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The Effects Of Judicially Imposed Restriction Of Settlements To Compensatory Damages

LEWIS A. KORNHAUSER AND KEITH T. TAKEDA*

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ABSTRACT. Courts have traditionally limited judicially approved settlements to compensatory or single damages even in class actions based in Federal civil antitrust law where trebling of damages is mandatory upon a finding of liability. This paper analyzes the effects of such settlement caps for both single and multiple defendants and shows such caps: (1) reduce settlement and (2) introduce additional conflicts of interest between plaintiff and defendant or defendants. The multi-defendant analysis is done both for defendants whose outcomes are perfectly correlated and independent. In a second part, the paper provides an empirical analysis of the *Auction Houses* case showing the effects of the limitation in actual practice and demonstrate how the model might be used by decision makers to assess the fairness of actual settlements.

1. INTRODUCTION

Courts have traditionally limited judicially approved settlements to compensatory or *single* damages without regard to the possibility of enhanced damages. The Federal courts have

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imposed this limitation even in class actions based in Federal civil antitrust law,¹ where enhancement of damages – in antitrust, trebling – is *mandatory* upon a finding of liability.

This tradition has become a source of controversy within the courts. In the highly publicized *Auction Houses* civil antitrust class action² against the Christie's and Sotheby's auction houses, United States District Court Judge Lewis A. Kaplan rejected this "received wisdom," specifically refusing to follow the Court of Appeals for the Second Circuit's reasoning³ that settlements must be limited to compensatory damages.⁴ Instead, Judge Kaplan approved a settlement that considered the entire amount of potential damages faced by the defendants had they gone to verdict, including the treble damages mandated by the federal civil antitrust laws.⁵

Central to Judge Kaplan's critique of the single damages limitation is the limitation's failure to have any theoretical or empirical basis for the claim that it achieves its desired effects: "[s]etting a lower threshold for approval of a class action settlement perhaps has

¹In federal civil antitrust class actions, all settlements must be approved by the Court in accordance with Rule 23 of the Federal Rules of Civil Procedure: "SETTLEMENT, VOLUNTARY DISMISSAL, OR COMPROMISE. (1)(A) The court must approve any settlement, voluntary dismissal, or compromise of the claims, issues, or defenses of a certified class. (B) The court must direct notice in a reasonable manner to all class members who would be bound by a proposed settlement, voluntary dismissal, or compromise. (C) The court may approve a settlement, voluntary dismissal, or compromise that would bind class members only after a hearing and on finding that the settlement, voluntary dismissal, or compromise is fair, reasonable, and adequate." Rule 23(e), Fed.R.Civ.P.

²*In Re Auction Houses Antitrust Litig.*, 2001 U.S. Dist. LEXIS 1713, 00 Civ. 0648, at *31-40 (S.D.N.Y. February 22, 2001).

³*City of Detroit v. Grinnell Corp.*, 495 F.2d 448, 458-59 (2d Cir. 1974), *abrogated on other grounds by Goldberger v. Integrated Res., Inc.*, 209 F.3d 43 (2d Cir. 2000).

⁴According to the Second Circuit: "While it is true that treble damages are extracted from a defendant who ultimately loses a civil antitrust suit on the merits, there are strong reasons why trebling is improper when computing a base recovery figure which will be used to measure the adequacy of a settlement offer. First, the vast majority of courts which have approved settlements in this type of case, even though they may not have explicitly addressed the issue, have given their approval to settlements which are traditionally based on an estimate of single damages only." *City of Detroit*, 495 F.2d at 458-59.

⁵*In Re Auction Houses*, 2001 U.S. Dist. LEXIS 1713, at *40.

been thought to redress" the "imbalance" imposed upon "defendants who cannot afford to take even a remote risk of a ruinous outcome ... even where they would be quite likely to prevail on the merits... But if the single damages standard for approving class action settlements is so intended, it has been adopted without explicit recognition of the purpose of doing so and *without any recourse to theoretical or empirical basis* for determining that it does not go seriously beyond the desired effect."⁶

In the first part of this paper, we provide a simple theory that both meets Judge Kaplan's call for a theoretical basis and supports his critique of the rule that limits settlements to single damages. In fact, as we show, settlement caps: (1) reduce settlement and (2) introduce additional conflicts of interest between plaintiff and defendant or defendants. In the second part, we provide an empirical analysis of the *Auction Houses* case showing the effects of the limitation in actual practice and demonstrate how the model might be used by decision makers to assess the fairness of actual settlements.⁷

As Judge Kaplan noted, up to now, these effects have not been well understood. For example, certain critical aspects of the social desirability of the effects of these limitations, such as their effect on settlement, have in fact, been widely misunderstood, with both the proponents and opponents of the limitation agreeing that the limitation encourages settlement. In fact, in his *Auction Houses* decision, Judge Kaplan, observes that: "The effect of the single damages standard is to lower the bar that must be surmounted in order to settle a class action and thus to promote negotiated rather than litigated determinations

⁶*Id.*, at *35-6 (emphasis added).

⁷The Court might, for example, appoint an expert pursuant to Rule 706 of the Federal Rules of Evidence to perform such an analysis, or assist the Court in identifying information useful for such an analysis. *See, e.g., Manual for Complex Litigation, Fourth*, § 21.644 (2004).

of these matters."⁸ The Second Circuit in *City of Detroit* argued that: "*To require treble damages to be considered as a part of the computation of the base liability figure ... might well hinder the highly favored practice of settlement.*"⁹

Yet, as we demonstrate in this article, *precisely the opposite is true*, that whether for single defendants or multiple defendants subject to joint and several liability, the restriction of settlements to single damages *discourages* settlements and may, in fact, entirely eliminate the possibility of rational settlement for risk-neutral parties.¹⁰

Why then, when settlement under restriction does not offer the risk-neutral plaintiff sufficient return to justify settlement, do, for example, the majority of antitrust class actions settle? One might suppose such settlements may be evidence of agency effects, where the plaintiff's attorneys have different incentives than the plaintiff. In this account, what operates would be that which critics have pointedly emphasized as a central concern in class action settlements – that agency issues may cause plaintiff's counsel to take its surplus fees and settle for less than would be rational for any individual plaintiff. Judge Kaplan himself notes: "The single damage standard for class action settlements, however, places the settlement court, which acts as a fiduciary for the absent class members, in a position in which it may be forced to approve a settlement that no non-representative

⁸*Id.*, at *34. Judge Kaplan states: "Given this reality, there are few perceptible justifications of the single damages standard for the determination of the fairness of antitrust class actions. One is the long established policy of favoring settlements. The effect of the single damages standard is to lower the bar that must be surmounted in order to settle a class action and thus to promote negotiated rather than litigated determinations of these matters. Perhaps that is a sufficient basis for adopting such a rule." *Id.* (citations omitted).

⁹*City of Detroit*, 495 F.2d at 458-59 (emphasis added).

¹⁰The risk neutrality of the actual plaintiffs reflects the conditions of actual class actions, for example, the *Auction Houses* case, where the individual class members have little direct decision-making involvement in the actual action and who individually face little or no downside from the action.

plaintiff would accept in similar circumstances."¹¹

Plaintiff's counsel, paid a contingent fee, does face a substantial downside for not settling, one not faced by the plaintiff – the lost opportunity costs and expenses if the plaintiff loses at trial. In this paper, however, we analyze the incentives on plaintiff's counsel when paid a contingent fee and show that these agency effects, though arising because of the cap, are often confined only to some limited ranges of probabilities of the plaintiff's succeeding at trial. Contingent fees are often therefore in some sense self-correcting for caps on settlements.

We present two major types of models in this article. In the first, a plaintiff or plaintiff class has sued a single defendant, both parties being risk neutral. This model formalizes the argument made in Leslie (2009). In the second, we analyze lawsuits with one plaintiff or plaintiff class and two defendants. Our analysis assumes that defendant R (Row) has share r and defendant C (Column) share $1 - r$ of liability. We assume a legal regime with claim reduction: plaintiff's claim against a litigating defendant is reduced by the amount of any settlement with the other defendant (a *pro tanto* set-off rule.) In addition, we assume either a regime of joint and several liability with contribution or that, in a regime of joint and several liability with no contribution, when both defendants litigate and both lose at trial, then plaintiff satisfies her entire judgment from defendant R with probability r and from C with probability $1 - r$ or plaintiff chooses to recover a fraction r of the judgment from R and a fraction $1 - r$ from C . This latter condition yields a model that applies to antitrust litigation under which a rule of no contribution applies.

In the models, the litigations reach a settlement phase where the parties can either settle

¹¹*In Re Auction Houses*, 2001 U.S. Dist. LEXIS 1713, at *35.

the actions or take them to verdict.¹² In the multi-defendant models, the plaintiff makes take-it-or-leave-it offers to the defendants in the settlement phase. In all models, the defendants pay their counsel a non-award based, non-contingent fee to take the action to verdict, while the plaintiff pays counsel a contingent fee on any amounts collected. Plaintiff's counsel faces an opportunity cost when the action is taken to verdict representing the time (and in some jurisdictions expenses) that plaintiff's counsel forgoes in preparing for and taking the action to litigation, time for which counsel could have collected fees in other actions.

We proceed as follows. The next section studies the single plaintiff-single defendant case. It begins with an example that illustrates the logic behind the argument. We first show that, when the plaintiff retains settlement authority, a cap limiting settlements to actual damages implies that some cases that would settle in the absence of a cap, will not settle when a cap is in place. We then show that the presence of a cap introduces conflicts of interest between the plaintiff and her attorney.

The third section considers a single plaintiff litigating against two defendants that are jointly and severally liable for the plaintiff's loss. This section thus directly addresses the antitrust case faced by Judge Kaplan. In both the single defendant and two-defendant analyses, we pursue the same strategy. We analyze two settlement games between plaintiff and defendant(s). In one game, the plaintiff makes all decisions about settlement and litigation; in the second game, the attorney makes all such decisions.¹³ Contingent fee arrangements create a well-known conflict of interest between attorneys and their clients;

¹²The analysis of the *Auction Houses* settlement uses non-normalized dollar levels.

¹³Choi (2003) analyzes a model in which it is in plaintiff's interest to cede settlement authority to his attorney. The cap on damages that we study here undermines that result.

as the attorney does not receive the full return from increased effort, he has an incentive to under-invest in the litigation. We abstract away from this problem; specifically we assume that plaintiff's prospects of success are independent of attorney effort. In this situation, as discussed more fully in the next section, in the absence of a cap, the interest of plaintiff and attorney are perfectly aligned with respect to the decision settle; the presence of a cap, however, may introduce conflicts of interest between plaintiff and her attorney. We thus identify circumstances under which the interests of the plaintiff and her attorney conflict; in some instances, under a cap on damages, the plaintiff would choose to litigate when the attorney would choose to settle.

In all models, the following definitions operate: p is the probability the plaintiff prevails at trial; m is the damages enhancement multiplier - for example, in antitrust actions where damages are trebled upon a finding of liability, m is 3, while for no enhancement, $m = 1$; c is the contingent fee as a percentage of any amount collected by the plaintiff; and T is the cost of litigating an action to verdict. For a defendant (in both the single and two-defendant models), T is the amount that defendant must pay counsel to litigate the action to verdict. In the single defendant model, for plaintiff's counsel, T is the opportunity cost of litigating the action to verdict, in other words, the compensation plaintiff's counsel must forego in not taking other cases in order to litigate the present action to verdict. The situation in the two-defendant model is more complex, because the costs of litigation against both parties are likely to vary with the degree of correlation in plaintiff's prospects of success against each defendant. Kornhauser and Revesz (1994) noted that the degree of correlation would depend on the degree of commonality of the facts that the plaintiff must prove to prevail against different defendants. In the case of two perfectly correlated defen-

dants, because the proofs required to prevail against one defendant are likely to coincide with those for the other, with the case of a conspiracy being an illustrative example, the opportunity cost to plaintiff's counsel is the same for taking the action to verdict for one defendant as it is for two. Thus, the model treats the opportunity cost as T for either one or two defendants not settling. By contrast, if the defendants' trial outcomes are independent the plaintiff must collect in discovery and introduce at trial two separate sets of proofs in order to prevail against any defendant. Thus, plaintiff's counsel faces an opportunity cost of T to litigate against one defendant and $2T$ to litigate against both.

In all models, we normalize compensatory (or "single") damages to 1. Formally, and without loss of generality, we assume that the plaintiff's claim has a value of $v = 1$ before application of any multiplier.

For multiple defendants, a cap on settlements has no effect on the plaintiff's return from full litigation, but does reduce the return on a range of p for both selective litigation and full settlement. Thus, it is never the case that a cap on settlements increases the range of p where settlement is encouraged over full litigation. Moreover, for any fixed $p \in (0, 1)$, a cap on settlements has a greater effect on full settlement than on selective litigation. We therefore focus our analysis on those regions where without the cap, the plaintiff preferred either full settlement or selective litigation with the strongest focus on full settlement regions.¹⁴

Thus, a settlement cap never acts to increase the range over which the plaintiff prefers selective litigation over full settlements. Because the plaintiff's attorney always faces the downside of litigation costs whenever either or both defendants litigate – a downside

¹⁴This reflects the real social cost of any litigation, even those involving less than all defendants, in that, for example, a judge need expend time, and other decision makers including the jury must expend resources.

which because of the contingent fee arrangement the plaintiff does not face – at any p where the plaintiff prefers to settle with all defendants, the plaintiff’s attorney will prefer to settle with all defendants, but there may be p at which the plaintiff’s attorney prefers to settle with all defendant while the plaintiff prefers some other profile. At the latter p , there can be agency effects due to the differing preferences. The former tells us, however, that at any T sufficiently large that the plaintiff prefers full settlement on all $p \in [0, 1]$, there is no opportunity for agency effects due to differing preferences between the plaintiff and the plaintiff’s attorney. For such T , the imposition of a settlement cap will result in some p for which there can be agency effects. In other words, at these p the plaintiff’s and the plaintiff’s attorney’s preferences will differ. Where the plaintiff prefers other profiles than full settlement, a cap may create agency effects, although there may already be differing preferences at some of these p . The cap also, however, reduces the plaintiff’s attorney’s payoff for partial litigation and full settlement over some ranges of p , and this reduction may act to mitigate differences in the preferences of the plaintiff and the plaintiff’s attorney, mitigating therefore, the regions of p for which there may be agency effects. In this sense, contingent fee arrangements may limit the potential for agency issues arising from introducing settlement caps.

2. THE MODEL

The Single Defendant Model.

