Emotions in Litigation Contests

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Abstract

This paper introduces the concept of emotions into the standard litigation contest. Positive (negative) emotions emerge when litigants win (lose) at trial and are dependent in particular on the level of defendant fault. Our findings establish that standard results of litigation contests change significantly when emotions are taken into account. We show that emotions may increase or decrease individual and total equilibrium contest effort, introduce an asymmetry into the contest, and reinforce or weaken a plaintiff's incentives to bring a suit. In addition, we consider how emotions impact on justice.

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1 Introduction

1.1 Motivation and main results

Conflicts among human beings seem to be an unavoidable reality of everyday social life. Situations characterized by conflict usually stir up emotions in conflicting parties. On the one hand, a party may feel positive emotions, such as pride, when enjoying success despite bleak prospects in the quarrel. On the other hand, a party may experience negative emotions like frustration, for instance, when failing to succeed despite excellent prospects. It can be expected that parties take into account these emotional consequences of a conflict ex ante. Emotions affect whether they will enter into situations bearing potential for disagreement, and also their behavior in the conflict itself (see evidence from experimental studies presented by, e.g., Bosman and van Winden 2002, 2010, and Hopfensitz and Reuben 2009). Litigation represents such a conflict scenario where parties involved argue in favor of their position and may experience emotional costs or benefits.

In this paper, we introduce the notion of emotions into the type of litigation contest which allows for different levels of defendant fault (Hirshleifer and Osborne 2001). Litigants' emotions are naturally dependent on whether the litigant wins or loses, and the facts of the case at hand. For instance, the plaintiff will experience strong negative emotions if a case is lost that was, in evidence-terms, very strongly biased in her favor. Our analysis yields the finding that standard results of litigation contests change significantly when emotions are taken into account. We establish that emotions may increase or decrease individual equilibrium litigation efforts as well as total effort in equilibrium. Thus it may be that the sum of litigation efforts actually decreases in equilibrium, although the incorporation of emotions implies that more is at stake for both parties. This will ensue if the importance of emotions differs for the trial parties, such that the litigation contest, which is symmetric with respect to monetary payoffs and effort costs, becomes an asymmetric contest, with asymmetries tending to lower equilibrium efforts (see, e.g., Konrad 2009). With regard to individual equilibrium effort, an asymmetry in the emotional intensity is also conducive to, but not necessary for, a decrease in the level of effort relative to the benchmark case. This may also occur if the case is, in terms of evidence, tilted towards the other party, while both parties are equally emotional. In that case, however,

the reduction in equilibrium effort invested by one party relative to the benchmark is not sufficient to compensate for the increase in equilibrium effort by the other party, implying an increase in total litigation effort. Seeking to distill differences in behavior due to the presence of emotions, we also consider the plaintiff's incentives to bring the suit. The analysis suggests that emotions may reinforce or weaken a plaintiff's incentives to do so. While expected payoffs for the plaintiff are always positive in the benchmark, this need not hold in the set-up which allows for emotions, due to the negative emotions the plaintiff experiences if the case is lost. A final aspect of interest to us is the way in which the incentive effects of emotions interact with a welfare measure labeled justice. We find that in the majority of cases, the plaintiff's winning probability is no longer closely aligned with the underlying facts of the case, resulting in a deviation from the principle of justice. This result is a direct consequence of the repercussions that emotions entail for the equilibrium contest efforts.

1.2 Relationship to existing literature

The present analysis is related to two distinct strands of existing literature. First, we link our contribution to other papers that similarly use the contest framework to derive conclusions about litigants' behavior. Second, we refer to papers in the literature on applied economic theory which similarly supply analyses of preferences that are extended to incorporate emotions.

We adopt the notion that litigation can be conceptualized as a contest, as in Katz (1988), Farmer and Pecorino (1999), Wärneryd (2000), Hirshleifer and Osborne (2001), Parisi (2002), Baik and Kim (2007a,b), and Friehe (forthcoming), among others. For instance, Farmer and Pecorino (1999) compare the performance of the American and English fee shifting rules, while Parisi (2002) compares the adversarial system of adjudication with the inquisitorial one. The litigants' interests in these analyses always lie with the monetary judgment only. We contribute to this body of work by allowing for additional considerations that are likely to have an impact on perceived payoffs and therefore equilibrium outcomes.

Emotions play a central role in the contributions by Kräkel (2008a,b,c), Kragl and Schmid (2009), and Grund and Sliwka (2005), among others. Many of these contributions discuss questions revolving around incentive contracts. Kräkel (2008a) introduces emotions workers experience when comparing their performance to that of co-workers, and establishes that these

emotions might make uneven tournaments preferable to even ones. In Kräkel (2008b), the interplay of emotions and incentives under the piece-rate system is investigated, while Kräkel (2008c) analyzes emotions in the realm of rank-order tournaments and identifies certain conditions under which the principal benefits from emotional agents. Kragl and Schmid (2009) study how envy impacts relational employment contracts in a setting with two agents and moral hazard and find that inequity aversion may be beneficial for the principal since relational contracts may be more profitable. Likewise, Grund and Sliwka (2005) analyze tournaments with inequity-averse agents. In sum, preferences which include emotional aspects have been studied theoretically with respect to their implications for organizational incentive systems. However, an analysis of the incentive effects of emotions in the litigation contest is lacking and indeed due, given the importance of emotional motives in that realm.

