BETA
Bureau
d'économie
théorique
et appliquée

Documents
de travail

« Lawyer Fee Arrangements and Litigation Outcomes: An Auction-Theoretic Perspective»

Auteurs

Yannick Gabuthy, Pierre-Henri Morand

Document de Travail n° 2019 – 03

Janvier 2019

Bureau d'Économie Théorique et Appliquée BETA

www.beta-umr7522.fr

@beta_economics

Contact :
jaoulgrammare@beta-cnrs.unistra.fr

Université de Strasbourg · cnrs · UNIVERSITÉ DE LORRAINE · INRA SCIENCE & IMPACT · AgroParisTech

Lawyer Fee Arrangements and Litigation Outcomes: An Auction-Theoretic Perspective*

Yannick Gabuthy† Pierre-Henri Morand‡

January 2019

Abstract

Many jurisdictions in Europe foresee the opportunity to allow the use of pay-for-performance (outcome-based) contracts in lawyer-client relationships, *via* the so-called contingent/conditional fees. In this article, we analyze the welfare implications of such fee regimes – regarding their effects on litigation outcomes – by modeling the lawsuit as an auction. The criteria for regime comparison are litigation costs, lawyers' profits, and parties' incentives to reach a pre-trial settlement. The main result shows that switching from hourly to outcome-based fees may increase the trial costs and the lawyers' profits, and enhance the likelihood of settlement (by decreasing the litigants' expected utilities at trial). This last effect may challenge an important argument in favor of pay-for-performance contracts, that is the objective of promoting access to justice, which is an overriding public policy motivation behind the introduction of these remuneration systems.

Keywords: Litigation expenditures, Pre-trial settlement, Legal fees.

JEL codes: D44, K40, K41.

*We wish to thank the participants to the 2nd Annual Conference of the French Association of Law and Economics and to the 4th International Workshop on Economic Analysis of Litigation for their useful comments.

†Corresponding author; Université de Lorraine, Université de Strasbourg, CNRS, BETA, Nancy, France. Email: yannick.gabuthy@univ-lorraine.fr.

‡Université d'Avignon et des Pays de Vaucluse, LBNC; Avignon, France. Email: pierre-henri.morand@univ-avignon.fr.

1. Introduction

In civil lawsuits, compensation schemes in which lawyer's fees depend on the trial's outcome are an increasing feature of judicial systems. In the US, for instance, it is very common for plaintiffs to compensate their lawyers with *contingent fees*, implying that the attorney gets a share of the judgement if her client wins and nothing if he loses.[1] Indeed, 92%-98% of individual plaintiffs and 85%-88% of corporate plaintiffs retain their lawyer on a contingency basis in American tort and contract litigation cases (Emons and Fluet, 2016). In Europe, such 'no win - no fee' agreements were strictly forbidden for a long time since *pactum de quota litis* was not allowed by the ethical code of the European Association of Lawyers. However, market pressure has led the UK – followed by Belgium and the Netherlands – to implement outcome-based payment contracts *via* the so-called *conditional fees*, whereby the lawyer receives an upscale premium in case of winning and nothing if the case is lost. Both contingent and conditional fees pay for performance, by compensating the lawyer with a higher fee if the lawsuit is successful, however the former provides a percentage of the trial award while the latter implies a reward unrelated to the adjudicated amount.

Following this feature, our purpose is to conduct a comparative analysis of the respective fee regimes (*i.e.* hourly, contingent, conditional fees, and combination of them) regarding their effect on litigation outcomes. The criteria for regime comparison are litigation expenses, trial costs, lawyers' profits, and parties' incentives to settle.[2] Following the seminal paper of Baye *et al.* (2005), this objective is addressed by modeling the litigation process as an all-pay auction in which the legal ownership of a disputed asset is unknown to the court.[3] In other words, the tribunal observes only the quality of the case presented by each litigant who may influence the judgement by hiring an attorney presenting arguments and evidence. With this framework in place, we show that the introduction of pay-for-performance remuneration systems may decrease litigation expenditures, increase both attorneys' profits and trial costs, and enhance pre-trial settlement incentives (by decreasing the litigants' expected payoffs at trial). This last effect may be viewed as

[1] We use the pronoun 'she' to refer to the lawyer and 'he' to refer to the client.

[2] The analysis of these alternative fee regimes imply to make a difference between the litigant's *expenditures* at trial (which are the quantities/hours of legal services purchased to defend his case) and his trial *costs* (which include a filling cost and the actual payment made to his lawyer given the fee system in place).

[3] The idea that litigation may be conceptualized as an auction was first argued – informally – by Klemperer (2003).

socially desirable by implying that less cases go to trial, but it may also challenge an important argument in favor of outcome-based fee systems, that is the objective of promoting access to justice by enabling liquidity-constrained people to get legal advice (which was a central motivation highlighted by governments having introduced these remuneration mechanisms). Indeed, as mentioned by Rickman *et al.* (1999), promoting the use of such compensation schemes would allow to facilitate the transfer of a wide range of civil lawsuits from the legal aid system to the private sector. This issue is overriding from a welfare perspective since the legal aid mechanism consumes substantial public ressources. For example, legal aid spending increased by 65% in France between 2000 and 2010, and by 635% in the UK between 1984 and 1994 (Gray, 1994; Lambert and Chappe, 2014).

In this context, the main contribution of the present paper is twofold. First, we think that our insights may contribute to the growing policy debate in some European countries – such that France, Germany, Italy or Spain – over the opportunity to follow the US/UK tendency, and then allow the use of pay-for-performance remuneration mechanisms.[4] Indeed, compensation contracts between litigants and their lawyers may influence a variety of decisions along the litigation flow (including the choice between settlement and trial, and the incentives to expend resources resources in the case), and analyzing this influence may be interesting for policy makers who are in the position of selecting the regime that will serve the jurisdiction better. Following our results, it is clear that jurisdictions face a trade-off and regime selection should depend on the objective which is considered as the most valuable socially.