An Example. The following single defendant example illustrates a number of the issues. Suppose a civil antitrust class action has been initiated against defendant company. We assume that the total harm involved is \$100 million and that the plaintiff class has a 40% chance of winning at trial. The applicable Federal antitrust law calls for automatic

trebling of any verdict. Suppose that defendant expects to pay \$10 million in legal fees, costs and expenses if the case does not settle and that counsel for the plaintiff class faces an opportunity cost of the same amount for taking the case through verdict. We also suppose that the contingent fee in this case is 25% of any recovery the class makes.

In this example, the plaintiffs' expected return for litigating the action through trial is thus $40\% \times \$100 \text{ million} \times 3 = \120 million , less the contingent fees, or $\$120 \text{ million} \times (1 - 0.25) = \90 million . Thus, the plaintiff class should not accept anything less than \$120 million in settlement of which the plaintiffs will receive \$90 million and the plaintiffs' attorney \$30 million. In other words, in the case of an offer of anything less than \$120 million, the plaintiff class would be better off going to trial. The defendant should expect to lose $40\% \times \$100 \text{ million} \times 3 = \120 million plus litigation fees, costs and expenses, or $\$120 \text{ million} + \$10 \text{ million} = \$130 \text{ million}$. The defendant should therefore be willing to pay anything up to \$130 million.

The action should settle for anything in the settlement range of \$120 million to \$130 million. A limitation of settlement to single damages however, would restrict the settlement amount to \$100 million, an amount far below the \$120 million minimum the plaintiffs would rationally accept. Here, the traditional limitation of settlements to single damages would therefore eliminate the chance of rational settlement.

Figure 1 illustrates this limiting effect. Here, the amounts at issue, contingent fee and defendant's attorney's fees are identical to those in the example. Instead of fixing a probability of success p – in the example $p = 0.4$ or 40% – the figure reflects the analysis for any probability of success p . Thus, the line with the diamonds represents the maximum amount that the defendant would pay in settlement, while the line with triangles represents

the minimum that the plaintiff class would accept in settlement. The region between the two lines, *i.e.* the combination of the regions I and II, therefore represents the region in which the plaintiff class and defendant can rationally settle. A cap on settlement to single damages represented by the solid line, thus eliminates the entire settlement region II, leaving only settlement region I, which does not extend over the entire range of p . Thus, in this example, a cap on settlements has eliminated the possibility of rational settlement over a range of possible probabilities of success.

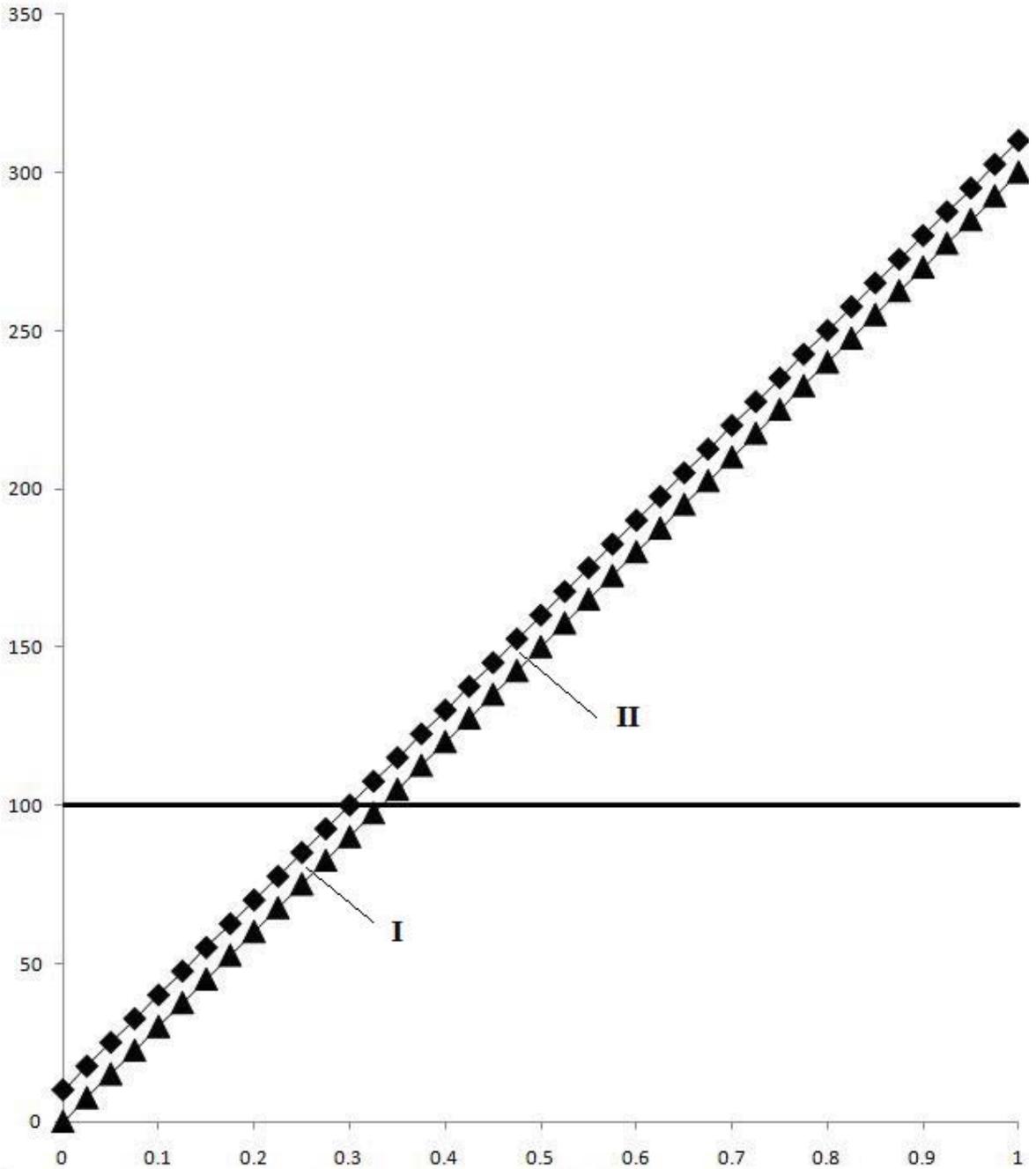


Figure 1: Plaintiff's Gross Returns

What incentives are there for the action to settle in spite of the cap? In this case, plaintiffs' counsel would receive the following payments. For taking the case to verdict, counsel receives 25% of the trebled damages less its opportunity cost or: $25\% \times \$120 \text{ million} - \$10 \text{ million} = \$20 \text{ million}$. For settling the case, however, plaintiffs' counsel receives or 25% of single (*i.e.* capped) damages or: $25\% \times \$100 \text{ million} = \25 million . Thus, plaintiffs' counsel prefers by a substantial amount to settle, even though it would be irrational for the plaintiffs to do so. This presents the potential for an agency issue of the sort Judge Kaplan discussed in his *Auction Houses* decision. It is worth noting that this issue only arises here because of there being a cap on settlements.

The principal-agent conflict disappears at higher probabilities of the plaintiff class prevailing at trial. This is because the return to the plaintiffs' counsel remains flat due the cap, while the return for the plaintiffs' counsel for trying the case increases as the probability of plaintiff class succeeding at trial increases. As we show below, however, whenever a cap is imposed, there always exists a region in which such an agency issue exists. Thus, if we now assume the plaintiff class has a 50% chance of winning at trial, the plaintiff class should still want to litigate when a cap on settlement is operative, but now for taking the case to verdict, counsel receives 25% of the trebled damages less its opportunity cost or: $25\% \times 50\% \times \$100 \text{ million} \times 3 - \$10 \text{ million} = \$27.5 \text{ million}$. For settling the case, however, plaintiffs' counsel again receives or 25% of single (*i.e.* capped) damages or \$25 million. Thus, plaintiffs' counsel prefers to take the same action as the class itself does, to litigate to verdict. The agency issue has disappeared with this increase in the class' probability of success.

Figure 2 illustrates these effects. As in Figure 1, all the relevant amounts are as in the

examples, with the exception that p is not limited to the single value of 0.4 or 40%. The dashed line represents the plaintiff class attorney's return for settlement (here, we assume that the case settles for the maximum feasible amount), while the dotted line represents the amount the plaintiffs' attorney receives if the case goes to verdict – recall that the plaintiffs' attorney must pay trial expenses if the case goes to verdict. The new solid line is the plaintiff class attorney's return for settlement when settlements are capped at single damages. Clearly, with no cap, both the plaintiffs' attorney and the plaintiff class prefer to settle the case. The effect of the settlement cap on the attorney's payment for settlement begins at point A , but the plaintiffs' attorney still prefers to settle, even with the cap, up to point B . Thus, for p in the region above the B , both the plaintiffs and the plaintiffs' attorney prefer to litigate. For some portion of the region between A and B , however, the plaintiffs will prefer to litigate because the cap had made settlement irrational, but the plaintiff class attorney still prefers to settle. This tension in interests may create the potential for agency effects.

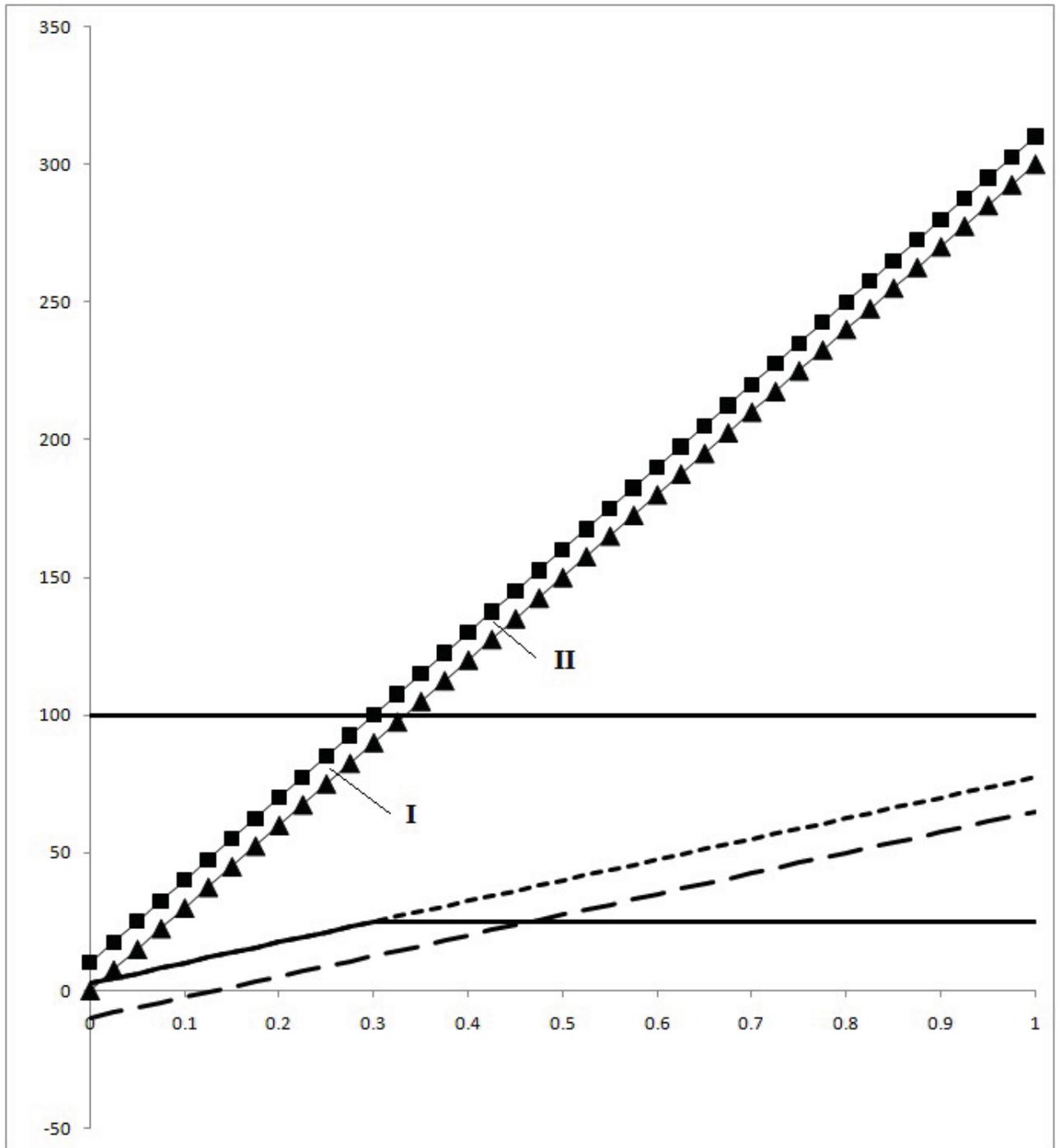


Figure 2: Plaintiff's Gross and Plaintiff's Attorney Returns

The Single Defendant Model. A plaintiff or plaintiff class has sued a single defendant, both parties being risk neutral. In both this section and the next, the litigation reaches a settlement phase where the parties can either settle the action or take it to verdict. In all models, the defendant pays its counsel a non-award based, non-contingent fee to take the action to verdict, while the plaintiff pays counsel a contingent fee on any amounts collected. Plaintiff's counsel faces an opportunity cost when the action is taken to verdict representing the time (and in some jurisdictions, expenses) that plaintiff's counsel forgoes in preparing for and talking the action to litigation, time for which counsel could have collected fees in other actions.

Our analysis proceeds as follows. We first determine the settlement region when there is no cap and the plaintiff has settlement authority. We then determine the settlement region when there is no cap but the plaintiff's attorney has settlement authority. A comparison determines whether, in the absence of a cap, the plaintiff faces an agency problem. We then determine the settlement region when there is a cap on damages and the plaintiff has settlement authority. A comparison of this result to the no-cap, plaintiff authority result measures the pure effect of the cap. Fourth, we calculate the settlement region under a cap when the plaintiff's attorney has settlement authority. The difference between the behavior predicted under the cap and plaintiff authority and under the cap and attorney authority measures the agency effect. A theorem summarizes our results.

In single defendant actions, the minimum the plaintiff class would accept settlement for the action is mp , the amount that plaintiff class could obtain by litigating the action through verdict. Because of the contingent fee arrangement, the plaintiff's costs do not increase by going through verdict and the plaintiff's compensation from such a settlement

is $(1 - c)mp$, the same as plaintiff's expected return from litigating the action through verdict. The corresponding maximum offer from the defendant is $mp + T$, the T being included because the defendant only has to expend this amount by litigating the action through verdict. T , the difference between the defendant's maximum settlement offer for the action and the plaintiff's minimum settlement value, *i.e.*, $T = (mp + T) - mp$ is also the width of the settlement region for any fixed p .

