DISMISSAL DISPUTES AND THE INCENTIVES TO BARGAIN: ESTIMATES OF THE CONTRACT ZONE

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In many countries the arbitration of dismissal disputes by public tribunals and state agencies is regarded as slow and expensive. Some common law countries, including the United States and Australia, are privatizing dispute resolution on the premise that this is more efficient than using statutory channels, and it is thus perceived as a better method of settling disputes. Previous advances in statutory law regarding the arbitration of dismissal disputes have been either rescinded or circumvented, sometimes with dramatic political consequences. Little is known, however, about the extent to which statutory law induces inefficiency and redistribution. The author uses settlement and arbitration cost information derived from both Australian courts and survey research for the period 2001–2008 to estimate the contract zone of average settlements, that is, the legal, stigmatic and uncertainty costs saved by averting arbitration. He finds that dispute resolution under statutory law is not as wasteful as it initially seems, nor are substantial resources redistributed from business owners to labor suppliers.

In many countries, the process of dismissal dispute resolution has become increasingly controversial, but its economic impact remains little understood. Whether arbitration law is driven by statutory exceptions to the common law of employment at will (e.g., wrongful discharge), or by good cause standards (unfair or unjust dismissal laws), dispute resolution by industrial tribunals, courts, and other public agencies is generally regarded as slow, unpredictable, expensive, and inefficient. For these reasons, many employers view employment protection laws as adding to the risk (rather than stability) of their operations. Business organizations in most industrialized countries have, therefore, campaigned quite effectively to repeal these laws or reduce their effectiveness.

Some Anglo-American common-law countries, including the United States, the United Kingdom, and Australia, have responded to these moves by attempting to privatize the dispute resolution process. Their goal has been to make this process more efficient through the early resolution of disputes. Increasingly, plaintiff access to courts and

dispute resolution institutions[1] is being curtailed, dismissal disputes are referred to private arbitrators, statutory rights are waived, rights of appeal or to counsel representation are removed or restricted, and the size of remedies sought is severely limited. Since the early 1990s, levels of effective employment protection have dropped considerably in these countries, in sharp contrast to the growth in statutory employment protection that had prevailed until then.

In this paper, I consider the point, long acknowledged by researchers but not fully appreciated in policy debates, that efficiency improvements in dismissal dispute resolution necessarily come at the expense of *quid pro quo* industrial relations arrangements, which carry an economic cost of their own. Striking an appropriate balance between equity and efficiency targets is an important yet divisive and hard-to-quantify objective of industrial relations policy. Among U.S. state legislatures, strong perceptions of inequity and inconsistent treatment by statutory legislation have supported various (mostly unsuccessful) attempts to introduce just-cause statutes and to substitute dispute resolution for court proceedings. By contrast, the gradual evolution of common law has reduced access to courts in favor of mandatory private arbitration. In Australia specifically, it is widely speculated that a failure to preserve equity-efficiency trade-offs in recent reforms aimed at curbing statutory dismissal law contributed heavily to the electoral rout suffered by the Howard government in November 2007. In New Zealand, the deregulation of employment law in times of economic recession or financial crisis significantly influenced electoral debacles for incumbent

governments in 1990 and 1999 (Lansbury et al. 2007). There have been similar failures in civil-law countries. Marginal attempts to weaken employment protection laws in Italy and France in 2001 and 2006, respectively, ended with street protests, government back down, and ministerial reshuffles (Skedinger 2010).

Does the pursuit of economic gains warrant tenser industrial relations and political backlashes? Attempting to answer this question requires an evaluation of the potential gains from mitigating the power of statutory arbitration law. Studies of dismissal dispute resolution stress that the main function of statutory employment protection laws is not to encourage wasteful litigation outcomes but to create strong incentives for the parties to discover a "contract zone" (Hicks 1932; Farber and Katz 1979; Farber et al. 1990) and to negotiate a settlement "under the shadow of the law"[2] (Cooter et al. 1982). Although there has been much theoretical interest in this issue in law and economics research (e.g., Knight and Latreille 2000; Latreille 2007), there has been no empirical work on contract zones *per se*, and no quantification of the bargaining space nor of its components or likely partition.

The estimation of a contract zone would greatly inform public policy. First, such an estimate would enlighten the privatization versus social justice dilemma. The size of the contract zone is a measure of the potential excess burden created by statutory law; its partition is an indication of just how redistributive these rules are in practice.

Second, the estimates could also inform the large debate[3] in OECD countries about

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[2] The parties bargain "under the shadow of the law" when a pre-trial bargaining process (such as negotiating a settlement) is initiated to avert arbitration by courts. "Under the shadow of the law" specifically refers to the law as the source for some of the major parameters of the negotiation process (particularly the expected cost and benefits of going to trial).

[3] This literature, which became popular with the studies of Lazear (1990) and Bentolila and Bertola (1990), is too large to be presented here, but to get a good sense of the current issues in the United States, see Autor et al. (2004, 2006); Autor et al. (2007); Kahn (2007); and Bertola (2004). For studies on countries in the

the assumed undesirable economic effects of legislation-imposed firing costs. Much of the theoretical literature in this area has produced ambiguous results about effects on employment levels and dynamics, labor productivity, and labor market segmentation. Empirical research is necessary to clarify these questions, but the field has generally lacked quantitative estimates of firing costs of the type discussed in this paper (Hamermesh and Pfann 1996; Addison and Teixeira 2003).

Third, a better understanding of contract zones and their determinants is also necessary in order to assess the success of policy reforms in improving rates of early dispute resolution. To illustrate these points, I use cost estimates of settlements and arbitration under statutory law in Australia to calibrate an average contract zone and its likely partition. This economic evaluation sheds light on the incentives to settle under current statutory provisions and on the potential "gains from trade" that would be obtained from reforming dispute resolution institutions.

Dismissal Laws and the Privatization Debate

Disciplinary dismissals, or dismissals for cause, are involuntary separations for reasons specific to the employee (unsatisfactory performance, absenteeism, serious misconduct, and so on), which are grounds for *fair* dismissal (dismissal *at will*). In practice, however, the performance and behavioral issues leading to dismissal for cause are often undocumented and unobservable by third parties. In addition, the social norms and values that developed in the post-war period have increasingly emphasized aspects of dismissal decisions that were often neglected by employers, such as workplace safety, minority-group issues, and individual rights, or they were socio-economic in context. In both civil- and common-law countries, this evolution was characterized by the emergence of various types of statutory rights protecting

employees against summary dismissal. To various degrees, the legislative and judiciary systems of most OECD countries now allow employees who deem their dismissal discriminatory, harsh, unjust, or unreasonable to have their claims arbitrated by industrial tribunals and other public arbitrators,[4] or to be adjudicated in courts.

The rise of these institutions from the 1960s through to the early 1990s produced sharp increases in the number of dismissal claims lodged with public arbitrators. Over time, under-resourced industrial courts could no longer respond adequately to the massive increase in caseloads. This led to mounting disenchantment in the business community, not only with the frivolous nature of some lawsuits, but also with the delays, costs, and vagaries of public arbitration (Towers and Brown 2000; Colling 2004), as well as with case adjudication by jury courts (Westin and Feliu 1988; Olson 1991; Garry 1997). Legal rules were perceived as imposing too large a cost on the societies they were designed to assist, stifling productivity and job creation. Judicial- or government-initiated privatization policies are contemporary policy responses designed to meet these concerns.

In the U.S. union sector, courts have had a long tradition deferring the resolution of employment disputes to the parties themselves (e.g., for interest arbitration) or to neutral third-party arbitrators (e.g., grievances) and except for ever-declining unionization rates, the status quo has been largely undisturbed. It is therefore in the non-union sector (now comprising about 88.1% of all U.S. workers) that privatization reforms have been most noticeable. A landmark decision by the U.S. Supreme Court in 1991 recognized the right of employers to contractually impose mandatory employment arbitration to non-unionized employees. In effect, such arrangements entitle employers to require

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European Union, see Cahuc and Zylberberg (2004) and Layard et al. (2005).

[4] Along with Lipsky and Seeber (1998), I define arbitration as a dispute resolution mechanism by which a neutral third party is endowed with the power to make final and binding decisions to resolve a dismissal conflict. By contrast, in conciliation and mediation, the third party assists the parties in reaching an agreement but has no binding determination powers.

ex ante (that is, upon recruitment) the private arbitration of any dismissal conflict that might arise upon future termination of the employment relationship.[5] Mandatory private arbitration is an expedient and technically effective way to resolve employment disputes, but is it equitable? Employment arbitration is controversial, and there is evidence of bias towards employers (Stone 1999; Bingham and Mesch 2000). For better or worse, the privatization momentum initiated by the evolution of the common-law doctrine seems for now to have circumvented the growth in statutory protection that prevailed until then.

