Decision Rules and Information Provision: Monitoring versus Manipulation*

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Abstract

The paper focuses on the organization of institutions designed to resolve disputes between two parties, when some information is not verifiable and decision makers may have vested preferences. It shows that the choice of how much discretional power to grant to the decision maker and who provides the information are intrinsically related. Direct involvement of the interested parties in the supply of information enhances monitoring over the decision maker, although at the cost of higher manipulation. Thus, it is desirable when the decision maker is granted high discretion. On the contrary, when the decision maker has limited discretional power, information provision is better assigned to an agent with no direct stake. The analysis helps to rationalize some organizational arrangements that are commonly observed in the context of judicial and antitrust decision-making.

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1 Introduction

Judicial systems, quasi-judicial institutions, such as industrial tribunals, regulatory and antitrust authorities are some of the institutions through which modern states administer the disputes that arise between their members. In all such institutions the decision process consists of a first stage where the information is acquired and a second one where a decision is made. Efficiency results from the extent to which the information produced enables to evaluate the available alternatives and by how the actual decision reflects this information.

The paper studies the internal organization of these institutions in a world where some information is not verifiable, decision makers may have vested preferences and monetary incentive schemes are not sufficient to discipline them. The focus of the analysis is the relationship between the design of decision rules and the delegation of information provision. The former relates to the degree of discretion that is granted to the decision maker; the latter defines whether information provision is better assigned to the parties directly interested in the decision or to an investigator (generally an agent internal to the organization) with no immediate stake.

Although a rich literature exists on both these topics, each of them has been treated in isolation. On the issue of information provision for decision-making, several authors have analyzed the costs and benefits of relying on agents with dissonant objectives. Milgrom and Roberts (1986) have noticed that competition between two perfectly informed parties elicits all relevant information, even when the parties conceal evidence that is damaging to their interests. Shin (1998) has shown that with two biased parties the principal can improve his ability to draw correct inferences by allocating the burden of the proof to the better informed one. Other authors have argued that information-gathering is less expensive with two competing agents (Dewatripont and Tirole, 1999) and that advocacy induces efficient mutual monitoring (Palumbo, 2002). All these papers, however, assume that the decision maker is a disinterested party. Thus, they do not deal with issues related to the design of decision rules: the optimal rule simply consists in delegating full discretion to the benevolent decision maker. Another strand of the literature has focused on the delegation of decision-making to an agent with superior information but vested preferences. This literature has stressed the desirability of imposing limits on the decision maker's discretion in order to prevent opportunistic behaviors (see for example Holmstrom 1984, Brennan and Buchanan 1985 and Armstrong 1994); to address time inconsistency problems (see, among many others, Kidland and Prescott 1977);

or to reduce capture by interests groups in regulatory contexts (see for example Laffont and Tirole 1990, 1991).[1] In all these contributions the process by which the information is created is treated as exogenous. Our approach, by looking at the relationship between the adjudicative and investigative stages represents an attempt to bridge these two strands of literature.

We consider a setting where a decision maker - on behalf of a principal - must resolve a dispute between two parties. Hard information on the merit of each cause may be supplied either by the parties themselves or by an investigator with no immediate stake. After a decision is made, the interested parties can appeal to seek for correction.

The contracting problem faced by the principal is threefold. A contract specifies the amount of discretional power to grant to the decision maker (decision rule), who is in charge of information provision (the interested parties or the investigator), and the conditions under which the interested parties are entitled to exercise their right to appeal.

The key feature of the model is that some information is not contractible. Consequently, comprehensive and fully contingent decision rules cannot be written. The principal can make up for this incompleteness in two ways. He can set a rule that defines ex ante the decision to be made when contractible evidence is not available or he can leave the decision maker full discretion to use all the non-contractible information that is available ex post. We shall refer to the first regime as *Rules* and to the second as *Discretion.* Discretion is attractive because it allows the decision maker to select the decision that is most desirable. The cost of discretion is related to the fact that the decision maker cannot be fully trusted to implement the principal's goals. What may prevent the decision maker from abusing his authority is the monitoring activity exercised by the interested parties through their right to appeal.

We show that the direct involvement of the interested parties in the supply of information contributes to enhance their monitoring role. The reason is twofold. First, the parties have an inherent incentive to retain information that is damaging to their cause. Compared to the case where information provision is assigned to a more impartial investigator, this raises their incentive to seek evidence of wrongdoing and increases the probability that a decision maker who abused his authority is caught. Second, the parties have known and opposing goals. Thus, they anticipate that concealment by one side always works to the detriment of the other side, while cannot

[1] On the other hand, Cowen *et al.* (2000) have emphasized that discretion may enhance credibility by enabling the discovery of the decision makers' preferences over time.

make the same type of inference when the investigator supplies the information. This makes monitoring more effective when the interested parties supply the information also if the investigator conceals information and the level of manipulation is the same under the two institutions. Thus, parties' reciprocal monitoring constitutes an efficient mechanism through which non-benevolent decision makers are kept on their toes.[2]

The highlighted positive correlation between the parties' manipulation of information and their monitoring incentives implies that the choice of the decision rule (*Rules* versus *Discretion*) and the delegation of information provision (to the interested parties or the investigator) are inherently linked. Under *Discretion*, ex-post monitoring is especially valuable, for the principal is more vulnerable to opportunistic behavior by the decision maker. Thus, he wishes to encourage ex-post monitoring by delegating information provision to the interested parties (control from below). Under *Rules*, ex-post monitoring is less valuable, for the principal monitors the decision maker ex ante (control from above). This increases the desirability to delegate information provision to a more impartial investigator that ensures less manipulation of information.

Finally, we compare different organizational arrangements and provide conditions under which either is optimal.

Our approach sheds lights on a number of issues related to institution design and helps rationalize some organizational arrangements that are commonly observed in the context of court and antitrust decision making. The Civil Law and the Common Law systems mainly differ for the degree to which they insist on adherence to predetermined standards, with the Civil Law system being more inclined to standards than the Common Law. Consistent with our results, we observe that where a Civil Law system is adopted, the proof-taking task is assigned to an impartial investigator who is supposed to make the case for both causes. On the contrary, where a Common Law

[2] This result can be seen as complementary to the one in Dewatripont and Tirole (1999). They consider a situation where a principal must choose whether to embrace one of two causes or decide in favor of the status quo. Information provision is delegated to one or two agents, who receive no private benefits from any of the decisions. With two agents, effort provision is ensured by *making* each of them an advocate of a specific cause. The single agent is rewarded more when either of the two causes is embraced. In this setting, they compare the incentives to monitor of the advocates and of the nonpartisan agent and argue that advocacy enhances the integrity of decision making because it ensures checks on abusive decisions in both directions. Instead, we consider the case where monitoring is always exercised by the interested parties and compare their incentives to monitor when they themselves provide the information and when the information is provided by a more impartial investigator.

system prevails, evidence is adduced bilaterally (prosecutor and defense attorney) through direct and cross-examination. The same type of matching is observed in antitrust proceedings. The European competition law tends to be regulatory and bureaucratic whereas in the US the statutes are in most cases concise, and the law has been made through judicial interpretation during centuries of litigation. In line with our analysis, in Europe the investigation is mainly carried out by the Commission itself with less intervention of the interested subjects. By contrast, in the US, the parties involved have a great control of the proceeding and the fact-finding.

The paper is organized as follows. Section 2 describes the model. Section 3 considers the benchmark where the game ends after the decision is made. Section 4 allows for parties' monitoring by introducing an additional stage where the parties can appeal and ask for a revision of the proposed decision. It discusses the case where the initial contract imposes restrictions on the decision maker's authority (*Rules*) and that where the decision maker is given discretional power (*Discretion*). Section 5 compares these two different settings. Section 6 extends the model to consider the possibility that the investigator conceals information with positive probability. Section 7 discusses our main assumptions while Section 8 applies our results to shed some lights on issues related to the organization of legal systems and antitrust proceedings. Section 9 concludes.

