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Hamburg Institute  
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# No judge, no job! – Judicial Discretion and Incomplete Labor Contracts

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**HWWI Research**

Paper 2-23

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# No judge, no job!

- Judicial Discretion and Incomplete Labor Contracts -

*Robin Christmann*<sup>1</sup>

## **Abstract:**

The decision making of judges is prone to error and misapprehension. Consequently, the prevailing literature ties the economic function of courts to dispute resolution and minimization of rule making costs. In contrast to previous research, this analysis applies a contract theoretic perspective to the ruling of courts and keeps the focus on the implemented market transactions. Using labor contracts as institutional setting, performance and limitations of judicial law making are formally investigated and compared to the effects of specific legislation. It is shown that the efficient relation of legislative law making and judicial discretion is defined by the characteristics of the particular field of law and the actual market structure. The model also suggests a mutual dependency between legislation and adjudication to establish efficiency in law, contradicting the traditional legal doctrines of exclusive legislation or sole case-law.

*JEL-Classification:* K12, K31, K41

*Keywords:* incomplete contracts, judicial law making, legislation

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## 1. INTRODUCTION

«After all, one way to reduce the cost of agreement is to agree on less.»

- RICHARD POSNER 1986, P. 513

Why do we need judges in the first place? When someone signs a contract, he does not expect to find himself in courtroom the next day. Instead, the legal institution of contracts<sup>2</sup> is meant to define and coordinate the interaction of the contracting parties for the time to come. Consequently, any allocation of resources in a modern economy can be rooted to a web-like system of individual contracts. But even though parties do not anticipate immediate litigation, they are well aware of the fact that pure wording of a commitment and its actual authenticity may differ. It is the discrete ruling of courts on similar, but disputed transactions that affects the expected legal value of their contract, thus manipulating the allocative decisions of numerous market participants.

However, each time individuals exercise discretion, private incentives and human flaws begin to matter. But as judicial decision making remains subject to error, its intrusion in resource allocation raises skepticism. Legal doctrines have developed substantially different approaches to account for the imperfection of courts: in the common law, the incentive to litigate false judicial decisions guarantees its long-term efficiency; in the civil law tradition the margin of judicial error is minimized through binding codification. Recent developments have corroded this traditional distinction and promoted a methodological convergence of legal systems (see Fon and Parisi 2009). Thus the traditional role and scope of judicial decision-making is in flux.

It is the object of this article to investigate the performance and limitations of judicial lawmaking, hence contributing to a general understanding of the economic role of courts. This will be exemplified for the case of labor jurisdiction. Therefore court ruling is introduced into a formal analysis of labor contracts, which is derived from a Buyer – Seller Model by Zhu and Zhang (2000). The stipulated principal agent game allows the

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<sup>2</sup> From an economic perspective, a contract is the sum of constraints imposed on the strategic behavior of parties by the prevailing institutional setting. An introduction to contract theory provide Salanié (1999) and Hart and Holmström (1987).

identification of various information and control constraints of the contracting parties. Initially, the potential effect of court ruling on the implementation of labor contracts is analyzed. In a second step, the specificity of legal rules is introduced into the model. Consequently, it will be determined under which preconditions judicial law making supersedes specific legislation.

The organization of this article is as follows: in Section 2, I describe the setting of the formal contract model. The implementation of the labor contract with respect to judicial discretion is analyzed in Section 3. The mutual dependence of legislation and court ruling and the impact on social outcome are then stylized in Section 4. In Section 5, I will discuss the theoretical findings and provide some insight on decisive factors for the composition of law. Section 6 concludes the analysis.

This article follows a diverse literature to the function and scope of courts. However, two different perspectives have developed in the law and economics field: The first strand of research integrates the evaluation of judicial lawmaking into the rules vs. discretion debate, in which the variable costs of adjudication and the fixed costs of legislation determine the optimal scope of court decisions (see, for example, Sullivan 1991; Ehrlich and Posner 1974; Fon and Parisi 2009). In this setting, the judge is a passive arbitrary mechanism (Hayek 1980) which only serves the minimization of social costs. The socially desirable performance of judicial law making is also emphasized by the efficiency-hypothesis of case law jurisdiction (Landes and Posner 1976; Rubin 1977; Priest 1977; Cooter and Rubinfeld 1989; Mahoney and Sanchirico 2005). However, Shavell (1981) and Kaplow (1986) showed that private incentives to litigate may diverge from the social benefit, hence inducing excessive externalities through adjudication. Furthermore, Shleifer, Posner and Niblett (2008) found no empirical evidence for any convergence of case law to a stable resting point which would eventually reduce uncertainty in the legal system.

The second strand investigates the individual resolution of disputes: courts are to maximize the utility of the litigating parties. Hence, judicial presumptions in court (Bernado, Talley and Welch 2000) as well as the ability of the judge to interpret vague contracts (Shavell 2006) promote efficiency. Additionally, judges may intervene in

unbalanced contracts with one sided risk distribution, thereby hedging the parties from unforeseen contingencies (Anderlini, Felli and Postlewaite 2006). Schwartz and Watson (2004) criticize that the court's skill to interpret also induces the implementation of less accurate contracts by the parties while at the same time raising the wasteful costs of litigation. At last, the resolution of disputes may be severely biased, if judges themselves are accepted as rational maximizing men (see, for example, Posner 1986; Shapiro and Levy 1995; Fon and Parisi 2003; Miceli and Cosgel 1994).