The balance of the article is as follows. The next section presents the benchmark litigation contest without reference to emotions. Emotions are introduced in section 3, where we first turn to a reasonably general formalization and then provide a full analysis including comparative statics aspects for a tractable specification. Section 4 concludes our study.

2 The benchmark: Litigation contest without emotions

Consider a complete-information setting in which risk-neutral defendant D and plaintiff P simultaneously invest litigation effort equal to d and p, respectively, in order to increase their respective probabilities of winning the lawsuit, given by $(1-q)$ and q. The probability q is determined by the respective efforts and the level of defendant fault $Y \in (0,1)$ in the following way:

$$q = \frac{Yp}{Yp + (1-Y)d} \tag{1}$$

for strictly positive effort levels.[1] That is, with regard to the contest success function, we consider what has become known as the Tullock contest.[2] In particular, we use the litigation success function developed by Hirshleifer and Osborne (2001), which allows for variations in

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[1]We focus our attention on interior solutions only.

[2]This contest success function is the one most widely applied (see, e.g., Konrad 2009). For the first application in a rent-seeking setting, see Tullock (1980). Axiomatizations can be found in Skaperdas (1996), as well as Kooreman and Schoonbeek (1997); for a discussion of the equivalence of Tullock contests and lotteries, see Allard (1988).

the level of defendant fault denoted Y. The way in which this function is formalized ensures that, given equal degrees of fault, the trial outcome is contingent only on litigation efforts, and that, given equal litigation efforts, the trial outcome is contingent only on the degree of fault. Parties value winning according to the level of the judgment, J. The litigation contest is - except for the level of fault - symmetric, with both players valuing winning the contest similarly and facing the same costs of litigation effort.

The defendant's payoffs can be stated as

$$\pi_{NE}^D = (1-q)J - d \tag{2}$$

sub-indexed by NE for no emotions. The defendant selects the level of litigation effort d such as to maximize (2) given the level of plaintiff effort p. The level of d is thus set according to the first-order condition

$$\frac{pY(1-Y)J}{(Yp+(1-Y)d)^2} = 1 \tag{3}$$

which leads to the following defendant's best response function:

$$BR_{NE}^D = d_{NE}(p) = \frac{\sqrt{pJ(1-Y)Y} - pY}{1-Y} \tag{4}$$

The payoffs the plaintiff expects from the contest can be stated as:

$$\pi_{NE}^P = qJ - p \tag{5}$$

The plaintiff chooses p such as to maximize (5) given the level of defendant effort d. The privately optimal level of p is thus chosen in accordance with the first-order condition

$$\frac{dY(1-Y)J}{(Yp+(1-Y)d)^2} = 1 \tag{6}$$

and leads to the following statement of the best response function of the plaintiff:

$$BR_{NE}^P = p_{NE}(d) = \frac{\sqrt{dJ(1-Y)Y} - d(1-Y)}{Y} \tag{7}$$

The equilibrium efforts are given by

$$p_{NE}^* = JY(1-Y) \tag{8}$$

$$d_{NE}^* = JY(1-Y) \tag{9}$$

as already stated in Hirshleifer and Osborne (2001). From the fact that, in equilibrium, both parties invest the same litigation effort into the contest, it follows that the plaintiff's winning probability is equal to the level of defendant fault:

$$q_{NE}^* = Y \tag{10}$$

In this way, the outcome of the trial is perfectly equitable in terms of justice. The description of the equilibrium of the benchmark case without any emotions ends with the respective payoffs in equilibrium:

$$\pi_{NE}^D = J(1-Y)^2 \tag{11}$$

$$\pi_{NE}^P = JY^2 \tag{12}$$

The plaintiff is better off filing the suit because $\pi_{NE}^P > 0$, given that there are no fixed costs associated with filing. The defendant is better off defending the case instead of surrendering because paying the judgment right away corresponds to payoffs equal to zero, whereas $\pi_{NE}^D > 0$.

3   Litigation contest with emotions

In this section, we introduce the concept of emotions into the litigation contest. We will first describe the way in which we incorporate emotions into the litigation contest in a general set-up and derive findings with respect to the equilibrium litigation effort levels. Subsequently, we will use a functional specification of emotions for tractability and deliver a comparative statics analysis of equilibrium effort, the plaintiff's incentives to bring a suit, and justice with respect to the level of defendant fault and measures of emotional intensity.

3.1   The set-up

Emotions are by no means an easy concept (e.g., Elster 1998). However, in taking emotions into account, we are dealing with aspects that are likely to play an important role in many circumstances. Litigants' emotions, if they play a role, are almost certainly dependent on who wins the lawsuit and on the characteristics of the case, which may be captured by the level of defendant fault Y. There are also additional aspects which we might expect to have an influence on litigants' emotions, such as the identity of the opposing party, the history of the relationship

between the conflicting parties (e.g., in divorce trials) or the level of legal costs incurred by the other party. In this exploratory analysis, we restrict ourselves to the two aspects of who wins and the defendant fault level.