2 The Model

Suppose a principal (Congress) delegates to a decision maker (antitrust authority, judge) the task of deciding in a dispute between two parties, a and b (merging firms and their rivals, prosecutor and defendant). Throughout we shall refer to them as Parties. The decision maker selects a decision d from the set $D = \{A, B, 0\}$. Decisions A and B are to be interpreted as favoring parties a and b, respectively. Depending on the context, 0 can be interpreted as either the status quo, an intermediate decision or a more lenient sentence.

The principal's preferences are single peaked and depend upon the realization of a state of nature $\theta \in \Theta = \{A, B\}$. Each state occurs with probability $\frac{1}{2}$. Let l_θ^d denote the loss suffered by the principal in state $\theta \in \Theta$ when

decision $d \in D$ is made; we assume

$$l_\theta^d = \begin{cases} 0 & \text{if } d = \theta \\ l & \text{if } d = 0 \\ \delta l & \text{if } d \neq \theta, 0 \end{cases} \tag{1}$$

and $\delta > 2$. Thus, the principal wishes to implement $d = \theta$. Any deviation from this rule inflicts him a positive loss increasing in the distance from the preferred decision. Notice that $\delta > 2$ implies that ex ante the principal prefers $d = 0$ to a randomly chosen $d = A, B$.

The decision maker does not respond to monetary incentives, receives a constant wage equal to his reservation wage of zero and can be of two types: "congruent" or "incongruent". A congruent decision maker is indifferent to any decision and we assume that he acts in the principal's interest; an incongruent decision maker receives a private benefit V when $d \neq \{\theta, 0\}$. Incongruence may be due to a different view of social welfare, to corruption or political or ideological positions. Decision maker's type and benefits are unobservable. The fraction of incongruent decision makers is common knowledge and denoted by α, with $\alpha < 1$.[3]

If the state of nature is observable and verifiable by a third party, delegation of decision-making is costless. The principal can easily implement his preferred decision by offering the decision maker a contract that requires him to choose $d = \theta$. The contract is then enforced by setting appropriate out-of-equilibrium penalties if the decision maker deviates from the prescribed rule. However, if the state of nature is not observable, a state contingent decision rule becomes infeasible and inducing proper decision-making requires the principal to elicit hard evidence about θ. We assume that the principal can choose between two institutions. In the first, labelled *Partisanship*, the task to provide hard evidence in support of either decision is assigned to the parties a and b. In the second, labelled *Investigatorship*, the same task is delegated to an investigator with no immediate stake. The two institutions are mutually exclusive. Thus, either the Parties are in charge, in which case the only hard information received by the decision maker is the one they gather and report, or the investigator is in charge. In this case, the Parties do not take any part in the provision of evidence. We are aware that in most real world situations evidence is provided jointly by the interested parties

[3] This characterization of the preferences and benefits is one way to capture the potential conflict of interests between the principal and the decision-maker. This specification is chosen so as to simplify the analysis, and has no impact on its insights.

and other more independent agents. Our focus on pure systems has the objective to provide a better understanding of the characteristics of each of the two institutions.

Parties' preferred outcomes are independent of the state of nature and common knowledge: party a always prefers decision A to 0 and 0 to B whereas party b always prefers decision B to 0 and 0 to A. For each party $i = a, b$ and each decision $d \in D$ the utilities are private benefits; they are symmetric and given as follows

$$U_i^d = \begin{cases} U & \text{if } i = d \\ \lambda U & \text{if } d = 0 \\ 0 & \text{if } i \neq d \end{cases} \tag{2}$$

with $1 > \lambda > 0$.

As for the investigator, we assume that he does not respond to monetary incentives and receives a constant wage equal to his reservation wage of zero. For most of the paper we shall also assume that the investigator always reports truthfully. Then, in Section 6, we extend the analysis to consider other types of behavior while in Section 7 we discuss the possibility that the investigator and the decision maker are the same person.

Information collection is modeled as the search for compelling (i.e. hard) evidence in support of one of the decisions. Let $h \in \{\theta, \phi\}$, with $\theta \in \Theta$, denote a signal; we assume that in state θ, $h = \theta$ with probability μ and $h = \phi$ with probability $1 - \mu$. Thus, $h = A$ (respectively B) represents compelling evidence that the true state is A (respectively B); $h = \phi$ means that the signal is uninformative. The signal $h = \theta$ is hard information, is verifiable and can be described ex ante at no cost. However, it is privately observed by the agent who acquires it. Thus, it can be substantiated if transmitted but can be concealed. Let $\widehat{h} \in \{\theta, \phi\}$ denote the report. An agent who observes $h = \theta$ can either tell the truth ($\widehat{h} = \theta$) or claim that the search for evidence was unfruitful, in which case $\widehat{h} = \phi$. By contrast an agent who observes $h = \phi$ can only report $\widehat{h} = \phi$. We let the amount of information collection be the same under both institutions. We formalize this by assuming that under *Investigatorship* the investigator observes two simultaneous and independent realizations of h. Instead, under *Partisanship* the Parties observe one realization each. This assumption is meant to avoid the bias that could be generated by the Parties being two.

Furthermore, to capture the value of discretion in a simple way, we assume that under both institutions the mere unfolding of the dispute and

the examination of its different aspects provides the decision maker with information (a signal) beyond what is acquired through the report of h. This occurs for example during the hearings in the phases of examination, cross-examinations and information processing.[4] This signal is soft and non-verifiable, i.e. non-contractible; further, it is perfectly informative. That parties a and b do not possess any soft information and that the decision maker is fully informed involves little loss of generality, but highly simplifies the derivation of our results. In Section 7 we shall discuss alternative assumptions.

Consider now the the contract between the principal and the decision maker. If $\widehat{h} = \theta$ the principal can implement the optimal decision by requiring the decision maker to abide by the following rule[5]

$$d = \theta \qquad \text{if} \qquad \widehat{h} = \theta \tag{3}$$

If $\widehat{h} = \phi$, there is no evidence of what constitutes the optimal decision and we assume that the set of feasible contracts consists of two alternatives. The principal can establish ex ante the decision to be made when $\widehat{h} = \phi$. In this case, referred to as *Rules*, the optimal contract is (from (1) and $\delta > 2$)

$$d = 0 \qquad \text{if} \qquad \widehat{h} = \phi \tag{4}$$

Alternatively, the principal can empower the decision maker with the right to decide in all situations where $\widehat{h} = \phi$. We shall refer to this contract as *Discretion*. The value of discretion stems from the possibility to use the soft information that becomes available ex post. Indeed, under the simplifying assumption that the soft information acquired by the decision maker perfectly reveals the true state, *Discretion* achieves the first-best

[4] Alternatively, the soft signal could be interpreted as the report of independent scientists or expert witnesses. Indeed, as suggested by Shin (1988), "when a dispute hinges on disputed scientific facts, the submissions rely on the current scientific understanding, including the possible controversies and uncertainties in existence at the time. Even when dealing with well-established methods and techniques, it would be rare that any single piece of scientific work is faultless. Understanding whether this fault is significant takes training and experience"... "In such instances, there may be a case for relying on expert witnesses directly appointed by the decision maker".

[5] With some abuse of notation, the expression "if $\widehat{h} = \theta$" is here used to mean "if at least one of the reports is $\widehat{h} = \theta$". Thus, when the Parties are in charge it suffices that $\widehat{h} = \theta$ for either a or b. Similarly, when the investigator is in charge it suffices that $\widehat{h} = \theta$ for at least one realization of h. Similarly, in (4) the expression "if $\widehat{h} = \phi$" is used to mean "if both reports are $\widehat{h} = \phi$".

when the decision maker is congruent. The cost of *Discretion* is related to the possibility that the decision maker abuses his authority when his preferences are in conflict with those of the principal.

It is worth mentioning at this point that we are aware that better contracts than the one considered here may be possible. In this regard, our analysis should not be viewed as aiming at developing a theory of optimal mechanisms but rather at evaluating particular organizational arrangements observed in practice that differ with respect to who collects information and to the degree of freedom granted to the decision-maker.

