2 of the CLT.

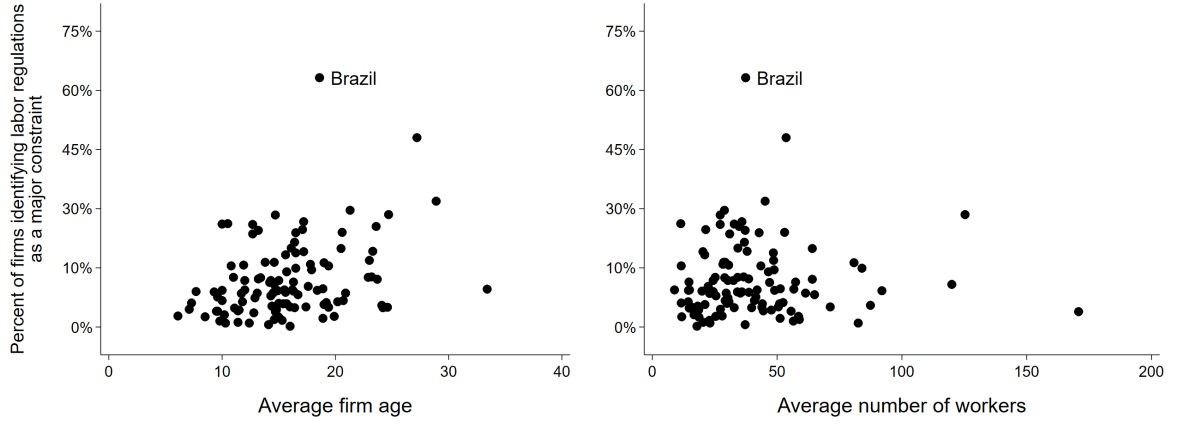
²²Art. 790, §4 of the CLT.

²³Art. 852-D of the CLT.

²⁴Art. 820 of the CLT.

²⁵According to the *National Justice Council* (CNJ), 26.4% of all new cases filed in 2016 in the Labor, State, and Federal Justice were labor cases.

Figure 1: Labor regulations as a major constraint and firm characteristics



Notes: This figures shows the results of the 2009 World Bank Enterprise Survey on the perception of firms regarding labor regulations, and average firm age and size. Each dot represents a country, with the fraction of firms identifying labor regulations as a major constraint plotted in the Y-axis and average firm age or size in the X-axis.

2.2 The 2017 Labor Reform

In 2017, Brazilian Labor Law went through its most significant changes in decades. The main objectives of these reforms were lowering expected labor costs and increasing employment, by addressing some of the issues mentioned in the previous section. In March 2017, Federal Law 13,429 allowed firms to outsource work that was previously not permitted by law to be outsourced. Until then, firms were only allowed to outsource secondary work, unrelated to the firm’s core activities. For example, schools were allowed to outsource their security and cleaning, but not their teachers. After the reform, any work activity can be outsourced, without the firm being subject to legal action in labor courts.

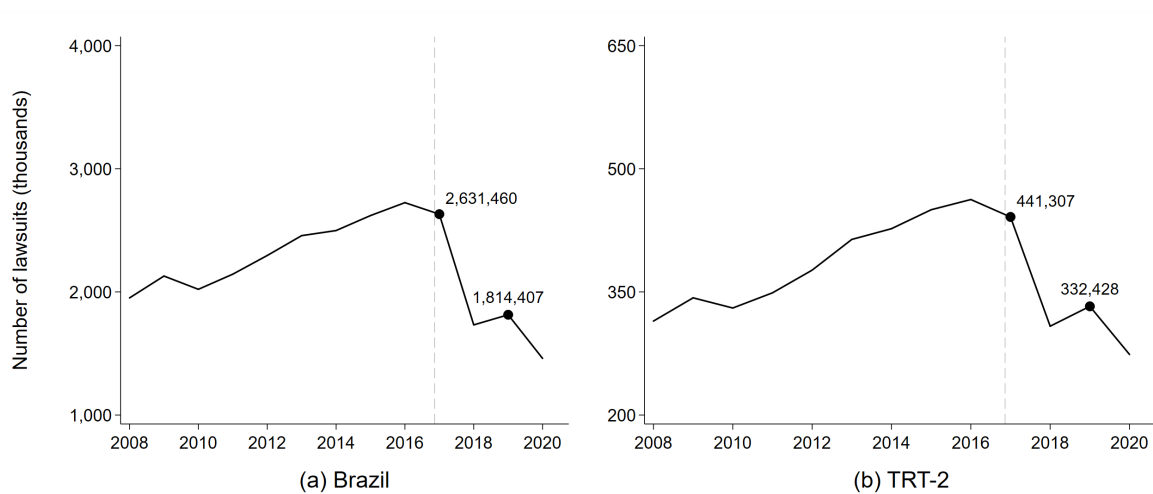
In July 2017, a larger reform altered several articles in the Brazilian Constitution and in the CLT. These changes were expected to reduce labor costs by three channels: i) by increasing the set of employment practices deemed legal; ii) by removing from procedural labor law its most noticeable incentives for excessive and groundless litigation; and iii) by reducing the discretion of judges to decide in accordance to their views when these are in conflict with the law. Table A.1 lists some of the main changes brought by the July 2017 labor reform.

Rows 1 through 10 in Table A.1 describe changes in rights and responsibilities of employers and employees. These are related mostly to increases in the set of lawful labor practices and to the loosening of the rules on how workers can exert their rights. Importantly, these reforms made legal more flexible employment practices that were in-

dispensable for the viability of some economic activities. They also addressed a few of the main sources of labor complaints, most often related to alleged unpaid overtime, disagreements about severance payments, failure to give proper notice of termination of contract and unpaid unused vacation days (TST, 2019) Rows 11 through 17 in Table A.1 describe changes in procedural labor law.

Taken together, these changes affected both expected gains and losses from labor litigation. By making legal previously illegal employment practices, some of the claims that would be easily accepted prior to the reform now have a harder time being granted by a judge. Additionally, with the establishment of higher standards for granting exemption from payment of court and court-related fees, for many workers filing a complaint is no longer a costless endeavor. Even more so in frivolous or groundless cases, with the the real possibility of being ordered to pay a fine and having to pay attorney’s fee and damages for the opposing side. With the reduced expected payoff of labor litigation, the number of lawsuits experienced a sharp drop right after the reform came into effect. Figure 2 shows the number of labor complaints filed per year, both in Brazil and in the 2nd Region. In both cases, the reform reverted an upward trend, resulting in a drop of over 31% and 25%, respectively, between 2017 and 2019.

Figure 2: Number of labor lawsuits filed per year in Brazil



Source: National Council of Justice (CNJ).

2.3 Dataset Construction and Descriptives Statistics

Our empirical analysis is built upon labor court decisions over the period 2008-2013 published in the *Diário Oficial Eletrônico* (DOE)²⁶, the official register of the TRT2. This data includes the full name of all parties involved (plaintiff, defendant, lawyers, and judge), court number, filing date, 1st instance decision date, categorical ruling (*procedente*, *parcialmente procedente*, and *improcedente*) and the value of the claim.²⁷

The second main source of data is *Relação Anual de Informações Sociais* (RAIS), a yearly matched employer-employee administrative dataset that comprises information on the universe of Brazilian labor market contracts. This dataset includes workers' information on workers such as name, age, gender, education level, race, occupation and wage, as well as firms characteristics such as sector, establishment size and location.

Finally, the third source of data was gathered from the *Tribunal de Justiça de São Paulo* (TJSP), which stores legal information about the judicial cases - in particular, the bankruptcy requests - filed in the state of São Paulo. We collected the information about the 7,715 bankruptcy requests filed between 2000 and 2015. This includes the full names of firms that went bankrupt, their tax identifier, and the date of bankruptcy.

Sample. Using workers, judges and firms full names, we are able to merge the first two sources of data, and then, using the firm tax identifier, we can merge them with the bankruptcy dataset. Table A.2 describes the several steps leading to our final sample of labor litigation cases. In Panel A we report the total number of usable observations. We are able to find 1,758,007 cases out of a total of over 2 million cases filed in a TRT2 labor court over the 2008-2013 period.²⁸

We limit our attention to cases (i) whose plaintiff is a worker, (ii) for which the names of the plaintiff, defendant and judges are available, and (iii) we successfully merge with the RAIS dataset, (iv) whose judge appears more than once in the sample, and (v) whose firm (defendant) is operational in the private sector (we exclude agriculture, cleaning services and extractive industry). The analysis is focused on firms who are brought to court exactly once in the 2008-2013 period in order to avoid collective dismissals, cases

²⁶Available in <<https://aplicacoes1.trtsp.jus.br/ConsultaDOE/doi/completo.jsp>>. Starting in 2014, the DOE was phased out in favor of the *Diário Eletrônico da Justiça do Trabalho* (DEJT).

²⁷We have built an algorithm relying on the massive use of the Python's package *Pandas* and regular expressions that converted the DOE files into HTML format and from which we gather lawsuits unique identifiers. We have reached all the informations from available lawsuits by searching these identifiers in the TRT2 website.

²⁸According to *CNJ*, 2,126,892 new cases were filed in the TRT2 labor courts over the 2008-2013 period. The 1,758,007 number of cases that we have found in the DOE is the number of cases that were filed in those years and that have not been inactive in the same period.

that have not been reviewed in the appellate court and whose parties did not reach a settlement prior to the judge’s decision. Our final sample contains 8,879 labor court disputes (see Table A.2).

Table 2 reports summary statistics for our final estimation sample. The worker’s claim is (partially or totally) accepted by the judge in 72% of the cases, and the average amount of compensation granted is equivalent to 9.2 months of the worker’s last reported monthly wage. Besides, the first instance result is contested in the appeal court in 46% of the cases.

Regarding plaintiffs, around 18% of the workers that are suing firms have a college degree and almost none are reported as illiterate. These workers earned, on average, 1,590 *BRL* in the last reported job, which is almost 3 times the average minimum wage of 539 *BRL* in the 2008-2013 period. Firms employ on average almost 17 workers, but 50% of them employ less than 5 workers. The median firm is over 8 years old and mostly found in the retail and manufacturing sectors.