Second, the present analysis may also contribute to the discussion existing in literature over the respective merits of the different fee regimes. Indeed, we argue that our results shed new light on the possible influence of contingent/conditional fees in litigation process, since the previous literature has mostly addressed the use of these arrangements as a way to improve the lawyer-client relationship. Following this perspective, many papers show that pay-for-performance contracts may alleviate the moral hazard problem by inciting the lawyer to exert effort (see, *e.g.*, Danzon, 1983; Hay, 1996; Emons and Garoupa, 2006; Wang, 2008), while some other papers consider these fee schedules as a way to share the risk more efficiently between the attorney and her client (Emons, 2017). Indeed, under outcome-related fees, some of the risk incurred at litigation is shifted from the more risk-averse client to the – presumably – less risk-averse lawyer, due to the fact that it is easier

[4]Notice that some of these legal systems have relaxed certain restrictions – by introducing the possibility of such mechanisms – but not to the extreme of accepting explicit conditional/contingent fees (Emons, 2017).

for her to diversify the risks from trials (Posner, 1986). To the best of our knowledge, our article is the first one to emphasize the impact of such a broad range of lawyer remuneration schemes (*i.e.* hourly, contingent and conditional fees, and combination of them) on both incentives to settle, litigation expenditures, trial costs and lawyers' expected payoffs, and so by considering an environment with incomplete information. For example, Hyde (2006) (resp. Baik and Kim, 2007) analyze the implications of conditional (resp. contingent) fees on parties' expenses, but they neglect the possibility of pre-trial settlement. This assumption may seem somewhat puzzling given that, in practice, a large number of disputes do not rise the level of lawsuit and end in settlement. Furthermore, total expenditure depends not only on the expenditure per trial but also on the number of trials. The fee arrangement that generates lower expenditures per trial may provide greater payoffs from litigation and, thus, results in more cases being brought to lawsuit, implying a decreasing in social welfare. Our setup enables us to tackle this overall effect by examining incentives to litigate at the first place. Moreover, these papers are based on a complete information framework, while we consider that each litigant's valuation of the disputed asset is private information, unobserved by the other party and the court. In this respect, our framework extends – partially – the analysis by Baye *et al.* (2005) who ignore the role of fee arrangement and focus on the legal expenditure incentives created by various fee-shifting rules, such as the English *versus* American rule of cost allocation.[5] Following this paper, we assume that the court's decision is influenced by the quality of the case presented by each party, and that quality is a strictly increasing function of her legal expenditures. This assumption departs from alternative approaches assuming either that there is a 'correct' verdict or that the probability of winning is independent of the quality of legal services purchased by the litigants. Nevertheless, we assume that the court's decision can rely on elements of the lawsuits to rule against the party presenting the most meritorious case, but in a symmetric way, such that neither party has a distinct advantage with respect to the legal merits of her claim.

The remainder of the paper is organized as follows. Section 2 lays down the model, and derives our main results concerning the optimal fee contracts. Section 3 concludes and suggests some extensions. For ease of exposition, all proofs are relegated to the appendix.

[5]The American rule implies that each party bears its own litigation costs, while the winner's costs are shifted to the loser under the English rule. The authors also deal with much less common rules, such that the so-called Quayle, Marshall, and Matthew systems. From this standpoint, our framework is somewhat more restrictive since we restrict the attention to the American rule. However, this restriction has been deliberately chosen to develop our results in a focused and simplified manner.

2. The Model

2.1. Framework. There are two – risk-neutral – parties who are involved in a civil dispute regarding the ownership of an indivisible asset. Following Klemperer (2003), it is assumed that each party has a privately-known value of winning the lawsuit relative to losing, which is independently drawn from a common, strictly-increasing, and atomless distribution. More precisely, each party i values the asset at v_i, and these valuations are random variables drawn from a continuous density f with distribution function F over $[0, 1]$. Furthermore, each party's valuation is private information, while the distribution of valuations is *common knowledge*. The legal ownership of the asset is unknown to the court who observes only the quality of the case presented by each litigant. In this context, party i chooses the quantities/hours of legal services purchased, $e_i \geq 0$, in order to influence the court's decision. The role of the court is then to examine the evidence presented and to award the asset to one of the litigants. The party i's probability of prevailing is then given by:

$$\mathbb{P} = \begin{cases} \frac{1+x}{2} & \text{if } e_i \geq e_j \\ \frac{1-x}{2} & \text{if } e_i < e_j \end{cases}$$

where $x \in [0, 1]$ captures the influence of legal services on the court's adjudication.
In the case where $x = 0$, the litigants' expenditures do not affect the judge's decision, and $\mathbb{P} = 1/2$ since the litigation environment is symmetric. Indeed, we implicitly assume that the lawyers have equal ability and neither party has an advantage with respect to the evidentiary or legal merits. Following Waldfogel (1998), this simplifying assumption may have some empirical relevance since the pre-trial adjudication process tends to remove asymmetries between litigants.[6] In contrast, when $x = 1$, the outcome at trial depends only upon the litigants' outlays, and party i (resp. j) wins if $e_i > e_j$ (resp. $e_i < e_j$). The present framework extends the analysis by Baye *et al.* (2005) who assume a deterministic relationship between the player's expenditures and its probability of winning (*i.e.* $x = 1$). Furthermore, we argue that the different values of x may characterize various judicial systems. Indeed, a low value for x might characterize a system where judges have broad leeway to instruct juries and, thus, the influence of advocacy on each side is weak. In contrast, a high value for x would reflect systems where – by law or customs – judges are

[6]Carbonara *et al.* (2015) introduce, however, an asymmetric winning function in a different theoretical framework where trial is modeled as a rent-seeking contest. Notice that the Tullock's rent-seeking approach has been widely applied to the analysis of civil litigation (see Parisi and Luppi, 2015, for a survey).

limited to analyze procedural issues. Following the discussion by Parisi (2002), we can refer to the distinction between 'adversarial' and 'inquisitorial' systems implying different roles played by the judge in the conduct of a civil case.