3 No monitoring

As a first step, suppose that the game ends after the decision is made, that is, there is no ex post monitoring over the decision maker. The exact timing is as follows. At stage 0 (contractual stage) the principal designs a contract that specifies the decision rule (*Rules* versus *Discretion*) and the allocation of the information provision (*Partisanship* or *Investigatorship*). At stage 1 (disclosure stage) information is acquired and disclosed to the decision maker. At stage 2 (decision stage) the decision maker makes a decision conditional on the information received and the chosen decision rule.

Since the investigator always reports truthfully, under *Investigatorship*, the decision maker receives hard evidence that perfectly reveals the true state ($\widehat{h} = \theta$) with probability $1 - (1 - \mu)^2$ and nothing ($\widehat{h} = \phi$) with probability $(1-\mu)^2$. On the contrary, given our specification of the preferences, the self-interested Parties have incentive to disclose only evidence that is favorable to their preferred cause. Their behavior for the case of $\theta = A$ is illustrated in Table 1.

Probabilities	Information		Report	
	a	b	a	b
μ^2	A	A	A	ϕ
$\mu(1-\mu)$	ϕ	A	ϕ	ϕ
$\mu(1-\mu)$	A	ϕ	A	ϕ
$(1-\mu)^2$	ϕ	ϕ	ϕ	ϕ

Table 1

Not surprisingly, under *Partisanship*, ϕ is reported more often than under *Investigatorship* (with probability $1-\mu$ rather than $(1-\mu)^2$). Since an inefficient decision may only occur when $\widehat{h}=\phi$, it follows that delegating information provision to the impartial investigator is optimal under both decision rules. In the absence of ex-post monitoring, it is always desirable to maximize the probability that the hard information is reported truthfully. This rules out the delegation of information provision to the self-interested parties. Moreover, in the set up of this section, *Rules* dominates *Discretion* if $\alpha\delta > 1$. As one would expect, limiting the decision maker's scope of action is optimal if the expected loss of discretion (the probability of encountering an incongruent decision maker times the loss associated with an erroneous decision) is high.

4 Parties' Monitoring

4.1 The appeal stage

From now on we allow the Parties to exert monitoring over the decision maker. We introduce another stage to the game (stage 3, appeal stage) and assume that after the decision is made, at a private cost H, the Parties can file an appeal. If either party incurs H, a new information acquisition process takes place. We do not explicitly model the process by which hard information is provided at the appeal stage under each institution but we assume that there exists a positive correlation between the information that was available in stage 1 and the information that can be found in stage 3. Reasonably, the probability to find hard evidence in stage 3 is higher when this evidence had already been discovered but it had been concealed. To simplify, we let this correlation be perfect in the sense that all evidence that is concealed in stage 1 is found and disclosed in the appeal stage but no new information becomes available.

If the appeal is granted, a new decision process takes place. We assume that the appeal decision maker is drawn from the same population as the stage 2 decision maker and has the same information. The same decision rule applies to both decisional stages. In case of a reversal, the stage 2 decision maker suffers a loss $R \geq 0$ where R is limited and exogenously given. R may either stand for a loss of reputation or for a measure of the extent to which the decision maker's career is jeopardized by an incorrect decision. A new decision process costs $C < \delta l$ to the principal. This cost contributes to the total expected loss the principal aims to minimize, together with the loss of erroneous decisions.

With the introduction of the appeal stage, the contracting problem faced by the principal becomes threefold. Not only does a contract specify the amount of discretional power to grant to the decision maker and who is in charge of information provision but it also regulates the circumstances under which the Parties can ask for a new decision. Under the assumption that all decision makers are drawn from the same population, the optimal contract grants the appeal only when there is verifiable evidence that an inefficient decision was made. Indeed, if there is no evidence of wrongdoing, the expected outcome of the appeal game is the same as that of the first period game and systematic appeals only add an extra cost C.[6]

In the set up we have considered appeals are valuable only to the extent that they affect the decision maker's behavior at stage 2. In practice, appeals serve many purposes: they act as monitoring devices, enable discovery of new evidence and help correct errors in decision-making. We have restricted attention to the monitoring role to better focus on the purposes of the paper.

4.2 Rules

Consider the case where the initial contract prevents the decision maker to make use of his soft information by establishing a regime of *Rules*. As the following Proposition shows, under *Rules* it is still optimal to rely on a more impartial investigator to provide information.

Proposition 1 *Under Rules delegating information acquisition to an impartial investigator is always preferred.*

The intuition behind this result lies in the fact that under *Rules* the principal protects himself against opportunistic behaviors from the decision maker by restricting his scope of authority (control from above). To the extent that the decision maker's hands are tied, ex-post monitoring has limited value (nil in our simplified setting) and the outcome of the decision-making process is mainly determined by the efficiency of the information provision process. Hence, relying on the impartial investigator is preferable. To see this, first suppose that information provision is assigned to the investigator. With probability $1-(1-\mu)^2$ the report is $\widehat{h}=\theta$ and $d=\theta$; with probability $(1-\mu)^2$ the report is $\widehat{h}=\phi$ and an inefficient decision ($d=0$) occurs.[7] In both cases, there is no scope for appeal. The expected loss to the principal

[6] Note also that under this rule frivolous appeals never occur.

[7] Note that contract enforceability implies that deviations from (3) and (4) never occur.

under *Rules-Investigatorship* is thus

$$L^{RI} = (1-\mu)^2 l \tag{5}$$

Now suppose that the Parties supply the information. Disclosing only information in support of the preferred decision is still the Parties' optimal strategy at stage 1 (see Table 1). Hence, under *Rules-Partisanship*, the expected loss if there is no appeal is $(1-\mu)l$. Clearly, this is larger than L^{RI}. Allowing for the appeal does not affect the result. The best the appeal can do is to permit each party to discover the manipulation of the opponent. This yields a loss of $(1-\mu)^2 l$ plus the expected cost of appeal, which is greater than L^{RI}.

4.3 Discretion

Let us now turn to the case where the initial contract grants discretion to the decision maker (*Discretion*). Clearly, relying on the impartial investigator is still optimal when the decision maker is congruent and therefore there is no need for monitoring. However, as it will be argued, this is not necessarily true when the decision maker has incongruent preferences and therefore monitoring is valuable to the principal.

Suppose that the information is provided by the investigator. He reports $\widehat{h} = \phi$ with probability $(1-\mu)^2$. When confronted with this report, an incongruent decision maker chooses $d \neq \{\theta, 0\}$. This is because he correctly anticipates that in the case an appeal is filed, no evidence of wrongdoing will be found. The Parties also anticipate this and therefore do not incur H in the first place. It follows that the expected loss to the principal under *Discretion-Investigatorship* is

$$L^{DI} = (1-\mu)^2 \alpha\delta l \tag{6}$$

Now suppose that the provision of information is delegated to the Parties and consider their incentives to incur H in order to seek evidence of manipulation from the other side and reverse the initial decision. Clearly, the Parties may wish to appeal only when the opponent reports $\widehat{h} = \phi$. Since the model is perfectly symmetric we can focus on one party only, say a. Let y denote the probability that party a files an appeal, i.e. searches for party b's manipulation, and x the probability that an incongruent decision maker makes his preferred decision ($d \neq \theta, 0$) when the report is $\widehat{h} = \phi$.[8]

[8] Given $R \geq 0$ a congruent decision maker always prefers $d = \theta$.

Assume that at stage 1 (disclosure stage) the Parties only report information that is favorable to their preferred cause, as illustrated in Table 1. When $d = B$, party a's expected utility is

$$\Pr(h = \overline{A} \ / \ \widehat{h} = \phi, \ d = B)U - H = \frac{\mu\alpha x}{\mu\alpha x + (1-\mu)}U - H \tag{7}$$

when she incurs H and zero otherwise.[9] Similarly, an incongruent decision maker enjoys an expected payoff of

$$-y\mu R + y(1-\mu)V + (1-y)V \tag{8}$$

when he acts opportunistically ($d \neq \theta, 0$) and zero otherwise.

