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Legal Complexity

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by

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Abstract. This paper proposes a framework for analyzing the level and form of legal complexity in statutory and common law, assuming that income-maximizing lawyers influence complexity so as to maximize their earnings. A number of interesting results emerge. Lawyers are shown to prefer an intermediate level of legal complexity, regardless of whether they represent plaintiffs or defendants. This result is robust to changes in the form of legal complexity, to changes in litigants' attitudes toward risk, and to the system used of paying for legal costs, as long as lawyers' fees depend on the level of legal complexity. In legal fields where typical cases involve high stakes, such as antitrust, lawyers are shown to prefer that the law be more complex. However, when plaintiffs' lawyers are paid contingency fees, the interests of plaintiffs' and defendants' lawyers may diverge. Plaintiff lawyers are likely to prefer the simplest possible law and therefore the model predicts that legal doctrines will be less complex in areas of the law such as personal injury, where contingency fees are common. The model is also applied to analyze complexity in tax law. The IRS is shown in certain circumstances to favor the highest possible level of complexity.

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1. Introduction

In the U.S., only lawyers serve in the roles of judge and litigator and mainly lawyers serve in the role of legislator. Acting in their roles as legislators and judges, lawyers decide on legal doctrines in both statutory and common law. In the process, they decide how complex the law will be. But acting in their role as litigators, lawyers are hurt or benefited by the level of complexity of the law. In particular, lawyers benefit when legal doctrines are more complex since legal fees are higher—as evidenced, for example, by the frequent references in the popular press to long, complex pieces of legislation as "lawyers' relief acts." In this paper, I present a general model of the complexity of legal doctrines. Both the level and the form of legal complexity are assumed to be influenced by lawyers whose interest is to maximize their incomes. Prior models of litigation behavior have assumed that legal complexity is exogenously determined and have treated it as fixed.

Legal doctrines become complex in a variety of ways. For example, a legal doctrine involving a balancing rule or rule of reason—such as the negligence rule in tort law—is more complex than one that uses an absolute or *per se* rule—such as the strict liability rule in tort law. To decide liability under a rule of reason requires a court to determine the levels of two or more variables and then compare them, while to decide liability under an absolute rule requires only that the court determine whether the situation fits within the requirements for the rule to apply. Since determining the value of any variable requires evidence which is costly to collect and requires court time to present and evaluate, a balancing rule is more complex.

Similarly, legal doctrines become more complex when there is an extensive case law providing many possible precedents. Complexity increases litigation costs here because researching more cases is more expensive. Statutory legal doctrines become more complex when the law itself is longer, when it contains more cross-references and interrelationships, when the law is ambiguous and self-contradictory, when it changes more frequently, and when there are many relevant rules and regulations. Statutes also become more complex when the law contains multiple procedures for dealing with similar situations, such the choice for an individual between filing one's taxes as a single person versus as a single head of household, the choice for a business between (re)organizing as a corporation, a partnership or a subchapter S corporation, and the choice in bankruptcy law between liquidation and reorganization. Persons making the choice may be allowed to choose the most favorable alternative, or they may be required to choose that alternative which satisfies a particular condition—such as the requirement that taxpayers pay the alternative minimum tax if it leads to a higher tax liability than the normal income tax or the requirement

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that the choice between two alternatives not be made solely with the intent of reducing tax liability. But in either case, complexity is increased by the need to consider all the possibilities before making a choice.[1]

This paper presents a general framework for analyzing the complexity of legal doctrines or rules governing a particular legal field. The inquiry is restricted to aspects of legal complexity that are the same for all cases in a particular field of law. Thus the legal rule in, say, products liability cases is of concern here, but the legal procedures used to litigate individual products liability cases—which may vary across cases—are not.[2] Both statutory and common law are considered. In section 2, the basic model is presented. There I show that when lawyers choose the level of legal complexity, they have an incentive to choose an intermediate level. They do not want to set the level of complexity too low, since doing so would cause them to lose income, but they also do not want to set it too high, since litigation would be discouraged and lawyers would have little to do. I show that both plaintiffs' and defendants' lawyers agree on the preferred level of legal complexity under a variety of forms of legal complexity. In section 3, the analysis is extended to consider contingent fee arrangements. Here, I show that plaintiffs' and defendants' lawyers have divergent interests concerning the level and form of legal complexity. When contingency fees are common, the model predicts that the legal complexity level is likely to be lower. Section 4 applies the model to consider the form and level of complexity of tax law and the interests of the Internal Revenue Service in tax complexity. I show that under some circumstances, the IRS favors making tax law as complex as possible. Section 5 considers briefly whether lawyers' preferred level of legal complexity is higher or lower than the socially efficient complexity level and is the conclusion.

2. A Positive Model of Legal Complexity

2.1 Legal Complexity Functions

Suppose the plaintiff expects to win a case in a particular field of law with probability p_π and the defendant expects the plaintiff to win the case with probability p_Δ. Legal complexity is denoted c, where $c \geq 0$. Both parties' estimates of the plaintiff's probability of winning the case are affected by the law's complexity. As the level of legal complexity increases, the parties' predictions of the plaintiff's chance of winning in litigation may either rise or fall and may become more or less certain.[3] $p_\pi(c)$ and $p_\Delta(c)$ are referred to as legal complexity functions.

Suppose first that increases in the level of legal complexity make the outcome of litigation more certain. This is illustrated in figures 1A and 1B. In both figures, when the level

[1] See Surrey (1969) and Long and Swingen (1987) for discussion and a survey of practitioners' opinions concerning the complexity of tax law.

[2] The complexity level of legal procedure can vary for different cases in a particular field because each side can hire expert witnesses, depose the other sides' witnesses, demand documents from the other side, or choose not to do any of these things. This type of legal complexity will be treated in a separate paper.

[3] Both p_π and p_Δ are subjective probabilities, since each reflects the relevant party's expectations concerning the outcome of litigation.

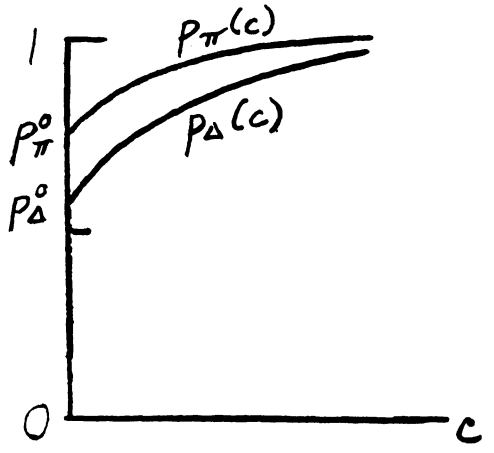

Fig. 1A

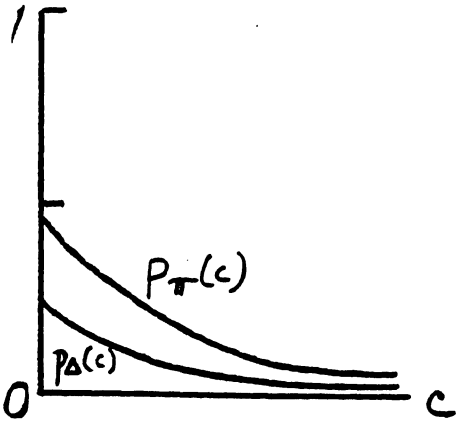

Fig. 1B

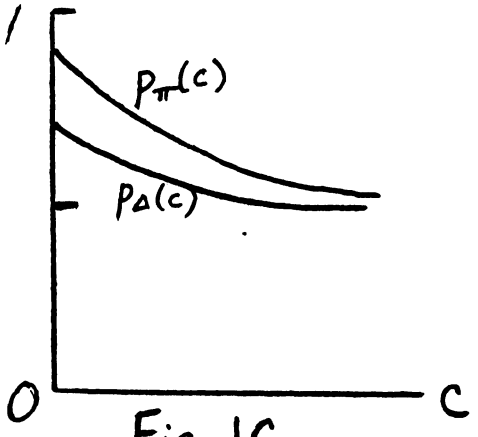

Fig. 1C

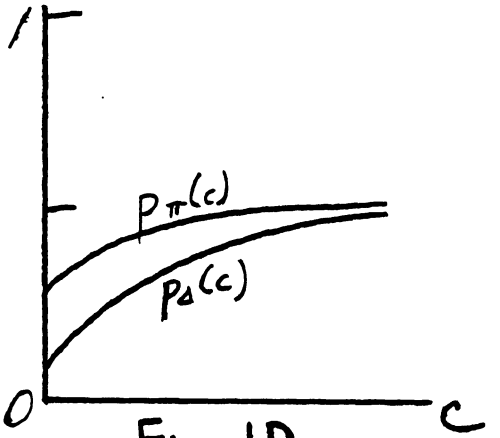

Fig. 1D

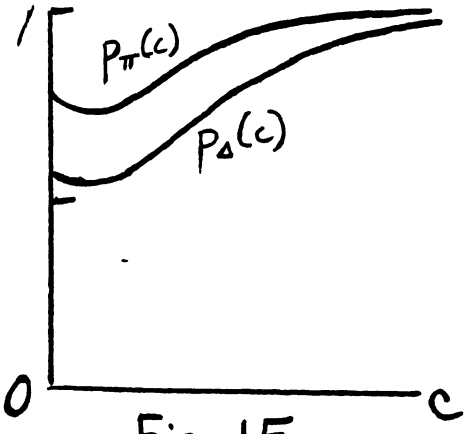

Fig. 1E

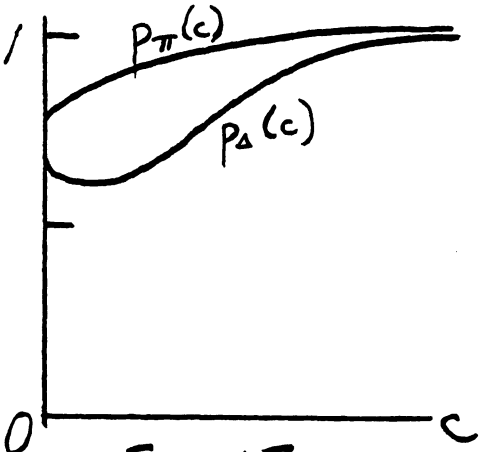

Fig. 1F

of legal complexity c is zero (the simplest possible law), the plaintiff and defendant think the plaintiff has probabilities of winning of p_π^o and p_Δ^o, respectively. As legal complexity increases, both the plaintiff and the defendant become more confident that the plaintiff will win in figure 1A, so that $p_\pi(c)$ and $p_\Delta(c)$ rise and approach 1 as c increases. In figure 1B, increases in the level of legal complexity favor the defendant, so that both $p_\pi(c)$ and $p_\Delta(c)$ fall and approach 0 as c rises.

