Distribution and Welfare Effects of Dismissal Dispute Resolution Systems

Laszlo Goerke * and Michael Neugart †

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Abstract

Previous studies of dismissal protection have largely been based on the analysis of the rules on the book. However, actual outcomes often rely on the involvement of courts. Our model takes this feature into account and explains how relative lobbying power of unions and employer associations, costs associated with claiming files, and the effectiveness of lobbying shape labor court activity and affect payoffs. We find that (a) as employer associations become stronger, labor court activity increases, and firms' costs and workers' payoffs decrease, (b) higher costs of a court procedure tend to reduce the extent of labor court disputes and may, therefore, actually reduce the welfare loss from judicial involvement, (c) more elaborate court systems with specialized chambers for dismissal disputes, with possibilities of appeal, or with involvement of lay judges make a reliance on courts more attractive for the stronger party.

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1 Introduction

The analysis of dismissal protection regulations has overwhelmingly been based on the assumption that the rules on the book, that is, enshrined in

*Eberhard Karls Universität Tübingen, School of Business and Economics, Melanchthonstraße 30 D – 72074 Tübingen, Germany, Phone: ++49(0)7071 29 74912, IZA, Bonn and CESifo, München, E-mail: Laszlo.Goerke(at)uni-tuebingen.de

†Free University of Bozen/Bolzano, School of Economics and Management, Universitätsplatz 1, I-Bolzano, Italy, Phone: ++390471013250, E-mail: michael.neugart(at)unibz.it

laws or collective contracts are actually applied. However, evidence from various countries indicates that regulations are often implemented incompletely, that their realization depends on the opportunities to enforce entitlements or that they are explicitly evaded (see, e.g., Venn, 2009). Against this background, attention has recently shifted and we have seen repeated calls for a more proper analysis of the law in action, as distinguished from employment protection regulations on the books (Bertola et al., 2000; Skedinger, 2010). Actually, striking cross-country differences can be observed in the frequency with which employment protection regulations are enforced via the court system. This raises the question why different industrial relations systems rely on the enforcement of employment protection rules via labor courts or comparable institutions to a different extent, and what the distribution and welfare effects of such different approaches are.

In this paper, we provide a theoretical analysis of the incentives for employees and firms to settle a dismissal dispute out of court or to file a suit. On the basis of this analysis, we investigate how features of the legal system affect (1) the probability that legal conflicts about dismissals arise, (2) the amount of resources spent (unproductively) on such disputes, and (3) expected payoffs. In particular, we are interested in distribution and welfare effects arising from a variation in the relative lobbying expenditure of employer and worker associations, the costs associated with labor court suits, and the effectiveness of lobbying in the political and the legal domain.

While codified dismissal law is nowadays fairly well documented for a relatively large set of countries (see, e.g., OECD, 2004; Botero et al., 2005; Gwartney et al., 2010; Muravyev, 2010), little information is available on what happens as workers and firms take dismissal cases to court. Bertola et al. (2000) provide some preliminary evidence, for example, on the wide diversity in the number of dismissal disputes dealt with by labor courts. More recently, Venn (2009) identifies a positive correlation between the specialization of courts and the number of cases dealt with for a small group of countries. However, the most comprehensive information on judicial activity in a cross-country perspective is being assembled by the European Commission for the Efficiency of Justice (CEDEJ, 2002; 2006; 2008; 2010), with a relatively strong emphasis on transition countries. Drawing on this source, Figure 1 documents considerable variation in the number of dismissal cases per 100,000 inhabitants dealt with by first instance courts.

Figure 1 about here

To illustrate the quantitative importance of dismissal dispute resolution systems, one may note that the number of dismissal cases dealt with in

France, Germany, and the United Kingdom by Prud'Hommes, Employment Tribunals and labor courts exceed 100,000 per annum and, in Germany, reached 250,000 in 2009.[1] Back-of-the envelope calculations suggest that the total cost of the courts' involvement may substantially exceed expected dismissal payments, at least in Germany. To illustrate this claim, note that there about 1,000 labor court judges and almost 9,000 lawyers specialized in labor law. Assume, furthermore, that the cost per person, including support staff, overheads, remuneration for lay judges etc., amount to € 200,000 p.a. Since about 50% of all labor court suits are related to dismissals, total costs for each case can be calculated as [0.5 x (1,000 + 9,000) x € 200,000]/250,000 = € 4,000, while Goerke and Pannenberg (2010) estimate dismissal payments of € 6,500 on average. Note, however, that less than a quarter of all dismissed employees obtained such payments. In consequence, the resources spent on enforcing entitlements to dismissal pay are substantial in absolute and also in relative terms.

We do not only lack information on the extent of transfers actually paid for a large number of countries, on the relevance of pre-court settlements, and the frequency of verdicts and settlements reached at court, we also need a better understanding of what is actually driving the variation across countries. Our conjecture is that one source may be the lobbying efforts of the key players in the field, the representatives of the workers and the firms, and how they try to influence the legislature and the judiciary. To develop this hypothesis, we set up a theoretical model in which there is a large number of risk-neutral firms and risk-averse workers. Workers are represented by an organization called "trade union" and firms by an "employer association". Due to an exogenous shock a fraction of the workforce becomes superfluous and experiences an income reduction. Therefore, workers will want the firm to provide compensation for the decline in income, referred to as dismissal payment, whereas the firm will attempt to pay as little as possible. There is an entitlement to a compensation for workers which is determined in the legislature and workers can only enforce it if they file a costly labor court suit. We assume that the costs of filing a suit vary across dismissed employees, but that the firm does not know their magnitude when deciding on the dismissal. This asymmetry of information generates the potential for a court's involvement in equilibrium. In order to reduce the likelihood that workers

[1] For these number, see Fraisse (2010) (France), http://www.bmas.de/portal/50354/property=pdf/2011__01__24__statistik__der__arbeitsgerichtsbarkeit__2009.pdf (Germany, accessed January 28, 2011) and http://www.employmenttribunals.gov.uk/Documents/Publications/ET_EAT_AnnualStats_Apr09_Mar10.pdf (UK, accessed January 28, 2011).

file a costly labor court suit, the firm can offer employees a compensation payment in exchange for their consent to a dismissal. Furthermore, by altering lobbying expenditure, the employer association and the trade union can affect the entitlement determined in the legislative process and also establish an influence on the court's decision.

The theoretical analysis shows, inter alia: (a) Stronger employer associations will lead to more court activity because employees will have less chances of obtaining a dismissal payment without a court's involvement. Moreover, stronger employer associations reduce dismissal costs incurred by firms and payments received by dismissed workers. (b) Higher costs of a court procedure tend to reduce the extent of labor court disputes and may, therefore, actually reduce the welfare loss from a judicial involvement. (c) More elaborate court systems with specialized chambers for dismissal disputes, with possibilities of appeal, or with involvement of lay judges make a reliance on courts more attractive for the stronger party.

While we focus on employment protection, our analysis is of wider applicability. There are further types of conflicts between firms and employers which may or may not be settled with a court's involvement. One may think of workplace accidents, minimum wages, and consequences of illness-related absences. For clarity of exposition, we, however, deal with dismissal protection systems only. Furthermore, the OECD (2004) indicates that in some countries employment protection regulations on the books are not determined by laws only but also by collective agreements. Our model can basically be extended to include such settings as well.

Our analysis is related to various strands of the literature. The evasion of dismissal protection regulations is investigated primarily in empirical studies (see, for example, Almeida and Carneiro, 2009). Formally, our contribution borrrows from the literature on contest success functions, which goes back to Tullock (1980), with recent surveys by Corchón (2007), Congleton et al. (2008), and Konrad (2009). In particular, our approach bears resemblance to the model of forum shopping by Rubin et al. (2001) applied in a different setting where interest groups choose between lobbying a legislature in order to change a bill in their favor or for bringing a case in front of a court to install a new precendent. Our contribution takes up a hypothesis by Voigt (2010) who investigates determinants of the optimal number of courts. He conjectures that general as opposed to more specialized court systems are less prone to lobbying activities because judges in general court systems are often only marginally relevant to interest groups. Finally, evidence that the judiciary is prone to (political) influence and open to rent-seeking comes from a strand of literature which is trying to trace court outcomes to politically motivated judges (George and Epstein, 1992; Posner, 1993; Ashenfelter et al.,

1995; Segal and Spaeth, 1996; Stephenson, 2009).

In section 2 we set-up the model along the various actors involved, determine the optimal choices, and derive at our main results via a comparative static analysis. Section 3 concludes and gives some policy implications.