If the plaintiff wins (loses), she will experience positive (negative) emotions. These emotions will impact on the subjective payoff consequences. We argue that winning (losing) the case at court implies a payoff of $E_i^+(J,Y)$ ($-E_i^-(J,Y)$) for party i, $i = P, D$. These payoffs are determined by the level of the judgment J, traditionally the sole component, and the emotions in the respective states. Regarding the plaintiff's payoffs, it can be hypothesized that $\frac{\partial E_P^+}{\partial J} > 0$, $\frac{\partial E_P^+}{\partial Y} < 0$, $\frac{\partial E_P^-}{\partial J} \geq 0$, and $\frac{\partial E_P^-}{\partial Y} > 0$. The changes with respect to the level of defendant fault, i.e., the impact of Y on E_P^+ and E_P^-, are relatively straightforward and can be explained as follows. A high level of defendant fault implies that the plaintiff feels that she ought to win. As a consequence, emotions do not add much to obtaining the judgment in the winning state because the plaintiff's winning the case was very much expected. In contrast, the plaintiff may experience very strong negative emotions if a case in which Y is high is indeed lost. Such an outcome would be perceived as unfair and thus cause emotional upheaval. Regarding the defendant's payoffs, it can be similarly argued that one might expect that $\frac{\partial E_D^+}{\partial J} \geq 0$, $\frac{\partial E_D^+}{\partial Y} > 0$, $\frac{\partial E_D^-}{\partial J} > 0$, and $\frac{\partial E_D^-}{\partial Y} < 0$.

The payoffs of the defendant now explicitly take account of both possible states, winning and losing, and can be stated as:

$$\pi_E^D = (1-q)E_D^+ - qE_D^- - d \tag{13}$$

sub-indexed by E for emotions. The privately optimal level of d is chosen according to the first-order condition

$$\frac{pY(1-Y)}{(Yp + (1-Y)d)^2}(E_D^+ + E_D^-) = 1 \tag{14}$$

which clearly shows the role emotions play with regard to individual incentives to invest litigation effort. The first-order condition may be rearranged to obtain the defendant's best response function

$$BR_E^D = d_E(p) = \frac{\sqrt{p(1-Y)Y(E_D^+ + E_D^-)} - pY}{1-Y} \tag{15}$$

The above clearly establishes that the sum of E_D^+ and E_D^- takes the place held by the judgment J in the benchmark case. Consequently, it follows that there is more at stake for the defendant

than in the benchmark and she will thus tend to be more aggressive in the contest, all else equal. These observations similarly apply to the plaintiff. The plaintiff's payoffs in the more general case which allows for emotions to affect incentives can be stated as

$$\pi_E^P = qE_P^+ - (1-q)E_P^- - p \tag{16}$$

The privately optimal level of p is set to fulfill

$$\frac{dY(1-Y)}{(Yp + (1-Y)d)^2}(E_P^+ + E_P^-) = 1 \tag{17}$$

A rearrangement leads to the plaintiff's best response function

$$BR_E^P = p_E(d) = \frac{\sqrt{p(1-Y)Y(E_P^+ + E_D^-)} - pY}{1-Y} \tag{18}$$

The intersection of (15) and (18) gives the equilibrium litigation effort levels. With $E_D = E_D^+ + E_D^-$ and $E_P = E_P^+ + E_P^-$, these levels amount to

$$p_E^* = Y(1-Y)\frac{E_D E_P^2}{[(1-Y)E_D + YE_P]^2} \tag{19}$$

$$d_E^* = Y(1-Y)\frac{E_P E_D^2}{[(1-Y)E_D + YE_P]^2} \tag{20}$$

which must be compared with (8) and (9), the effort levels in a litigation contest neglecting emotions.

The statement of equilibrium levels in (19) and (20) allows us to make some initial observations. Although both parties contest for the same judgment sum and both have marginal effort costs of one, the litigation contest may no longer be symmetric due to the incorporation of emotions. This is shown in the respective objective functions and also in the levels of equilibrium litigation effort. Except for the case in which $E_D = E_P$, equilibrium effort by the plaintiff will be different from the defendant's equilibrium effort level. Any asymmetry in equilibrium effort levels in turn implies that the plaintiff's winning probability in equilibrium is different from the level of defendant fault, which is in stark contrast to the equilibrium plaintiff's winning probability in the standard litigation contest described before.

Closer inspection of (8) and (9), as well as (19) and (20), **yields the following result, the proof of which is relegated to the appendix**:

Proposition 1 *In comparison to the results for the standard litigation contest, the presence of emotions can cause (i) the plaintiff to invest more in equilibrium and the defendant less, the plaintiff to invest less in equilibrium and the defendant more, or both to invest more in equilibrium, and (ii) total litigation effort to increase or decrease.*

We find that, quite intuitively, the plaintiff invests relatively more effort and the defendant less if the plaintiff's emotions have relatively more impact on incentives. In graphical terms, the stronger emotions cause the plaintiff's best response function to be shifted outwards to a larger extent than that of the defendant. As a consequence, the equilibrium is located at a point where the defendant's best response function slopes downward. In such a case, it may be that the defendant will actually invest less effort in equilibrium, even though both best response functions have been shifted outward in comparison to the benchmark case. In contrast, if the change in location of the respective best response functions is fairly similar, both equilibrium effort levels, and therefore total litigation effort, increase.

