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The Inquisitor Judge's Trilemma*

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Abstract

We address the long-standing judicial debate over inquisitorial and adversarial procedures in criminal trials, focusing on the incentives to collect evidence of a defendant's guilt and innocence. We demonstrate three shortcomings of the former procedure: (i) a judge may suffer a trilemma or a quandary among three tasks she confronts, i.e., an incentive scheme to improve the performance of one task impairs the performance of one or two of the others; (ii) it underperforms the latter procedure in collecting evidence at cost if private interests in winning a suit are more motivating than the public interests in avoiding erroneous judgments; (iii) incentive arrangements are so constrained that it may be impossible to induce high efforts of investigation. However, the shortcoming (ii) might be negated when the private interests lead adversely to obscuring, rather than revealing evidence.

Keywords: costly evidence collection; criminal trial; inquisitorial vs. adversarial procedure; judge's trilemma.

JEL classification: D86; K41.

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1 Introduction

Over the past decade, a series of theoretical studies has been conducted on the debate over the Romano-Germanic inquisitorial and Anglo-American adversarial procedures. Dewatripont and Tirole (1999), who presumably initiated this trend, investigated the incentive structures of nonpartisan and advocacy procedures and showed the relative efficiency of advocacy in finding facts. Although they used judiciary as an archetypal example of what their theory illustrates, there remains potential difficulty in applying their model to comparative legal procedures, especially in criminal trials, due to a unique feature of these procedures.[1] We thus address the long-standing debate over this procedural dichotomy with specific focus on criminal procedures and, in doing so, we contribute some novel insights to the literature.

According to scholars of comparative judicial procedures, in the inquisitorial system, a judge, *not a neutral investigator*, plays active roles in investigating a case. Posner (1999), a prominent defender of the American legal heritage, says: "[T]he only searcher is a professional judge. That is a caricature of the inquisitorial system that prevails in Continental Europe." Tullock (1980: 87), an icon of the opposite side of this debate, agrees: in the inquisitorial system, "the judges or judge are, in essence, carrying on an independent investigation of the case, and the parties play a much minor role."[2] In contrast, the nonpartisan model of Dewatripont and Tirole assumes that a nonpartisan agent, *not the decision-making principal*, collects information. Thus, their nonpartisan model differs structurally from the inquisitorial procedure in terms of common language, and their theoretical treatment of the procedure fails to fully capture its organizational structure. Moreover, an inquisitor judge often bears the greater responsibility for fact-gathering in criminal trials than in civil ones.[3]

To examine and contrast the inquisitorial and adversarial paradigms with structural accuracy, we revisit the same issue of procedural comparison with focus on a criminal trial. We develop a formal model which depicts the following two procedural

[1] To be fair, their model depicts organizational structures in comprehensive circumstances without focusing on judiciary per se. Thus, we do not mean to deny their contribution to organization theory. In fact, they admitted that their model's applications to comparative legal systems remained preliminary at the end of their article, and that lead us to the present research.

[2] For more, Wolfram (1986: 566) states: "In the inquisitorial system the process of gathering and sifting facts is performed primarily by judges and not by parties."

[3] See Lagbein (1985). Emons and Fluet (2009b) also wrote: "in civil litigation and by contrast with criminal trials, the presentation of evidence essentially rests with the parties even in so-called inquisitorial systems."

alternatives. In the adversarial system, a prosecutor and a defense attorney litigate as the representatives of the state and of a defendant, respectively. The prosecutor sends a judge a signal which summarizes collected evidence on the defendant's guilt, while the defense attorney sends a signal which may prove innocence. The signals are assumed to be informative but imperfect, the informativeness of a signal hinging on the level of effort each party exerts at cost. Based on the two signals, the judge makes a binary decision between conviction or acquittal, and she pronounces the defendant convicted only if her belief of his guilt exceeds the threshold of a "reasonable doubt." In the inquisitorial system, on the other hand, the judge herself collects both the two signals instead of receiving them from the prosecutor and the defense attorney.[4] To paraphrase, the adversarial system delegates the three tasks at hand to separate entities, whereas the inquisitorial counterpart assigns all the tasks to the judge.[5]

In the circumstance described above, we found that the inquisitorial system presents two obstacles to the effective execution of the three tasks:

(a) The inquisitorial system fails to effectively structure incentives for collecting evidence because the inquisitor judge is assigned two conflicting tasks which aim to prove opposing claims. In other words, the judge in the inquisitorial system faces a dilemma in simultaneously searching for incriminating evidence and exonerating evidence. Psychologically, "a nonadversarial trial is like trying to play chess against yourself: neither Black nor White pieces get played very well, and second-rate games result" (Luban 1988: 71). This finding mirrors Dewatripont and Tirole who demonstrated that the nonpartisan arrangement is largely less efficient than the advocating one. In the adversarial system, by contrast, this mutual offsetting of the two incentives does not arise because the opposing evidence is pursued by separate entities.

(b) In the inquisitorial system, any incentive arrangement to induce search efforts inevitably interferes with the judge's decision to render a conviction. This is due to

[4] Thoughout this article, we use the masculine pronoun "he" to refer to the prosecutor or to the defense attorney and the feminine pronoun "she" to the judge.

[5] This assumption about the inquisitorial procedure holds that judges are responsible for presenting the proofs and that the roles of prosecutors and defense attorneys are limited (Luban 1988: 93-103). In former West Germany, for instance, lawyers are discouraged to ask witnesses questions after the judges do: "[A] lawyer who asked a lot of questions would be implying that the judge had not done a good job, a dangerous tactic, to say the least. The lawyers also submit written pleadings and make closing arguments. Beyond that, they do nothing" (p. 95).

the centralized nature of the inquisitorial system wherein a single authority engages in both decision-making and information collection. This finding was not expressed by Dewatripont and Tirole because their nonpartisan model structurally differs from our inquisitorial counterpart as stated above. Again, the adversarial system is free from such a distortion on the judge's decision.