Table 2: **Summary statistics**

| | Mean | Std. Dev. | Median | Min | Max | N |
|--|-------|-----------|--------|-----|---------|-------|
| <i>Lawsuit characteristics</i> | | | | | | |
| - Claim accepted | 0.72 | 0.45 | 1.00 | 0.0 | 1.0 | 8,879 |
| - Compensation in worker’s monthly wage | 9.17 | 16.42 | 4.14 | 0.0 | 284.5 | 3,786 |
| - Result contested in the appeal court | 0.46 | 0.50 | 0.00 | 0.0 | 1.0 | 8,879 |
| <i>Worker characteristics</i> | | | | | | |
| - Illiterate worker | 0.00 | 0.04 | 0.00 | 0.0 | 1.0 | 3,690 |
| - Worker with college degree | 0.18 | 0.39 | 0.00 | 0.0 | 1.0 | 3,690 |
| - Worker’s last monthly wage (1,000 BRL) | 1.59 | 2.58 | 0.97 | 0.0 | 54.8 | 4,718 |
| <i>Firm characteristics</i> | | | | | | |
| - Firm size (workers) | 17.46 | 93.16 | 5.00 | 0.0 | 4,118.0 | 5,905 |
| - Firms with less than 10 workers | 0.46 | 0.50 | 0.00 | 0.0 | 1.0 | 5,905 |
| - Firm age in years | 12.16 | 10.83 | 8.71 | 0.4 | 63.4 | 3,869 |
| - Firm sector: manufacturing | 0.12 | 0.33 | 0.00 | 0.0 | 1.0 | 8,706 |
| - Firm sector: retail | 0.39 | 0.49 | 0.00 | 0.0 | 1.0 | 8,706 |
| - Firm sector: food and lodging | 0.09 | 0.29 | 0.00 | 0.0 | 1.0 | 8,706 |

3 Econometric analysis

In this section, we discuss our empirical strategy to identify the causal effect of judge bias on firm outcomes as measured by employment, average wage of employees, financial

distress and survival. We begin by discussing the challenges on econometric identification and how we have built our instrument. We then present our main results.

We model firm outcomes as a function of judge bias as in the following model

$$Y_{ijcT} = \beta_0 + \beta_1 \cdot I_{ijct} + X_{ijct}^0 \cdot \gamma + \epsilon_{ijcT} \quad (1)$$

where Y_{ijcT} is the outcome of the firm sued in case i , assigned to judge j in courthouse c , measured $T - t > 0$ years after the judge decision. I_{ijct} is an indicator variable that equals one if the judge accepted, at least partially, the worker's claim in period t and zero if the judge considers the case unfounded²⁹. X_{ijct} is a vector of controls variables that includes courthouse \times year fixed effects and other case-level characteristics. However, OLS estimates of this equation are likely to be biased as I_{ijct} is correlated with case-characteristics that are unobserved, such as the quality of the lawyers in both sides of the lawsuit. We address this concern by exploiting that, conditional on year and courthouse fixed effects, cases are randomly assigned to judges. Moreover, judges vary in how pro-workers they are. We then use judge bias as an instrument to I_{ijct} in order to assess the causal effects of labor lawsuits. Our baseline empirical model is given by:

$$I_{ijct} = \alpha_0 + \alpha_1 \cdot z_{ijct} + X_{ijct}^0 \cdot \phi + v_{ijct} \quad (2)$$

$$Y_{ijcT} = \beta_0 + \beta_1 \cdot I_{ijct} + X_{ijct}^0 \cdot \gamma + \epsilon_{ijcT} \quad (3)$$

where z_{ijct} is the judge j bias measure for case i in the courthouse c and year t . We estimate β_1 , our coefficient of interest, using two-stage least squares (2SLS) with equation (2) as the first stage and equation (3) as the second stage.

Instrumental variable. We construct our z_{ijct} instrument using a residualized, leave-one-out judge bias measure (Dahl, Kostol and Mogstad, 2014; Dobbie, Goldin and Yang, 2018; Bhuller et al., 2020; Cahuc et al., 2020). More formally, we compute the judge bias by estimating:

$$I_{ijct} = \eta_{ct} + z_{ijct} \quad (4)$$

where $E[z_{ijct}|\eta_{ct}]$ is assumed to be zero. This equation means that the lawsuit outcome I_{ijct} is assumed to be result of a random term plus a term that is common to all cases judged in the same courthouse c and year t , which captures some regional particularities

²⁹As explained in section 2, cases in which parties settled are excluded from our analysis.

and trends. This common term, the courthouse \times year fixed effect, is defined by

$$\eta_{ct} = E[I_{ijct} | \eta_{ct}] \quad (5)$$

which can be estimated as

$$\hat{\eta}_{ct} = \frac{1}{n_{ct}} \sum_{i \in 2(c,t)} I_{ijct} \quad (6)$$

where n_{ct} is the number of cases judged in courthouse c at year t , and $i \in (c, t)$ represents all the cases judged in this same courthouse and year. Therefore, the estimator of the judge fixed effect, conditional on the courthouse \times year fixed effect is given by

$$\hat{z}_j = \frac{1}{n_j} \sum_{i \in 2j} \hat{z}_{ijct} \quad (7)$$

where $i \in j$ stands for all the cases judged by judge j . However, in order to avoid reflection problems when we analyze the correlation between judge j bias and the case i outcome, we need to estimate the bias of the assigned judge as the bias of the judge in all of her other cases but one. Thus, the bias of judge j is measured by the leave-one-out mean of case i , which makes this measure both judge and case specific. Judge j bias for case i is defined as:

$$\hat{z}_{ijct} = \frac{1}{n_j - 1} \left(\left(\sum_{i \in 2j} \hat{z}_{ijct} \right) - \hat{z}_{ijct} \right) \quad (8)$$

Identification. Our empirical strategy rests on the assumption that the allocation of judges to cases is random. Key institutional features ensure that this is the case. First, all cases are randomly assigned to a court within the same courthouse. In the case of São Paulo courthouse, there are 90 courts with a chief and a substitute judge in each. Second, the selection of cases settled before going to trial can, in theory, be influenced by the judge in charge of the case. However, employers, workers and lawyers do not know with certainty the identity of the president until the day of the judgment for several reasons: a new judge may be appointed, judges are mobile across courts, the judge may be absent and replaced by another one. Hence defendants and plaintiffs have limited information about the identity of the judge which ensures that the personality of judges does not unduly generate case selection through pre-trial settlement.

In order to assess if cases are indeed randomly assigned to judges and assess the validity of our instrument, we look whether our measures of judge bias are correlated with case-characteristics. Columns (1) and (3) of Table A.3 show the regression results of

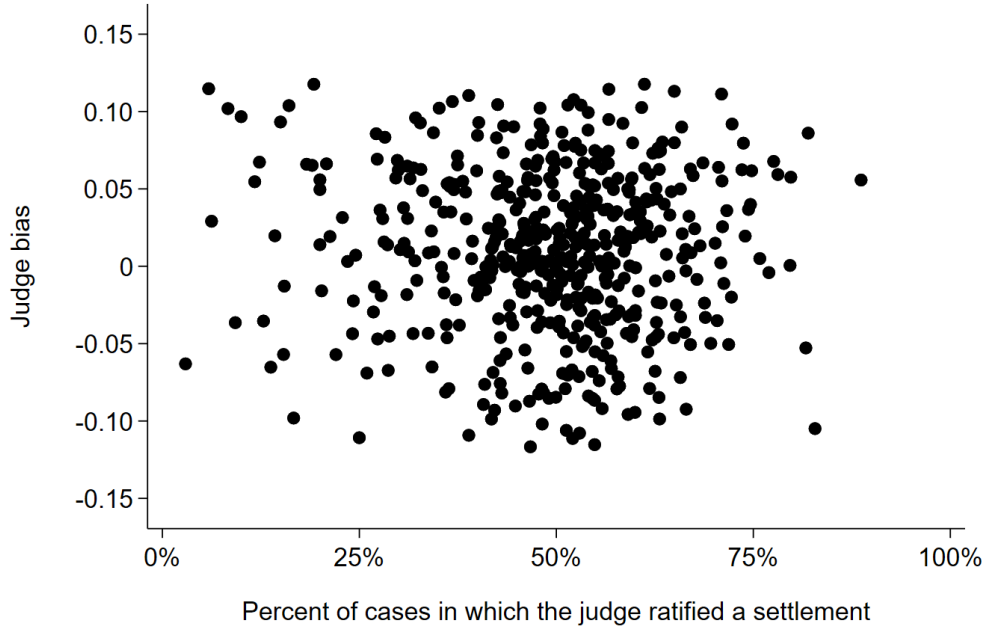
the dummy indicating claim being accepted and the case compensation in monthly wages, respectively, on characteristics of both workers and firms. We control for courthouse \times year fixed effects and standard errors are clustered at the judge level. We show that the firm probability of losing the case decreases as the firm become older and if the firm is sued by workers with college degree. The worker's education is also highly predictive of the amount granted by the judge. In columns (2) and (4) of Table A.3, however, we regress our both measures of judge bias on the same characteristics of workers and firms. Regardless which instrument is used as dependent variable, results suggest that different judges are indeed assigned to very similar cases. Estimated coefficients are all considerable smaller in magnitude than in columns (1) and (3) and generally non-significant. Furthermore, the p-value of the joint F-test is equal to 0.689 in column (2) and equal to 0.504 in column (4), which suggests that workers and firms characteristics are also not joint significant.

We also check whether settlements rate (before trial but after court assignment) correlate with the bias level of the judge. Each dot in Figure 3 represents an unique judge, with judge bias (equation 7) plotted in the Y-axis and her average settlement rate in the X-axis. Consistent with the institutional features described above, pre-trial settlement rates do not seem to correlate with judge type.

First stage. Figure 4 shows the distribution of our judge bias measure as defined in equation 8. Figure 5 presents the distribution of an alternative measure that is build using the amount granted by the judge in workers' monthly wages as the case outcome Y_{ijct} in equation 4. In both cases there is considerable variability in how biased judges are, showing that regardless the dimension in which we measure bias, prosecuted firms are exposed to systematically different judges. Being assigned to one of the 10% most pro-worker judges as compared to the 10% most pro-firm judges increases the probability of the claim being accepted from 61% to 82%, and the amount granted by the judge from 5.5 to 13.1 months of wage. Figures 4 and 5 also show in the right-axis a graphical and flexible representation of our first-stage estimations in which we plot the local polynomial fit of the residualized lawsuit outcome explained by the judge bias. In both cases the outcome is positively and roughly linearly correlated with judge bias.

Tables 3 and 4 show the first-stage estimations from equation 2. Our coefficient of interest is stable across specifications and always highly significant. Consistent with the graphical version, these estimates show that the instrument is highly predictive of lawsuit outcomes. Column (5) of table 3 shows that an increase of one standard deviation in judge bias means a 5.5% higher probability of the claim being accepted, even after controlling for court \times time fixed effects, worker and firm characteristics. Also, column (5) of table

Figure 3: Judge bias vs settlement rate



Notes: This figure shows how judge bias correlates with judges' settlement rates. Each dot represents an unique judge, with her judge bias (equation 7) plotted in the Y-axis and her average settlement rate in the X-axis. We excluded all judges from the top and bottom 5% of the average bias distribution, and also those who have never ratified a settlement in our database.