In the next section, we will describe E_D and E_P in more detail in order to provide a full comparative statics analysis.

3.2 A functional specification of emotions

In our full-blown analysis, we specify emotional consequences for the litigants which (i) are dependent on the level of defendant fault, (ii) may differ in intensity between the plaintiff and the defendant, and (iii) may differ in intensity between the winning and the losing state. For instance, in product liability or environmental liability trials, the plaintiff will often be an individual, whereas the defendant is a corporation. It is then easy to imagine that the plaintiff will be more pronouncedly affected by emotions. In the following, we normalize the judgment level J to one, assume that payoffs can be separated into monetary and non-monetary consequences and, more concretely, that

$$E_P^+ = 1 + kt(1 - Y)^2 \tag{21}$$

$$E_P^- = (2 - k)tY^2 \tag{22}$$

$$E_D^+ = 1 + k(2 - t)Y^2 \tag{23}$$

$$E_D^- = (2 - k)(2 - t)(1 - Y)^2 \tag{24}$$

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where $k \in [0,2]$ ($t \in [0,2]$) is a scaling factor used to represent potential differences in the emotional intensity between the different states, winning and losing (the different litigants, plaintiff and defendant).

The best response functions and equilibrium levels of litigants' contest effort can be obtained using the terms (15), (18), (19), and (20). This paper seeks to analyze the way in which the results of this set-up which takes account of emotions differ from the results of the benchmark without emotions. As a consequence, we will subsequently detail the changes that occur relative to that benchmark. Variables of interest are equilibrium effort levels, a plaintiff's incentives to bring suit, and justice. We will highlight the parameter combinations for which the variable of interest is higher or lower than in the benchmark, illustrating them in two-dimensional graphs. Varying t and Y continuously, where $t \in (0,2)$ and $Y \in (0,1)$, we consider three different levels of k, $k \in \{.5, 1, 1.5\}$. It will be evident that the three different levels of k suffice to obtain an understanding of the changes that occur in this dimension. We will begin our discussion with the difference in equilibrium plaintiff litigation effort.

Figure 1 shows that the plaintiff will often exert higher equilibrium effort in the case where emotions are taken into account. The graph is to be read as follows: The brown area indicates the region where plaintiff effort is higher than in the benchmark case for all values of k considered; in the **grayish** area plaintiff effort is higher than in the benchmark case for $k = 1$ and $k = 1.5$ but lower for $k = 0.5$; the yellow area contains all combinations for which plaintiff effort is higher than in the benchmark scenario **only** for $k = 1.5$; finally, plaintiff effort is lower for all considered values of k in the plain area.[3] Given that the plaintiff perceives that more is at stake, more effort can be expected, so that it is rather the observation of less effort that requires explanation. The set of parameter combinations of Y and t where equilibrium plaintiff effort is smaller than in the benchmark is largest if $k = .5$. As long as the level of defendant fault is sufficiently small, equilibrium plaintiff effort is relatively smaller, even in the case of emotional symmetry, in which $t = 1$ holds. The low level of k implies strong negative emotions in the losing state. The losing state is relatively likely if the facts of the case favor the defendant, i.e. if $Y < .5$. To provide more intuition, we look at the net benefits from contest effort for a given

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[3]**The figures to come are to be read accordingly.**

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level of defendant effort in the "no emotions" and the "emotions" set-up. We find that

$$\frac{\partial \pi_E^P}{\partial p} - \frac{\partial \pi_{NE}^P}{\partial p} = \frac{dt(1-Y)Y\left[k(1-2Y) + 2Y^2\right]}{(pY + d(1-Y))^2} \tag{25}$$

for a given level of d. This shows that as long as $Y < .5$ holds, marginal effort benefits are higher for a higher level of k, i.e. a higher emotional impact of the winning state. The allocation of emotional importance between the winning and the losing state is irrelevant only if $Y = .5$. Should the case be tilted towards the plaintiff in evidence terms, i.e. should $Y > .5$ hold, then higher levels of k actually reduce effort incentives in the emotions set-up, compared to in the set-up without emotions. These aspects are a direct consequence of our functional specification, $E_P^+ = 1 + kt(1-Y)^2$ and $E_P^- = (2-k)tY^2$, since $E_P = 1 + t\left[k(1-2Y) + 2Y^2\right]$. Furthermore, the difference establishes the intuitive fact that a higher level of t increases marginal effort benefits for the plaintiff. In contrast, the impact of an increase in the level of defendant fault Y on the difference in marginal net benefits may be positive or negative. Apart from these effects, the difference in marginal effort incentives for a given level of d is confounded by different equilibrium levels of d in the "no emotions" and "emotions" set-up. As is clear from (25), only equilibrium levels of defendant effort which differ between set-ups can explain the fact that plaintiffs may choose lower contest effort if $Y < .5$. The figure below illustrates that the plaintiff reduces effort to below the benchmark level if the defendant is very emotional, i.e. t is small, and has a strong case, i.e. Y is small.