In this context, lawyer's payoffs will depend on the existing fee arrangement, knowing that we can distinguish three typical remuneration schemes between the litigants and their attorneys:

- An *hourly fee* contract which implies that the lawyer receives a payoff corresponding to the number of hours (*i.e.* e_i) spent on the legal case, regardless of the court's decision.

- A *contingent* fee contract which is given by a percentage b of the adjudicated amount. In other words, under this fee regime, the lawyer gets a share b of her client's recovery (*i.e.* v_i) as a payment for her legal services.

- A *conditional* fee contract which implies the payment of a bonus not related to the value of the judgement and received only in case of winning at trial. Following the literature, this bonus may be considered either as a fixed amount $\bar{b}$, implying that the lawyer gets $e_i + \bar{b}$ in case of victory, or as a percentage mark-up β over the hourly rate, which entails that the attorney receives $(1+\beta)e_i$ if winning.[7]

Given these different fee regimes, the litigant i's payoff may be written as:[8]

$$u_i(e_i, e_j, v_i) = \begin{cases} v_i - \left[k + e_i(1+\beta) + bv_i + \bar{b}\right] & \text{if party } i \text{ wins} \\ -(k + \mu e_i) & \text{if party } i \text{ loses} \end{cases}$$

where k is a filing cost, which may include the cost of preparing a complaint and making the other party aware of the lawsuit, and $\mu \in \{0, 1\}$ is an indicator variable enabling us to represent the party i's expected payoff in a general fashion. Indeed, our framework is able to capture a large combination of fee regimes: the hourly fee arrangement is characterized by $\mu = 1$ and $\beta = b = \bar{b} = 0$, while an outcome-based payment schedule is given by $\mu = 0$ and β, b, and/or $\bar{b}$ taking a positive value. For example, a typical contingent fee contract

[7]For instance, the first structure is retained by Emons (2006, 2007), while the second one is chosen by Hyde (2006). We address both of them in order to be all-encompassing.

[8]The unit price of legal services is normalized to 1 (under a hourly fee arrangement). This assumption has been introduced for algebraic convenience and could be relaxed without altering the gist of our arguments.

is defined by $\mu = \beta = \bar{b} = 0$ and $b \in (0,1)$. Moreover, we can also consider some more 'exotic' systems implying, for instance, a combination of conditional and contingent fees represented by $\mu = \bar{b} = 0$, $\beta > 0$ and $b \in (0,1)$. The fact to tackle such remuneration mechanisms seems to us interesting essentially for the following reasons. First, although all these combinations are not necessarily consistent with real-world legal systems, this does not mean they will never be allowed in any jurisdiction at any time, and an exploratory analysis may be interesting from a normative perspective. Furthermore, it may be useful to give insightful recommendations to alter some inefficiencies of the current systems or to provide some guidelines to jurisdictions contemplating the introduction of outcome-based contracts. These arguments explain also why we do not introduce further restrictions on the values of β and b, while such restrictions exist in practice.[9]

Having exposed our theoretical framework and its assumptions, we now turn to the study of the parties' behavior over the litigation process, depending on the considered fee regime. In this perspective, we first characterize the equilibrium expenditures on legal services when both parties go to trial, and then investigate their incentives to settle at an earlier stage of the lawsuit. This analysis will allows us to determine the expected total legal costs and payoffs from an *ex-ante* standpoint.

2.2. Equilibrium expenditures. We consider that each litigant chooses his level of expenditure in order to maximize his expected payoffs, and we restrict attention to strictly symmetric, continuous and increasing strategies for the two players. In this static Bayesian game, a *pure* strategy for player i is a function $e_i(v_i)$, where for each valuation v_i in $[0,1]$, $e_i(v_i)$ specifies the action that type i would choose if drawn by the Nature. The litigant

[9]This is for example the case in UK (resp. Australia) where the maximum value for β is 100% (resp. 25%). In the same way, as underlined by At and Gabuthy (2015), the typical contingent fees contract in the US involves $b = 30\%$.

i's best reply is then defined by the following maximization problem:

$$\max_{e_i} \mathbb{E}U(e_i, v_i) =$$
$$\underbrace{\int_{v^-}^{e_j^{-1}(e_i(v_i))} \left((v_i - (k + e_i + \beta e_i + bv_i + \bar{b})\right) \left(\frac{1+x}{2}\right) dF(v_j)}_{\text{prevailing with the highest value / expenditure}}$$
$$- \underbrace{\int_{v^-}^{e_j^{-1}(e_i(v_i))} (k + \mu e_i) \left(\frac{1-x}{2}\right) dF(v_j)}_{\text{losing with the highest value}}$$
$$- \underbrace{\int_{e_j^{-1}(e_i(v_i))}^{v^+} (k + \mu e_i) \left(\frac{1+x}{2}\right) dF(v_j)}_{\text{losing with the lower value}}$$
$$+ \underbrace{\int_{e_j^{-1}(e_i(v_i))}^{v^+} \left(v_i - (k + e_i + \beta e_i + bv_i + \bar{b})\right) \left(\frac{1-x}{2}\right) dF(v_j)}_{\text{prevailing with the lowest value}}$$

Under hourly fees, the problem confronting each party at trial is strategically similar to the problem faced by a buyer in an *all-pay auction*. Indeed, by choosing a lower level of expenditures, a litigant earns a greater payoff if winning but at the same time increases the risk of losing, which typically reflects the basic strategy trade-off faced by each litigant/buyer in litigation/in an all-pay auction. However, under outcome-based fees, the situation sounds like a *first-price auction* since the lawyer is paid only in case of success at trial. Given these strategic considerations, we get the following result.