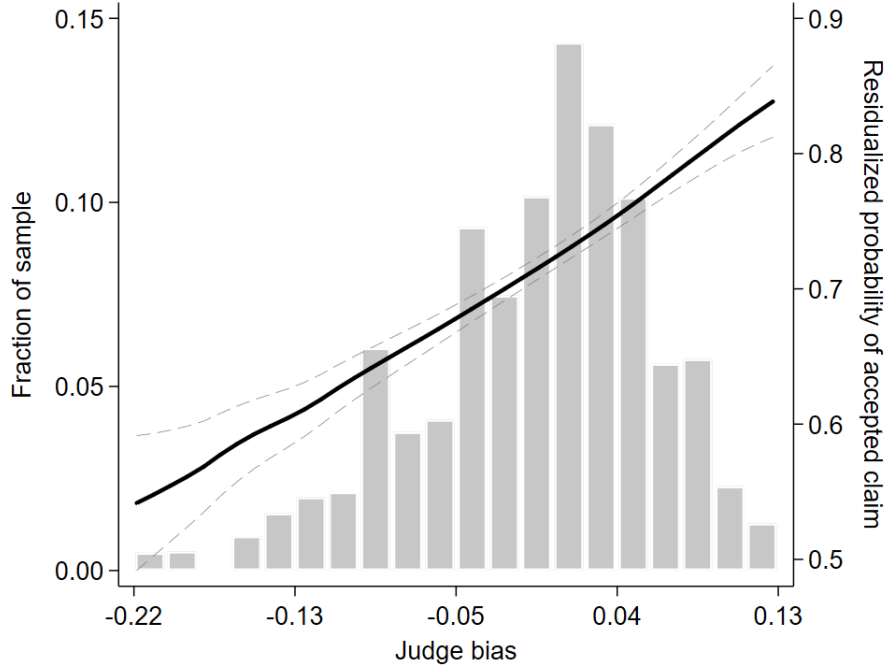
4 shows that an increase of one standard deviation in judge bias in monthly wages means a 2.6 months of wage higher compensation.

3.1 Judge bias and firm performance

Table 5 presents the results of reduced form estimations in which we regress the firm outcomes on both judge toughness measures. Panel A shows that the growth rate of employment decreases by 2.1% and the growth rate of the average wage of new hires by 0.8% as we increase the judge toughness with respect to the acceptance of the claim in one standard deviation. There is also evidence of an increase in the probability of the firm becoming inactive and in the probability of the firm going bankrupt after the judge's decision. On the other hand, panel B shows that an increase in the judge toughness measure with respect to the worker's compensation seems to impact only the growth rate of the average wage of new hires and the probability of the firm going bankrupt.

These results can be viewed as the firm's response to an increase in labor costs and in labor regulations. Conditional on having been sued, a firm that is randomly assigned to a judge that is more pro-worker than the average faces an exogenous increase in the expected labor costs and reacts by reducing both the growth rate of its employment level

Figure 4: Judge bias with respect to the acceptance of the claim



Notes: The histogram shows the density of judge bias along the left-axis (top and bottom 1% excluded). The solid line is the local polynomial fit of the residualized lawsuit outcome explained by the judge bias. Dashed lines represent 90% confidence intervals.

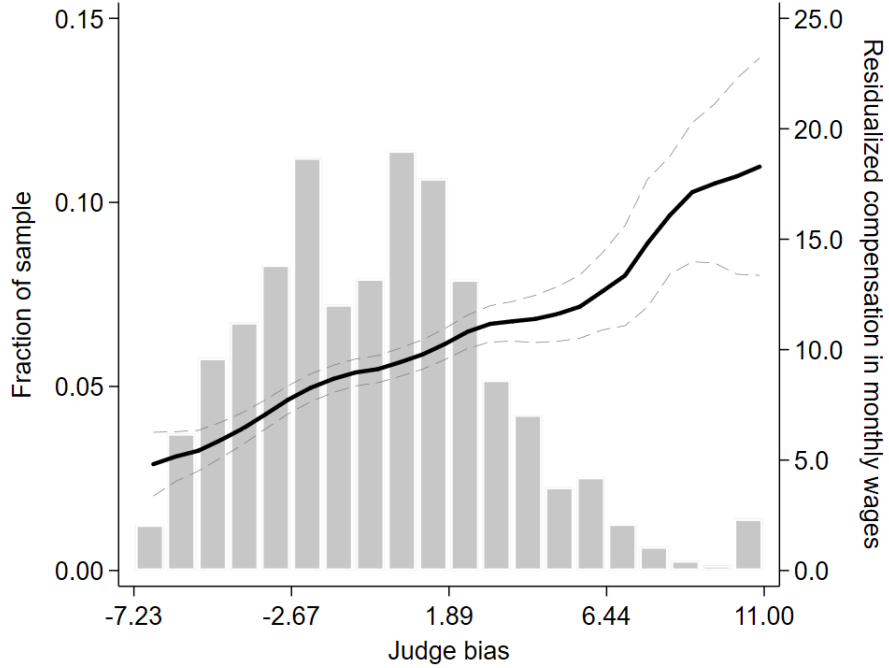
and the growth rate of the average wage of new hires. Moreover, the increase in total costs implies an exogenous reduction in profits, which leads to a higher probability of the firm becoming inactive and going bankrupt after the judge’s decision.

4 A search and matching model

The econometric analysis discussed in section 3 cannot address how firms and workers react to changes in expected labor costs due the introduction of Brazil’s Labor Reform in 2017. Also, it is not informative regarding welfare effects of changing judicial incentives or the mechanisms behind those effects. In this section, we build a model to quantify the impact of the reform that explicitly accounts for the aspect of the reform in which workers may now be responsible for payment of court-related fees as well as attorney’s fee and damages for the opposing side in case of case dismissal.

Our model is based on a standard search and matching framework in continuous time where workers are risk neutral, infinitely lived and discount the future at rate r . Labor market frictions are characterized by a standard matching function. When a meeting between a firm and an unemployed worker takes place, they draw a match-

Figure 5: Judge bias with respect to the worker’s compensation



Notes: The histogram shows the density of judge bias along the left-axis (top and bottom 1% excluded). The solid line is the local polynomial fit of the residualized lawsuit outcome explained by the judge bias. Dashed lines represent 90% confidence intervals.

specific productivity x from a stationary distribution $G(x)$ and accept forming a match if and only if the net surplus of the match is higher than zero. Wages are set by Nash bargaining upon observing the match-specific productivity x . A match can be destroyed at an exogenous rate δ .

We extend this standard environment by allowing workers who are laid off to decide whether to file a lawsuit against the firm or not, namely, a plaintiff or non-plaintiff unemployed. This decision is taken soon after the worker gets fired and before any new match takes place. The idea is that the plaintiff unemployed receives a positive compensation that depends on the job productivity as well as may obtain an idiosyncratic gain attributed to a more favorable case. On the other hand, the plaintiff joins a blacklist from which firms hire at a lower rate. We assume that the worker’s litigation history resets every time she is admitted to a job such that no history is carried forward.

The details of this search and matching process are better described as follows.

Table 3: Effect of judge bias on worker’s claim being accepted

| | Dependent variable: Claim accepted | | | | |
|-----------------------------------|------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | (1) | (2) | (3) | (4) | (5) |
| Judge bias | 0.8539*** [0.0811] | 0.8548*** [0.0810] | 0.7740*** [0.1378] | 0.9978*** [0.1205] | 0.8115*** [0.1992] |
| Court \times time fixed effects | No | Yes | Yes | Yes | Yes |
| Plaintiff characteristics | No | No | Yes | No | Yes |
| Defendant characteristics | No | No | No | Yes | Yes |
| Observations | 8,879 | 8,879 | 2,811 | 3,869 | 1,343 |
| Adjusted R2 | 0.016 | 0.017 | 0.014 | 0.033 | 0.033 |
| IV mean | -0.003 | -0.003 | -0.003 | -0.003 | -0.003 |
| IV std dev | 0.068 | 0.068 | 0.068 | 0.068 | 0.068 |

Notes: In brackets, standard errors are clustered at the judge level. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***. Court \times year fixed effects are used. The plaintiff characteristics included in column (3) and (5) are dummy variables that account for the worker’s education and the value of the last reported monthly wage. Defendant characteristics in columns (4) and (5) include firm age in years and dummies for the firm sector.

4.1 Workers

While working, individuals enjoy the wage that depends on the job match productivity, x , and may receive a termination shock at the rate δ in which case they immediately decide whether to file a lawsuit against the firm or not, situations that are denoted by 1 and 2, respectively. In case of dispute, workers (plaintiff) obtain the value of unemployment U_1 in addition to an expected gain $A(x, \epsilon)$ that vary with the worker’s productivity x and an idiosyncratic “case-size” shock ϵ . We assume that ϵ has a Type-I Extreme Value distribution with mean zero and scale parameter equal to σ . We also assume that the expected gain $A(x, \epsilon)$ is separable such that $A(x, \epsilon) = A_1(x) + A_2(\epsilon)$. Finally, when workers decide not to file a lawsuit against the firm (non-plaintiff), they receive the value of unemployment U_2 .

For the plaintiff unemployed, the contact rates are lower as employers observe whether the job seeker has filed a lawsuit against the previous employer, such that they fill vacancies with these workers at a lower intensity, i.e. $\lambda_1 < \lambda_2$. The flow value of an unemployed in the situation $i=1,2$ is

$$rU_i = b + \lambda_i \int \int \max \{W(w(x), \epsilon) - U_i, 0\} dH(\epsilon)dG(x) \quad (9)$$

Table 4: Effect of judge bias on the compensation for the claim

| | Dependent variable: Compensation as worker's last monthly wage | | | | |
|-----------------------------------|--|-----------------------|-----------------------|-----------------------|-----------------------|
| | (1) | (2) | (3) | (4) | (5) |
| Judge bias in monthly wages | 0.6308*** [0.0711] | 0.6387*** [0.0712] | 0.6353*** [0.1094] | 0.6952*** [0.1376] | 0.6894*** [0.2214] |
| Court \times time fixed effects | No | Yes | Yes | Yes | Yes |
| Plaintiff characteristics | No | No | Yes | No | Yes |
| Defendant characteristics | No | No | No | Yes | Yes |
| Observations | 3,786 | 3,786 | 2,264 | 1,919 | 1,124 |
| Adjusted R2 | 0.021 | 0.023 | 0.040 | 0.033 | 0.048 |
| IV mean | -0.083 | -0.083 | -0.083 | -0.083 | -0.083 |
| IV std dev | 3.758 | 3.758 | 3.758 | 3.758 | 3.758 |

Notes: In brackets, standard errors are clustered at the judge level. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***. Court \times year fixed effects are used. The plaintiff characteristics included in column (3) and (5) are dummy variables that account for the worker's education and the value of the last reported monthly wage. Defendant characteristics in columns (4) and (5) include firm age in years and dummies for the firm sector.

where b is the flow utility while unemployed. While we do not distinguish it between unemployment types, we assume that any gains from filing a lawsuit against the firm are earned upfront upon job destruction, which is considered below.