Similar developments in the movement away from statutory arbitration of employment disputes in a different setting can also be traced to the United Kingdom's non-union sector. The efficiency and accessibility of the Employment Tribunal Service (ETS), originally established by statute to provide speedy, informal, and low-cost arbitration of employment disputes, has been severely questioned since the early 2000s. The 2004 Dispute Resolution Regulations[6] required that formal (three-stage, or in certain circumstances two-stage) internal discipline, grievance, or dismissal procedures were completed within the workplace prior to the lodging of an Employment Tribunal claim, whereas the Arbitration Scheme 2001 promoted the use of private- or quasi-private arbitrators (such as the Advisory, Conciliation and Arbitration Service) to resolve disputes involving a statute.[7] These statutory reforms were introduced to curb the number of claims lodged yearly and to encourage the early settlement of dismissal disputes.

Though the 2004 reforms introduced more clarity in the procedures involved, a recent assessment of these arrangements—the Gibbons review (Gibbons 2007)—suggests they have largely failed as a consequence of too much formalism. Strict adherence to official procedures carries large administrative costs, wastes management time, and tends to solidify positions. The review recommends a new set of statutory reforms geared toward regulatory simplicity and tribunal discretion and suggests rewarding reasonable behavior and promoting provisions to use early dispute resolution methods in employment contract. Again, the main argument driving the ebbs and flows of reforms is the economic cost of public arbitration. Colling (2003: 564) remarked that "two factors have dominated . . . reform of the tribunal system: cost and . . . needless litigation."

In New Zealand, as in Australia, governments have since the early 1990s actively dismantled public arbitration institutions and encouraged recourse to alternative dispute resolution of dismissal conflicts. Most reforms in New Zealand took place in the mid to late 1980s, culminating in the *Employment Contract Act* of 1991, which repealed compulsory conciliation and arbitration of dismissal disputes by the Court of Arbitration and strongly promoted direct conflict resolution by the parties (Bray and Walsh 1998). These reforms brought down the Moore government in 1990 and further reforms played a role in the demise of the Shipley government in 1999. Subsequent counter reforms, in 2001 and 2004, made little or no attempt to "renationalize" the arbitration of employment disputes.

In Australia, reforms proceeded at a slower pace. In 1993 and 1996, partial reforms mildly reduced the arbitrating powers of Australia's Federal industrial tribunal—the Australian Industrial Relations Commission (AIRC). In December 2005, however, the Australian Parliament enacted the *Workplace Relations Amendment* (*WorkChoices*) *Act 2005*, which removed access to unfair dismissal laws and AIRC arbitration for employees of organizations with fewer than 100 employees. These measures, which effectively put an end to state-sponsored arbitration of

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[5] The rise, issues, and consequences of off-court employment arbitration in the United States are discussed and documented by Bingham and Mesch (2000); LeRoy and Feuille (2001); Elkouri and Elkouri (2003); Wheeler et al. (2004); and Klaas et al. (2006).

[6] The Employment Act 2002 and the subsequent Employment Act 2002 (Dispute Resolution) Regulations 2004.

[7] The privatization of dispute resolution in the United Kingdom is discussed in depth in Towers and Brown (2000); Colling (2004); Neal and Dickens (2006); and Latreille et al. (2007).

employment conflicts, have triggered un-precedented controversy in Australia[8] and are largely viewed as the catalyst for the fall of the Howard government in November 2007.[9] New policy proposals by the Rudd government showed some inclination towards re-establishing court-style conciliation and arbitration, but with higher recourse to informal mediation and ADR.

In the wake of these developments there has been renewed research interest into the allocative and redistributive consequences of these reforms, particularly in the U.S. non-union sector (Bingham and Mesch 2000; Colvin 2003; Klaas et al. 2006). Claims of efficiency improvements are intuitive and appealing, but the ideological nature of industrial relations conflicts implies that reforms are unlikely to be driven by processes in which the winners do actually intend to compensate the losers. There is widespread concern among labor advocacy groups as well as among those in the academic community about the likely redistributive and equity outcomes of moving away from state-sponsored arbitration.[10]

The privatization of the dispute resolution process has reignited normative debates about workplace fairness, job property rights, industrial relations stability, and the role of both the judiciary and government legislatures in subsidizing the cost of redressing any perceived imbalances in these matters (Fisher 1994; Feuille and Chachere 1995; Frantz 1997; Stone 1999; Zack 1999). Social justice theories stress fundamental power asymmetries between employees and employers and therefore promote the redistributive properties of employment protection rules (Büchtemann 1993). Others allege these rules correct externalities in the labor market (Booth and Zoega 2003) and help foster loyal and long-term employment relationships (Emerson 1988). As discussed above, there is also mounting evidence that stirring relatively unstable industrial relations arrangements can lead to far-ranging political consequences. Given these social, economic, and political costs, it is important to address the lack of quantitative research into the intrinsic merits of current policy reforms.

Reforms and Settlement Trends in Australia

Australian reforms of statutory law have had a large impact on the resolution of dismissal disputes. The main changes have been (a) the enactment of the *Workplace Relations Act 1996*, which curbed the generous provisions of the unfair dismissal statutes provided by the *Industrial Relations Reform Act 1993*, and (b) the enactment of the *WorkChoices 2005* reforms, which removed access to these statutes for a very large part of the Australian workforce. As Table 1 shows, the former had drastic effects on the number of claims lodged at the Federal level, which dropped from 13,643 in 1995–1996 to 8,092 two years later. The latter had a considerable impact on the number of claims lodged with State jurisdictions, which dropped from 6,905 in 2004–2005 to a mere 915 two years later.

Official rates of dispute resolution through AIRC conciliation have consistently hovered around 75% in the period 1997–2008 (they were around 55% over 1994–1997), which would suggest little impact

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[8] To gain a fuller sense of the debate, see Chapman (2006); OECD (2006); and Freyens and Oslington (2007).

[9] Although the *WorkChoices* reforms sought to modify various other aspects of industrial relations policy, its most prominent thrusts were the dismantling of the conciliation and arbitration functions of the Australian Industrial Relations Commission and the removal of access to unfair dismissal laws for large tracts of the Australian workforce. John Howard strongly re-emphasized this point at the 2008 Irving Kristol lecture delivered at the American Enterprise Institute in Washington, D.C. in 2008.

[10] Most of the aforementioned studies see recent evolution as highly detrimental to dismissed employees' interests in the non-union sector in the United States, and similarly across the board in the United Kingdom, New Zealand, and Australia. For a summary of the literature, see Kaplow and Shavell (1994) and Seeber and Lipsky (2006). There are divergent views in the United States, which present the privatization process as both efficiency and equity-enhancing (Sherwyn et al. 1999; Estreicher 2001; Sherwyn et al. 2005). This approach is based on the inaccessibility of common-law litigation for the poor and on dual labor market arguments: those working in good jobs are protected and employees have access to justice and those in bad jobs do not, so removing protection makes things "more equal." Similar arguments have been put forward in Australia (Harding 2002).

Table 1. Evolution of Settlement Rates and Claimant Success Rates in AIRC Arbitration

Years	Number of Cases Lodged (Federal*)	Number of Cases Lodged (States)**	Official Settlement Rate (Federal)	All Inclusive Settlement Rate (Federal)	All Inclusive Settlement Rate (States)***	Claimant Success Rate (Federal)
1997–1998	8092	:	**0.69**	0.86	:	0.58
1998–1999	8146	:	**0.74**	0.94	:	0.45
1999–2000	7498	:	**0.72**	0.93	:	0.43
2000–2001	8109	:	**0.73**	0.93	:	0.51
2001–2002	8658	8037	**0.75**	0.93	:	0.49
2002–2003	7121	7656	**0.75**	0.93	0.92	0.44
2003–2004	7044	7576	**0.75**	0.94	0.92	0.48
2004–2005	6707	6905	**0.77**	0.94	0.91	0.43
2005–2006	5758	4020	**0.73**	0.96	0.90	0.56
2006–2007	5173	915	**0.73**	0.96	0.90	0.43
2007–2008	6067	(a)	**0.73**	0.98	0.91	0.51

Notes: *Federal jurisdiction also covers the State of Victoria, and Australia's two Territories. ** States include New South Wales, Queensland, South Australia and Western Australia, but exclude Tasmania. Data for Western Australia do not include mixed applications (e.g. unfair dismissal + breach of contract). *** Settlement rates have been averaged across all four States using lodged claims as weights. State-based methodology is likely to differ as each State has its own statutes and jurisdictions, so these rates should be used with caution. In column 3, (a) indicates that data are missing for New South Wales. The settlement rate (States) was calculated with data for Queensland, South Australia, and Western Australia.