## 2. THE MODEL

Contract theory provides a promising setting for a formal analysis of judicial decision making. This particular approach is derived from a discrete modeling of a reciprocal trade contract by Zhu and Zhang (2000), who illustrated that imperfect verification of contingencies do not necessarily defeat contracting altogether. They prove with a standard buyer – seller – model that as long as the court's decision is not arbitrary, an efficient outcome can be reached through renegotiations by the contracting parties.

This model of a reciprocal contract can be transferred to labor contracts. In the buyer – seller – model, the traded good is specifically for the buyer's use with no outside value, creating uneven bargaining power for the seller in ex post negotiations. This dependence of the seller on binding contracts for production can be compared to the typical asymmetric structure of labor contracts. The performance of an employee has no ex post outside value, creating a similar contracting problem to the buyer – seller - model. In order to conduct an analysis of social outcome, I develop a continuous version of the contract model. Also, this adaption treats optimality and induced welfare loss as endogenous.

The labor contract is modeled as a non-cooperative game with two parties. The agent (employee) can provide a service to the company with the quality of his performance  $q$ . In doing so he incurs an opportunity cost  $C(q)$ , depending on the chosen quality. The cost of performance stylizes the lost utility of alternative activities like leisure or shirking. The principal (employer) has a valuation  $V(q)$  for the service, depending on

quality of performance and reflecting its utility in the company's production process. In order to obtain the service, the principal offers a wage  $W(q)$  to the agent. Suppose  $C'(q) > 0$ ,  $C''(q) > 0$ ,  $C(0) = 0$  and  $V'(q) > 0$ . The functions  $C(q)$ ,  $V(q)$  and the variable  $q$  are fully observable to both parties.

In this setting, any allocation  $[q, W(q)]$  can be interpreted as labor contract. The binding contract stipulates a wage payment  $W(q)$  for any chosen quality of performance by the agent. It is assumed the observable quality  $q$  is difficult to verify to a third party, caused either by difficulties in defining the desired service in the written contract or by lack of factual evidence. Thus an implemented contract contingent on quality  $q$  faces imperfect verification, if dispute arises. Therefore, the parties can only choose an incomplete labor contract for the desired transaction.

However, if the agreed transaction fails, for example because one party performs badly or payment is withheld, the contract can be enforced as written in court. In this case, the incompleteness of the contract produces the risk of false assessment of the factual quality by the judge. This leaves the court ruling subject to error. The decision making of the judge is hence modeled as an exogenous probability vector  $g(f_q, f_{\bar{q}})$ .  $f_q$  stylizes the probability that the judge correctly assesses the true quality  $q$ . Consequently,  $f_{\bar{q}}$  is the probability that the judge believes  $q$  is the true quality, while the factual quality of performance is  $\bar{q}$ . Suppose  $q \geq \bar{q}$  and  $f_q \geq f_{\bar{q}}$ . Thereby, court ruling can be fully described by  $1 - f_q$  as the alpha error and  $f_{\bar{q}}$  as the beta error of judicial decision making. It is assumed that both parties form equal expectation about the accuracy of court ruling.<sup>3</sup>

Litigation, however, is costly for the contracting parties. Filing a case generates constant cost of contract enforcement  $L^P$  and  $L^A$  for the principal and the agent

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<sup>3</sup> This is a simplifying, but not a critical assumption. If there are deviations and parties have different expectations about the potential court ruling, parties might still file a case at the optimum in contrast to abstaining from law suit under equal expectations. In this setting, renegotiations always fail if the principal estimates the validity of court ruling to be lower than the agent does (see Zhu [2000] for a detailed description of this variation).



respectively. The charges include process costs and attorney fees. For matters of simplification, these expenses are due irrespectively of the outcome of the law suit.<sup>4</sup>

Furthermore, suppose the principal has all the bargaining power. As there are potentially many agents who can provide the desired service, the employer is enabled to offer a take-it-or-leave-it contract. In addition, pre-trial renegotiations are assumed to be costless and can be conducted by the contracting parties whenever dispute arises. Lastly, parties are risk-neutral and have enough funds to bear unlimited liability.<sup>5</sup>

The non-cooperative game of the modeled labor contract is divided into four stages as displayed in Figure 1: The contract offer by the principal (stage 1), the performance of the agent (stage 2), and, if dispute arises, a pre-trial renegotiation (stage 3) and eventually the law suit (stage 4).  $\Pi_P^n$  and  $\Pi_A^n$  stylize the expected revenue of principal and agent respectively at stage n.