The flow value of a job is

$$rW(w(x), \epsilon) = w(x; \epsilon) + \delta [\max \{U_1 + A_1(x) + A_2(\epsilon), U_2\} - W(w(x), \epsilon)] \quad (10)$$

where the wage is a function of productivity x and the idiosyncratic shock ϵ that affects the worker's outside option when bargaining with the employer.

4.2 Firms

Firms post vacancies. The flow value of an open vacancy is

$$rV = -c + \zeta_1 \int \int_{\epsilon_x}^1 \max \{J(x, \epsilon) - V, 0\} dH(\epsilon) dG(x) + \zeta_2 \int \int_1^{\epsilon_x} \max \{J(x, \epsilon) - V, 0\} dH(\epsilon) dG(x) \quad (11)$$

Table 5: Effect of judge toughness on firm's outcomes - Reduced form regressions

| | Growth rate between $t - 1$ and $t + 1$ | | | | | |
|------------------------------|---|---------------------|-----------------------|------------------------|-----------------------|------------------------|
| | Employment | Avg wage | Avg wage of new hires | Active in $[t, t + 1]$ | Liquidation after t | Liquidation before t |
| Panel A: Instrument 1 | | | | | | |
| Judge bias | -0.3073** [0.1476] | -0.0041 [0.0535] | -0.1112** [0.0543] | -0.1260* [0.0707] | 0.0114*** [0.0043] | 0.0043 [0.0041] |
| Observations | 8,706 | 6,884 | 5,196 | 8,706 | 8,706 | 8,706 |
| IV mean | -0.003 | -0.003 | -0.003 | -0.003 | -0.003 | -0.003 |
| IV std dev | 0.068 | 0.068 | 0.068 | 0.068 | 0.068 | 0.068 |
| Panel B: Instrument 2 | | | | | | |
| Judge bias in monthly wages | -0.0001 [0.0045] | -0.0003 [0.0016] | -0.0029* [0.0017] | 0.0008 [0.0020] | 0.0003* [0.0001] | 0.0001 [0.0001] |
| Observations | 3,739 | 3,045 | 2,367 | 3,739 | 3,739 | 3,739 |
| IV mean | -0.083 | -0.083 | -0.083 | -0.083 | -0.083 | -0.083 |
| IV std dev | 3.758 | 3.758 | 3.758 | 3.758 | 3.758 | 3.758 |
| Year fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Sector fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |

Notes: In brackets, standard errors are clustered at the judge level. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***.

where c is the per period vacancy cost, ζ_1 is the rate at which employers meet the plaintiff unemployed, and ϵ_x is the level of idiosyncratic gain that determines the decision of the unemployed to file a lawsuit against the firm, conditional on the match productivity. Since firms have a preference for unemployed who did not file a lawsuit against the previous firm, they hire such workers at a higher intensity $\zeta_2 = \psi\zeta_1$, where $\psi > 1$ and is assumed exogenous.³⁰

The value of a filled job depends on the profit flow $x - w(x; \epsilon)$ and the expected termination occurring at rate δ , in which case the firm may be sued with probability $\Phi(x)$.³¹ In this case, they are expected to pay a cost $K(x)$ due to court-related fees as well as attorney's fee and damages for the opposing side in case of case dismissal in addition to $A(x, \epsilon)$. The flow value of a filled job is

³⁰An interesting extension for future work would allow for directed search, with firms choosing a selection rule for workers type 2 over type 1 as well as wages.

³¹The idea here is that the litigation history of the worker affects his/her wage at the time of hiring but then resets after hiring. Therefore if a firm hires a "high ϵ " worker (a plaintiff), this does not imply that the worker is going to become a plaintiff for sure again in case of firing.

$$rJ(x, \epsilon) = x - w(x; \epsilon) + \delta \{V - \Phi(x) [K(x) + A_1(x) + A_2(\epsilon)] - J(x, \epsilon)\} \quad (12)$$

4.3 Equilibrium

In this section we solve for endogenous objects, namely, the contact rates, the reservation shock that determines the unemployed's choice of filing a lawsuit, wages and reservation productivity.

4.3.1 Matching

We assume that the meeting between employers and employees are governed by a matching function. As it is standard in the literature we assume a Cobb-Douglas function, such that the number of meetings is given by

$$m = \mu (u_1 + u_2)^{1-\eta} v^\eta$$

where μ is a positive scale parameter, $u_1 + u_2$ is the total number of unemployed in the market, respectively, plaintiff and non-plaintiff, and v the number of vacancies.³² Given the market tightness $\theta = \frac{v}{u_1 + u_2}$, the firms hire the unemployed type 1 (plaintiff) and type 2 (non-plaintiff) at the following rates

$$\zeta_1 = \frac{m}{v} = \mu \theta^{\eta-1}$$

$$\zeta_2 = \frac{\psi m}{v} = \psi \mu \theta^{\eta-1}$$

Likewise, since vacancies are more visible to non-plaintiff unemployed, these individuals also meet firms more frequently. The contact rates for the unemployed λ_i ($i = 1, 2$) are

³²The elasticity of the matching function with respect to vacancies, η , is typically in the range 0.3-0.5 (Petrongolo and Pissarides, 2001).

$$\lambda_1 = \frac{m}{u_1} \frac{u_1}{u_1 + u_2} = \mu\theta^\eta$$

$$\lambda_2 = \frac{\psi m}{u_2} \frac{u_2}{u_1 + u_2} = \psi\mu\theta^\eta$$

4.3.2 The workers' litigation decision

Individuals who enter the labor market search as a non-plaintiff unemployed. But previously employed workers who lost their jobs direct their search as plaintiff or non-plaintiff unemployed. Since taking the firm to court implies a lower contact rate from a next future employer but entitles the worker for some positive compensation as well as an idiosyncratic gain, the worker who just lost a job decides based on the following maximization:

$$\max \{U_1 + A_1(x) + A_2(\epsilon), U_2\} \quad (13)$$

where we assume $A_2(\epsilon) = \sigma\epsilon$. Due to the assumption that ϵ is drawn from an i.i.d. Type-I Extreme Value distribution, the optimization problem (13) thus implies that the probability that an unemployed individual with productivity x takes a case to the labor court is

$$\Pr\{\epsilon > \epsilon_x^* \mid x\} = \Phi(x) = \frac{1}{1 + \exp(\epsilon_x^*)}$$

where ϵ_x^* solves $U_1 + A_1(x) + \sigma\epsilon_x^* = U_2$.

4.3.3 Wage determination

After drawing a shock ϵ and deciding whether to become a plaintiff or non-plaintiff against the previous employer, she searches for jobs.

When firms and workers meet, they draw a match-specific productivity $x \sim G(x)$ and they start the bargaining process to determine the wage and to decide whether to accept the match. The firm observes the unemployed status (plaintiff or non-plaintiff) and the realized shock ϵ . Thus, for each x and ϵ , the wage is obtained through Nash bargaining as follows,³³

³³Note that since wages are only negotiated at the time of hiring, breaking off the bargaining does not bring any lawsuit benefit to the worker or cost to the firm.

$$\max_w \{W(w(x), \epsilon) - \max\{U_1 + A_1(x) + A_2(\epsilon), U_2\}\}^\beta \{J(x, \epsilon) - V\}^{1-\beta}$$

where β is the labor share, taken as exogenous. In equilibrium with free entry, $V = 0$. From the first order condition, we arrive at the wage function

$$w(x; \epsilon) = (1 - \beta)r \max\{U_1 + A_1(x) + A_2(\epsilon), U_2\} + \beta(x - \delta\Phi(x) [K(x) + A_1(x) + A_2(\epsilon)]) \quad (14)$$

The wage in equilibrium is an average between the flow value of their outside option given by $\max\{U_1 + A_1(x) + A_2(\epsilon), U_2\}$ and the workers' productivity x minus the expected cost of firms with a labor lawsuit which diminishes wages as firms attempt to mitigate the judicial costs by paying lower wages.

4.3.4 Reservation productivity

As in standard search-matching models, accepting a job match depends on a reservation productivity that makes the workers and firms indifferent between an agreement and keep searching. Since the bargaining takes place only at the hiring, this is defined by the following zero-surplus condition, for any ϵ ,

$$W(w(x_\epsilon), \epsilon) - \max\{U_1 + A_1(x_\epsilon) + A_2(\epsilon), U_2\} + J(x_\epsilon, \epsilon) - V = 0$$

We then use this restriction, together with $V = 0$ and the value functions (2) and (4) to obtain:

$$x_\epsilon = r \max\{U_1 + A_1(x_\epsilon) + A_2(\epsilon), U_2\} + \delta\Phi(x_\epsilon) [K(x_\epsilon) + A_1(x_\epsilon) + A_2(\epsilon)] \quad (15)$$

If we assume that $K(x)$ and $A_1(x)$ are monotone³⁴, a unique fixed point solution is obtained for any given shock ϵ . This equation makes it clear that a decrease in $K(x)$ or $A_1(x)$ shifts the reservation productivity down implying more matches. Our model suggests that a labor reform that reduces firm's costs and worker's benefits has the potential to increase employment and reduce litigation.

³⁴We assume they are increasing.

4.4 Steady-state conditions

We solve for the steady-state unemployment rate of plaintiff and non-plaintiff individuals by equating flows in and out of employment and both types of unemployment. Let u_1 , u_2 , and emp be the fraction of plaintiff unemployed, non-plaintiff unemployed, and employed individuals, respectively. Given that individuals must be at one of these three states, $u_1 + u_2 + emp = 1$.