No monitoring equilibrium. Let $R_0 = \frac{1-\mu}{\mu}V$. When $R < R_0$, the incongruent decision maker always acts opportunistically since the expected benefits from selecting his preferred decision outweigh the expected costs of being overturned (expression (8) is positive at $y = 1$). Similarly, when

$$H > \frac{\mu\alpha}{\mu\alpha + (1-\mu)}U \equiv H_0 \tag{9}$$

the cost H is too large to induce party a to file the appeal even if the decision maker abuses his power with probability one (expression (7) is negative at $x = 1$). In both these cases, *Discretion-Partisanship* is never optimal: relying on the Parties to supply the information provides no monitoring but yields manipulation.

Monitoring equilibrium. When $R > R_0$ and condition (9) does not hold, the Parties would always file the appeal if the decision maker always acted opportunistically and therefore the decision maker would never do so. On the other hand, the decision maker would always act opportunistically if the Parties did never file the appeal. Thus, the equilibrium is in mixed strategies where the probability that the Parties file the appeal is (from equation 7)

$$x^* = \frac{(1-\mu)H}{\mu\alpha[U-H]} \tag{10}$$

The probability of the decision maker acting opportunistically is (from equation 8)

$$y^* = \frac{V}{\mu(V+R)} \tag{11}$$

[9] Clearly party a never incurs H if she has observed $h = \theta$. Thus, $\Pr(h = A \ / \ \widehat{h} = \phi, \ d = B)$ in expression (7) is to be interpreted as party a's posterior belief that party b observed A given that she observed ϕ, b reported ϕ and $d = B$.

Equations (10) and (11) provide the interesting insight that, under *Discretion*, delegation of information provision to agents with biased preferences enhances monitoring over the decision maker (control from below). Since concealment of information by one side always works to the detriment of the other side, each party has incentive to seek manipulations in the opponent's report. The decision maker anticipates this and since he cannot be sure whether hard evidence of wrongdoing will be found, he cheats with a lower probability than in the absence of ex-post monitoring. In other words, Parties' manipulation and reciprocal monitoring represents the channel through which incongruent decision makers are kept on their toes for fear of being caught.

The assumption that the investigator always reports truthfully makes the delegation of information provision to the Parties a *necessary* condition to obtain control over the decision maker. The insight is more general, however. The key point is that the benefit to each party from incurring H is positively correlated with the probability that information is concealed in stage 1. Thus, *coeteris paribus* more manipulation generates more monitoring. But who manipulates also matters. As we shall argue in Section 6, even if manipulation occurs to the same extent under *Partisanship* and *Investigatorship*, monitoring remains higher under *Partisanship*.[10]

Our analysis predicts that the delegation of information provision to the Parties generates costs as well as benefits. On the one hand, it gives an incongruent decision maker more opportunities to abuse his discretional power, since ϕ is reported more often. On the other hand, it may reduce his incentives to do so. In what follows we compare these costs and benefits and give condition for the optimality of relying on the Parties to supply information. When $H < H_0$ and $R > R_0$, the expected loss under *Discretion-Partisanship* is

$$L^{DP} = (1-\mu)^2 \alpha x^* \delta l + \mu(1-\mu)\alpha x^*[\delta l - y^*(\delta l - C)] \tag{12}$$

[10] Given the specificities of our model, it would be desirable for the Parties never to disclose any information so as to exploit the positive relationship between manipulation and monitoring. Indeed, suppose that party a plays the strategy: "I always report $\widehat{h} = \phi$, then if I observe $h = A$ and $d \neq A$, I appeal and report $\widehat{h} = A$". It is not difficult to see that for $R > R_0$, the incongruent decision maker's best response to this strategy is to choose $d = \theta$. Appeals would then be off-the-equilibrium path and the Parties would be better-off for they could save H. This strategy, however, is quite unreasonable and would be an artefact of our ruling out the possibility of errors in decision making (i.e. our assuming that the decision maker is perfectly informed).

The first term of the right-hand side of (12) is the loss when both parties observe $h = \phi$ (no manipulation) and therefore there is no appeal. Compared to its counterpart in L^{DI}, it shows the *benefit of monitoring*: the probability of an inefficient decision is lower. Since the decision maker does not observe the information in the hands of the Parties, he fears reversal also when such reversal cannot take place because hard evidence of wrongdoing is not available. The second term is the loss when the report is $\widehat{h} = \phi$ but either party a or b concealed information. With probability y^* the appeal is triggered and the optimal decision is achieved. With probability $1 - y^*$ the appeal is not triggered and therefore an inefficient decision occurs whenever the decision maker is incongruent.[11] This represents the *cost of manipulation*.

Substituting for (10) and (11) into (12) and comparing the resulting expression with (6) yields as follows.

Proposition 2 *Under Discretion, delegating information acquisition to the Parties is optimal if* $R > R_0$ *and* $H < \frac{\mu\alpha}{1+\mu\alpha+\frac{V(C-\delta l)}{\mu\alpha(V+R)}}U \equiv H_1$, *where* $H_1 < H_0$.

Relying on the Parties to provide information enhances monitoring but comes at the cost of more manipulation. Thus, *Discretion-Partisanship* dominates *Discretion-Investigatorship* if the benefits of monitoring more than offset the costs of manipulation. Proposition 2 suggests that this holds when monitoring is cheap (H low), valuable (δl high) and not too costly to the principal (C low).

We have assumed all along that there are no penalties for the Parties when they are caught manipulating. One may argue, though, that the principal could reduce concealment of information by making it costly. The next proposition shows that for $H < H_0$ it is never optimal for the principal to punish detected manipulation under *Partisanship*.

Proposition 3 *When* $H < H_0$, *penalties to the Parties for detected manipulation are never optimal.*

The intuition for Proposition 3 lies in the fact that the Parties' preferences are known and that the decision maker suffers a positive loss when caught misbehaving. To see this, let $\beta \leq 1$ denote the probability that the

[11] Note that L^{DP} is lower than C, where C would be the loss if the principal did not delegate the appeal decision to the parties but specified ex ante that appeal occurs with probability 1.

Parties conceal evidence unfavorable to their preferred cause. In the appeal game the Parties receive a pay-off of zero when they *do not* incur H, and so does the decision maker when he *does not* act opportunistically. Thus, in equilibrium any increase in β has to be compensated by adjustments in x^* and y^* that leave unchanged the Parties' incentives to monitor and the decision maker's incentives to act opportunistically.

For the Parties' incentives to remain the same, an increase in β must be accompanied by less cheating from the decision maker (lower x^*). In particular, as a consequence of the Parties knowing their preferences, the equilibrium requires $\beta x^* = constant$. Indeed, when party a observes a report ϕ by party b she assigns probability zero to the event "party b observed and concealed B". Thus, higher probability of manipulation by b results in a *proportional* increase in the likelihood that a finds evidence in support of cause A when she incurs H.

Now consider the incentives for the incongruent decision maker to abuse his power. He receives a positive pay-off only if both Parties report ϕ and the final decision is $d \neq \theta, 0$. Two states can be distinguished: one where manipulation of information took place, and another one where the Parties genuinely observed $h = \phi$. It is not hard to see that in equilibrium an increase in β leads to a reduction in y^*: less cheating (lower x^*) reduces the decision maker's expected pay-off in the state where manipulation did not occur (and therefore there is no monitoring), while it leaves it constant in the state where manipulation took place (since $\beta x^* = constant$). Thus, less monitoring (lower y^*) by the Parties is necessary to leave the decision maker's incentives unchanged.

Finally, compare the benefits and losses for the principal and the decision maker in the two states. For the decision maker, the loss when manipulation occurs and he is caught is $V + R$. This is larger than the benefit when manipulation does not take place and therefore he cannot be caught V. For the principal instead the benefit when manipulation occurs and the decision maker is caught $\delta l - C$ is smaller than the loss when manipulation does not takes place and therefore there is no monitoring δ. It follows that increases in the probability of manipulation always move the equilibrium of the appeal game in a direction that makes the principal better-off.