2 The model

2.1 General set-up

In the economy there is a large number of (ex-ante) identical and risk-neutral firms and a mass of ex-ante identical (not necessarily strictly) risk-averse workers. Workers are represented by an organization called "trade union" and firms by an "employer association". The trade union is utilitarian and tries to maximize aggregate utility of workers. To simplify the exposition we normalize the mass of workers to one and focus on a representative firm. This implies, as will become clear below, that the employer association's and the firm's interests coincide, so that we can use the terms "firm" and employer association synonymously. Initially, the firm employs all workers, earning profits π and paying a wage w per worker. Then a shock occurs which creates a conflict of interest between firm and workers. In particular, a fraction of the firm's workforce becomes superfluous. Workers will experience an income reduction owing to the job loss. Therefore, workers will want the firm to provide compensation for the decline in income, referred to as redundancy or dismissal payment, whereas the firm will attempt to pay as little as possible. There is an entitlement to a compensation for workers, paid by the firm, which is determined in the legislature. The magnitude of this entitlement is affected by the lobbying effort of the employer association and the trade union.

Workers can only enforce this entitlement if they file a labor court suit, that is, the firm can decide to refrain from making a payment and workers who do not file a suit will then receive no compensation for the job loss. This assumption reflects the fact that severance payments are generally made by firms and not by public institutions. [2] If workers file a suit, this will be costly for the firm and workers. First, there are fixed costs of a court procedure, for example, for obtaining legal advice or information, court fees or opportunity cost. These costs, denoted by k^U and k^E, respectively, for the worker and the firm, are independent of the court's judgment. In addition, there are

[2] One exception to this rule is Austria, where firms have to contribute a fixed percentage of wages to a public institution ("Abfertigungskasse") from which dismissed workers can then claim a severance payment.

costs which represent a fraction of the compensation awarded by the court. Such costs can arise for a variety of reasons: First, fees for lawyers and the court are often related to the value of judgments. Second, the cost of obtaining information about the appropriate legal strategy can be correlated positively with the value of the court's judgment. Finally, court-awarded compensations in the case of dismissals may be subject to taxes and social security contributions. The decisive modeling assumption is that a payment made by the firm, if due to a verdict, is not received entirely by a dismissed worker. The empirical evidence on the difference between payments made by firms and received by workers in the case of dismissals indicates that this wedge can be substantial.[3] We assume that the workers' fixed costs k^U of filing a suit vary across dismissed employees, but that the firm does not know the magnitude of these costs when deciding on the dismissal.

In order to reduce the likelihood that workers file a costly labor court suit, the firm can offer a dismissed employee a compensation payment in exchange for the consent to the dismissal. This voluntary offer by the firm can be interpreted in various ways. It can consist of the proposal to the employee of terminating the employee contract amicably, in exchange for a payment. It can also be the outcome of pre-court dispute resolution procedures, present in many OECD countries (see, e.g.,Venn, 2009). When determining the optimal magnitude of such a voluntary dismissal pay offer, the firm will trade off the higher costs of such an offer with the reduction in the fraction of employees who will insist on a court verdict.

Since the firm cannot prevent labor court suits from taking place, it will try to minimize total expected dismissal costs, consisting of payments made voluntarily, court-awarded transfers and the costs of legal conflicts. The trade union's objective is to maximize the workers' expected utility, which is - in the present set-up - equivalent to minimizing the workers' expected loss from dismissals.

The trade union U and the employer association E have a fixed amount of resources I^U and I^E, respectively, which can be used to either influence the legislative process or the judiciary. We will refer to the resources spent on influencing legislature and judiciary as lobbying expenses. However, this terminology is to be interpreted rather broadly. In the legislature, lobbying can, for example, include the provision of information to legislators, the participation in hearings, the support of parties or candidates who are friendly to

[3]Garibaldi and Violante (2005), for example, present evidence for Italy that the non-transfer component of firing costs in Italy is about one-third of total costs. Belot et al. (2007) show that the OECD's employment protection indicators mainly measure tax-like elements and not transfers to dismissed workers. See also Venn (2009) for examples of much higher costs for selected OECD countries.

one's own objectives, the attempt to get representatives of the trade union or employer association elected as members of parliament or the creation of public pressure making use of the media. In the judiciary, lobbying can also include the provision of information, the attempt to influence the legal opinion and the appointment of judges, the education of lay judges[4] , or the (partial) coverage of the cost of court procedures for employees or firms. The decisive element of our model is that expenditure either in the legislature or the judiciary will, ceteris paribus, make the outcome more favorable to the party undertaking the financial effort. The task of the trade union and the employer association is to determine how to optimally split resources I^E and I^U.

2.1.1 The trade union

Expected utility V^U of workers writes

$$V^U = pU(w) + (1-p)EU(\bullet), \tag{1}$$

where $(1-p)$ is the exogenous fraction of workers loosing their jobs, $0 < p < 1$, w is the exogenous wage and EU is the aggregate expected utility of dismissed workers. The utility function $U(.)$ is increasing in its arguments at a weakly decreasing rate. Therefore, the subsequent analysis covers the case of risk-averse and risk-neutral workers. Maximizing V^U is equivalent to maximizing the aggregate expected utility of dismissed workers EU. If, as we assume, the expected utility EU in the case of a job loss is less than the utility from holding a job $U(w)$, the trade union effectively aims at minimizing the expected loss from dismissals.

There is heterogeneity over the costs of going to court for the workers. These costs are denoted by $k^U \in (0, K^U)$ and uniformly distributed over the interval. At the time of the dismissal, the realization of these costs is not yet known. Therefore, the only information available to the trade union when making its choices is that workers with low costs of going to court are more likely to file a suit than workers with higher costs. If at least some workers file, while the costs k^U are sufficiently high for some workers to refrain from seeking legal assistance, there is a critical value k_{crit} of the costs, $k_{crit} \in (0, K^U)$, which determines the fraction $r = r(k_{crit})$ of dismissed workers going to court or abstaining from doing so.

Workers filing a suit receive a payoff $\omega + A^C(1-\gamma) - k^U$, where ω is some given transfer like unemployment benefits and A^C is the amount awarded by

[4]Lay judges are present in labor courts dealing with cases of non-discriminatory unfair dismissals in about two-thirds of all OECD countries (cf. Venn, 2009). Further evidence on lay judges can be found in Voigt (2009).

the labor court. To rule out a situation in which even the worker characterised by the highest cost $k^U = K^U$ can increase income by filing a suit, we assume $A^C(1-\gamma) < K^U$. The payment awarded by the court is not received in its entirety by workers but reduced by a fraction γ, $0 < \gamma < 1$. The variable costs γA^C of obtaining a verdict and payment represent the cost for getting legal representation, court fees, or deductions due to tax payments and social security contributions. Workers who do not go to court, have accepted the firm's voluntary offer of a compensation payment A^O. Collecting the above information, aggregate expected utility EU of dismissed workers is given by

$$EU = \frac{1}{K^U}\int_0^{k_{crit}} U(\omega + A^C(1-\gamma) - k^U)dk^U + \frac{1}{K^U}\int_{k_{crit}}^{K^U} U(\omega + A^O)dk^U. \quad (2)$$

2.1.2 The firm

The firm maximizes expected profits V^E which consist of profits π if no shock occurs and profits $\pi - T$ if a negative shock takes place, where T represents expected dismissal costs. The probability of a shock - or the fraction of ex-ante identical firms experiencing a shock - is given by $1-p$.

$$V^E = \pi - (1-p)T \quad (3)$$

Expected costs T can result from a voluntary payment A^O to the dismissed worker, from a transfer A^C imposed by the court, and expenditure for legal representation in the case of a court's involvement. Furthermore, expected costs T depend on the fraction r of dismissed workers which will go to court. If a worker accepts the firm's offer A^O, he will have no incentive to renege on this decision and file a labor court suit afterward. Accordingly, the worker will go to court only, if he declines the firm's offer. In this case, the firm will incur costs $A^C(1+\sigma)$, which consist of the court-awarded payment A^C plus the cost mark-up σ, $\sigma > 0$, resulting from legal cost, and the fixed costs k^E of a court procedure.[5] Therefore, the firm's expected costs T in the case of a negative shock amount to:[6]

$$T = (1-r)A^O + r[A^C(1+\sigma) + k^E]. \quad (4)$$

[5]The specification of the cost of a court procedure for the trade union and the firm is compatible with the American Rule. We have chosen this approach because other cost-sharing rules are more difficult to specify in our setting without a clearly defined party that wins or loses a suit. The survey by Venn (2009) clarifies that there is no clear pattern in OECD countries of how legal costs are shared in dismissal cases.