From findings (a) and (b) above, we derived the following three shortcomings of the inquisitorial system:

(i) Findings (a) and (b) combined form a judge's *trilemma*: a better performance of one task compromises or sacrifices one or two of the others. The trilemma thus suggests that the inquisitorial system cannot fully accommodate all three tasks at the same time. This may be a critical drawback of the inquisitorial system but has been overlooked in the literature of comparative criminal procedures. We believe that this trilemma is the most innovative finding of this article.

(ii) In a case where the litigants' or their representatives' private motives for winning prevail over the judge's social motive for enforcing criminal law, the adversarial system may outperform the inquisitorial one when it comes to presenting informative evidence to the court. (Put more precisely, the incentive compatibility constraints for costly evidence collections are less restrictive in the adversarial system than in the inquisitorial one if the litigants' payoffs from winning a suit are larger than or equal to the judge's payoffs from accurate adjudications.[6]) It is because the latter lacks a means for harnessing the power of self-interest on each side necessary to unearth the best evidence. In this vein, Posner (1988) insisted that the very advantage of the adversarial system lies in its reliance on the private energies of litigants to prove their cases, but such motives can hardly be expected from judges:

> [T]he judges do not bear those costs [of protracted proceedings] in any personal sense. ... They do not bear the benefits of accurate fact finding

[6] This shortcoming (ii) seems trivial, but it is not so on the grounds that its inverse does not hold; i.e., the prevalence of the judge's social motive over litigants' private motives does not necessarily lead to the inquisitorial system's superiority to the adversarial one in inducing search efforts. We refrain from outlining a detailed explanation here, but the primary reason lies in the fact that while a judge in the inquisitorial system knows the level of search efforts, a judge in the adversarial system does not. This difference in knowledge of the true effort levels gives the litigants' representatives greater incentives to collect evidence.

> in any very direct way either. In the adversarial system, the people who actually bear the costs and benefits of the litigation are allowed to shape the litigation rather than having it shaped for them by a public official whose interest in the whole matter may be perfunctory.

Our model renders a solid theoretical foundation to this claim. It might be interesting that the adversarial system makes use of the private energies of the litigants, energies which may ultimately serve the public interest in ferreting out the truth, whereas the inquisitorial system relies on the public interest of the judge but could be less of a vehicle toward the public goal. In this sense, the relative merit of the adversarial system over the inquisitorial one may derive from its reliance on self-interested parties in dispute. However, our discussion does not claim that the adversarial procedure is superior to the inquisitorial counterpart in structuring every aspect of a criminal justice system.[7] Our focus is solely on the incentive arrangement for evidence search and its effect on judgment. Other critical concerns about criminal trials such as costs of litigation, protection of individual rights, and abuses of government authority remain out of our scope.

(iii) A logical consequence of the trilemma is that only incentive arrangements available to the inquisitorial system are to merely manipulate the judge's threshold to render conviction. This restrictiveness further implies that there may not exist any incentive scheme to induce high-effort investigation. The adversarial system, on the contrary, allows for a corresponding incentive scheme by which the costs of search efforts are covered by the obsessive litigants.

We further extend our model to investigate the possibility that the shortcoming (ii) above is overturned. We demonstrate that the quality of evidence presented to the judge can be undermined when overzealous attorneys are tempted to obscure the truth or even to concoct false evidence for a self-serving resolution. This finding corresponds to Tullock's (1997) rent-seeking scenario associated with the adversarial system in which undeserving parties attempt to mislead judges to secure possibly incorrect conclusions they favor.[8] In this regard, the prohibition of a contingency

[7] For drawbacks of the adversarial system, see Tullock (1980: 87-104, 1988).

[8] This concern was raised by other scholars as well (e.g., Langbein 1985; Wolfram 1986: 566; Zywicki 2008).

fee (Wolfram 1986: 535-538) and the establishment of evidence rule (Posner 1999; Sanchirico 2004) are possible remedies to prevent the fabrication of evidence.

Among the theoretical articles on comparative legal procedures, Palumbo (2001, 2006) and Emons and Fluet (2009a) assumed a neutral investigator instead of an inquisitor judge to collect evidence possibly because their focuses were not specifically on criminal cases, where a judge's involvement in fact-finding is more extensive than in civil cases.[9] On the other hand, there are several studies (Shin 1988; Froeb and Kobayashi 2001; Parisi 2002) whose treatments of the inquisitorial procedure are similar to ours but with different interests. Shin's (1988) model with exogenous evidence collection suggests that the adversarial procedure is superior, its superiority stems from its ability to allocate the burden of proof between the parties in dispute. Froeb and Kobayashi (2001) compared the accuracy of evidence produced by the two systems (or two variances of random variables drawn from the two procedures in their model) and concluded that neither strictly dominates the other. Parisi (2002) considered a hybrid system of the inquisitorial and adversarial procedures, instead of treating them as purely dichotomous and sought an optimal mixture of the two in light of rent-seeking litigants.

The rest of this article proceeds as follows. Section 2 presents the formal framework of a judge's decision-making problem. Section 3 describes the adversarial procedure, while Section 4, which is the highlight of the article, describes the inquisitorial one and makes a comparison between the two. Section 5 points out a potential drawback in the adversarial procedure. Section 6 draws our investigation to a conclusion.

2 A Judge's Decision Problem

Before presenting a comprehensive model of criminal trial, we illustrate a decision problem of a judge J whose task is to render a judgment of conviction C or acquittal A. Although J is uncertain about whether a defendant sent to her court is guilty or innocent $t \in \{G, I\}$, she has the prior probability that the defendant is guilty $\Pr(G)$. She makes the decision based on two signals $s_P \in [0,1]$ and $s_D \in [0,1]$ presented by a prosecutor P and a defense attorney D, respectively. The signal s_P can be regarded as a summary of evidence of guilt collected by the prosecutor and s_D as that of innocence by the defense attorney. These two signals follow conditional distributions

[9] See *supra* footnote 3.

$F_P(s_P|t)$ and $F_D(s_D|t)$ with their associated densities $f_P(s_P|t)$ and $f_D(s_D|t)$.