The basic idea behind Proposition 3 is that under *Partisanship* the benefit of manipulation in terms of higher monitoring more than outweigh the increased opportunities for the decision maker to abuse his discretional power. Clearly, if $H > H_0$ the same argument does not apply for the Parties provide no monitoring. Thus manipulation yields no benefit. Notice, however, that in this case at the best, i.e. if the punishment completely deters manipula-

tion, *Partisanship* can fare as well as *Investigatorship*.

5 Rules versus Discretion

We have shown that the choice of the decision rule and the delegation of information provision are inherently linked. Under *Discretion*, the principal wishes to encourage ex-post monitoring by delegating information provision to the interested parties (control from below). Under *Rules*, the principal monitors the decision maker ex ante (control from above). This increases the desirability to delegate information provision to a more impartial investigator that ensures less manipulation of information.

We now compare the optimal organizational arrangements of decision rules and information provision. We shall focus on the case where in the absence of monitoring imposing restrictions on the scope of authority conferred to the decision maker is more desirable than leaving him discretion ($L^{RI} < L^{DI}$). This requires $\alpha\delta > 1$. In this case, the relevant comparison is the one between *Rules-Investigatorship* and *Discretion-Partisanship*. The difference between a regime of *Rules* and one of *Discretion* can be cast in terms of the costs that contract incompleteness imposes on the principal. Under *Rules* this cost is measured by l. Under *Discretion*, it is determined by several factors: the size of the control loss δ, the extent of Parties' monitoring, which in turn depends on their costs H and stakes U, and the cost that monitoring imposes on the principal C. Thus, for a given level of monitoring and C, *Discretion* is to be preferred when l is sufficiently large relative to δ, that is, when the cost of "immobilism" or "moderatism" is high relative to that of "misguided activism". On the contrary, *Rules* should be preferred whenever the cost of "misguided activism" is large relative to the loss of making a more intermediate decision. Clearly, all other things being equal, the desirability of *Discretion-Partisanship* increases as the principal benefits significantly from the existence of an ex-post control mechanism (lower C) or Parties' monitoring becomes more effective (higher $U - H$). The following proposition summarizes our results.

Proposition 4 *Discretion-Partisanship dominates Rules-Investigator when U and l are high or C, δ or H are low.*

Proof. Notice that $L^{DP} < L^{RI}$ if $H < \frac{2\mu}{\delta+2\mu+\frac{V(C-\delta l)}{l(V+R)}}U \equiv H_2$, with $H_2 < H_1$. ■

6 Investigator does not report truthfully

We have seen that under *Discretion* delegation of information provision to the Parties may be optimal because of the direct relationship between monitoring and manipulation. This result was derived under the assumption that the investigator always reports truthfully and therefore delegation of information provision to the Parties is a necessary condition to induce monitoring. In this section we allow for manipulation by the investigator. Our main finding is that under *Partisanship* monitoring is more efficient because the Parties know their preferences but not those of the investigator. This enables us to state the following results. First, Proposition 2 holds also when the investigator conceals evidence provided that total manipulation is not higher under *Investigatorship*. Second, under *Investigatorship* Proposition 3 does not hold: more manipulation is not always desirable.

Suppose that with probability γ the investigator does not report truthfully, i.e. reports $\widehat{h} = \phi$ whenever $h = \theta$. Manipulation occurs to the same extent under *Partisanship* and *Investigatorship* if[12]

$$\gamma = \frac{1-\mu}{2-\mu} \equiv \overline{\gamma}$$

We prove the following result.

Proposition 5 *If* $R > R_0$ *and* $H < H_1$ *then* $L^{DI}(\gamma) > L^{DP}$ *for any* $\gamma \in [0, \overline{\gamma}]$.

Suppose that $\gamma = \overline{\gamma}$. When $d = B$, party a's expected pay-off is

$$\Pr(h = A \;/\; \widehat{h} = \phi,\ d = B)U - H = \alpha x \mu U - H \tag{13}$$

when she incurs H and zero otherwise. It is easy to show that expression (13) is lower than (7): under *Investigatorship* the abuse of discretional power is larger. The intuition is that the Parties know their preferences but not those of the investigator. In particular, under *Investigatorship,* when party a observes a report $\widehat{h} = \phi$, she cannot rule out that B was in fact observed, whereas she can under *Partisanship*. Thus, more manipulation by the investigator raises the probability to find evidence both in favor and against cause

[12] Under *Investigatorship* manipulation occurs with probability $\gamma(1-(1-\mu)^2) = \gamma\mu(2-\mu)$. Instead, under *Partisanship* manipulation occurs with probability $\mu(1-\mu)$.

A and this depresses the incentives to monitor compared to the *Partisanship* case.[13]

Now, consider the incentives for an incongruent decision maker to act opportunistically. He enjoys an expected payoff of

$$-\mu y R + (1-\mu) y V + (1-y) V \tag{14}$$

when he chooses $d \neq \theta, 0$ and zero otherwise. Notice that expression (14) is equal to (8). This is because the decision maker knows the true θ and therefore whether it is the investigator or the Parties that gather information is irrelevant to him. Only he cares about the total extent of manipulation. Thus, when the amount of manipulation is the same under both institutions, the immediate consequence of monitoring being more efficient under *Partisanship* is that *Discretion-Partisanship* dominates *Discretion-Investigatorship*. A more rigorous proof of this result is provided in the Appendix where we also show that it extends to any $\gamma \in [0, \overline{\gamma}]$.

An interesting implication of Proposition 5 is that under *Investigatorship* Proposition 3 no longer holds. Since monitoring is less effective under *Investigatorship*, the benefit of manipulation in terms of higher monitoring and lower abuse of discretional power in each state may not be sufficient to compensate the increased opportunities for the decision maker to select his preferred outcome.

Corollary 1 *Under Investigatorship, more manipulation is not necessarily desirable.*

Remark 1 *The basic message of the paper is that more manipulation generates more monitoring and thus it may be desirable under Discretion. The policy implication we have derived is that the principal may prefer to delegate information provision to the biased Parties rather than to a more impartial investigator. We view the investigator as a member of the organization, a civil servant or a bureaucrat with no direct interest in the decision. It thus seemed realistic to assume that he distorts less "on average" than the self-interested Parties. However, should total manipulation be (sufficiently)*[14] *higher under Investigatorship, the opposite conclusion would obtain. For*

[13] More formally, under *Investigatorship*, for party a to be indifferent between incurring H or not, an increase in γ must reduce x in such a way that the probability of finding hard evidence of wrongdoing $\gamma x(\gamma)$ increases in γ: $\frac{d}{d\gamma}(\gamma x(\gamma)) > 0$.

[14] More manipulation should compensate for the fact that monitoring is more efficient under *Partisanship*.

$\gamma >> \overline{\gamma}$, the principal's goal would be better achieved by relying on the Parties under Rules and on the investigator under Discretion.

7 Robustness

Information structure

It should be apparent at this point that our insights are robust to the assumption that the decision maker is able to draw better inference from the unraveling of the various aspects of the dispute. Allowing the Parties to also receive the soft information (i.e. to observe a soft signal as informative as the one observed by the decision maker) would further improve their ability to monitor the decision maker. Clearly, if the soft signals were perfectly precise, for large enough R, the mere threat of an appeal would suffice to discipline the decision maker and *Discretion-Partisanship* would yield the first best.

Appeal

As already emphasized, Proposition 2 hinges on the positive relationship between manipulation of information and monitoring *and* on monitoring being more efficient when the Parties also provide the information. This explains why allowing for the discovery of new evidence at the appeal stage would not affect our results.

Further, we have assumed that the appeal is decided by a single decision maker who is drawn from the same population as the decision maker in stage 2. In this way, we have ignored that the appeal decision maker may serve as monitor of the stage 2 decision maker. Causal observation, however, shows that appeals are often decided by juries and the process is structured so as to reduce the possibility of bad decision-making. In our set up this would be equivalent to assuming that the appeal decision maker is less incongruent than the one in stage 2. Let $\omega \in [0, \alpha)$ denote the probability that the appeal decision maker is incongruent and $C(\omega)$ the cost of appeal for the principal, where $C_\omega < 0$. Notice that if systematic reviews (i.e. reviews exogenously set by the principal) are not optimal, that is, if $(\alpha - \omega)\delta l < C(\omega)$, hard evidence of wrongdoing is still necessary for a new decision to be granted. Then, it is still true that manipulation enhances Parties' monitoring, by increasing their ex-post beliefs of seeing the decision reversed. Similarly, our results would be qualitatively unchanged if we let the appeal to also serve as a device to correct errors in decision making (by assuming that the decision maker does not learn the true θ ex post), provided that systematic reviews are not optimal.