[6]While it may seem a simplification to assume an exogenous probability p, an exogenous wage w and furthermore exogenous profits π, it is straightforward to show that if a monopoly union chooses the wage w, followed by the firm optimally deciding on p, where $p = p(w, A^C)$, $\partial p/\partial w < 0 < \partial p/\partial A^C$, $\pi = \pi(p)$, $\partial\pi/\partial p < 0$, decisions on our endogenous

2.1.3 The legislature

There is a legislative body which would set compensation in the case of a job loss A equal to B if there was no lobbying. The level of B is assumed to be positive and can, for example, represent a minimum payment enshrined in the constitution or have been established by a supra-national institution. For our purposes, B is beyond the influence of lobbyists. Lobbying expenditure by the trade union (employer association) in the legislative process is denoted by I_L^U (I_L^E). We assume that lobbying by the trade union can raise the compensation in the case of a job loss determined in the legislature above B, whereas lobbying resources expended by the employer association will have the opposite effect. The parameter η, $0 < \eta \leq 1$, measures the effectiveness of lobbying expenditure in the legislative process. In addition, a given amount of lobbying by either the trade union or the employer association in the political sphere may have different effects, for any given measure of effectiveness η. We capture this notion of differential access to the legislature by a parameter β, $0 < \beta$, which indicates the relative importance of lobbying by firms. For $\beta = 1$, expenditure by the trade union and the employer association have symmetric consequences. Therefore, we specify the level of compensation A determined in the legislative process as

$$A = B + \frac{(I_L^U)^\eta - \beta(I_L^E)^\eta}{(I_L^U)^\eta + (I_L^E)^\eta}. \tag{5}$$

In line with the literature on contest success functions, the parameter $0 < \eta \leq 1$ can be interpreted as capturing the returns to scale in lobbying expenditure. More specifically, the parameter η measures by how much the legislative outcome can be affected by lobbying (Huck et al., 2001). In the context of our setting, η will be lower the more members of Parliament there are, the more chambers and or committees affect a law's content or, more generally, the more checks and balances characterize the legislative process. In all of these instances, the marginal impact of greater lobbying expenditure is reduced. The parameter β may, for example, be greater than unity if the government, or the majority in Parliament, favours the objectives of firms relative to those of trade unions.

variables would be derived in the same way as we actually do it. The reason is that the firm chooses p optimally and the trade union the wage w. Therefore, the envelope theorem ensures that only the direct impact of variations in payments A^O and A^C on EU and T are relevant, as it is the case in the setting investigated below.

2.1.4 The labor court

A dismissed worker can reject the firm's offer A^O of a compensation payment and file a labor court suit. The court will award a payment A^C which can differ from the payment A the legislature has established. Such a deviation can, for example, occur because the court believes that the requirements which have to be fulfilled in order to obtain A are not or only partially fulfilled. This would induce a reduction in the payment. Conversely, the firm may have violated legal restrictions, so that the payment awarded by the court rises above A.

We model the influence of the court in line with substantial evidence that the political leanings of judges affect court outcomes (see, e.g., George and Epstein, 1992; Posner, 1993; Songer and Lindquist, 1996; Hanssen, 2004; Berger and Neugart, 2008). In particular, we assume that trade union and employer association incur lobbying expenditure I_J^U and I_J^E, respectively, to alter the court's ruling in their favour. The exogenous parameter ϵ, $0 \leq \epsilon \leq A$, measures the potential impact of courts on compensation payment, for a given amount of lobbying expenditure, relative to the impact achievable in the legislative process. Finally, the structure of courts may influence the effectiveness of lobbying expenditure. The parameter λ, $0 < \lambda \leq 1$, measures the effectiveness of lobbying expenditure in the judiciary. If courts are multi-layered, decision are taken by multi-person chambers, there are lay judges, or if the scope for judicial influence is relatively limited, a given amount of lobbying expenditure will have a smaller impact on outcomes than in a court system with few courts, without the opportunity to appeal, with single judges, or with substantial restraints on judicial influence.[7] Furthermore, the parameter λ may be higher in common law than in civil law countries.[8] Specifically, we assume

$$A^C = A + \epsilon \frac{(I_J^U)^\lambda - (I_J^E)^\lambda}{(I_J^E)^\lambda + (I_J^U)^\lambda}. \tag{6}$$

Higher lobbying activity I_J^U on the side of the union will, ceteris paribus,

[7] In one of the few economic analysis of lay judges, Voigt (2009) hypothesizes that corruption of the judiciary is less likely in countries with lay participation in judicial decision-making and obtains some empirical support for this claim. If we interpret lobbying in terms of corruptibility, Voigt's claim will be consistent with the idea that lobbying is, ceteris paribus, less effective in labor courts with lay judges than in courts with solely professional judges.

[8] Note, however, that these distinctions have to be applied with care in the area of labor law. Germany, for example, is a civil law country with a substantial common law elements in labor law. Repeated attempts to codify labor law in a code book failed (see, e.g., Richardi, 2007).

increase A^C and, by the same token, as the employer association allocates more funds, the transfer will, ceteris paribus decrease.[9]

2.1.5 The timing of decisions

The timing of decisions is the following:

1. The trade union and the employer association simultaneously decide on how to allocate their resources I^U and I^E in order to influence the judiciary J and the legislature L.
2. The government decides on A.
3. A fraction $(1-p)$ of employees loses the job.
4. The firm decides on the voluntary compensation offerA^O.
5. The worker's cost k^U of filing a labor court suit are revealed.
6. Dismissed workers decide on whether to go to court or not which determines the probability r that a court procedure ensues.
7. The labor court awards the payment A^C.

The model is solved by backward induction.

2.2 Optimal choices

Given optimal choices of the interest groups on how to allocate lobbying resources to the legislature and the judiciary, the court will award payments A^C according to eqs. (5) and (6). Workers will decide whether to go to court, anticipating the court's judgment, if the utility from filing a suit exceeds the utility from accepting the firm's offer. The critical value k_{crit} of the costs of

[9]There is a substantial literature which shows that one of the disadvantages of insisting on a court's ruling, instead of accepting a pre-trial bargain, is that the outcome is uncertain. Theoretically this has been looked into, e.g., by Huang et al. (2009) and Ståhler (2008). Empirically, Berger and Neugart (2010) showed that a considerable degree of unpredictability exists in labor court rulings for Germany. Since it is not our objective to analyze the consequences of such uncertainty about court outcomes, we do not incorporate this into the specification of eq. (6). However, in the case of risk neutrality including aspects of uncertainty would not have an impact. If workers are risk-averse, uncertainty could be captured by introducing a parameter which establishes asymmetric effects of a given amount of lobbying expenditure by the trade union and employer association on A^C.

filing a suit divides the mass of dismissed employees into those who go to court and those who abstain. It is determined by the condition

$$U(\omega + A^O) = U(\omega + A^C(1-\gamma) - k_{crit}). \tag{7}$$

Taking into account the uniform distribution of k^U and $k_{crit} = A^C(1-\gamma) - A^O$, the share r of workers going to court is given by

$$r = \frac{A^C(1-\gamma) - A^O}{K^U}. \tag{8}$$

Inserting eq. (8) in eq. (4) and minimizing with respect to A^O yields the optimal offer A^{O*} of the firm

$$A^{O*} = \frac{A^{C*}(2-\gamma+\sigma) - K^U + k^E}{2}. \tag{9}$$

When determining the optimal offer to the worker A^{O*}, the firm trades off the increase in costs which will result if the offer is accepted and the rise in expenditure which will occur if the worker files a labor court suit. The costs of a court's involvement consist of the payment A^C the court will award, variable court fees and legal expenditure σ, and the fixed costs k^E. Accordingly, A^{O*} is increasing in the payment A^{C*} which the court will award and the firm's variable cost of legal representation σ, and declining in the worker's variable cost γ of a court procedure. Furthermore, the offer of the firm is decreasing in the ceiling K^U of the interval from which the worker's fixed costs of going to court can stem and rising in the firm's fixed cost of a court procedure k^E.