Lemma 1. *Switching from hourly to outcome-based fees decreases the equilibrium level of litigation expenditures:*

$$e^*_{ob}(v_i) = \frac{x(1-b)\int_{v^-}^{v_i} s \, \mathrm{d}F(s)}{(1+\beta)\mathbb{P}(v_i)} - \frac{x\bar{b}F(v_i)}{\mathbb{P}(v_i)} < e^*_{hf}(v_i) = x\int_{v^-}^{v_i} s \, \mathrm{d}F(s)$$

where "ob" (resp. "hf") stands for outcome-based (resp. hourly) fees, and $\mathbb{P}(v_i)$ is the probability that a party with value v_i wins at trial:

$$\mathbb{P}(v_i) = \left(\frac{1+x}{2}\right) F(v_i) + \left(1 - \frac{x+1}{2}\right)(1 - F(v_i))$$

Proof. See Appendix A □

The intuition behind this proposition is the following. Under hourly fees, each litigant is incited to bid aggressively since litigation expenditures are wasted in case of losing. In contrast, with outcome-based contracts in place, the parties are encouraged – when deciding their level of expenditures – to balance the desirable increase in probability of winning with the undesirable decrease in surplus. This latter effect is reinforced by the level of b, β and $\bar{b}$ ($\forall v_i$):

$$\frac{\partial e^*_{ob}(v_i)}{\partial b} = -\frac{x\int_{v^-}^{v_i} s\,\mathrm{d}F(s)}{(1+\beta)\mathbb{P}(v_i)} < 0, \frac{\partial e^*_{ob}(v_i)}{\partial \beta} = -\frac{(1-b)x\int_{v^-}^{v_i} s\,\mathrm{d}F(s)}{(1+\beta)^2\mathbb{P}(v_i)} < 0, \frac{\partial e^*_{ob}(v_i)}{\partial \bar{b}} = -\frac{xF(v_i)}{\mathbb{P}(v_i)} < 0$$

The next result follows.

Corollary 1. *Switching from hourly to outcome-based fees decreases the total expected level of litigation expenditures:*

$$\mathbb{E}(E_{ob}) = \int_{v^-}^{v^+} 2e^*_{ob}(s)\mathrm{d}F(s)) < \mathbb{E}(E_{hf}) = \int_{v^-}^{v^+} 2e^*_{hf}(s)\mathrm{d}F(s)$$

where $\mathbb{E}(E_{ob}) = \int_{v^-}^{v^+} 2\frac{x(1-b)\int_{v^-}^{v_i} s\,\mathrm{d}F(s)}{(1+\beta)\mathbb{P}(v_i)} - \frac{x\bar{b}F(v_i)}{\mathbb{P}(v_i)\mathrm{d}F(s)}$ *and* $\mathbb{E}(E_{hf}) = \int_{v^-}^{v^+} 2x\int_{v^-}^{v_i} s\,\mathrm{d}F(s)\mathrm{d}F(s)$.

Furthermore, as highlighted above, this decreasing effect is stronger when the contingency fee (*i.e.* b) or the conditional bonus/mark-up (*i.e.* $\beta/\bar{b}$) is higher:

$$\frac{\partial \mathbb{E}(E_{ob})}{\partial \bar{b}} < 0, \frac{\partial \mathbb{E}(E_{ob})}{\partial b} < 0, \frac{\partial \mathbb{E}(E_{ob})}{\partial \beta} < 0$$

However, under outcome-based contracts, we know that the parties do not incur trial expenditures in case of losing and pay more than these expenses in case of winning. Therefore, comparing the level of expenditures is not enough to say something about the actual trial costs incurred by the litigants. Furthermore, these expenditures are often considered as a waste in literature on litigation (since an agreement could provide a similar allocation without incurring these expenses), but this argument does not apply here since the trial expenses induce a monetary transfer between parties and their lawyers.

2.3. Expected litigation costs. Under the hourly fee system, the litigant i with valuation v_i incurs an expected trial cost which is given by:

$$\mathbb{E}(C_{hf}) = k + x\int_{v^-}^{v_i} sf(s)\,\mathrm{d}s$$

Under the outcome-based payment schedules, this cost may be written as:

$$\mathbb{E}(C_{ob}) = k + \mathbb{P}(v_i)\left((1+\beta)e^*_{ob}(v_i) + bv_i + \bar{b}\right)$$

$$\Leftrightarrow \mathbb{E}(C_{ob}) = k + (\bar{b} + bv_i)\mathbb{P}(v_i) + x\left((1-b)\int_{v^-}^{v_i} sF'(s)\,\mathrm{d}s - \bar{b}F(v_i)\right)$$

The next proposition follows.

Proposition 1. *Switching from hourly to outcome-based fees increases the expected trial costs incurred by the litigants. This effect is strengthened by the level of contingent fee/conditional bonus (i.e. $b/\bar{b}$).*

Proof. See Appendix B □

The reader who is familiar with auction theory may find useful to have an intuitive explanation of the theoretical underlying factors explaining this result. The explanation goes back to the root causes of the revenue equivalence theorem, following the arguments exposed in Appendix C.

2.4. Lawyers' profit. We now turn to the comparison of fee regimes in terms of lawyers' remuneration. The attorney's profits, π, may be stated as the difference between the remuneration she obtains form her client (*i.e.* R) and the cost induced by the working hours invested in the case (*i.e.* $\phi(e)$):

$$\pi = k + R - \phi(e) \text{ with } R = \begin{cases} e^*_{hf}(v_i) & \text{under hourly fees} \\ \left((1+\beta)e^*_{ob}(v_i) + bv_i + \bar{b}\right)\mathbb{P}(v_i) & \text{under outcome-based fees} \end{cases}$$

The next result follows.

Proposition 2. *The lawyers' expected remuneration under outcome-based payment systems is similar or higher than under hourly fees.*

Proof. See Appendix D □

Furthermore, following Lemma 1, we know that the equilibrium level of expenditures is lower under outcome-related payment schemes (*i.e.* $e^*_{ob}(v_i) < e^*_{hf}(v_i)$), which implies in turn that the corresponding cost is lower (*i.e.* $\phi(e^*_{ob}(v_i)) < \phi(e^*_{hf}(v_i))$). Considering first the case where $b = 0$ and $x = 1$, we can highlight that pay-for-performance contracts induce the same remuneration as that implied by hourly fees, and generate in the same

time a lower cost. The lawyer's profit is then enhanced. This result holds for all the possible fee mechanisms (*i.e.* for any combination of β and $\bar{b}$), and is even strengthened when $x < 1$ since a switchover to outcome-based fees increases R and decreases $\phi(.)$. This finding is summarized in the following corollary.