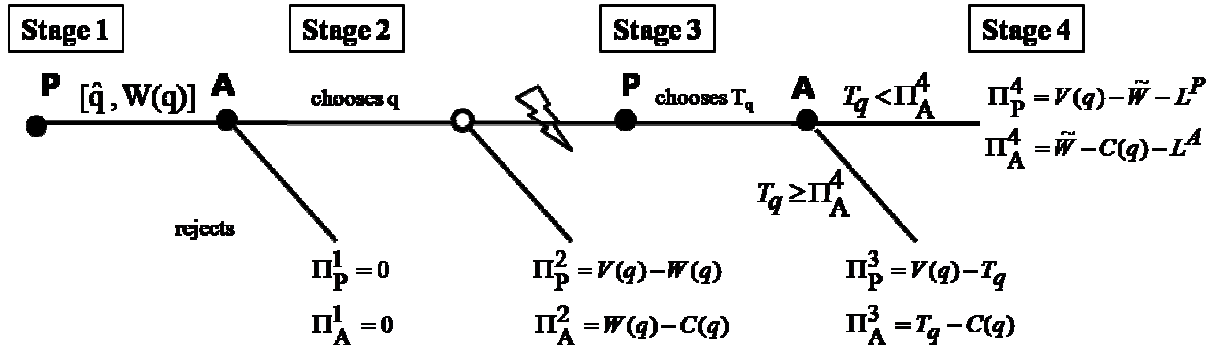


Figure 1. Extensive form of the contracting game

At stage 1, the employer offers a labor contract to a potential employee, specifying the demanded quality of service  $\hat{q}$  and the wage payment  $W(q)$ . If the employee rejects the offer, no transaction takes place and both parties gain a utility of zero. Upon agreement to work for the company, the employee chooses a level of effort in his job at stage 2, specified as factual quality of service  $q$ . It is feasible that no frictions occur during the implementation of a contract and both parties stick to the agreement. Then the game

<sup>4</sup> It is a common legal procedure that only the succumbing party of the trial bears the litigation costs, thereby further hindering false claims. However, this remains an institutional choice. To prevent interference with the implications of court ruling itself, this procedure is not applied here. It is proven in the Appendix that this variation does not alter the results of the model.

<sup>5</sup> See the Appendix for formal proof that risk-aversion or limited funds of the agent do not stall the illustrated beneficial mechanism of the contract.

ends at this stage, resulting in the utility  $\Pi_P^2$  and  $\Pi_A^2$ . In case of dispute, for instance if the employee shirks his duties, the contract is renegotiated.<sup>6</sup> The employer, again endorsed with complete bargaining power, may offer a payment  $T_q$  to settle the matter. The rational employee is willing to accept the payment, if filing the case is not a favorable option,  $T_q \geq \Pi_A^4$ . Hence, the game ends with a pre-trial settlement, yielding  $\Pi_P^3$  and  $\Pi_A^3$ . However, if the renegotiation fails, the parties proceed to court and the final ruling of the judge stipulates the effective payment  $\tilde{W}$  to the employee. Thus, additional enforcement costs  $L^P$  and  $L^A$  are assigned to the contracting parties.

### 3. LABOR CONTRACTS AND IMPERFECT COURT RULING

Having full bargaining power, the principal maximizes his revenue through the design of an optimal contract. As in standard game theory, this mutual optimization problem can be solved applying backward induction. Consequently, the analysis starts at stage 4.

In the case of litigation, the judge will enforce the labor contract and determine the factual wage payment  $\tilde{W}$ . The agent forms rational expectations about the outcome of trial  $E[\Pi_A] = f_q W(q) + (1 - f_q)W(\bar{q}) - L^A$ . In court, the verdict will correctly stipulate the agreed payment  $W(q)$  with probability  $f_q$ . However, the court will be mistaken in the assessment of the true quality of performance with probability  $1 - f_q$ , hence determining a lower payment  $W(\bar{q})$  to the agent. In addition, the litigation produces a cost  $L^A$  for the agent. It is intuitive that the cost of effort  $C(q)$  are sunk at this stage and not relevant for the agent's decision.

A rational principal expects this consideration of the agent (stage 3) and will offer a settlement payment  $T_q \geq f_q W(q) + (1 - f_q) W(\bar{q}) - L^A$  such that the agent is at least indifferent to accepting or rejecting it. A settlement is always advantageous for the

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<sup>6</sup> The condition for a breach of contract at stage 2 is not endogenously modeled. It is proven in Chapter Three that it is irrelevant to the implemented allocation whether the contract is executed as written or renegotiated in case of frictions.

principal, because it cuts the effective wage payment  $\tilde{W}$  by  $L^A$  and additionally saves own litigation expenses  $L^P$ .

As indicated above, the imperfect verification of the factual quality  $q$  creates an agency-problem to the principal, which he seeks to avoid while implementing the contract (stage 2). However, the agent would only take advantage of the principal's lack of control, if this does not place him in an unfavorable position in court. Consequently, the agent will show the desired effort, if and only if  $T_q - C(q) \geq T_{\bar{q}} - C(\bar{q})$  or  $W(q) - W(\bar{q}) \geq \frac{C(q) - C(\bar{q})}{f_q - f_{\bar{q}}}$ . Under that condition good performance is preferable to shirking, thus determining the incentive compatibility constraint of the contract.

At last, the offered contract  $[q, W(q)]$  of the principal has to be accepted by the agent at stage 1. This will only be achieved, if the contract fulfilling agent can cover his opportunity costs through the expected payment. As the agent cannot control the risk of future litigation, the participation constraint  $f_q W(q) + (1 - f_q) W(\bar{q}) - L^A \geq C(q)$  has to be satisfied.

Hence, the optimization problem of the maximizing principal is defined as

$$\Pi_P(q) = V(q) - W(q) \Rightarrow \max_q \quad (1)$$

$$W(q) - W(\bar{q}) \geq \frac{C(q) - C(\bar{q})}{f_q - f_{\bar{q}}} \quad (2)$$

$$f_q W(q) + (1 - f_q) W(\bar{q}) - L^A \geq C(q) \quad (3)$$

Due to the reciprocal nature of the contract, the principal is maximizing his profit with respect to the decision  $q$  of the agent (1). The fulfillment of side conditions (2) and (3) ensures that the determined profit maximizing quality  $q^*$  can also be implemented through a contract. Assuming that these side conditions are binding in the optimum, they can be solved for  $W(q)$  and inserted into (1). A differentiation with respect to  $q$  then yields the following First - Order Condition

$$V'(q) - \frac{(1 - f_{\bar{q}}) C'(q)}{f_q - f_{\bar{q}}} = 0 \quad (4)$$

As the functions  $V(q)$  and  $C(q)$  and the vector  $g$  are common knowledge, the profit maximizing quality  $q^*$  can be determined.

