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Revisiting the Roles of Legal Rules and Tax Rules in Income Redistribution: A Response to Kaplow & Shavell

Ronen Avraham, David Fortus** & Kyle Logue****

INTRODUCTION	1126
I. THE INCOME-DEPENDENT TORT REGIME	1132
A. <i>BACKGROUND</i>	1132
B. <i>MAKING THE EX ANTE ADJUSTMENTS EXPLICIT AND INTRODUCING HETEROGENEITY</i>	1139
II. THE DESIGN OF AN ALTERNATIVE <i>PARETO</i> -IMPROVING TAX	1144
III. RESPONSE TO OBJECTIONS.....	1148
IV. CONCLUSION	1152
APPENDIX	1155

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INTRODUCTION

The debate over whether legal rules should be used to redistribute resources in society or whether redistribution should be left exclusively to the tax-and-transfer system has long occupied philosophers,¹ political theorists,² economists,³ and legal academicians.⁴ For many years, the conventional wisdom on this question among legal scholars seemed to be that blanket generalizations were inappropriate. All systems of redistribution distort individuals' choices and entail administrative costs. Therefore, the argument went, a universal preference for using the tax-and-transfer system to redistribute is not justified. Rather, the choice among institutions to accomplish society's redistributive goals was considered to be "an empirical one which must be resolved on a case-by-case basis, in the light of detailed information about the circumstances likely to influence the effectiveness of each method of redistribution."⁵

At some point, however, a contrary view developed among economists, a view that has become the new conventional wisdom: that income (or wealth) redistribution is *always* better accomplished through the tax-and-transfer system than through the legal system.⁶ One of the arguments traditionally offered to support this view is that redistribution through the legal system is by nature more haphazard (in the sense of less

1. See, e.g., JOHN RAWLS, A THEORY OF JUSTICE 274–80 (1971). Rawls supports a division of labor between what he calls "the basic structure of society" (which includes in particular the tax-and-transfer system) and the rules that apply to particular transactions (which would include the legal system). Anthony T. Kronman, *Contract Law and Distributive Justice*, 89 YALE L.J. 472, 500 (1979–80).

2. See RAWLS, *supra* note 1, at 274–80; see also RONALD DWORCKIN, LAW'S EMPIRE 276–312 (1986) (arguing that the concern of other people's well-being is the responsibility of the government and not of the citizens in their daily transactions utilizing private property).

3. See ROBERT COOTER & THOMAS ULEN, LAW AND ECONOMICS 110–13 (3d ed. 2000).

4. See generally Jennifer Arlen, *Should Defendants' Wealth Matter?*, 21 J. LEGAL STUD. 413 (1992); Thomas Miceli & Kathleen Segerson, *Defining Efficient Care: The Role of Income Redistribution*, 24 J. LEGAL STUD. 189 (1995).

5. See Kronman, *supra* note 1, at 508. Others who have expressed similar views include Guido Calabresi, *The Pointlessness of Pareto: Carrying Coase Further*, 100 YALE L.J. 1211, 1224–25 (1991), and Duncan Kennedy, *Distributive and Paternalist Motives in Contract and Tort Law, with Special Reference to Compulsory Terms and Unequal Bargaining Power*, 41 MD. L. REV. 563, 617 (1982). Some scholars have also opposed redistributive legal rules on the grounds that judges are not competent to make redistributive determinations (whereas the taxing authority is) and that non-redistributive legal rules are more "neutral" and less restrictive of individual liberty. For a response to these arguments, see Kronman, *supra* note 1, at 501–06.

6. See, e.g., A. MITCHELL POLINSKY, AN INTRODUCTION TO LAW AND ECONOMICS 124–27 (2d ed. 1989); Louis Kaplow & Steven Shavell, *Why the Legal System is Less Efficient Than the Income Tax in Redistributing Income*, 23 J. LEGAL STUD. 667, 667 (1994) [hereinafter Kaplow & Shavell, *Efficiency in Redistribution*].

comprehensive and less precise) than redistribution through the tax system.⁷ That is, the tax system can redistribute from all better-off to all worse-off individuals, whereas the legal system can redistribute only from those better off to those worse off who are subject to the legal rule in question. In addition, it was often argued that the legal system's capacity for income redistribution is, in any event, small because redistributive legal rules will be effective only in settings in which the parties are not able to "contract around" the redistributive effect of those rules.⁸ Thus, the argument goes, legal rules can perform a meaningful redistributive function only in situations involving non-contract-based rules, such as tort rules governing the conduct of strangers (that is, individuals not in a contractual relationship with one another).⁹ In general, with some significant qualifications, we agree that the haphazardness and contracting-around arguments provide a basis for generally preferring the tax-and-transfer system as the primary means of reducing income inequality.¹⁰

