Appeal Process Lowers Litigation Costs?*

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1 Introduction

This paper explores the effects of appeal process on the litigation efforts of the plaintiff and defendant under the assumption of non-benevolent judge.

In the standard litigation model, the plaintiff effort level (litigation cost) is cancelled out by the defendant effort.[1] judge tends to be described not as a self-interested player but as a "function" which inputs litigation efforts and outputs judgement. The judges are benevolent and maximize social welfare in the model. In reality, however, some of them make a decision depending on their own preference and consider the effects of their judgement on their future career.

On the other hand, recent studies include the non-benevolent judge and focus on the judge behavior by which the judge maximizes her payoff. Focus of these studies is not litigation parties' behaviors: the evolution of common law, Wittman (2000); consideration of judge reputation, Levy (2005); the effect of appeal process on the divergence of social welfare and individual preference, Shavell (2007).

The present paper combines the litigation model with non-benevolent judge model, and examines the effect of appeal process on litigation costs of the parties.

2 The Model

We consider strategic behavior of a plaintiff (P) and a defendant (D) in a lower court. In order to gain damages, or judgment under the lower court, P hires a lawyer and spends time and money. This litigation effort of P to is x, which is count by dollars. That is, x is litigation cost of P. Similarly, Litigation cost of D is y. Given the parties' efforts, a judge in the lower court makes

*Preliminary. Comments are welcome!

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[1]See Katz (1988).

judgement v After the judgment of the lower court, if either of the parties would not be satisfied with the judgment, he or she could appeal to a higher court.

Given that P receives harms from D, the timeline is describes as the following manner:

1. Potential D chooses level of care c, and accident occurs with probability $p(c)$.
2. P decides whether he brings a suit or not.
3. P and D decide each litigation efforts (x, y) under the lower court;
4. Judgment v is given by the judge of the court;
5. P and D consider whether to appeal the court's decision;
6. If one of the parties appeal to a high court, judgment v_A under the high court is given.

In order to satisfy the subgame perfection, we will examine decisions of each parties, including P, D, and lower court judge, in the reverse order.

We assume that judgment v_A and litigation cost z_A under higher court are common value for parties. Given the judgment under lower court v, each party, who anticipates higher court decision v_A, consider whether to appeal. For the plaintiff, he does not appeal when the expected payoff under higher court is lower than that under lower court;

$$v_A - z_A \leq v - x. \tag{1}$$

Similarly, the defendant does not appeal when cost under higher court is higher than that under lower court;

$$v_A + z_A \geq v + y. \tag{2}$$

2.1 Judge Behavior

Now let us consider judge decision under the lower court.[2] Following Shavell (2006), we assume that a lower court judge fears the penalty on the career track if a higher court judge denies the lower court decision, and dislikes the litigation parties appeal to higher court to avoid the higher court decision. Therefore, the lower court judge prevents litigation parties from appealing to a higher court.

[2]The argument of this subsection is based on Shavell (2006).

To this end, a lower court judge will make a decision v to satisfy the condition that both parties avoid to appeal, that is, conditions (1) and (2);

$$v_A - z_A + x \leq v \leq v_A + z_A - y. \tag{3}$$

This is similar condition to the "settlement range' in the literature of economics of litigation.[3] We call this condition appeal-proof condition (AC). For analytical usefulness, we define $A_p = v_A - z_A + x$ and $A_d = v_A + z_A - y$. A_p and A_d are the appeal-proof conditions with respect to the plaintiff and defendant, respectively. To make thing interesting, we assume that there exisits such v that satisfy the condition. Given parties' litigation efforts (x, y), the judge bears costs $c(v; x, y)$, which is given as $(v - \bar{v}(x, y))^2$ for analytical simplicity. From this functional form, v of longer distance from $\bar{v}$ means more costly for the judge. Exogenous variable $\bar{v}$ represents preferrence of the judge. A judge with smaller (larger) $\bar{v}$ means that she is more pro-defendant (pro-plaintiff), because it is less costly for the judge to give smaller (larger) judgement v.

Thus, the lower court judge makes decision v to prevent both litigants from appealing and to minimize her cost. Thus, the judge's problem is described as follows;

$$\min_{v} C(v; x, y) \tag{4}$$
$$\text{subject to} \qquad \text{AC}.$$

The decision v of the above prolem is depicted as $v^* = v(x, y)$. From the discussion of Shavell (2006), we can classify the decisions of the judge into three cases, depending on whether AC is constrained.