Clearly, in the absence of a cap on settlements and given non-negative litigation costs, *i.e.*, $T \geq 0$, for any fixed probability p , there is a set of values over which the parties will settle and the parties would settle for some amount within the range $[mp, mp + T]$ (and when $T = 0$, the parties would settle at mp .) This "settlement band" appears in the figures as the "gap" of height T between the line that represents the plaintiff's minimum settlement value, mp and the line that represents the defendant's maximum offer for settlement $mp + T$ above it. In our first example $mp = \$120$ million and $mp + T = \$130$ million.

Without a settlement cap, the return to plaintiff's counsel's for settling lies within the range $[cmp, cmp + T]$, while the return to plaintiff's counsel for litigating the action to verdict would be $cmp - T$. Plaintiff's counsel would clearly prefer to settle the action if litigation costs are positive, $T > 0$, and by convention would chose to settle even when litigation costs are zero, $T = 0$, being indifferent between settlement. Thus in the absence of a cap on settlements, plaintiff's counsel's preferences mirror plaintiff's and, the decision to settle is independent of the allocation of settlement authority. We have proved proposition 1:

Proposition 1. *In the absence of a cap, regardless of the allocation of settlement authority to plaintiff or her attorney, the parties always settle for some amount in the region*

$[mp, mp + T]$.

To get a sense of the consequences of imposing a cap, we shall assume that the parties divide any surplus from settling by allocating the plaintiff α , $0 \leq \alpha \leq 1$ (and the defendant therefore receiving $1 - \alpha$).¹⁵ When there is no cap, the surplus is $(mp + T) - mp = T$. Thus, the value of the claim to plaintiff in the absence of a cap is $V_P^{No-Cap} = (1 - c)(mp + \alpha T)$ while the value to the attorney is $V_A^{No-Cap} = c(mp + \alpha T)$.

When, however, a court caps settlements at single damages, the surplus becomes $\min[mp + T, 1] - mp$ and thus the defendant's maximum offer becomes $mp + \alpha(\min[mp + T, 1] - mp)$, effectively cutting off a large part of the settlement region. The cap thus radically changes the plaintiff's incentives to settle. There can be no settlement for any p which satisfies $mp > 1$, in other words for any $p > \frac{1}{m}$. In fact, the cap on settlements begins to "narrow" the settlement range at $mp + T = 1$, that is, for any $p > \frac{1-T}{m}$, then completely cuts off the settlement range for $p > \frac{1}{m}$.

Proposition 2. *In the presence of a cap set at single damages, when the plaintiff has settlement authority, settlement occurs whenever $p \in [0, \frac{1}{m}]$; for all other p plaintiff chooses to litigate.*

If $p \in [0, \frac{1-T}{m}]$, the expected value of plaintiff's claim under a cap when she has settlement authority remains V_P^{No-Cap} and the value of the claim to the attorney also remains unaffected by the cap. When $\frac{1-T}{m} < p < \frac{1}{m}$, however, the expected value of her claim and the expected value of the claim to the attorney decreases from V_P^{No-Cap} to the amount of the plaintiff's gross return from litigation and the corresponding surplus goes from T to 0.

¹⁵As a result of the formal structure of the models employed, Kornhauser and Revesz (2004) and the two defendant section of this paper allocate the full surplus to the plaintiff, *i.e.* $\alpha = 1$.

Thus, for all $p > \frac{1}{m}$, the cap causes the plaintiff class to prefer to litigate the action to verdict. In antitrust actions, where $m = 3$, the plaintiff class will prefer to litigate for all $p > \frac{1}{3}$, and the imposition of a cap on settlements will therefore take away the possibility of rational settlement for $\frac{2}{3}$ of the values of p .

Under a court imposed cap on settlements, plaintiff's counsel's return from litigation remains $cmp - T$. Plaintiff's counsel's return from settlement, however, is limited to: $c(mp + \alpha T)$ when $mp + T < 1$ and $mp < 1$ ($p < \frac{1-T}{m}$); $cmp + c\alpha(1 - mp)$ for $\frac{1-T}{m} \leq p < \frac{1}{m}$; and c otherwise. Thus, when plaintiff's attorney has settlement authority, she will want to settle if and only if $cmp + c\alpha(1 - mp) > cmp - T$ (for $mp + T > 1$), *i.e.*, if and only if $p < \frac{T+c\alpha}{c\alpha m}$. When $mp + T < 1$, plaintiff's attorney also wants to settle as his return from settlement is $c(mp + \alpha T) > cmp - T$, his return from litigation.

We have proved proposition 3.

Proposition 3. *In the presence of a cap set at single damages, when the plaintiff's attorney has settlement authority, settlement occurs whenever $p \in [0, \frac{c\alpha+T}{c\alpha m}]$; for all other p , plaintiff's attorney chooses to litigate.*

Our main result for the single defendant case now follows immediately. A cap on settlements equal to actual damages creates a conflict of interest between plaintiff and her attorney whenever p lies in the interval $(\frac{1}{m}, \frac{c\alpha+T}{c\alpha m})$. For all p in the interval, the plaintiff prefers to litigate, while the plaintiff's counsel prefers to settle with this range being non-empty for any non-negative T (for proof of both results see the proof of *Theorem 4* below.) Below $\frac{1}{m}$, the cap has no effect on the choice of either plaintiff or her counsel – both prefer settlement on $p \in (0, \frac{1}{m})$. Above the interval, that is for $p > \frac{c\alpha+T}{c\alpha m}$, plaintiff's counsel prefers to litigate, just as the plaintiff does and thus, the contingent fee arrangement has in

a sense "self corrected" on $p \in (\frac{c+T}{cm}, 1)$. Our theorem follows directly from propositions 2 and 3.

In other words when the $p = \frac{c\alpha+T}{c\alpha m}$ end of the interval exceeds 1, *i.e.*, when the interval in which self-correction occurs disappears completely, and there is an agency effect for all $\frac{1}{m} < p < \frac{c\alpha+T}{c\alpha m}$, $p \in [0, 1]$, thus, for $T > 0$. Put another way, when the downside cost T to plaintiff's counsel of litigating to verdict gets too large, plaintiff's counsel prefers to settle, while the plaintiff, who due to the fee arrangement is never exposed to this downside, prefers to litigate because of the cap over the same range of p .¹⁶

By contrast, if the plaintiff class paid their counsel on the basis of the time counsel has worked on the action, the plaintiff's counsel's incentive would be to litigate the action to verdict for any $p \in (0, 1)$ because counsel's return increases as the amount of work done increases and because plaintiff's counsel faces no cost downside in going to verdict as counsel does in a contingency. In that situation, without a cap, there is an agency issue for all p , and with a cap, there is an agency issue wherever the plaintiff class prefers to settle, that is over all $p \leq \frac{1}{m}$.

Theorem 4. *When settlements are capped, there always exists an interval on $p \in (0, 1)$ where for all p in the interval, the plaintiff prefers to litigate, while the plaintiff's counsel prefers to settle. This interval is $p \in (\frac{1}{m}, \frac{c\alpha+T}{c\alpha m})$ and for any non-negative T , this range is non-empty.*

We conclude this section with two remarks. First, when T is sufficiently large, *i.e.*

¹⁶Technically, there may exist other downsides associated with losing at trial, one being the cost shifting provision of the Federal Rules of Civil Procedure. For example, under Rule 54(d)(1), costs are normally allowed: "costs — other than attorney's fees — should be allowed to the prevailing party." Some statutes include provision for a prevailing plaintiff to be awarded attorney's fees. As noted below, however, these amounts do not affect the conclusions of the analysis.

whenever $\frac{c\alpha+T}{c\alpha m} > 1$ or $T > c\alpha(m-1)$, plaintiff's attorney wants to settle regardless of the prospects p of success on the merits while the plaintiff wants to litigate for any $p > \frac{1}{m}$.

In the case of federal civil antitrust actions where $m = 3$, $p > \frac{1}{3}$. For there to be an agency issue, p must be between the value for which $mp = 1$ (or $p = \frac{1}{m}$) and $p = \frac{c\alpha+T}{c\alpha m}$. A necessary condition for there to be an agency effect is therefore $\frac{1}{m} < \frac{c\alpha+T}{c\alpha m}$. Simplified, this requirement is $mT > 0$, which is true for all $T > 0$. So when damages are capped, given positive litigation costs there is an agency issue for all $p \in (\frac{1}{m}, \frac{c\alpha+T}{c\alpha m})$. ■

2.1. An Informal Analysis of Joint and Several Liability. The formal analysis of the settlement caps under joint and several liability is more complex but the results and the intuitions underlying them remain essentially unchanged. In this section, we provide an informal, diagrammatic analysis of the effects of caps under joint and several liability. The value of plaintiff's claim under joint and several liability depends on the degree of correlation between the likelihood that she will prevail against defendant 1 – call him Row and the likelihood of success that she will prevail against defendant 2 – call him Column. We consider two pure cases: perfect correlation and independence. A price fixing agreement, as in the Auction House Case, offers a paradigmatic example of perfect correlation. For the plaintiff to prevail against each defendant, she must prove an agreement between the two defendants. Thus, if she succeeds against one she succeeds against the other. In section 3 below, we discuss the settlement in the Auction House Case in light of the theory we outline here.

Perfect Correlation. To begin, we consider the effect of the imposition of a cap on the plaintiff's litigations on the assumption that the plaintiff has settlement authority.

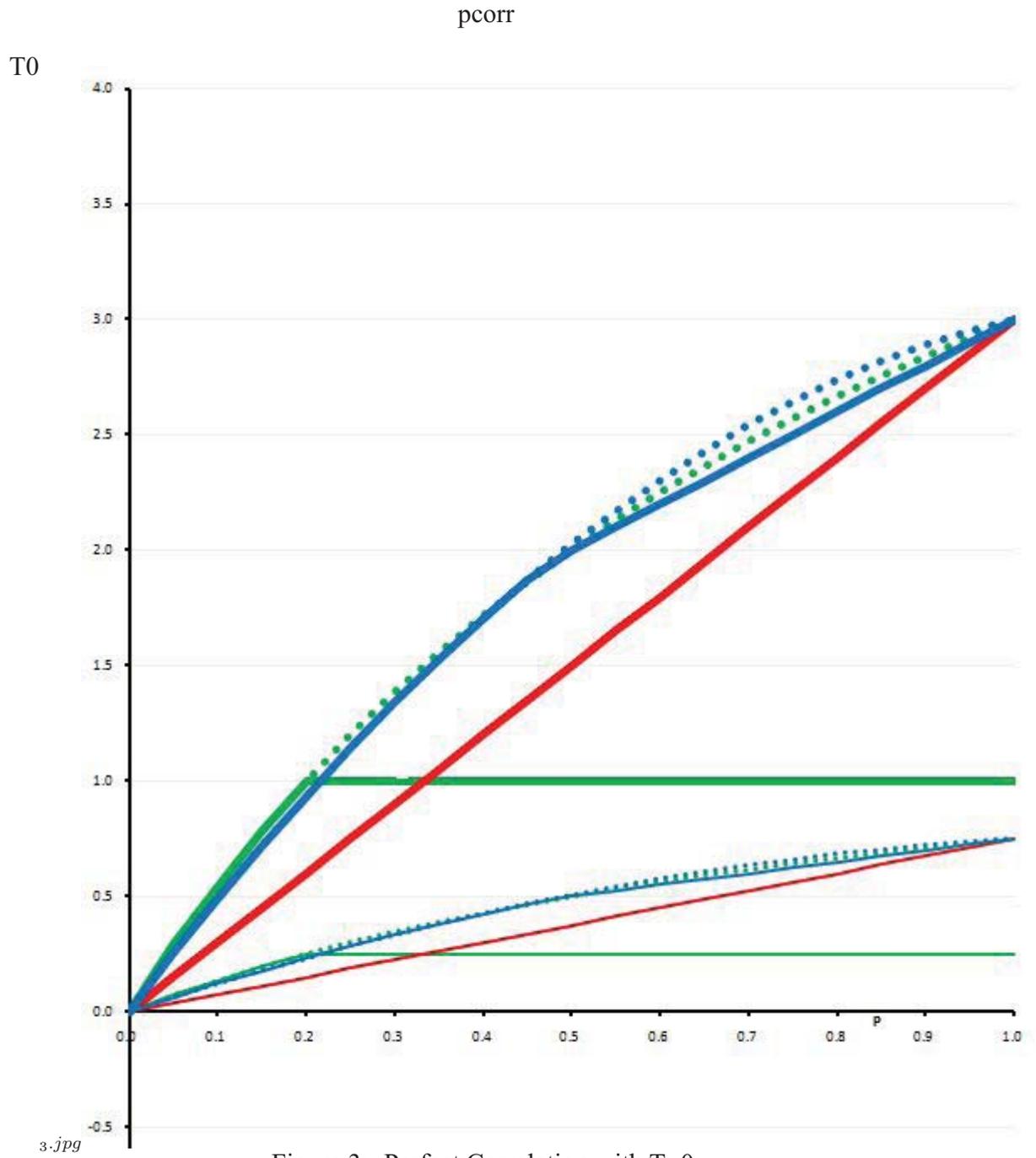


Figure 3 displays the plaintiff's gross returns for each pair of behavioral strategies that she may induce with plaintiff's gross returns graphed against p . In this diagram, the costs T of litigation are 0. The solid lines represent the payoffs under the cap while the dotted lines represent payoffs without a cap, green represents full settlement, blue partial settlement and red full litigation. With perfectly correlated probabilities, in the absence of a cap, the plaintiff never wants to litigate against both parties. She either settles with both or settles with the larger defendant (by our convention Row) and litigates with Column. A cap radically reduces the plaintiff's gross returns once the probability of success against the defendants becomes sufficiently large – for the given parameter values in the diagram at roughly $p = 0.2$. Without a cap, she would, when the probability of success was between 0.2 and 1.0, sometimes settle with both defendants, under the cap the plaintiff will choose to settle with Row and litigate against Column. Thus, the cap reduces the amount of settlement rather than increasing it.

If we allocate settlement authority to the attorney, we observe the same result. In the diagram, the attorney's returns are represented by the thin lines. Again we see that the attorney would, with the cap and for some values of p , choose to settle with Row and litigate against Column when, without the cap, she would settle with both.

When we introduce positive costs of litigation, a principal-agent problem develops under the cap.