Figure 2 illustrates the changes in equilibrium litigation effort by the defendant in response to variations in t, Y, and k. The underlying rationale for the difference between equilibrium effort in the set-up with emotions and the effort level in the set-up without emotions parallels that presented for plaintiff effort. For the defendant, the term similar to (25) is given by

$$\frac{\partial \pi_E^D}{\partial d} - \frac{\partial \pi_{NE}^D}{\partial d} = \frac{p(2-t)(1-Y)Y\left[2(1-Y)^2 - k(1-2Y)\right]}{(pY + d(1-Y))^2} \tag{26}$$

for a given level of p. As we would expect, the areas in which the emotions set-up provokes a smaller level of defendant effort are opposite to the areas in which the emotions set-up provokes a smaller level of plaintiff effort. If the plaintiff is very emotional, i.e. t is large, and has a strong case, i.e. Y is large, the defendant reduces effort to below the benchmark level.
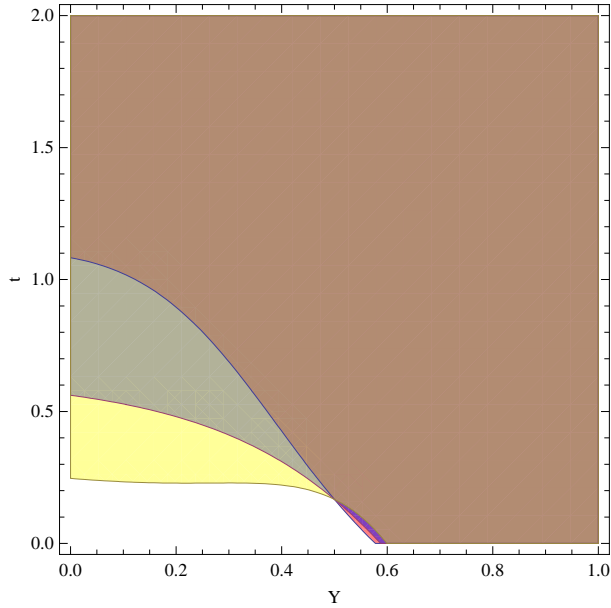
Figure 1: Relative plaintiff effort

In Figure 3, we are concerned with changes in the level of total litigation effort. We find that one litigant investing less is in some cases actually strong enough to dominate the increase in the level of equilibrium effort by the other litigant. Exactly in line with the reasoning presented for individual equilibrium effort, the result of lower total litigation effort occurs for most combinations of Y and t if the emotional weight is skewed to the losing state, that is, if k is small. If both Y and t are small, the reduction in plaintiff effort is sufficient to compensate for the increase in defendant effort, and vice versa if both Y and t are large. The fact that the incorporation of emotions may provoke lower total litigation effort comes as a surprise since emotions ensure that more is at stake for litigation contest parties. However, this surprising result has a very simple explanation. The decrease in the level of total litigation effort occurs only if the value of t is not equal to one, i.e. only if there is an asymmetry in litigant emotions. Such an asymmetry implies different valuations by contest parties and has been shown to reduce total effort (see, e.g., Konrad 2009).

The next criterion we turn to is the plaintiff's incentives to bring the suit. It may be argued that the plaintiff will file the suit whenever this implies a non-negative total expected payoff.
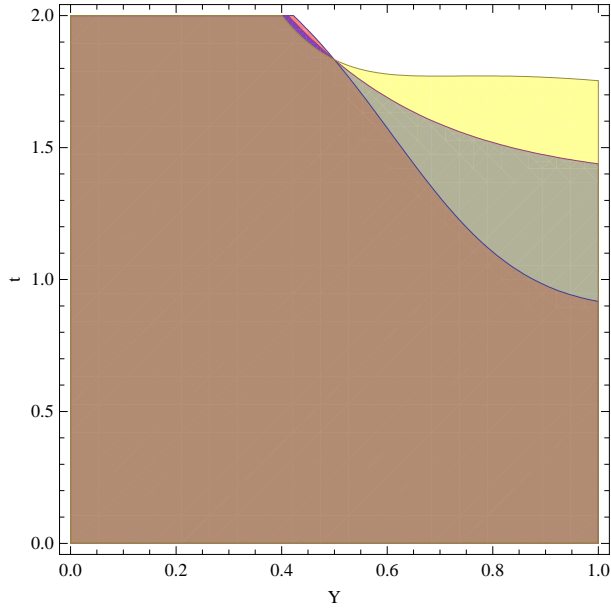
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Figure 2: Relative defendant effort