What is important for this Article, however, is that the debate did not end there. In the mid-1990s, in what has come to be considered a classic article, Louis Kaplow and Steven Shavell made what seemed to be a decisive argument regarding the use of redistributive legal rules.¹¹ They argued that income redistribution is *always* more efficiently accomplished through the tax-and-transfer system, even if the contracting-around and haphazardness issues are placed aside.¹² The Kaplow and Shavell argument consists of several steps. First, they note that any tax on income will distort work incentives, in the sense that individuals subject to an income tax will tend to work less than they would in a no-tax world.¹³ Next, they assert that the work distortion would occur to precisely the same degree whether the new income tax is imposed directly through the tax-and-transfer regime or

7. POLINSKY, *supra* note 6, at 125–27; Kaplow & Shavell, *Efficiency in Redistribution*, *supra* note 6, at 674–75; Chris William Sanchirico, *Deconstructing the New Efficiency Rationale*, 86 CORNELL L. REV. 1003, 1051–56 (2001) [hereinafter Sanchirico, *New Efficiency Rationale*].

8. POLINSKY, *supra* note 6, at 123; Louis Kaplow & Steven Shavell, *Fairness Versus Welfare*, 114 HARV. L. REV. 961, 1126 (2001).

9. POLINSKY, *supra* note 6, at 123.

10. See Kyle Logue & Ronen Avraham, *Redistributing Optimally: Of Tax Rules, Legal Rules, and Insurance*, 56 TAX L. REV. 157, 177–78 (2003).

11. See Kaplow & Shavell, *Efficiency in Redistribution*, *supra* note 6, at 667.

12. *Id.* at 667–68. This argument was first developed in Steven Shavell, *A Note on Efficiency vs. Distributional Equity in Legal Rulemaking: Should Distributional Equity Matter Given Optimal Income Taxation?*, 71 AM. ECON. REV. 414 (1981). Shavell's early work on this topic drew from J. A. Mirrlees, *Optimal Tax Theory*, 6 J. PUB. ECON. 327 (1976). For Kaplow and Shavell's most recent reiteration of their efficiency argument favoring the tax-and-transfer system, see Louis Kaplow & Steven Shavell, *Should Legal Rules Favor the Poor? Clarifying the Role of Legal Rules and the Income Tax in Redistributing Income*, 29 J. LEGAL STUD. 821 (2000) [hereinafter Kaplow & Shavell, *Should Legal Rules Favor the Poor?*].

13. Kaplow & Shavell, *Efficiency in Redistribution*, *supra* note 6, at 667–68.

indirectly through the legal system.¹⁴ Finally, they argue that if a legal rule were made “income dependent” (that is, the rule is designed to diverge from efficiency in order to implement society’s redistributive goals), not only would there be the normal work-leisure distortion associated with any equivalent income tax, but there would also be a distortion in the underlying activity being regulated by the legal rule.¹⁵ For example, if tort law were adjusted so that high-income tort defendants would always pay an extra “tort tax” that poor tort defendants did not have to pay, high-income potential tortfeasors would *both* reduce their work effort by precisely the same amount as they would under a direct income tax (where the legal rule was set to achieve efficiency, holding the amount of revenue collected constant) *and* would take excessive levels of care (owing to the rule’s inefficiency).

In their more formal analysis, Kaplow and Shavell demonstrate that under certain assumptions, it is possible, with respect to any income-dependent legal rule, to design a “simple alternative” legal regime that is independent of income¹⁶ in which all redistribution is accomplished through the tax-and-transfer system, *and* which leaves everyone as well off as under the income-dependent rule. In addition, this regime would produce more revenue for the government.¹⁷ This line of argument produces a powerful conclusion: as a matter of theory, *any* amount of income redistribution—even a single dollar—would *always* be more efficiently

14. Kaplow & Shavell, *Efficiency in Redistribution*, *supra* note 6, at 667–68 (“[U]sing legal rules to redistribute income distorts work incentives fully as much as the income tax system—because the distortion is caused by the redistribution itself—and also creates inefficiencies in the activities regulated by the legal rules.”). Kaplow and Shavell note:

[I]f legal rules disadvantage high-income individuals and help low-income individuals, that will tend to discourage work effort in the same manner and to the same extent as making the income tax system more redistributive. Whether it is the tax collector or the courts that take an additional 1 percent of rich people’s income and give it to the poor, the reward for work by the rich is reduced by 1 percent, so the distortion of work effort will be the same.