However, the labor contract will only produce this socially favorable outcome, if the indicated agency – problem is overcome. Therefore, the principal has to establish the contingent wage payment  $W(q)$  in order to stipulate the desired behavior of the agent, satisfying both the participation constraint and the incentive compatibility constraint. Firstly, a contract is always incentive compatible, if any deviation from the target optimum  $q^*$  is never favorable to the decision maker. Thus,  $W(q^*) - W(q) \geq \frac{C(q^*) - C(q)}{f_q - f_{\bar{q}}}$  has to be satisfied. Secondly, the participation constraint (3) protects a contract fulfilling agent from bearing a loss through unfortunate litigation. The rational agent will reject any contract that produces a net loss in litigation, although his claims are legitimate. Otherwise the principal could strategically threaten to file the suit to corner the agent, thereby exploiting the setting of asymmetric bargaining. In order to specify (3), it is assumed the constraint insures the risk-neutral agent against the expected value of a complete disaster in court,  $\bar{q} = 0$ , either caused by a wrong assessment of the judge or by strategic claims of the principal. Then, the participation constraint determines the exact wage payment at the optimum with  $q = q^*$  and  $\bar{q} = 0$ . Solved to  $W(q^*)$  and equating with the incentive compatibility constraint, this determines the contingent wage function as  $W(q) = \frac{C(q)}{f_q - f_{\bar{q}}} - \frac{f_{\bar{q}} C(q^*)}{f_q - f_{\bar{q}}} + L^A$ . The optimal payment  $W^*(q)$  of the contract then is

$$W^*(q) = \begin{cases} \frac{C(q)}{f_q - f_{\bar{q}}} - \frac{f_{\bar{q}} C(q^*)}{f_q - f_{\bar{q}}} + L^S & , \text{if } 0 \leq q \leq q^* \\ \frac{(1 - f_{\bar{q}}) C(q^*)}{f_q - f_{\bar{q}}} + L^S & , \text{if } q > q^* \end{cases} \quad (5)$$

The distinction of cases in the wage function (5) cannot be avoided, as the differentiable function  $W(q)$  could not support the optimum  $q^*$  due to  $W'(q) > C'(q)$  for all  $q$ .<sup>7</sup> The optimal payment  $W^*(q)$  is incentive compatible in the interval  $[0, q^*]$  and maximizes the profit of the principal at quality  $q^*$ . For  $q > q^*$ , the function yields constant payments to

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<sup>7</sup> The common First – Order approach in contract theory is not applicable in this setting. The payoff function of the agent cannot be altered to satisfy  $W'(q^*) = \frac{C'(q^*)}{f_q}$  in order to support the optimum  $q^*$ . Eventually, this always violates the incentive compatibility constraint of the contract due to  $\frac{C'(q^*)}{f_q} < \frac{C'(q^*)}{f_q - f_{\bar{q}}}$ .

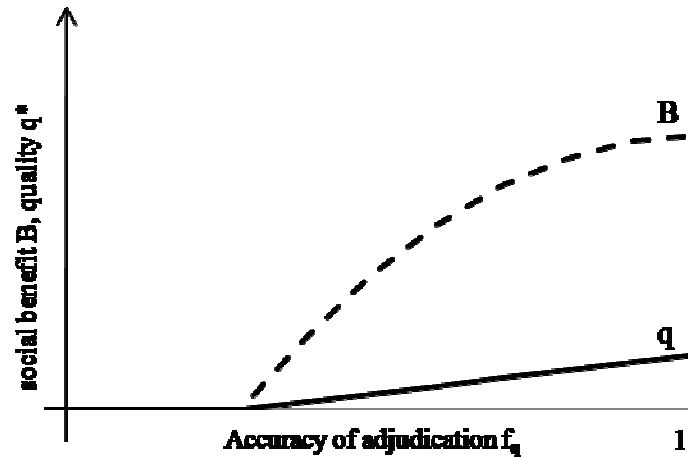
the agent. But as opportunity costs are rising in  $q$ , the agent has no incentive to choose such a performance.

The resulting payoff function of the agent proves the allocative irrelevance of distinction between fulfilled and disputed contracts. If the contract is executed as written (stage 2), the payoff function of the agent is characterized as  $\Pi_A^2 = W^*(q) - C(q)$ . Consequently, the applying First Order Condition is  $\frac{C'(q)}{f_q - f_{\bar{q}}} > C'(q)$  within the interval  $[0; q^*]$  and  $0 < C'(q)$  for  $(q^*; \infty]$ . In the case of renegotiation (stage 3), the relevant payoff function is  $\Pi_A^3 = f_{\bar{q}}W(q^*) + (1 - f_{\bar{q}})W(q) - L^A - C(q)$ . The First Order Condition can then be derived as  $\frac{(1-f_{\bar{q}})C'(q)}{f_q - f_{\bar{q}}} > C'(q)$  within the interval  $[0; q^*]$  and  $0 < C'(q)$  for  $(q^*; \infty]$ . Evidently, choosing quality  $q^*$  is always maximizing the returns of the contracting agent. The implemented allocation therefore is independent of the future end state of the contract.