An example of this type of legal complexity might be a statutory legal doctrine which is passed by Congress in the form of a bare statement of principle. The statement of principle by itself leaves the outcome of cases litigated under it very uncertain. Case law then accumulates concerning how the doctrine applies in a variety of situations, so that the law both becomes more complex and litigation concerning any particular application of it becomes more predictable. Or rules and regulations may accumulate which serve the same purpose. Thus legal complexity provides extra information in the form of relevant cases which elucidate the doctrine, but the information comes at the cost of greater legal complexity. Such a situation could illustrate either figure 1A or 1B, depending on whether the accumulation of precedent or of regulations helps or hurts the plaintiff.

Another example is the rule of Hadley v. Baxendale in contract law that restricts liability of the party breaching a contract to damages that are reasonably foreseeable. Suppose for the average buyer, breach of the contract by the seller causes damages of $100, but for buyer A, breach causes damages of $10,000. If the legal rule specified that liability by the seller for breach of contract were for actual damage, then buyer A would have a claim for $10,000 against the seller. But the outcome of the case would be difficult to predict, because courts would tend to be sympathetic to the seller and reluctant to hold her liable when damages would be so large. The rule of Hadley v. Baxendale rule restricts the seller's liability to foreseeable damages, which in the example are $100, unless buyer A puts the seller on notice of his unusually high damages. The rule increases the complexity level of the law of contract breach by forcing the parties to present evidence and the court to consider what damages were foreseeable and whether the notice given by the buyer was adequate. But it also increases predictability, since a buyer such as A would be much more likely to win if notice of large damages had been given in advance.[4]

Alternatively, greater legal complexity may make the outcome of litigation less rather than more predictable. Figures 1C and 1D depict this situation. Here, increases in the level of legal complexity make the parties less certain of their predictions concerning the outcome of litigation. Therefore as c rises, both $p_\pi(c)$ and $p_\Delta(c)$ approach .5—the situation in which neither party has any better method for predicting the outcome of litigation than flipping a coin. In figure 1C, both the plainiff and defendant think that the plaintiff is likely to win at low levels of legal complexity, but both become less certain as the complexity level increases. In figure 1D, both the plaintiff and defendant think that the defendant is likely to win at low levels of complexity, but they also become less certain of the outcome as the complexity level increases.

An example is the choice between strict liability versus negligence rules in accident law. Suppose a rule of strict liability were replaced by a negligence rule for deciding

[4] Economists also argue that the rule of Hadley v. Baxendale is economically efficient. See Posner (1986).

accident cases. The negligence rule is more complex than the strict liability rule, since it requires that the court determine (a) whether the injurer's action was legally a cause (i.e., a proximate cause) of the victim's harm, (b) what standard of care is required for the injurer to avoid being found negligent, and (c) whether the injurer's care level met the standard or not. In contrast, under the strict liability rule, the court must only determine (a). To predict the outcome of litigation under either rule, the parties must predict how the court will decide each of the relevant questions. Under the negligence rule, the parties must predict how the court will decide three questions, while under the strict liability rule, the parties must only predict how the court will decide one. This implies that the outcome of litigation will be less predictable under the negligence rule rule than under strict liability. The negligence rule is also more favorable to the defendant than the strict liability rule, since under the negligence rule, the defendant is liable for damage in a smaller range of circumstances. This implies that at the higher level of complexity associated with the negligence rule compared to the strict liability rule, both p_π and p_Δ fall. Thus replacing a strict liability rule with a negligence rule illustrates figure 1C, since the resulting increase in the level of legal complexity both increases the defendant's probability of winning in litigation and makes the outcome of litigation less predictable.[5]

Another common example in which greater legal complexity makes the outcome of litigation less rather than more predictable is a situation in which a similar transaction can fit into more than a single category. The choices by taxpayers concerning filing status for income tax purposes are simple examples. Similarly, individuals in bankruptcy can choose between a chapter 7 procedure in which they give up all their assets over an exemption level or a chapter 13 reorganization in which they keep their assets but pay off part of their debts from future income. For high income/low asset debtors, chapter 7 is clearly preferable. But the choice is complicated by the restriction that bankruptcy judges have the right to deny the chapter 7 procedure to individuals if it results in a "substantial abuse" of the bankruptcy procedure. This provision, however, is rarely invoked. A more complicated choice is that of a business which is sold or merged. This transaction takes the form of a tax reorganization, of which there are 10 or more possibilities. While businesses can choose the most favorable alternative, the choice is constrained by complicated rules governing eligibility and by the "wildcard" restriction that the choice among alternatives must have a business purpose and so cannot be made for tax avoidance reasons alone. In general, the more choices there are, the more likely is the plaintiff (the government), to prevail in litigation, since with more choices it is more likely that the defendant, who makes the choice, has violated one of the rules. But the more choices there are and the more that rules restrict the choice, the less predictable is the outcome of litigation. Thus the example illustrates figure 1D.[6]

Other possible complexity functions are illustrated in figures 1E and 1F. In figure 1E,

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[5] See Shavell (1987) for analysis of incentives to take care under these and other liability rules. Note that a negligence rule is not necessarily less desirable from an economic efficiency standpoint than a strict liability rule. Negligence rules might be preferred if they cause fewer cases to be litigated or give injurers more efficient incentives for accident avoidance, despite their greater complexity.

[6] See Surrey (1969) for a discussion of complexity in the context of tax law. See White (1987) and (1988) for discussion of choices for individuals and corporations in bankruptcy.

both the plaintiff's and the defendant's predictions of the plaintiff's probability of winning first fall and then rise as c increases, eventually converging to $p_\pi = p_\Delta = 1$. Similar examples could also be constructed in which the plaintiff's and defendant's predictions changed direction but eventually converged to some other value. In figure 1F, the plaintiff's predicted probability of winning increases monotonically as c rises, but the defendant's prediction of the plaintiff winning first falls and then rises. Thus their predictions first diverge and then eventually converge as c rises. This possibility (and others involving eventual convergence to some other value) seems less probable, since rational plaintiffs and defendants are likely to react in the same qualitative way to increased information, so that their estimates of the plaintiff's probability of winning change in the same direction as c rises. However, they are not ruled out.

Two assumptions are made concerning the characteristics of the $p_\pi(c)$ and $p_\Delta(c)$ functions. First, the plaintiff is always assumed to be more optimistic than the defendant, so that $p_\pi(c) > p_\Delta(c)$ at any level of c. The levels of optimism by the plaintiff and defendant are represented by the heights of the curves in figures 1A through 1D. If the $p_\pi(c)$ curve shifted upward (downward), the plaintiff would be more optimistic (pessimistic). If the $p_\Delta(c)$ curve shifted upward (downward), the defendant would be more pessimistic (optimistic).

Second, the plaintiff's and defendant's predictions of the outcome of litigation are assumed eventually to converge as the level of legal complexity rises. The difference between the parties' predictions, $[p_\pi(c) - p_\Delta(c)]$, is referred to as the convergence function. For sufficiently large c, $[p_\pi(c) - p_\Delta(c)]$ must approach zero. Convergence will generally be assumed to occur monotonically as c rises, as illustrated by figures 1A through 1E. However, non-monotonic convergence, as illustrated by figure 1F, is not ruled out. Also, while figures 1A through 1F illustrate convergence of p_π and p_Δ to values of 0, .5, or 1, convergence to other values is also permissible. The six examples in figure 1 are referred to below as cases A through F.

2.2 Litigation Behavior when Legal Complexity Can Vary

To consider the determination of the level of legal complexity, a model of litigation behavior must be specified.[7] In any model of litigation, the plaintiff first decides whether or not to file a lawsuit. Assuming the case is filed, either the plaintiff and defendant agree on a settlement or the case is litigated.

The plaintiff's costs of litigation are denoted a and the defendant's b. Both sides' litigation costs depend on the level of legal complexity c and I assume that they increase monotonically as c rises. If the case settles rather than litigates, I assume that both parties' legal costs are zero. (This assumption is relaxed below.) I also distinguish between the American system of paying for legal costs, under which each party pays its own legal costs, and the English system, under which the loser pays both parties' legal costs.[8]

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[7] Formal models of litigation were first proposed by Landes (1971) and Gould (1973) and developed by Shavell (1982).

[8] The English system is also used in some contexts in the U.S.

An increase in the level of legal complexity may cause the plaintiff's and defendant's litigation costs to rise at different rates. For example, a rise in the number of legal cases that are precedents may cause the defendant's litigation costs to rise rapidly because each relevant case is carefully researched; while it may have little effect on the plaintiff's litigation costs, since the plaintiff's lawyer devotes little time to research.

The plaintiff and the defendant are assumed to agree on the amount of the judgment if the case is litigated and the plaintiff wins. The judgment amount, w, is the same for all cases in the same legal field. This means that all cases in a particular legal field are assumed to be identical. I also assume that both the plaintiff and defendant are risk neutral. (Both of these assumptions are relaxed below.)