This always holds in the benchmark since, for $J = 1$, the plaintiff's equilibrium payoff is given by Y^2. Interestingly, total expected payoff is not always positive in the framework which considers emotions, i.e. the plaintiff does not have incentives to bring the suit for all parameter values. Indeed, it can clearly be seen in the case with $k = .5$ that the plaintiff prefers to abstain from bringing trial for levels of defendant fault below one half and intermediate values of t, where the latter implies that both parties indeed consider emotional consequences when choosing their behavior. The set of parameters which bring about a non-positive expected plaintiff payoff is smaller, the higher the level of k. There are still combinations of Y and t for which the plaintiff does not bring the suit if $k = .9$, but this is no longer so if $k = 1$ as shown in Figure 4. This may be explained by the effects of k on the payoffs and on the equilibrium effort levels. For small levels of k, the plaintiff invests relatively little in the contest as long as Y and t are of only moderate magnitude. The defendant invests relatively more for these cases. Furthermore, a small level of k implies that the emotional costs in the losing state are considerable. As a consequence, the plaintiff may prefer to abstain from filing suit.

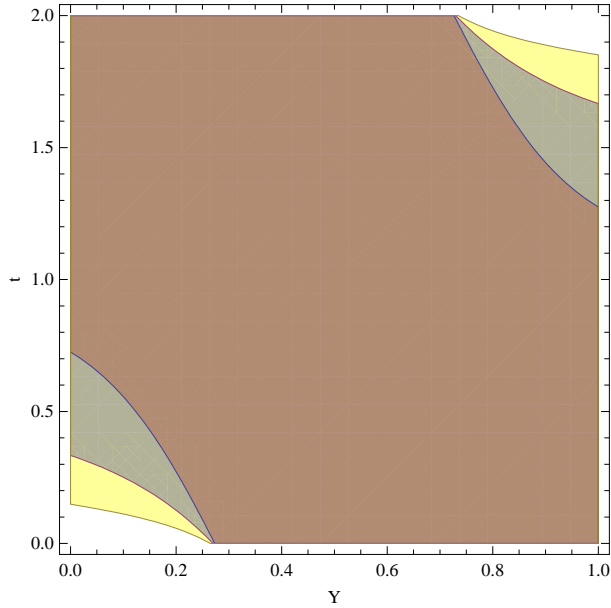In Figure 5, we follow up **on** the question concerning in which way emotions affect the

Figure 3: Relative total effort

plaintiff's incentives to bring the suit by illustrating whether the level of the plaintiff's equilibrium payoff in expectation terms is higher in the setting with emotions than in the setting without emotions. Regardless of the level of k, the two-dimensional space is divided into a region in which expected payoffs are relatively higher and a region in which these are relatively lower. Plaintiff payoffs turn out to be higher in the setting in which emotions are taken into consideration than in the benchmark, particularly when the plaintiff is relatively emotional and the evidence bias favors the defendant. An increase in the level of k causes the region in which expected payoffs are relatively higher to expand. Indeed, the region where plaintiff payoffs are higher when $k = .5$ is relatively small, which is in accordance with the level of plaintiff payoffs illustrated in Figure 4.

This paper contrasts the outcomes of the standard litigation contest with the results obtained for a set-up that incorporates a notion of emotions. From a welfare perspective, two issues are of utmost importance. (i) Total litigation effort represents a use of resources which is of no direct social value in our framework and has been dealt with above. (ii) Achieving justice, which may be interpreted as aligning defendant fault and **the** plaintiff's win rate (Hir-
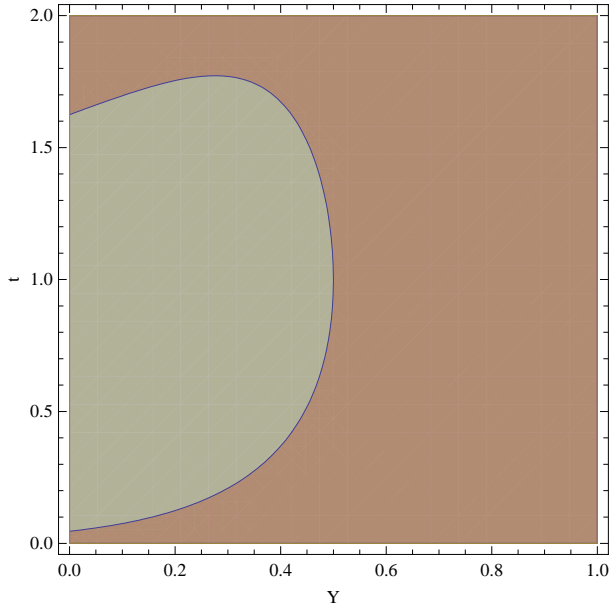
Figure 4: Positive plaintiff payoffs