Sources: Annual reports of the Australian Industrial Relations Commission, and of the Industrial Relations Commissions of New South Wales, Queensland, South Australia, and Western Australia

from the *WorkChoices* reforms on settlement rates. Official AIRC settlement rates, however, do not include many claims that are settled or withdrawn at a post-conciliation stage. Therefore, Table 1 also shows a more inclusive measure of settlements (all claims withdrawn early on, or after the conciliation stage). By this yardstick, settlement rates in post-1996 reform years have averaged about 93% of all claims finalized in a given year, whereas the 2005 reforms provisionally raised this standard to about 97% of all claims.

Implicitly, substantive arbitration by industrial courts is then becoming a relatively rare event. Fewer and fewer unfair dismissal claims are being arbitrated across all jurisdictions (there were none with the Queensland Industrial relations Commission in 2006-2007). Ruling out cases dismissed on jurisdictional grounds or due to time lapse, the average outcome of arbitration procedures at the Federal level is evenly distributed between claimants and defendants. Since 1996, dismissed employees obtained compensation payments or reinstatement in 48.3% of the cases arbitrated on merit by the AIRC.

Assuming similar statistics for States' courts (for which I do not have the data), this positions Australia in the middle ground between countries whose courts tend to be employee-friendly (e.g., France, Spain, Sweden, and Germany) and employer-friendly (e.g., United Kingdom, Ireland, and Austria).[11]

The evidence, therefore, is that reforms in Australia have both successfully improved rates of dispute resolution and dramatically reduced unfair dismissal claims lodged with industrial tribunals. The short-lived nature of *WorkChoices* suggests these reforms went too far, perhaps too fast, and had not built sufficient support to be sustainable socially and politically.

A Basic Model of Dispute Settlement

There are countless economic models of dispute resolution but very few that are

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[11] See Bertola et al. (2000) for evidence on court outcomes and enforcement of employment protection standards in some E.U. countries.

actually specific to employment termination disputes. A vast theoretical literature stresses the benefits to both parties of developing a bargaining strategy driven by the potential mutual gains from settling the dispute prior to arbitration (see, e.g. Landes 1971; Shavell 1982; and Priest and Klein 1984). These theories rest on the rationality of the agents involved and build on the well-known argument that market-based (that is, off-court) arrangements leaving rational agents better off will provide powerful incentives for building consensus (Lazear 1990). Settlement agreements would then depend on the type and size of the transaction costs involved with both court arbitration and dispute settlement, which constitute a contract zone.[12] I define the main determinants of the contract zone as (a) standard dissipative costs (legal costs, representation fees, bureaucratic regulations, time costs); (b) stigma costs that brand fired employees as unemployable; and (c) uncertainty costs (determined by risk aversion and expectations about plaintiff awards granted by court arbitration).

Standard dissipative costs. Evaluating the merit of disciplinary dismissal decisions requires a substantial amount of context-dependent information. The transaction costs incurred by retrieving and presenting case information receivable by public arbitrators are therefore quite significant for both parties. Although less costly than court adjudication, arbitration can be lengthy and expensive, and it can generate an outcome that is always uncertain (Lipsky and Seeber 1998).

Stigmatic costs: It is well documented that the labor market outcomes of dismissed workers tend to be quite poor: lower earnings (Jacobsen et al. 1993; Farber 1997), lower re-employment probabilities, and poorer health (Ruhm 1991; Drinkwater et al. 2008). Hagglund and Provis (2005: 78), for example, observed that "according to employer and employee advocates, dismissed employees appeared willing to take . . . lesser [settlement] amounts if they could work out agreements to convert their dismissals to resignations, clear their records of derogatory materials and secure the employers' promise not [to] give negative reports to future employers." Hiding involuntary separations from third-party scrutiny improves the re-employment probabilities of dismissed employees because prospective employers cannot derive information about their likely lower productivity from employment history records (Canziani and Petrongolo 2000; Drinkwater et al. 2008).

Risk and uncertainty costs: the potential amount of compensation (with or without reinstatement orders) granted by tribunal arbitration is of course unknown, but the parties can build rational expectations about its average value and volatility. The risk preferences of the parties are likely to drive the degree to which they are willing to give up some of the expected gains from tribunal decisions in order to avoid the attendant uncertainty (Farber and Katz 1979). Hence, risk and expectations impose additional informational and behavioral costs to the parties, inducing them to reach a settlement rather than go to court.

There are other, rather complex, parameters of contract zones. For instance, employers that fire and do not settle may incur their own stigma such as the "reputation cost" of being branded a harsh, undesirable workplace, especially if the dismissal involves discriminatory issues (Sherwyn et al. 1999). Farber and Bazerman (1989) and subsequent research have examined sources of optimism (and pessimism) unrelated to a rational approach to risk and expectations, which, absent reliable data on divergent beliefs, I do not consider here.

A Bargaining Model

A termination process can be approached as a game in which the employer makes the first move by communicating the decision to fire to an underperforming employee (e.g., see Viscusi and Scharff 1996). If the firing is

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[12] The expression is borrowed from Farber and Katz (1979) and is also referred to in the literature as "settlement range" (Bebchuk 1984; Shavell 1996), "cooperation surplus" (Cooter and Rubinfeld 1989), or "bargaining rents"(Kobayashi 1996). The contract zone embodies all the transaction costs to the parties generated by statutory dismissal laws.

contested, the employer may either settle by accepting to bargain over a settlement payment T (and present the firing as consensual separation to third parties) or stay the course, in which case the employee either withdraws the challenge or brings the case to arbitration, hoping to obtain an uncertain award A, which is assumed normally distributed[13] with mean value $E[A]$ and variance $V[A]$:

(1) $A \sim N(E[A], V[A])$.

Arbitration costs are therefore much less predictable than settlement costs. They comprise the costs of legal (or other) representation, bureaucratic "red tape," and court proceedings,[14] D, which are dissipative (waste) components, since lawyers and courts are not parties to the dispute. In the basic settlement model presented below, I assume the parties to be similarly informed, to differ in their attitudes to risk, and to bargain in non-co-operative Nash fashion.

Let f and w subscripts represent the employer and the employee, respectively. The share of dissipative costs D incurred by the employer is D_f. The employer also expects to have to pay an award $E[A]$[15] (the mean value taken by the award weighted by the probability ($1\text{-}p_A$) of losing the case). Contrary to the asymmetric information literature, I assume here the parties to have access to the same information about average award decisions.[16]

Abstracting provisionally from the volatility component of the expected award, $V[A]$, the total expected cost of arbitration to the employer, F, is thus:

(2) $F = D_f + (1 - p_A) E[A]$.

If the employee does not contest the firing, the cost to the employee is a stigma cost C that reduces the employee's probability of finding another job. If the employee contests the dismissal in courts, the expected benefit B from court action is the average expected award, weighted by the probability p_A of winning the case, net of stigma and the employee's share D_w of arbitration dissipative costs:

(3) $B = p_A \cdot E[A] - C - D_w$.

Expressions (2) and (3) define the boundaries of the contract zone. B is the net payoff the employee expects to reap from arbitration and is often referred to as the employee's threat point, or fallback position. F is the upper limit to the expense the employer expects to incur, which defines another threat point. Risk-neutral employees will not accept a settlement amount (a certainty equivalent) lower than the expected benefit of challenging the firing.[17] Hence the minimum settlement payment the employee would take in this game is B whereas the maximum amount the employer would settle for is the amount F that makes the employer indifferent between a dismissal and a settlement. I provisionally define the contract zone Ω as the difference between these minimum and maximum amounts:

(4) $\Omega = F - B = D + C$.

Risk Aversion and Uncertainty

Bargaining over the separation payoff, however, involves more than the mere

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[13] This assumption derives theoretically from the work of Farber and Katz (1979) and is convenient to derive analytically tractable results. I discuss issues regarding this assumption at the end of the paper.

[14] As emphasized above, Australia and the United Kingdom have a system of publicly funded arbitration courts; so if claims have failed to settle, they proceed to court for arbitration. There is no equivalent to public arbitration commissions in the United States, where dispute resolution is privately funded. If a claim has failed settle, it may progress toward "post-private-arbitration" court proceedings, which adjudicate the merit or arbitrability of the case under common law and statutory exemptions.

[15] The attitude of arbitrators is posited as a constant. Friendlier arbitrators' attitudes toward the plaintiff would raise the award's expected value (by increasing both the size of the average award and the likelihood of receiving it).

[16] In this respect, the asymmetric information literature remains controversial. There seems to be no reason for

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plaintiffs with a strong case to withhold private information whereas plaintiffs with a weak case have incentives to do so but will rationally settle rather than go to court (Shavell 1989; Sobel 1989; Farmer and Pecorino 1996).