The social goal is to maximize the allocative outcome, stipulated by the imperfect labor contract. Consider  $B = V(q) - C(q)$  as the social welfare function of the economy, then optimality is defined as the balance of marginal utilities with  $\frac{V'(q)}{C'(q)} = 1$ . Labor will be contracted according to the principal's maximization problem (1), thus implementing the optimal quality of performance  $q^*$ . The ratio of marginal utilities then is indicated by

$$\frac{V'(q)}{C'(q)} = \frac{1 - f_{\bar{q}}}{f_q - f_{\bar{q}}} \geq 1 \quad (6)$$

Evidently, the labor contract only implements social optimality, if court ruling is perfect and not subject to error ( $f_q = 1$ ). Otherwise the end state of the contract is characterized as second-best, yielding a benefit contingent on the accuracy of the judicial decision as plotted by Figure 2. As long as the decision of the judge is not arbitrary,  $f_q > f_{\bar{q}}$ , the rational parties can induce a socially beneficial outcome by contracting despite imperfect verification. Only in the extreme case of  $f_q = f_{\bar{q}}$ , the contract becomes fully unverifiable by the court and the desirable transaction is stalled.



**Figure 2.** Implication of judicial signaling

Despite its imperfection, the end state of the labor contract establishes a PARETO-improvement compared to a setting without jurisdiction. In this environment, the agent would be dependent on the courtesy of the principal in any dispute, as he cannot enforce the ex ante contract. Facing opportunity costs of performance, the rational agent would always abstain from contracting in such an unbalanced setting. Eventually, only the opportunity to enforce a contract as written resolves the asymmetry of the labor contract.

As a corollary, the rational expectations about the accuracy of court ruling determine the efficiency of the contract. The socially wasteful litigation process itself has no allocative effect, and is fully avoided under the assumption of common beliefs. Generally, the more the parties expect the courts to correctly assess the execution of the contract, the larger is the implemented social benefit. Consequently, information about the true probability vector  $g$  affects efficiency. This first result highlights the importance of legal precedence and past verdicts, which provide signals to numerous contractors about the future ruling of courts and about the interpretation of imperfect contracts. Thus, this judicial signaling is the most valuable service of courts to market participants and stabilizes socially desirable transactions.

#### 4. OPTIMAL SPECIFICITY OF LAW

Reconsider the contract setting. Is the discrete ruling of courts still required, if the interpretation of contracts can be fully specified by legal rules? Taking the presented model as the formal groundwork, I will investigate the mutual dependence of contract law and judicial decision-making in stabilizing transactions and augmenting social benefit. In contrast to the traditional cost-oriented literature (see Shavell 1981; Ehrlich and Posner 1974; Fon and Parisi 2009), this approach also takes into account the social gains of judicial signaling. In particular, it will be analyzed in which environment discrete court ruling is socially preferable to law-making.

Assume the legislator is capable of identifying the optimal wage function  $W^*(q)$  of a contracting problem. Given perfect legislation, this function can be applied to an infinite amount of contracts through the enactment of an adequate law. Such a legal rule is always binding to market participants and ideally leaves no room for dispute. Thus, the welfare reducing agency-problem is eliminated. Consequently, the legislator seeks to rebuild the completeness of the contract through law making.

Furthermore, consider a legal rule which is characterized by its exogenous specificity  $\gamma$  and  $\gamma \in [0,1]$ . Then, a specificity of  $\gamma = 0$  reflects the lack of any binding rule, thereby endorsing the judge with complete freedom in deciding the case. In this setting, the written contract is the only guideline for the ruling of the court. It is fully left to the judge to apply and interpret its contents.<sup>8</sup> Under complete specificity of legal rules,  $\gamma = 1$ , only the application of law is handed over to the judge. Fully derived of discretion, the court acts like a mechanic enforcement element.<sup>9</sup> However, if  $0 < \gamma < 1$  applies, the binding rule conveys a certain guideline, but still leaves room for judicial discretion.

Though beneficial, the formation of legal rules always comes at a cost. The function  $R(\gamma)$  denotes the incurred costs of legislation, contingent on the specificity of

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<sup>8</sup> See chapter 3 for details on the polar case with complete judicial discretion.

<sup>9</sup> MAX WEBER, a German sociologist and political economist, created the term 'Rechtsautomat' or 'enforcement machine' for judges who efficiently went through their workload of pending cases. It compares standardized legal procedures and routines to the benefits of industrialization (see Weber, [1922] 2005, pp. 649).

the created law. It is intuitive that the expenses of the legislator for planning, coordination and promulgation of legal rules are dependent on their precision. In particular, more specificity requires more expensive research to gain and process the required information. Assume  $\lim_{\gamma \rightarrow 0} R(\gamma) = 0$  and  $\lim_{\gamma \rightarrow 1} R(\gamma) = \infty$ . Clearly, totally abstaining from law making avoids legislative costs. In the other extreme case, the hypothetical ideal of a perfectly binding legal rule without any discretion produces prohibitively high costs and is hence unobtainable for the law maker. In contrast to legislative expenses, the costs of adjudication per case are covered by the charged litigating fees  $L^A + L^P$ .