shleifer and Osborne 2001), is another crucial welfare consideration. In our case, the "objective" plaintiff win rate is equal to Y since it corresponds with the level of defendant fault. In the benchmark, the plaintiff's winning probability in equilibrium is indeed equal to Y. We may now seek to compare the plaintiff's winning probability which results in the emotions setting with the "objective" plaintiff win rate. Figure 6 establishes that the plaintiff's winning probability in equilibrium is equal to Y only in few contingencies. **The colored areas represent combinations of t and Y for which $q_E^* > Y$ holds, i.e., for which the plaintiff's winning probability in equilibrium exceeds the objective level of defendant fault.** The figure is to be read as the ones before with the purple (red) area indicating parameter constellations for which $q_E^* > Y$ for $k = 0.5$ and $k = 1$ but not for $k = 1.5$ (for $k = 0.5$ but not for $k = 1$ and $k = 1.5$). If emotions in the winning and the losing state are of the same importance, i.e. if $k = 1$, then $q_{NE}^* = Y$ is greater (smaller) than q_E^* when $t < (>)1$. In other terms, if the emotional balance is tilted towards the plaintiff, this implies quite intuitively that the plaintiff will win more often than justified by the facts in equilibrium and vice versa. This picture changes somewhat if $k \neq 1$. If there is more weight on the losing state, such that $k = .5$, the plaintiff's winning probability may be relatively higher if $0 < Y < .5$, but only if t is of sufficient
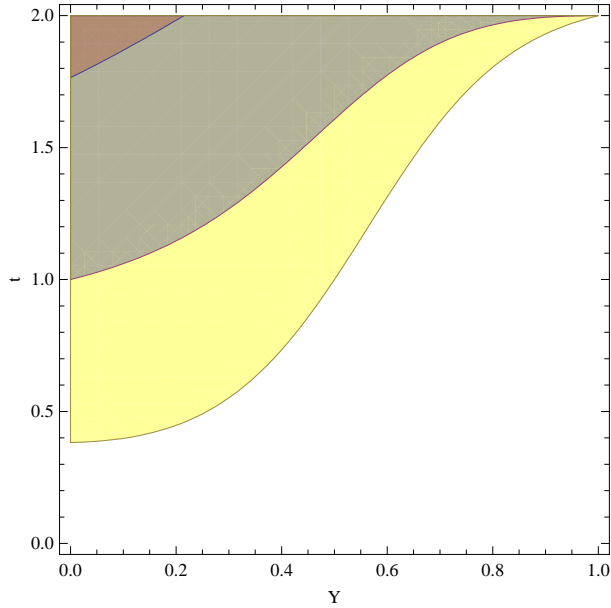
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Figure 5: Relative plaintiff payoffs

magnitude. This naturally relates back to the fact that the plaintiff (defendant) equilibrium effort in the emotional set-up is lower (higher) than in the benchmark for a large set of Y and t if Y and t are small. The contour we obtain for $k = .5$ is mirrored for the case where $k = 1.5$.

4 Conclusion

Emotions are an important aspect of human existence. Emotions may effectively act as a reward or sanction in specific circumstances. For instance, winning a contest although the chances were bleak at best can be very satisfactory for the contestant. Such aspects will be anticipated by individuals and therefore steer behavior. This paper introduces the notion of emotions into the litigation contest. Litigation often forms a way of dealing with fundamental disagreements between parties and is therefore prone to evoke emotions.

We find that emotions change the results of the standard litigation contest in several interesting ways. For instance, despite the fact that both parties have more at stake if emotional consequences are considered in addition to direct monetary consequences of a trial outcome, total equilibrium litigation effort may decrease. Furthermore, emotions may deter or encourage
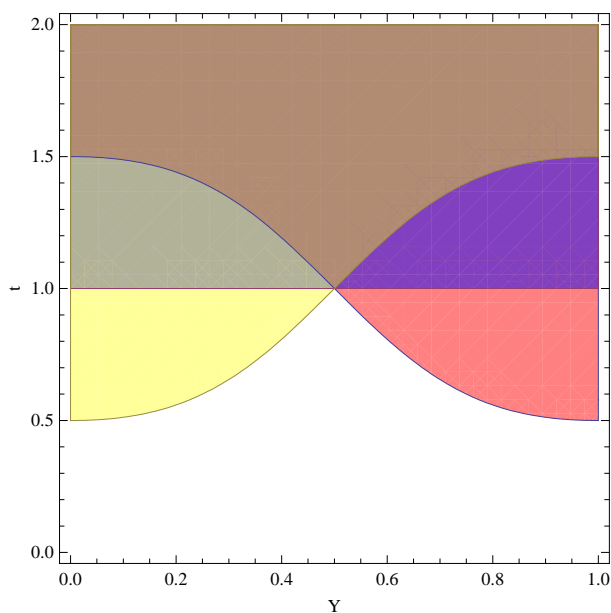
Figure 6: Relative plaintiff's win rate

the bringing of the suit by the plaintiff in the first place. From a welfare perspective, the presence of emotions tends to mean that the case is in many cases not decided according to the underlying facts, but more (or less) often than it should be in favor of the plaintiff.

The analysis has therefore convincingly established that taking account of emotions in litigation may profoundly change the predictions concerning litigants' behavior and trial outcomes. If the litigation contest framework is used to derive policy implications, for instance, regarding the choice between different rules of legal cost allocation, we believe that the robustness of policy recommendations with respect to the incorporation of emotions ought to be tested.

This study presents an initial exploration of the potential repercussions of emotions for incentives in litigation. Undoubtedly, there are limitations to our analysis: we assume, for instance, in line with the bulk of the literature that both parties invest simultaneously and that they invest only once. Furthermore, we disregard aspects such as strategic delegation to agents who are particularly emotional or not at all. The incorporation of such aspects presents a worthwhile challenge for future research.

