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ACCURACY IN ADJUDICATION

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Accuracy in Adjudication

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Abstract

Many features of public legal systems and private schemes of dispute resolution influence the accuracy of legal outcomes, including rules of procedure and evidence, appeals, regulation of lawyers' conduct, and some aspects of substantive law. An economic inquiry into this subject is concerned with the trade-off between accuracy and cost. Much of the effort involves careful specification of the value of accuracy, which until recently has been largely taken for granted. It turns out that the benefits from greater accuracy vary greatly by context. Accordingly, the discussion separately considers problems of determining liability, assessing damages, and establishing future rights and obligation.

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Many features of the legal system are concerned with or directly influence the accuracy of legal outcomes. Rules of civil, criminal, and administrative *procedure* (including those regulating investigations, discovery of opponents' information, use of experts, and case management), the use of *appeals*, and rules of *evidence* all directly govern the availability of information and the conduct of decisionmaking. In addition, aspects of *substantive law* -- for example, which categories of damages may be demonstrated, specialized burdens of proof, the fineness of distinctions among offenses -- involve choices about the accuracy of adjudication. As well, the choice whether to have an *adversarial or inquisitorial legal system* and the design of *private schemes of dispute resolution* are concerned with accuracy. *Regulation of lawyers' conduct* also will be important.

An economic inquiry into this subject is concerned with the trade-off between accuracy and cost. (If one can achieve greater accuracy at a lower cost, the choice usually will be clear.) But it is not possible to assess whether a reform that increases accuracy by some given amount at a stated cost is desirable without first identifying *why* accuracy is in fact valuable. Unfortunately, the value of accuracy has largely been taken for granted, although some recent work has begun to explore this value in a manner that permits economic assessment. It turns out that the benefits from greater accuracy vary by context. Accordingly, the present discussion will separately consider accuracy in determining *liability* (i.e., identifying who is responsible for any harm caused), in assessing *damages*, and in establishing *future rights and obligations* (such as with licensing of activities, determining eligibility for public benefits, or establishing the level of tax obligations). The analysis will not consider how best to promote "fairness," "legitimacy," or other such objectives that may also be affected by accuracy, although the economic analysis does illuminate these issues. See Kaplow (1994a). Moreover, this survey will not consider the many

particular legal rules and procedures that affect accuracy in each of the contexts considered because such an examination would require a large number of separate inquiries that are best undertaken separately. On procedure generally, see Posner (1973, 1992); on appeals, see Shavell (1995).

Accuracy in the Determination of Liability

Description of the problem. Consider a scenario in which the only issue is whether an individual is liable. For example, there may be uncertainty about the identity of who committed an act, whether an act was committed, whether an act was the cause of harm, or whether the act was justified in some manner recognized by the law. The act may be a crime, a tort, a contract breach, or whatever.

Tribunals may make errors, falsely sanctioning the innocent or mistakenly exonerating the guilty. (For convenience, the language of guilt and innocence and of sanctions, most associated with criminal enforcement, will be used, although the analysis generally is applicable to the civil context as well.) Greater accuracy, which is assumed to be costly, reduces both types of errors. (The optimal trade-off between the two types of errors, involving the *burden of proof*, will be discussed below.)

The optimal degree of accuracy. Greater accuracy in determining liability *enhances deterrence*. Greater accuracy implies that the guilty are more likely to be sanctioned and that the innocent are less likely to be sanctioned. Both effects make it more advantageous for individuals to abstain from illegal acts, as the benefit from abstention is greater and the cost of violations is greater as well. Thus, although not traditionally a focus of attention when examining deterrence, accuracy is in fact a central determinant of the ability of the legal system to influence behavior.