One last consideration concerns the size of the punishment R. In our setting reversals occur only when the decision maker intentionally pursued his private interests at the expense of the principal. Hence, it would suffice to set an infinite punishment and an exogenous and infinitesimally small probability of appeal to deter opportunistic behaviors. The out-of-equilibrium punishment would not violate the decision maker's participation constraint and the first-best would be achieved. In practice, however, wrong decisions occur for a number of other reasons: lack of information, incompetence, errors, and so forth. In all these cases, imposing very harsh penalties would paralyze the decision process and prevent decisions from being taken, which is the main reason why we do not observe them in practice. Our assumption that R is limited should then be interpreted as capturing this fact.

Separation of investigation and adjudication

Throughout the paper we have assumed that the decision maker in stage 2 and the investigator are two different persons. Proposition 2 is robust to this assumption. Allowing a potentially incongruent decision maker to also run the task of information disclosure increases the scope for opportunistic behavior. When the decision maker has access to the true hard signal h (rather than to the report made by the Parties or by the investigator), he always selects his preferred outcome when $h = \phi$ since he knows that no evidence of wrongdoing can be found. Thus, the benefit of more manipulation, i.e. the reduction in the abuse of decisional power when no compelling evidence is available, is lost. This point is reminiscent of the literature on the separation of regulators against collusive behavior (see Laffont and Martimort, 1999). Laffont and Martimort argue that the opportunities for collusion are reduced when the information about the firm's technology is split between two regulators. Separation reduces regulators' discretion and the sum of their gains from collusion may be lower than with one regulator. Our paper gives a different reason as to why it may be harmful to put too much information in the same hands. It claims that concentration makes it more difficult to monitor a decision maker who uses his discretional power to pursue personal interests.

8 Applications

Comparative legal and judicial systems

The two most widely adopted legal systems are those of Civil Law and Common Law. The former, which is a derivation of Ancient Roman Law,

is typically observed in European continental countries, whereas the latter is more widespread in the Anglo-Saxon world. Underlying the Civil Law system is the great importance given to the "certainty of decision-making", which is guaranteed by a systematic organization of the law into a code whose provisions the courts should administer without power of amendment. The code is viewed as to supply a solution for any legal problem that may arise and official discretion is seen as negative and harmful. On the contrary, the Common Law puts more importance on achieving the decision most appropriate to the specific circumstances of each case. Although certainty of decision-making is recognized as an important value, finding the best solution for each particular case is considered the most important task.

The two most widespread judicial procedures are the adversarial and the inquisitorial types. In the latter, the trial is conceived as an official inquest conducted by a single investigator who is supposed to be impartial and to look for evidence both against and in favor of the accused. Instead, in the adversarial procedure the proceeding is dominated by the two parties - prosecutor and defense attorney - and evidence is adduced bilaterally through direct and cross-examination.

It is apparent that the difference between Common Law and Civil Law is partially one between a regime of *Discretion* and one of *Rules*; analogously the institutions of *Partisanship* and *Investigatorship* resemble the way in which the proof-taking process is managed under the adversarial and the inquisitorial procedures. Interestingly, the same combination of legal and judicial system is observed in nearly all the countries. In particular, Civil Law systems are generally associated with inquisitorial procedures whereas Common Law systems are often combined with adversarial procedures. Our paper provides a theoretical justification for this stylized fact.

The relative merits of the Common and Civil Law have long been discussed among legal experts (see for example Damaska 1975, 1986) and economists. Most studies that take an economic approach have advocated that judge-made and precedent-based law has an inherent tendency towards efficiency (Posner 1972, Priest 1977 and Rubin 1977). The underlying argument is that disputes arising under inefficient legal rules are more likely contested and litigated than disputes arising under efficient rules. As a consequence, they are more frequently subject to improvements through subsequent reversions. In this process the stock of efficient rules increases over time. More recently, the superiority of the Common law has been sustained on the ground that it promotes the development of capital markets by providing better creditors and small shareholders' protection (La Porta et al. 1997, 1999). Finally, using data from law firms in 109 countries,

Djankov et al. (2002) have shown that Civil Law countries show systematically greater procedural formalism and that greater formalism is associated with higher expected duration of judicial proceedings, more corruption, less consistency, less honesty less fairness in judicial decision and inferior access to justice. Most of this literature has been produced in the US and comparable research from a Continental European perspective is still very narrow. However, dissenting views on the efficiency of the Common Law tradition have been expressed by Van De Bergh (1988) and Tullock (1988).

Equally controversial is the debate on the relative benefits of the two judicial procedures. A number of authors have argued that the delegation of proof-taking to the interested parties ensures a more accurate ascertainment of the facts (Shin 1988, Posner, 1999). Others have defended the inquisitorial procedure on the ground that adversarial trials generate manipulation and inefficient over-investment of resources (Tullock, 1975). Our paper contributes to this debate by arguing that the costs and benefits of alternative judicial procedures cannot be properly assessed independently of the legal framework within which they operate.

Antitrust proceedings

The insights generated by our analysis appear to be relevant also in the context of antitrust regulation. The problem of designing efficient proceedings for the enforcement of antitrust policies has been central among politicians and economists in recent years. At the core of the debate lies the inherent tension between flexibility and certainty in competition law. Certainty is necessary to maintain some degree of predictability of outcomes and help the firms to anticipate that a particular conduct or agreement does or does not violate antitrust laws. Flexibility is important to reflect changes in economic thinking and market conditions, two aspects that are particularly relevant for competition laws. US enforcement of competition policy is characterized by the leading role played by judges in shaping the law and the extensive and explicit reliance on economic theory. The statutes are in most cases concise, and the law has been made through judicial interpretation during centuries of litigation. As stressed by Kovacic and Shapiro (1999, p. 18):

> No other country has adopted an antitrust statute [Sherman Antitrust Act, 1890], that contains equally broad substantive provision and relies so heavily on a common method of judicial interpretation to implement them. The consciously evolutionary quality of the US antitrust statutes, with their implicit recogni-

> tion of the needs to adjust doctrine over time in light of experience and new learning, gives economists considerable power to influence competition law and policy.

Take as an illustration the case of restraints. Unlike Article 81 of the EC Treaty[15], Section 1 of the Sherman Act does not provide for the granting of exemptions. Therefore, in principle, all restraints of trade are prohibited. The absurdity of this solution has led to the development of the ancillary restraints doctrine and, soon thereafter, the doctrine of the Rule of Reason to narrow the general prohibition of Section 1 of the Sherman Act. In so doing, jurists have generally been keen on accepting the greater uncertainty resulting from the inclusion of economics in antitrust law.

By contrast, enforcement in the EU is far more regulatory and bureaucratic and the adaptation of economically enhanced rules had been fended off as leading to an undesirable measure of uncertainty in legal interpretation (Hawk 2000). Much regulation is based on a system of notification and approval by negative clearance, individual exemption, or block exemption. The factors the Commission must consider in order to decide whether to grant an exemption are exhaustively listed in Article 81(3). A flexible inquiry that varies in focus and detail depending on the nature of the agreement and on market circumstances is outside the scope of the EU exemption system.[16] Further, the objective of achieving an integrated market has lead the Commission to take an even more rigid position towards vertical restraints, which are essentially regulated on the basis of fixed per se rules. Consistent with our results, in the EU antitrust is a special responsibility of the Commission, to which most of the investigation is assigned.

> "Much of the information used by the Commission in its competition enforcement is disclosed to it voluntary by the parties, reported by third parties, or gleaned from the specialist press and publicly available reports and statistics. But the Commission could hardly perform its enforcement role effectively if it were restricted to information coming to it from these sources and if it were unable to verify or supplement this information. It has, therefore, been given active information-gathering powers.