[17] In this respect, the model follows a well-established tradition that began with Hicks's (1932) model of bargaining over strikes.

partition of the economic waste generated by the conflict. Early models of dispute arbitration, such as those of Landes (1971), showed (in the absence of dissipative costs) that the size of the contract zone is essentially defined by diverging views about the expected award and attitudes to risk.[18] In the absence of dissipative costs, differing degrees of risk aversion among the parties create a contract zone as long as risk aversion strictly dominates risk attraction. This relationship is highly intuitive: risk-averse individuals would rather avoid a trial whereas risk lovers would dismiss the mere idea of a settlement. However, positive attitudes toward risk are rarely observed in experiments (Holt and Laury 2002), and they are also an increasingly irrational feature of employment dispute resolution. In line with the rationales driving contemporary reforms, arbitrators and juries have taken an ever hardening line against parties that appear to refuse to settle for "gambling reasons" (Oakley and Mayer 1996; Lipsky and Seeber 1998).

Consonant with the literature on this subject, I use the Arrow-Pratt measure of absolute risk aversion to parameterize the parties' attitude toward risk. This parameter, α_i, is negative for risk-averse individuals and positive for risk-loving individuals. Let υ and ω represent the shares of the bargaining space held *ex post* by the employer and the employee, generating utility $u_f(\upsilon)$ and $u_w(\omega)$, $u'>0, u''<0$. Farber and Katz (1979) suggested a convenient parametric form that reflects the necessary opposition between the parties' respective utilities:

(5)
$$u_w = 1 - e^{\alpha_w \omega \Omega} / 1 - e^{\alpha_w}$$
$$u_f = 1 - e^{\alpha_f \upsilon \Omega} / 1 - e^{\alpha_f}.$$

Under these assumptions, the size of the contract zone depends only on the parties' divergences in award expectations (which is zero here, since I assume both parties to be similarly informed by an exogenous set of average estimates, such as those presented in this paper); awards volatility (approximated

by the variance of my estimates); and risk attitudes (zero for employers, negative for employees). Since the contract zone (4) should also be expressed as a function of risk and uncertainty, the boundaries of the contract zone specified in expressions (2) and (3) have to be adjusted for these additional costs. Expressions (2) and (3) become[19]

(6) $F = (1-p_A)E[A]+D_f-0.5\cdot\alpha_f V[A]$ and

(7) $B = p_A E[A] - C - D_w + 0.5\cdot\alpha_W V[A].$

Hence, with due risk and uncertainty considerations, risk-averse parties are now willing to consider additional settlement offers in order to avoid the vagaries of a trial. For reasons I explain later on, I will assume the average employer to be risk neutral ($\alpha_f = 0$). In this case, expression (4) now becomes:

(8) $\Omega = D + C - 0.5\cdot\alpha_W V[A]$

As a result, the contract zone now consists of the economic waste generated by arbitration and the costs introduced by uncertainty and risk aversion. Intuitively, if risk aversion disappears, uncertainty is no longer relevant, and vice versa.

Bargaining Parameters

The size of the bargained settlement T depends also on the bargaining power of the players,[20] which I make depend on their respective degrees of patience, indexed by δ_f and $\delta_w, \in [0,1]$ ($\delta = 1$ indicates extreme patience). It has been shown that for some basic axiomatic formulations about players attitudes such a game converges by backward

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[18] Note that these early models focused mainly on the reason trials occur; therefore, they examined reasons for contract zones *not* to exist (such as excessive optimism).

[19] See Farber and Katz (1979: 56–59) for details. The model first computes the expected utility value of going to court, specifying the award's probability density function, and using the moment generating function of a normal variable. Expressions (6) and (7) (the equivalent in this model of their expressions (16) and (13), p. 58) are derived by equating the result to expression (5), which gives the certainty equivalent.

[20] Note that I do not imply a necessary relationship between risk aversion and bargaining power: a player can be risk averse (say, because she is asset poor) and yet have strong bargaining power (say, because she is more patient or more skilled at bargaining). Often though, the two concepts will be related.

induction towards a perfect equilibrium partition (PEP) in which one player moves first and obtains a larger share of "the pie" than the other player[21] (Rubinstein 1982). There is little scope here for switch threats and outsider pressure (as in wage negotiations) so that the well-known result of this game suggests that if the employee is less patient than the employer $(\delta_w < \delta_f)$ the following coefficients determine the outcome of non-collaborative Nash bargaining (and vice versa if the employee is more patient)[22]:

$$(9) \qquad \upsilon = \left\{ \frac{(1-\delta_w)}{1-\delta_w\delta_f} \right\}; \omega = \left\{ \frac{\delta_w(1-\delta_f)}{1-\delta_w\delta_f} \right\}.$$

The employee then expects to obtain a settlement package $B + \upsilon\Omega$ whereas the employer expects to save $\omega\Omega$ by settling the case. Combining expressions (8) and (9) yields the following settlement amount T:

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\begin{aligned}
(10) \quad & T = B + \upsilon\Omega = p_A{\cdot}E[A] - C - D_w \\
& + 0.5{\cdot}\alpha_w V[A] + \upsilon\,(D + C - 0.5 \\
& {\cdot}\alpha_w V[A]) = p_A{\cdot}E[A] + (1 - \upsilon) \\
& (0.5{\cdot}\alpha_w V[A] - C) + \upsilon D - D_w.
\end{aligned}
$$

Figure 1 illustrates the determinants of the model's contract zone and its partition. The

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[21] In this particular game, a first-move criterion could arguably combine the opportunity cost of not playing the game with the degree of patience of the player so that the player who stands to lose most by not playing the bargaining game will accept that the other player starts first (not starting the game is not an option because both players are worse off). Hence, the employee starts first if the firm's patience-weighted potential savings from the game exceed those of the employee. This approach contradicts my data and assumptions and is not pursued here.

[22] This perfect equilibrium partition (PEP) is the standard result of a non-cooperative game of sequential bargaining with alternating offers over the partition of a fixed "pie"—a typical bargaining problem *a la* Nash (1950). This result, first derived by Rubinstein (1982), was quite influential in its field and was subsequently made both more accessible and more intuitive by Shaked and Sutton (1984). Sutton (1986) and Binmore et al. (1989) extended and illustrated the analysis to include outside options and threat points. This PEP was so prominent in Rubinstein's article that it appeared, quite uncharacteristically, in the paper's abstract.

pure transfer parameters (expected court awards and settlement payments), dissipative and stigmatic trial costs, and attitudes towards risk define the scope of the bargaining space Ω, whereas respective bargaining powers determine its partition.

Calibrating this model requires estimates of dissipative costs, settlement amounts, expected damage awards and attitudes to risk. Simulating plausible values for the respective degrees of patience among players then generates the likely partition of this average contract zone.
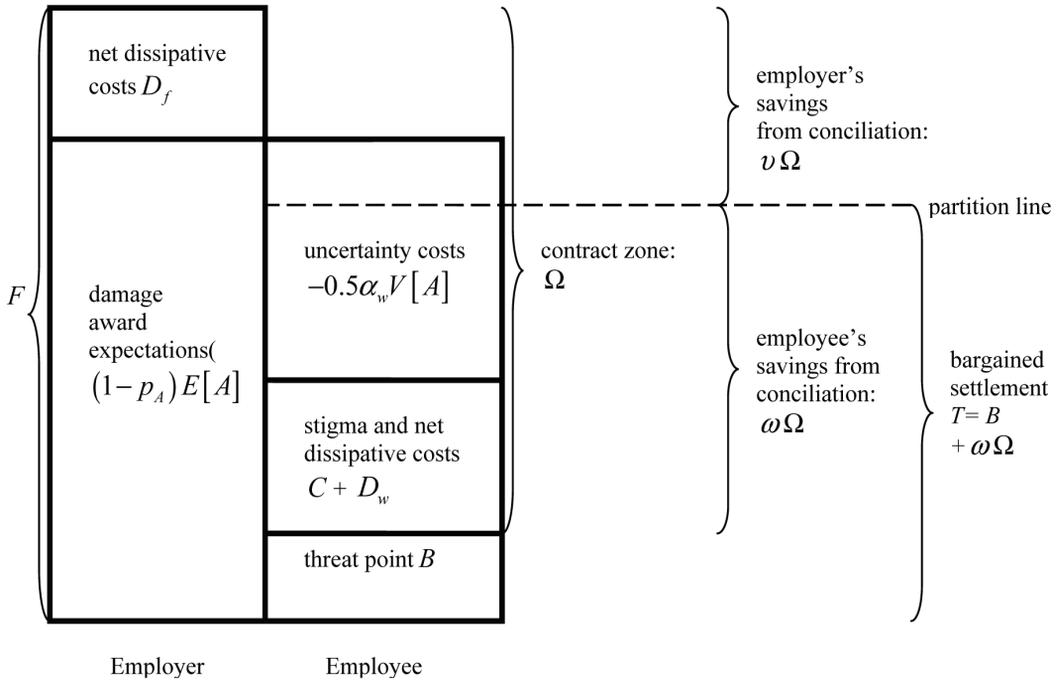
Cost Estimates

Termination costs and their components are relatively elusive concepts in empirical research, and there is little effort by national and international statistical agencies to standardize these costs or at least provide an agreed nomenclature. Perhaps for these reasons, it is still very difficult to obtain comparable data on the costs associated with the arbitration or conciliation of dismissal disputes. Much of the existing data is anecdotal or rests on case studies, and the paucity of estimates has been deplored by many researchers such as Hamermesh and Pfann (1996) and Addison and Teixeira (2003).