Based on the two signals (s_P, s_D), J can rationally update her belief of the defendant's guilt:

$$\begin{aligned}\Pr(G|s_P, s_D) &= \frac{\Pr(G) f_P(s_P|G) f_D(s_D|G)}{\Pr(G) f_P(s_P|G) f_D(s_D|G) + \Pr(I) f_P(s_P|I) f_D(s_D|I)} \\ &= \frac{1}{1 + \frac{\Pr(I)}{\Pr(G)} \frac{f_P(s_P|I)}{f_P(s_P|G)} \frac{f_D(s_D|I)}{f_D(s_D|G)}}.\end{aligned}$$

A larger value of s_P or s_D implies more significant evidence of guilt (larger $\Pr(G|s_P, s_D)$) if the Monotone Likelihood Ratio Conditions are satisfied as follows:

Assumption 1 *$\frac{f_P(s_P|I)}{f_P(s_P|G)}$ decreases in s_P, and $\frac{f_D(s_D|I)}{f_D(s_D|G)}$ decreases in s_D.*

The judge J prefers a defendant to be convicted if and only if the belief of guilt exceeds the threshold of reasonable doubt $q \in (0,1)$. Namely, J's *ex post* payoff can be shown as: $u_J(C|I) = -q$; $u_J(A|G) = q - 1$; $u_J(C|G) = u_J(A|I) = 0$.[10]

Given the signal structure and J's preference as above, the judge's rational decision rule can be described as follows:

Lemma 1 *There exists a non-increasing function $\overline{s}_P(s_D) \in [0,1]$ such that J prefers the defendant to be convicted if and only if $s_P > \overline{s}_P(s_D)$ for given s_D.*[11]

Proof. J's expected payoff given (s_P, s_D) is

$$\begin{aligned}&\Pr(G|s_P, s_D)(1 - \sigma(s_P, s_D))(q-1) - [1 - \Pr(G|s_P, s_D)]\sigma(s_P, s_D)q \\ = \;& \Pr(G|s_P, s_D)(q-1) + [q - \Pr(G|s_P, s_D)]\sigma(s_P, s_D),\end{aligned}$$

where $\sigma(s_P, s_D)$ denotes the probability of conviction determined by J who received (s_P, s_D). It is immediate that the optimal choice of $\sigma(s_P, s_D)$ is

$$\sigma(s_P, s_D) = \begin{cases} 0 & \text{for } \Pr(G|s_P, s_D) < q \\ 1 & \text{for } \Pr(G|s_P, s_D) > q. \end{cases}$$

[10] This threshold of reasonable doubt is frequently employed in models of criminal trial. The judge's preference is consistent with the minimization of expected error costs. For expository details, see Feddersen and Pesendorfer (1998).

[11] The probability that the equality holds is measure zero and is safely ignored.

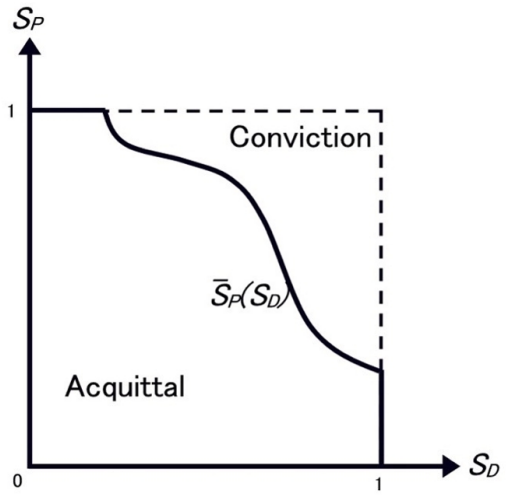

Figure 1: The judge J's optimal decision.

By Assumption 1, $\Pr(G|s_P, s_D)$ is increasing in $s_P \in [0,1]$ and $s_D \in [0,1]$. Define $\bar{s}_P(s_D) \equiv \arg\max_{s_P}\{s_P \in [0,1]|\Pr(G|s_P, s_D) \leq q\}$ for any $s_D \in [0,1]$. $\bar{s}_P(s_D)$ is non-increasing in s_D since $\{s_P \in [0,1]|\Pr(G|s_P, s_D^{'}) \leq q\} \subset \{s_P \in [0,1]|\Pr(G|s_P, s_D) \leq q\}$ for any $s_D^{'} > s_D$. It is also evident that $s_P > \bar{s}_P(s_D)$ for given s_D if and only if $\Pr(G|s_P, s_D) > q$. ■

Lemma 1 suggests that given s_P and s_D, J always makes a deterministic, not randomized, decision. The threshold $\overline{s}_P(s_D)$ is non-increasing because a stronger signal from one party is required to compensate for a weaker signal from the other (Figure 1). Given J's strategy $\overline{s}_P(s_D)$, the probability in state t that J acquits the defendant is

$$\Pr(A|t) = \int_0^1 F_P(\overline{s}_P(s_D)|t)\, dF_D(s_D|t).$$

Since the judge J has only imperfect information about a case, occasional misjudgments are apparently unavoidable.

3 Adversarial Procedure

We further develop the model above to describe an adversarial criminal procedure by incorporating the incentive problem concerning costly evidence collections by the

prosecutor P and the defense attorney D.[12] P and D share the prior probability $\Pr(G)$ with the judge J. Each of the two parties in dispute engages in an unverifiable effort to search for evidence. This effort is a binary choice for each party and is costly only at the higher levels ($e_P \in \{L_P, H_P\}$ and $e_D \in \{L_D, H_D\}$ with $L_P = L_D = 0$). To compress tedious arithmetic, it is assumed that P can strengthen his signal through the high effort only in the state of guilt, while D can do so only in the state of innocence.[13] Namely, the distributions of the two signals are modified as follows:

Assumption 2 *(i)* $F_P(s_P|G, H_P) < F_P(s_P|G, L_P)$ *for* $s_P \in (0,1)$, *and* $F_P(s_P|I, H_P) = F_P(s_P|I, L_P)$ *for any* s_P. *(ii)* $F_D(s_D|I, H_D) > F_D(s_D|I, L_D)$ *for* $s_D \in (0,1)$, *and* $F_D(s_D|G, H_D) = F_D(s_D|G, L_D)$ *for any* s_D.