Corollary 2. *The lawyers' profit is similar or higher under outcome-based payment systems than under hourly fees.*

2.5. Litigants' incentives to settle. We now turn to the case where a pre-trial settlement is possible. Analyzing the individual incentives to settle is important since the total litigation costs induced by a given fee system depend not only on the costs per trial under each system – as underlined in Section 2.3 – but also on the number of trials induced by each system. In the pre-trial stage, each disputant compares the expected payoffs he can get from an agreement to the payoffs obtained if trial occurs. Given that party i's probability of winning is increasing in v_i, we can define a threshold $\tilde{v}$ such that no party with $v_i \leq \tilde{v}$ chooses to go to court. This threshold is defined as the value such that a party with private signal $\tilde{v}$ is indifferent between going to trial (and facing an adversary with a signal greater than $\tilde{v}$ or winning for sure if the other party has a signal $v_j < \tilde{v}$) or settle and obtain the asset with probability 1/2.[10] The following table highlights the litigant i's expected utility from going to trial in the two possible payment schedules (*i.e.* hourly or outcome-based fees), depending on the core parameters of our framework (*i.e.* x, β, b, and $\bar{b}$).

	$\beta > 0$	$b > 0$ or $\bar{b} > 0$
$x = 1$	$\mathbb{E}U^*_{hf} = \mathbb{E}U^*_{ob}$	$\mathbb{E}U^*_{hf} = \mathbb{E}U^*_{ob}$
$x < 1$	$\mathbb{E}U^*_{hf} = \mathbb{E}U^*_{ob}$	$\mathbb{E}U^*_{hf} > \mathbb{E}U^*_{ob}$

This result is proved in Appendix E and is summarized in the following proposition.

Proposition 3. *Considering that $x < 1$, switching from hourly to outcome-based fees enhances litigants' settlement incentives if lawyers' remuneration entails contingent fees (i.e. $b > 0$) and/or a conditional fixed bonus (i.e. $\bar{b} > 0$).*

This result highlights that the use of – some types of – pay-for-performance contracts between litigants and their lawyers may improve the efficiency of the litigation process

[10]Indeed, following some arguments by Baye *et al.* (2005), we can consider that the asset is allocated on the basis of a coin flip – representing a fair sharing – in the case where both parties concede.

by enhancing the likelihood of pre-trial settlements and, hence, lessening the social cost of justice (which is deeply impacted by ressource wastes, caseloads of public courts, ...).[11] However, following an alternative understanding of this result, we could consider that switching from hourly to outcome-based fees may also induce a perverse effect by reducing the litigants' access to justice (whose the magnitude may indeed be captured by their expected utilities at trial). In this context, this switchover may be considered as desirable if mitigating congestion in the courts is highly valuable socially and embodies the main objective of policy makers.

3. Conclusion

Following the growing debate in some European countries over the opportunity to allow pay-for-performance contracts to compensate lawyers, the aim of this paper was to conduct a comparative analysis of a wide range of fee regimes regarding their effect on litigation outcomes. More precisely, we investigated the effects of these fee schedules on parties' expenditures, trial costs, attorneys' profits and the likelihood of a pre-trial settlement. Formalizing the litigation process as an auction, our model notably predicts that switching from hourly to outcome-based fees may decrease litigation expenditures, increase lawyers' expected payoffs, enhance trial costs, and promote incentives to settle (by decreasing the parties' expected utilities at trial).[12] This last effect may be viewed as suitable by implying that less cases go to trial, but it may also question an important argument in favor of 'no win - no fee' agreements, that is the objective of promoting access to justice (which was a crucial public policy motivation behind the introduction of these mechanisms). In a more general perspective, our findings highlight that policy makers may face a trade-off – when contemplating the introduction of outcome-related contracts – between the incentives to settle, the access to justice, and the impact on litigation costs incurred by the litigants (even if some of these costs are a transfer and, hence, improve the lawyers' profits).[13] However, although these results might be relevant for policy-making, our analysis is by no means all-encompassing and several extensions suggest themselves. First, our model abstracts from many factors that explain why disputes do not settle by focusing the

[11] The case where $x < 1$ is much more relevant because it seems puzzling to assume that lawyers cannot influence court's decision.

[12] As highlighted in our results, the different impacts of fee regimes depend on the values of the contingency fee (*i.e.* b) and of the conditional bonus/mark-up (*i.e.* $\beta/\bar{b}$).

[13] Indeed, as underlined in Section 2.2, we have to notice that litigation expenditures should not be considered as waste ressources in our setup since they fall within lawyers' payoffs.

attention on the role of asymmetric information. An interesting (but complicated) extension could incorporate some of these factors, such as attitudes toward risk or divergent litigants' beliefs on court's decision (given that these beliefs may have both objective and subjective components in practice). Second, we adopt a *client-controlled* litigation perspective by assuming that the client is able to perfectly control legal expenditures. An alternative view would be to consider a framework where lawyers get the exclusive decision-making authority (Maute, 1984; Choi, 2003), and thus choose outlays that maximize their own payoffs, depending on the fee schedule in place. Such an extension would imply to integrate agency cost considerations into the comparison between hourly and pay-for-performance fees. Indeed, under hourly fees, some agency costs may arise since the objectives of the litigants and their attorneys are not necessarily congruent: absent concerns for reputation or long-run relationship, the divergence of interests between the client and his lawyer would require to invest in costly monitoring in order to deal with moral hazard (Baik and Kim, 2007). In contrast, we can conjecture that there is no need for the client to monitor his lawyer's effort level under outcome-based fees since these compensation schemes are precisely a response to the moral hazard problem (by tying the attorney's pay on the outcome of litigation). Overall, such considerations would affect the results by modifying parties' litigation costs and, then, altering the strategic interaction between them. Finally, a further step towards realism would be to consider that the parameters characterizing each lawyer-client contract (*i.e.* β, b, and $\bar{b}$) are not *common knowledge*. Indeed, in practice, it is impossible for the adversary to see the exact value of these parameters since the contract for them is a kind of privileged communication or document between the lawyer and her client.