We subsequently assume that the ceiling K^U is sufficiently low so that the firm's optimal offer A^{O*} is positive and less than $A^C(1-\gamma)$. This implies that the fraction r of workers filing a suit is positive and the firm's cost of a court procedure affect the probability that a dismissed worker files a labor court suit, as can be noted when inserting A^{O*} into eq. (8).

$$r^* = \frac{K^U - k^E - A^{C*}(\gamma+\sigma)}{2K^U} = \frac{1}{2} - \frac{k^E + A^{C*}(\gamma+\sigma)}{2K^U} \tag{10}$$

We will observe a smaller fraction of workers going to court as A^{C*} increases. This effect is driven by the variable legal costs γ and σ imposed on workers and firms, respectively, as these costs drive a wedge between what the court awards and the actual financial burden for the firm and the net payment accruing to the worker. As these legal costs increase with A^{C*} the firm is inclined to make a more generous offer A^{O*} which will prevent workers

from going to court. Note, furthermore, that given these variable costs, a fall in the court-awarded payment A^{C*} will result in a more pronounced decline of the payment A^{O*} offered by the firm because the reduction in A^{C*} is amplified by the existence of variable costs. As a result, which is also important for later findings, labor court activity r^* is declining in the court-awarded payment A^{C*}, ceteris paribus. Furthermore, a higher ceiling K^U reduces the fraction of workers filing a suit, ceteris paribus (cf. eq. (8)), but also lowers the firm's optimal offer A^{O*} (cf. eq. (9)). Since the former impact is dominated by the latter, a higher ceiling K^U raises the fraction r^* of workers filing a suit.

Moving further backwards, the government's decision on its policy is determined by eq. (5). If the trade union allocates a relatively larger (smaller) amount of lobbying resources to the legislative body than the employer association, the politically determined level of transfers A is increasing (decreasing).

Finally, we have to determine I_J^{U*} and I_J^{E*} which, given fixed resources $I^U$and I^E, will also yield the lobbying efforts on the legislature I_L^{U*} and I_L^{E*}. As the two lobbying groups move simultaneously, we are looking for the reaction functions in I_J^U and I_J^E.

Let us begin with the optimal choice of the union, taking as given whatever the employer association is doing. The union maximizes the payoff given in (1). Clearly with exogenous p and w, the optimization problem with respect to finding the union's choice of I_J^{U*} is equivalent to maximizing EU. The f.o.c. is:

$$\frac{dEU}{dI_J^U} = \frac{\partial EU}{\partial A^C}\frac{\partial A^C}{\partial I_J^U} = 0 \tag{11}$$

The s.o.c. is given by:

$$\frac{d^2EU}{d(I_J^U)^2} = \frac{\partial^2 EU}{\partial (A^C)^2}\left(\frac{\partial A^C}{\partial I_J^U}\right)^2 + \frac{\partial EU}{\partial A^C}\frac{\partial^2 A^C}{\partial (I_J^U)^2} < 0 \tag{12}$$

As we have $\frac{\partial EU}{\partial A^C} > 0$ (which we show in the proof of Proposition 1) the f.o.c. (11) boils down to finding which lobbying efforts fulfill $\frac{\partial A^C}{\partial I_J^U} = 0$. Combining eqs. (5) and (6) we have:

$$A^C = B + \frac{(I_L^U)^\eta - \beta(I_L^E)^\eta}{(I_L^U)^\eta + (I_L^E)^\eta} + \epsilon\frac{(I_J^U)^\lambda - (I_J^E)^\lambda}{(I_J^E)^\lambda + (I_J^U)^\lambda}. \tag{13}$$

This implies

$$\frac{\partial A^C}{\partial I_J^U} = \frac{-\eta(I_L^U)^{\eta-1}(I_L^E)^\eta(1+\beta)}{((I_L^U)^\eta + (I_L^E)^\eta)^2} + \epsilon\frac{\lambda(I_J^E)^\lambda 2(I_J^U)^{\lambda-1}}{((I_J^E)^\lambda + (I_J^U)^\lambda)^2} = 0. \tag{14}$$

The second derivative of A^C with respect to I_J^U is given by:

$$\frac{\partial^2 A^C}{\partial (I_J^U)^2} = -\frac{(1+\beta)\eta (I_L^U)^{\eta-1}(I_L^E)^{\eta}}{((I_L^U)^{\eta}+(I_L^E)^{\eta})^3}\left[(1+\eta)(I_L^U)^{\eta-1}+(1-\eta)\frac{(I_L^E)^{\eta}}{I_L^U}\right]$$

$$-\frac{2\epsilon\lambda (I_J^E)^{\lambda}((I_J^U)^{\lambda-1}}{((I_J^E)^{\lambda}+(I_J^U)^{\lambda})^3}\left[(1-\lambda)\frac{(I_J^E)^{\lambda}}{I_J^U}+(1+\lambda)(I_J^U)^{\lambda-1}\right]<0 \qquad (15)$$

Taking into account $\frac{\partial A^C}{\partial I_J^U}=0$, it implies that the second-order condition (12) for the trade union's maximization problem holds.

Turning to the firm, we need to find the solution to the f.o.c.

$$\frac{dT}{dI_J^E}=\frac{\partial T}{\partial A^C}\frac{\partial A^C}{\partial I_J^E}=0 \qquad (16)$$

and show that the s.o.c.

$$\frac{d^2T}{d(I_J^E)^2}=\frac{\partial^2 T}{\partial (A^C)^2}\left(\frac{\partial A^C}{\partial I_J^E}\right)^2+\frac{\partial T}{\partial A^C}\frac{\partial^2 A^C}{\partial (I_J^E)^2}>0 \qquad (17)$$

is fulfilled. As we have $\frac{\partial T}{\partial A^C}>0$ (as shown in the proof of Proposition 1), the f.o.c. is fulfilled for $\frac{\partial A^C}{\partial I_J^E}=0$ which writes

$$\frac{\partial A^C}{\partial I_J^E}=\frac{\eta (I_L^E)^{\eta-1}(I_L^U)^{\eta}(1+\beta)}{((I_L^U)^{\eta}+(I_L^E)^{\eta})^2}-\epsilon\frac{\lambda (I_J^E)^{\lambda-1}2(I_J^U)^{\lambda}}{((I_J^E)^{\lambda}+(I_J^U)^{\lambda})^2}=0. \qquad (18)$$

The second derivative of A^C with respect to I_J^E is given by:

$$\frac{\partial^2 A^C}{\partial (I_J^E)^2}=\frac{(1+\beta)\eta (I_L^U)^{\eta}(I_L^E)^{\eta-1}}{((I_L^U)^{\eta}+(I_L^E)^{\eta})^3}\left[(1-\eta)\frac{(I_L^U)^{\eta}}{I_L^E}+(1+\eta)(I_L^E)^{\eta-1}\right]$$

$$+\frac{2\epsilon\lambda (I_J^E)^{\lambda-1}((I_J^U)^{\lambda}}{((I_J^E)^{\lambda}+(I_J^U)^{\lambda})^3}\left[(1-\lambda)\frac{(I_J^U)^{\lambda}}{I_J^E}+(1+\lambda)(I_J^E)^{\lambda-1}\right]>0 \qquad (19)$$

Taking into account $\frac{\partial A^C}{\partial I_J^E}=0$, this implies that the second-order condition (17) for the firm's maximization problem holds.

Solving the two f.o.c. (14) and (18) yields the condition determining optimal choices as

$$\frac{I_J^{E*}}{I_J^{U*}}=\frac{I^E}{I^U}\equiv\alpha. \qquad (20)$$

Thus the allocation of lobbying resources to the judiciary and the legislative bodies is solely determined by relative endowments.[10] The more resources the employer association can spend relative to the trade union, the higher will be its lobbying efforts in the judiciary and the legislature, relative to the trade union's expenditure.

Substituting αI_J^{U*} for I_J^{E*} and αI_L^{U*} for I_L^{E*} in the specification of the payment awarded by the court (cf. eq. (13)), and canceling common terms, we obtain:

$$A^{C*} = B + \frac{1-\beta\alpha^{\eta}}{1+\alpha^{\eta}} + \epsilon\frac{1-\alpha^{\lambda}}{1+\alpha^{\lambda}}. \tag{21}$$

Solving the f.o.c.s (14) or (18) for the union's and employer association's equilibrium levels of lobbying expenditure I_J^{U*} and I_J^{E*} yields:

$$I_J^{U*} \equiv \frac{2\epsilon\lambda\alpha^{\lambda}(1+\alpha^{\eta})^2 I^U}{2\epsilon\lambda\alpha^{\lambda}(1+\alpha^{\eta})^2 + \eta(1+\beta)\alpha^{\eta}(1+\alpha^{\lambda})^2} \tag{22}$$

$$I_J^{E*} \equiv \frac{2\epsilon\lambda\alpha^{\lambda}(1+\alpha^{\eta})^2 I^E}{2\epsilon\lambda\alpha^{\lambda}(1+\alpha^{\eta})^2 + \eta(1+\beta)\alpha^{\eta}(1+\alpha^{\lambda})^2}. \tag{23}$$

Since I_J^{U*} and I_J^{E*} are functions solely of exogenous parameters, a Nash-equilibrium consisting of lobbying expenditures $\alpha I_J^{U*} = I_J^{E*}$ in the judiciary and of $I_L^{U*} = I^U - I_J^{U*}$ and $I_L^{E*} = I^E - I_J^{E*}$ in the legislature is unique. In the Appendix we furthermore show that these choices constitute a locally stable Nash equilibrium.