Considering deterrence alone, the optimal degree of accuracy would be determined in

conjunction with setting other instruments that influence deterrence, namely the level of sanctions and the level of enforcement effort. Note that the mere presence of inaccuracy does not in itself favor lower sanctions in achieving a given level of deterrence: although an innocent individual mistakenly found liable would be sanctioned less, it would be necessary to raise enforcement effort to maintain deterrence, which would make such mistakes more frequent. Moreover, if the legal regime uses a high enforcement effort/low sanction strategy, accuracy will tend to be more expensive. (If there are more trials, audits, or whatever, it will cost more *in total* to increase the accuracy of *each proceeding*.) As a result, a particular concern for mistakes in sanctioning the innocent may favor a low enforcement effort/high sanction strategy, for then a given amount of adjudicative resources can be concentrated on fewer adjudications, reducing the incidence of mistakes.

A related benefit of greater accuracy is that it allows *more precise* control of behavior. It is well recognized that the prospect of error may discourage some innocent activity (deeds that might readily be mistaken for improper activity). When error is present, higher overall expected sanctions are needed to deter improper behavior. (Because some of the guilty are exonerated and some innocents punished, deterrence is less, as noted above; this requires higher sanctions or more enforcement effort to achieve a given level of deterrence.) The higher expected sanction, in turn, worsens the problem of discouraging some innocent activity. But when deterrence is enhanced through greater accuracy, this problem is reduced rather than increased.

Aside from controlling behavior, accuracy is valuable because it *reduces the imposition of socially costly sanctions*. In the simple case in which sanctions are fines or damage awards -- mere monetary transfers -- and individuals are risk neutral, sanctions themselves do not impose social costs. However, other sanctions -- notably, imprisonment and monetary payments imposed

with a probability on risk-averse individuals -- are socially costly. In that case, it is desirable to reduce the total incidence of sanctions, other things equal. For a given level of deterrence, increasing accuracy accomplishes this. First and most obviously, greater accuracy reduces the imposition of sanctions on the innocent. Second and more subtly, total sanctions imposed on the guilty fall as well. (The reason is that, to hold deterrence fixed, greater accuracy, which increases deterrence, would be offset by lower enforcement effort or sanction levels. For a given level of deterrence, moreover, expected sanctions on the guilty must fall because expected sanctions on the innocent are falling -- and deterrence depends on the *difference* between the expected sanctions born when committing versus when not committing an act.) Thus, the more costly the sanction, the greater the optimal level of accuracy.

Another benefit of greater accuracy is that it may *improve the selection of filed cases*. The prospect that valid claims will fail discourages plaintiffs with valid claims, and the possibility that invalid claims will succeed encourages unmeritorious suits. Thus, enhanced accuracy, along with rules about fee-shifting and the like, is a means of producing better case selection which in turn will tend to allow for better control of behavior with lower litigation costs.

Discussion. It should be emphasized that the present analysis is relevant to civil as well as to criminal liability (and, accordingly, to the design of private dispute resolution systems). Disputes about liability are, of course, the subject of a large portion of litigation. What was said about the effects of accuracy on deterrence remains true, although it is less common in the context of private civil litigation to think of adjusting enforcement effort and the level of sanctions. Nonetheless, many policies affect the level of suits (fees charged, availability of cost-shifting, use of class actions, supplemental public enforcement, damage rules, whether unsuccessful or frivolous suits are penalized), and the level of damages does not always simply equal actual harm

(as there may be limits on some classes of damages or damage multipliers, statutory minimum damages, and punitive damages). In the civil context, there may be sanction costs due to risk aversion. And the problem of discouraging innocent activity may be quite important.

It should also be noted that accuracy will be relevant for controlling behavior only when actors are able to anticipate the relevant effects. Thus, greater precision in distinguishing borderline activity in adjudication will not improve behavior if individuals are not able to make the subtle distinctions themselves. This problem is more likely to be serious with some modern, intricate regulatory regimes and tax laws or with some applications of the negligence rule than in the case of traditional crimes or intentional torts. (For elaboration, see the section to follow, on assessing damages.)