Assumption 1 continues to hold regardless of effort levels. Notice that since P's (D's) effort strengthens his signal distribution only in state G (I) and is meaningless in the other state, the higher efforts always convey more informative signals to the judge and thus can assist her in making a more accurate adjudication. Since the efforts e_P and e_D change the signal distributions, J would condition her decision rule on them $r(e_P, e_D)$, which paraphrases the more cumbersome threshold function $\overline{s}_P(s_D|e_P, e_D)$. The probability of acquittal in state t given P and D choose (e_P, e_D) and J expects efforts $(\widetilde{e}_P, \widetilde{e}_D)$ is

$$\Pr\left(A|t, r\left(\widetilde{e}_P, \widetilde{e}_D\right), e_P, e_D\right) = \int_0^1 F_P\left(\overline{s}_P\left(s_D|\widetilde{e}_P, \widetilde{e}_D\right)|t, e_P\right) dF_D\left(s_D|t, e_D\right).$$

The high efforts might be expected from the representatives (P and D) if judgments result in a reward of extra payoff (w_P or w_D); i.e., P (D) will receive w_P (w_D) when he wins the case.[14] With the payoff from losing a case being normalized as zero,

[12] To depict the model more explicitly, P and D are the agents of the state and of the defendant, respectively. These litigants determine remuneration schemes to their agents while the agents choose the effort levels of evidence search.

[13] In Section 5, we will consider how results differ if this restriction is relaxed.

[14] A reader may feel at odds with extra payoffs since the ban on contingency-fee arrangements is considered to be a universal feature (Lushing 1992). A striking exception to this feature is Japan where contingent contracts on criminal defense are ubiquitous. In addition, although a contingency fee on criminal defense is formally banned, it is practically exercised: "the lawyer is aware that there is a risk of nonpayment, and that, if the client is convicted and sent to jail, there will often be no recourse" (Karlan 1993). Prosecutors and defense attorneys may also have non-pecuniary concerns such as career development or reputational capital (Kritzer 2004). Given these motivating forces, it is unnatural to ignore the extra payoffs contingent upon resolutions of the case. A historical account for the ban in the U.S. appears in Wolfram (1986: 535-538).

P's incentive compatibility constraint to induce the high effort is

$$\Pr(G)\left[\Pr\left(C|G, r\left(H_P, H_D\right), H_P, H_D\right) - \Pr\left(C|G, r\left(H_P, H_D\right), L_P, H_D\right)\right] w_P \geq H_P, \tag{1}$$

while D's incentive compatibility constraint is

$$\Pr(I)\left[\Pr\left(A|I, r\left(H_P, H_D\right), H_P, H_D\right) - \Pr\left(A|I, r\left(H_P, H_D\right), H_P, L_D\right)\right] w_D \geq H_D. \tag{2}$$

These constraints depend on the sizes of effort costs (H_P and H_D), the relative likelihood of each state ($\Pr(G)$ or $\Pr(I)$), and how each effort influences the judgment. They suggest that the high efforts can be expected only if the compensations (w_P and w_D) are affordable to the litigants.[15]

4 Inquisitorial Procedure and Its Comparison with Adversarial Procedure

We next present the alternative model of an inquisitorial criminal system, where the judge J actively investigates a case on her own, and compare it with the model of the adversarial one. We aim to demonstrate: (i) a judge in the inquisitorial system may suffer a trilemma among the three tasks she confronts; (ii) the adversarial system might be better at collecting evidence on a case if attorneys' private interests in winning a suit are plausibly stronger than the judge's public interests in avoiding erroneous judgments; (iii) in the inquisitorial system, there is no incentive scheme to induce costly evidence collection when the costs are sufficiently large relatively to the judge's public interests.

In the inquisitorial system, J herself finds signals instead of P and D and utilizes them for her judgment. This means that J engages in all three tasks of collecting

[15] For Condition (2), we assume that the defense attorney cannot screen out guilty defendants and thus make a contingent contract with both guilty and innocent ones; i.e., the equilibrium is pooling. Such screening is likely to be difficult if defendants have various tastes for conviction or "types." (In a similar context, Grossman and Katz (1983) demonstrate the impossibility of prosecutorial office's screening in plea bargaining when defendants have different degrees of risk averse.) Theoretically, this pooling equilibrium makes sense if the contract between the defendant and his attorney is observable to third parties including judges. Otherwise, a judge could infer from the form of the contract that the defendant is guilty when only innocent defendants make contingent one. If screening is possible, the attorney would also be informed of the defendant's state, and $\Pr(I)$ of Condition (2) should be eliminated in the separating equilibrium, thus loosening the constraint.

evidence of guilt, collecting evidence of innocence, and judging a case.[16] In the adversarial system, each of these tasks is delegated to a separate entity. Notice that this inquisitorial model differs from the nonpartisan agent model of Dewatripont and Tirole (1999), where the decision-maker and the information-collector are *not* identical. To avoid giving an unfair advantage to either system, we impartially assume that the costs of efforts for finer signals in the inquisitorial system are the same as in the adversarial one. J's incentive compatibility constraints for the high efforts are:

$$\begin{aligned} & \Pr(G)\left[\Pr\left(C|G, r\left(H_P, H_D\right), H_P, H_D\right) - \Pr\left(C|G, r\left(L_P, H_D\right), L_P, H_D\right)\right](1-q) \\ & + \Pr(I)\left[\Pr\left(A|I, r\left(H_P, H_D\right), H_P, H_D\right) - \Pr\left(A|I, r\left(L_P, H_D\right), L_P, H_D\right)\right] q \\ \geq\ & H_P, \end{aligned} \tag{3}$$

$$\begin{aligned} & \Pr(G)\left[\Pr\left(C|G, r\left(H_P, H_D\right), H_P, H_D\right) - \Pr\left(C|G, r\left(H_P, L_D\right), H_P, L_D\right)\right](1-q) \\ & + \Pr(I)\left[\Pr\left(A|I, r\left(H_P, H_D\right), H_P, H_D\right) - \Pr\left(A|I, r\left(H_P, L_D\right), H_P, L_D\right)\right] q \\ \geq\ & H_D, \end{aligned} \tag{4}$$

$$\begin{aligned} & \Pr(G)\left[\Pr\left(C|G, r\left(H_P, H_D\right), H_P, H_D\right) - \Pr\left(C|G, r\left(L_P, L_D\right), L_P, L_D\right)\right](1-q) \\ & + \Pr(I)\left[\Pr\left(A|I, r\left(H_P, H_D\right), H_P, H_D\right) - \Pr\left(A|I, r\left(L_P, L_D\right), L_P, L_D\right)\right] q \\ \geq\ & H_P + H_D. \end{aligned} \tag{5}$$