Equilibrium lobbying expenditure of the trade union and the employer association in the judiciary increase with the indicator of the court's potential impact on compensation payment ϵ and decrease with indicator of the relative importance of lobbying expenditure by the employer association β, while the impact of changes in λ, η, and α will be ambiguous if $\alpha \neq 1$.[11] Furthermore, the equilibrium lobbying expenditure is independent of the variable costs of going to court, γ and σ.

[10] The rule describing the optimal division of resources (20) on lobbying in the legislature and the judiciary bears some resemblance to the findings obtained in other models of lobbying in the presence of judicial influence. Rubin et al. (2001) assume that a challenging party can choose to either use the legislature or the judiciary to alter a law, whereas the second party will want the law to be unchanged. There, the decision whether to use the legislature or judicial approach depends on the ratio of marginal costs of legislative and judicial rent-seeking, relative to a measure of effectiveness of both forums. Osborne (2002) finds that the fraction of resources spend on lobbying the judiciary and the legislature depends on the measures the effectiveness of lobbying expenditures, that is η and λ in terms of our model.

[11] For $\alpha = 1$, equilibrium expenditure rises with λ and declines with η.

2.3 Comparative static analysis

Our analyis looks into the effects of various parameters on those endogenous variables which describe labor court activity, measure costs and payoffs of the two parties, and indicate the amount of resources spent unproductively. The exogenous parameters can be grouped into those that generally describe the relative strength of the two competing interest groups (α, β), costs involved with taking cases to the court $(K^U, k^E, \sigma, \gamma)$, and measures of the effectiveness of lobbying expenditure $(\eta, \lambda, \epsilon)$. Changes in these parameters we relate to (1) labor court activity (r^*), i.e. cases taken to the court and not settled beforehand, (2) expected dismissal costs to firms (T^*) and expected utility of the trade union (EU^*), and finally (3) the total expected amount of resources wasted W^*, due to court procedures, $W^* \equiv r^* \left[A^{C*}(\gamma + \sigma) + k^E + E(k^U)\right]$, where $E(k^U)$ measures the expected fixed costs of a court procedure to an employee, given that this person files a suit.[12]Table 1 summarizes our findings.

[12]Since changes in (expected) utility EU^* are hard to measure, we also investigated the variation in a potentially empirically observable indicator of the trade union's payoff, which we label net transfers, A^{net}. This measure is defined as the total expected gross amount of payments received by employees, less the costs of court procedures, $A^{net} = (1 - r^*)A^{O*} + r^* \left[A^{C*}(1 - \gamma) - E(k^U)\right]$. It turns out that the changes in expected utility EU^* and net transfers A^{net} resulting from a variation in an exogenous parameter are qualitatively the same (a proof is available upon request from the authors).

Table 1: Comparative static results

	Strength of interest groups			Costs				Effectiveness of lobbying expenditure				
		α	β	K^U	k^E	σ	γ			η	λ	ϵ
r^*		+	+	+	-	-	-		$\alpha < 1$	-	-	-
									$\alpha = 1$	0	0	0
									$\alpha > 1$	-+	+	+
T^*, EU^*		-	-	-	-	+	-		$\alpha < 1$	+	+	+
									$\alpha = 1$	0	0	0
									$\alpha > 1$	-	-	-
W^*	$r^* < \frac{1}{3}$	+	+	+	-	-	-	$\alpha < 1$	$r^* < \frac{1}{3}$	-	-	-
	$r^* \geq \frac{1}{3}$	-	-	+	+	+	+		$r^* \geq \frac{1}{3}$	+	+	+
								$\alpha = 1$		0	0	0
								$\alpha > 1$	$r^* < \frac{1}{3}$	+	+	+
									$r^* \geq \frac{1}{3}$	-	-	-

Proposition 1 *Relatively higher lobbying endowments by the employer association and a greater importance of lobbying expenditures by the employer association in the legislature*

1. *increase expected labor court activity* r^*,
2. *decrease expected dismissal costs to the firms,* T^*, *and expected utility of dismissed workers,* EU^*, *and*
3. *increase expected waste* W^* *for low labor court activity* ($r^* < \frac{1}{3}$), *and decrease it otherwise.*

Proof: See Appendix

A rise in the relative amount of lobbying expenditure available to the employer association, that is an increase in α, induces firms to proportionally raise expenditure both in the legislature and the judicary. Therefore, the court-awarded compensation A^{C*} in the case of a job loss is affected negatively via two channels. The firm lowers its offer A^{O*} and as the decline in the firm's offer A^{O*} dominates the direct impact of a reduction in the court-awarded payment A^{C*}, the worker's payoff of accepting an offer by the firm declines by more than from going to court. In consequence, labor court activity r^* rises.

A rise in the parameter β, measuring the relative impact of lobbying expenditure by the employer association in the legislature, has no direct impact on the optimal offer A^{O*} (cf. eq. (9)). However, it reduces the payment effectively obtainable in court because the basis A^* for the court's judgment shrinks, for a given lobbying expenditure, and therefore the employer association will find it more beneficial to direct its lobbying expenditure to the legislature. In consequence, also the trade union will spend a greater share of its lobbying resources on the legislature, whereas the amount spent in the judiciary shrinks (since $\partial I_J^{U*}/\partial\beta < 0$). As the payment obtainable in court declines with the parameter β, so will the offer A^{O*} made by the firm. Since this indirect impact on the probability of filing a labor court suit is stronger than the direct one, court activity r^* will rise with the parameter β.

Since a rise in the parameter α indicates an overall increase in the strength of the employer association, whereas an expansion of β signifies more influence in the legislative process, Proposition 1 clarifies that the relationship between court activity and the relative strength of employers is independent of the source of de facto power. Stronger employer associations will manage to lower the dismissal payment determined in the legislature. Therefore, trade unions will be more inclined to obtain a payment by filing a labor court suit.

Expected utility EU^* of dismissed workers and expected dismissal costs T^* of firms decrease with α. The channel through which this happens orginates from EU^* and T^* increasing in the level of the dismissal payment A^{C*} awarded by the court. This is the case because the rise in A^{C*} induces the firm to increase its voluntary offer A^{O*}. This increase in A^{O*} reduces the probability r^* of a dismissed worker going to court. However, the expected costs of dismissal payments rise, not only because of the rise in the court-awarded dismissal payment A^{C*}, but also since the higher voluntary payment A^{O*} is accepted with a greater probability $1 - r^*$. As expected utility EU^* of dismissed workers and expected dismissal costs T^* of firms increase with A^{C*}, any change in an exogenous parameter raising A^{C*} will have the same effects on EU^* and T^*. Since A^{C*} declines with the parameters α and β, expected utility EU^* of dismissed workers and expected dismissal costs T^* of firms will decline, too. Accordingly, a greater (relative) strength of one agent will make this agent better and the other worse off, irrespective of whether the amount of resources wasted in the course of legal disputes rises or falls.

Focussing on the measure W^*, we can note that the effects on W^* depend on the absolute magnitude of the fraction r^* of a dismissed workers filing a labor court suit. To obtain an intuition for this relationship assume A^{C*} to rise. Variable costs $(\sigma + \gamma)A^{C*}$ of court procedures will, ceteris paribus, become greater, causing an increase in W^*. However, the rise in A^{C*} lowers r^*, so that expected waste W^* declines, ceteris paribus. If the probability r^* of a dismissed worker filing a suit is less than 1/3, the impact of fewer cases being filed will dominate. However, if the probability r^* of filing is sufficiently large, the rise in A^{C*} will have a larger level impact on W^*, because it occurs for a large number of workers. This implies that W^* will rise with A^{C*} if r^* is sufficiently high, that is above 1/3. Since the changes in exogenous parameters α and β alter the measure of expected waste W^* only via the probability of filing a suit r^* or the court-awarded payment A^{C*}, the second component of the explanation builds on the positive impact that these parameters have on r^*.