It is important to inquire whether parties' incentives to present information in adjudication are socially appropriate. In this context, there generally is a divergence between private and social costs and benefits. The main social benefits of accuracy are better control of behavior and avoiding the wasteful imposition of costly sanctions. By contrast, defendants simply wish to avoid sanctions regardless of these effects and plaintiffs simply wish to recover more. Interestingly, it is possible that innocent individuals would have *too little* incentive to present information. For example, if they are subject to imprisonment, their private benefit of effort designed to increase accuracy will be avoiding the loss of liberty; the social benefit will include this private benefit *plus* the additional benefits of saving the cost of running prisons and of avoiding a dilution of deterrence. This suggests that it may be optimal to subsidize efforts of the innocent to avoid liability, but doing so may be difficult without also subsidizing the guilty (who already have an excessive incentive). The system might provide rewards to those acquitted (presumably the innocent have a higher probability of acquittal and thus would be encouraged

relatively more by such a reward) or increase the sanction on those who insist on trial but are ultimately convicted (as may be done by offering sanction discounts for admitting guilt).

Finally, it is worth exploring how the problem of accuracy affects the operation of a negligence rule. Because liability may be affected greatly by small changes in behavior, it need not be the case that inaccuracy reduces deterrence. In particular, actors might undertake excessive precautions because the costs of failing to meet due care even slightly may be substantial. See Calfee and Craswell (1984), Craswell and Calfee (1986), Shavell (1987). For empirical evidence concerning liability for medical malpractice, see Kessler and McClellan (1996); for a suggestion that the negligence rule does not always function in this manner, see Kahan (1989). Greater accuracy may reduce this sort of problem, although one would have to consider the costs as well as alternative means such as adjusting the standard of care.

Literature. The issues considered here are modeled in Kaplow and Shavell (1994) and further examined in Kaplow (1994a). Other literature explores how legal error may reduce deterrence, requiring higher sanctions. See, e.g., Png (1986), Polinsky and Shavell (1989), and Posner (1973). Png (1986) also notes how the problem of discouraging innocent behavior may be averted by using subsidies (for example, by rewarding those found innocent or by directly subsidizing the affected activity). Polinsky and Shavell (1989) discuss how error affects plaintiffs' incentives to sue.

For further discussion of optimal law enforcement, see the entries on this subject and Becker (1968), Polinsky and Shavell (1984), and Shavell (1993).

Burden of proof. A related subject concerns setting the burden of proof -- the manner in which the two types of error are traded off, taking as given the residual degree of uncertainty. Setting the burden of proof is logically distinct from determining the degree of accuracy, which

indicates how much uncertainty remains. These subjects are often confused, perhaps because many changes in the legal system affect both accuracy and the burden of proof simultaneously. For example, providing additional resources to indigent criminal defendants may increase accuracy by improving their ability to gather and present information while at the same time raising the implicit burden of proof (in the sense of making it more likely that the guilty will go free and that the innocent will be exonerated). More generally, changes that increase the capacity of one party to present its case tend to affect both accuracy and the implicit proof burden. (One could often separate the effects; for example, if defense assistance were favored for accuracy but the proof burden were already thought high enough, one might accompany greater defense assistance by an explicit reduction in the proof burden.) Another complicating factor is that different proof burdens will change parties' incentives to present information, which also will affect accuracy.

The analysis of accuracy in this entry can be understood as holding the burden of proof constant. And whatever proof burden turns out to be optimal, the above analysis would apply. Setting the optimal burden of proof is itself a complicated endeavor, for it will influence deterrence (although it should be noted that low proof burdens may worsen deterrence, not increase it, by making innocent behavior less attractive) and the imposition of sanctions that may be socially costly. These issues are explored in Kaplow (1994a), and Kaplow and Shavell (1994). Davis (1994) explores how the optimal burden of proof may depend upon the accuracy of adjudication. Rubinfeld and Sappington (1987) consider how the burden of proof affects defendants' litigation expenditures; Miceli (1990) examines prosecutorial effort.