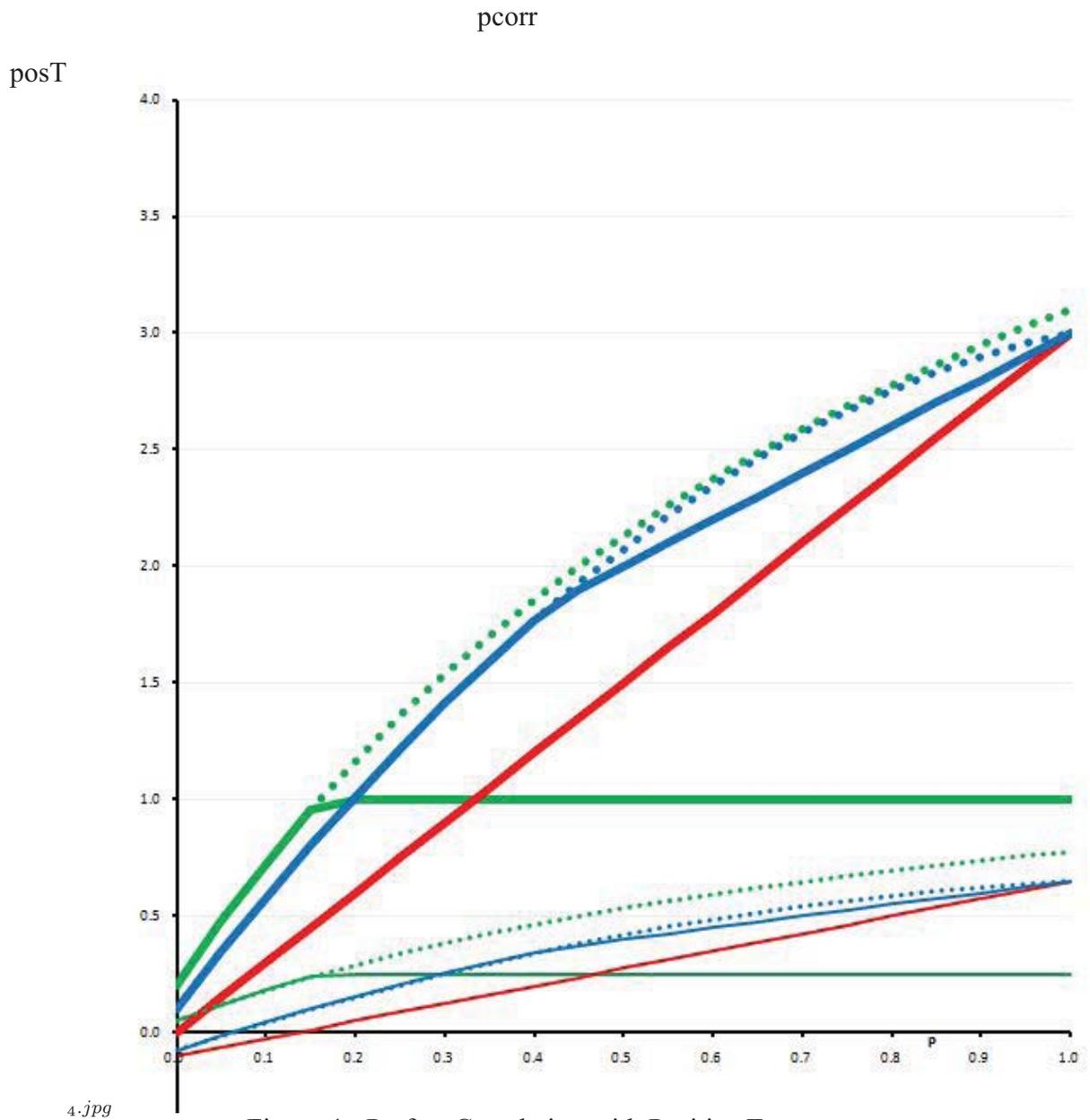


Figure 4: Perfect Correlation with Positive T.

Consider Figure 4. Here the costs of litigation are $T = 0.1$. Now, over roughly the interval p in $(0.2, 0.3)$, the plaintiff, if she had settlement authority, would settle with Row

and litigate against column while, if the plaintiff's attorney had settlement authority, the attorney would settle with both defendants.

Independence. When her prospects of success against each defendant are independent, Plaintiff's optimal behavior under joint and several liability is very complex. Her optimal strategy varies with the costs of litigation and with her probability of success against a single defendant. In section 2.2 we set out some general results. Here we analyze a few diagrammatic examples to illustrate first that the imposition of a cap introduces a conflict of interest between the plaintiff and her attorney and second that the imposition of a cap reduces rather than encourages settlement.

In the absence of a cap, when the plaintiff's prospects of success against each defendant are independent and the costs of litigation are zero (or near zero), her optimal strategy dictates that she litigate against both defendants. When the costs of litigation are positive, however, the use of a contingent fee may introduce a principal agent problem. When the costs of litigation are low, the plaintiff, in the absence of a cap will want to settle with both parties when her probability of success against the defendants is low. As her probability of success increases, however, she will prefer to litigate against both parties. As examination of Figure 5 shows, for sufficiently high prospects of success, an attorney with settlement authority will continue to settle with both defendants for all probabilities of success. Figure 5 shows the plaintiff's gross returns for each pair of behavioral strategies that she may induce with plaintiff's gross returns graphed against p , with the solid lines representing the payoffs under the cap while the dotted lines representing payoffs without a cap, green represents full settlement, blue represents partial settlement and red represents full litigation.

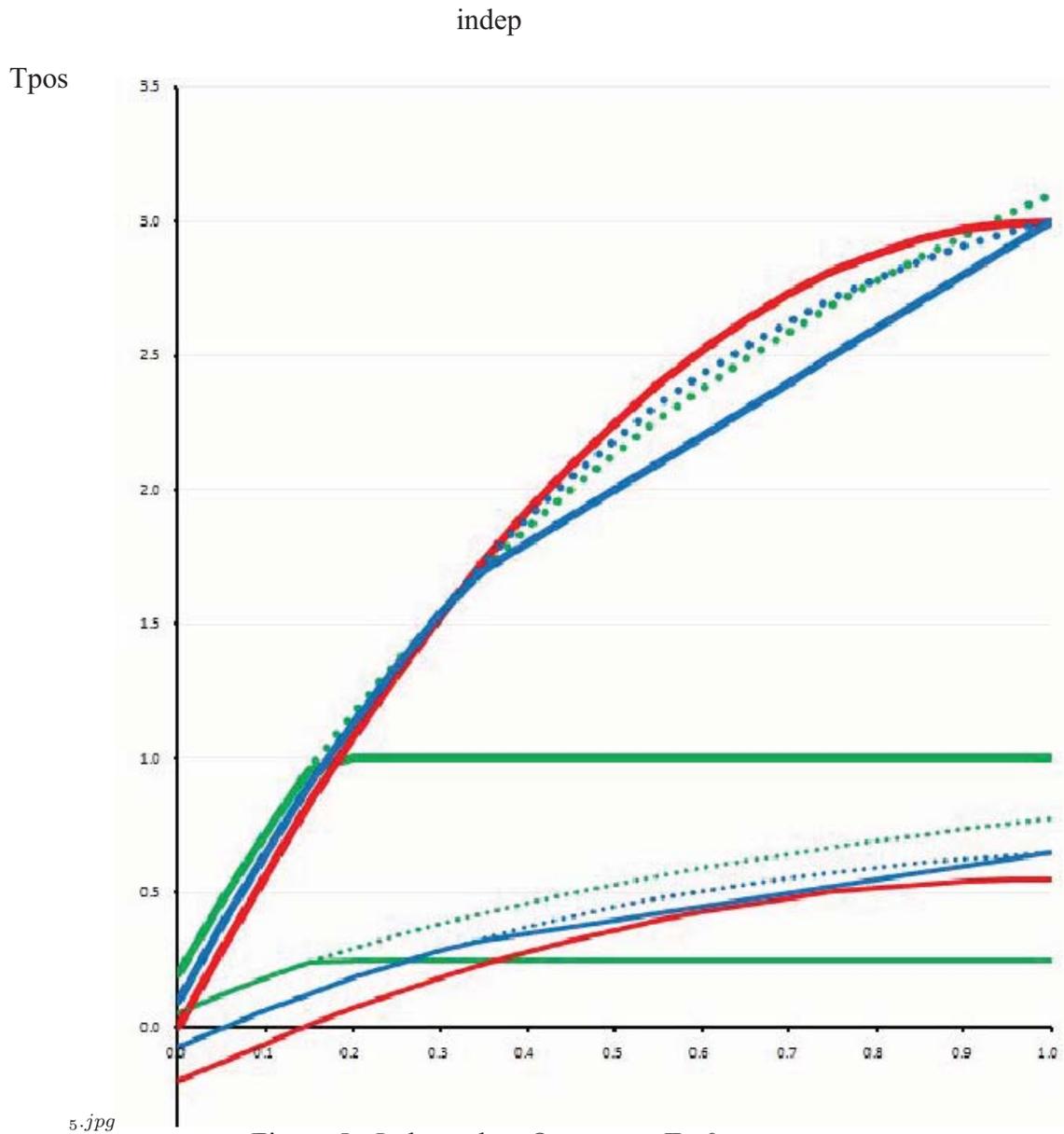


Figure 5: Independent Outcomes, $T > 0$.

A similar conflict of interest occurs under a cap. When plaintiff's probability of success against each defendant is sufficiently low, both the plaintiff and her attorney prefer to settle

with both defendants. When plaintiff's probability of success, however, is sufficiently high, both plaintiff and attorney prefer to litigate against both defendants. For intermediate probabilities of success, however, plaintiff prefers to litigate against both defendants while the attorney prefers to settle with Row and litigate against Column.

2.2. A Two-Defendant Joint And Several Liability Model.

Introduction. For multiple defendants, as a general rule there exists a sufficiently large T such that the plaintiff prefers to settle with all defendants for any p , and plaintiff's attorney's shares this preference. This shared preference occurs because the plaintiff's attorney faces a downside of the opportunity cost of conducting a trial for any profile including litigating defendants that the plaintiff does not. Thus, at any T for which the plaintiff prefers to settle with all defendants, the plaintiff's attorney will also prefer to settle with all defendants. In this case, a cap eliminates settlement for some range of p and can create regions within which plaintiff and plaintiffs' attorney have differing preferences with the plaintiff's attorney more inclined to settlement because the attorney faces a downside cost for litigating under a contingency fee agreement. We analyze the effects of a settlement cap and the potential for agency effects for multiple defendants where the defendants are jointly and severally liable.

In this analysis we employ a modified 2-defendant model based on that of Kornhauser and Revesz (1994). We conduct an analysis for a *pro tanto* rule of claim reduction. Unlike Kornhauser and Revesz, however, we focus on positive litigation cost regimes because these costs play a critical role in the incentives of the plaintiff's attorney and therefore are critical to the principal agent analysis.

For multiple defendants, a cap on settlements has no effect on the plaintiff's return

from full litigation, but does reduce the return on a range of p for both selective litigation and full settlement. Thus, it is never the case that a cap on settlements increases the range of p where settlement is encouraged over full litigation. Moreover, for any fixed $p \in (0, 1)$, a cap on settlements has a greater effect on full settlement than on selective litigation. We therefore focus our analysis on those regions where, without the cap, the plaintiff preferred either full settlement or selective litigation with the strongest focus on full settlement regions.¹⁷

In the absence of a cap, there exists, in general, a sufficiently large T such that the plaintiff prefers to settle with all defendants for any $p \in [0, 1]$ and, for reasons identified below, the plaintiff's attorney shares this preference. Even for smaller T , there may exist regions of p within which the plaintiff prefers to settle with all defendants. These regions may be reduced or eliminated when a cap on settlements is operative so that, for the reasons stated above, a settlement cap may limit the range of probabilities p over which the parties prefer to settle or even preclude the possibility for full settlement.

As the plaintiff's attorney always faces the downside of litigation costs whenever either or both defendants litigate, a downside which because of the contingent fee arrangement the plaintiff does not face, at any p where the plaintiff prefers to settle with all defendants, the plaintiff's attorney will prefer to settle with all defendants, but there may be p at which the plaintiff's attorney prefers to settle with all defendants while the plaintiff prefers some other profile. At the latter p , even in the absence of a cap, there can be agency effects due to the differing preferences. The former tells us, however, that at any T sufficiently large that the plaintiff prefers full settlement on all $p \in [0, 1]$, there is no opportunity

¹⁷This reflects the real social cost of any litigation, even those involving less than all defendants, in that for example a judge need expend time, and other decision makers including the jury must expend resources.

for agency effects due to differing preferences between the plaintiff and the plaintiff's attorney. Even for such T , however, the imposition of a settlement cap will result in some p for which there can be agency effects, in other words at these p , the plaintiff's and the plaintiff's attorney's preferences will differ. Where the plaintiff prefers other profiles than full settlement a cap may create agency effects, although there may already be differing preferences at some of these p . The cap also reduces the plaintiff's attorney's payoff for full and for partial settlement, over some ranges of p , and this reduction may act to mitigate differences in the preferences of the plaintiff and the plaintiff's attorney, mitigating therefore, the regions of p for which there may be agency effects.

The Basic Formal Framework. In the multi-defendant models, we consider a sequential game Γ with 3 players. The plaintiff is player 0 and players 1 and 2 are the defendants. In stage 1, the plaintiff makes a take-it-or-leave-it offer ω_j to each defendant j with $\omega_j \in [0, \infty)$; her strategy space Ω thus consists of all non-negative vectors (ω_j) . At stage 2, each defendant decides, non-cooperatively, whether to settle, s , or to litigate, $\neg s$. Phrased differently, at stage 2, the defendants play a non-cooperative subgame in which each has the (behavioral) strategy set $\{s, \neg s\}$.¹⁸ Let $\sigma = (\zeta_1, \zeta_2)$ be the vector of behavioral responses of defendants and S the set of possible behavioral profiles for the defendants. At stage 3, the plaintiff decides whether to litigate against any non-settling defendants. We examine three correlation scenarios relating to the defendants' trial outcomes.¹⁹ The defendants' outcomes may be 1) independent or perfectly correlated. We

¹⁸In the full game, each defendant's strategy space is much more complex. A strategy for defendant i is a function f from Ω to $\{s, \neg s\}$.

¹⁹If the plaintiff makes settlement offers to both defendants, she offers to each defendant $m \frac{p+T}{1+p}$. If only one defendant settles, then the offset is $\frac{p+T}{1+p}$. For full selective litigation, the plaintiff nets from litigating with the non-settling defendant $p(m - m \frac{p+T}{1+p}) = \frac{mp}{1+p}(1-T)$, which is positive for $T < 1$. Thus, the plaintiff

also assume that each defendant j is responsible for a share r_j of the plaintiff's claim. For convenience, we assume that all claims are joined in a single litigation.

For each correlation type, we model *pro tanto* offsets, where settlements offset liability on a dollar-for-dollar basis. Formally, under a *pro tanto* set-off rule, when a plaintiff with a claim for v settles with one or more defendants for an amount ω , her claim against the remaining defendants is reduced by the settlement amount. That is, her claim against remaining defendants is $v - \omega$. For enhanced damages, *i.e.* $m > 1$, the multiplier is not applied to ω to calculate the offset. In other words, the plaintiff's claim against the remaining defendants is $m - \omega$ (for example, if $m = 3$, $3 - \omega$.)