The integration of the specificity of legal rules into the contract model is achieved as follows: Generally, the level of judicial discretion at stage 4 - litigations is dependent on the specificity  $\gamma$ . Thus, the rational agent expects the court to assess the quality of performance according to the enacted legal directive. His expected payoff  $E[\Pi_A]$  in litigation yields

$$E[\Pi_A] = W(q) - (1 - \gamma)(1 - f_q)[W(q) - W(\bar{q})] - L^A \quad (7)$$

An increase in the specificity of legal rules  $\gamma$  significantly minimizes the impact of judgement errors and hence raises the agent's expected payoff in court (7). As before, the agent expects to bear his share of the litigation costs  $L^A$ . The optimization problem of the profit maximizing principal is then determined analogical to the basic model at the following stages. Eventually, the principal maximizes his revenue with respect to the decision  $q$  according to

$$\Pi_P(q) = V(q) - W(q) \Rightarrow \max_q! \quad (8)$$

$$W(q) - W(\bar{q}) \geq \frac{C(q) - C(\bar{q})}{1 + (1 - \gamma)(f_q - f_{\bar{q}} - 1)} \quad (9)$$

$$W(q) - (1 - \gamma)(1 - f_q)[W(q) - W(\bar{q})] - L^A \geq C(q) \quad (10)$$

Given that the incentive compatibility constraint (9) and the participation constraint (10) are binding in optimum, the profit maximizing quality  $q^*$  is derived from the following First - Order Condition

$$\frac{V'(q)}{C'(q)} = \frac{1 - (1 - \gamma)f_{\bar{q}}}{1 + (1 - \gamma)(f_q - f_{\bar{q}} - 1)} \geq 1 \quad (11)$$



At last, this determines the optimal wage function  $W^*(q)$  of the contract as

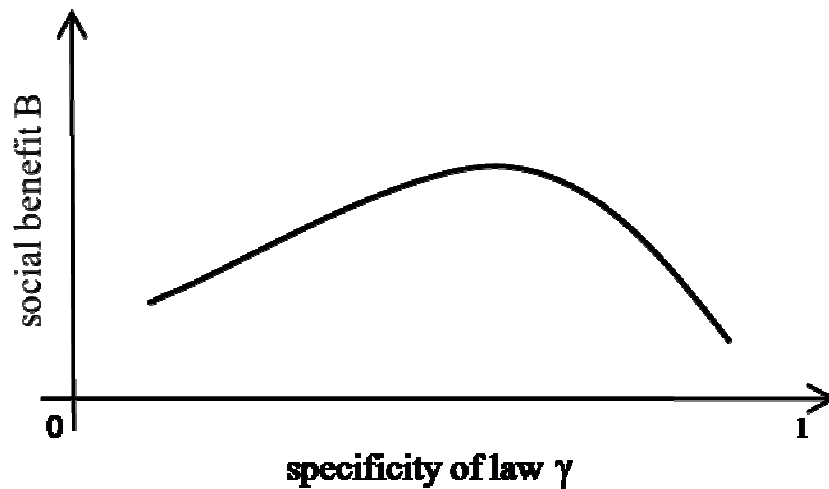
$$W^*(q) = \begin{cases} \frac{c(q)}{1+(1-\gamma)(f_q-f_{\bar{q}}-1)} - \frac{(f_{\bar{q}}-\gamma f_{\bar{q}})c(q^*)}{1+(1-\gamma)(f_q-f_{\bar{q}}-1)} + L^A & , \text{if } q \leq q^* \\ \frac{[1-(1-\gamma)f_{\bar{q}}]c(q^*)}{1+(1-\gamma)(f_q-f_{\bar{q}}-1)} + L^A & , \text{if } q > q^* \end{cases} \quad (12)$$

As revealed by (11), only the trivial case ( $f_q = 1$  or  $\gamma = 1$ ) produces the First-Best. Still, this condition illustrates the steering mechanism of legal rules on optimizing individuals. For the principal, it is de facto irrelevant whether the desired quality  $q^*$  is established due to the setting of legal rules or because of judicial discretion and signaling. Evidently, both means of law-making are suitable to manipulate individual decisions and social outcome. However, the legislative costs of society  $R(\gamma)$  stay irrelevant at the contract level.

From an overall economic perspective, the social outcome of contracts in this legal environment can be stylized by the following welfare function B:

$$B = \sum_{i=1}^N [V_i(q) - C_i(q)] - R(\gamma) \quad (13)$$

At this level, the social net benefit is defined by contrasting the social gain of N individual contracts to the incurred legislative costs  $R(\gamma)$ . Due to the rational expectations of the contracting parties, variable costs of adjudication do not apply as litigation is generally avoided. As depicted in Figure 3, both means of law making then induce different effects on the implemented social outcome.



**Figure 3.** Specificity of law and Social Benefit

As the specificity of law rises, the discretion of courts is more and more bound to legal rules. Hence, contractors are increasingly relieved of judicial errors in litigation, consequently relaxing the pressure on the optimal wage function. This enlarges the net benefit of the contract. However, the legislative costs increase and steadily reduce the social outcome. A low specificity of legal rules avoids these costs, but strains litigating parties with a growing risk of judicial error. In turn, the pressure on the wage function intensifies and the implemented quality decreases.

Consider homogenous labor contracts only and denote the implemented qualities by the contracting parties contingent on the specificity of legal rules as  $q^*(\gamma)$ , the optimization problem of a benevolent legislator is simplified to

$$B(\gamma) = N \cdot [V[q^*(\gamma)] - C[q^*(\gamma)]] - R(\gamma) \Rightarrow \max_{\gamma}! \quad (14)$$

Thus, the optimal specificity of law  $\gamma^*$  can be determined, defining the efficient relation of legislative law making and judicial discretion. Implicitly, the choice of  $\gamma^*$  by the legislator frames the amount of law making power transferred to the courts.