Accuracy in the Assessment of Damages

Description of the problem. Consider a scenario in which the only issue is the level of

harm caused: it may be 5, 10, or 15, each with equal probability. That is, when injurers cause harm (the likelihood of which depends on their level of care), assume that liability is certain and the only question is the extent of harm. To further simplify the discussion, suppose that liability is strict, parties are risk neutral, there is no issue of victims' care, and that all victims bring suit.

It is assumed that both prospective injurers and the adjudicator (which may be a court, a jury, an administrative tribunal, a private arbitrator, or whatever) know these basic facts, and thus they know that the average level of harm is 10. Adjudicators can learn the actual level of harm (through direct inquiry or through parties' presentation of evidence, depending upon the legal system), but only at some cost. One way to interpret the adjudicators' information is to imagine that when a case is filed -- or after very brief investigation or presentation of information -- it is possible to form an estimate of actual harm, which would be the average harm for cases of the type fitting the preliminary information. Then, there may or may not be additional inquiry to refine this estimate to determine the actual level of harm more precisely. (This characterization is formally a bit different from that used below, but it can be demonstrated that the results are unaffected. See Kaplow and Shavell (1996).)

The optimal degree of accuracy and its relationship to injurers' ex ante knowledge.

Suppose first that, at the time they decide how to act (whether, how much, and with what level of care), *injurers know exactly how much harm they will cause*. In this case, accuracy in adjudication will be valuable. Some injurers will know that the actual harm they would cause is 15; under an inaccurate system they would anticipate paying damages of 10, and thus would be underdeterred (they would take too little care, act too often). Other injurers will know that the harm they would cause is only 5; these individuals will be overdeterred. But if the system of adjudication is accurate, each injurer will expect to pay for the actual level of harm he would

cause, and behavior will be optimal. In this case, accuracy will be efficient if its cost is less than the benefit of improved behavior. Whether this will be true depends primarily on the cost of accuracy, the extent to which individuals' behavior is responsive to incentives, and whether most prospective injurers actually would cause approximately the average level of harm or, instead, the variance is great.

Now suppose that at the time they act *injurers do not know the actual level of harm they would cause*; rather, they know only the probability distribution. Under an inaccurate regime, they would pay damages of 10 whenever harm occurred. Under an accurate one, they would pay 5, 10, or 15, each with equal probability, so their expected damages are 10. Thus, they would behave in precisely the same manner under both regimes. Any expenditures on accuracy would be a pure waste. As will be emphasized below, this conclusion is extremely important because much actual litigation about damages concerns refinements about which injurers could not have known at the time they acted.

Finally, suppose that at the time they act *injurers are uninformed but can learn the actual level of harm at some cost*. (As a general matter, ex ante information acquisition may include expert legal advice or assessing facts, as in determining the toxicity of chemicals that one is discharging.) Clearly, injurers will not learn about harm unless the adjudication will be accurate, because if they will pay damages of 10 regardless of the actual level of harm there is no point in knowing it in advance. If the adjudication will be accurate, they will have an incentive to learn about harm so they can better tailor their behavior in light of its consequences. They will choose to become informed if the private benefit of adjusting their behavior (net reduction in the sum of expected precaution costs and expected damage payments) exceeds the information cost. (In this simple scenario, Kaplow and Shavell (1992) show that this private information acquisition

decision is socially optimal, taking as given that the system is accurate; under other assumptions this may not be true.) If injurers will not in fact become informed, accuracy will be a pure waste, as in the preceding case. If they will become informed, the behavioral benefits must be balanced against not just the costs of making adjudication more accurate (as in the case in which all individuals were simply informed at the outset) but also the costs of ex ante information acquisition.