[15] Treaty Establishing the European Community, 1957 [Official Journal C 340, 10.11.1997]

[16] All agreements that do not fit into one of the block exemptions or that do not yield the benefits described in Article 81(3) of the EC Treaty violate Article 81(1), even if they do not significantly impair competition.

> Chief among such powers are the power to require that firms provide information in writing or produce documents (Article 11 of Regulation 17[17]), the power to obtain evidence directly from firms through on-the-spot investigations (Articles 13 and 14) and the power to proceed to sector inquiries (Article 12). These powers can, if necessary, be backed by coercive measure in the form of formal orders and possibly fines. The Commission procedures in on-the-spot investigations have met with considerable legal challenge but have been largely vindicated and clarified by the Court of Justice" (Ritter et al. 2000, p. 831).

The US procedures instead are much more litigation-oriented and very demanding in terms of supporting economic and factual evidence. Contrary to the investigative procedure in Europe, expert testimony is more often required in the US where the adversarial process invites each party to expose the weakness of the other party's arguments and evidence (see Bellamy, 2000).

9 Concluding Remarks

We have focused on the organization design of public institutions devoted to resolve disputes between two parties, when a possibly opportunistic decision maker relies on hard information supplied by other players. Under the assumption that some information is not verifiable, we have investigated the contractual design problem faced by a principal who has to choose a decision rule and allocate information provision.

The paper has yielded a number of general insights, which can be summarized as follows. First, information manipulation enhances monitoring. The larger the amount of manipulation at the information provision stage, the higher the Parties' incentives to challenge the decision made and to ask for correction. Second, Parties' monitoring is more efficient under *Partisanship* than under *Investigatorship* because the Parties know their preferences but not those of the investigator. Thus, involving the Parties in the provision of information, ensures greater control from below. How the principal weighs monitoring and manipulation depends on the extent of the discretional power given to the decision maker. High discretion calls for monitoring; thus information provision by the interested parties tends to

[17] Council Regulation No 17 (EEC): First Regulation implementing Articles 85 and 86 of the Treaty (at present Articles 81 and 82) [Official Journal No. 013, 21.02.1962]

be preferred. Low discretion renders monitoring less relevant and calls for a more impartial information collector. Finally, as the loss of making an incorrect decision increases relative to that of making an intermediate decision, discretion becomes more risky. Therefore, it should be preferred only if the Parties' stakes are sufficiently high relative to their monitoring costs.

We have ruled out monetary incentives and assumed that the agents are only driven by their private benefits. This assumption can be motivated on the ground that monetary contingent payments are not observed in practice, at least not in the applications discussed above. Indeed, judges and antitrust regulators are usually given job life positions and fixed salaries in order to preserve their independence. We have also abstracted from moral hazard consideration, by taking the agents' effort to search for information as given. We believe that extending our analysis in this direction, by taking a more internal organization view point, would be an interesting topic for future research.

10 Appendix

Proof of Proposition 2. Note that $H < H_1$ implies that condition (9) does not hold. Hence, the equilibrium strategies of the appeal game under *Discretion-Partisanship* are given by (10) and (11) and expression (12) yields

$$L^{DP} = (1-\mu)^2 \alpha x^* \delta l + \mu(1-\mu)\alpha x^* [\delta l - y^*(\delta l - C)] = \frac{(1-\mu)^2 H}{\mu[U-H]} \left[\delta l - \frac{V}{V+R}(\delta l - C) \right] \tag{15}$$

Thus, *Discretion-Partisanship* dominates *Discretion-Investigatorship* if the expression above is lower than (6). Trivial calculations prove the result. ■

Proof of Proposition 3. Suppose that a punishment P is imposed to a party that is caught manipulating her information and let $\beta(P) \leq 1$ denote the associated probability of manipulation, with $\beta'(P) < 0$. Then, from (7), the expected payoff from appealing becomes

$$\frac{\beta \alpha x \mu}{\beta \alpha x \mu + (1-\mu)} U - H$$

For $H < H(\beta)$, where $H(\beta) = \frac{\beta\alpha\mu}{1-\mu+\beta\alpha\mu} U$, $H'(\beta) > 0$ and $H(1) = H_0$, we have

$$x^*(\beta) = \frac{(1-\mu)H}{\beta\alpha\mu\,[U-H]} < 1 \tag{16}$$

and $\frac{\partial x^*(\beta)}{\partial \beta} = -\frac{x^*(\beta)}{\beta} < 0$. Thus, $\frac{\partial \beta x^*(\beta)}{\partial \beta} = 0$. In equilibrium more manipulation by party $i = a, b$ requires less cheating from the decision maker. Specifically, $\beta x^*(\beta) = costant$, as a consequence of the Parties knowing their preferences. Now consider the effect of β on y^*; y^* solves

$$-y\frac{\mu\beta}{\beta\mu + (1-\mu)}R + y\frac{(1-\mu)}{\beta\mu + (1-\mu)}V + (1-y)V = 0$$

For $R > R(\beta)$, where $R(\beta) = \frac{1-\mu}{\mu\beta}V$, $R'(\beta) < 0$ and $R(1) = R_0$, we have

$$y^*(\beta) = \frac{(\beta\mu + 1 - \mu)\,V}{\mu\beta(V+R)} < 1 \tag{17}$$

and $\frac{\partial y^*(\beta)}{\partial \beta} = -\frac{(1-\mu)V}{\mu\beta^2(V+R)} < 0$.

When $H(\beta) < H < H_0$ or $R_0 < R < R(\beta)$, the proof is trivial. So, we restrict attention to $H < H(\beta)$ and $R > R(\beta)$. In this case, the expected loss for the principal under *Discretion-Partisanship* is given by

$$L^{DP}(\beta) = (1-\mu)^2 x^*(\beta)\alpha\delta l + \mu\beta x^*(\beta)\alpha[\delta l - y^*(\beta)(\delta l - C)] \tag{18}$$

and

$$\begin{aligned}\frac{\partial L^{DP}(\beta)}{\partial \beta} &= (1-\mu)^2\alpha\delta l\frac{\partial x^*(\beta)}{\partial \beta} + \mu(1-\mu)\alpha[\delta l - y^*(\delta l - C)](\frac{\partial x^*(\beta)}{\partial \beta}\beta + x^*) \\ &\quad -\beta\mu(1-\mu)\alpha x^*\left[\delta l - C\right]\frac{\partial y^*(\beta)}{\partial \beta}\end{aligned}$$

Thus, a necessary and sufficient condition for $\frac{\partial L^{DP}}{\partial \beta} < 0$ is

$$-(1-\mu)\frac{x^*}{\beta} + \beta\mu x^*\frac{1-\mu}{\mu\beta^2}\frac{V}{V+R} < 0 \tag{19}$$

which always holds.

The intuition as to why condition (19) is always true can be understood as follows. The expected ex ante pay-off of the decision maker can be written as

$$(1-\mu)^2 x^*(\beta)V + \mu\beta x^*(\beta)[V - y^*(\beta)(V+R)] \tag{20}$$

Since $\frac{d\beta x^*(\beta)}{d\beta} = 0$, an increase in β affects expressions (20) and (18) only through its effect on $x^*$and y^*. Moreover, in equilibrium expression (20) must equal zero for any β. This implies expression (19). ■

Proof of Proposition 5. Suppose that the investigator conceals information with probability $\gamma \in [0, \overline{\gamma}]$. The expected payoff for party a when she incurs H is

$$\frac{\alpha x \gamma \mu (2-\mu)}{\gamma \mu (2-\mu) + (1-\mu)^2} U - H$$

and zero otherwise. For $H < H(\gamma)$, where $H(\gamma) = \frac{\gamma\mu(2-\mu)}{\gamma\mu(2-\mu)+(1-\mu)^2}\alpha U$ with $H'(\gamma) > 0$, this yields

$$\widehat{x}(\gamma) = \left[1 + \frac{(1-\mu)^2]}{\gamma\mu(2-\mu)}\right] \frac{H}{\alpha U} < 1$$