Overall, a framework based on some of these extensions would certainly provide a more complete and robust analysis of the influence of fee regimes on litigation outcomes. Our aim was simply to develop a theoretical basis to understand this role under idealized conditions, as a prerequisite to analyze it in a more integrative process.

Appendix A. Proof of Lemma 1

By noting the inverse function e_j^{-1} as $h_j(e_i)$, the litigant i's expected utility (with value v_i) under outcome-based fees may be written:

$$\int_0^{h_j(e_i)} \left(\frac{1+x}{2}(v_i - ((1+\beta)e_i + bv_i + \bar{b})) \right) dF(v_j) + \int_{h_j(e_i)}^1 \left((1 - \frac{1+x}{2})(v_i - (1+\beta)e_i + bv_i + \bar{b}) \right) dF(v_j) - k$$

Considering symmetric equilibrium and taking boundary condition $e_i(0) = 0$, the litigant determines his optimal level of expenditures by solving the following first-order condition:

$$-\frac{1+\beta}{2}(1 - x + 2F(v_i)) = \frac{x(\bar{b} + (-1+b)v_i + (1+\beta)e(v_i))F'(v_i)}{e'(v_i)}$$

Using standard manipulation, we obtain:

$$e^*_{ob}(v_i) = \frac{2x\int_0^{v_i}(\bar{b} + (-1+b)s)dF(s)}{(1+\beta)(-1+x-2xF(v_i))}$$

Let $\mathbb{P}(v_i)$ denotes the probability that a party with value v_i wins the case:

$$\mathbb{P}(v_i) = \left(1 - \frac{x+1}{2}\right)(1 - F(v_i)) + \frac{1}{2}(x+1)F(v_i),$$

We get:

$$\frac{1}{\mathbb{P}(v_i)} = \frac{2}{2xF(v_i) - x + 1} \Rightarrow e^*_{ob}(v_i) = \frac{x\int_0^{v_i} sF'(s)\,ds}{(1+\beta)\mathbb{P}(v_i)} - \frac{x\bar{b}F(v_i)}{\mathbb{P}(v_i)}$$

Under hourly fees, the litigant i's expected utility (with value v_i) is:

$$\mathbb{E}U(v_i) = \int_{h_j(e_i)}^1 \left(\left(1 - \frac{x+1}{2}\right)(v_i - (k+e_i)) - \frac{1}{2}(x+1)(k+e_i) \right) dF(v_j)$$

$$+ \int_0^{h_j(e_i)} \left(\frac{1}{2}(x+1)(v_i - (k+e_i)) - \left(1 - \frac{x+1}{2}\right)(k+e_i) \right) dF(v_j)$$

The first-order condition of the optimization problem is thus given by:

$$\frac{v_i x F'(v_i)}{e'(v_i)} = 1$$

With boundary condition $e_i(0) = 0$, we obtain:

$$e^*_{hf}(v_i) = x \int_0^{v_i} sF'(s)\, ds.$$

Therefore, we can state that:

$$e^*_{ob}(v_i) = \frac{(1-b)e^*_{hf}(v_i)}{(1+\beta)\mathbb{P}(v_i)} - \frac{x\bar{b}F(v_i)}{\mathbb{P}(v_i)} < e^*_{hf}(v_i).$$

Appendix B. Proof of Proposition 1

Comparing the expected costs under hourly and outcome-based fees gives:

$$\mathbb{E}(C_{ob}) - \mathbb{E}(C_{hf}) = (\bar{b} + bv_i)\mathbb{P}(v_i) - x\left(b\int_{v^-}^{v_i} sf(s)\,\mathrm{d}s + \bar{b}F(v_i)\right)$$

Rearranging terms and integrating by parts yield:

$$\mathbb{E}(C_{ob}) - \mathbb{E}(C_{hf}) = (\bar{b} + bv_i)(\mathbb{P}(v_i) - xF(v_i)) + xb\int_{v^-}^{v_i} F(s)\,\mathrm{d}s > 0$$

Notice that this difference is strictly increasing in b and $\bar{b}$. Furthermore, we can state that $\mathbb{E}(C_{ob}) = \mathbb{E}(C_{hf})$ if $\bar{b} = b = 0$ and:

$$\frac{\partial[\mathbb{E}(C_{ob}) - \mathbb{E}(C_{hf})]}{\partial\beta} = 0.$$

Appendix C. Revenue equivalence and non-equivalence of expenditures

An intuitive way to understand the underlying factors that explain the previous results is to go back to the root causes of the revenue equivalence theorem. In our setting, and in most auctions-like settings, the problem can be stated in the following terms: an agent, with a private valuation v_i, has to determine his strategy e_i that may affect both the probability of winning the prize and his payoff in case of winning or losing. His expected payoff may be written as:

$$\mathbb{E}U(v_i, e_i) = (v_i - t_{win}(e_i, e_j, v_i))Prob_{win}(e_i, e_j) - t_{loose}(e_i, e_j, v_i)Prob_{loose}(e_i, e_j)$$

This expected utility can be further decomposed into two components: a fixed part, common for all level of private signal v_i, and a type-dependent part. Actually:

$$\frac{\mathrm{d}\mathbb{E}U(v_i,e_i)}{\mathrm{d}v_i}=\frac{\partial\mathbb{E}U(v_i,e_i)}{\partial v_i}+\underbrace{\frac{\partial\mathbb{E}U(v_i,e_i)}{\partial e_i}}_{=0}\times\frac{\partial e_i}{\partial v_i}$$

Since e_i is determined as the optimal level, only direct impact of v_i matters.