Under the American system of paying for legal costs, the plaintiff receives w with probability $p_\pi(c)$ if the case is litigated and she wins and receives zero with probability $(1 - p_\pi(c))$ if the case is litigated and she loses. The plaintiff's litigation costs are $a(c)$, regardless of the outcome. Her expected gain from litigation is therefore $p_\pi(c)w - a(c)$. This amount is also the minimum acceptable settlement for the plaintiff, *i.e.*, the minimum amount she will accept to settle rather than litigate. The defendant's expected liability under the American system if litigation occurs is w with probability $p_\Delta(c)$ and zero with probability $(1-p_\Delta(c))$. The defendant's litigation costs are $b(c)$, regardless of the outcome. His expected loss in litigation is therefore $p_\Delta(c)w + b(c)$. This amount is also the defendant's maximum settlement offer. Litigation is assumed to occur whenever the plaintiff's minimum acceptable settlement exceeds the defendant's maximum settlement offer, *i.e.*, the bargaining range is empty. Settlement occurs otherwise.[9] Therefore, the condition for litigation to occur is:[10]

$$p_\pi(c)w - a(c) \geq p_\Delta(c)w + b(c) \tag{1}$$

Lawyers deciding legal doctrines are assumed to choose the level of legal complexity by maximizing the combined legal fees paid to lawyers by both plaintiff and defendant, $a(c) + b(c)$. However, since lawyers receive no income if cases settle, they wish to maximize legal fees subject to the constraint that that all cases litigate rather than settle, or that expression (1) hold. A single level of legal complexity c must be chosen, which will apply to all cases in the field. Higher levels of legal complexity always increase legal fees and thus are desirable from lawyers' standpoint, except that higher legal complexity eventually causes the plaintiff's and defendant's estimates of the outcome of the case to converge, so at high levels of c, they prefer to settle rather than litigate. Lawyers' preferred level of legal complexity is that level at which plaintiffs and defendants just barely prefer to litigate—if the complexity level were raised any further, they would settle. This implies that at lawyers' preferred level of complexity under the American system, denoted c^A,

[9] Incomplete information may cause bargaining to break down, so that either litigation or settlement could occur when the bargaining range is non-empty. Models of litigation that consider this possibility include Salant and Rest (1982) and Bebchuk (1984). Incomplete information models could be extended to consider the determination of the level of legal complexity, but the extension makes the model much more complex. The results are similar to those obtained here.

[10] It is worthwhile for the plaintiff to file the case if her expected return, $p_\pi(c)w - a(c)$, is positive. Whenever the case satisfies the litigation condition, ineq. (1), the condition for the plaintiff to file the case must also be satisfied.

expression (1) holds as an equality. Thus, we have:

$$[p_\pi(c^A) - p_\Delta(c^A)]w = a(c^A) + b(c^A) \tag{2}$$

Eq. (2) implies that lawyers have an incentive to choose an intermediate level of legal complexity as long as at some low level of legal complexity, plaintiffs and defendants prefer to litigate rather than settle. Lawyers do not choose the minimum level of legal complexity, because legal fees are low when complexity is minimized. But they also do not choose the highest possible level of legal complexity, since doing so would make litigation very expensive and would reduce litigants' disagreement concerning the outcome. In that situation, all cases would settle and lawyers would have little to do.

Under the English system of paying for legal costs, the plaintiff receives w with probability $p_\pi(c)$ if she wins, but must pay $a(c) + b(c)$ with probability $(1 - p_\pi(c))$ if she loses. Therefore her expected gain from litigation is $p_\pi(c)w + (1 - p_\pi(c))(-a(c) - b(c))$. This amount is also the minimum acceptable settlement for the plaintiff. The defendant's expected loss from litigation is $p_\Delta(c)(w + a(c) + b(c)) + (1 - p_\Delta(c))0$. Litigation rather than settlement occurs if the plaintiff's minimum acceptable settlement exceeds the defendant's maximum settlement offer. Lawyers' preferred level of legal complexity under the English system, denoted c^E, is that level for which the litigation condition is satisfied with equality, or:[11]

$$[p_\pi(c^E) - p_\Delta(c^E)](w + a(c^E) + b(c^E)) = a(c^E) + b(c^E) \tag{3}$$

Under the English system, lawyers also prefer to adopt an intermediate level of legal complexity.

If eq. (2) is divided by w, it indicates that at lawyers' preferred level of legal complexity under the American system, the convergence function, $[p_\pi(c) - p_\Delta(c)]$, must equal the ratio of total legal costs to the amount at stake, $\frac{a(c)+b(c)}{w}$. Figure 2A graphs the convergence function assuming that it declines monotonically as c rises. The ratio of total legal costs to the amount at stake under the American system, which must increase monotonically as c rises, is also shown.[12] Lawyers' preferred level of legal complexity, c^A, occurs at the intersection.

If eq. (3) is divided by $w+a(c)+b(c)$, it indicates that at lawyers' preferred level of legal complexity under the English system, the convergence function must equal $\frac{a(c)+b(c)}{w+a(c)+b(c)}$. Under the English system, both sides' legal costs are part of the amount at stake, since they are paid by the loser. Therefore $\frac{a(c)+b(c)}{w+a(c)+b(c)}$ is again the ratio of total legal costs to the amount at stake. This ratio must also increase monotonically as c rises, but it is always lower than the ratio $\frac{a(c)+b(c)}{w}$ under the American system. Figure 2A graphs the curve $\frac{a(c)+b(c)}{w+a(c)+b(c)}$ for the English system. Lawyers' preferred level of complexity c^E for the English system occurs where the ratio of legal costs to the amount at stake intersects

[11] Under the English system, it is worthwhile for plaintiffs to file cases if $p_\pi(c)w + (1 - p_\pi(c))(-a(c) - b(c)) > 0$. As under the American system, whenever it is worthwhile to litigate a case rather than settle it, it must also be worthwhile for plaintiffs to file the case.

[12] $(a(c) + b(c))/w$ can rise at an increasing, decreasing or constant rate.

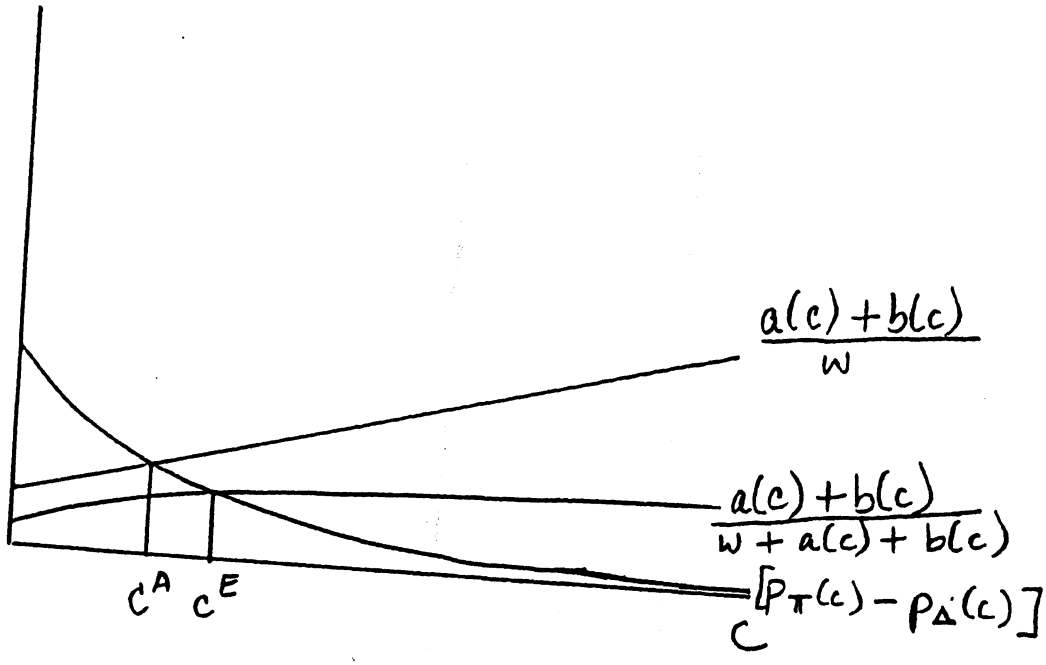
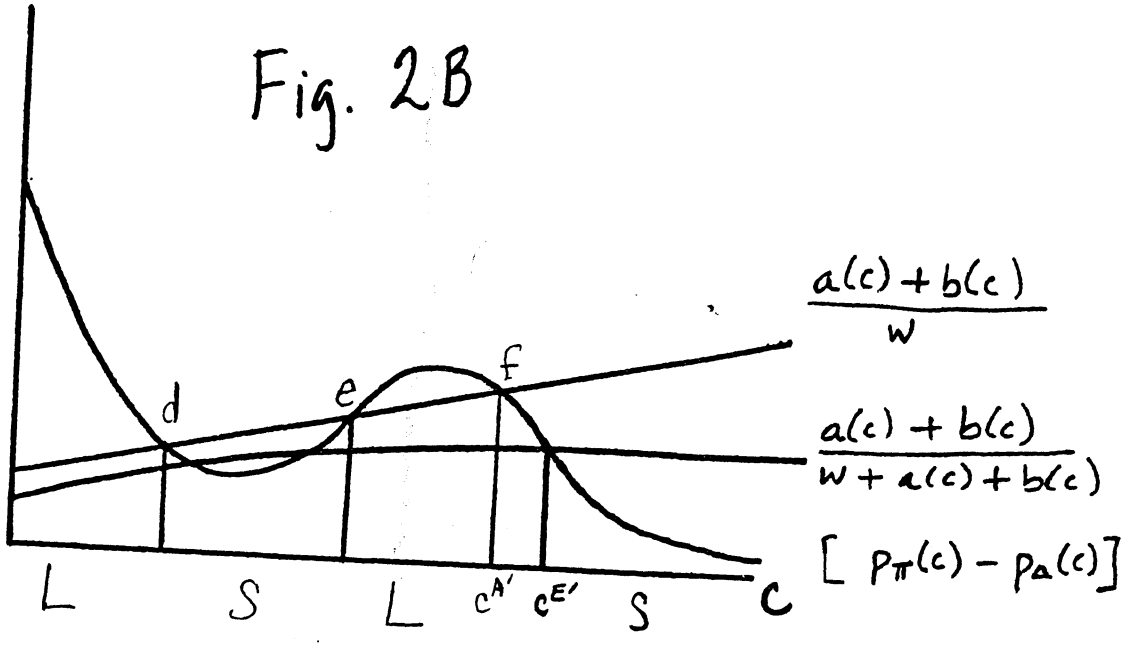

$\frac{a(c)+b(c)}{w}$
$\frac{a(c)+b(c)}{w+a(c)+b(c)}$
$[p_T(c) - p_A(c)]$
c^A c^E
c

Fig. 2A

Fig. 2B


$\frac{a(c)+b(c)}{w}$
$\frac{a(c)+b(c)}{w+a(c)+b(c)}$
$[p_T(c) - p_A(c)]$
d
e
f
L
S
L
$c^{A'}$
$c^{E'}$
S
c

the convergence function. This implies that the preferred level of complexity under the English system must always be greater than under the American system, or that $c^E > c^A$.