In practice, it is useful to think of the problem as one of determining the *optimal degree of accuracy*. Clearly, it will be useful to distinguish large categories of behavior from one another: airline crashes from automobile crashes, serious injury to humans versus minor injuries or property damage. The cost of making such distinctions in adjudication will be trivial and the incentive benefits will be large, as individuals often will be aware of such differences at the time they act and their behavior may well be influenced by extremely large differences in expected damage payments. At the other extreme, expenditures on refinements in the level of damages (precise determination of lost future wages or the how many trees were damaged by some source of pollution) will usually be wasteful. First, most individuals will not know about such subtle differences at the time they act. In fact, many will know far less than would be revealed even by a simplistic inquiry. (For example, people who drive dangerously may know there is some probability that they will strike a pedestrian, but the actual injury -- a cut, a broken leg or death -- and the particulars of the victim's circumstances -- e.g., occupation, life expectancy, preexisting disabilities, all of which are relevant in calculating lost earnings -- will almost never be known ex ante.) Second, even if some individuals did know of subtle differences, the effect on behavior may be slight. This suggests that much present expenditure in litigation that relates to damages assessment is socially wasteful.

Whether parties' incentives to present information in adjudication are socially appropriate, and possible corrective policies. Many legal systems, particularly adversarial ones, allow the parties to determine how much to spend in litigation to present information to the adjudicator. Thus, the level of accuracy is endogenous, rather than stipulated by the tribunal. This raises the question whether parties' incentives to present information are appropriate or instead excessive or inadequate. If parties expenditures are duplicative or offsetting, producing little effect on the outcome, or if the information presented is unreliable or misleading, expenditures obviously will be excessive, as they do not even promote accuracy (but nonetheless such expenditures are made because each party finds it in its interest to do so). The more difficult case, to be considered here, is that in which expenditures do promote accuracy.

Consider the simple situation in which either party may make an expenditure (costing, say, 2) which will allow it with certainty to establish the truth (which, at the time of adjudication, the harm already having been done, each party is assumed to know). Even in this case, parties incentives may well be excessive. Using the preceding figures, victims will spend 2 to establish actual harm whenever harm is 15 (because they would prefer to pay 2 to recover 15 than to recover 10); injurers will establish harm whenever it is 5 (preferring to pay 2 plus damages of 5 rather than damages of 10). If injurers do not know the actual harm in advance, these subsequent expenditures will be a pure waste. Even in the case in which harm is known in advance (or can be learned at low cost), the expenditures might still be excessive, for the advantage of tailoring behavior may be less than the additional costs incurred. (This problem of a divergence between private and social incentives involving litigation is an instance of a more general one that arises because private benefits relate to the amount of damage payments ex post whereas social benefits may depend primarily upon deterrent effects ex ante, which are usually of no immediate concern

to the parties. See Shavell (1982).)

Due to the possibility of excessive incentives (and, indeed, the probability of excessive expenditures in the many cases in which litigating damages is expensive but injurers could not possibly know the actual harm in advance -- such as with automobile accidents), it may be efficient for the legal system to curtail parties' efforts. (Keep in mind that this may be true even when the information is informative and truthful and even when the party presenting the information pays the full costs.) One approach involves a tribunal refusing to hear or ignoring evidence in cases in which the greater accuracy is undesirable. Another possibility would be to impose fees on lawyers, charges for court time, and the like. A method being used more frequently in the United States is to impose -- through general rules or through judicial discretion in case management -- limits on discovery, the use of experts, and trial time. Use of a more inquisitorial system, under which decisions affecting the degree of accuracy are more under the control of the tribunal than of the parties, might have the benefit of avoiding this problem with private incentives. A rather different approach would involve the use of damages scheduling. See, e.g., Bovbjerg, Sloan, and Blumstein (1989). Although often advocated to avoid the arbitrariness and possible bias in jury awards, the use of scheduling may be advantageous even if it substitutes less accurate averages for highly precise case-specific damage awards.