The Basic Model in Kornhauser and Revesz. Kornhauser and Revesz study the settlement of behavior under a rule of joint and several liability of two defendants for all possible, non-negative degrees of correlation δ in plaintiff's prospects of success against each defendant. In their model $\delta \in [1, 1/p]$, with $\delta = 1$ implying independence and $\delta = 1/p$ implying perfect positive correlation. The plaintiff moves first; her choice of settlement offers determines the equilibrium behavioral strategies adopted by the two defendants. In

will choose to litigate against the remaining defendant for all $T < 1$ (generally the case for litigations.)

The plaintiff's attorneys return for settling is $u_A(S, S) = cm \frac{2(p+T)}{1+p}$. For the plaintiff's attorney, there is an incentive to litigate against the remaining defendant if $cp(m - m \frac{p+T}{1+p}) - T > 0$, in other words if $[cm(1 - T) - T]p > T$. Thus, there are three cases.

First, if $c = \frac{T}{m(1-T)}$, then if the attorney has settlement authority, the plaintiff's attorney would not litigate.

Second, if $cm(1 - T) - T > 0$, then the requirement is that $p > \frac{T}{cm(1-T)-T}$. If $\frac{T}{cm(1-T)-T} > 1$, then the requirement cannot be satisfied. The feasibility $\frac{T}{cm(1-T)-T} \leq 1$ reduces to $cm(1 - T) \geq 2T$ or $c \geq \frac{2T}{m(1-T)}$.

Finally, if $cm(1 - T) - T < 0$, then the requirement is that $p \leq \frac{T}{cm(1-T)-T}$, which requires $p < 0$, so if the attorney has settlement authority, the plaintiff would not litigate.

Thus, there is a potential for an agency issue if $cm(1 - T) - T \leq 0$, or if $p \leq \frac{T}{cm(1-T)-T}$.

the course of their analysis, they calculate the plaintiff's maximal payoff from each of the four possible equilibria in behavioral strategies. They show first that $u_\pi(\neg S, S) > u_\pi(S, \neg S)$. We reproduce the three relevant calculations here.²⁰

$$v_\pi(S, S) = \frac{2(p+T)}{1+p};$$

$$v_\pi(\neg S, \neg S) = p(2 - \delta p) - f(\delta)T, \text{ where } f(1/p) = 1, f(1) = 2, \text{ and } f(0) = 1; \text{ and}$$

$$v_\pi(\neg S, S) = p(2 - p) - (1 - p)\delta pr - T.$$

Note that the surplus represented by the litigation costs, T , both here and in Kornhauser and Revesz could be divided between the plaintiff and Under a contingent fee arrangement with share c to the plaintiff, no cap, and multiple damages m , we may write plaintiff's and her attorney's maximal return from each strategy as follows:²¹

Settle against both:

$$u_\pi(S, S) = (1 - c)m\frac{2(p+T)}{1+p};$$

$$u_A(S, S) = cm\frac{2(p+T)}{1+p}.$$

Litigate against both:

$$u_\pi(\neg S, \neg S) = (1 - c)mp(2 - \delta p);$$

$$u_A(\neg S, \neg S) = cmp(2 - \delta p) - f(\delta)T.$$

Litigate against row and settle against column:

$$u_\pi(\neg S, S) = (1 - c)m[p(2 - p) - (1 - p)\delta pr];$$

$$u_A(\neg S, S) = cm[p(2 - p) - (1 - p)\delta pr] - f(\delta)T.$$

We write the gross return to plaintiff's side as $g_\pi(-, -) = u_\pi(-, -) + u_A(-, -) +$

²⁰These are equations 19-22 in Kornhauser and Revesz (1994). We have adjusted these equations to reflect the assumptions on litigation costs that we have made.

²¹Those cases filed under statutes which mandate the payment of attorney's fees upon the plaintiff prevailing might increase the award pool by the amount of the fee award, F . Because this F would go into this award pool, the F does not, however, affect the conclusions of the analysis.

$f(\delta)T$.

Perfect Correlation, *Pro Tanto* Setoff. The multi-defendant case raises several complex issues that did not arise in the single defendant analysis. Our model differs in several important respects from that of Kornhauser and Revesz. In their model, there is no multiplier m , no cap, and no attorney. The introduction of the attorney paid a contingent fee may create a principal-agent problem. The allocation of settlement authority thus has significant effects. If plaintiff has settlement authority, then for any positive T , the cap discourages settlement for some range of p and r . We show first that, even in the absence of any principal-agent problem, the imposition of a cap may reduce settlement.

We begin by considering the outcome when plaintiff has settlement authority. We first calculate the capped gross return \hat{g}_π to plaintiff under each strategy. (Recall that, with the contingent fee $u_\pi = (1 - c)\hat{g}_\pi$.) We have: $\hat{g}_\pi(S, S) = \min[1, \frac{2(mp+T)}{1+p}]$, $\hat{g}_\pi(S, \neg S) = p(m - \hat{\omega}) + \hat{\omega}$ where $\hat{\omega} = \min[1, pmr + T]$; and $\hat{g}_\pi(\neg S, \neg S) = mp$.

Proposition 5. *Under perfect correlation, with a multiplier m and a settlement cap, when plaintiff has settlement authority, if (a) $\frac{1-2T}{2m-1} < \frac{1-T}{mr}$, then there exists a \hat{p} in the interval $[0, \frac{1-T}{mr}]$, such that for $p \in [0, \hat{p}]$, the plaintiff's optimal strategy is to settle with both defendants and for $p \in (\hat{p}, 1]$, the plaintiff's optimal strategy is to litigate with both defendants; and (b) if $\frac{1-T}{mr} < \frac{1-2T}{2m-1}$, then there exists a \hat{p} in the interval $[0, \frac{1-2T}{2m-1}]$, such that for $p \in [0, \hat{p}]$, the plaintiff's optimal strategy is to settle with both defendants and for $p \in (\hat{p}, 1]$, the plaintiff's optimal strategy is to litigate with both defendants;*

Proof: With the contingent fee, the plaintiff is concerned with the gross return on her claim. Using the gross returns expressed above, we compare the gross return for the three

induced behavioral strategies of the defendants (S, S) , $(S, \neg S)$ and $(\neg S, \neg S)$. We have the following three propositions.

1. For all $p \in [0, 1]$, $\hat{g}_\pi(S, \neg S) > \hat{g}_\pi(\neg S, \neg S)$. Thus, whenever the plaintiff prefers full litigation to settlement, the plaintiff's optimal strategy is to settle with the larger plaintiff and litigate against the other defendant.

2. For all p where both the cap for full settlement and the cap for selective litigation are in effect, $\hat{g}_\pi(S, \neg S)$ exceeds the return from settling with both parties if and only if $mpr \geq 1$ which holds if $1 \geq mp + (1 - p)$ or $m \leq 1$.

3. Now we determine when the cap comes into effect for full settlement and for full selective litigation.

For full settlement, the cap says that $\hat{g}_\pi(S, S) = 1$ when $\frac{2mp+2T}{1+p} \geq 1$. Thus, $\hat{g}_\pi(S, S)$ is capped for $p \geq \frac{1-2T}{2m-1}$.

For full selective litigation, the cap requires that $\hat{g}_\pi(S, \neg S) = mp + (1 - p)$. when $pmr + T \geq 1$. Thus, $\hat{g}_\pi(S, \neg S)$ is capped for $p \geq \frac{1-T}{mr}$.

So there are two cases: $\frac{1-2T}{2m-1} < \frac{1-T}{mr}$ and $\frac{1-2T}{2m-1} \geq \frac{1-T}{mr}$.

4. When $\frac{1-2T}{2m-1} < \frac{1-T}{mr}$, the cap on full settlement is in place before the cap on selective litigation. Thus, for:

$$p < \frac{1-2T}{2m-1}, \hat{g}_\pi(S, S) = \frac{2mp+2T}{1+p} \text{ and } \hat{g}_\pi(S, \neg S) = -mrp^2 + (m + mr - T)p + T;$$

$$p \in \left[\frac{1-2T}{2m-1}, \frac{1-T}{mr} \right], \hat{g}_\pi(S, S) = 1 \text{ and } \hat{g}_\pi(S, \neg S) = -mrp^2 + (m + mr - T)p + T \text{ and}$$

$$p > \frac{1-T}{mr}, \hat{g}_\pi(S, S) = 1 \text{ and } \hat{g}_\pi(S, \neg S) = mp + (1 - p).$$

For $p < \frac{1-2T}{2m-1}$, $\hat{g}_\pi(S, S) \geq \hat{g}_\pi(S, \neg S)$ when $\frac{2mp+2T}{1+p} \geq -mrp^2 + (m + mr - T)p + T$ in other words, when $f = (-mr)p^3 + (m - T)p^2 + (mr - m)p - T \leq 0$. At $p = 0$, $f = -T$, so the requirement is satisfied. so certainly, near $p = 0$, $\hat{g}_\pi(S, S) \geq \hat{g}_\pi(S, \neg S)$.

For $p \in [\frac{1-2T}{2m-1}, \frac{1-T}{mr})$, $\hat{g}_\pi(S, S) \geq \hat{g}_\pi(S, \neg S)$ when $\frac{2mp+2T}{1+p} > mp + (1-p)$, in other words, when $f = (m-1)p^2 + -mp + (1-2T) < 0$.

For $p \geq \frac{1-T}{mr}$, $\hat{g}_\pi(S, S) \geq \hat{g}_\pi(S, \neg S)$ when $1 \geq mp + (1-p)$ or $m \leq 1$. Thus, for any multiplier greater than 1, when $\frac{1-2T}{2m-1} < \frac{1-T}{mr}$, there exists a $\hat{p} \leq \frac{1-T}{mr}$, such that for $p \in [0, \hat{p}]$, the plaintiff's optimal strategy is to settle with both defendants and for $p \in (\hat{p}, 1]$, the plaintiff's optimal strategy is to litigate with both defendants.

5. When $\frac{1-T}{mr} \leq \frac{1-2T}{2m-1}$, the cap on selective litigation is in place before the cap on full settlement. Thus, for:

$$p < \frac{1-T}{mr}, \hat{g}_\pi(S, S) = \frac{2mp+2T}{1+p} \text{ and } \hat{g}_\pi(S, \neg S) = -mrp^2 + (m + mr - T)p + T;$$

$$p \in [\frac{1-T}{mr}, \frac{1-2T}{2m-1}], \hat{g}_\pi(S, S) = \frac{2mp+2T}{1+p} \text{ and } \hat{g}_\pi(S, \neg S) = mp + (1-p); \text{ and}$$

$$p > \frac{1-2T}{2m-1}, \hat{g}_\pi(S, S) = 1 \text{ and } \hat{g}_\pi(S, \neg S) = mp + (1-p).$$

For $p < \frac{1-T}{mr}$, $\hat{g}_\pi(S, S) \geq \hat{g}_\pi(S, \neg S)$ when $\frac{2mp+2T}{1+p} \geq -mrp^2 + (m + mr - T)p + T$ in other words, when $f = (-mr)p^3 + (m-T)p^2 + (mr-m)p - T \leq 0$. At $p = 0$, $f = -T$, so the requirement is satisfied, so certainly, near $p = 0$, $\hat{g}_\pi(S, S) \geq \hat{g}_\pi(S, \neg S)$.

For $p \in [\frac{1-T}{mr}, \frac{1-2T}{2m-1})$, $\hat{g}_\pi(S, S) \geq \hat{g}_\pi(S, \neg S)$ when $1 > -mrp^2 + (m + mr - T)p + T$, in other words, when $f = -mrp^2 + (m + mr - T)p + T - 1 < 0$.

For $p \geq \frac{1-2T}{2m-1}$, $\hat{g}_\pi(S, S) \geq \hat{g}_\pi(S, \neg S)$ when $1 \geq mp + (1-p)$ or $m \leq 1$. Thus, for any multiplier greater than 1, when $\frac{1-T}{mr} < \frac{1-2T}{2m-1}$, there exists a $\hat{p} \leq \frac{1-2T}{2m-1}$, such that for $p \in [0, \hat{p}]$, the plaintiff's optimal strategy is to settle with both defendants and for $p \in (\hat{p}, 1]$, the plaintiff's optimal strategy is to litigate with both defendants. ■

Notice that even in the absence of a contingent fee, the imposition of a cap may have an adverse effect on settlement. For T sufficiently small, we will have $\hat{g}_\pi(S, \neg S) > 1$, the capped gross return from (S, S) .

Proposition 6. *When settlements are uncapped, whether there is an agency issue depends on T . For $T = 0$, there is no possibility of an agency issue. For positive T , there is a possibility of an agency issue unless $c = \frac{1}{2}$.*

Proof: For full settlement, the plaintiff's and her attorney's returns are multiples of each other. On the other hand, for partial and full litigation the plaintiff's and her attorney's returns also differ by T . Thus, for a fixed p , changes in T have no effect on the relative sizes of the plaintiff's and her attorney's returns from full settlement, but changes in T affect the relative sizes of the plaintiff's and her attorney's returns from other profiles.

Assume $T = 0$. Then: $u_\pi(S, S)_{T=0} = (1 - c)m\frac{2p}{(1+p)}$ and $u_A(S, S)_{T=0} = cm\frac{2p}{(1+p)}$; $u_\pi(\neg S, \neg S)_{T=0} = (1-c)mp$ and $u_A(\neg S, \neg S)_{T=0} = cmp$; $u_\pi(S, \neg S)_{T=0} = (1-c)(-mrp^2 + (m + mr - T)p + T)$ and $u_A(S, \neg S)_{T=0} = c(-mrp^2 + (m + mr - T)p + T) - T$.

Thus, $u_\pi(S, S)_{T=0} = \alpha u_A(S, S)_{T=0}$; $u_\pi(S, \neg S)_{T=0} = \alpha u_A(S, \neg S)_{T=0}$; $u_\pi(\neg S, \neg S)_{T=0} = \alpha u_A(\neg S, \neg S)_{T=0}$. Therefore at a p where $u_\pi(S, S)_{T=0} > u_\pi(\neg S, \neg S)_{T=0}$, $\alpha u_A(S, S)_{T=0} > \alpha u_A(\neg S, \neg S)_{T=0}$ and thus $u_A(S, S)_{T=0} > u_A(\neg S, \neg S)_{T=0}$ and likewise for every other relation. Thus, for $T = 0$, there is no agency issue because the plaintiff and her attorney's interest in profiles exactly coincide.