Case 1 is that AC is not constrained as in Fig.1. In this case, a lower court judge makes a decision without caring about the ligation parties. This means that the lower court judge's decision is neither so far nor different from that of higher court judge. It results in that there is little possibility that she is punished. Given (x, y), the judge chooses her optimal decision as $v^* = \bar{v}(x, y)$.

Case 2 is that the left side of AC is constrained (Fig. 2). In this case, a lower court judge has to consider the plaintiff and to offer judgement. The judge prefers to lesser damages, and means to be more pro-defendant. Unless the judge does not care about the plaintiff, then he will go to a higher court after lower court decision. The judge chooses her optimal decision as

[3]See Miceli (1997) for introduction of economics of litigation and settlement.

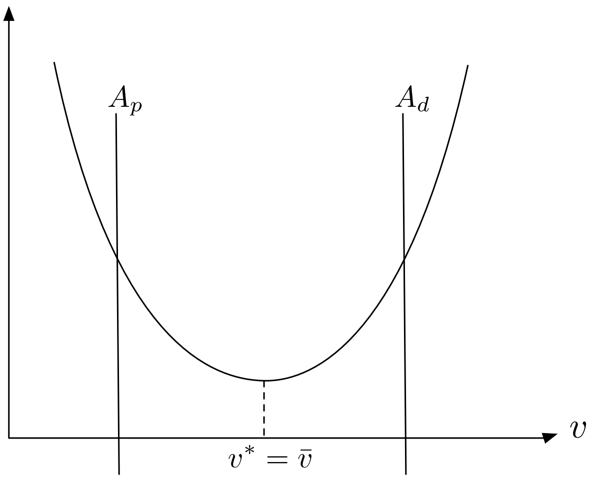

Figure 1: **Non-contrained AC**

$v^* = A_p (= v_A - z_A + x)$.

In Case 3, the judge prefers to more damages and is more pro-plaintiff. The right side of AC is constrained (Fig. 3) in this case. The judge cares about whether the defendant will appeal to a higher court. In order to prevent the defendant to go to the higher court, the judge has to choose $v^* = A_d = v_A + z_A - y$ less than her first best decision $\bar{v}$.

From the above discussion, we can find that appeal process mitigates the lower court judge to make a moderate judgment particularly when she tends to be a extremely pro-defenandant or pro-plaintiff. Given the analysis of the self-interested judge, we will consider the effect of appeal process on the parties' behaviors in the next section.

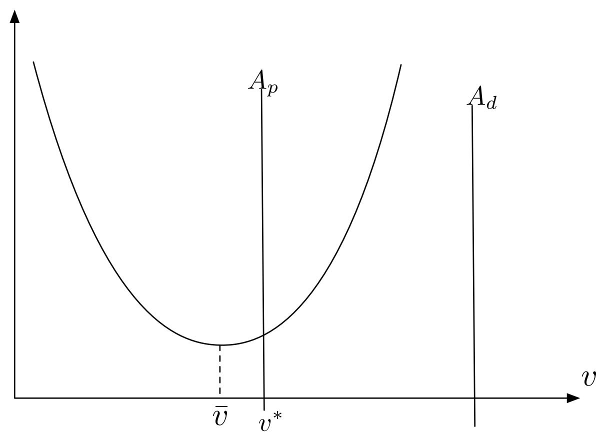

Figure 2: **Constrained AC** (A_p)

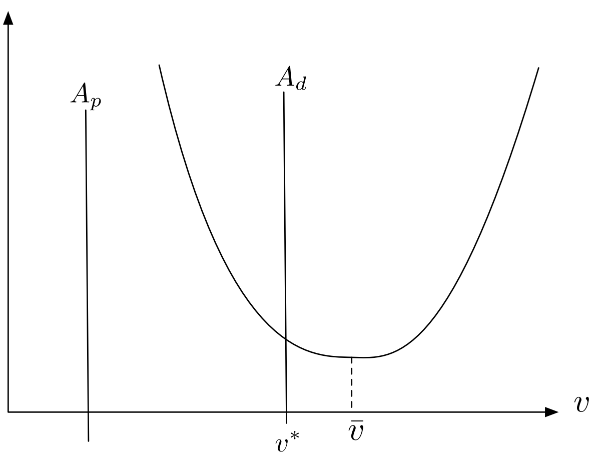

Figure 3: **Constrained AC** (A_d)

3 The Effect of Appeal Process

3.1 Litigation Costs

Let us examine litigation efforts of the parties. The plaintiff and defendant anticipate the lower court's judgement $v(x, y)$ and decide their litigation efforts (x, y), respectively:

$$\text{The plaintiff's problem} \quad \max_x v(x, y) - x; \tag{5}$$

$$\text{The defendant's problem} \quad \min_y v(x, y) + y. \tag{6}$$

The lower judge decision $v(x, y)$ depends on whether appeal-proof condition is constrained (Case 1, 2, and 3). We consider litigation efforts of the parties in each case.