Extensions, applications, discussion. Suppose that parties are *risk averse*. Then, more accurate damage awards might better compensate victims; awards based upon average harm would overcompensate those who suffer little and undercompensate those who suffer greatly. On the other hand, injurers will bear more risk if they must pay highly individualized awards rather than damages based upon average harm. Both factors, however, tend to be of limited importance because of the extent of insurance and because many actors are organizations that may be

approximately risk neutral.

Allowing for the possibility of *settlement* does not greatly affect the analysis. The costs of more accurate adjudication will not be as great, but they hardly will be insignificant even if most cases settle because a large portion of legal costs are incurred pretrial, in the course of investigation, discovery from other parties, and the like. A more accurate trial regime (consider, for example, one that admits any and all evidence pertinent to damages by contrast to one that uses damages tables) will induce parties to spend more in preparation. Unless settlement is virtually immediate, greater accuracy will involve nontrivial costs. A related complication is that greater accuracy itself may impede settlement, or at least delay it until after further discovery. As explained by Spier (1994), there may exist asymmetric information that is relevant only in a more accurate regime. (For example, the victim might initially know details about the actual level of harm that could only be learned through discovery or that may not come out until trial.) As a result, settlement will be more difficult.

One might modify the analysis to consider other forms of error and benefits from accuracy. For example, courts may make *predictable error* -- that is, produce biased results -- in the absence of greater effort to increase accuracy. Individuals, in turn, may undertake wasteful expenditures on legal advice not for the purpose of determining actual harm or the true underlying legal norm, but instead for purposes of predicting errors in adjudication. See Kaplow and Shavell (1992). In this case, greater accuracy will not only improve behavior but also may *reduce* individuals' (wasteful) ex ante expenditures on information. (A simpler form of predictable error is *systematic* bias, as when damages are generally too low for a recognized class of cases. This problem could be addressed with a more generous damage rule -- say, a damage multiplier to offset the tendency to understate damages -- which does not itself require greater expenditures

adjudicating each case.)

The present analysis, in focusing on damages, has examined a regime of strict liability. Although the *negligence rule* raises complications explored in the preceding section on the accuracy of liability determinations, it should be noted that the main points about accuracy presented for the case of strict liability do apply with the negligence rule. For example, if the actors themselves do not know very precisely what is the standard of due care or how much harm they in fact will cause, an accurate determination of these issues in adjudication will not generally improve behavior.

The analysis can be used to assess the rule of *market share liability*. See, e.g., Rosenberg (1984), Shavell (1985). Consider the simple case in which a number of firms produce fungible products each causing harm with some probability. The expected (average) harm caused by each firm is known. Ex ante, there is no way a firm could know if its products would cause more or less harm, for whether they will do so is entirely random. Thus, tracing actual causation would be a complete waste of resources. This benefit of market share liability, which makes each firm liable for harm in proportion to the fraction of its output, is somewhat different from that usually emphasized, concerning cases where actual responsibility cannot be determined. The relevance of the present discussion is that even if one could identify responsibility for each particular harm, it would not be efficient to do so. (Such identification would be valuable if products were nonfungible and identification was the only way to establish the relative contribution to harm made by each firm.)

The problem of accuracy is closely related to that of determining the *optimal precision of legal rules*. See Kaplow (1995). A more precise legal regime is one that more finely differentiates behavior. Finer differentiation tends to be desirable when accuracy is desirable:

when individuals, at the time they act, anticipate the differences in outcome and their behavior accordingly differs to a significant extent. Indeed, when differentiation in rules is based upon differences in the severity of harm, the two problems are largely the same. Precision of the law on the books will, of course, be relevant only if adjudication is sufficiently accurate to make the legally relevant distinctions.

Literature. Most of the analysis presented here is developed in a formal model in Kaplow and Shavell (1996). For additional discussion and applications, see Kaplow (1994a). Rasmusen (1995) considers how a court might adjust its estimate of damages based upon inferences from the fact that the plaintiff has chosen to sue.