In the steady-state, the flow of plaintiff unemployed individuals into employment must be equal to the flow of employed individuals who become unemployed and decide to sue the firm. Moreover, the flow of non-plaintiff unemployed individuals into employment must be equal to the flow of employed individuals into unemployment followed by a decision to not filing a lawsuit against the firm. The steady-state conditions are given by

$$u_1 \lambda_1 \iint \mathbb{1}_{fW(x,\epsilon) > U_1 g} dH(\epsilon) dG(x) = emp \delta \iint \mathbb{1}_{fU_1 + A_1(x) + A_2(\epsilon) > U_2 g} dH(\epsilon) dG(x)$$

$$u_2 \lambda_2 \iint \mathbb{1}_{fW(x,\epsilon) > U_2 g} dH(\epsilon) dG(x) = emp \delta \iint [1 - \mathbb{1}_{fU_1 + A_1(x) + A_2(\epsilon) > U_2 g}] dH(\epsilon) dG(x)$$

where $\mathbb{1}_{fg}$ is an indicator function taking value one if \cdot is true.

Combining these two conditions with the mass of workers equal to one gives

$$u_1 = \left[\frac{\delta D_3}{\lambda_1 D_1} \right] \cdot \left[\frac{1}{1 + \frac{\delta D_3}{\lambda_1 D_1} + \frac{\delta(1 - D_3)}{\lambda_2 D_2}} \right] \quad (16)$$

$$u_2 = \left[\frac{\delta(1 - D_3)}{\lambda_2 D_2} \right] \cdot \left[\frac{1}{1 + \frac{\delta D_3}{\lambda_1 D_1} + \frac{\delta(1 - D_3)}{\lambda_2 D_2}} \right] \quad (17)$$

$$emp = \left[\frac{1}{1 + \frac{\delta D_3}{\lambda_1 D_1} + \frac{\delta(1 - D_3)}{\lambda_2 D_2}} \right] \quad (18)$$

where $D_1 = \iint \mathbb{1}_{fW(x,\epsilon) > U_1 g} dH(\epsilon) dG(x)$, $D_2 = \iint \mathbb{1}_{fW(x,\epsilon) > U_2 g} dH(\epsilon) dG(x)$, and $D_3 = \iint \mathbb{1}_{fU_1 + A_1(x) + A_2(\epsilon) > U_2 g} dH(\epsilon) dG(x)$.

5 Model Calibration

As explained in section 2, by shifting lawsuit costs to the losing party and imposing more restrictive rules on how detailed a worker’s claim should be, the 2017 Labor Reform reduced the firm’s expected costs and the worker’s expected benefits with the lawsuit. In this section we calibrate the model in order to replicate the Brazilian labor market status before the reform implementation and then simulate how equilibrium variables of employment, unemployment type, wages, and productivity are affected by these changes in incentives brought by the reform.

We begin by proposing functional forms to describe the worker’s winning probability function p_w , the case compensation function and the expected gain with the lawsuit. Then, we show which data moments we target in order to recover the parameters for such functional forms. Finally, we externally calibrate the remaining parameters.

5.1 Worker’s winning probability

As described in sections 2 and 3, judges are randomly allocated to cases and deviate to a greater or lesser degree from the average court decision. We then assume that the worker’s winning probability is a function of the empirical average court decision (μ^w) and an idiosyncratic “judge bias” term such that

$$p_j^w = \mu^w + v_j$$

where v_j follows a re-scaled Beta distribution defined in the $[-0.4, 0.4]$ interval with shape parameters v^A and v^B .

We choose these parameters in order to match some of our empirical results. Specifically, in Section 3 we find that being assigned to one of the 10% most pro-workers as compared to one of the 10% most pro-firm judges increases the probability of the claim being accepted from 60.6% to 81.7%. Table 6 shows how well we fit our theoretical p_j^w to the data averages. The model also reasonably fits the 10th and 90th percentile probabilities, which are not targeted.

Table 6: Calibration of the distribution of p_j^w

| | Data | Model |
|---------------------------|-------|-------|
| Targeted moments | | |
| Pro-firm judges' mean | 0.606 | 0.607 |
| Pro-worker judges' mean | 0.817 | 0.818 |
| Untargeted moments | | |
| 10th percentile | 0.265 | 0.285 |
| Median | 0.397 | 0.453 |
| 90th percentile | 0.624 | 0.631 |

5.2 The expected gain with the lawsuit

The worker's total expected gain with the lawsuit is $A(x, \epsilon) = A_1(x) + \sigma\epsilon$, where ϵ follows an extreme value distribution described in Section 4 with mean zero.³⁵

$A(x, \epsilon)$ is calculated as a linear function of the winning probability (p^w), the likelihood of the dispute being settled (p^a) which is fixed, and the compensation function ($C(x, \epsilon)$). The latter describes the value of the judge sentence as a function of the worker's productivity x and the "case-size" shock ϵ which can be positive or negative and is independent of the outcome of the process. First, we define the compensation function,

$$C(x, \epsilon) = C_1(x) + \sigma\epsilon$$

Given that ϵ is i.i.d. and has zero mean, we choose c_1 and c_2 in order to $C_1(x) = c_1x^{c_2}$ approximate the empirical distribution of the ratio between the worker's compensation and the wage in the last job. Figure 6 shows how close the model is to the data, for at least ten wage percentiles. Both theoretical and data moments show that judges seem to be less generous towards the worker as the worker become richer.

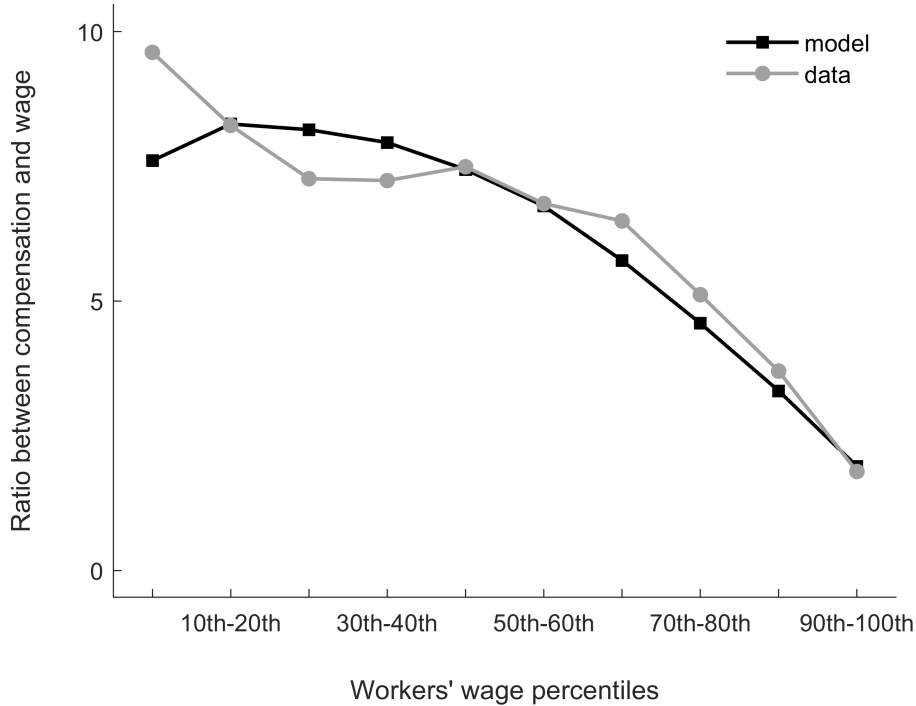
Now we define the worker's total expected gain,

$$\begin{aligned} A(x, \epsilon) &= p^w(C_1(x) + \sigma\epsilon) + p^a(C_1(x)/2 + \sigma\epsilon) + (1 - p^w - p^a)(0 + \sigma\epsilon) \\ &= A_1(x) + \sigma\epsilon \end{aligned}$$

with $A_1(x) = p^wC_1(x) + p^aC_1(x)/2$.

³⁵This assumption implies that for a given support of this distribution σ is calculated such that $E(\epsilon) = 0$.

Figure 6: Fit of the compensation function



Notes: The figure reports two series: (i) the ratio between the modeled compensation function and the workers' observed median wage, and (ii) the ratio between the observed median compensation and the workers' observed median wage. In both cases judges seem to be less generous towards the worker as the worker become richer.

5.3 Benchmark case

We choose our parameters with a month as the implicit unit of time. We set the monthly real discount rate to equal 0.33%. The value of unemployment b is normalized to 0, $\eta = \beta = 0.5$,³⁶ $\mu = 4$, $\delta = 1/36$, and the per period vacancy cost is such that $c = 20$.³⁷ The destruction rate δ is chosen to match the average employment duration of 3 years (36 months) in the Brazilian data.³⁸ Using RAIS data, we also assume that $\psi = 1.089$, which is the relative likelihood of finding a new job in the 2 years following the layoff between those that were fired in 2010 and did not file a lawsuit in the same year and those

³⁶As is standard in the literature, we choose the bargaining power of workers equal to the matching function elasticity with respect to vacancies satisfying that the allocation is constrained efficient, as this calibration satisfies the Hosios (1990)'s condition for efficiency.

³⁷Most of such parameters have been externally calibrated using Albrecht, Navarro and Vroman (2009).

³⁸This is consistent with data from the PME (Monthly Employment Survey) in the 2002-2007 period, used in Meghir, Narita and Robin (2015) and Narita (2020).

that were fired in 2010 but filed a lawsuit against the firm in the same year.³⁹ From the TRT2 data, we set $\mu^w = 0.42$ and $p^a = 0.462$, respectively, the mean worker's winning probability and the fixed probability of the dispute being settled.

One of the sources of heterogeneity in the model is the workers' productivity x . We assume that x is drawn from a Beta distribution over the interval $[0, 1]$ with shape parameters $\alpha_1 = 2$ and $\alpha_2 = 5$, which makes the workers' productivity more concentrated in low values. After calculating the density functions we re-scale x such that $x \in [1, 100]$. The other source of heterogeneity is the case-size shock ϵ , which is assumed to be drawn from a Type-I Extreme Value distribution in the interval $[-30, 10]$. Both the distribution's scale parameter σ and the ϵ interval are chosen in order for the mean ϵ being equal to zero and to match the unemployment rate of 12.9% (benchmark level, PNADC 2017).

Finally, following the fact that most lawsuit costs are usually charged as a fixed percentage of the expected or our model deterministic part of the compensation, we set $K = 0.2C_1(x)$. 20% refers to the fraction which is typically charged in such cases.⁴⁰ Specifically, we assume that K is defined before the realization of ϵ and thus is a function only of the match productivity x .⁴¹

Table 7 shows the results for our baseline case. Total unemployment rate is at 12.74%, and around 44% of unemployed workers and 6.4% of employment are plaintiffs, showing that a considerable fraction of dismissed workers and employees file lawsuits against employers. This result also matches the descriptive information in Figure 2 in which around 2.6 million workers filed labor lawsuits, i.e. approximately 6% of all labor contracts in 2017.⁴² This is consistent with firms being very likely to be sued, which is exactly what we see with the expected value of $\phi(x)$ being around 86%. Our baseline θ is 1.22, showing a number of vacancies higher than matches, which is also usual in the search-matching literature.⁴³ The expected value of wages is at 44.8 while the reservation productivity is around 60 showing that matches only form at an upper part of the x distribution and there is a significant wage-productivity gap.