High-effort investigations can be expected if the costs to collect evidence are lower than the expected loss from erroneous judgments. These constraints (Conditions (3), (4), and (5)) differ from those of the adversarial system (Conditions (1) and (2)) due to the fundamental difference that in the inquisitorial system, a single entity engages in all the three tasks. This fundamental difference is two-fold: (a) both incriminating evidence and exonerating evidence are collected by the same agent; (b) both evidence collection and judgment are also conducted by the same one.[17]

The difference (a) trivially generates the additional constraint (Condition (5)) not

[16] This assumption characterizes the inquisitor judge's extensive role in conducting a case; in effect, she may absorb the roles of the prosecutor and the defense attorney. See *supra* footnote 5.

[17] To contrast these two differences, it might be helpful to imagine the eclectic model of two agents corresponding to the nonpartisan agent model of Dewatripont and Tirole (1999), where the judgment is assigned to one and evidence collection to the other, although we refrain from explicitly presenting it.

to simultaneously shirk the two efforts e_P and e_D. Moreover, since the inquisitor judge confronts two activities which aim to prove opposing claims, the implementation of the two is presumably difficult. To paraphrase more formally, suppose that J is given extra payoffs $w_A > 0$ from acquittal and $w_C > 0$ from conviction: $u_J(C|I) = -q + w_C$; $u_J(A|G) = q - 1 + w_A$; $u_J(C|G) = w_C$; $u_J(A|I) = w_A$.[18] Then, J's *ex post* payoffs $1 - q$ and q in Conditions (3), (4) and (5) will be replaced by $1 - q + w_C - w_A$ and $q + w_A - w_C$, suggesting that the contingent payoffs w_C and w_A tend to offset each other.

Proposition 1 *In Conditions (3), (4) and (5), a rise in a contingent payoff, say w_A, tends to reduce the effect of a rise in the other, w_C, and vice versa.*

Proposition 1 suggests that the judge in the inquisitorial system may face a dilemma between the collection of two pieces of conflicting evidence. For instance, an attempt to incentivize the effort to prove guilty by raising w_C may adversely affect the other incentive for e_D because the incentive compatibility constraints for e_P and e_D are inter-related.[19] In part due to this ineffectiveness, such incentive arrangements are largely *non-existent*. This proposition mirrors Dewatripont and Tirole (1999) in their claim that "advocates' rewards closely track their performance whereas nonpartisans' incentives are impaired by their pursuing several causes at one time."

In relation to the difference (b), we next explore another feature of the inquisitorial system which was not addressed by Dewatripont and Tirole. In the adversarial system, the prosecutor's and defense attorney's incentive schemes can be conditional on the judge's decision. In other words, they can be paid more when the judgment favors their clients. In the inquisitorial system, on the contrary, since the judge searches for evidence herself, any incentive scheme for search efforts inevitably causes a distortion of judgment and thereby hinders her incentive for search. For instance, as long as the judge is paid more for a conviction, she may simply render more convictions instead of making an effort to collect evidence of guilt no matter how an incentive scheme is designed. Since an arrangement (w_A, w_C) alters J's *ex post* payoffs, it affects the

[18] Because it remains unknown whether a defendant is guilty or not even after a judgment is made, the judge's incentive scheme cannot be based on state $t \in \{G, I\}$, and thus any institutional arrangement cannot directly penalize the judge for her wrongful judgment.

[19] We cannot give a general prediction of whether a rise in a contingent payoff, say w_C, supports or hinders each of Conditions (3), (4) and (5). The contingent payoff from conviction w_C may urge the judge to pursue more evidence of guilt or simply to render more convictions without thorough investigation.

judge's threshold to render conviction and therefore her decision rule $r(\widetilde{e}_P, \widetilde{e}_D)$.[20] In other words, to keep the judge's threshold unaffected, any payoff arrangement should be abandoned.

Proposition 2 *Any payoff arrangement (w_A, w_C) to induce from the judge J a high search effort distorts her threshold to render conviction unless the two payoffs w_A and w_C are completely offset: $w_A = w_C$.*

Propositions 1 and 2 suggest that a judge in the inquisitorial system may suffer a *trilemma* among her three tasks; that is, a better performance of one task hinders or sacrifices one or two of the others. Because of this trilemma, the inquisitorial system cannot fully satisfy all three tasks simultaneously unless the costs of evidence collection H_P and H_D are sufficiently small that Conditions (3), (4) and (5) are satisfied even without a payoff arrangement (w_A, w_C). Apparently, the trilemma never emerges in the adversarial system because it can structure an incentive scheme without affecting the judge's threshold.

Due to the difference (b), the inquisitor judge knows the true effort levels (e_P, e_D), unlike her adversarial counterpart. Below we argue that this difference makes search efforts harder to induce in the inquisitorial system than in the adversarial one. To interpret this effect, it would be helpful to contrast J's beliefs of effort levels $(\widetilde{e}_P, \widetilde{e}_D)$ in the two systems. In the inquisitorial system, since J herself investigates a case, she knows the true effort levels (e_P, e_D) and thus can adjust the decision rule according to the change in effort levels. In the adversarial system, on the other hand, J's decision rule is fixed because J cannot observe the effort levels. In short, J takes the change in effort levels into consideration in the inquisitorial system, but she does not do so in the adversarial one. This difference in J's belief $(\widetilde{e}_P, \widetilde{e}_D)$ makes the inquisitorial constraints more restrictive than the adversarial ones.