In this section, I examine the costs and bargaining parameters of unfair dismissal disputes lodged with and arbitrated by the Australian Industrial Relations Commission, an industrial tribunal, and its State subsidiaries. The AIRC is a jurisdiction competent for *statutory* action concerning unfair dismissal claims (dismissals deemed harsh, unjust or unreasonable), whereas common-law courts arbitrate wrongful dismissal cases, which may or may not be unfair but always involve a breach of the employment contract. In Australia, most dismissal disputes are lodged with the AIRC in part because of its larger jurisdictional scope, but also because AIRC arbitration is much less expensive than court litigation (parties often represent themselves). AIRC arbitration is, however, not accessible to high-earning employees (the salary cap varies with years and State jurisdictions but tends to correspond to about twice

Figure 1. Contract Zone and Equilibrium Partition

the national average wage—full- and part-time employees).

Compensation and Damages

I derive my first cost estimates from commissioners' decisions taken in the State of South Australia between 2001 and 2008 and in Federal courts over the course of 2002 and 2003. My sample includes 129 unfair termination cases arbitrated with order for compensatory award, and 34 orders for reinstatement with (or, rarely, without) payment of damage awards for wages lost between dismissal and re-employment. Reinstatement is less common than compensation but its cost is more volatile since the size of damage awards depends on the time separating termination from re-employment orders. Otherwise, the size of compensatory awards generally depends on commissioners' findings with regard to the exact reason for the dismissal, the behavior of the parties in settlement negotiations, plaintiffs' attempts to

mitigate their losses, business viability, contingency factors affecting the employment relationship, and termination payments (if any) made by the employer. The mean compensation award for lost wages amounts to 13 weeks' wages (25% of annual wage), whereas the mean damage award for lost wages until re-employment is 27.5 weeks' wages (53% of annual wage). Assuming employers cannot accurately forecast whether a successful unfair dismissal claim will result in compensation or reinstatement, the average cost of the compensatory transfer is 16 weeks' wages, or 31% of annual wage cost. This amount is the average award granted in unfair dismissal cases won by claimants, and therefore still needs to be weighted by the relevant probability to win an unfair dismissal case (see the section on expectations).

Chelliah and D'Netto (2006) similarly examined the determinants of AIRC compensation and reinstatement orders between 1997 and 2000, using as regressor a

vector of 136 compensation awards (with no reinstatement) and 37 damage awards (with reinstatement) obtained from the AustLII database managed by the Australian Legal Information Institute. Computing the weighted average product of the awards' means (13.2 and 17.6 weeks' wages) yields an average employee award of 14 weekly wages,[23] or 27% of annual wage cost, which is quite close to my cost estimates. Note that the marked difference in damage awards for reinstatement is due to different means in the observed waiting period between dismissal and arbitration (30 weeks in their sample, 53 weeks in mine).

Settlement Pay

Hagglund and Provis (2002) examined 132 settlement payments recorded by the AIRC in South Australia, emphasizing that many settlement payments proceed informally and remain unreported. Table 2 of their study (*Ibid.*: 78) reports settlement incidence and size of settlement amounts by size category. In the absence of exact distributional information, I use the mean of each class to derive a weighted average settlement of about 8.6% of wage cost—using the average annual Australian wage (full- and part-time) for 2002 to convert dollar figures into relative costs (ABS 2003).

Another source of information for settlement payments is the AHRI survey,[24] a quantitative online employer survey conducted in 2004 by the Australian Human Resource Institute with a research team at the University of New South Wales. The survey, which targeted larger organizations, reports an average settlement payment of 12% of annual wage cost. This is somewhat larger than

the amount implicitly reported in the Hagglund and Provis study, which was more representative of smaller-sized firms. Given its much larger sample size, the Hagglund and Provis study provides more reliable estimates.

Freyens and Oslington (2007) used quantitative survey techniques to report estimates of firing costs incurred by small and medium businesses at both the conciliation and arbitration stage of the dismissal claim. However, they did not distinguish between pure transfer and dissipative costs. Their computation of average employer costs of conciliation of 17.1% of wage cost included legal and time cost and settlement pay. The arbitration cost of 25.3% of wage cost (*Ibid.* pp. 5–6), inclusive of dissipative costs and expected award payments, was found to be lower than the estimates reported in the present study, but this is expected due to the focus on small firms and "deep pocket" speculations.[25] Abstracting from the AHRI survey, none of these additional empirical studies provides separate estimates for the dissipative costs of settling or arbitrating dismissal disputes.

Net Dissipative Costs

The AHRI survey provides the net dissipative costs of dispute settlement, that is, the legal and time costs incurred through arbitration net of those incurred through conciliation. Net dissipative costs appear surprisingly small (4.3% of annual wage cost). This is because the dissipative costs incurred through conciliation are themselves significant (7.5% on average). I make a simplifying assumption here: the parties either enter negotiations with a firm intention to avoid court arbitration (they expect *ex ante* to settle the dispute) or they do not negotiate and go to court. The parties do not anticipate starting with the former and ending

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[23] In less recent surveys of these costs in the United Kingdom, Dickens (1994) found a median arbitration award by Industrial Tribunals of eight weeks' pay "at the average manual employee's wage." Burgess (1988) reported arbitration awards of eight and one-half weeks' wages for unfair dismissal dispute resolution.

[24] The survey is a technical, online business questionnaire sent to 500 HR practitioners, with a response rate of about 8%. See Freyens (2008: 104–24) for methods and details.

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[25] This theory holds that larger organizations usually face larger compensation claims not only because the wages forgone by dismissed employees are higher—a non-issue here since I present costs relative to wages—but also because courts and tribunals always consider the financial viability of the business (Dertouzos 1988).

Table 2. Cost Estimates - AIRC Conciliation and Arbitration

(relative to annual wage cost)

Cost studies			Freyens & Oslington (2007)		Hagglund & Provis (2005)			
Cost estimates **Conciliation costs**	AHRI survey	(n)		(n)		(n)		
Dissipative costs	**0.075*** [0.0108]	34	:	:	:	:	:	:
Settlement payments (T)	0.120 [0.0339]	7	:	:	**0.082:**	132	:	:
Total settlement	0.195 [0.0356]	35	0.171	121	:	:	:	:
Administrative cost	0.056 [0.0085]	37	0.103	439	:	:	:	:
Conciliation total	0.251 [0.0366]	39	0.277	121	:	:	:	:

			Freyens & Oslington (2007)		Chelliah & D'Netto (2006)		Freyens (2008)	
Arbitration costs	AHRI survey	(n)		(n)		(n)		(n)
Dissipative costs	**0.118** [0.0176]	24	:	:	:	:	:	:
Arbitration awards (E[A])	0.227 [0.0222]	19	:	:	0.270	173	**0.308** [0.021]	164
Total dissipative and awards	0.345 [0.0283]	24	0.243	38	:	:	:	:
Administrative cost	0.088 [0.0114]	21	0.103	439	:	:	:	:
Arbitration total	0.433 [0.0305]	24	0.357	38	:	:	:	:

			Holt and Laury (2002)		Chelliah & D'Netto (2006)		Freyens (2008)	
Other contract zone parameters	AHRI survey							
Net employer dissipative costs (D^J)	**0.043** [0.0207]	29	:	:	:	:	:	:
Expected value of award $p_A(E[A])$	0.114 [0.0111]	19	:	:	0.135	173	**0.154** [0.014]	164
Award volatility (V[A])	0.009	19	:	:	0.042	173	**0.061**	164
Risk aversion	:	:	−0.4	175	:	:	:	:

Notes: *Bold face indicates specific parameters used for the calibration exercise. Standard errors of sample means reported in brackets where available.

up with the latter (in which case dissipative costs are cumulative and a probability of negotiation failure would have to be added).

The AHRI survey being a business survey, there is no direct information on the net dissipative (and possibly stigma) costs incurred by the employee. One possibility is that the latter are negligible. After all, the cost of lodging an unfair dismissal claim with the AIRC is insignificant relative to annual wage cost. Moreover, the legal outlays may be small—Hagglund and Provis (2005) reported many instances of dismissed employees representing themselves. The time cost of a dismissed employee is also likely to take much lower values than that of employers. In subsequent sections, I try to derive this information residually. The other key parameters of the bargaining process are the expected values for the pure transfer payments and the variance in the amounts awarded by courts.