³⁹Because workers are homogeneous in the model, we focus our calculations on the group of 35 years old or older male workers with college degree.

⁴⁰This includes court-related fees (2%) as well as attorneys' fees (5-15%), expert witness costs and other fees. All such costs add approximately 20%.

⁴¹Consistently with firms setting continuous contracts with law firms such that costs vary little with the case-size uncertainty.

⁴²There were 46 million workers in Brazil (RAIS, 2017).

⁴³e.g. Albrecht, Navarro and Vroman (2009).

Table 7: Equilibrium results - Baseline economy

| | u_1 | u_2 | employment rate | $\frac{u_1}{u_1+u_2}$ | θ | expected value | | | |
|-----------|-------|-------|--------------------|-----------------------|----------|----------------|--------------|-------|--------|
| | | | | | | x^* | ϵ^* | w | ϕ |
| Benchmark | 5.60% | 7.14% | 87.26% | 0.440 | 1.22 | 60.03 | -1.96 | 44.84 | 86.30% |

5.4 Counterfactual Simulations

Now, with all parameters set, we can perform the counterfactual experiments. First, we simulate the main results on firm survival, employment, unemployment type and wages from varying the judge bias towards workers. These results are then compared to our reduced-form estimation in Section 3.1. Second, we take advantage of the model we just described that allows us to analyze the labor market and welfare effects of the 2017 Labor Reform that changed the incentives for a labor lawsuit.

5.4.1 Varying the judge bias

Does an increase in the judge bias towards workers reduce employment and the firm survival? Table 8 shows that as we shift the v_j distribution to the right through v^A increases, which raises the expected winning probability, the unemployment rate and the reservation productivity rise monotonically with some increase in wages, albeit very small. These results corroborate our empirical findings of table 5, in which an increase in judge bias reduces the likelihood of the firm remaining active in $t + 1$ but does not affect average wages significantly.

Table 8: Counterfactual results - Changes in v^A

| v^A | $E(p_j^w)$ | u_1 | u_2 | employment rate | $\frac{u_1}{u_1+u_2}$ | θ | expected value | | | |
|---------|------------|-------|-------|--------------------|-----------------------|----------|----------------|--------------|-------|--------|
| | | | | | | | x^* | ϵ^* | w | ϕ |
| 4.60 | 0.464 | 5.75% | 7.34% | 86.92% | 0.439 | 1.15 | 60.25 | -1.95 | 44.95 | 86.17% |
| 4.55 | 0.462 | 5.72% | 7.31% | 86.97% | 0.439 | 1.16 | 60.18 | -1.95 | 44.92 | 86.19% |
| 4.50 | 0.460 | 5.69% | 7.25% | 87.07% | 0.440 | 1.18 | 60.12 | -1.95 | 44.89 | 86.23% |
| 4.45 | 0.457 | 5.60% | 7.14% | 87.25% | 0.440 | 1.22 | 60.08 | -1.96 | 44.87 | 86.31% |
| 4.40(B) | 0.455 | 5.60% | 7.14% | 87.26% | 0.440 | 1.22 | 60.03 | -1.96 | 44.84 | 86.30% |
| 4.35 | 0.453 | 5.55% | 7.08% | 87.36% | 0.439 | 1.24 | 59.98 | -1.96 | 44.82 | 86.33% |
| 4.30 | 0.451 | 5.53% | 7.05% | 87.42% | 0.439 | 1.25 | 59.90 | -1.96 | 44.78 | 86.35% |
| 4.25 | 0.448 | 5.49% | 6.96% | 87.55% | 0.441 | 1.28 | 59.85 | -1.97 | 44.75 | 86.40% |
| 4.20 | 0.446 | 5.40% | 6.87% | 87.73% | 0.440 | 1.31 | 59.76 | -1.97 | 44.71 | 86.46% |

5.4.2 2017 Labor Reform changes

One of the main changes brought by the 2017 Labor Reform was the fact that the losing party now pays court-related fees as well as attorney’s fee and damages for the opposing side in case of case dismissal, regardless the losing party economic condition.⁴⁴ We simulate the effects of such change by reducing both the firm’s expected cost and the worker’s expected benefit with the lawsuit. Table 9 presents the results of this counterfactual exercise.

Specifically, the simulations in which we shift 100% of the lawsuit costs onto workers if the case is lost is equivalent to reducing $A_1(x)$ by $(1 - p^w - p^a)C_1(x)$ in Equations 10, 12, 14, and 15.

Table 9: Counterfactual Results - Cost shifting

| | u_1 | u_2 | employment rate | $\frac{u_1}{u_1+u_2}$ | θ | net output | expected value | | | |
|-----------|-------|-------|-----------------|-----------------------|----------|------------|----------------|--------------|-------|--------|
| | | | | | | | x^* | ϵ^* | w | ϕ |
| Benchmark | 5.60% | 7.14% | 87.26% | 0.440 | 1.22 | 55.51 | 60.03 | -1.96 | 44.84 | 86.30% |
| 25% | 5.51% | 7.04% | 87.46% | 0.439 | 1.26 | 55.59 | 59.90 | -1.95 | 44.78 | 86.26% |
| 50% | 5.38% | 6.90% | 87.72% | 0.438 | 1.31 | 55.72 | 59.76 | -1.95 | 44.71 | 86.23% |
| 75% | 5.20% | 6.76% | 88.04% | 0.435 | 1.35 | 55.91 | 59.63 | -1.94 | 44.65 | 86.17% |
| 100% | 4.78% | 6.30% | 88.92% | 0.432 | 1.42 | 56.59 | 59.46 | -1.94 | 44.56 | 86.18% |

By transferring 100% of costs to workers’ in the case of the lawsuit being dismissed, the labor market got tighter, with a decrease of 1.7 percentage points in the total unemployment rate (13.0%) and 0.8 percentage point in the fraction of plaintiff unemployed (14.6%). In spite of a negative effect on wages, due to a lower value of the worker’s outside option, the ratio between wages and reservation productivity increases by 0.33%, from 0.747 to 0.7495, consistent with new matches forming in the market at lower productivity levels. The main mechanism for positive results on employment is through job creation.

A 13% decrease in the unemployment rate represents additional 1,723,116 jobs.⁴⁵ Also, a decline of 14.6% in the share of plaintiff unemployed implies a reduction of 861,109 lawsuits since 2017, which corresponds to the actual decline in the number of lawsuits we see in Figure 2, which is in the range 817,053 – 899,093 from 2017 to 2018-19.

⁴⁴In fact, the judge can still grant the “free justice” benefit to the worker, as long as the worker presents proof of her poverty condition. Prior to the 2017 Labor Reform, however, the benefit of “free justice” was the norm and no proof was required.

⁴⁵From PNADC data, the average number of unemployed workers was 13,365,333 in 2017.

Welfare implications. To analyze welfare the implications of the 2017 Labor Reform that shifted the lawsuit costs to the losing party, we look at the total steady-state surplus of the economy defined by net output as is the convention in these models (see Hosios (1990) and Acemoglu (2001)). Net output in our model is equal to total output flow consisting of the number of employees $(1 - u_1 - u_2)$ times the average productivity of active jobs (\bar{x}) ,⁴⁶ minus the flow cost of vacancy creation $(c\theta(u_1 + u_2))$.

Column 6 in Table 9 shows the effects on net output. Despite higher costs due to more job creation and a decrease in the average reservation productivity, net output increases by 1.9% if we compare our benchmark and the case in which all lawsuit costs are paid by the losing party. This is due to higher employment effects.

6 Conclusion

This article makes two main contributions. First, we take advantage of random case assignment to document that judges that are relatively more pro-workers negatively affect firm performance in terms of hiring and wages, financial distress and survival rates.

Second, we build a model to quantify the impact of the reform that explicitly accounts for the aspect of the reform in which workers may now be responsible for payment of court-related fees as well as attorney's fee and damages for the opposing side in case of case dismissal. Our model replicates our empirical results on judge bias: as we increase the average judge bias towards workers the employment rate decreases.

We then perform counterfactual exercises by partially or totally shifting lawsuit costs to employees if they lose the case, in line with one of the main changes brought by the 2017 Labor Reform in Brazil. Counterfactual simulations show that, by reducing the workers' incentives to litigate and the firms' expected cost with lawsuits, the unemployment rate decreases by 1.7 percentage points and the number of lawsuits filed each year by 861,000, which replicates almost perfectly the drop in the number of lawsuits observed in the data two years after the 2017 Labor Reform implementation. We also show that by fully shifting the lawsuit costs to workers if they lose the case increases aggregate net output by 2% due to a higher vacancy creation and thus more employment.

We stress that our paper does not attempt yet to provide an overall assessment of changes in lawsuit costs introduced by the 2017 Labor Reform in Brazil. While this first draft does compute an increase in aggregate net output, we have not offered any evaluation of the benefits or costs of such changes for different workers. We are currently

⁴⁶ $\bar{x} = \int \int_{x_\epsilon^*} x dG(x) dH(\epsilon)$, where x_ϵ^* are reservation productivity levels defined in Equation 15.

estimating the impacts on employment, labor productivity and welfare by education, age and gender that will give us a more complete picture about the winners and losers of changing the incentives to start a lawsuit.