As a corollary of the above findings, this analysis supports the existence of an optimal specificity of law, which maximizes social outcome. The actual optimal specificity of legal rules  $\gamma^*$  depends on two criteria: Firstly, the characteristics of the particular field of law are relevant: the costs of legislation  $R(\gamma)$  and the accuracy of judicial decision making  $g(f_q; f_{\bar{q}})$ . In contrast to traditional literature, the significance of adjudicative costs is superseded by the quality of judicial signals. Secondly, these findings also reveal the impact of the specific market structure: the buyer's valuation  $V(q)$ , the cost function  $C(q)$  of the seller and the amount of transactions  $N$ . Consequently, the legislator's choice of  $\gamma^*$  will vary with different fields of law and diverse markets.

## 5. ON THE COMPOSITION OF CONTRACT LAW

These results provide theoretical insights on the socially desirable amount of law making power of courts. This approach suggests that for the rational lawmaker, the significance of judicial discretion is bound to its ability to complement legislation.

Consider the relevant characteristics of the field of law: The legislative cost function  $R(\gamma)$ , which limits the ability of the law maker to effectively enact rules on his own, and the accuracy of court ruling  $g(f_q; f_{\bar{q}})$ , which reflects the ability to verify contracts through discretion. As  $\frac{dR}{d\gamma} > 0$ , the particular slope of the legislator's cost function is decisive: A smooth slope enables the law maker to reach specific rules at low costs, hence guiding effectively the economic activity. A transparent, stable environment and simplicity of bilateral relations favour such specific legal rules. However, the legislator will only implement vague standards and transfers their interpretation to courts, if he bears a steep incline in costs. In that case, relations between contractors are often complex and subject to frequent change, putting specific rules at the risk of obsolescence. Also, valid information may be difficult to obtain (see especially Fon and Parisi 2009). From a political economy perspective, high levels of rule specificity also require successful bargaining of political decision makers, hence induce strategic behavior and socially wasteful conflict. This constraint is presumably relevant in labor law: as employment is vital to voters, any labor legislation may have to face exceptionally volatile political opposition. But as bargaining costs increase for the decision maker, less degrees of specificity are preferred. In this setting, the transfer of lawmaking authority to courts does not promote efficiency, but indicates a lack of interest of the legislator.

Generally, the accuracy of court ruling,  $g(f_q; f_{\bar{q}})$ , signals to contracting parties their chances to verify the contract. At large, the accuracy is determined by the particular judiciary system itself and includes concepts of education, legal practice and career incentives. It is plausible that judges, who repeatedly work on similar law suits, learn valuable information more rapidly and gain experience. Hence, specialized courts may learn faster to correctly assess legal claims (see Shapiro and Sweet 2002, p. 93; Posner 1996, pp. 244-64). Judicial decisions then gain reliability in complementing the law and a decrease in the specificity of rules may save legislative costs.

In contrast to traditional literature (Landes and Posner 1976; Posner and Ehrlich 1974; Fon and Parisi 2009), this analysis suggests only minor relevance of variable adjudicative costs, if judicial signaling prevails as the primary function of courts and

rational expectations apply. The scope of this signal, affecting an infinite number of contracts at low costs, indicates that previous work may have systematically overestimated the optimal specificity of law.<sup>10</sup>

The actual market structure is the second determinant to optimal specificity of rules. The higher the attainable benefit of a single contract,  $V(q^*) - C(q^*)$ , the more preferable is the guidance of specific and costly rules. Consequently, the implemented specificity is higher. Furthermore, the size of the market, defines as  $N$  homogenous transactions, yields the same implication: the bigger the market size, the higher the attainable benefit. However, significant market volatility reduces the number of homogenous contracts, resulting in a lower specificity of law.

In addition to the illustrated rationale of judicial signaling, the contract model also sheds new light on the observed convergence of legal systems and on the controversial virtue of court ruling (see Rubin 1977, Priest 1977; Shavell 1981; Cooter and Rubinfeld 1989; Niblett, Shleifer and Posner 2008): As long as legislation is costly, a discrete court, though imperfect, is an irreplaceable complement even to the ideal law maker. This explains the recent tendency in civil law states to give more weight to judicial adaption and interpretation of codified law. The contract model also suggests that due to the inevitable imperfection of adjudication, unframed discretion of courts may induce legal uncertainty and thus raise the pressure on the wage function. Consequently, the obtainable social outcome decreases. The growing intervention of legislation in common law systems may be traced to this finding. The contract model also provides formal evidence for the common thesis: If markets and societies change, so does the law.

For future research, the analysis can easily be extended to other legal fields, if some basic assumptions are met: as the focus is on the polarity of judicial law making and legislation, the model is basically applicable for codified law systems. Nevertheless, many common law states have introduced legal statutes aside case law.<sup>11</sup> Hence, the setting is

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<sup>10</sup> In this contract setting, adjudicative costs have distributive effects only, as parties negotiate under common beliefs. Only if there are discrepancies in the expectation of court ruling, socially wasteful litigation occurs. Even then, the beneficial effects of judicial signaling on numerous undisputed contracts still have to be compared to the costs of actually filed cases, thus reducing variable adjudicative costs.

<sup>11</sup> For example, the role of legislation played in contract law is large and growing in the United States and England. For further detail see Atiyah (2005) and Goldmann (1996 ). Thus, these fields of law have turned into a

also suitable for any mixed doctrine of common and codified law to evaluate the allocation of rulemaking responsibility.