Expectations

The two players do not start negotiations based on the certainty of an average award transfer of 30.8% of wage cost upon arbitration, but on the *expected* value of the transfer. It is well documented that, based on the pure merit of the cases, arbitration decisions tend to go either way in Australia, with the probability of employee success varying between 42 and 58% in recent years (AIRC 2006). Curiously, the probability of winning a case on its merit has not been particularly affected by the *WorkChoices* reforms mentioned earlier in this paper. I posit an average probability p_A of 50%[26] for compensatory transfers to be ordered by arbitration, which is roughly the trend value over the last ten years in AIRC arbitration (see Table 1). This yields an expected average award of 15.4% of annual wage cost.

Uncertainty

As Farber and Katz (1979) suggested, a natural proxy for uncertainty is the dispersion of compensation (A_1) and damage awards (A_2) ordered by arbitrators. As previously assumed, employers cannot accurately anticipate whether arbitrators will order compensation or reinstatement, so the average variance of the compensatory award is given by expression (11), which combines between- and within-award variance:

$$(11) \quad V[A] = \frac{1}{N}\left[\begin{array}{c} \left(n_1 V[A_1] + n_2 V[A_2] \right) \\ + \left(\begin{array}{c} n_1 \left(E[A_1] - E[A] \right)^2 \\ + n_2 \left(E[A_2] - E[A] \right)^2 \end{array} \right) \end{array} \right].$$

Chelliah and D'Netto (2006) reported $STDEV[A1]^{[27]} = 0.165$ ($n = 136$) and $STDEV[A2] = 0.312$ ($n = 37$), which results

in $V[A] = 0.042$. My more recent findings indicate slightly larger award dispersion at $STDEV[A1] = 0.185$ ($n = 129$) and $STDEV[A2] = 0.412$ ($n = 34$), which results in $V[A] = 0.075$. The standard deviations indicate significant uncertainty about the award expected by the parties, in spite of the six months' wage cap that statutory law places on compensatory claims (but not on damage awards). High uncertainty should act toward enlarging the contract zone since uncertainty introduces a cost of its own.[28]

Risk Aversion

Experimental economics has so far provided little insight as to how risk aversion should be modeled to explain bargaining patterns in employment disputes. Controlled experiments based on simple lotteries, such as those conducted in the wake of the Holt and Laury (2002) study, find overwhelming evidence of risk aversion rather than risk attraction among players. These experiments often model the bargaining parties as buyers and sellers.[29] The buyer bids for the lowest possible price (which suggests risk aversion), whereas the seller bids for the highest possible price (usually with milder risk aversion than the buyer). Dickinson (2009) found an average degree of risk aversion of 0.23 for buyers, and 0.12 for sellers. In my model, this setting would translate as employees-sellers seeking the highest possible award (or settlement amount), and employers-buyers making a case for small awards/settlement offers at hearings/conciliation.

However, the extent to which this intuition can help portray employment disputes

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[26] In their sample, Chelliah and D'Netto (2006) reported an employee success rate in courts of 173/342 = 50.6%. Their average expected value of employee awards is about 13.5% of wage cost.
[27] Non-publicly released parameter provided upon request from the author.

[28] However, Dickinson (2009) found that far from increasing the spread between buyers and sellers' respective threat points ($F - B$), higher uncertainty actually induces higher optimism among the parties, with a shrinking effect on the contract zone.
[29] The original Holt and Laury (2002) study had little to do with bargaining over separation payments, examining instead individual lottery choices. However, researchers have subsequently used the Holt and Laury lottery choices experiments as a way of generating a measure of risk attitude, which could then be used as regressor in analyzing results from other experiments they run.

negotiations remains untested. Of particular difficulty is the standard contention in bargaining theory that the party with the largest personal assets faces less risk (because it can afford better lawyers, sustain prolonged bargaining or appeal procedures, and so on), which undermines the idea of dismissed employees (relatively asset-poor) as risk-loving "award sellers." Although these details do not play a large a role in my results, I select an approach better tailored to the problem by positing risk neutrality among employers and using the mid-point risk aversion coefficient ($\alpha = -0.4$), derived from lottery choices by Holt and Laury (2002), to characterize employee attitudes to risk. There is an inescapable element of arbitrariness in this selection, but I view Holt and Laury's average parameter as a reasonable compromise.[30] Table 2 summarizes the main estimates of the costs of settling and arbitrating dismissal disputes used and discussed in this study. The cost estimates used in the calibration exercise are inserted in bold face.

Contract Zone Estimates

Scope

Inserting the main cost estimates into expressions (2), (7), and (10) allows me to calibrate a potential contract zone in settlement negotiations and derive residual approximations for employee dissipative costs (legal cost, stigma, and so on). Inserting my estimates for D_f and $(1-p_A)\ E[A]$ into expression (2) suggests that the net arbitration costs (F) incurred by risk neutral employers averages 19.7% of annual wage cost, which yields the upper bound of the contract zone. Quantifying the lower bound (expression (7)) is more difficult, because parameters B, C and D_w are largely unknown and there are no well-accepted estimates of these parameters

in past and current research. However, these average parameters have to be compatible with an average settlement of 8.2% of wage cost. Consequently, I attempt here to derive this information residually. I summarize all known employer and bargaining cost information in expression (12):

$$(12) \quad \begin{cases} F = D_f + (1-p_A)E[A] = .0197 \\ T = 0.082 \\ \omega \cdot \Omega = 0.115. \end{cases}$$

The estimates presented in expression (12) suggest that employers save an average 11.5% of annual wage cost by bargaining and settling the claim rather than having it arbitrated by the AIRC. Although this is quite a sizeable proportion (more than half) of the average expected employer cost F, it is not, as such, a very substantial amount. In the next section, I demonstrate that assuming employers to be risk-averse does not affect the result by much.

The saving made by the employer corresponds to the product of ω, the employer's *ex post* share of the contract zone, by Ω, the contract zone itself. Hence, since F is known, and ω can be simulated using average discount rates, both B (the employee's minimum acceptable settlement T) and Ω (the contract zone) can be approximated. This in turn helps generate values for the average dissipative costs to dismissed employees of settling an unfair dismissal case. In general, results for this type of simulation can vary widely depending on assumptions made about which player starts bargaining first, what the overall level of patience of the players is, and the extent to which patience differs among the players. The estimates presented in this paper, however, together with mild constraints imposed by the model's set-up, enable me to constrain the set of likely results.

First, note that only a few combinations of discount rates (δ_f, δ_w) and implied player shares (υ, ω) are compatible with an average settlement amount of 8.2% of wage cost. This compatibility constraint strongly narrows the range of possible contract zones in

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[30] Holt and Laury (2002) reviewed other (mostly unpublished) controlled experiments involving pairs of players bargaining over an unknown but finite amount of money, which all yielded an average degree of risk aversion ranging between −0.4 and −0.6. Dickinson's average risk aversion coefficient is −0.175.

my simulations. Second, the hypothesis of "workers bargaining first" yields results that are inconsistent with my data (and my assumption of higher risk aversion), and can therefore be ruled out. The simulation range can be narrowed further, such as by restricting the analysis to standard time valuations (e.g., discount rates ranging between 5 and 10%), and by dismissing extreme situations where one party holds unreasonably large bargaining power with respect to the other (e.g., in terms of discount rate differentials $|\delta_i - \delta_j|$). Adding this smoothing constraint on the bargaining parameters is reasonable given that all the estimates considered in the model are average values. Smoothness can also be justified on the ground that in the court arbitration of unfair dismissal disputes, both parties can count on significant sources of bargaining power (protection laws for dismissed employees as well as assets, experience, and insolvency claims for employers—especially small businesses),[31] so bargaining power should not, on average, be excessively unbalanced.

Partition, Settlement and Savings

Compatibility and smoothness constraints yield a narrow range for the results. The average contract zone spans 15.7% of annual wage cost. This result is compatible with a restricted subset of bargaining parameters such as $(\delta_p, \delta_w) = (0.970, 0.920)$ or $(0.950, 0.875)$, and a partition $(\upsilon, \omega) = (0.73, 0.27)$. Few other values of the contract zone satisfy my data constraints, model specifications, and behavioral assumptions. The employee's threat point in negotiations (the lower bound to the settlement range) is about 4% of annual wage cost. Under the average employee risk aversion ($\alpha_w = -0.4$) posited in this paper, and following the reasoning described above, I find average employee dissipative costs $C + D_w$ to amount to 9.9% of annual wage cost.