References

- Acemoglu, Daron.** 2001. “Good Jobs versus Bad Jobs.” *Journal of Labor Economics*, 19(1): 1–21.
- Adascalitei, Dragos, and Clemente Pignatti-Morano.** 2015. “Labour market reforms since the crisis: Drivers and consequences.” International Labour Office, Research Department Working Paper No. 5.
- Albrecht, James, Lucas Navarro, and Susan Vroman.** 2009. “The effects of labour market policies in an economy with an informal sector.” *The Economic Journal*, Vol. 119(No. 539): pp. 1105–1129.
- Arnold, David, Will Dobbie, and Crystal S Yang.** 2018. “Racial bias in bail decisions.” *The Quarterly Journal of Economics*, 133(4): 1885–1932.
- Autor, David H., William R. Kerr, and Adriana D. Kugler.** 2007. “Does Employment Protection Reduce Productivity? Evidence From US States.” *The Economic Journal*, 117(521): F189–F217.
- Autor, D. H., J. J. Donohue, and S. J. Schwab.** 2006. “The cost of wrongful-discharge laws.” *The Review of Economics and Statistics*, Vol. 88(No. 2): pp. 211–231.
- Bamieh, Omar.** 2017. “Firing costs, employment and misallocation: evidence from randomly assigned judges.”
- Bartelsman, Eric J., Pieter A. Gautier, and Joris De Wind.** 2016. “Employment protection, technology choice, and worker allocation.” *International Economic Review*, 57(3): 787–826.
- Bernal-Verdugo, Lorenzo E., Davide Furceri, and Dominique M. Guillaume.** 2012. “Crises, Labor Market Policy, and Unemployment.” International Monetary Fund, Working Paper No. 65.
- Bertola, Giuseppe.** 1990. “Job security, employment and wages.” *European Economic Review*, 34(4): 851–879.
- Bertola, Giuseppe, Tito Boeri, and Sandrine Cazes.** 1999. “Employment protection and labour market adjustment in OECD countries: evolving institutions and variable enforcement.” International Labour Office, Employment and Training Papers No. 48.

- Bhuller, Manudeep, Gordon B. Dahl, Katrine V. Løken, and Magne Mogstad.** 2020. “Incarceration, Recidivism and Employment.” *Journal of Political Economy*, Vol. 128(No. 4): pp. 1269–1324.
- Bjuggren, Carl Magnus.** 2018. “Employment protection and labor productivity.” *Journal of Public Economics*, 157(C): 138–157.
- Boeri, Tito.** 1999. “Enforcement of employment security regulations, on-the-job search and unemployment duration.” *European Economic Review*, 43(1): 65–89.
- Boeri, Tito.** 2011. “Institutional Reforms and Dualism in European Labor Markets.” In . Vol. 4B. 1 ed., , ed. O. Ashenfelter and D. Card, Chapter 13, 1173–1236. Elsevier.
- Botero, Juan C, Simeon Djankov, Rafael La Porta, Florencio Lopez-de Silanes, and Andrei Shleifer.** 2004. “The regulation of labor.” *The Quarterly Journal of Economics*, 119(4): 1339–1382.
- Cahuc, Pierre, Stéphane Carcillo, Bérengère Patault, and Flavien Moreau.** 2020. “Judge bias in labor courts and firm performance.” IZA Institute of Labor Economics Discussion Paper No. 13794.
- Castelar-Pinheiro, Armando.** 2003. “Judiciário, Reformas e Economia: A Visão dos Magistrados.” Instituto de Pesquisa Econômica Aplicada (IPEA) Texto para Discussão 966.
- Centeno, Mário, and Álvaro A. Novo.** 2012. “Excess worker turnover and fixed-term contracts: Causal evidence in a two-tier system.” *Labour Economics*, 19(3): 320–328.
- Dahl, G. B., A. R. Kostol, and M. Mogstad.** 2014. “Family welfare cultures.” *The Quarterly Journal of Economics*, Vol. 129(No. 4): pp. 1711–1752.
- Delgado, Mauricio Godinho.** 2012. *Curso de Direito do Trabalho*. . 11th ed., São Paulo:LTR.
- Depew, Briggs, Ozkan Eren, and Naci Mocan.** 2017. “Judges, Juveniles, and In-Group Bias.” *The Journal of Law and Economics*, 60(2): 209–239.
- Di Tella, Rafael, and Robert MacCulloch.** 2005. “The consequences of labor market flexibility: Panel evidence based on survey data.” *European Economic Review*, 49(5): 1225–1259.

- Dobbie, W., J. Goldin, and C. S. Yang.** 2018. “The effects of pretrial detention on conviction, future crime, and employment: evidence from randomly assigned judges.” *American Economic Review*, Vol. 108(No. 2): pp. 201–240.
- Emerson, Michael.** 1988. “Regulation or deregulation of the labour market: Policy regimes for the recruitment and dismissal of employees in the industrialised countries.” *European Economic Review*, 32(4): 775–817.
- Garibaldi, Pietro, Jozef Konings, and Christopher Pissarides.** 1997. “Gross job reallocation and labour market policy.”
- Gazal-Ayal, Oren, and Raanan Sulitzeanu-Kenan.** 2010. “Let My People Go: Ethnic In-Group Bias in Judicial Decisions—Evidence from a Randomized Natural Experiment.” *Journal of Empirical Legal Studies*, 7(3): 403–428.
- Gonzaga, Gustavo, William F Maloney, and Alejandra Mizala.** 2003. “Labor turnover and labor legislation in Brazil [with comments].” *Economia*, 4(1): 165–222.
- Gregg, Paul, and Alan Manning.** 1997. “Skill-biased change, unemployment and wage inequality.” *European Economic Review*, 41(6): 1173–1200.
- Grubb, D., and W. Wells.** 1997. “Employment regulations and patterns of work in EC countries.” *OECD Economic Studies*, 21: 7–58.
- Hijzen, Alexander, Leopoldo Mondauto, and Stefano Scarpetta.** 2017. “The impact of employment protection on temporary employment: Evidence from a regression discontinuity design.” *Labour Economics*, 46(C): 64–76.
- Hosios, Arthur J.** 1990. “On the Efficiency of Matching and Related Models of Search and Unemployment.” *The Review of Economic Studies*, 57(2): 279–298.
- Iverson, Benjamin Charles, Joshua Madsen, Wei Wang, and Qiping Xu.** 2018. “Learning by Doing: Evidence from Bankruptcy Judges.” *Available at SSRN 3084318*.
- Jackman, Richard, Richard Layard, and S. Nickell.** 1996. “Combating unemployment: is flexibility enough?”
- Kahn, Lawrence.** 2010. “Employment protection reforms, employment and the incidence of temporary jobs in Europe: 1996-2001.” *Labour Economics*, 17(1): 1–15.
- Knepper, Matthew.** 2018. “When the Shadow Is the Substance: Judge Gender and the Outcomes of Workplace Sex Discrimination Cases.” *Journal of Labor Economics*, 36(3): 623–664.

- Lazear, Edward.** 1990. "Job Security Provisions and Employment." *The Quarterly Journal of Economics*, 105(3): 699–726.
- Meghir, Costas, Renata Narita, and Jean-Marc Robin.** 2015. "Wages and informality in developing countries." *American Economic Review*, Vol. 105(No. 4): pp. 1509–1546.
- Narita, Renata.** 2020. "Self-employment in developing countries: A search-equilibrium approach." *Review of Economic Dynamics*, Vol. 35: pp. 1–34.
- OECD.** 2018. *OECD Employment Outlook 2018*.
- Petrongolo, Barbara, and Christopher A. Pissarides.** 2001. "Looking into the black box: a survey of the matching function." *Journal of Economic Literature*, Vol. 39(No. 2): pp. 390–431.
- Shayo, M., and A. Zussman.** 2011. "Judicial ingroup bias in the shadow of terrorism." *The Quarterly Journal of Economics*, Vol. 126(No. 3): pp. 1447–1484.
- TST.** 2019. *Tribunal Superior do Trabalho - Relatório Geral da Justiça do Trabalho*.
- Ulyseia, Gabriel.** 2010. "Regulation of entry, labor market institutions and the informal sector." *Journal of Development Economics*, 91(1): 87–99.

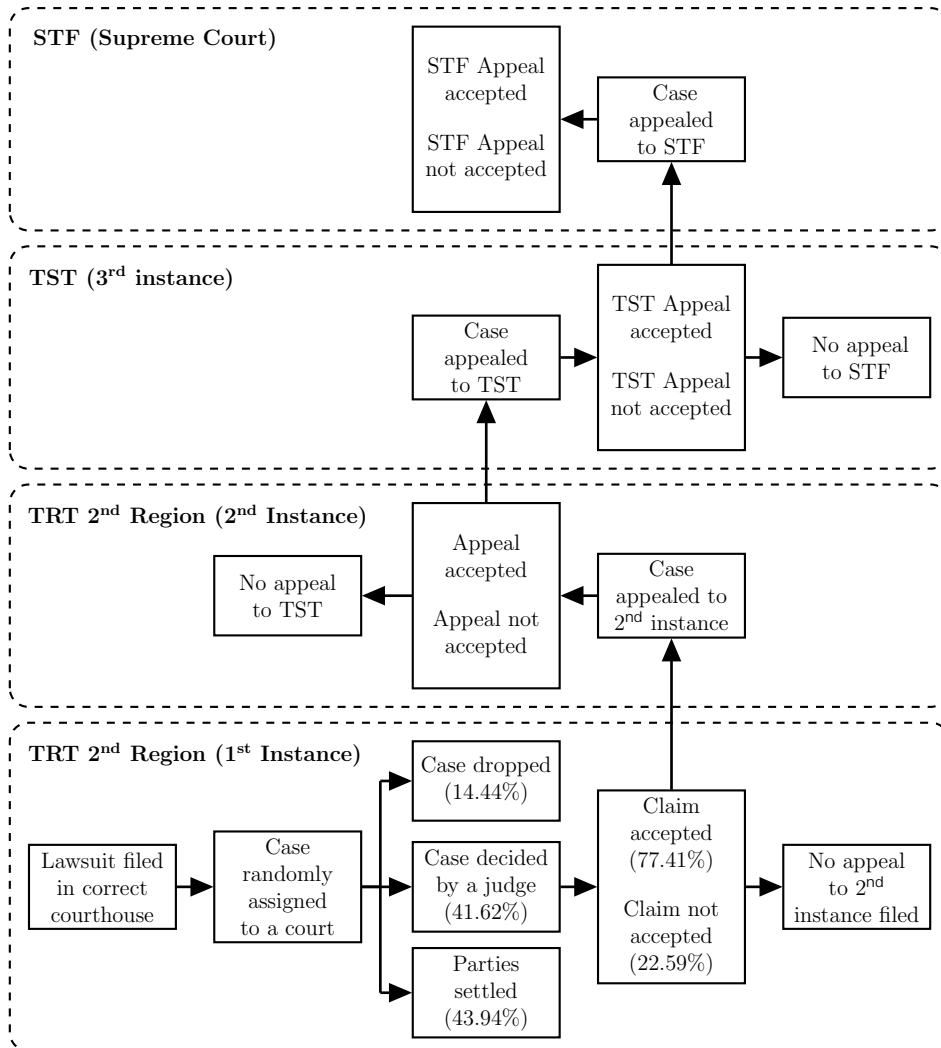
**Labor Courts, Job Search and Employment: Evidence from a
Labor Reform in Brazil**

R. Corbi, R. Ferreira, R. Narita & D. Souza

ONLINE APPENDIX

A Additional Tables and Figures

Figure A.1: Stages of a typical labor lawsuit in Brazilian courts.