Now suppose the convergence function does not decline monotonically as c rises.[13] The convergence function in figure 2B has three intersections with each of the ratio of total legal costs to stakes curves. Under the American system, the intersections are labelled d, e, and f. The multiple intersections give rise to multiple regions of litigation and settlement, labelled L and S in the figure, respectively. In this situation, lawyers' preferred level of legal complexity occurs at the intersection having the highest c, which is labelled $c^{A'}$ for the American system and $c^{E'}$ for the English system. As before, lawyers' preferred level of legal complexity is higher under the English system.

An interesting feature of the situation illustrated in figure 2B is that lawyers' chosen complexity level might differ for different types of substantive law. For example, suppose the law took the form of a statute containing a simple statement of principle and case law developed over time applying it. Then the legal complexity level would increase over time as more cases were decided. But if the complexity level of the law increased over time, the preferred complexity level for lawyers under the American system would be that corresponding to point d, since if the complexity level increased beyond d, all cases would settle rather than litigate. Now suppose the law alternately took the form of a complicated statute which specified in advance many of its applications, so that little or no case law develops. Then lawyers' preferred level of complexity under the American system would be the higher level corresponding to point f. In this situation, lawyers have an incentive to adopt a complicated statute, rather than adopting a simple statute and allowing case law to develop, because the former permits a higher level of legal complexity and gets to it without delay.

We have shown that the preferred level of legal complexity under the American system, c^A, must always be lower than the preferred level of complexity under the English system, c^E. The reason for this is that under the English system, both sides' legal costs are part of the stakes to be won or lost. Therefore the legal costs add to the expected damage award of w and cause the parties to act as if the total amount at stake were $w + a(c) + b(c)$. But the more that is at stake, the more that the plaintiff and defendant prefer to litigate rather than settle, and so the higher the level of legal complexity preferred by lawyers. Further, the difference between c^A and c^E gets larger as total legal costs increase as a proportion of the damage award w.

It is worthwhile to return to the issue of how the interests of plaintiffs' versus defendants' lawyers coincide. In the model developed here, lawyers are assumed to prefer the level of legal complexity that maximizes the total income received by lawyers on both sides. This assumption incorporates the idea that lawyers on both sides have similar interests, since lawyers for the defendant only receive income if plaintiffs file suit and lawyers for the plaintiff only receive income if plaintiffs sue and defendants contest the suits. Formally, the interests of plaintiffs' and defendants' lawyers are identical in that the level of legal complexity that would be chosen if the combined incomes of lawyers on both sides is maximized is the same as the level of complexity that would be chosen if the income of

[13] The convergence function corresponding to figure 1F has this property.

either plaintiffs' or defendants' lawyers alone were maximized.

To see this, suppose the income of defendants' lawyers only was to be maximized. Then $b(c)$ is maximized instead of $a(c) + b(c)$. However, the constraint that cases must litigate rather than settle must still hold. Therefore the best that defendants' lawyers can do is still to choose a level of complexity such that exp. (1) holds as an equality. Any lower level of c would generate less income per case from the same number of cases, since all cases would litigate, and any higher level of c would generate no income at all, since all cases would settle. But this is the same result as emerged when we maximized the combined incomes of lawyers on both sides. The same level of complexity would also be chosen if plaintiffs' lawyers' incomes only were maximized.

Finally, suppose lawyers had the power to choose (or, more realistically, to influence) the form of the complexity functions, as well as the level of legal complexity. For example, suppose lawyers could choose among the six cases A through F in figure 1. We have shown that lawyers prefer an intermediate level of legal complexity under all forms of the complexity function. The exact level of complexity chosen by lawyers varies depending on the level and speed of convergence of $p_\pi(c)$ and $p_\Delta(c)$, but an intermediate level is always chosen. Lawyers would prefer that form of the complexity function for which the chosen level of legal complexity (c^A or c^E, respectively, under the American and English systems), is highest. The model does not allow us to predict whether or not lawyers have strong preferences over the form of the legal complexity function, or, if so, which form they would prefer.

2.2.1 Comparative statics properties of the preferred legal complexity level

The comparative statics properties of the preferred complexity level are interesting and suggest some potentially testable hypotheses. Suppose either the plaintiff's or the defendant's level of optimism increased. Either change would cause the convergence function in figure 2A or 2B to shift upward. As a result, the intersection of this curve with the ratio of total legal costs to the amount at stake curve moves to the right.[14] Therefore the level of legal complexity preferred by lawyers would rise under both the American and English systems. When either side is more optimistic, that party becomes more willing to litigate. In that situation, lawyers prefer a higher level of legal complexity since they benefit from higher legal fees without discouraging litigation.[15]

Now suppose the schedule of legal costs for the plaintiff or the defendant rose, but the amount at stake remained constant. Under the American system, this would cause the curve $\frac{a(c)+b(c)}{w}$ in figure 2A or 2B to shift upward. The intersection with the convergence function $[p_\pi(c) - p_\Delta(c)]$ must occur at a lower level of complexity. Thus when legal costs rise for either plaintiff or defendant (or both), lawyers' preferred level of complexity falls. This result is not surprising, since higher legal costs discourage litigation and encourage

[14] In figure 2B, the preferred complexity level could shift upward discontinuously if, for example, the shift in the convergence function caused intersections e and f to disappear.

[15] Another way of viewing this is that lawyers who are effective income-maximizers have an incentive to convince their clients that they are likely to win. Clients who are more optimistic are less willing to settle, which allows the complexity level of the law and total legal incomes to be higher without causing settlement to occur.

settlement. Therefore when legal costs rise, lawyers prefer a lower level of complexity to offset the disincentive to litigate. The same result also holds under the English system. This suggests that in situations where legal costs are high as a proportion of the level of damages, we should expect to find that legal doctrines are less complex.

Now suppose the damage award, w, rises, but everything else remains constant. Then the ratio of total legal costs to stakes, $\frac{a(c)+b(c)}{w}$, falls at any level of legal complexity. In figure 2A or 2B, this causes the curve $\frac{a(c)+b(c)}{w}$ to shift downward and therefore to intersect the convergence function at a higher level of complexity. Thus an increase in the amount at stake holding the schedule of legal costs constant makes litigation more likely. Higher stakes make lawyers prefer a higher level of legal complexity, because they can collect higher legal fees without causing the parties to settle. Therefore in areas of the law where typical cases involve high stakes, such as patent infringement or antitrust cases, we expect to find more complex legal doctrines. Similarly, in legal fields where triple damages or punitive damages are frequently awarded to successful plaintiffs, the preferred level of legal complexity will be higher.

However, when the level of expected damages rises, legal costs may also rise. Suppose lawyers charge higher fees when the stakes are large, at any level of legal complexity. In that case, legal costs would become $a(c,w)$ and $b(c,w)$ for the plaintiff and defendant, respectively, and they would vary positively with both the level of legal complexity and the level of damages. In this situation, lawyers' desired level of legal complexity still rises when w increases, as long as total legal costs rise less quickly than w, so that the ratio of legal costs to stakes still falls as w increases.

Finally, suppose the rate of convergence as c rises differs across otherwise similar types of cases. Then lawyers would prefer a more complex legal rule in the field in which the convergence function declined more slowly. An example is the use of any liability rule involving negligence in medical malpractice cases versus automobile accident cases, both of which fall under the general legal field of accident law.[16] Making a negligence determination is much more costly for medical malpractice cases than for automobile accident cases, because determining what constitutes negligent conduct is more complicated for the practice of medicine than for driving. Therefore a given level of convergence only occurs for medical malpractice cases at a higher level of complexity than for autombile accident cases. As a result, lawyers prefer a higher level of legal complexity for medical malpractice cases.

2.2.2 Risk aversion and complexity

Suppose now that either the plaintiff or the defendant, or both, is risk averse rather than risk neutral. In general, greater uncertainty makes risk averse parties less willing to litigate and more willing to settle. Defendants are willing to pay the certainty equivalent of their loss in litigation, which exceeds their expected loss, to settle and plaintiffs are willing to accept the certainty equivalent of their gain in litigation, which is less than their expected gain, to settle. These effects imply that when either or both parties are

[16] Different liability rules involving negligence include the simple negligence rule, the contributory negligence rule and the comparative negligence rule. See Shavell (1987).

risk averse, the certainty equivalent of the convergence function is below the convergence function defined for the risk neutral situation. Risk aversion therefore reduces the level of legal complexity that lawyers prefer.[17]

However, the effect of risk aversion at the margin differs depending on the form of the complexity function. Risk is measured here by the variance of $p_\pi(c)$ and $p_\Delta(c)$. It is a property of the binomial distribution that variance is greatest when the predicted probability of a particular outcome—here, the plaintiff winning in litigation—is .5. Variance decreases as the predicted probability diverges from .5 in either direction. In figure 1A, both p_π^o and p_Δ^o exceed .5 and both $p_\pi(c)$ and $p_\Delta(c)$ approach 1 as c rises. This implies that risk decreases monotonically as legal complexity rises. The same is true of figure 1B. In figure 1C, p_π^o and p_Δ^o both are less than .5 and $p_\pi(c)$ and $p_\Delta(c)$ approach 0 as c rises. This implies that risk increases monotonically with legal complexity. The same is true of figure 1D.[18]

Therefore, increases in the level of legal complexity reduce risk at the margin in cases A and B; while they increase risk at the margin in cases C and D. However, it is not possible to determine in general which forms of the legal complexity function would lead to lawyers' preferring higher or lower levels of legal complexity—the results depend on the degree of risk aversion and the speed at which it changes as complexity increases in the various cases.