The findings for the measure W^* of resources wasted are striking for two reasons: First, there need not be a one-to-one relationship between the number of court cases resulting from dismissals and overall costs. Therefore, an increase in the number of labor court cases, which is often viewed as a detrimental welfare effect, does not have to imply a rise in the amount of resources spent on these cases, because resources wasted per case shrink on average. Second, there is no straightforward relationship between the relative strength of trade unions – or employer associations – and the total resources expended unproductively.

We, next, focus on the parameters measuring the costs of court procedures and, in doing so, distinguish between (1) the variable costs σ and γ, which are related to the level of the payment awarded by court, (2) the firms' fixed costs k^E and the upper bound K^U of the interval from which the workers' fixed costs can stem. A rise in K^U also involves a higher expected value of the workers' fixed costs and is, therefore, comparable to a rise in the firms' fixed cost k^E.

Proposition 2 *1. Higher variable court costs for employers and workers* (σ, γ)

(a) decrease labor court activity r^*,

(b) increase the expected costs and payoffs for the firms and workers T^*, EU^* *as we look into* σ, *and decrease the expected costs and payoffs for the firms and workers* T^*, EU^**for the variable costs for the workers* (γ), *and*

(c) decrease expected waste W^* *for sufficiently low court activity* ($r^* < \frac{1}{3}$) *and increase it otherwise.*

2. Higher fixed court costs for firms k^E

(a) decrease r^*,

(b) as well as T^*, EU^*, *and*

(c) reduce W^* *for sufficiently low court activity* ($r^* < \frac{1}{3}$) *and increase it otherwise.*

3. Finally, a higher upper bound on the fixed costs for workers K^U

(a) increases r^*,

(b) decreases T^* *and* EU^*, *and*

(c) increases W^*.

Proof: See Appendix

The key for building an intuition for the results related to the cost parameters lies in their impact on the firms' outside offer A^{O*}. Higher fixed and variable costs of a court procedure for the firm (k^E, σ) and lower variable costs γ of a court procedure for workers as well as a lower ceiling K^U, raise the firm's optimal offer A^{O*} of a compensation payment, but have no effect on the payment obtainable in a court procedure A^{C*}. Thus, the probability

r^* declines with the variable cost parameters σ, γ , and k^E but increases with in the ceiling K^U (cf. eq. (8)).

As σ and γ have no impact on the payment A^{C*} obtained in a court procedure, the firm faces higher expected cost T^* of making dismissal payments and the expected utility EU^* of dismissed employees rises if the variable costs for the firms rise. Analogeously, T^* and EU^* decrease as the variable costs for the worker rise because these costs reduce the outside offer of the firm.

Although r^* is decreasing with γ and σ, the same will only be true for expected waste W^* if the fraction of dismissals resulting in a court suit is not too high. For $r^* > \frac{1}{3}$, the cost base effect of a rise in variable costs dominates the impact of the decline in the probability of a suit being filed, so that W^* rises.

Analogeously we can interpret the findings for an increase in the fixed costs for firms k^E and a higher upper ceiling for the fixed costs for workers of going to court, on T^*, EU^*, and expected waste W^*.

There are a number of noteworthy findings for the impact of the cost parameters σ, γ, k^E, and K^U. First, fixed and variable costs have opposite effects on expected payoffs $T^*$and EU^*. Second, while higher costs tend to reduce the use of labor courts, the impact on the expected amount of resources wasted may be negative if the decline in the number of cases overcompensates the rise in the costs per case. Easier access to labor courts, for example, by a reduction in court fees or the abolition of a requirement to be represented by a lawyer, accordingly, tends to raise the usage of courts, whereas the impact on the trade union's expected payoff and on resources wasted is ambiguous.

Finally, we consider the consequences of a change in the effectiveness of lobbying expenditure. Higher values of η, λ, and ϵ make lobbying expenditure in the respective area more effective, ceteris paribus. Note, though, that variations in these parameters have symmetric effects in that they alter the effectiveness of lobbying expenditure of trade unions and employer associations in the same direction. Proposition 3 summarizes our findings.

Proposition 3 *1. For equal endowments with lobbying resources of employer assciations and trade unions* ($\alpha = 1$)*, any change in the measures of effectiveness of lobbying expenditure do not have an impact on* r^*, T^*, EU^*, *and* W^*.

2. If employer associations are weaker than trade unions ($\alpha < 1$)*, an increase in* η, λ, *and* ϵ *will*

(a) decrease labor court activity r^*,

(b) increase expected payoffs T^* and EU^*,

(c) and decrease expected waste W^* for sufficiently low labor court activity ($r^* < \frac{1}{3}$).

3. *As we look into relatively stronger employer associations ($\alpha > 1$) these interaction effects reverse signs.*

Proof: See Appendix

A rise in the measures of effectiveness of lobbying expenditures η, λ, or ϵ in the legislature or the judiciary will have ambiguous effects on the absolute levels of lobbying expenditure directed at the legislature and the judiciary, but will leave the relative amount of resources unchanged (cf. eq. (20)). Accordingly, the court-awarded payment A^{C*}, which depends primarily on relative lobbying expenditure, as measured by the parameter α, will rise if the trade union has more resources at its disposal ($\alpha < 1$) and will decline if the employer association is endowed with greater resources ($\alpha > 1$). This effect then feeds back via the alteration in A^{C*} on the various variables stated in Proposition 3. A more productive lobbying expenditure either in the legislature or the judiciary (η, λ) or more effective lobbying in the judiciary relative to the legislature (ϵ), will result in a lower court-awarded compensation payment A^{C*} for $\alpha > 1$. Once again, the fall in A^{C*} induces a reduction in the firm's offer by a larger amount, so that a worker's incentives to go to court rise and labor court activity r^* increases. The reverse prediction will hold if the trade union is stronger than the employer association. The effects on exptected costs for firms and payoffs to the workers as well as waste can be explained along the lines of the previous findings.

Summarising the findings for the indicators of lobbying effectiveness, it is remarkable, first, that the specific nature of the alteration is without impact, as the comparison, for example, of the findings for the parameters η and λ shows. Second, the consequences of variations in the indicators of effectiveness depend crucially on the relative strength of the employer association (and trade union). This is true for all of the endogenous variables considered. In particular, greater specialization of courts may be associated with greater effectiveness of lobbying expenditure in courts because it can be targeted more precisely. The theoretical analysis does not predict a unique relationship between effectiveness and the number of cases dealt with and, hence, does not provide a foundation for the observation by Venn (2009)referred to in the introduction. Furthermore, general statements regarding the distributional and welfare effects of changes in the lobbying technology depend on the relative strength of parties involved in the process of lobbying. Third, a higher effectiveness of lobbying expenditure will benefit the stronger

party, as the changes in T^* and EU^* indicate.

3 Conclusions and implications

While most of the existing literature on employment protection studies the consequences of codified dismissal laws, the actual degree to which these laws unfold is very often determined by courts. Existing data on the extent to which this happens suggests that courts do play an important role, and furthermore indicate that there is a considerable variation across countries in how frequent cases are taken to court .

The aim of our paper was to explain labor court activity and its consequences on distribution and welfare. As dismissal protection is typically determined in the legislature and in the judicature, this required a model that takes into account the genesis of dismissal protection as we find it on the books, the behavior of firms in terms of offering payments in the shadow of a potential court case, as well as the interpretation of the legal code through distinct labor court systems. We found that relatively more influential employer associations lead to higher labor court activity and lower expected dismissal costs and expected payoffs to workers. Higher variable costs of filing claims reduce labor court activity and increase expected dismissal costs and expected utility of dismissed workers. Quite interestingly, we found a non-trivial relationship between the total expected amount of wasted resources and the relative strengh of lobbyists, the various costs involved for the two parties as they file a claim, and the effectiveness of lobbying. These relationships very much depend on the current labor court activity and on the feature of the dismissal dispute resolution system that is changed. Equivally prominent is our finding that any effect of a change in the effectiveness of lobbying depends on the relative endowment of the lobbying groups.