The incongruent decision maker enjoys an expected payoff of

$$-\frac{\gamma \mu (2-\mu)}{\gamma \mu (2-\mu) + (1-\mu)^2} yR + \frac{(1-\mu)^2}{\gamma \mu (2-\mu) + (1-\mu)^2} yV + (1-y)V$$

when $d \neq \theta, 0$ and zero otherwise. For $R > R(\gamma)$, where $R(\gamma) = \frac{(1-\mu)^2}{\gamma\mu(2-\mu)}V$ with $R'(\gamma) < 0$ and $R(\overline{\gamma}) = R_0$, this yields

$$\widehat{y}(\gamma) = \left[1 + \frac{(1-\mu)^2}{\gamma\mu(2-\mu)}\right] \frac{V}{(V+R)} < 1$$

Let $R > R_0$; then for any γ, we have

$$L^{DI}(\gamma) = \begin{cases} (1-\mu)^2 \alpha \widehat{x}(\gamma) \delta l + \gamma\mu(2-\mu)\alpha\widehat{x}(\gamma)\left[\delta l - \widehat{y}(\gamma)(\delta l - C)\right] & \text{if } H < H(\gamma) \\ (1-\mu)^2 \alpha \delta l & \text{otherwise} \end{cases}$$

Let $\widehat{\gamma} \equiv \arg\min L^{DI}(\gamma)$ when $\gamma \in [0, \overline{\gamma}]$. It suffices to prove that $\min L^{DI}(\gamma) > L^{DP}$ where

$$\min L^{DI}(\gamma) = \begin{cases} L^{DI}(\widehat{\gamma},\, \widehat{x}(\widehat{\gamma}),\, \widehat{y}(\widehat{\gamma})) & \text{if } H \leq H(\widehat{\gamma}) \\ (1-\mu)^2 \alpha \delta l & \text{otherwise} \end{cases}$$

Tedious calculations show that

$$\widehat{\gamma} = \frac{1-\mu}{2-\mu}\frac{1-\mu}{\mu}$$

Suppose $H \leq H(\widehat{\gamma})$. If $\mu \leq \frac{1}{2}$ we have a corner solution with $\widehat{\gamma} = \overline{\gamma}$ and

$$L^{DI}(\overline{\gamma}) = \frac{(1-\mu)H}{\mu U}\left[\delta l - \frac{V}{V+R}(\delta l - C)\right]$$

if $\mu > \frac{1}{2}$we have an interior solution with $\widehat{\gamma} < \overline{\gamma}$ and

$$L^{DI}(\widehat{\gamma}) = 2(1-\mu)^2\frac{2H}{U}\left[\delta l - \frac{V}{V+R}(\delta l - C)\right]$$

At $H < H_1$, L^{DP} is given by expression (15). The result then follows by noting that Proposition 2 ensures that $(1-\mu)^2\alpha\delta l > L^{DP}$; for $\mu > \frac{1}{2}$, $H \leq H(\widehat{\gamma})$ implies $L^{DI}(\widehat{\gamma}) > L^{DP}$ and for $\mu \leq \frac{1}{2}$, $H \leq H(\overline{\gamma})$ implies $L^{DI}(\overline{\gamma}) > L^{DP}$. ■

Proof of Corollary 1. Immediate by the proof of Proposition 5, where $\widehat{\gamma}$ may be lower than $\overline{\gamma}$. ■

References

[1] Armstrong, M. (1994). Delegation and Discretion. Discussion Paper No 9421, University of Southampton.

[2] Bellamy, H.C. (2000). Some Reflections on Competition Law in the Global Market. http://www.nesl.edu/lawrev/Vol34/34-1/BELLAMY.PDF.

[3] Brennan, G. and J.M. Buchanan (1985). *The Reason of Rules: Constitutional Political Economy,* Cambridge University Press, Cambridge.

[4] Cowen, T., A. Glazer and K. Zajc (2000). Credibility May Require Discretion, not Rules, *Journal of Public Economics*, 76: 295-306.

[5] Damaska, M.R. (1975). Structures of Authority and Comparative Criminal Procedure, *The Yale Law Journal*, 84: 480-544.

[6] Damaska, M.R. (1986). *The Faces of Justice and State Authority. A Comparative Approach to the Legal Process*, Yale University Press.

[7] Denaeijer, N. and B. Hawk (2000). The Development of Articles 81 and 82: Legal Certainty. Mimeo.

[8] Dewatripont, M. and J. Tirole (1999). Advocates, *Journal of Political Economy*, 107(1): 1-39.

[9] Djankov, S., R. La Porta, F. Lopez-de Silanes, and A. Shleifer (2002). Courts: the Lex Mundi Project. Harvard Institute of Economic Research, Discussion Paper No 1952.

[10] Hawk, B.E. and N. Denaeijer (2000). The Development of Articles 81 and 82: Legal Certainty. www.iue.it/RSC/competition/Hawk_1.pdf

[11] Holmstrom, B. (1984). The Theory of Delegation. In M. Boyer and R.E. Kihlstrom, ed. *Bayesian Models in Economic Theory. Studies in Bayesian Econometrics*, vol. 5. New York Amsterdam and Oxford: North-Holland.

[12] Kidland, F.E. and E.C. Prescott (1977). Rules rather than Discretion: the Inconsistency of Optimal Plans, *Journal of Political Economy*, 85(3): 473-491.

[13] Laffont, J.J. and D. Martimort (1999). Separation of Regulators against Collusive Behavior, *RAND Journal of Economics*, 30: 232-262.

[14] Laffont, J.J. and J. Tirole (1990). The Politics of Government Decision Making: Regulatory Institutions, *Journal of Law Economics and Organizations*, 6: 1-32.

[15] Laffont, J.J. and J. Tirole (1991). The Politics of Government Decision Making: A Theory of Regulatory Capture, *Quarterly Journal of Economics*, 106: 1089-1127.

[16] La Porta, R., F. Lopez-de Silanes, A. Shleifer and R.W. Vishny (1997). Legal Determinance of External Finance, *Journal of Finance*, 52: 1131-50.

[17] La Porta, R., F. Lopez-de Silanes, A. Shleifer and R.W. Vishny (1998). Law and Finance, *Journal of Political Economy*, 106(6): 1113-55.

[18] Milgrom, P. and J. Roberts (1986). Relying on Information of Interested Parties, *RAND Journal of Economics*, 17: 18-32.

[19] Palumbo, G. (2002). Optimal Duplication of Effort in Advocacy Systems. Mimeo.

[20] Posner, R. A. (1999). An Economic Approach to the Law of Evidence, *Stanford Law Review* (51): 1477-

[21] Posner, R.A. (1972). *Economic Analysis of Law* Boston: Little, Brown.

[22] Priest, G.L. (1977). The Common Law Process and the Selection of Efficient Rules, *Journal of Legal Studies*, 6: 65-82.

[23] Ritter, L., W.D. Brown and F. Rawlinson (2000). *European Competition Law: A Practitioner's Guide*. Kluwer Law International.

[24] Rubin, P.H. (1977). Why is the Common Law Efficient?, *Journal of Legal Studies*, 6(1): 51-63.

[25] Shapiro, C. and W.E. Kovacic (1999). Antitrust Policy: A Century of Economic Legal Thinking, Competition Policy Center, University of California, Berkeley. Working paper n. CPC99-09.

[26] Shin, H.S. (1998). Adversarial and Inquisitorial Procedures in Arbitration, *RAND Journal of Economics*, 29(2): 378-405.

[27] Tullock, G. (1975). On the Efficient Organization of Trials, *Kyklos* 28(4): 745-762.

[28] Tullock, G. (1988). Defending the Napoleonic Code over the Common Law. In S.S. Nagel, ed. *Research in Law and Policy Studies*, vol. 2, Greenwich, CT: JAI Press.

[29] Van De Bergh, R. (1988). Le Droit Civil Face a L'Analyse Economique du Droit [Civil Law Confronts the Economic Analysis of Labor] *Revue International de Droit Economique (International Review of Economic Law),* 4: 229-254.