Thus introducing risk aversion into the model implies that lawyers prefer a lower level of legal complexity. Lawyers are hurt by risk aversion, since plaintiffs are less willing to file cases and both sides are less willing to litigate them. But risk aversion does not lead lawyers to have general preferences over the various forms of the legal complexity functions.

2.2.3 Complexity with legal fees paid when settlement occurs

In the model as developed so far, plaintiffs and defendants were assumed to pay legal fees only when cases litigate. But now suppose that lower, but positive, legal fees are paid even when cases settle. In particular, suppose if a case is settled, plaintiffs and defendants each pay legal fees equal to a fixed fraction μ of what they would pay if the case litigated. Assume also that the American system is in effect and that both parties are risk neutral.

The expected gain for the plaintiff of litigating an already filed case is still $p_\pi(c)w - a(c)$. But now if the case is settled, the plaintiff will incur legal costs of only $\mu a(c)$. Therefore the plaintiff is indifferent between litigating and settling if she receives in settlement an amount equal to her expected judgment in litigation, $p_\pi(c)w$, minus her savings in legal costs due to settling rather than litigating, or $(1-\mu)a(c)$. Thus the plaintiff's minimum acceptable settlement once the case is filed is $p_\pi(c)w - (1-\mu)a(c)$.[19]

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[17] When risk aversion is introduced, the certainty equivalent of $p_\pi(c)$ must exceed the certainty equivalent of $p_\Delta(c)$ at the preferred complexity level in order for litigation to occur. The condition for plaintiffs to file lawsuits is also less likely to hold when plaintiffs are risk averse.

[18] Risk is not monotonically related to complexity in figures 1E and 1F.

[19] Plaintiffs' expected return if settlement occurs is at least their minimum acceptable settlement minus their legal costs in settlement, or $p_\pi(c)w - a(c)$. This amount is at least equal to their expected return if litigation occurs. Therefore whenever it is worthwhile for plaintiffs to file legal cases in the model without settlement costs, it is also worthwhile for them to file legal cases when settlement costs are added to the

The defendant's maximum settlement offer can similarly be shown to be $p_\pi(c)w + (1 - \mu)b(c)$. The condition for litigation rather than settlement to occur is now that $p_\pi(c)w - (1 - \mu)a(c) \geq p_\Delta(c)w + (1 - \mu)b(c)$.

Lawyers again wish to maximize total legal fees. As long as legal fees are lower when cases settle than when they litigate, it is still in lawyers' interest to set the level of legal complexity so that all cases litigate. This implies that lawyers' preferred level of complexity is where the parties just barely prefer to litigate rather than to settle. This implies that the preferred level of legal complexity, denoted $c^{A'}$, occurs where

$$[p_\pi(c^{A'}) - p_\Delta(c^{A'})] = (1 - \mu)\frac{a(c^{A'}) + b(c^{A'})}{w} \tag{4}$$

How does the level of legal complexity preferred by lawyers compare to the level they preferred when legal fees were paid only if cases litigated? Since $(1 - \mu) < 1$, the ratio of legal costs to stakes shifts downward when legal fees are paid in settlement. Therefore the desired level of legal complexity rises. The reason for this result is that litigation has become less expensive. Once the case has been filed, μ percent of both sides' legal fees become fixed costs. The extra cost of litigating rather than settling is therefore only $1 - \mu$ percent as high as previously. Therefore the parties are more willing to litigate and lawyers can raise the level of legal complexity without causing settlement to occur. Further, note that the higher is the cost of settling relative to litigating (or the larger is μ), the higher is lawyers' preferred level of legal complexity.

This model thus suggests that when legal fees for settlement rise, lawyers' preferred legal complexity level rises. Therefore, total legal income per case litigated is higher in the model with settlement costs than in the model where settlement costs are zero. Further, since all legal cases are identical by assumption, settlement never actually occurs in either model, so that all legal cases end up either being litigated or not being filed at all. But whenever the condition for legal cases to be filed is met in the model without settlement costs, it is also met in the model with settlement costs. Therefore, lawyers' total income from all legal cases is higher when legal costs in settlement are incorporated into the model.

2.2.2 Complexity when legal cases are heterogeneous

The model thus far has had the result that lawyers prefer a level of legal complexity which results in all cases being litigated. In actuality, many legal cases are settled out of court. Therefore, in this section the model is extended by assuming that different legal cases in the same field have differing stakes. But since the same legal doctrine must apply to all cases in a particular legal field, lawyers are still constrained to choose a single complexity level which will apply to all cases, regardless of size. This leads to the more realistic result that there is a mixture of settlement and litigation.

Assume that there is a probability distribution of cases by size in a particular legal field, $f(w)$. The judgment in any particular case is assumed to be known in advance by both plaintiff and defendant. Legal fees if cases litigate are now assumed to vary positively with both the judgment if the plaintiff wins and the legal complexity level, so that they

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model.

become $a(c,w)$ and $b(c,w)$. Legal fees are again assumed to be zero if cases settle. The ratio of total legal fees to stakes, $\frac{a(c,w)+b(c,w)}{w}$, falls as w rises.

For cases of any particular size, litigation occurs if $[p_\pi(c) - p_\Delta(c)] \geq \frac{a(c,w)+b(c,w)}{w}$ and settlement occurs otherwise. At any given level of legal complexity, there is an associated size of case for which the parties are just indifferent between litigating and settling, denoted w_{min}. At this level of complexity, all cases having stakes greater than w_{min} will litigate and all cases having stakes less than w_{min} will settle. $w_{min}(c)$ is defined implicitly by the litigation condition, $[p_\pi(c) - p_\Delta(c)] = \frac{a(c,w_{min})+b(c,w_{min})}{w_{min}}$. Note that if the level of complexity rises, the associated w_{min} for which the parties are indifferent between litigating and settling also rises.

Lawyers wish to maximize total legal fees,

$$\int_{w_{min}(c)}^{\infty} (a(c,w) + b(c,w))f(w)dw \tag{5}$$

over their choice of the level of legal complexity. Since w_{min} is positively related to c, lawyers must balance the gain from raising the complexity level, which increases their return from cases that litigate, against the loss from a reduction in the number of cases litigating. The preferred level of legal complexity occurs where these two effects exactly offset each other. Note that if the distribution $f(w)$ is more heavily weighted toward large cases, lawyers will prefer a higher level of legal complexity, and vice versa.

Figure 3 illustrates the model for the situation in which there are small, medium and large cases in a particular legal field, having stakes of w_s, w_m, and w_l, respectively. The legal fees to stakes curve is shown for each size class, with the curve for the biggest cases lowest and the curve for the smallest cases highest. If a separate level of legal complexity could be chosen for each size class, lawyers would prefer the complexity levels c^l, c^m and c^s, which would cause cases of all sizes to litigate. However, only a single complexity level can be chosen. If c^s were chosen, then all cases would litigate, but lawyers' income per case would be low. If c^m were chosen, then lawyers' income per case would be higher, but small cases would no longer litigate, so the income they generate would be lost. If c^l were chosen, then only large cases would litigate, but legal fees per case would be high. Among these three possibilities, lawyers prefer the one for which total legal income from all cases that litigate is highest.[20]

Thus when legal cases have varying stakes, lawyers' preferred level of legal complexity trades off the gain from higher income per case litigating against the loss of income due to more cases settling when the complexity level is raised. This tradeoff implies that lawyers again prefer an intermediate level of legal complexity. The model also implies that at the level of legal complexity preferred by lawyers, cases having high expected judgments litigate and cases having low expected judgments settle. Thus both litigation and settlement occur.

[20] Note that lawyers would never prefer a complexity level other than c^s, c^m or c^l.

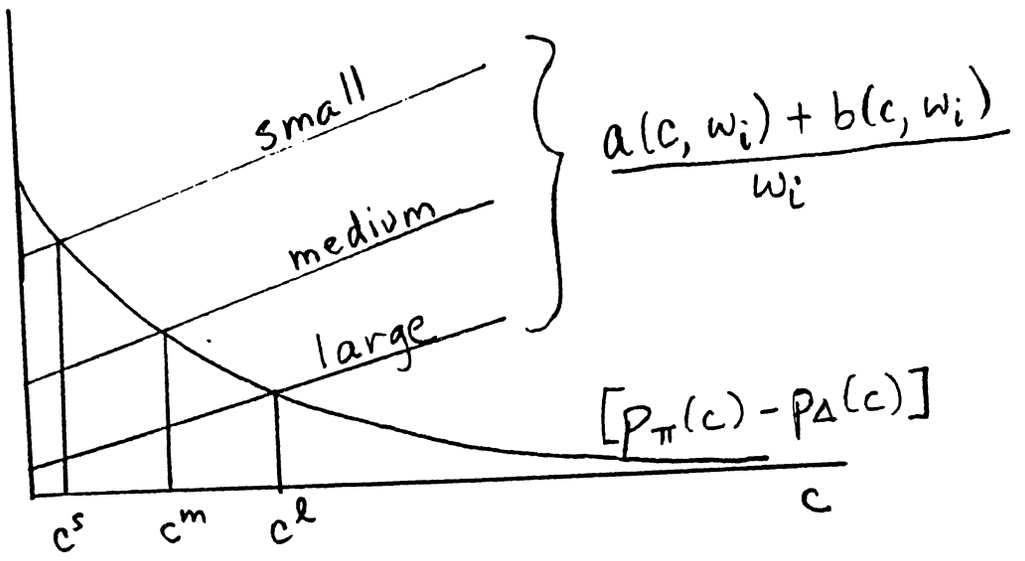
small
medium
large
$\frac{a(c, w_i) + b(c, w_i)}{w_i}$
$[p_\pi(c) - p_\Delta(c)]$
c
c^s
c^m
c^ℓ