Accuracy in Establishing Future Rights and Obligations

Regulation of future conduct. Some adjudication is concerned with regulating parties' future behavior, instead of or in addition to providing appropriate ex ante incentives, the focus of the preceding discussion. For example, *injunctions* (assuming that they cannot be bargained away) may control a factory's pollution or a school's operation, *imprisonment* affects the future liberty of criminals (thereby providing a benefit from incapacitation), and *licenses* may determine who is permitted to practice a profession, operate an airline, or broadcast on the airwaves. In each of these instances, greater accuracy will increase future benefits. For example, incapacitation is useful only to the extent those imprisoned are truly dangerous, and it is better achieved if sentences are more precisely tailored to the relevant characteristics of offenders. Moreover, these future benefits are largely independent of whether individuals could anticipate the particular outcomes of more accurate adjudication. (It will improve public safety to incapacitate a dangerous individual even if he did not anticipate being imprisoned.)

The proper analysis differs greatly by context. In general, one would determine the

optimal level of accuracy in a manner similar to that used in conventional information acquisition problems, as when a firm must decide whether to conduct further study before beginning production of a new product. As before, there is no particular reason to expect that parties' private costs and benefits will be aligned with social costs and benefits. (For example, a criminal will wish to be exonerated or receive a lower sentence even when this is socially undesirable. Or a prospective licensee will desire the privilege even if he knows himself to be unqualified.) This case is examined briefly in Kaplow (1994a).

Eligibility for public benefits. There is a substantial volume of adjudication concerned with eligibility for welfare, social insurance, and other public benefits. And in some regimes, notably, in the United States, there has been considerable controversy about the accuracy of proceedings (e.g., whether there should be oral hearings, appeals, and the like). In this context, the value of accuracy arises from providing proper payments to the truly eligible and in denying payments to the ineligible. This value, however, may easily be overstated. One cannot, for example, simply look at the dollar amounts involved. Even for those who are deserving, providing them proper benefits entails a cost -- that of the benefits themselves. Similarly, when giving benefits to the ineligible, there usually is not a complete waste involved. (For example, giving welfare to an individual whose income is just above the eligibility threshold will usually involve valuable redistribution, even if not quite valuable enough to justify the outlay.) Moreover, providing proper benefits often involves distortion (as of work incentives). Nonetheless, accuracy will surely be of some value. One must be careful, however, to measure it by reference to the norms that underlie the relevant benefits program. (Accuracy may also influence the volume of valid and false claims, which will affect administrative costs and the extent to which funds are channeled to the correct individuals.)

There is likely to be an excessive incentive for applicants to expend resources establishing eligibility. In principle, a claimant would be willing to spend up to \$999 to receive \$1,000 in benefits. At the margin, an additional dollar will be spent whenever it will yield more than a dollar in expected benefits. But the social value of the benefits is always lower than this private benefit, for one must subtract the cost of paying for the benefit, which the private party ignores. (Note that this problem is serious even aside from the fact that claimants' expenditures may also impose administrative costs on the other parties, here, the government.) Hence, it will tend to be efficient to adopt procedures that limit even honest claimants' efforts to present entirely valid evidence; in fact, streamlined (and inquisitorial) procedures are often used in these contexts.

These issues are discussed in Kaplow (1994a) and are modeled (for the analogous case of private insurance) in Kaplow (1994b).

Taxation. Expenditures on tax administration and compliance, particularly for income taxes, are enormous. See, e.g., Slemrod (1995), who estimates that the costs for the United States personal income tax are \$75 billion. Greater accuracy would entail additional information reporting and auditing. The benefits, like those in the context of paying public benefits, are subtle. Collecting an additional dollar of tax that is properly due does not involve a social benefit of one dollar, because the cost to the taxpayer reduces social welfare. The objective is to distribute the tax burden optimally while distorting incentives as little as possible. The manner in which accuracy furthers these goals and means of evaluating the resulting benefits are explored Kaplow (1994c, 1996).

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