Now select a $\bar{T} > 0$. and suppose at some \bar{p} , $u_\pi(S, S)_{T=\bar{T}} = u_\pi(\neg S, \neg S)_{T=\bar{T}}$. Then in order for $u_A(S, S)_{T=\bar{T}} = u_A(\neg S, \neg S)_{T=\bar{T}}$; it must be that $cm\frac{2(p+\bar{T})}{1+p} = cmp - \bar{T}$, or $(1-c)m\frac{2(p+\bar{T})}{1+p} = (1-c)mp - \frac{(1-c)\bar{T}}{c}$. By assumption $(1-c)m\frac{2(p+\bar{T})}{1+p} = (1-c)mp - \bar{T}$ so the equality would only be preserved for the attorney for $\frac{1-c}{c} = 1$, or $c = \frac{1}{2}$. Likewise for a \underline{T} where for some \bar{p} , $u_\pi(S, S)_{T=\underline{T}} = u_\pi(S, \neg S)_{T=\underline{T}}$, the equality would only be preserved for the attorney for $\frac{1-c}{c} = 1$, or $c = \frac{1}{2}$. ■

This property manifests itself in the following ways. When T is large enough that

the plaintiff prefers to settle with all defendants for all $p \in (0, 1)$, the plaintiff's attorney will also prefer that the plaintiff settle with all defendants for all $p \in (0, 1)$, and therefore, there is no agency issue. If, however, there is a range of p , which we refer to as χ in which the plaintiff prefers selective litigation, the plaintiff's attorney may also prefer selective litigation, but only for a subset γ of those χ . For the remaining p in χ , *i.e.*, $\gamma^c \cap \chi$, the plaintiff's attorney will prefer settlement and there is the possibility of an agency effect.

Proposition 5 establishes that, when the cap is binding on the equilibrium (S, S) , the plaintiff will induce some other equilibrium strategy. We have not, however, shown that, when the cap is close to binding, the plaintiff would want to induce (S, S) . We now prove that stronger proposition and therefore establish that the imposition of a cap unambiguously reduces settlement.

Theorem 7. *Under the cap, where the defendants' outcomes are perfectly correlated and $T > 0$, there always exists some interval of p where selective litigation is preferred to full settlement, but where, without the cap, the plaintiff prefers full settlement – and where, therefore, the cap eliminates full settlement as plaintiff preferred.*

Proof: First, as shown above, the plaintiff prefers selective litigation to full litigation with (or without) the cap. Thus, we only need to compare selective litigation and full settlement.

Because $\hat{g}_\pi(S, S) \leq 1$ for all p , whenever $\hat{g}_\pi(S, \neg S) > 1$, $\hat{g}_\pi(S, \neg S) > \hat{g}_\pi(S, S)$ – in other words, the plaintiff will prefer selective litigation to settlement. The cap comes into effect on the settlement component of selective litigation, $\hat{g}_\pi(S, \neg S) = mp + (1 - p) > 1$, so that under the cap for all $p \geq \hat{p}_{(S, \neg S)} = \frac{1-T}{mr}$, selective litigation is preferred to full settlement. Note that $\hat{p}_{(S, \neg S)} \leq 1$ whenever $r \geq \frac{1-T}{m}$. Because $r \geq \frac{1}{2}$, if we assume that

litigation costs are less than single damages, $T < 1$, then $\hat{p}_{(S, \neg S)} \leq 1$ for $m \geq 2$, and, in fact for any m such that $m \geq 2(1 - T)$. Thus, when $m \geq 2(1 - T)$, there exists an interval \hat{U} near $p = 1$, where, under the cap, selective litigation is preferred to full settlement.

If, on the other hand, $\hat{p}_{(S, \neg S)} > 1$ (in other words, though the cap is mandated, it does not affect selective litigation) note that $\hat{g}_\pi(S, \neg S) = -mrp^2 + m(1 + r)p - Tp + T$ is a continuous function in p and that at $p = 1$, $\bar{g}_\pi(S, \neg S) = m$ which is greater than 1 by assumption, so that by continuity of the difference $\hat{g}_\pi(S, \neg S) - \hat{g}_\pi(S, S)$, there always exists some neighborhood \hat{U} near $p = 1$ where $\hat{g}_\pi(S, \neg S) > \hat{g}_\pi(S, S)$, in other words where, under the cap, selective litigation is preferred to full settlement.

When there is no cap, at $p = 1$, $g_\pi(S, S) = m + T$ while $g_\pi(S, \neg S) = m \leq g_\pi(S, S)$ and by the continuity of $g_\pi(S, S) - g_\pi(S, \neg S)$, there always exists some neighborhood U around $p = 1$ where $g_\pi(S, S) \geq g_\pi(S, \neg S)$. In other words there exists a neighborhood where, in the absence of the cap, full settlement is preferred to selective litigation.

The intersection, $U \cap \hat{U}$, is a region where the cap eliminates full settlement as the plaintiff's preferred profile. ■

Independent Outcomes, *Pro Tanto* Setoff. In the case of independent outcomes and *pro tanto* setoff, with multiplier m , without a cap on settlements, and under a contingent fee arrangement with share c to the plaintiff, we may write the plaintiff's and her attorney's maximal returns for each strategy as:

$$u_\pi(S, S) = (1 - c)m \frac{2(p+T)}{1+p};$$

$$u_A(S, S) = cm \frac{2(p+T)}{1+p}.$$

Litigate against both:

$$u_\pi(\neg S, \neg S) = (1 - c)mp(2 - p);$$

$$u_A(\neg S, \neg S) = cmp(2 - p) - 2T.$$

Litigate against row and settle against column:

$$u_\pi(S, \neg S) = (1 - c)p(m - \varpi) + \varpi, \text{ where } \varpi = m[p(1 - p) + p^2r] + T;$$

$$u_A(S, \neg S) = cp(m - \varpi) + \varpi - T.$$

We write the gross return to plaintiff's side as $g_\pi(-, -) = u_\pi(-, -) + u_A(-, -) + 2T$.

For capped utilities we may write the plaintiff's and her attorney's maximal returns for the strategies as follows:

Both Settle:

$$\hat{u}_\pi(S, S) = \min[(1 - c)m\frac{2(p+T)}{1+p}, 1 - c];$$

$$\hat{u}_A(S, S) = \min[cm\frac{2(p+T)}{1+p}, c].$$

Litigate against both:

$$\hat{u}_\pi(\neg S, \neg S) = (1 - c)mp(2 - p);$$

$$\hat{u}_A(\neg S, \neg S) = cmp(2 - p) - 2T.$$

Litigate against row and settle against column:

$$\hat{u}_\pi(S, \neg S) = (1 - c) \min[p(m - \varpi) + \varpi, p(m - 1) + 1] \text{ where } \varpi = m[p(1 - p) + p^2r] + T;$$

$$\hat{u}_A(S, \neg S) = c \min[p(m - \varpi) + \varpi - T, p(m - 1) + 1 - T].$$

Proposition 8. *Under a contingent fee, the interests of the plaintiff and her attorney may diverge, even in the absence of a cap.*

Proof: The attorney's return from settlement is given by $c\frac{2(mp+T)}{1+p}$, the attorney's return from settling with Row and litigating with column is $-cm(r - 1)p^3 + [m(r - 1) - cm]p^2 + (2m - cT)p$, while the plaintiff's return from settlement is given by $(1 - c)\frac{2(mp+T)}{1+p}$, the attorney's return from settling with Row and litigating with column is $-(1 - c)m(r - 1)p^3 +$

$[m(r-1) - (1-c)m]p^2 + [m - (1-c)(T-m)]p$. Observe that for both the plaintiff and her attorney, the return from settlement is increasing in T , while the return from selective litigation/partial settlement is decreasing in T . Thus, at some sufficiently large T , both the plaintiff and her attorney will prefer full settlement for any $p \in (0, 1)$.

But also note, if there some constraints on what T might be reasonable, for example that it must be less than single damages, *i.e.*, $T < 1$, then the (minimal) difference is: $cm(1-r)p^4 + [-m(1-r) - cmr]p^3 + (m-c+mr-cm)p^2 + (2m-c-2cm)p - 2c$. At $p = 1$, the difference is therefore $-2(m+mr+2)c + (2m+2mr)$ which is positive if $c \leq m \frac{1+r}{m+mr+2}$, which is easily satisfied for many reasonable m and r (for example, $m = 3$ and $r = 0.6$, the constraint is $c \leq 3 \frac{1+0.6}{3+3(0.6)+2} = 0.70588$), but not for $1-c$, so that the plaintiff and her attorney, even at maximal reasonable T , can still have differing preferences, particularly near $p = 1$.

Let the difference $\Delta(\Lambda) = [-\Lambda m(r-1)]p^3 + [m+m(r-1) - \Lambda(T-m) - \Lambda m]p^2 + [m - \Lambda(T-m) - 2\Lambda m]p - 2\Lambda T$. Then at $p = 0$, $\Delta(\Lambda) = -2\Lambda T$ which is negative and increasingly negative in Λ . At $p = 1$ $\Delta(\Lambda) = -(4T+mr)\Lambda + m(1+r)$. Note that $\Delta(\Lambda) = 0$ implies $[(-T-m)p - Tp^2 - m(r-1)p^3 - 2T]\Lambda + [m+m(r-1)]p^2 + mp = 0$ or $\Lambda = \frac{-mp(rp+1)}{m(1-r)p^3 - Tp^2 - (m+T)p - 2T}$.

Thus, because for the attorney $\Lambda = c$ while for the plaintiff $\Lambda = 1 - c$, (unless $c = \frac{1}{2}$, which could be prohibited by applicable ethical rules or case law), the zeros of the two difference functions will also differ. Thus, if T , m , and r are such that for some range of $p \in (0, 1)$, the plaintiff prefers selective litigation/partial settlement, then there will be an opportunity for agency effects because the plaintiff and her attorney's interests will differ near the zeros of the difference functions. ■

We now turn to: Independent Outcomes, *Pro Tanto* Setoff.

Proposition 9. *For $T > 0$, when the plaintiff has settlement authority, there always exists some interval of p near $p = 1$, where without a cap, full settlement is preferred over any other profile, but where, under a cap selective litigation is preferred to full settlement – and where, therefore, the cap eliminates full settlement as preferred.*

Proof: First, we examine the case where there is no cap. Without a cap, at $p = 1$, $g_\pi(S, S) = m + T$ while for $T > 0$,²² $g_\pi(S, \neg S) = g_\pi(\neg S, \neg S) = m < g_\pi(S, S)$ and by the continuity of $g_\pi(S, S) - g_\pi(S, \neg S)$, and of $g_\pi(S, S) - g_\pi(\neg S, \neg S)$, there always exists some neighborhood around $p = 1$, $U = (p_{nocap}, 1]$, $p_{nocap} < 1$ where $g_\pi(S, S) \geq g_\pi(S, \neg S)$, and where $g_\pi(S, S) \geq g_\pi(\neg S, \neg S)$, in other words where, in the absence of the cap, full settlement is preferred to selective litigation and to full litigation.

Next, we examine the case with a cap. Because we are trying to showing that under a cap full settlement is not preferred on a region \bar{U} near $p = 1$, we can compare $\hat{g}_\pi(S, S)$ to either $\hat{g}_\pi(\neg S, \neg S)$ or $\hat{g}_\pi(S, \neg S)$. Here, we shall compare $\hat{g}_\pi(\neg S, \neg S)$ to $\hat{g}_\pi(S, S)$. Note first that at $p = 1$, the cap condition on full settlement $m(1 + T) > 1$, so that under the cap, $\hat{g}_\pi(S, S) = 1$ at and near $p = 1$. Note also that $\hat{g}_\pi(\neg S, \neg S) = m[1 - (1 - p)^2]$ is a continuous function in p and that at $p = 1$, $\hat{g}_\pi(\neg S, \neg S) = m$ which is greater than 1 by assumption, so that by continuity of the difference $\hat{g}_\pi(\neg S, \neg S) - \hat{g}_\pi(S, S)$, there always exists a neighborhood around $p = 1$, $\hat{U} = (p_{cap}, 1]$, $p_{cap} < 1$ where $\hat{g}_\pi(\neg S, \neg S) > \hat{g}_\pi(S, S)$, in other words where, under the cap, selective litigation is preferred to full settlement.

The intersection, $\bar{U} = U \cap \hat{U}$, is a region where the cap eliminates full settlement as preferred.

²²For $T = 0$, Kornhauser and Revesz (1994) show that the plaintiff prefers full litigation over $p \in (0, 1)$.

3. THE AUCTION HOUSES CASE

"When we take on a class action, we approach it in the same way as an individual client ... The individual client is not going to say, 'We want single damages.'"

– David Boies²³

In what one antitrust lawyer has termed "the most outstanding result I have ever heard of in the history of the antitrust laws,"²⁴ the *Auction Houses* civil antitrust lawsuit settled with defendants, Christie's and Sotheby's, paying \$512 million to the plaintiff class and with the law firm of Boies, Shiller, Flexner LLP ("Boies") receiving \$26.75 million as the plaintiff class lead counsel.²⁵ At the time, commentators noted the size of the settlement: "Never in a thousand years could I have predicted such a large recovery," according to interim lead counsel, Fred Furth.²⁶ As another interim lead counsel observed: "we didn't think we could have accomplished what Mr. Boies did."²⁷

The *Auction Houses* case is noteworthy not only for the magnitude of the settlement and for Judge Kaplan's innovative and much analyzed²⁸ auction process for selecting class lead counsel, but also for the detailed data available on the negotiation process. This information is available in part due to Judge Kaplan's auction procedure and decisions, and

²³Karen Donovan, *V. Goliath: The Trials Of David Boies*, p. 209 (2007).

²⁴*In re Auction Houses*, 2001 U.S. Dist. LEXIS 1713 at *27-8.

²⁵According to the initial agreement: "Sotheby's and Christie's each would pay \$206 million, for a total of \$412 million, into an escrow account for the benefit of members of the class....Sotheby's and Christie's, within thirty days after district court final approval of the settlement, would pay an additional \$ 50 million, for a total of an added \$100 million, into the escrow account for the benefit of class members." *Id.*, at *13-14.

²⁶David Boies, *Courting Justice*, p. 352 (2004).

²⁷*In re Auction Houses*, 2001 LEXIS 1713, at *28. According to other commentators: "Boies got them into an auction. Boies played them like a fiddle, basically." Donovan, *V. Goliath*, p. 213.

²⁸See, e.g., Orley Ashenfelter and Kathryn Graddy, "Anatomy of the Rise and Fall of a Price-Fixing Conspiracy: Auctions at Sotheby's and Christie's," 1(1) *Journal of Competition Law and Economics* 3–20 (2005).

in part due to the detailed accounts written about the case, including one written by David Boies himself.²⁹ This wealth of useful data allows us a unique opportunity to examine the conclusions of the model in the context of an actual lawsuit and to demonstrate how a decision maker might use the model to assess the substantive fairness³⁰ of actual settlements and in particular, possible agent-principal effects.³¹ The sequence of events in the litigation and settlement process also reveals information useful for this analysis.