Fig. 3

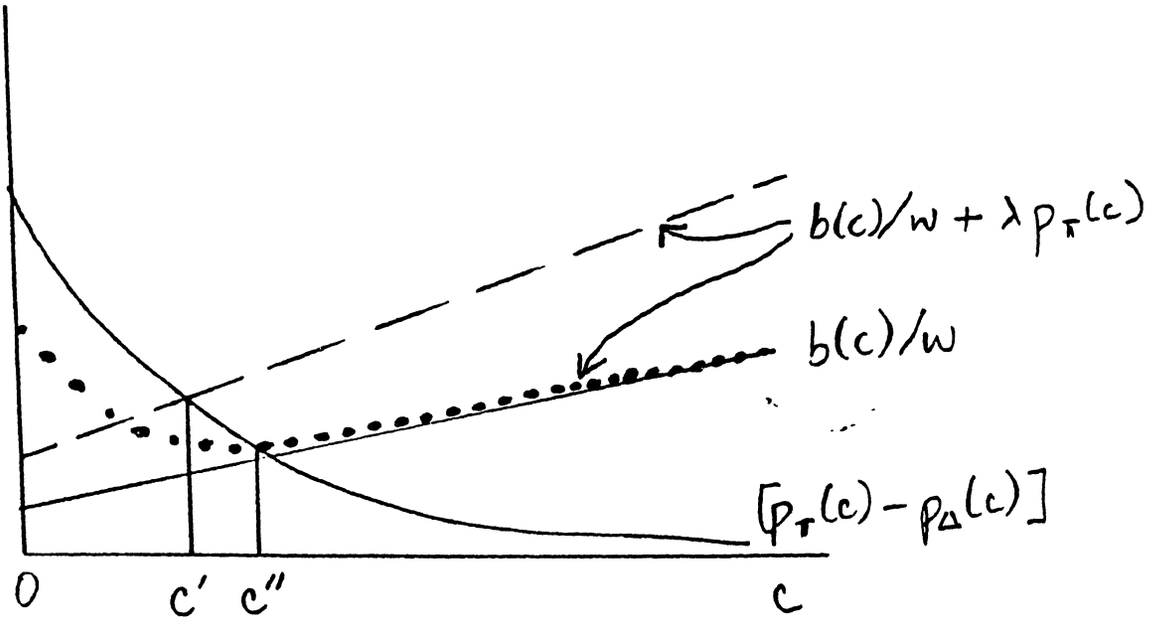
$b(c)/w + \lambda p_\pi(c)$
$b(c)/w$
$[p_\pi(c) - p_\Delta(c)]$
0
c'
c''
c

Fig. 4

3. Legal Complexity when Lawyers are Paid Contingent Fees

In this section, lawyers' preferred complexity level is analyzed when plaintiffs' lawyers are paid on a contingency basis. This possibility is of interest because contingency fees are common in some types of litigation—particularly litigation involving personal injury—and because it gives rise to a divergence of interest between lawyers on the two sides concerning the preferred level of legal complexity.

To keep the model simple, I assume again that all cases have the same expected judgment, w, that lawyers on both sides are paid only when litigation occurs, that the American system is in effect, and that both parties are risk neutral. Defendants' lawyers are assumed as before to be paid $b(c)$ when cases litigate and nothing otherwise. Plaintiffs' lawyers, however, are now assumed to be paid a fraction λ of the damage award if the plaintiff wins in litigation and nothing otherwise, where λ is assumed fixed.[21] I also assume that the function $p_\pi(c)$ measures the expectations of both the plaintiff and the plaintiff's lawyer concerning the plaintiff's probability of winning.

The plaintiff's lawyer's legal fee is now $\lambda w p_\pi(c)$ in expected value terms. The plaintiff's expected gain from litigating, which is her minimum acceptable settlement, is $(1 - \lambda)p_\pi(c)w$.[22] The defendant's expected loss from litigating, which is his maximum settlement offer, is still $p_\Delta(c)w + b(c)$. The condition for litigation rather than settlement to occur is now that $[p_\pi(c) - p_\Delta(c)]w \geq \lambda w p_\pi(c) + b(c)$.

Lawyers for the plaintiff and defendant now may have opposing rather than identical interests concerning their preferred levels of legal complexity. As before, lawyers for the defendant wish to set the level of legal complexity so that plaintiffs and defendants just barely prefer to litigate rather than settle, or where the litigation condition is just satisfied as an equality:

$$[p_\pi(c) - p_\Delta(c)] = \lambda p_\pi(c) + \frac{b(c)}{w} \tag{6}$$

However, plaintiffs' lawyers' preferred level of legal complexity now depends on whether increases in legal complexity increase or decrease their predicted probability that the plaintiff will win. Higher levels of complexity increase plaintiffs' lawyers' predicted probability that the plaintiff will win in cases A and D. In this situation, their expected legal income rises as c rises, as long as litigation occurs, so that plaintiffs' lawyers' interests coincide with those of defendants' lawyers. But higher levels of complexity decrease plaintiffs' lawyers' predicted probabilities that the plaintiff will win in cases B and C. In this situation, plaintiffs' lawyers expected legal income falls as c rises, so that they prefer the lowest possible level of legal complexity, $c = 0$.[23]

Figure 4 shows the convergence function, $[p_\pi(c) - p_\Delta(c)]$. $b(c)/w$, which rises as c increases, is also shown as a solid line. However, $\lambda p_\pi(c)$ can either rise or fall with c. If it rises, then total legal costs, $\lambda p_\pi(c) + b(c)/w$, must also increase as c rises. Total legal

[21] λ is typically around one-third.

[22] The condition for the plaintiff to file a lawsuit, $(1 - \lambda)p_\pi(c)w \geq 0$, is always met under the contingency fee arrangement.

[23] In cases E and F, plaintiff's and defendant's lawyers' interests may be identical or opposing at different complexity ranges.

costs are shown in the figure as the dashed line. In this situation, the desired level of legal complexity, labelled c', occurs at the intersection between the convergence function and the dashed total legal costs curve. Here despite the differing institutional arrangements for paying lawyers on the two sides, both sides' lawyers prefer the same level of legal complexity, c'.

Alternately, suppose plaintiffs' lawyers believe that increased complexity reduces plaintiffs' chance of winning, as in cases B and C. In this situation, $\lambda p_\pi(c)$ (not shown) has its maximum value at $c = 0$ and falls as c rises. Therefore, plaintiffs' lawyers prefer a zero level of legal complexity. Defendants' lawyers prefer the level of legal complexity that satisfies equation (6). This is determined graphically by adding the rising $b(c)/w$ curve and the falling $\lambda p_\pi(c)$ curve, to get the total legal costs curve shown in figure 4 as the dotted line. Total legal costs in this case first fall and then rise as c rises. Defendants' lawyers prefer the level of legal complexity c'', where total legal costs intersect the convergence function.

Thus when plaintiffs' lawyers are paid contingency fees, their interests may or may not coincide with those of defendants' lawyers. If increased complexity makes plaintiffs' lawyers more confident of winning, then their interests coincide with those of defendants' lawyers and both sets of lawyers again prefer an intermediate level of legal complexity. But when increased information makes plaintiffs' lawyers think it more likely that the plaintiff will lose, then the interests of lawyers on the two sides diverge. Plaintiffs' lawyers prefer the minimum level of legal complexity, while defendants' lawyers still prefer an intermediate level of complexity.

In order to determine the level of legal complexity that lawyers would prefer in the latter situation, a procedure is needed which reconciles their opposing interests. Suppose this procedure is the simple one of split-the-difference, so that lawyers on both sides agree to support a legal complexity level equal to the average of the levels preferred by plaintiffs' and defendants' lawyers. Then we would expect to find less complex legal doctrines prevailing in areas of the law where contingency fee arrangements are common and where plaintiffs' lawyers feel that more information hurts rather than helps plaintiffs' chance of winning.

The possibility that greater legal complexity hurts plaintiffs' lawyers who are paid on a contingency basis seems plausible, since such lawyers often practice by themselves or in small firms and, in order to reduce risk, often take on many diverse cases. Therefore they have little time to spend on each case compared to defense lawyers. In these circumstances, when the law is complex, plaintiffs' lawyers are likely to lose cases due to inadequate preparation.

What about the lawyers' preferences among the various forms of the legal complexity functions? From the viewpoint of defendants' lawyers, a complexity function in which increased complexity raised rather than lowered plaintiffs' probability of winning would be preferable, since this would eliminate pressure from plaintiffs' lawyers to lower the legal complexity level. Thus defendants' lawyers would prefer the complexity function to take the form of cases A or D rather than cases B or C. Turning to the viewpoint of plaintiffs' lawyers, their expected legal fees are $\lambda p_\pi(c)w$. Therefore their preferred form of legal complexity is that for which p_π takes on the highest value at the preferred level of legal complexity. The preferred level of legal complexity for plaintiffs' lawyers is $c = 0$ in cases B and C and an intermediate level of complexity in cases A and D. From figure 1, the

maximum value of p_π exceeds .5 in cases A and C and is less than .5 in cases B and D. This implies that plaintiffs' lawyers prefer cases A and C over cases B and D. More generally, their primary concern is to adopt a form of the legal complexity function which maximizes their probability of winning; they are relatively unconcerned about whether higher levels of legal complexity favor or hurt their clients at the margin or increase versus decrease risk.