Proposition 3 *As long as the private interests in winning a case are stronger than the public ones in avoiding an erroneous judgment, i.e., $w_P \geq 1 - q$ and $w_D \geq q$, the high efforts (H_P, H_D) are harder to induce in the inquisitorial system than in the adversarial system.*

The proof is provided in the Appendix, but its intuitive account is as follows: If e_P is shirked, for instance, J may reduce the threshold for conviction in the inquisitorial

[20] Recall that the decision rule $r(\widetilde{e}_P, \widetilde{e}_D)$ is depenent on q as shown in the proof of Lemma 1.

system (Condition (3)), but she does not do so in the adversarial one (Condition (1)). Then, when J receives poor evidence of guilt (a small s_P), J in the adversarial system will infer, without knowing the true effort level, that the defendant is likely to be innocent, but J in the inquisitorial one may reason that the poor evidence is due to insufficient investigation (L_P) instead of the defendant's innocence. Consequently, even from the same signals, the adversarial J may acquit, whereas the inquisitorial J convicts. If the prosecutor P is willing to avoid such an acquittal, he would make a higher effort than the corresponding judge J in the inquisitorial system, resulting in Proposition 3.

Proposition 3 may seem trivial at a glance, but it is not so. This is because its inverse does not hold. Namely, even if public interests dominate private ones ($1 - q \geq w_P$ and $q \geq w_D$), the high efforts are not necessarily easier to induce in the inquisitorial system than in the adversarial system.

The premise of Proposition 3 that $w_P \geq 1 - q$ and $w_D \geq q$ is not unnatural if private interests prevail over social interests. For instance, a defence counsel's willingness to prove innocence of his client is likely to be much greater than a judge's willingness not to convict an innocent defendant. Proposition 3 implies that under this premise, the inquisitorial system could underperform the adversarial system in bringing more informative evidence to courts.

The next corollary further suggests the *impossibility* for the inquisitorial system to promote evidence collection.

Corollary 1 *In the inquisitorial system, the high efforts* (H_P, H_D) *cannot be induced by any incentive arrangement* (w_A, w_C) *if there is no* $q \in (0, 1)$ *such that all Conditions (3), (4) and (5) hold.*

Proof. The proof is immediate from Conditions (3), (4), and (5) with the replacement of J's *ex post* payoffs $1 - q$ and q with $1 - q + w_C - w_A$ and $q + w_A - w_C$, respectively. Notice that Conditions (3), (4) and (5) never hold for $q \leq 0$ ($q \geq 1$) because J renders a conviction (an acquittal) regardless of the signals and thus is not willing to engage in costly evidence collection. ■

Corollary 1 holds that since incentive arrangements are severely restricted in the inquisitorial system, it may be impossible to induce the judge's costly investigation. This mechanism crucially differs from that of the adversarial system in its reliance on the judge's social motives, not the attorneys' private ones. In the adversarial system,

although (or because) prosecutors and defense attorneys are driven by private interests of winning a case, they can consequently serve the social interest of suppressing misjudgments; in the inquisitorial system, on the other hand, although the judge's motivation originates in the social interest (or because she lacks motivation from private interests), she may fail to collect informative evidence for a case.

To summarize, we posited three shortcomings of the inquisitorial procedure: (i) trilemma (Propositions 1 and 2); (ii) underperformance in investigation (Proposition 3); (iii) impossibility (Corollary 1). We next point out a potential drawback in the adversarial one.

5 The Adversarial Procedure Re-Examined

Section 3 examined the adversarial procedure in a restricted circumstance in which an effort by each party strengthens his signal only in one state. This section will re-examine the adversarial procedure without such a restriction by extending our model to the case in which an effort strengthens the signal regardless of whether the defendant is guilty or innocent. Suppose that P's effort choice is trinary $e_P \in \{L_P, H_P, X_P\}$ with $X_P > H_P > L_P = 0$ and D's is similarly $e_D \in \{L_D, H_D, X_D\}$ with $X_D > H_D > L_D = 0$. Accordingly, we add to Assumption 2 the distributions of the signals as follows:

Assumption 3 *(i)* $F_P(s_P|G, H_P) = F_P(s_P|G, X_P)$ *for any* s_P, *and* $F_P(s_P|I, H_P) > F_P(s_P|I, X_P)$ *for* $s_P \in (0, 1)$. *(ii)* $F_D(s_D|I, H_D) = F_D(s_D|I, X_D)$ *for any* s_D, *and* $F_D(s_D|G, H_D) < F_D(s_D|G, X_D)$ *for* $s_D \in (0, 1)$.

Assumption 3 means that an excessive effort by P (D) can produce a stronger signal of guilt (innocence) even when the defendant is innocent (guilty). That is, it may give an incorrect impression to the judge in favor of the party or even distort evidence at times to obscure the truth and mislead the judge.[21] If so, the moderate efforts (H_P, H_D) might be preferable to the excessive ones (X_P, X_D) for purposes of assisting the judge. The incentive compatibility constraints *not* to make the excessive

[21] See *supra* footnote 8.

efforts are:

$$\Pr(I)\left[\Pr\left(C|I, r\left(H_P, H_D\right), X_P, H_D\right) - \Pr\left(C|I, r\left(H_P, H_D\right), H_P, H_D\right)\right] w_P \leq X_P - H_P, \tag{6}$$

and

$$\Pr(G)\left[\Pr\left(C|I, r\left(H_P, H_D\right), H_P, X_D\right) - \Pr\left(C|I, r\left(H_P, H_D\right), H_P, H_D\right)\right] w_D \leq X_D - H_D. \tag{7}$$

In contrast, the inquisitorial system is apparently free from such an incentive problem since it is absurd for the judge to produce misleading signals even at costs.