Clearly, policy implications of any analysis like ours would start off from some sort of a welfare measure. Expected waste may be one such objective that guides a normative analysis. Taking our results at face value, a recommendation on how to optimally shape a labor court system would depend on the relative strength of the lobbying parties and labor court activity. For fairly low court activity and relatively weak unions, one would prefer to have a labor court system that is not multi-layered, that has no lay judges, and that has many courts with opportunities to appeal in order to reduce the amount of resources wasted. If unions are strong, however, just the opposite recommendation holds as a given amount of lobbying expenditures will have a smaller impact on outcomes.

Finally, we believe that our results contain a range of predictions that

could immediately been taken to the data (once it becomes available). Existing, mostly descriptive evidence, suggests that a lot of action with respect to dismissal protection is taking place off the books. Resolution of disputes either already takes place in the shadow of an upcoming suit or, if not, by taking the case to the court. Unfortunately, in a cross-country perspective there is still missing a great deal of reliable data that describes labor court activity and the main characteristics of labor court systems more elaborately. In empirical terms it seems important to learn more about this area of labor market institutions which largely has non-trivial distributional consequences.

4 Appendix

Local stability of Nash equilibrium can be established (see, e.g., Cornes and Sandler, 1991) along the following steps:

1. Write the f.o.c.s on I_J^U and I_J^E as dynamic equations.
2. Linearize these dynamic equations with a first-order Taylor approximation around the equilibrium.
3. Define the Jacobian matrix for this 2-dimensional first-order difference equation.
4. Calculate the Eigenvalues of the Jacobian and show that they lie within the unit circle implying stability.

It turns out (a detailed derivation of the result is available upon request) that a sufficient condition for local stability is $0 < (1+\eta)(\frac{1}{\alpha})^{\eta-1} + (1-\eta)\alpha + \eta(1-(\frac{1}{\alpha})^{\eta})$, e.g. for $\eta = 1$ a sufficient condition for local stability is $\alpha > 1/3$.

Proof of Proposition 1:

1. From eq. (8) we know that labor court activity r^* is independent of α and β, for a given value of A^{C*}, and decreasing in A^{C*}. The result on r^* follows directly from the impact of variations in α and β on A^{C*} as specified in (21):

$$\frac{\partial A^{C*}}{\partial \beta} = -\frac{\alpha^{\eta}}{1+\alpha^{\eta}} < 0 \tag{24}$$

$$\frac{\partial A^{C*}}{\partial \alpha} = -\frac{\alpha^{\eta-1}\eta(1+\beta)}{(1+\alpha^{\eta})^2} - \epsilon\frac{\alpha^{\lambda-1}\lambda 2}{(1+\alpha^{\lambda})^2} < 0. \tag{25}$$

2. Subsequently, we show that T^* and EU^* increase in the payment obtained in court A^{C*}. As A^{C*} is decreasing in α and β, and neither T^* nor EU^* depend directly on α and β, this establishes our result. The firm's expected costs T^* as a function of exogenous parameters are given by eq. (4):

$$\begin{aligned} T^* &= \frac{K^U + k^E + A^{C*}(\sigma+\gamma)}{2K^U}\frac{A^{C*}(2-\gamma+\sigma) - K^U + k^E}{2} \\ &+ \frac{K^U - k^E - A^{C*}(\sigma+\gamma)}{4K^U}\left[2A^{C*}(1+\sigma) + 2k^E\right] \\ &= \frac{A^{C*}(2-\gamma+\sigma)}{2} - \frac{k^E A^{C*}(\gamma+\sigma)}{2K^U} - \frac{(A^{C*})^2(\gamma+\sigma)^2}{4K^U} \\ &- \frac{K^U}{4} + \frac{k^E}{2} + \frac{(k^E)^2}{4K^U} \end{aligned} \tag{26}$$

Using eq. (10) and $\gamma < 1$ we have:

$$\begin{aligned} \frac{\partial T^*}{\partial A^{C*}} &= \frac{2-\gamma+\sigma}{2} - \frac{k^E(\gamma+\sigma)}{2K^U} - \frac{A^{C*}(\gamma+\sigma)^2}{2K^U} \\ &= \frac{2-\gamma+\sigma-\gamma-\sigma}{2} + (\gamma+\sigma)\left[\frac{1}{2} - \frac{k^E + A^{C*}(\gamma+\sigma)}{2K^U}\right] \\ &= 1 - \gamma + (\gamma+\sigma)r^* > 0 \end{aligned} \tag{27}$$

For $\frac{\partial EU^*}{\partial A^{C*}}$ we have from eq. (2), taking into account $A^{O*} = A^{O*}(A^{C*})$ and (7):

$$\begin{aligned} \frac{\partial EU^*}{\partial A^{C*}} &= \frac{1}{K^U}[\int_{k_{crit}}^{K^U} U'(\omega + A^{O*})\frac{\partial A^{O*}}{\partial A^{C*}}dk^U - U(\omega + A^{O*})\frac{\partial k_{crit}}{\partial A^{C*}} + \\ &+ \int_0^{k_{crit}} U'(\omega + A^{C*}(1-\gamma) - k^U)(1-\gamma)dk^U \\ &+ U(\omega + A^{C*}(1-\gamma) - k^U)\frac{\partial k_{crit}}{\partial A^{C*}}] \\ &= \frac{1}{K^U}[\int_{k_{crit}}^{K^U} U'(\omega + A^{O*})\frac{2-\gamma+\sigma}{2}dk^U \\ &+ \int_0^{k_{crit}} U'(\omega + A^{C*}(1-\gamma) - k^U)(1-\gamma)dk^U + \\ &+ \frac{\partial k_{crit}}{\partial A^{C*}}(U(\omega + A^{C*}(1-\gamma) - k^U) - U(\omega + A^{O*}))] \end{aligned}$$

$$= \frac{1}{K^U}[\int_{k_{crit}}^{K^U} U'(\omega + A^{O*})\frac{2-\gamma+\sigma}{2}dk^U$$

$$+ \int_0^{k_{crit}} U'(\omega + A^{C*}(1-\gamma) - k^U)(1-\gamma)dk^U]$$

$$+\frac{\partial k_{crit}}{\partial A^{C*}} \cdot 0 > 0 \tag{28}$$

3. For establishing the third part of the proposition, note that expected waste W^* is given by $W^* = \frac{1}{K^U}\int_0^{k_{crit}}(A^{C*}(\gamma+\sigma) + k^E + k^U)dk^U$, since only workers characterized by a value of fixed costs below k_{crit} file a suit. We can rewrite this expression in terms of A^{C*} and $k_{crit} = k_{crit}(A^{C*}, A^{O*})$. Substituting in accordance with eqs. (9) and (10), in order to express W^* as a function of the probability r^* of filing a suit, and collecting terms, yields:

$$\begin{aligned} W^* &= \frac{1}{K^U}\int_0^{k_{crit}}(A^{C*}(\gamma+\sigma) + k^E + k^U)dk^U \\ &= r^*\left[A^{C*}(\gamma+\sigma) + k^E + \frac{k_{crit}}{2}\right] \\ &= r^*\left[A^{C*}(\gamma+\sigma) + k^E + \frac{A^{C*}(1-\gamma) - A^{O*}}{2}\right] \\ &= r^*K^U\left[1 - \frac{3}{2}r^*\right] \end{aligned} \tag{29}$$

Since $\partial r^*/\partial A^{C*} < 0$ from (10), expected waste W^* will be decreasing (increasing) in the payment awarded by the court A^{C*} if $r^* < (>)1/3$ as

$$\frac{\partial W^*}{\partial A^{C*}} = K^U\frac{\partial r^*}{\partial A^{C*}}(1-3r^*). \tag{30}$$

Combining this finding with those for the impact of α, β on A^{C*} proves the third part of Proposition 1.

Proof of Proposition 2:

1. Variable costs

   (a) Variations of σ and γ have no direct impact on A^{C*} (see eq. (21)) and thus decrease r^* according to equation (10).