Notes: Percentages indicate conditional probabilities, so that percentages from nodes with the same parent add to 100%.

Table A.1: Some of the changes brought by the July 2017 Labor Reform in Brazil

| | Topic | How it was before the reform | How it came to be |
|---|--------------------------------|--|---|
| 1 | Paid vacation | For every 12 months of work, firms had to provide 30 consecutive days of paid vacation to employees. | Vacation days can be split into three during the year, as long as each vacation period is not shorter than 5 days and one of these periods is not shorter than 14 days. |
| 2 | Termination of contract | When an employee is fired, she is entitled to make a withdraw from her account in a social insurance fund called FGTS. ⁴⁷ The firing firm pays the worker a fine of 40% of the balance in the worker's FGTS account. Workers who quit their jobs were not allowed to withdraw these funds nor were paid the fine. | If employer and employee reach an agreement to terminate the contract, the worker can withdraw 80% of her FGTS funds and is entitled to a fine of 20% of the balance in her FGTS account. |
| 3 | Lunch break | During work shifts of 6 hours or more, the worker had to take a break of at least one hour for lunch. | Employer and employee may agree to a shorter break of 30 minutes. |
| 4 | Freelance or Intermittent work | Both of these types of work were forbidden. Courts often ruled that workers performing freelance or intermittent work were entitled to the same rights as permanent full-time employees. | Freelance work is explicitly allowed. Employers may hire workers on demand and by the hour, as long as the worker is given a three-day notice. Firms may also impose fines on absent workers. |
| 5 | Part-time work | Allowed, up to 25 hours per week. Overtime was forbidden for these types of workers. | Employers may hire part-time workers for up to 30 hours a week, without overtime; or for no more than 26 weekly hours, with overtime limited to 6 hours per week. |
| 6 | Work from home | There was no legal basis for working from home. | Work from home is allowed. Employer must pay for the related costs. |
| 7 | Overtime | Employees that worked overtime right after the end of their regular shifts had to rest for 15 minutes before starting the extra work hours. | Overtime can begin right at the end of the regular work shift. |
| 8 | Commuting | Firms providing transportation for their workers in hard-to-access locations or in places where there was no public transportation available had to pay them for the commuting time. | Worker starts to get paid only when her work effectively begins. |
| 9 | Individual agreements | Individual agreements cannot outweigh collective agreements. | High income workers can make individual agreements with their employers that take precedence over collective agreements negotiated by their union. |

Table A.1: Some of the changes brought by the July 2017 Labor Reform in Brazil (cont.)

| | Topic | How it was before the reform | How it came to be |
|----|-------------------------------------|--|---|
| 10 | Unions | Unions had to approve mass layoffs and collective agreements regarding banked hours. Union dues were mandatory and workers had to pay the equivalent of one day of labor income to the union. | Employers do not need the Union's approval for mass layoffs and collective agreements on banked hours can be made directly between employer and employees. Union dues are optional. |
| 11 | Frivolous and groundless litigation | There was no legal basis in labor law for imposing penalties for bringing a frivolous lawsuit. | Plaintiffs bringing frivolous and groundless lawsuits can be required to pay a fine (between 1% and 10% of the amount being asked). They can also be required to compensate the defendant for damages and legal expenses. |
| 12 | Out-of-court settlements | There was no legal basis for out-of-court agreements. Even when such agreements were later reviewed and approved by a judge, the worker could still bring a case against the firm in the future. | Out-of-court agreements that are reviewed and approved by a judge are legally binding. Any future labor complaints cannot include issues that were settled in such an agreement. |
| 13 | Court fees | Parties seeking exemption from payment of court fees did not need to prove they were eligible for the benefit. | Parties seeking exemption from payment of court fees now have to demonstrate that they do not have enough income nor wealth to pay for court fees. |
| 14 | Expert's fees | Losing side was exempt from paying the court-appointed expert's fee when they were considered too poor to pay for court fees. | Even if the losing side is considered too poor to pay for court fees, they still have to pay the expert's fees. |
| 15 | Attorney's fees | Contrary to what happens in most civil cases, the losing party in labor cases did not had to pay the winning side's attorney's fees. | The losing party now pays for the winning side's attorney's fees, even when the losing party is considered too poor to pay for court fees. |
| 16 | Withdrawal of complaint | Plaintiffs could drop the case, even after the opposing side had presented its defense. | After the opposing party has presented its defense, the plaintiff is required to get the consent of the opposing side to drop the case. |
| 17 | Complaint requirements | Labor complaints had only to contain a brief description of the reasons for the claim and the plaintiff's demands, and were only dismissed if considered to be incomprehensible to the extent that it would harm the opposing party's ability to defend itself. Complaints often contained vague or generic claims, with unrealistic or arbitrarily defined demands. | Labor complaints must follow guidelines similar to those of civil complaints. Besides a brief description of the reasons for the claim, the complaint must now explicitly mention all of the plaintiff's demands and specify the precise amount being asked for each demand. Fail to do so may lead to the complaint being dismissed without prejudice. |

Table A.2: Database description

| | Lawsuit's filing year | | | | | | | Total |
|--|-----------------------|---------|---------|---------|---------|---------|-----------|-------|
| | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | | |
| Panel A: Lawsuits that we have found in the labor justice journal | | | | | | | | |
| Total number of lawsuits according to CNJ | 314,445 | 342,771 | 330,364 | 348,885 | 376,497 | 413,930 | 2,126,892 | |
| Lawsuits in the DOE (A) | 258,123 | 281,623 | 297,461 | 298,936 | 324,760 | 297,104 | 1,758,007 | |
| Proportion of the total number of lawsuits as reported by CNJ | 0.821 | 0.822 | 0.900 | 0.857 | 0.863 | 0.718 | 0.827 | |
| Lawsuits in which firms, universities or unions are suing workers (B) | 11,948 | 11,175 | 15,308 | 17,021 | 16,831 | 12,707 | 84,990 | |
| Lawsuits that do not have the parties identification (C) | 9,886 | 10,450 | 26,089 | 17,569 | 19,770 | 24,595 | 108,359 | |
| Panel B: Matching step | | | | | | | | |
| Lawsuits in the DOE (D=A-B-C) | 236,289 | 259,998 | 256,064 | 264,346 | 288,159 | 259,802 | 1,564,658 | |
| <i>Parties for which we found correspondence in RAIS (% lawsuits)</i> | | | | | | | | |
| Defendants | 0.64 | 0.66 | 0.68 | 0.68 | 0.69 | 0.70 | 0.68 | |
| Plaintiffs | 0.78 | 0.79 | 0.80 | 0.81 | 0.81 | 0.81 | 0.80 | |
| Judges | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | |
| Defendants and plaintiffs | 0.51 | 0.53 | 0.55 | 0.56 | 0.57 | 0.58 | 0.55 | |
| Defendants and judges | 0.64 | 0.66 | 0.67 | 0.68 | 0.69 | 0.70 | 0.67 | |
| Plaintiffs and judges | 0.78 | 0.79 | 0.80 | 0.81 | 0.81 | 0.81 | 0.80 | |
| Defendants, plaintiffs and judges | 0.51 | 0.53 | 0.55 | 0.56 | 0.57 | 0.57 | 0.55 | |
| Panel C: Restrictions on the dataset | | | | | | | | |
| Lawsuits in which we haven't found firm and judge in RAIS (E) | 84,586 | 88,356 | 83,330 | 84,223 | 90,150 | 79,104 | 509,749 | |
| Lawsuits that do not have a clear decision (F) | 20,697 | 22,425 | 23,071 | 23,502 | 26,462 | 24,119 | 140,276 | |
| Lawsuits in which a settlement was reached (G) | 64,763 | 75,281 | 80,383 | 83,254 | 91,531 | 84,580 | 479,792 | |
| Lawsuits from judges that had judged only 1 case in the sample (H) | 2 | 1 | 0 | 1 | 1 | 5 | 10 | |
| Lawsuits from firms with more than 1 case in the sample (I) | 60,581 | 68,759 | 64,787 | 68,918 | 75,243 | 67,305 | 405,593 | |
| Lawsuits that have been judged after 2015 (J) | 44 | 47 | 61 | 98 | 208 | 539 | 997 | |
| Lawsuits from inactive or non-private sector firms (K) | 3,049 | 2,397 | 1,977 | 1,821 | 1,830 | 1,518 | 12,592 | |
| Lawsuits filed in small courts or that had been reviewed in the Appeal Court (L) | 1,124 | 1,138 | 1,099 | 1,167 | 1,313 | 929 | 6,770 | |
| Final database (M=D-E-F-G-H-I-J-K-L) | 1,443 | 1,594 | 1,356 | 1,362 | 1,421 | 1,703 | 8,879 | |

Table A.3: Balance test for judge bias

| | Claim accepted | Judge bias | Compensation as worker's last monthly wage | Judge bias in monthly wages |
|---------------------------------------|------------------------|---------------------|--|--------------------------------|
| | (1) | (2) | (3) | (4) |
| <i>Worker characteristics</i> | | | | |
| - Worker with college degree | -0.0635* [0.0369] | 0.0079* [0.0044] | -2.6084*** [0.6755] | 0.2901 [0.3590] |
| - Worker's last monthly wage (th BRL) | 0.0023 [0.0061] | 0.0002 [0.0008] | -0.7206*** [0.1317] | 0.0665 [0.0480] |
| <i>Firm characteristics</i> | | | | |
| - Firms with less than 10 workers | 0.0380 [0.0254] | -0.0015 [0.0034] | 0.3742 [0.9202] | -0.0336 [0.2151] |
| - Firm age in years | -0.0045*** [0.0011] | 0.0001 [0.0002] | -0.0237 [0.0444] | 0.0050 [0.0133] |
| - Firm sector: manufacturing | -0.0322 [0.0400] | 0.0019 [0.0054] | 0.1048 [1.2963] | -0.1781 [0.3250] |
| - Firm sector: retail | 0.0559** [0.0280] | 0.0037 [0.0037] | 2.5232** [1.0121] | -0.0243 [0.2417] |
| - Firm sector: food and hotel | 0.0639 [0.0423] | 0.0048 [0.0065] | 1.0463 [1.0782] | -0.2975 [0.3883] |
| Joint F-test | 0.000 | 0.689 | 0.000 | 0.504 |
| Observations | 1,343 | 1,343 | 1,124 | 1,124 |

Notes: In brackets, standard errors are clustered at the judge level. Significance at the 10% level is represented by *, at the 5% level by **, and at the 1% level by ***. Court \times year fixed effects are used.