In Case 1, An increase of x leads to an increase of $\bar{v}$, and in addition to an increase of A_p (See Fig.4). The judge chooses $\bar{v}$ as long as an incremental of A_p is not larger than that of $\bar{v}$. The parties' problems are described as follows:

$$\text{The plaintiff's problem} \quad \max_x \bar{v}(x, y) - x; \tag{7}$$

$$\text{The defendant's problem} \quad \min_y \bar{v}(x, y) + y. \tag{8}$$

It is assumed that in these problems solutions (x^*, y^*) are positive and unique, respectively. The plaintiff decides $x^* > 0$ such as $\frac{\partial \bar{v}}{\partial x} = 1$ of the first order condition of Eq.5. Similarly, the defendant selects $y^* > 0$ such as $\frac{\partial \bar{v}}{\partial y} = 1$ of the first order condition of Eq.6. Therefore, in Nash Equilibrium $(x^*(> 0), y^*(> 0))$ is occurred. This is the same result as the standard litigation effort model. In this case, there is no difference of litigation costs between under existence of appeal process and under inexistence.

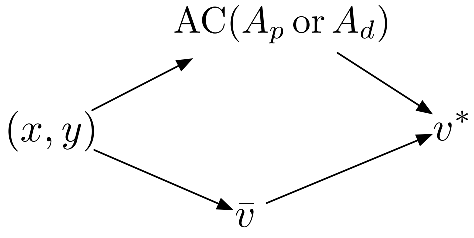

Figure 4: **Channel to** v^*

Now let us consider the litigation efforts in Case 2, where A_p is constrained. As x increases,

$v(x, y)$ increases and A_p also increases. If the marginal effect of x on v is larger than that on A_p, then this become the same situation as Case 1. Thus, we focus on the situation where marginal effect of x on v is not larger than that on A_p: $\frac{\Delta \bar{v}}{\Delta x} < \frac{\Delta A_p}{\Delta x}$. Since the judge chooses $v^* = v_A - z_A + x$ in this case, the plaintiff equalizes marginal benefit $\frac{\partial v^*}{\partial x}$ to marginal cost 1. In fact, the marginal benefit is 1, and the marginal cost is also 1. Thus, the plaintiff decides any x^* satisfies $0 \leq x^* < 2z_A$. This value follows $v_A - z_A + x < v_A + z_A$. Since it is indifferent for the plaintiff to choose whether $x^* = 0$ or $x^* = 2z_A - \epsilon$, where ϵ is sufficiently small positive value, we assume that for simplicity $x^* = 0$. The defendant cannot make an effect on the judgement because of the judge's decision $v^* = v_A - z_A + x$. The marginal benefit is $\frac{\partial v^*}{\partial y} = 0$ and marginal cost is 1. Thus, the defendant chooses $y^* = 0$. As a result, $(0, 0)$ as Nash Equilibrium can occur. Therefore, under inexistence of appeal process, the litigation parties choose positive litigation costs as Nash equilibrium $(x^*(> 0), y^*(> 0))$. On the other hand, the litigation parties can spend little costs under appeal process in this case.

We consider the litigation efforts of Case 3, where A_d is constrained. Similar analysis applies, and we find that in Nash Equilibrium $(0, 0)$ can occur.

In this subsection, we can summarize that appeal process can help litigation costs of parties to lower in some cases (Case 2 and 3). Incorporating the incentive of the judge into analysis of litigation effort makes us new insight. The lower court judge does not care about the parties' litigation cost but just care about her preference. She is neither benevolent nor intends not to lower litigation costs. In spite of this, as a result the existence of appeal process contributes to lower litigation costs in some cases. Intuitive reason why litigation costs is lower in Case 2 and 3 is the following: There is strategic relationship between the plaintiff and defendant in Case 1. On the other hand, in Case 2 and 3 the judge is concerned only one party and the other party cannot influence the judgement. As a result, the appeal process cuts off the strategic relationship between the litigation parties. The lower court judge's preference is far different from the upper one in Case 2 and 3. In these cases, the lower court judge has to shift from her best to the upper court preference through the appeal proof condition, and has no choice to offer judgment that is lower than is desirable for her. From the above analysis, we summarize the results as the following proposition.