Consider first the case where:

$$\frac{\partial t_{win}(e_i,e_j,v_i)}{\partial v_i}=\frac{\partial t_{loose}(e_i,e_j,v_i)}{\partial v_i}=0,$$

which characterizes a situation where the agent's payoffs only depend on the strategies (implying $b=0$ in our framework). Under this condition, we get:

$$\frac{\mathrm{d}\mathbb{E}U(v_i,e_i)}{\mathrm{d}v_i}=Prob_{win}(e_i,e_j)\Rightarrow\int_{v^-}^{v_i}\frac{\mathrm{d}\mathbb{E}U(s,e_i)}{\mathrm{d}s}\,\mathrm{d}s=\int_{v^-}^{v_i}Prob_{win}(e_i,e_j)\,\mathrm{d}s$$

$$\mathbb{E}U(v_i,e_i)=\underbrace{\int_{v^-}^{v_i}Prob_{win}(e_i,e_j)\,\mathrm{d}s}_{\text{type-dependent part}}+\underbrace{\mathbb{E}U(v^-,e_i)}_{\text{fixed part}}$$

Notice that the type-dependent part is not affected by the payments: it only depends on the selection rule (*i.e.* the probability of winning). Any change in the payment rule that does not modify the probability of winning lets the type-dependent part of the expected utility unchanged. Here is the revenue equivalence theorem. In our setup, this feature explains why an increase in the upscale premium (*i.e.* β) does not impact the level of costs incurred by the parties. The fixed part corresponds to the expected utility of the party with the lowest signal (obviously because nobody can obtain less than the fixed part). In traditional basic auction setting, this fixed part vanishes as the probability of winning is null for lowest-type agent. And the revenue equivalence of different types of auction mechanisms is driven by the previous discussion relative to the type-dependent part. In our framework, an agent with the lowest type can win as long as the probability of prevailing does not only depend on the expenditures (which is the case if $x<1$). Therefore, under conditional fees, he is likely to pay the bonus and his expected utility is then reduced with a positive level for the fixed bonus (*i.e.* $\bar{b}>0$). If the trial outcome only depends on the parties' expenditures (*i.e.* $x=1$), then the probability of winning for the lowest-type agent is null.

Let us now turn to consider the alternative situation where, in our setting, $b > 0$, which implies that:

$$\frac{\partial t_{win}(e_i, e_j, v_i)}{\partial v_i} \neq 0 \quad \text{and} \quad \frac{\partial t_{loose}(e_i, e_j, v_i)}{\partial v_i} \neq 0$$

In this case, the agent's expected utility does not depend any longer only on the probability of winning and the expected utility of the lowest-type agent. Marginal impact of the signal on the payments matters and revenue equivalence theorem does not hold anymore.

Appendix D. Proof of Proposition 2

Under outcome-based payement schemes, and considering the litigants' optimal strategies, we get:

$$\left((1+\beta)\frac{(1-b)e^*_{ob}(v_i)}{(1+\beta)\mathbb{P}(v_i)} + \frac{x\bar{b}F(v_i)}{\mathbb{P}(v_i)} + bv_i + \bar{b}\right)\mathbb{P}(v_i)$$

$$\Leftrightarrow$$

$$\left(\frac{(1-b)e^*_{hf}(v_i)}{(1+\beta)\mathbb{P}(v_i)} - \frac{x\bar{b}F(v_i)}{\mathbb{P}(v_i)} + bv_i + \bar{b}\right)\mathbb{P}(v_i)$$

$$\Leftrightarrow$$

$$(1-b)e^*_{hf}(v_i) + \bar{b}(\mathbb{P}(v_i) - xF(v_i)) + bv_i\mathbb{P}(v_i)$$

$$\Leftrightarrow$$

$$e^*_{hf}(v_i) + (\bar{b} + bv_i)(\mathbb{P}(v_i) - xF(v_i)) + xb\int_{v^-}^{v_i} F(s)\,\mathrm{d}s \geq e^*_{hf}(v_i)$$

The lawyer's expected remuneration is the same in hourly fees and conditional fees if the bonus is only a percentage mark-up over the hourly rate (*i.e.* $b = \bar{b} = 0$). If $b = 0$ but $\bar{b} > 0$, the equivalence remains if and only if the probability of winning only depends on the level of expenditures (*i.e.* $x = 1$). If $x < 1$, then $\bar{b}(\mathbb{P}(v_i) - xF(v_i))$ is strictly positive and increasing in x: the lawyer's remuneration increases.

Appendix E. Litigants' expected payoffs

Endogenous entry in trial can be determined by considering the threshold value $\tilde{v}_{hf}$ (resp. $\tilde{v}_{ob}$) such that, considering hourly (resp. outcome-based) fees, no litigant with valuation lower than $\tilde{v}_{hf}$ (resp.$\tilde{v}_{ob}$) is incited to settle. The thresholds $\tilde{v}_{hf}$ and $\tilde{v}_{ob}$ are determined by:

$$\mathbb{E}U^*_{hf}(\tilde{v}_{hf})(1-F(\tilde{v}_{hf}))+\tilde{v}_{hf}F(\tilde{v}_{hf})=\frac{1}{2}\tilde{v}_{hf}F(\tilde{v}_{hf})$$

$$\text{and } \mathbb{E}U^*_{ob}(\tilde{v}_{ob})(1-F(\tilde{v}_{ob}))+\tilde{v}_{ob}F(\tilde{v}_{ob})=\frac{1}{2}\tilde{v}_{ob}F(\tilde{v}_{ob}),$$

where:

$$F_{\tilde{v}_{ob}}(v_i)=\frac{F(v_i)-F(\tilde{v}_{ob})}{1-F(\tilde{v}_{ob})} \quad \text{and} \quad F_{\tilde{v}_{hf}}(v_i)=\frac{F(v_i)-F(\tilde{v}_{hf})}{1-F(\tilde{v}_{hf})}$$