In 1997, the Department of Justice (DOJ) began an investigation of the price fixing of auction commissions by the world's biggest auction houses, Christie's and Sotheby's.³² Christie's ultimately admitted to conspiring to fix sellers' commissions and in turn received conditional amnesty from criminal prosecution, though not from civil suits.³³ After Christie's cooperation with the DOJ was publicly revealed in January 2000, a number of law firms, including Boies, decided to initiate actions on behalf of customers of Christie's

²⁹For example, see: *In re Auction Houses*, 2001 U.S. Dist. LEXIS 1713 (S.D.N.Y. February 22, 2001); Ashenfelter and Graddy (2005); Boies, *Courting Justice* (2004); Donovan, *V. Goliath* (2007); and James B. Stewart, "Bidding War; How an antitrust investigation into Christie's and Sotheby's became a race to see who could betray whom," *The New Yorker*, p. 158 (October 15, 2001).

³⁰This assessment is required by law. Rule 23(e)(2) states in pertinent part: "If the proposal would bind class members, the court may approve it only after a hearing and on finding that it is fair, reasonable, and adequate." Rule 23(e)(2), Fed.R.Civ.P.

According to Judge Kaplan: "The judgment a court confronted with a class action settlement is called upon to make is whether the settlement is "fair, adequate, and reasonable" to class members, a standard that includes both procedural and substantive components." *In re Auction Houses*, 2001 LEXIS 1713, at *25 (citations omitted).

³¹Judge Kaplan warns: "These problems of mismatched incentives are present not only in class actions, but also in traditional attorney-client relationships... However, they often can be far more severe in the class action context, primarily because classes tend to be large, dispersed and disorganized and therefore suffer from a collective action dilemma not faced by individual litigants. This collective action dilemma leads to significantly less monitoring of the attorney by the class and consequential higher agency costs. The danger of a suboptimal result for plaintiffs, therefore, is far more severe in the class action context than in traditional litigation." *In re Auction Houses Antitrust Litig.*, 197 F.R.D. 71, 77-78 (S.D.N.Y. 2000) (citations omitted).

³²Boies, *Courting Justice*, p. 324.

³³*In re Auction Houses*, 2001 U.S. Dist. LEXIS 1713, at 8.

and Sotheby's against the auction houses.³⁴ The cases filed in the Southern District of New York were referred to Judge Kaplan, who in February selected interim lead counsel, permitting interim lead counsel to file an amended consolidated complaint.³⁵ Judge Kaplan then certified the plaintiff class and in April, set about selecting lead counsel employing the auction mechanism noted above.³⁶

Under the first incarnation of Judge Kaplan's auction procedure, the competing law firms each submitted two bid numbers: an *X*, representing the amount the plaintiffs would collect before counsel received any payment; and a *Y*, representing counsel's base fee.³⁷ One quarter of any surplus collected over the sum of those amounts would also go to counsel.³⁸ In response, Boies submitted a bid of \$410 million for the class and \$26 million for Boies's fee, basing their estimates on publicly available information, in part because

³⁴Boies, *Courting Justice*, pp. 327-30.

³⁵*Id.*, pp. 330-31.

³⁶*In re Auction Houses*, 197 F.R.D. at 73. For further details regarding the auction, see for example, the *Statement Of the Honorable Lewis A. Kaplan, United States District Judge, Southern District of New York to the Court of Appeals for the Third Circuit's Task Force on Selection of Class Counsel*, (June 1, 2001) (available at: http://www.ca3.uscourts.gov/classcounsel/Witness%20Statements/Lewis_Kaplan.pdf).

³⁷Donovan, *V. Goliath*, p. 212.

According to Judge Kaplan:

"B. *First Proposed Fee Structure*

The bids contemplated by the Court's initial order were to contain three parts. First, each bid was to include information concerning the bidder's qualifications and evidence that the bidder had evaluated fully the risks and potential rewards of the litigation. Second, each bid was to contain two figures, X and Y, on the basis of which the bidder was prepared to serve as lead counsel. The X and Y figures were to be determined based on the bidder's evaluation of the case and the following fee structure: One hundred percent of any gross recovery obtained by the class or class members up to and including X would go entirely to the class or class members, free of attorney's fees. One hundred percent of any gross recovery in excess of X, up to and including Y, would go to lead counsel. One fourth of any recovery in excess of Y would be paid to lead counsel as additional compensation and three fourths to the class. Third, each bidder was to submit a brief memorandum setting forth the basis for and supporting the bid. The briefs were to explain the bidders' respective evaluation of the case, including their assumptions as to possible and likely recoveries in the event liability were established, and the bases therefore. The order stated that, if the Court decided to use the bids in selecting lead counsel, lead counsel would be selected on the basis of both the economic terms of the bids and the qualifications of the bidder." *In re Auction Houses*, 197 F.R.D. at 73 (citations omitted).

³⁸*Id.*

interim lead counsel had refused to share information collected from the defendants in the course of earlier settlement negotiations.³⁹ Boies's estimate was made without consideration of trebling.⁴⁰ In fact, Boies specifically noted in a filing with the Court that Boies was: "*not aware of any defendant ever settling a case, including an antitrust case, for more than actual damages, no matter how strong the facts might be.*"⁴¹

In response to objections to the process, Judge Kaplan ordered that interim lead counsel share their information with the other bidding firms and modified the bid submission requirements.⁴² In the second bidding process, the competing firms were now to provide a bid, X , for the amount the class would receive, with lead counsel to receive 25% of the excess of the amount collected over that X .⁴³ Having reviewed the information from

³⁹Boies, *Courting Justice*, pp. 333-35. Interim lead counsel withheld information from the other bidding firms claiming that a confidentiality agreement prevented such sharing. *Id.*, at p. 333.

⁴⁰*Id.*, at p. 334.

⁴¹Donovan, *V. Goliath*, p. 211.

⁴²*In re Auction Houses*, 197 F.R.D. at 74. According to Judge Kaplan:

"This second proposed fee structure included only one variable, X , rather than two. One hundred percent of any gross recovery up to and including X was to go to the class. And twenty-five percent of any recovery in excess of X would be paid to counsel, with the remainder going to the class. Each bid was to state the value of X pursuant to which the bidder was prepared to serve as lead counsel. As before, bidders were required to submit explanatory memoranda and sworn certifications." *Id.*

In both iterations of the process, Judge Kaplan would select lead counsel based on his judgment regarding the interests of the class, taking into account the bidder's qualifications *as well as* the bids. For the first proposed fee structure: "The order stated that, if the Court decided to use the bids in selecting lead counsel, lead counsel would be selected on the basis of both the economic terms of the bids and the qualifications of the bidder." *Id.*, at 73.

For the second:

"C. Second Proposed Fee Structure

... As with the previous round of bidding, the Court stated that it would select lead counsel based on its judgment as to which bidder was likely best to serve the interests of the class, taking into account the economic terms of the bids as well as the bidder's qualifications." *Id.*, at 74.

⁴³*Id.* According to Judge Kaplan: "The structure of the auction conducted by the Court was to fix the fee structure at 25 percent of the recovery in excess of X , with competing counsel to bid for the value of X . Thus, the class would receive one hundred percent of any recovery up to and including X , with counsel to recover only if the recovery exceeded X and then only to the extent of one fourth of the excess. At least one benefit of this structure was to discourage an inadequate settlement. At least one risk was that the successful bidder would overestimate the value of the case, thus creating a disincentive to invest in further prosecution

interim lead counsel, Boies submitted a slightly reduced *X* bid of \$405 million.⁴⁴ With this bid, Boies's initial \$26 million fee estimate would require obtaining at least a total of \$509 million from the defendants.

There was a difficulty facing the plaintiff class and its counsel, however. The civil claim included damages for both sellers and buyers at the defendants' auctions.⁴⁵ However, even though a sellers' side conspiracy had been admitted by Christie's, neither defendant had admitted a corresponding liability level, nor had either defendant admitted any buyers' commission price fixing,⁴⁶ much less the associated damages.

It would turn out that the initial damages estimate from Boies's economist was significantly overstated. Boies began to realize this overstatement as they received further information both when Judge Kaplan ordered interim counsel to release information and as discovery proceeded.⁴⁷ In light of this new information, and faced with a much reduced damages estimate, Boies eventually adjusted their settlement amount,⁴⁸ insisting on \$512

if it were to become clear that a recovery in excess of *X* would be unlikely." *Statement of Honorable Lewis A. Kaplan United States District Judge, Southern District of New York*, p. 1.

⁴⁴Boies, *Courting Justice*, pp. 336-7.

⁴⁵According to Judge Kaplan: "The primary sources of revenues of the defendant auction houses are so-called buyers' premiums and sellers' commissions. A buyer's premium is, typically, a percentage of the price at which the buyer successfully bids on an item at auction that is added to the auction sales price and retained by the auction house. The seller's commission is a percentage of the auction sales price deducted from the sale proceeds paid to the seller and retained by the auction house." *In re Auction Houses*, 197 F.R.D. at 72.

⁴⁶Boies, *Courting Justice*, p. 330.

⁴⁷Boies, *Courting Justice*, pp. 336, 345.

⁴⁸During the course of the month of negotiations which starting on Labor Day weekend 2000, Boies offered one defendant a "Mary Carter" agreement; offered to settle the case for \$500 million total or \$250 million from either defendant, then \$465 million or \$232.5 million from either defendant, and finally \$512 million or \$256 million from either defendant. Boies, *Courting Justice*, pp. 346-349.

million,⁴⁹ a figure that in fact reflects trebling.⁵⁰ This amount results in a counsel fee of \$26.75 million, within 3% of the original \$26 million estimated by Boies *when trebling was not considered* and *when Boies's estimate of total damages was significantly higher*.

This \$512 million is the amount for which the case ultimately settled, with Christie's and Sotheby's dividing the total evenly between themselves.⁵¹ The defendants made this even division despite Sotheby's having a significantly larger share of liability than Christie's.⁵²

Was the trebling necessary for settlement? What would or should have happened without it? Was there an agency issue, in other words, was there a settlement when it was not in the plaintiffs' best interest (particularly given the remarkable stability of the \$26 million in counsel's fees regardless of whether trebling was considered?) How could the even split of payments between defendants with different liability shares be explained?

3.1. Model Parameters In The Auction Houses Case. We first note that because the charge was that Christie's and Sotheby's had conspired to fix prices, specifically in the setting of buyers' and sellers' commissions in their auctions, their outcomes in the civil suit were essentially perfectly correlated, so we employ the perfect correlation model here.⁵³

⁴⁹According to one of Sotheby's lawyers: "The 512 was Boies's figure." "He pressed for the 512." Donovan, *V. Goliath*, p. 217. According to David Boies: "'The class gets \$512 million,' I said when they finished, 'or we go to trial.'" "I kept repeating 512." Boies, *Courting Justice*, p. 351.

⁵⁰Donovan, *V. Goliath*, p. 211.

⁵¹Donovan, *V. Goliath*, p. 219.

⁵²*In re Auction Houses*, 197 F.R.D. at 30, n. 31.

⁵³Because the determination of the Court at trial would involve not only liability, but also damages, the proof of particular damages level for each defendant could possibly differ between the defendants. For example, the establishment of a damages level for one defendant might be easier because of an abundance of documents or corroborating testimony not present for the other. In other words, unlike with conspiracy liability, testimony from one defendant about the magnitude of damages caused by itself or the other might not be decisive in establishing the damages actually attributable to the other.

The model parameters include: the plaintiff's probability of success at trial, p ; the amount at stake before trebling; the relative liability share r ; and the cost of taking the case through verdict, T .

We will ultimately calculate p from the other model variables, but we note the following facts useful in characterizing it. By the time Boies had been appointed as lead counsel in the civil case, Christie's had admitted its role in the price-fixing conspiracy and had agreed to assist in the criminal prosecution of Sotheby's as part of a deal to obtain leniency under the Department of Justice (DOJ) guidelines.⁵⁴ Christie's cooperation apparently included the production of documents and an agreement to provide testimony by its employees in the criminal prosecution of Sotheby's.⁵⁵ Thus, not only did Christie's cooperation simplify Boies's job in at least part of the civil case – increasing the probability p of the plaintiff class prevailing⁵⁶ – but it also reduced discovery and other costs related to trying the civil case to verdict, if that became necessary. Additionally simplifying Boies's task, each of the defendants, while vying to settle first with the class, had offered Boies information and Christie's had offered the promise of cooperation at trial.⁵⁷ One might therefore expect a very high value for p . Proving the liability for *all* components of the class claim, however, was not so clear cut a matter and establishing the corresponding damages amounts perhaps even less straightforward.

⁵⁴*In re Auction Houses*, 197 F.R.D. at 8-9. Boies, *Courting Justice*, p. 327. Under its *Corporate Leniency Policy*, the antitrust division of the Department of Justice offers grants of leniency even after an investigation has commenced if a corporation satisfies each of a number of criteria including, *inter alia*, that: "The corporation is the first one to come forward and qualify for leniency with respect to the illegal activity being reported;" and "The corporation reports the wrongdoing with candor and completeness and provides full, continuing and complete cooperation that advances the Division in its investigation." *Department Of Justice Corporate Leniency Policy*, <http://www.justice.gov/atr/public/guidelines/0091.htm>

⁵⁵Donovan, *V. Goliath*, p. 212. See also, Stewart, *Bidding War*.

⁵⁶At least, on liability and damages on the *sellers'* side of the price fixing claim. See below.

⁵⁷Boies, *Courting Justice*, pp. 342, 344.

Some of this uncertainty resulted from the auction fees having two commission components, a seller side and a buyer side commission. Establishment of seller commission fixing liability was considerably assisted by Christie's admissions. In fact, in addition to the Christie's criminal case admissions noted above, Sotheby's ultimately also admitted to criminal price fixing on the sellers' commissions.⁵⁸ Neither Sotheby's nor Christie's ever admitted, however, to buyers' side commission price fixing liability, much less a buyer side damages amount.⁵⁹ Thus, the probability of a finding or verdict of liability and a corresponding damages level which included both buyer side and seller side commissions damages was likely much less than 1.⁶⁰

According Judge Kaplan, the estimates of Boies's own economic expert, Jeffrey Leitzinger, results in the \$512 million settlement representing an approximately 1.8 multiple of actual damages.⁶¹ This implies that the single actual damages, according to Boies's expert were approximately \$286 million.⁶² The distribution of damages was estimated by plaintiff's counsel's expert as Sotheby's, \$162 million and Christie's, \$125 million, and cited conservatively by Judge Kaplan⁶³ as Sotheby's, \$71.5 million and Christie's, \$55.1 million. Each of these estimates results in a 56%/44% split of damages with an r of 0.56 for Sotheby's.

⁵⁸*In re Auction Houses*, 2001 LEXIS 1713, at *23.