Proposition 4 *The excessive efforts* (X_P, X_D) *can never be chosen in the inquisitorial system but can be chosen in the adversarial system unless Conditions (6) and (7) hold.*

If Proposition 4 applies, the adversarial system would not necessarily outperform the inquisitorial one in discovering useful evidence: the two parties in dispute merely indulge in rent-dissipation without contributing to accurate adjudication.[22] In this regard, it may make sense: to prohibit contingency fees for criminal defense as broadly practiced;[23] to establish the rule of evidence (Posner 1999; Sanchirico 2004); or to induce efforts from each side to find the flaws in the other's evidence (Palumbo 2006) although such a mechanism is abstracted away from our model.

6 Conclusion

We made a theoretical comparison of the criminal court systems. Specifically, we considered how incentives to collect evidence of a defendant's guilt and innocence can be provided in the inquisitorial and adversarial procedures. In the inquisitorial system, evidence collection is conducted by judges, who are motivated by the social interests in penalizing only criminals. In the adversarial system, on the other hand, evidence collection is delegated to prosecutors and defense attorneys, who are motivated by the

[22] There does not necessarily exist any w_P (w_D) that satisfies both Conditions (1) and (6) (Conditions (2) and (7)), depending on parameter values and distribution functions. This non-existence of the contingent fees can be another reason the adversarial system fails to induce the most informative efforts (H_P, H_D).

[23] See *supra* footnote 13.

private interest of winning a case. We showed that this difference in task assignment creates a sharp contrast between the two procedures and results in three shortcomings of the inquisitorial procedure. First, because the judge in the inquisitorial system is assigned three tasks which are mutually incompatible by nature, she may not be able to meet all the tasks simultaneously. Second, the adversarial system may outperform the inquisitorial one in inducing evidence collection if attorneys' private interests in winning a suit plausibly dominate a judge's social interests in judicial accuracy.[24] A caveat to this result is that the adversarial system would not necessarily prevail over the inquisitorial one if overzealous attorneys are tempted to fabricate evidence and mislead the judge for their own ends. Third, since the inquisitorial system is not designed to exploit attorneys' private energies, it cannot accommodate costly investigations if they are too costly for the judge who lacks motivation other than professional esprit.

We conclude this article by providing possible future research directions. Our model is restricted to cases in which the judge makes only a binary decision of conviction or acquittal, but a judge in court also hands down a sentence. Thus, a possible theoretical extension of the model is to give a judge more than two alternatives: determining both fact and penalty.[25] In addition, theoretical investigations on contingency fees have been conducted only in civil cases (e.g., Rubinfeld and Schotchmer 1993; Klement and Neeman 2004; Hyde 2006; Baik and Kim 2007; Wang 2008). This is probably due to practical appeal or empirical relevance to the majority of legal systems in the U.S. and Europe. However, given the lack of theoretical, empirical, and comparative studies on criminal contingency fees, we have been given no clue to help us discern the fees' relevance or help us predict their roles in criminal cases.[26] Signif-

[24] Our claim is not that the adversarial procedure is superior to or socially more desirable than the inquisitorial counterpart. Nor do we conduct any welfare comparison between the two procedures. In fact, given that evidence is costly to produce, accuracy in adjudication does not necessarily enhance social welfare (Polinsky and Shavell 1989; Kaplow 1994). In other words, there may be a tradeoff concerning the benefit of increasing accuracy and the cost of producing evidence. Nonetheless, it is too strong to assume that this tradeoff can be adequately resolved by the inquisitor judge. As Posner (1988) poignantly pointed out, the judge may not be the right person to choose the amount of evidence or the degree of the accuracy. The judge does not bear any personal cost of mistakenly sanctioning an innocent. The innocent does.

[25] For instance, a defendant's willingness to prove his innocence may depend on the size of penalty he anticipates from conviction. Thus, someone charged of felony, or his significant other, is likely to be willing to pay more to his counsel than another charged of misdemeanor. However, if the roles of a defense counsel are restricted as in the inquisitorial system, such a behavioral pattern might be less distinct.

[26] To the best of our knowledge, there is little study on conditional or contingency fees in criminal

icant insights will wholly be garnered from research on contingency fees in criminal cases, which have several unique features — plea bargaining, prosecutorial discretion, indigent defendants, the presumption of innocence, the proof beyond a reasonable doubt, the privilege against self-incrimination, and the lack of *res*.

APPENDIX

Proof of Proposition 1. Here will be shown that given $w_P \geq 1-q$ and $w_D \geq q$, Conditions (3), (4) and (5) suffice Conditions (1) and (2). The incentive compatibility constraint on e_P (Condition (3)) tells that J's expected payoff from (H_P, H_D) is no less than the one from shirking (L_P, H_D) :

$$\begin{aligned} & \Pr(G)\Pr(A|G, r(H_P, H_D), H_P, H_D)(q-1) \\ & +\Pr(I)\Pr(C|I, r(H_P, H_D), H_P, H_D)(-q) - H_P - H_D \\ \geq\ & \Pr(G)\Pr(A|G, r(L_P, H_D), L_P, H_D)(q-1) \\ & +\Pr(I)\Pr(C|I, r(L_P, H_D), L_P, H_D)(-q) - H_D. \end{aligned}$$

Because J's expected payoff is maximized when her belief is correct $r(\widetilde{e}_P, \widetilde{e}_D) = r(e_P, e_D)$,

$$\begin{aligned} & \Pr(G)\Pr(A|G, r(H_P, H_D), H_P, H_D)(q-1) \\ & +\Pr(I)\Pr(C|I, r(H_P, H_D), H_P, H_D)(-q) - H_P - H_D \\ \geq\ & \Pr(G)\Pr(A|G, r(H_P, H_D), L_P, H_D)(q-1) \\ & +\Pr(I)\Pr(C|I, r(H_P, H_D), L_P, H_D)(-q) - H_D. \end{aligned}$$