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Appendix

Proof of Proposition 1

(i) The plaintiff and defendant invest relatively more (less) effort if

$$\frac{E_D E_P^2}{[(1-Y)E_D + YE_P]^2} > (<)J \tag{27}$$

$$\frac{E_P E_D^2}{[(1-Y)E_D + YE_P]^2} > (<)J \tag{28}$$

Both requirements may be reformulated as:

$$\Delta_P = E_D E_P^2 - J\left[(1-Y)E_D + YE_P\right]^2 > (<)0 \tag{29}$$

$$\Delta_D = E_P E_D^2 - J\left[(1-Y)E_D + YE_P\right]^2 > (<)0 \tag{30}$$

We can then reconsider (29) and (30) for extreme values of Y.

$$\lim_{Y \to 0} \Delta_P = E_D(E_P^2 - JE_D) \tag{31}$$

$$\lim_{Y \to 0} \Delta_D = E_D^2(E_P - J) \tag{32}$$

$$\lim_{Y \to 1} \Delta_P = E_P^2(E_D - J) \tag{33}$$

$$\lim_{Y \to 1} \Delta_D = E_P(E_D^2 - JE_P) \tag{34}$$

This clearly establishes that defendant (plaintiff) effort will be greater than in the benchmark as long as $E_P (E_D) > J$ if $Y \to 0$ (1). In contrast, plaintiff (defendant) effort may be smaller or greater than in the benchmark as long as $E_P (E_D) > J$ if $Y \to 0$ (1). Both litigants invest more, for instance, if $E_D = E_P$ and $E_D > J$ since $\Delta_P > 0$ and $\Delta_D > 0$.

(ii) Total litigation effort increases (decreases) if

$$\Delta_{P+D} = E_D E_P(E_P + E_D) - 2J\left[(1-Y)E_D + YE_P\right]^2 > (<)0 \tag{35}$$

One way to see that circumstances can easily be determined in which both of the cases laid out in the proposition indeed arise is again to consider the extreme values of Y:

$$\lim_{Y \to 0} \Delta_{P+D} = E_D\left[E_P(E_P + E_D) - 2JE_D\right] \tag{36}$$

$$\lim_{Y \to 1} \Delta_{P+D} = E_P\left[E_D(E_P + E_D) - 2JE_P\right] \tag{37}$$

and attest that these may be greater or smaller than zero.

References

Allard, R.J., 1988. Rent-seeking with non-identical players. Public Choice 57, 3-14.

Baik, K. H., Kim, I.-G., 2007a. Strategic decisions on lawyers' compensation in civil disputes. Economic Inquiry 45, 854-863.

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

Bosman, R., van Winden, F., 2002. Emotional Hazard in a Power-to-Take Experiment. Economic Journal 112, 147-169.

Bosman, R., van Winden, F., 2010. Global Risk, Investment, and Emotions. Economica 77, 451-471.

Elster, J., 1998. Emotions and Economic Theory. Journal of Economic Literature 36, 47-74.

Farmer, A., Pecorino, P., 1999. Legal expenditure as a rent-seeking game. Public Choice 100, 271-288.

Friehe, T., forthcoming. On being asset-constrained in litigation contests. Public Choice.

Grund, C., Sliwka, D., 2005. Envy and Compassion in Tournaments. Journal of Economics and Management Strategy 14, 187-207.

Hirshleifer, J., Osborne, E., 2001. Truth, effort, and the legal battle. Public Choice 108, 169-195.

Hopfensitz, A., Reuben, E., 2009. The Importance of Emotions for the Effectiveness of Social Punishment. Economic Journal 119, 1534-1559.

Katz, A., 1988. Judicial decisionmaking and litigation expenditure. International Review of Law and Economics 8, 127-143.

Konrad, K.A., 2009. Strategy and dynamics in contests. Oxford: Oxford University Press.

Kooreman, P., Schoonbeek, L., 1997. The specification of the probability functions in tullock's rent-seeking contest. Economics Letters 56, 59-61.

Kräkel, M., 2008a. Emotions and the Optimality of Uneven Tournaments. Review of Managerial Science 2, 61-79.

Kräkel, M., 2008b. Emotions and Compensation. Schmalenbach Business Review 60, 145-159.

Kräkel, M., 2008c. Emotions in Tournaments. Journal of Economic Behavior and Organization 67, 204-214.

Kragl, J., Schmid, J., 2009. The Impact of Envy on Relational Employment Contracts. Journal of Economic Behavior and Organization 72, 766-779.

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

Skaperdas, S., 1996. Contest success functions. Economic Theory 7, 283-290.

Tullock, G., 1980. Efficient rent seeking. In: Buchanan, J., Tollison, R., Tullock, G., (eds.): Towards a theory of the rent-seeking society. Texas A & M University Press, 97-112.

Wärneryd, K., 2000. In defense of lawyers: Moral hazard as an aid to cooperation. Games and Economic Behavior 33, 145-158.