A critical precondition for the application of the model is the privity of contract and its consensual nature. Transactions have to be voluntary. Without the existence of an outside option, the participation constraint does not apply. Furthermore, the transaction has to establish a principal – agent asymmetry in the contract relations. This limits the application of the model to treaty law, customary law and private law areas. Even though the rationale of judicial signaling and of the legislative cost function is also intuitive for public, criminal and tort law, the element of coercion defeats the consensual contract setting.

## 6. CONCLUSION

The principal contribution of this article is the formal analysis of benefits and limitations of judicial law making from a contract theoretic perspective. In contrast to previous literature, this approach relates the court's ability in dispute resolution to preexistent binding legal rules while taking into account the maximizing behavior of market participants. Using a model of incomplete labor contracts as institutional setting, it is shown that the stipulated principal-agent game can be stabilized through the signaling effect of previous court ruling. Thus, the labor contract is made contingent on the expected accuracy of the judicial decision and enforcement, even though the performance of the agent could not be verified perfectly in court, if dispute arised. It is intuitive that the implemented outcome increases with the accuracy of court ruling.

Introducing binding legal rules into the contract setting, the discretion of the judge is restricted. Thus the specificity of these legal rules controls the agency-problem of the contract, but comes at increasing costs for society. Consequently, an optimal specificity of law can be determined which maximizes social outcome and defines the efficient relation of legislative law making and judicial discretion. The desirable amount of law making

power transferred to courts then depends on the characteristics of the particular field of law and on the actual market structure. Small, rapidly evolving markets combined with high costs of information for the legislator favor judicial law making. However, the model suggests a mutual dependency between legislation and adjudication to establish efficiency in law, contradicting the traditional legal doctrines of exclusiveness. In fact, incomplete information and agency-problems may form a major reason for the observed convergence of legal systems. Thus, the contract setting provides new insights on the economic function of judges: complementing legal rules, judicial discretion and signaling are decisive to stabilize numerous contracts and transactions.

## APPENDIX

### 1. Risk averse agent and limited liability

Assume a monotonous VON-NEUMANN MORGENSTERN-utility function  $U$ . Beginning at Stage 4, the expectations of the agent in courtroom yield:

$$E[\Pi_A] = f_q \cdot U[W(q)] + (1 - f_q) \cdot U[W(\bar{q})] - U[L^A] \quad (A1)$$

Given the monotony of the utility function, the incentive compatibility constraint remains unchanged. Then the principal maximizes his payoff as follows:

$$\Pi_P(q) = V(q) - W(q) \Rightarrow \max_q! \quad (A2)$$

$$W(q) - W(\bar{q}) \geq \frac{C(q) - C(\bar{q})}{f_q - f_{\bar{q}}} \quad (A3)$$

$$f_q \cdot U[W(q)] + (1 - f_q) \cdot U[W(\bar{q})] - U[L^A] \equiv U[C(q)] \quad (A4)$$

Assuming infinite risk aversion of the agent, (A4) can be simplified to:

$$W(\bar{q}) - L^A = C(q) \quad (A5)$$

Condition (A5) also holds in case of limited liability of the agent, which requires  $W(q) \geq 0$ . The First Order Condition follows as

$$\frac{V'(q)}{C'(q)} = \frac{1 + f_q - f_{\bar{q}}}{f_q - f_{\bar{q}}} \quad (A6)$$

and the profit maximizing wage function  $W^*(q)$  then is

$$W^*(q) = \begin{cases} \frac{C(q)}{f_q - f_{\bar{q}}} + C(q^*) + L^A & , \text{if } q \leq q^* \\ \frac{(1 + f_q - f_{\bar{q}})C(q^*)}{f_q - f_{\bar{q}}} + L^A & , \text{if } q > q^* \end{cases} \quad (A7)$$

### 2. Succumbing party bears litigation cost

Consider the costs of enforcement  $L(q)$  contingent on quality to satisfy  $L'(q) < 0$  and  $L(q^*) = 0$ . Consequently, the successful party does not bear any trial costs. Beginning at Stage 4, the expectations of the agent in courtroom yield:

$$E[\Pi_A] = f_q W(q) + (1 - f_q)W(\bar{q}) - (1 - f_q)L^A(\bar{q}) \quad (B1)$$

The principal maximizes his payoff:

$$\Pi_P(q) = V(q) - W(q) \Rightarrow \max_q \quad (B2)$$

$$W(q) - W(\bar{q}) \geq \frac{C(q) - C(\bar{q})}{f_q - f_{\bar{q}}} - L^A(\bar{q}) \quad (B3)$$

$$f_q W(q) + (1 - f_q)W(\bar{q}) - (1 - f_q)L^A(\bar{q}) \geq C(q) \quad (B4)$$

This determines the First Order Condition as

$$\frac{V'(q)}{C'(q)} = \frac{1 - f_{\bar{q}}}{f_q - f_{\bar{q}}} \quad (B5)$$

and the profit maximizing wage function then is

$$W^*(q) = \begin{cases} \frac{C(q)}{f_q - f_{\bar{q}}} - \frac{f_{\bar{q}} C(q^*)}{f_q - f_{\bar{q}}} + L^A(q) & , \text{if } 0 \leq q \leq q^* \\ \frac{(1 - f_{\bar{q}}) C(q^*)}{f_q - f_{\bar{q}}} & , \text{if } q > q^* \end{cases} \quad (C6)$$



**FIGURE LEGENDS**

- Figure 1.** Extensive form of the contracting game
- Figure 2.** Implication of judicial signaling
- Figure 3.** Specificity of law and social benefit

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