4. Tax Law and Legal Complexity

U.S. tax law presents some of the most dramatic examples of legal complexity. The Internal Revenue Code itself is extremely long and complex, and the regulations interpreting individual provisions of the Code are often books in themselves.[24] In this section, the determination of the level of complexity of tax law is considered, with particular consideration given to the possibility of explaining the high levels of complexity that occur in some parts of the tax law. I assume that IRS and private tax lawyers are influential in determining both the level of complexity and the form of the complexity functions in tax law.[25]

In tax litigation, the Internal Revenue Service serves in the dual roles of both plaintiff and plaintiff's lawyer. It decides whether or not to file tax cases (audits) and it receives the judgment if it wins. The defendant is always the taxpayer. Suppose the IRS has picked a taxpayer for audit due to suspected underpayment of taxes. During the audit, settlement negotiations are assumed to occur. If they fail, litigation will occur in tax court (or in an administrative appeals forum). The amount at stake is the amount of underpaid taxes T, plus a penalty multiplier m which is fixed by statute, or $w = (a + m)T$.[26] This amount is assumed to be known with certainty by both sides. The IRS' predicted probability of winning in litigation is $p_\pi(c)$ and the taxpayer's predicted probability of the IRS winning in litigation is $p_\Delta(c)$. Defendants' lawyers are assumed to be paid $b(c)$ if litigation occurs, but nothing if the case is settled by negotiation during audit. The IRS' own legal costs in litigation are assumed to be a constant proportion λ of the amount at stake. If settlement occurs during audit, the IRS' legal costs are assumed to be zero.

The IRS is assumed to be risk neutral. The taxpayer is also assumed to be risk neutral (but the risk aversion possibility is investigated below). The IRS' expected gain from

[24] For example, the regulations interpreting sub-section 704(b) of the Code are 140 pages long. Many regulations require large computers to do the relevant calculations. See Moore (1987). Bradford (1988) gives an example in which a hypothetical taxpayer with a personally owned business and financial investments buys consumption items, business assets and makes financial investments. The taxpayer must keep track of five different types of interest payments, each of which have different deductability rules.

[25] It might be objected that private tax lawyers have limited influence on the complexity of tax law, since the IRS is a government agency and its lawyers are public servants rather than private litigators. However, lawyers often work for the IRS for a few years and then join private law or accounting firms and specialize in advising clients on tax law provisions that they were involved in writing. Such a revolving door gives IRS lawyers an incentive to write complex tax law provisions, because later in private practice they will be the best informed of those advising clients on these provisions. See Moore (1987) for a proposal to prohibit former IRS employees from representing clients in matters when the employee had substantial responsibility for determination of tax policy.

[26] The total penalty has an interest rate component and a penalty component, both of which may depend on the time period since the taxes were due.

litigating an already filed case net of its own legal costs is $p_\pi(c)w(1-\lambda)$, which is its minimum acceptable settlement. The taxpayer's expected loss from litigating is $p_\Delta(c)w + b(c)$, which is the taxpayer's maximum settlement offer. Litigation must occur if $p_\pi(c)w(1-\lambda) \geq p_\Delta(c)w + b(c)$, and settlement is assumed to occur otherwise.

Tax lawyers for defendants wish to pick the level of c so as to maximize their incomes, subject to the constraint that tax cases litigate rather than settle. They therefore prefer the intermediate level of legal complexity where the litigation condition is just satisfied. This is shown in figure 5 as c^T, which occurs where the convergence function intersects the combined litigation costs curve, $b(c)/w + \lambda p_\pi(c)$. At levels of complexity below c^T, litigation occurs, while at levels of complexity above c^T, settlement occurs.

The IRS, however, wishes to maximize the expected amount of underpaid taxes that it recovers net of its own legal costs, which is either $p_\pi(c)(1-\lambda)w$ if litigation occurs or $p_\pi(c)w$ if settlement occurs. Dividing these amounts by w does not affect the maximization process, so that the IRS also can be characterized as maximizing $p_\pi(c)(1-\lambda)$ if litigation occurs or $p_\pi(c)$ if settlement occurs. Suppose first that legal complexity favors the IRS, as in cases A and D. Then the IRS' expected gain is shown as the dashed line in figure 5. The IRS' expected gain jumps discontinuously at c^T, since at complexity levels higher than c^T, settlement occurs which reduces its costs. In this situation, the IRS prefers to set the highest possible level of legal complexity, where its expected gain is highest. This puts the IRS in conflict with private tax lawyers, who prefer the intermediate level of complexity, c^T. However, if the complexity level of tax law is actually set at some compromise level exceeding c^T, then the observed complexity level could be very high. Note further that the IRS and private tax lawyers also have a conflict of interest concerning whether cases litigate or settle, with tax lawyers preferring litigation and the IRS preferring settlement.

Alternately, legal complexity may be unfavorable to the IRS, as in cases B and C. Figure 6 illustrates this situation. There total litigation costs, $b(c)/w + \lambda p_\pi(c)$, fall and then rise as c increases. The dashed line shows the IRS' expected gain, which now declines as the level of legal complexity rises. But the IRS' expected gain again jumps discontinuously at $c^{T'}$, the level of complexity where cases settle rather than litigate, since its costs fall if settlement occurs. In this situation, the IRS either favors the simplest possible tax law ($c = 0$), or it favors the intermediate complexity level $c^{T'}$. Which level is preferred depends on how whether $p_\pi(0)(1-\lambda)$ is greater than or less than $p_\pi(c^{T'})$. Thus the IRS may or may not have a conflict with private tax lawyers when complexity hurts the IRS. The IRS may favor extremely simple tax laws, while private tax lawyers still favor an intermediate level of complexity. Or their interests may coincide, with both the IRS and private tax lawyers preferring an intermediate level of complexity. But regardless of the level of legal complexity, the IRS always favors settlement and private tax lawyers always favor litigation.

The IRS' interest goes beyond auditing and litigating cases of underpayment of taxes, however. It is also interested in setting up conditions which make it unattractive for taxpayers to underpay their taxes in the first place. These objectives are primarily achieved through the setting of penalties for underpayment of taxes (the m discussed above) and the setting of the probability of audit for suspected underpayment.[27] These policies, combined

[27] Other authors have analyzed similar problems, but focussing on uncertainty in the amount of taxes

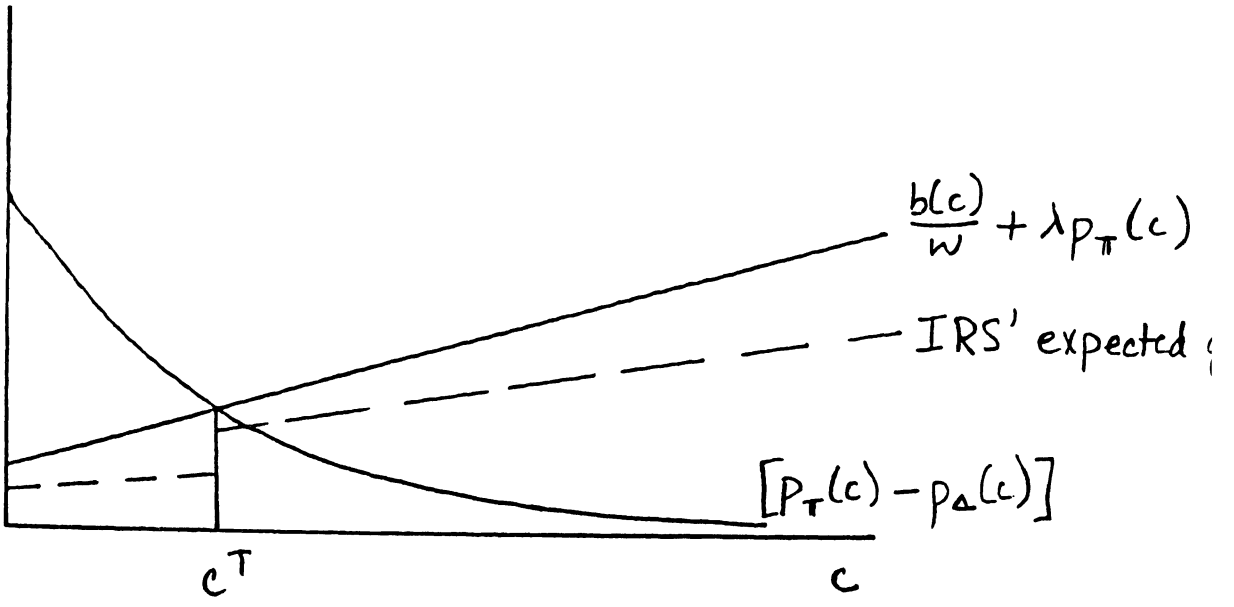
$\frac{b(c)}{w} + \lambda p_{\pi}(c)$
IRS' expected
$[p_T(c) - p_{\Delta}(c)]$
c^T
c

Fig. 5

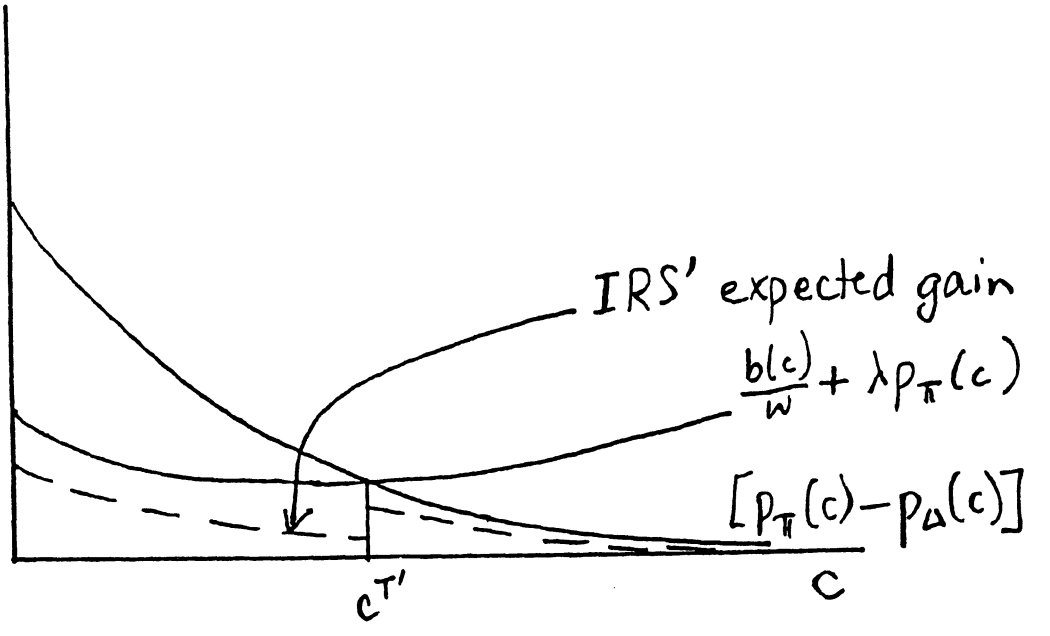
IRS' expected gain
$\frac{b(c)}{w} + \lambda p_{\pi}(c)$
$[p_{\pi}(c) - p_{\Delta}(c)]$
$c^{T'}$
c

Fig. 6

with the complexity level of tax law, determine whether taxpayers find it worthwhile to underpay their taxes in the first place. Suppose α denotes the probability of being audited for engaging in underpayment of taxes, where α is assumed to be independent of the legal complexity level. Then taxpayers' expected gain from underpaying T dollars of taxes is

$$(1-\alpha)T - \alpha[(1-p_{\Delta}(c))((1+m)T) + b(c)] \tag{7}$$

In (7), the first term is the expected gain from underpayment of taxes if no audit occurs and the second term is the expected loss if an audit occurs and the case is litigated. The taxpayer finds it worthwhile to underpay taxes if (7) is positive. Eq. (7) assumes that all tax cases are litigated. However, the gain from underpaying taxes remains unaffected by the possibility of settlement, as long as the settlement amount equals the expected cost of litigation to the taxpayer/defendant, which is $p_{\Delta}(c)w + b(c)$.