The findings are summarized in Figure 2. The net expected return to the claimant

from having the claim arbitrated is 4.0% of wage cost, which is an expected award of 15.4% of wage cost, from which uncertainty costs of 1.5 percent and stigma and net dissipative costs of 9.9% are deducted. This defines the claimant's threat point B: the expected amount from arbitration defining the certainty equivalent in settlement negotiations. By settling the claim instead, this representative employee obtains a net return of 8.2%, signifying his or her threat point of 4% incremented by a share 0.27 of the contract zone 15.7%. The difference between arbitration and settlement (a net gain of 4.2% of wage cost), therefore, provides the employee's savings from settling the claim with certainty now rather than having the claim arbitrated with uncertainty later.

The employer, conversely, expects to incur an average net wage cost of 19.7% were the dispute to be arbitrated whereas this cost is only 8.2% through settlement. Hence, the average employer saves 11.1% of wage cost by settling the claim, a much larger saving in net terms than derived by the employee, which is consistent with the assumptions of the model. Since an overwhelming majority of claims are settled prior to trial (see Table 1), statutory law does not appear to impose a very wasteful dispute resolution, nor does it seem to redistribute much capital from owners to labor suppliers. This conclusion holds for all other plausible scenarios simulated with the data.

Caveats

There are various limitations to this study: (a) *robustness*: some estimates, such as stigma and other employee dissipative costs, are obtained residually; (b) *sources*: the data reported here come either from business surveys, laboratory experiments, or institutional sources, which weakens the analysis on the employee side of negotiations; (c) *sample size*: some of the parameters reported here have very small sample size—the smallest of which is arbitration dissipative costs ($n = 24$). Certainly, some of these estimates will have to be re-estimated with a larger set of observations; (d) *normality assumption*:

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[31] Assets endowments as a source of bargaining power are also captured through risk aversion differentials.

Figure 2. Average Contract Zone Estimates (in % of Average Annual Wage Cost)
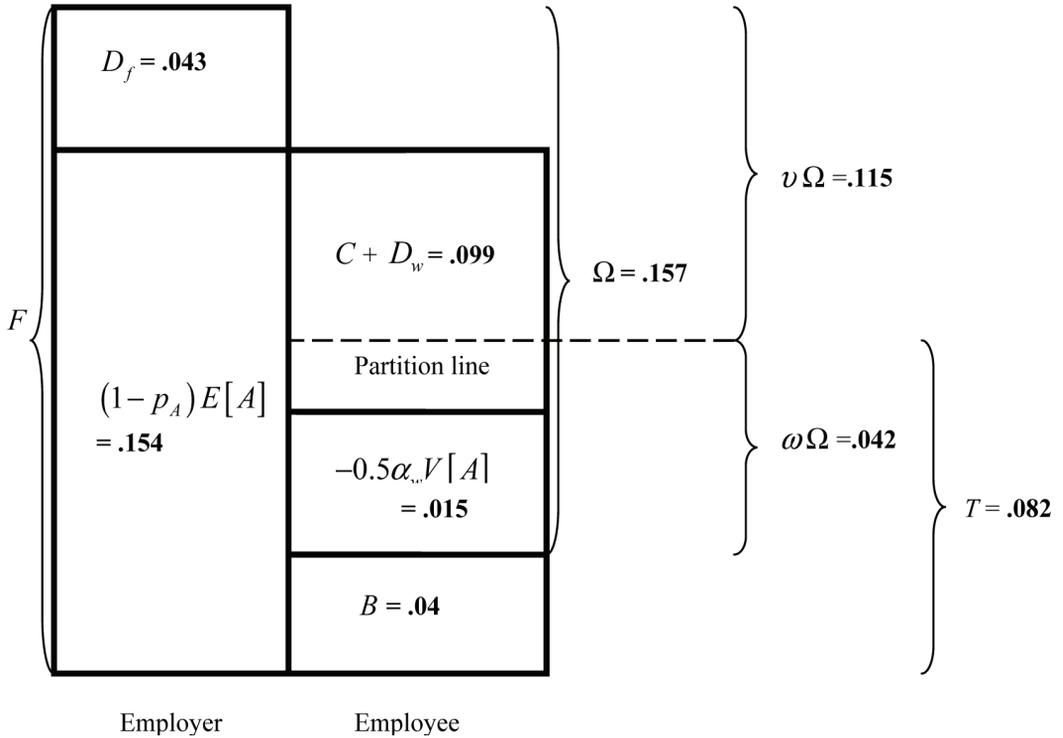
arbitration awards in the United Kingdom do not follow a normal probability law since their density function usually exhibits a positive skew,[32] as is also the case with the Australian data examined here; (e) *rationalism*: in practice, dispute resolution is not always conducted by rational players, so it is important to consider that misunderstandings, beliefs, and other behavioral issues not modeled here may lead to unbalanced settlement outcomes that could not possibly be predicted by this study; (f) *rules for cost recovery*: the model utilizes the American rule[33] for legal costs allocation. Using the English rule

would add another layer of complexity, since cost recovery should be modeled with appropriate probabilities.

Sensitivity analysis

To mitigate some of these weaknesses in this study, I proceed with some checks on the sensitivity of my results to mild variations among parameters and assumptions. Large swings in the results would indicate instability.

Award skewness

First, I examine the issue of award normality. Using the data, I derive a Gaussian kernel approximation of the density function. As Figure 3 demonstrates, the data collected for this exercise exhibits a positive skew.

The presence of skewness challenges the assumption of normality, with potentially

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[32] I thank an anonymous referee for this insight.
[33] Note, however, that the American rule is the norm in AIRC arbitration. Although applications for cost recovery can be made *ex post* (usually by the winning party), their treatment is the subject of another hearing and is not based on the cases' outcome, but instead on the parties' attitude in pre-hearing settlement negotiations. Since these attitudes are often polarized, cost recovery is rarely successful.

Figure 3. Distribution of Awards in % of Annual Wage Cost

Gaussian Kernel


Awards (A1 + A2) % of annual wage cost
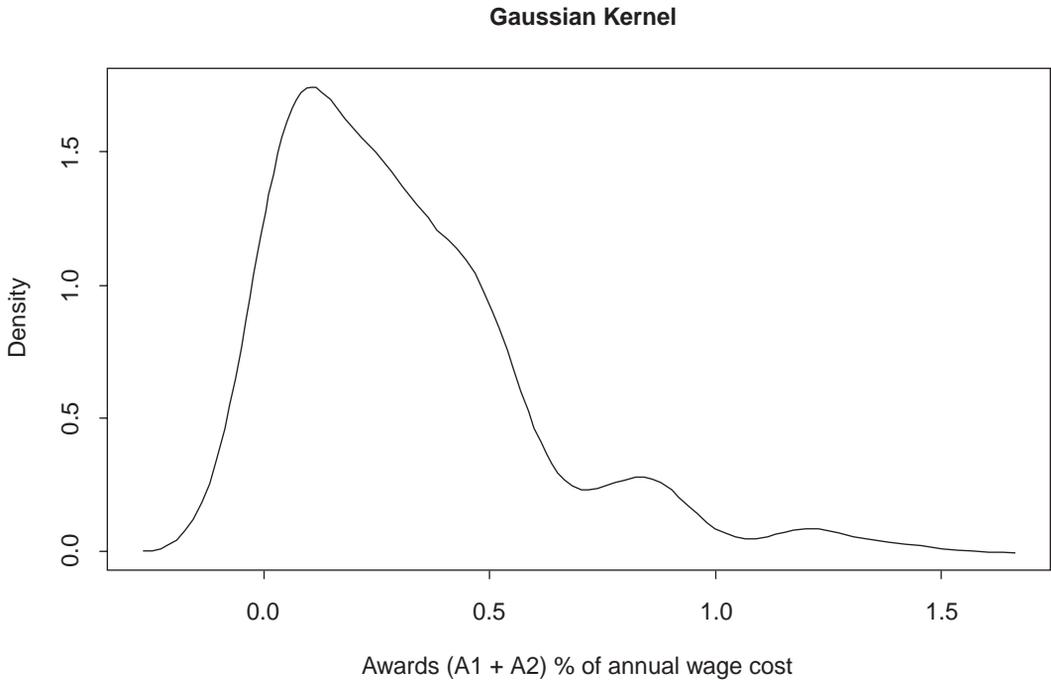
important consequences for my results. Therefore the model needs to be tested for a probability law that is more compatible with the distributional shape exhibited by the data. There are quite a few candidates (lognormal distribution, χ^2 distribution, gamma distribution, etc.) but none is particularly tractable analytically. Instead I use GAUSS to solve the model numerically for one of these alternative density functions and compare the result with the values obtained under the assumption of normality. Figure 4 suggests the theoretical law for awards would be better approximated by a lognormal distribution.