Proposition 1

a. If the judge has no effect of appeal court, litigants choose positive litigation costs.

b. If the judge has effect of appeal court, litigants can make no litigation efforts.

3.2 Filing a Suit

Let us consider the plaintiff's filing decision. The plaintiff bring a suit if $v^* - x^* - k \geq 0$, where k is the fixed cost to file a case. We assume that k varies across potential plaintiffs with the cumulative distribution F and the density f. We defines $\hat{k} = v^* - x^*$, and a plaintiff with $k(\leq \hat{k})$ brings a suit. We are interested in the comparison between the results with appeal process and without. $\hat{K}$ denotes the following: a plaintiff with $k(\leq \hat{K})$ brings a suit under no appeal process, where $\hat{K} = v^* - x^* = \bar{v} - x^*$.

In the following analysis, since there is no difference in analysis between existence of appeal process and inexistence, we focus on the interesting cases: Case 2 and 3.

In Case 2, if there is appeal process,

$$\begin{aligned} \hat{k} &= v^* - x^* \\ &= v_A - z_A. \end{aligned} \tag{9}$$

On the other hand, if there is no appeal process,

$$\begin{aligned} \hat{K} &= v^* - x^* \\ &= \bar{v} - x^* \end{aligned} \tag{10}$$

In this case, we know that $\bar{v} < v_A - z_A$, and find that $\hat{K} < \hat{k}$. This indicates that more plaintiffs bring a suit under the existence of appeal process than under inexistence.

Similarly in Case 3, under the existence of appeal process, we know that

$$\begin{aligned} \hat{k} &= v^* - x^* \\ &= v_A - z_A. \end{aligned} \tag{11}$$

On the other hand, if there is no appeal process,

$$\begin{aligned} \hat{K} &= v^* - x^* \\ &= \bar{v} - x^*. \end{aligned} \tag{12}$$

These conditions lead to the result where the effect of appeal process is unclear. More plaintiffs (or less plaintiffs) may bring a suit under the existence of appeal process. We summarize the result as follows.

Proposition 2

The effect of appeal process on the number of filing cases is unclear: more plaintiffs file a case under appeal court than under inexistence in Case 2; more plaintiffs may file a case under appeal court than under inexistence in Case 3.

3.3 Injurer's (Defendant's) Preventive Activity

Now let us examine potential defendant's level of care before accident. The potential defendant (injurer) chooses level of care c, accident occurs with probability $p(c)$ and harms a victim (plaintiff). The injurer expects the future results (x^*, y^*, v^*) and minimizes her costs:

$$\min_c c + p(c)[F(\hat{k})(v^* + y^*)]. \tag{13}$$

The first order condition is described as

$$1 + p'(c)[F(\hat{k})(v^* + y^*)] = 0. \tag{14}$$

From this, we find that larger $\hat{k}$, v^*, and y^* are, larger c^* is.

In Case 2, under appeal process since $v^* + y^* = v_A - z_A$, the judgment v^* and the threshold of filing a suit $\hat{k}$ are larger, and the defendant's litigation cost y^* is smaller, we find that the effect of appeal process on the deterrence is unclear. Finally, the level of care is higher under appeal process than under inexistence if the following condition is satisfied:

$$\frac{1}{F(\hat{k})(v_A - z_A)} < \frac{1}{F(\hat{K})(\bar{v} + y^*)}. \tag{15}$$

Since this condition holds when $A_p > \bar{v} + y$, if the difference between $\bar{v}$ and v_A is sufficiently large and/or y^* under inexistence is sufficiently small, then the deterrence is larger under appeal process.

In Case 3, under appeal process since v^* is smaller and the threshold of filing a suit $\hat{k}$ is unclear, the effect of appeal process on the deterrence is unclear. The level of care c^* is smaller under appeal process than under inexitence if the following condition holds:

$$\frac{1}{F(\hat{k})(v_A + z_A)} < \frac{1}{F(\hat{K})(\bar{v} + y^*)}. \tag{16}$$

This condition is satisfied if the difference between litigation cost of upper court z_A and litigation cost under inexistence of appeal court y^* is sufficiently small. If there is no particular reason why the difference is large, the deterrence under appeal process is weaker than under inexistence of appeal process. Therefore, we have the following result in this subsection.

Proposition 3

The effect of appeal process on deterrence is unclear.

4 Concluding Remarks

This paper finds that appeal process can mitigate litigation costs through cutting off the strategic relation between the parties. As in the setting of the model, even if a lower court judge has no intention to reduce the litigation costs of parties, she follows her self-interests and the litigation parties predict her such behavior. As a result, appeal process can lead to cheaper litigation.

References

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