(Notice that the belief is not consistent with the effort levels in the right hand side of the condition.) Since the distribution of s_P is independent of e_P in state I ($F_P(s_P|I, H_P) = F_P(s_P|I, L_P)$ from Assumption 2),

$$\Pr(C|I, r(H_P, H_D), H_P, H_D) = \Pr(C|I, r(H_P, H_D), L_P, H_D),$$

cases — a rare exception is Stephen et al. (2008) who showed the influence of a defense lawyer's renumeration on plea bargaining — despite the presence of a legal system allowing contingency fees in criminal defense. See *supra* footnote 14.

and therefore

$$\begin{aligned} & \Pr(G)\Pr(A|G, r(H_P, H_D), H_P, H_D)(q-1) - H_P \\ \geq\ & \Pr(G)\Pr(A|G, r(H_P, H_D), L_P, H_D)(q-1), \end{aligned}$$

or using $\Pr(A|G) = 1 - \Pr(I|G)$,

$$\Pr(G)\left[\Pr(I|G, r(H_P, H_D), H_P, H_D) - \Pr(I|G, r(H_P, H_D), L_P, H_D)\right](1-q) \geq H_P.$$

With $w_P \geq 1 - q$, Condition (1) is obtained once $1 - q$ above is replaced by w_P. Condition (2) can be derived from Condition (4) in a similar process. ■

References

[1] Baik, Kyung Hwan, and In-Gyu Kim. 2007. "Contingent Fees Versus Legal Expenses Insurance." *International Review of Law and Economics*. 27: 351-361.

[2] Dewatripont, Mathias, and Jean Tirole. 1999. "Advocates." *Journal of Political Economy*. 107: 1-39.

[3] Emons, Winand, and Claude Fluet. 2009a. "Accuracy Versus Falsification Costs: The Optimal Amount of Evidence under Different Procedures." *Journal of Law, Economics, and Organization*. 25: 134-156.

[4] Emons, Winand, and Claude Fluet. 2009b. "Adversarial versus Inquisitorial Testimony." Discussion Paper, Department of Economics, University of Bern.

[5] Feddersen, Timothy, and Wolfgang Pesendorfer. 1998. "Convicting the Innocent: The Inferiority of Unanimous Jury Verdicts under Strategic Voting." *American Political Science Review*. 92: 23-35.

[6] Froeb, Luke M., and Bruce H. Kobayashi. 2001. "Evidence Production in Adversarial vs. Inquisitorial Regimes." *Economics Letters*. 70: 267-272.

[7] Hyde, Charles E. 2006. "Conditional Versus Contingent Fees: Litigation Expenditure Incentives." *International Review of Law and Economics*. 26: 180-194.

[8] Grossman, Gene M., and Michael L. Katz. 1983. "Plea Bargaining and Social Welfare." *American Economic Review*. 73: 749-757.

[9] Kaplow, Louis. 1994. "The Value of Accuracy in Adjudication: An Economic Analysis." *Journal of Legal Studies*. 23: 307-401.

[10] Karlan, Pamela S. 1993. "Contingent Fees and Criminal Cases." *Columbia Law Review*. 93: 595-638.

[11] Klement, Alon, and Zvika Neeman. 2004. "Incentive Structures for Class Action Laywers." *Journal of Law, Economics, and Organzation*. 20: 102-124.

[12] Kritzer, Herbert. 2004. *Risks, Reputations, and Rewards: Contingency Fee Legal Practice in the United States*. Stanford: Stanford University Press.

[13] Langbein, John H. 1985. "The German Advantage in Civil Procedure." *University of Chicago Law Review*. 52: 823-866.

[14] Luban, David. 1988. *Lawyers and Justice: An Ethical Study*. Princeton: Princeton University Press.

[15] Lushing, Peter. 1991. "The Fall and Rise of the Criminal Contingent Fee." *Journal of Criminal Law and Criminology*. 82: 498-546.

[16] Palumbo, Giuliana. 2001. "Trial Procedures and Optimal Limits on Proof-Taking." *International Review of Law and Economics*. 21: 309-327.

[17] Palumbo, Giuliana. 2006. "Optimal Duplication of Effort in Advocacy Systems." *Journal of Economic Behavior and Organization*. 60: 112-128.

[18] Parisi, Francesco. 2002. *International Review of Law and Economics*. 22: 193-216.

[19] Polinsky, A. Mitchell, and Steven Shavell. 1989. "Legal Error, Litigation, and the Incentive to Obey the Law." *Journal of Law, Economics, and Organization*. 5: 99-108.

[20] Posner, Richard A. 1988. "Comment: Responding to Gordon Tullock." *Research in Law and Policy Studies*. 2: 29-33.

[21] Posner, Richard A. 1999. "An Economic Approach to the Law of Evidence." *Stanford Law Review*. 51: 1477-1546.

[22] Rubinfeld, Daniel L., and Suzanne Schotchmer. 1993. "Contingent Fees for Attorneys: An Economic Analysis." *RAND Journal of Economics*. 24: 343-356.

[23] Sanchirico, Chris William. 2004. "Evidence Tempering." *Duke Law Journal*. 53: 1215-1336.

[24] Shin, Hyun Song. 1998. "Adversarial and Inquisitorial Procedures in Arbitration." *RAND Journal of Economics*. 29: 378-405.

[25] Stephen, Frank H., Giorgio Fazio, and Cyrus Tata. 2008. "Incentives, Criminal Defense Lawyers and Plea Bargaining." *International Review of Law and Economics*. 28: 212-219.

[26] Tullock, Gordon. 1980. *Trials on Trial*. New York: Columbia University Press.

[27] Tullock, Gordon. 1988. "Defending the Napoleonic Code over the Common Law." *Research in Law and Policy Studies*. 2: 3-27.

[28] Tullock, Gordon. 1997. *The Case Against the Common Law*. Durham: Carolina Academic Press.

[29] Wang, Susheng. 2008. "The Optimality of Contingent Fees in the Agency Problem of Litigation." *International Review of Law and Economics*. 28: 23-31.

[30] Wolfram, Charles W. 1986. *Modern Legal Ethics*. St. Paul: West Publishing Co.

[31] Zywicki, Todd J. 2008. "Spontaneous Order and the Common Law: Gordon Tullock's Critique." *Public Choice*. 135: 35-53.

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