As a first step I numerically integrate the expected employee utility value of going to court to obtain an award, which consists of integrating the following expression with my sample parameters as estimates of the distribution's parameters:

$$(13) \qquad EU_w = \int_{-\infty}^{\infty} \left(1 - e^{\alpha_w A} \,/\, 1 - e^{\alpha_w}\right) f\left(A\right) dA.$$

Assuming $f\,(A)$ is the probability density function of a normal variable, the computed numerical value for the expected employee utility of going to court is 0.33558. Equating this expected employee utility of going to court with the present-time utility of taking a settlement allows me to derive the certainty equivalent value. Solving [expression (5) = 0.33558] for the employee yields a certainty equivalent amount of 0.2931 (which must still be weighted for the probability of winning a case and reduced by the amount of dissipative costs to obtain expression (8), which was calibrated as $B = 0.04$). A quick reality check of the method is to use the expression for the moment generating function to solve (13) analytically, equate the result to expression (5), and calibrate the resulting analytical expression, which indeed is found to equal 0.2931 (see Farber and Katz 1979 for theoretical details). No similar check is required for the employer's expectations since the employer is assumed risk neutral and thus accepts the expected value

Figure 4. Distribution of Log-Awards

Gaussian Kernel
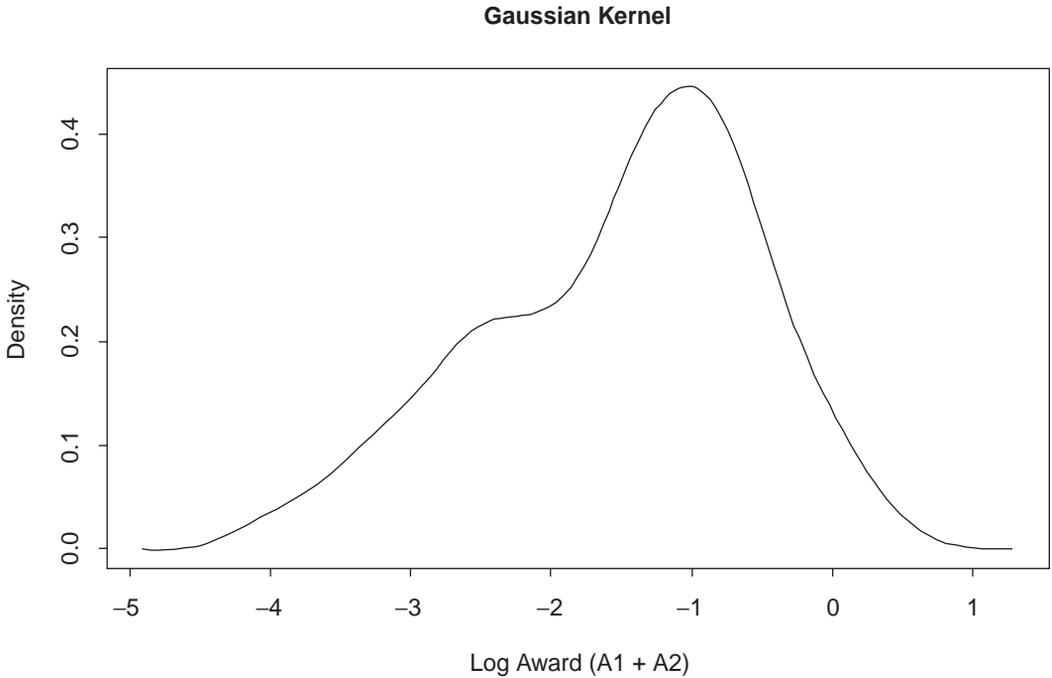
of the award as equal to its certainty equivalent. The second step is to take the logarithm of the observations and repeat the numerical integration this time replacing $f(A)$ with the probability density function of a lognormal variable, which is

$$(14) \qquad f(A) = \frac{1}{A\sqrt{2\pi V[A]}} \cdot e^{-(\log A - \mu_A)/2V[A]}.$$

The numerical expected utility value of going to court is now 0.3673 and the implied certainty equivalent is 0.32269. As opposed to the normal case, expression (8) does not exist under lognormality since the moment-generating function of a lognormal is not defined on the domain R. Therefore I lack an analytical expression for the minimum acceptable settlement for the employee. A comparison of the numerical value for the certainty equivalent, however, with its counterpart under assumption of award normality, suggests the employee threat point would

be roughly 10% higher under lognormality. This difference shrinks the average contract zone by a marginal amount (of about 0. 4% of wage cost) to 15.3% of wage cost. Thus, the calibration exercise is not particularly affected by using lognormal density instead of the normal probability law.

Risk parameters

What would change if instead I should modify the risk parameters of the study? First, consider the situation in which employers are risk averse rather than risk neutral. With employer risk aversion $\alpha_f = -0.4$ (the same degree of risk aversion as employees), $F = 0.212$ and the firm saves about 13% of annual wage cost by settling the dispute (rather than 11.5%). The average contract zone reaches 17.8% of wage cost. Second, reducing employer risk aversion to 0.2 (Dickinson's (2009) average parameter) induces employer savings of 12.3% and creates a contract zone of 16.8%. Third, consider the

range of parameters (-0.4 to -0.6) in the studies cited by Holt and Laury (2002). Keeping firms as less risk averse than employees (e.g., $\alpha_f = -0.4$; $\alpha_w = -0.6$) yields again a contract zone of about 17.8% of wage cost. Last, consider the case where the employer remains risk neutral, but the employee is less risk averse than previously assumed ($\alpha_w = -0.2$). Results are virtually unchanged; the contract zone remains 15.7%, and the savings of the respective parties remain the same. However, employee dissipative costs increase to 10.6% of wage cost (less risk cost implies more dissipative cost for given contract zone parameters).

Overall then, careful modifications to my assumptions do not produce large swings in the results of this study. Thus, the calibration exercise is quite robust, which can be explained by the relatively modest roles played in my results by risk and dispersion parameters.

Concluding Remarks

In order to reform an arbitration/adjudication system perceived as too onerous, Anglo-American common law countries have, since the early to mid 1990s, actively implemented policies aimed at rolling back or circumventing the progresses made by statutory dismissal law. Though their judiciary, executive, and legislative arms, governments have increasingly devolved the resolution of workplace disputes to off-court private forums and, sometimes, rescinded employee rights to dismissal dispute arbitration altogether. The central objective of my research has been to examine the economic legitimacy of these policies. If there are economic gains, how large are they? Are they worth pursuing in an environment made of tense industrial relations and swift political retributions?

To attempt an answer, I produced quantitative estimates of the efficiency costs and redistributive outcomes generated by statutory dismissal laws in Australia, a salient reformer. Using detailed cost estimates of arbitration and settlement costs, I examined the merits and outcomes of dismissal law based on out-of-court settlements bargained "under the shadow of the law" and calibrated a basic model of employment dispute resolution. I found that the average size of the contract zone generated by statutory law is positive but relatively modest (slightly less than two months' wages).

The modest size of this "representative" contract zone reflects the many legal restrictions to claims for compensation and reinstatement under unfair dismissal law—such as caps on compensation claims. Consequently, and contrary to public perceptions, statutory protection of dismissed employees does not seem to impose a very large excess burden on the parties. Although the average contract zone is not very large, it is sufficiently substantial to provide incentives to settle, which is consistent with the goals promoted by reforms. My estimates suggests that most (but not all) unfair dismissal cases will settle prior to arbitration, which is supported by the settlement rates reported in this paper.

Given the size of the average contract zone, the degree to which dispute resolution institutions redistribute capital from owners to labor suppliers cannot be particularly significant either. I find that what little bargaining power employees derive from the law is more effectively used in negotiating a settlement than forcing a decision through trial. The rewards in the form of saved uncertainty costs, stigma and other dissipative costs outstrip those of any alternative (not challenging the dismissal or forcing arbitration by industrial courts). The size and partition of the average contract zone, as well as the incentives to settle examined in this paper, point to a strong undercurrent of economic rationalism in current arbitration practice, not to a system dominated by economic waste, business risk, and undue plaintiff rewards.

Larger data sets, covering other countries with harmonized methodology, together with matched employee-employer surveys of firing costs are necessary to further investigate these questions. This study, moreover, makes no attempt to compare the economic costs of statutory employment protection with other (private or jury-based) institutions, nor does it seek to generalize results

(in particular the privatization of dispute resolution in the United States responds to somewhat different problems and follows a different dynamic than in Australia). This empirical experiment had no other ambition than to stress the potential value of quantitative research in this area. Policy makers need to evaluate the potential economic gains of removing or weakening employment protection laws against equity and political costs. Contrasting recent political events with the orders of magnitude revealed by this study show that the latter can easily dwarf the former.

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