Eq. (7) allows us to evaluate the effect of legal complexity on the taxpayer's compliance decision and on the IRS' expected revenue per audit filed under the various forms of the complexity functions. Depending on the level of complexity, tax cases are either settled or litigated. If they are settled, the settlement amount is assumed to be the expected cost of litigation to the taxpayer. Then the first effect of higher tax law complexity is to encourage compliance by raising the taxpayer's expected legal costs in litigation, $\alpha b(c)$. This effect is the same for all forms of complexity. The second effect of complexity, however, operates through the probability of the IRS winning in litigation and may either discourage or encourage compliance. Suppose first that higher tax law complexity favors the IRS by increasing its probability of winning, as in cases A and D. Then the IRS prefers a very high level of complexity. This will cause all tax cases to settle rather than litigate. In case A, the IRS wins all cases it litigates if the complexity level is very high, so that $p_{\pi} = p_{\Delta} = 1$. Although settlement occurs rather than litigation, the IRS still benefits since the settlement amount is high. Therefore taxpayers are discouraged from evading taxes, both because tax litigation is expensive and because they never win. So little tax evasion occurs. The IRS' expected revenue per case audited is $w + b(c)$. In case D, the IRS' chosen level of legal complexity is also very high, but the probability of the IRS winning in litigation is only $p_{\pi} = p_{\Delta} = .5$. Cases still settle rather than litigate, but the level of settlement is lower. Therefore taxpayers are again discouraged from evading taxes by the high cost of litigation, but they win half the time, so they are less discouraged than in case A. Since all cases are settled, the IRS' expected revenue per audit filed is $.5w + b(c)$, which is lower than in case A.

Now suppose complexity hurts the IRS by reducing its probability of winning, as in cases B and C. Then the IRS favors either a low or intermediate level of legal complexity to enable it to win more often in litigation. Low levels of legal complexity encourage evasion of taxes by reducing the expected legal cost of underpaying taxes. In case B, a low to intermediate level of legal complexity implies that the IRS expects to win in litigation with probability between 0 and .5. Also, tax cases are litigated rather than settled, so

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owed rather than on uncertainty in the audit/litigation process. See Scotchmer (forthcoming), Scotchmer (1988), and Slemrod (1988). In Scotchmer (forthcoming), the IRS is shown to prefer a high level of uncertainty in its audit policy, since this discourages tax evasion.

that the IRS incurs litigation costs. The IRS' expected return per case audited is therefore between 0 and $.5w(1-\lambda)$. Finally, with high evasion levels, there are likely to be many audits. This is the worst case for the IRS. The situation is slightly better in case C, where at a zero or intermediate level of legal complexity, the IRS expects to win in litigation with probability between .5 and 1. This encourages taxpayer compliance relative to case B, since while litigation costs are still low, the probability of the taxpayer winning is lower than in case B. The IRS' expected return per case audited is between $.5w(1-\lambda)$ and $w(1-\lambda)$.

Putting these results together, if the IRS could choose both the form and the level of tax law complexity, its preference ordering among the cases, from highest to lowest, would be A, either C or D, and finally B. (The IRS' preference between cases C and D depends on the exact characteristics of the complexity function and other variables.)

Finally, suppose taxpayers are risk averse rather than risk neutral. Risk aversion introduces an additional factor into the analysis: the effect of increased legal complexity on the riskiness of litigation. In cases A and B, high levels of legal complexity reduce risk, which encourages risk averse taxpayers to evade taxes, and thus hurts the IRS. In cases C and D, high levels of legal complexity increase risk, which encourages taxpayer compliance, and thus benefits the IRS. This means that case A, which under risk neutrality was preferred by the IRS, becomes relatively less desirable when taxpayers are risk averse, as does case B. Case D, which under risk neutrality was in the middle of the range, now becomes relatively more desirable, as does case C. Thus the effect of risk aversion is to reduce the IRS' strength of preference among the four cases, with the most preferred cases becoming less so and the least preferred cases becoming more so. But unless the risk aversion effect is very strong, then the IRS' preference ordering is likely to remain the same, except that the ordering between the two middle cases, C and D, may be determined by risk aversion considerations.

The analysis has shown that the IRS has two potential reasons for preferring high levels of complexity in tax law. The first is that complexity raises taxpayers' expected litigation cost when they evade taxes. The second is that increased complexity may both raise the IRS' probability of winning in litigation and/or raise the riskiness of litigation, both of which benefit the IRS. If the IRS can influence the form as well as the level of tax law complexity, then it will favor case A, in which greater complexity increases the IRS' chance of winning, or cases C or D, in which greater complexity increases risk. Private tax lawyers, in contrast, always prefer an intermediate level of tax law complexity such that tax cases litigate rather than settle.

5. Conclusion

This paper has proposed a framework for analyzing the level and form of legal complexity in statutory and common law, assuming that income-maximizing lawyers influence complexity so as to maximize their earnings. A number of interesting results emerge. First, lawyers are shown to prefer an intermediate level of legal complexity, regardless of whether they represent plaintiffs or defendants. This result is robust to changes in the form of legal complexity, to changes in litigants' attitudes toward risk, and to whether the English or the American system of paying for legal costs is used, as long as lawyers' fees are based

on the level of legal complexity. However, when plaintiffs' lawyers are paid contingency fees, plaintiffs' and defendants' lawyers interests may diverge. In particular, if increases in the legal of legal complexity reduce rather than increase plaintiffs' probability of winning, then plaintiffs' lawyers prefer the simplest possible law. But defendants' lawyers still prefer an intermediate level of legal complexity. Therefore, if the level of legal complexity is determined as a compromise between the two sets of lawyers' preferences, it will tend to be lower in areas of the law where contingency fees are common.

The model was also applied to analyze complexity in tax law. The IRS, which acts as both plaintiff and plaintiff's lawyer in tax litigation, is shown in certain circumstances to favor the highest possible level of legal complexity, regardless of whether taxpayers are risk neutral or risk averse. This is because a highly complex tax law always favors the IRS by increasing taxpayers' expected legal costs when they evade taxes, which discourages tax evasion. It may also favor the IRS by increasing the probability that the IRS will win in litigation with taxpayers and/or by increasing the riskiness of litigation. Private tax lawyers, in contrast, always favor an intermediate level of tax law complexity. If the IRS is influential in determining the complexity level of tax law, then the model provides an explanation for the very high levels of complexity which characterize some aspects of U.S. tax law.

Finally, turn to the issue of whether lawyers tend to prefer a higher or lower level of legal complexity than is efficient from a social standpoint. We have considered in detail the private benefits of legal complexity, which involve both changes in litigants' predicted probabilities of winning and increased legal costs as complexity rises. In contrast, the social benefit of increased legal complexity, if any, is the reduction in the probability of judicial error (type I or type II) in deciding legal cases. The value of reducing the proportion of legal cases decided wrongly varies across legal fields and includes both the pure value of the judicial system operating more fairly and, in some situations, gains in economic efficiency from parties having more efficient incentives because their cases are more likely to be decided correctly.[28] However, increased legal complexity comes at a cost in greater lawyers' fees and court time—and the social cost is always greater than the private cost, because private litigants pay for their lawyers, but do not pay for the time of the judge and jury or for the use of the court itself.

The two major possibilities can be delineated. Suppose first that increases in the level of legal complexity were associated with a rise in the probability of legal errors. In this case the socially efficient level of legal complexity would clearly be zero. But since lawyers have been shown to prefer an intermediate level of legal complexity, their preferred complexity level would necessarily be higher than the socially optimal level. Second, suppose increases in the level of legal complexity were associated with a decrease in the probability of legal errors, at least at low levels of c. This says that increases in legal complexity provide extra information which enables courts to decide cases correctly more often. In this situation the socially efficient level of legal complexity would be some positive level which equated the

[28] Actually, more accurate court decisions can sometimes reduce economic efficiency rather than increasing it. As an example, suppose a legal rule caused excessively high incentives to avoid accidents, resulting in excessively cautious behavior. Then a high prevalence of court errors which allowed injurers to escape liability would reduce the severity of the legal rule, resulting in more efficient incentives.

marginal benefit and marginal costs of legal complexity. But then the socially optimal level of legal complexity could in theory be either higher than or lower than lawyers' preferred level of legal complexity.

Even in the latter case, it seems likely that lawyers will prefer an excessively high level of legal complexity. This is both because the private costs of increased legal complexity are lower than the social costs and because diminishing social returns from increases in the level of legal complexity seem likely to set in more quickly than diminishing private returns. Thus while increases in complexity both reduce legal errors and cause convergence of the parties' expectations concerning the outcome of litigation, the former effect probably diminishes more rapidly than the latter. If so then we would expect to find that private lawyers prefer more complex laws than is efficient from a social standpoint.

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