(b) The effects on exptected dismissal costs T^* follow from

$$\frac{\partial T^*}{\partial \sigma} = \frac{A^{C*}}{2} - \frac{k^E A^{C*}}{2K^U} - \frac{(A^{C*})^2(\gamma+\sigma)}{2K^U} = A^{C*} r^* > 0 \qquad (31)$$

and

$$\frac{\partial T^*}{\partial \gamma} = -\frac{A^{C*}}{2} - \frac{k^E A^{C*}}{2K^U} - \frac{(A^{C*})^2(\gamma+\sigma)}{2K^U} < 0. \qquad (32)$$

Noting that A^{O*} shrinks with the workers' variable costs γ of a court procedure ($\partial A^{O*}/\partial\gamma = -A^{C*}/2$; cf. eq. (9)), the change in EU^* owing to a rise in γ can be computed using (7) as:

$$\frac{\partial EU^*}{\partial \gamma} = -\frac{A^{C*}}{K^U}\Big(\int U'(\omega + A^{C*}(1-\gamma) - k^U)dk^U + \qquad (33)$$

$$+\frac{1}{2}\int_{k_{crit}}^{K^U} U'(\omega + A^{O*})dk^U\Big) < 0$$

Furthermore, we have for $\partial A^{C*}/\partial\sigma = 0$:

$$\frac{\partial EU^*}{\partial \sigma} = \frac{1}{K^U}\int_{k_{crit}}^{K^U} U'(\omega + A^{O*})\frac{\partial A^{O*}}{\partial \sigma}dk^U = \qquad (34)$$

$$= \frac{A^{C*}}{2K^U}\int_{k_{crit}}^{K^U} U'(\omega + A^{O*})dk^U > 0.$$

(c) The impact on expected waste W^* follows from the derivatives of W^* with respect to r^* being $K^U(1-3r^*)$ and those of r^* with respect to γ and σ being negative.

2. Firms' fixed costs:

(a) Variations of k^E have no impact on A^{C*} and thus decrease r^* according to equation (10).

(b) The derivative of T^* with respect to the firm's fixed cost of a court procedure k^E can, making use of the definition of the probability r^* (cf. eq. (10)) be expressed as:

$$\frac{\partial T^*}{\partial k^E} = -\frac{A^{C*}(\gamma+\sigma)}{2K^U} + \frac{1}{2} + \frac{k^E}{2K^U} = r^* > 0. \qquad (35)$$

For the change in expected utility EU^* we find:

$$\frac{\partial EU^*}{\partial k^E} = \frac{1}{2K^U}\int_{k_{crit}}^{K^U} U'(\omega + A^{O*})dk^U > 0 \qquad (36)$$

(c) Again, the impact on waste follows from the derivatives of W^* with respect to r^* being $K^U(1-3r^*)$ and those of r^* with respect to k^E being all negative.

3. Upper limit workers' fixed costs:

(a) Variations of K^U have no impact on A^{C*} and thus decrease r^* according to equation (10).

(b) The derivative of T^* with respect to the ceiling K^U can be calculated as:

$$\frac{\partial T^*}{\partial K^U} = \frac{k^E A^{C*}(\gamma+\sigma)}{2(K^U)^2} + \frac{(A^{C*})^2(\gamma+\sigma)^2}{4(K^U)^2} - \frac{1}{4} - \frac{(k^E)^2}{4(K^U)^2} = \quad (37)$$

$$= \frac{1}{4K^U}\left[\frac{(k^E + A^{C*}(\gamma+\sigma))^2 - (K^U)^2}{K^U}\right]$$

$$= \frac{1}{4K^U}\left[\frac{(k^E + A^{C*}(\gamma+\sigma) + K^U)(k^E + A^{C*}(\gamma+\sigma) - K^U)}{K^U}\right]$$

$$= \frac{-r^*}{2}\frac{(k^E + A^{C*}(\gamma+\sigma) + K^U)}{(K^U)^2} < 0.$$

Furthermore, we have for $\partial A^{C*}/\partial K^U = 0$:

$$\frac{\partial EU^*}{\partial K^U} = -\frac{1}{(K^U)^2}\int_0^{k_{crit}} U(\omega + A^{C*}(1-\gamma) - k^U)dk^U \quad (38)$$

$$-\frac{1}{(K^U)^2}\int_{k_{crit}}^{K^U} U(\omega + A^{O*})dk^U$$

$$+\frac{1}{K^U}\int_{k_{crit}}^{K^U} U'(\omega + A^{O*})\frac{\partial A^{O*}}{\partial K^U}dk^U < 0.$$

(c) Finally, to determine the impact of a rise in K^U on W^*, note that r^* is a function of K^U in accordance with (10). The derivative of eq. (29) with respect to K^U is then found to be:

$$\frac{\partial W^*}{\partial K^U} = \left(r^* - \frac{3}{2}(r^*)^2\right) + K^U\frac{\partial r^*}{\partial K^U}(1-3r^*)$$

$$= r^*\left(1 - \frac{3}{2}r^*\right) + (1-3r^*)\left(\frac{1}{2} - r^*\right) \quad (39)$$

This expression is declining in r^*, since r^* is less than 0.5, see eq. (10). We find $\partial W^*/\partial K^U = 1/8 > 0$ for $r^* = 0.5$. Hence, $\partial W^*/\partial K^U$ is also positive for lower probabilities r^* of a court suit being filed.

Proof of Proposition 3:

Variations of η, λ, and ϵ impact on r^* through changes A^{C*} according to equation (10). Thus, the proposed changes in labor court activity follow from

$$\frac{\partial A^{C*}}{\partial \eta} = -\frac{\beta\alpha^{2\eta}(1+\beta)}{(1+\alpha^{\eta})^2}\ln\alpha > (<)0 \tag{40}$$

for $\alpha <(>)1$.

$$\frac{\partial A^{C*}}{\partial \epsilon} = \frac{1-\alpha^{\lambda}}{1+\alpha^{\lambda}} > (<)0 \tag{41}$$

for $\alpha < (>)1$.

$$\frac{\partial A^{C*}}{\partial \lambda} = -\frac{2\epsilon\alpha^{2\lambda}}{(1+\alpha^{\lambda})^2}\ln\alpha > (<)0 \tag{42}$$

for $\alpha<(>)$ 1.

These partial effects together with the partial effects of A^{C*} on EU^* and T^* established in Proposition 1 prove the effects on expected dismissal costs and expected worker payoffs. In the proof of Proposition 1 we also established the partial effect of A^{C*} on W^* which proves the last part of Proposition 3 if we combine it with the partial effects of η, λ, and ϵ on A^{C*} as stated above.

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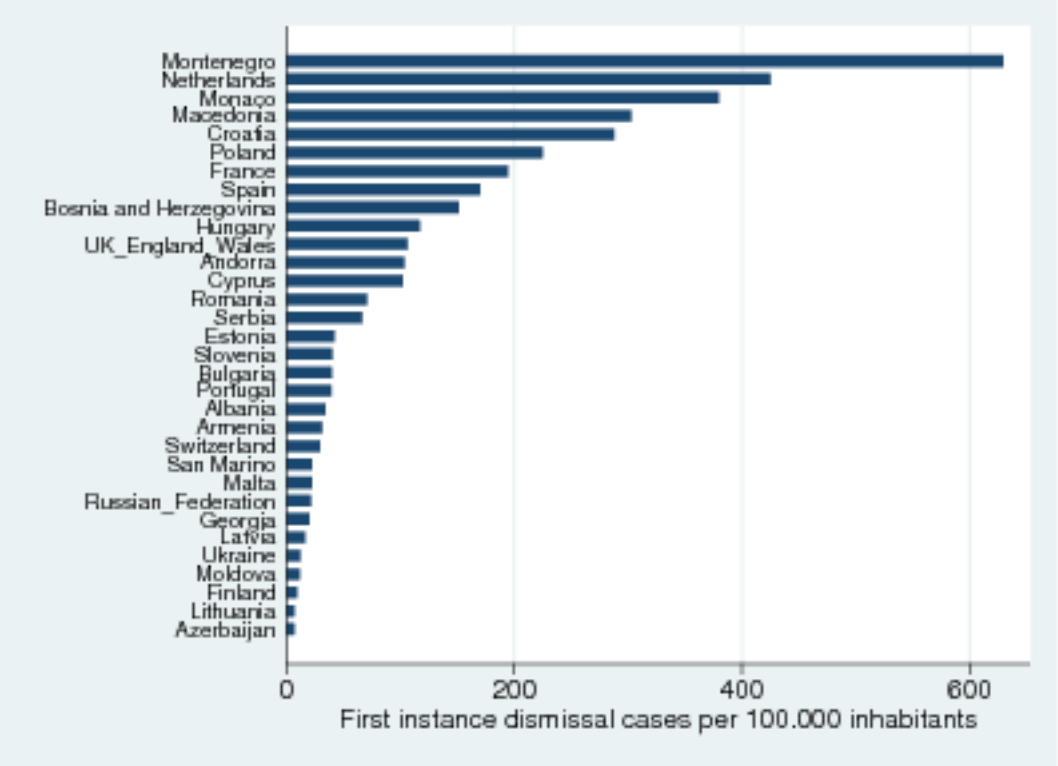

Figure 1: Dismissal cases