⁵⁹Judge Kaplan notes of the October 2000 guilty pleas of Sotheby's and of its former president, Diana D. Brooks: "Significantly, the informations charged price-fixing only with respect to sellers' commissions and made no mention of buyers' premiums." *In re Auction Houses*, 2001 LEXIS 1713, at *24.

⁶⁰Ashenfelter and Graddy point out issues with the economic theory underpinning both the amount and award of damages for buyers' side commissions. See, Ashenfelter and Graddy (2005), pp.10-12.

⁶¹*In re Auction Houses*, 2001 LEXIS 1713, at *31 and *32.

⁶²*Id.*, at *30.

⁶³"Sotheby's asserts that the damages it caused on the seller side were \$ 22 million. Sentencing Mem. at 6. The Court assumes *arguendo* that the alleged overstatement in Dr. Leitzinger's estimate of buyer side damages is proportionately the same, which would yield buyer side damages attributable to Sotheby's of \$49.5 million. Assuming further that the same level of overstatement affected Dr. Leitzinger's estimates of damages caused by Christie's would yield buyer and seller side damages attributable to Christie's of \$ 39.4 million and \$ 15.7 million, respectively." *In re Auction Houses*, 2001 U.S. Dist. LEXIS 1713, at *30, n. 31.

With respect to the cost of litigating the case to verdict, T , David Boies himself notes that: "our estimate that our total investment to prepare and try the case would be in the range of \$6 to \$8 million."⁶⁴ Looking at the model results at a number of possible different T levels, a floor, 0, a ceiling, \$15 million, we see that any choice of T within the range does not affect the result.

3.2. The Model's Predictions And Use Of The Model To Evaluate Fairness. As set forth in the previous section, the model inputs needed to conduct an analysis using the model had for the most part been collected by Judge Kaplan. Thus, a Court (or the Court through, for example, an expert appointed pursuant to Fed.R.Evid. 706) could identify and collect the appropriate information from the parties and then conduct an analysis using the model in a form adapted to be appropriate to the particulars of the action. This analysis could then, for example, show as it does here, whether placing a cap on settlements restricts or eliminates the chance for full settlement. Such an analysis could also confirm the Court's own conclusion on whether a proposed settlement is in the best interest of the class.

The even split of the settlement between Sotheby's and Christie's despite Sotheby's larger share of the liability, is precisely what Kornhauser & Revesz predict. An even split is the plaintiffs' preferred division when settling with all defendants because such a split maximizes the plaintiff's return.⁶⁵ This even division assumes that the participants to the

⁶⁴Boies, *Courting Justice*, p. 334.

⁶⁵It could be argued that the defendants might work secretly together, or otherwise collude, to reduce the plaintiffs' recovery by forcing the plaintiff to accept its return for litigation with both parties. Any such agreement would likely have to be revealed to the Court by the defendants as part of their obligations under Rule 23(e)(3), Fed.R.Civ.P. A Court might well find such collusion among the defendants to limit the plaintiffs' recovery troubling.

negotiations have complete information, something that Boies may have understood intuitively when he suggested the defendants meet to work out a settlement together: "But there were advantages to getting the defendants in a single room ... each might be prepared to settle for more than they otherwise might have if they knew the other was settling also."⁶⁶ The downside to Boies of defendant collusion was apparently minimal. In addition to the Federal Civil Rule disclosure requirement noted above, the defendants apparently mistrusted Boies (and each other).⁶⁷ Moreover, one defendant, Christie's, was still poised to testify against the other in the criminal action, and as noted above, each had been promising and providing cooperation against the other in an attempt to be the first settle with Boies.

⁶⁶Boies, *Courting Justice*, p. 349. According to David Boies: "I suggested they confer among themselves and get back to me. In a sense this suggesting that the two defendants get together was counterintuitive – it was tantamount to suggesting that they avoid bidding against themselves to see who could be the first to settle, that they collude against me..." *Id.*

There is some disagreement who actually suggested the defendants' meeting. One account has Christie's counsel, Shepard Goldfein of Skadden Arps, suggesting to David Boies that the defendants meet in order to "whack it up" and end the "bidding war" between the defendants, with Boies responding: "There's obviously a pretty strong incentive to whack it up." Donovan, *V. Goliath*, p. 218.

⁶⁷Donovan, *V. Goliath*, p. 218.

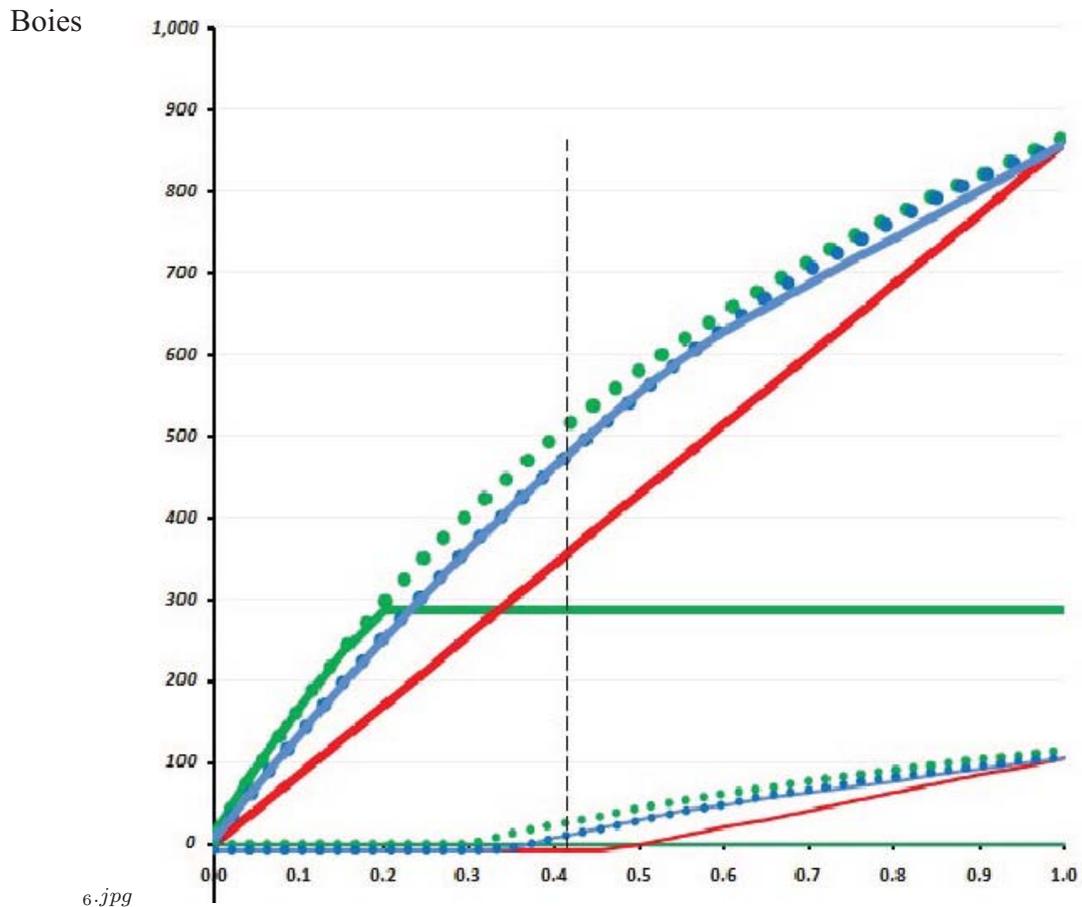


Figure 6: Auction Houses.

With actual damages of \$286 million; $r = 0.56$; $m = 3$; $T = 7.0$; $c = 0$ for the first gross recovery amounts up to \$405 million and $c = 0.25$ for any gross recovery beyond \$405 million⁶⁸; and a gross settlement amount of \$512 million; the implied p is

⁶⁸The structure of the payments to class counsel differs somewhat from the formal model set forth in the theory section in that below the \$405 million floor, class counsel would get nothing. The formal model has been adapted here to accommodate this provision. This difference does not change the applicability of the conclusion that a cap on settlements reduces settlement ranges and introduces potential conflict between the interests of the plaintiff and plaintiff's attorney. For the range of p over which the return would be below the \$405 million floor, without the cap, both the plaintiff class and its counsel would prefer settlement.

approximately 0.41, at which level and with no settlement cap, both lead counsel for the plaintiff class and the plaintiff class itself prefer settlement with both defendants, (S, S) – just as actually occurred.

Because both counsel and client class prefer the same outcome, full settlement, at this p , there is no principle/agent issue with this settlement. See Figure 6.⁶⁹ However, one flag sometimes raised about possible principal/agent issues is inadequacy of the settlement, as manifested in excessive "leaving money on the table." The actual damages of \$286 million, when trebled after a verdict – as is mandatory under the antitrust statute – would be \$858 million. Why were so much of the potential damages apparently left on the table? Recast in terms of the model, this question might be: "Why isn't p larger."

At least part of the answer regarding the magnitude of the probability may come from uncertainty relating to the proof of the claim concerning collusion on buyers' commission, both of liability and damages discussed above.

Also, as discussed above, Judge Kaplan termed the settlement an "extraordinary recovery"⁷⁰ and noted the plaintiffs' satisfaction with the agreement. Experienced antitrust attorneys noted the surprisingly high settlement amount.⁷¹ The class members' behavior also apparently reflected satisfaction. According to the Court: "The reception of the settlement by the class has been overwhelmingly favorable. Of approximately 130,000 class members, only 916, or 0.7 percent..., have requested exclusion, and only 61 have filed objections. No one has contended that the aggregate consideration is inadequate although, as

⁶⁹In Figure 6 the plaintiff's gross returns are graphed against p , with the solid lines representing the payoffs under the cap while the dotted lines representing payoffs without a cap, green represents full settlement, blue represents partial settlement and red represents full litigation.

⁷⁰*Statement Of the Honorable Lewis A. Kaplan*, p. 2, http://www.ca3.uscourts.gov/classcounsel/Witness%20Statements/Lewis_Kaplan.pdf

⁷¹*See, e.g., Stewart, Bidding War.*

will appear, a number of other points have been raised."⁷² Moreover, there are the lower (and losing) bids for the lead counsel in the auction. Thus, the consensus of both the participants and the informed observers appears to have been that little, if any, money was left on the table.

It might also be argued that another factor affecting p may lie in the apparently precarious financial state of Sotheby's.⁷³ In fact, the Government accepted payment of Sotheby's \$45 million criminal fine in interest free installments over five years, apparently to accommodate Sotheby's financial condition.⁷⁴ And in the end, Alfred Taubman, Sotheby's chairman, himself a defendant in a prosecution relating to Sotheby's price-fixing, eventually paid \$156 million of Sotheby's part of the settlement.⁷⁵ Taubman's participation, however, arguably renders the solvency issue at most a minor factor.⁷⁶ Boies seems to have believed in Taubman's ability to make up Sotheby's shortfall⁷⁷ in payments: during the negotiations, Boies had attempted to employ a technique to get around an inability to pay by Sotheby's, one apparently developed when David Boies represented the FDIC in the earlier Drexel Burnham Lambert cases, by which a defendant, here Sotheby's, would assign part of their claim against another party, here Taubman, to Boies's plaintiff.⁷⁸

With a cap on settlements to single damages, the model says that the result would be much different. Under a cap, the plaintiff class here would prefer selective litiga-

⁷²*In re Auction Houses*, 2001 U.S. Dist. LEXIS 1713, at *28 (citations omitted).

⁷³According to Judge Kaplan: "Sotheby's, at least, appears unlikely to be able to respond fully to a judgment for the full amount of trebled damages were plaintiffs to prevail after trial." *Id.*, at *28 (citations omitted).

⁷⁴Stewart notes the government's recognition of this situation in allowing Sotheby's to make no interest payments over five years. Stewart, *Bidding War*.

⁷⁵Donovan, *V. Goliath*, p. 219.

⁷⁶For more on the model adjusted to accommodate insolvency, see Kornhauser & Revesz (1994a).

⁷⁷See, e.g., Boies, *Courting Justice*, p. 348.

⁷⁸*Id.*, at 347.

tion against Christie's, the smaller share defendant,⁷⁹ and settlement with the larger share defendant, Sotheby's. Depending on T , plaintiff's counsel might prefer full settlement ($T = 15$) or also prefer selective litigation ($T = 1.257$ and $T = 0$.) The actual case reflects this effect as illustrated in the difference between Boies's initial filing with the Court where the firm makes it plain that they are seeking only single damages in settlement: they were "not aware of any defendant ever settling a case including an antitrust case for more than actual damages" and Boies's subsequent shift to requesting a settlement reflecting trebling after discovering that actual damages were substantially lower than Boies' expert's initial estimate (and far less than the \$405 million threshold for the Boies's firm to receive any payment).

This underscores an issue confronting judges where there is a cap. Strong, that is high p , conspiracy cases should not settle (the plaintiff should not settle with all defendants.) Nor should such high p cases result in all parties litigating. Rather, for strong conspiracy cases where there is a cap, the plaintiff should litigate with one defendant and settle with the others. Any other result in such cases, total settlement, for example, may indicate an issue, for example potential principal agent conflicts of interest, which could preclude certification of the settlement under Rule 23(e)(2) requirement "that it is fair, reasonable, and adequate."⁸⁰ In many situations, the only means a decision maker might have to

⁷⁹Conveniently for this strategy, Christie's solvency and ability to pay damages in this case was never a real matter of issue.

⁸⁰According to the Court in the Auction Houses Cases: "Factors pertinent to substantive fairness are included among those set out in *City of Detroit v. Grinnell Corp.*:"

"(1) the complexity, expense and likely duration of the litigation; (2) the reaction of the class to the settlement; (3) the stage of the proceedings and the amount of discovery completed; (4) the risks of establishing liability; (5) the risks of establishing damages; (6) the risks of maintaining the class action through the trial; (7) the ability of the defendants to withstand a greater judgment; (8) the range of reasonableness of the settlement fund in light of the best possible recovery; [and] (9) the range of reasonableness of the settlement fund to a possible recovery in light of all the attendant risks of litigation." *In re Auction Houses*, 2001 U.S.

identify such a conflict is to employ the techniques set forth above.

4. CONCLUSION

The model developed in section 2 establishes that a cap on settlements not only may reduce or eliminate the chance for settlement but also may introduce the conflicts of interest between the plaintiff and the plaintiff's attorney. We then examined the actual Auction Houses action in light of the model; our analysis demonstrates the wisdom of Judge Kaplan's rejection of the "received wisdom" of placing a cap on settlements. In so doing, Judge Kaplan (and Boies) not only avoided a settlement cap that would eliminate the opportunity for rational full settlement of the action, but also eliminated a potential conflict between the interests of the plaintiff class and class counsel.

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