Basic calculations enable us to determine the equilibrium expenditures of a litigant with value v_i, respectively under hourly and outcome-based fees:

$$e^*_{hf}(v_i)=x\int_{\tilde{v}_{hf}}^{v_i} sF'_{\tilde{v}_{hf}}(s)\,ds$$

$$e^*_{ob}(v_i)=\frac{x(1-b)\int_{\tilde{v}_{ob}}^{v_i} s\,\mathrm{d}F_{\tilde{v}_{ob}}(s)}{(1+\beta)\mathbb{P}(v_i)}-\frac{x\bar{b}F_{\tilde{v}_{ob}}(v_i)}{\mathbb{P}(v_i)}$$

We can determine the expected utilities in both fee regimes. Notice that:

$$\mathbb{E}U_{hf}(v_i)=\left[\left(\frac{1+x}{2}\right)F_{\tilde{v}_{hf}}(v_i)+\left(\frac{1-x}{2}\right)(1-F_{\tilde{v}_{hf}}(v_i))\right]v_i-e^*_{hf}(v_i)$$

$$\Leftrightarrow$$

$$\mathbb{E}U_{hf}(v_i)=\mathbb{P}(v_i)v_i-x\int_{\tilde{v}_{hf}}^{v_i} sF'_{\tilde{v}_{hf}}(s)\mathrm{d}s,$$

and that:

$$\mathbb{E}U_{ob}(v_i)=\left[\left(\frac{1+x}{2}\right)F_{\tilde{v}_{ob}}(v_i)+\left(\frac{1-x}{2}\right)(1-F_{\tilde{v}_{ob}}(v_i))\right]\left[(1-b)v_i-(1+\beta)e^*_{ob}(v_i)-\bar{b}\right]$$

$$\Leftrightarrow$$

$$\mathbb{E}U_{ob}(v_i)=\mathbb{P}(v_i)(1-b)v_i-x(1-b)\int_{\tilde{v}_{ob}}^{v_i} sF'_{\tilde{v}_{ob}}(s)\mathrm{d}s-x\bar{b}F(v_i)$$

With $b=0$ and $\bar{b}=0$, we get $\tilde{v}_{ob}=\tilde{v}_{hf}$. With $b\leq 1$ and $\bar{b}\geq 0$, we get $\tilde{v}_{ob}>\tilde{v}_{hf}$.

References

At, C. and Gabuthy, Y. (2015). Moral hazard and agency relationship in sequential litigation. *International Review of Law and Economics*, 41, 86–90.

Baik, K. H. and Kim, I.-G. (2007). Contingent fees versus legal expenses insurance. *International Review of Law and Economics*, 27 (3), 351–361.

Baye, M. R., Kovenock, D. and de Vries, C. G. (2005). Comparative analysis of litigation systems: An auction-theoretic approach. *Economic Journal*, 115 (505), 583–601.

Carbonara, E., Parisi, F. and von Wangenheim, G. (2015). Rent-seeking and litigation: The hidden virtues of limited fee shifting. *Review of Law and Economics*, 11 (2), 113–148.

Choi, A. (2003). Allocating settlement authority under a contingent-fee arrangement. *Journal of Legal Studies*, 32 (2), 585–610.

Danzon, P. M. (1983). Contingent fees for personal injury litigation. *Bell Journal of Economics*, 14 (1), 213–224.

Emons, W. (2006). Playing it safe with low conditional fees versus being insured by high contingent fees. *American Law and Economics Review*, 8 (1), 20–32.

— (2007). Conditional versus contingent fees. *Oxford Economic Papers*, 59 (1), 89–101.

— (2017). Legal fees and lawyers' compensation. In F. Parisi (ed.), *Oxford Handbook of Law and Economics*, vol. 3, pp. 247–258.

— and Fluet, C. (2016). Why plaintiff's attorneys use contingent and defense attorneys fixed fee contracts. *International Review of Law and Economics*, 47, 16–23.

— and Garoupa, N. (2006). US-style contingent fees and UK-style conditional fees: Agency problems and the supply of legal services. *Managerial and Decision Economics*, 27 (5), 379–385.

Gray, A. (1994). The reform of legal aid. *Oxford Review of Economic Policy*, 10 (1), 51–67.

Hay, B. L. (1996). Contingent fees and agency costs. *Journal of Legal Studies*, 25 (2), 503–533.

Hyde, C. E. (2006). Conditional versus contingent fees: Litigation expenditure incentives. *International Review of Law and Economics*, 26 (2), 180–194.

Klemperer, P. (2003). Why every economist should learn some auction theory. advances in economics and econometrics. In *Invited lectures to 8th world congress of the econometric society*.

Lambert, E.-A. and Chappe, N. (2014). Litigation with legal aid versus litigation with contingent/conditional fees. *Review of Law and Economics*, 10 (1), 95–115.

Maute, J. (1984). Allocation of decisionmaking authority under the model rules of professional conduct. *U.C. Davis Law Review*, 17 (4), 1049–1115.

Parisi, F. (2002). Rent-seeking through litigation: Adversarial and inquisitorial systems compared. *International Review of Law and Economics*, 22 (2), 193–216.

— and Luppi, B. (2015). Litigation as rent-seeking. In R. D. Congleton and A. L. Hillman (eds.), *Companion to the Political Economy of Rent Seeking*, pp. 293–308.

Posner, R. (1986). *Economic Analysis of Law*. Little Brown.

Rickman, N., Fenn, P. and Gray, A. (1999). The reform of legal aid in england and wales. *International Review of Law and Economics*, 20 (3), 261–286.

Waldfogel, J. (1998). Reconciling asymmetric information and divergent expectations theories of litigation. *Journal of Law and Economics*, 41 (2), 451–476.

Wang, S. (2008). The optimality of contingent fees in the agency problem of litigation. *International Review of Law and Economics*, 28 (1), 23–31.