Kaplow & Shavell, *Should Legal Rules Favor the Poor?*, *supra* note 12, at 823.

15. Kaplow & Shavell, *Should Legal Rules Favor the Poor?*, *supra* note 12, at 823–24 (“[W]hen inefficient legal rules are employed to redistribute income, there is not only a distortion of work effort; there is also the cost directly associated with the inefficiency of the legal rule (such as insufficient or excessive precaution in to avoid accidents).”).

16. *Id.* at 822.

17. Kaplow and Shavell argue that:

The conclusion is that adopting the efficient legal rule, with an appropriate change in the income tax, leaves all individuals equally well off but leaves the government with a surplus. With this additional revenue, the government can make each individual better off—for example, by lowering taxes . . . by a fixed amount for each individual or spending the funds on a public good that benefits everyone.

Kaplow & Shavell, *Efficiency in Redistribution*, *supra* note 6, at 674 (footnote omitted).

accomplished through the tax system than through the legal system. This is sometimes referred to as the “double-distortion” argument because of the idea that whereas a redistributive tax system produces only one distortion (the distortion of labor decisions), a redistributive legal rule would produce two distortions: the labor distortion and the distortion of the conduct regulated by the legal rule, such as accident avoidance in the case of tort law.¹⁸

This Article elucidates the extent to which this argument is based on implausible assumptions. The Article accomplishes this by first relaxing Kaplow and Shavell’s assumption of homogeneity across victims and injurers (or across taxpayers); that is, it introduces the possibility of heterogeneity within the population with regard to skill in “taking care” to avoid accidents *and* with regard to ability to generate income. Second, and more importantly, we relax the assumption on which Kaplow and Shavell critically rely, that the social planner—the one seeking both to deter accidents and redistribute income—has complete information.

We are not the first scholars to point out the importance of the homogeneity assumption to Kaplow and Shavell’s analysis. Professor Chris Sanchirico did it before us, and Kaplow and Shavell have defended their conclusion notwithstanding this critique.¹⁹ We find it important, nevertheless, to discuss heterogeneity for several reasons. First, this Article presents the idea in a way that is accessible to legal economists with no formal background in economics. Second, it presents a more complete picture of the *ex ante* adjustments that will be made by individuals (differing both in their care-taking skill and their ability to generate income) when they face an income-dependent legal regime. These *ex ante* adjustments are

18. As Kaplow and Shavell put it, “even though the income tax distorts work incentives, any regime with an inefficient legal rule can be replaced by a regime with an efficient legal rule and a modified income tax system designed so that every person is made better off.” Kaplow & Shavell, *Efficiency in Redistribution*, *supra* note 6, at 669. Our main point ultimately is that Kaplow and Shavell’s double-distortion argument explicitly assumes away differential administrative costs. They even contend that redistributive legal rules are probably more costly to administer than the alternative. *Id.* at 674 n.12. It is our sense that Kaplow and Shavell’s basic double-distortion argument has become the new conventional wisdom with respect to the use of redistributive legal rules. It also should be noted, however, that Kaplow and Shavell discuss other arguments against the use of redistributive legal rules, such as the haphazardness problem and the contracting-around problem, discussed in the text above. In a separate article, two of us provide a fuller account of, as well as a number of responses to, those problems. See Logue & Avraham, *supra* note 10. In this Article, however, we focus exclusively on the validity of Kaplow and Shavell’s core efficiency argument, which does not depend on either the haphazardness or the contracting-around arguments.

19. In two recent papers Professor Sanchirico launches his own attack on Kaplow and Shavell’s double-distortion argument. See generally Sanchirico, *New Efficiency Rationale*, *supra* note 7; Chris Sanchirico, *Taxes Versus Legal Rules as Instruments for Equity: A More Equitable View*, 29 J. LEGAL STUD. 797 (2000). In both of these articles, Sanchirico discusses the importance of Kaplow and Shavell’s assumption of homogeneity. For Kaplow and Shavell’s response, see Kaplow & Shavell, *Should Legal Rules Favor the Poor?*, *supra* note 12, at 822–35.

not salient in Kaplow and Shavell's analysis—a fact that has caused confusion. Third, highlighting the heterogeneity observation as well as the ex ante-adjustments observation allows this Article to make its most important point: under Kaplow and Shavell's modified tax-and-transfer regime, the policy maker would face an enormous informational burden. The main claim of this Article, simply put, is that in light of the heterogeneity of individuals and in light of their ex ante behavioral adjustments, Kaplow and Shavell's theoretical model of a tax-and-transfer alternative to redistributive legal rules is no longer simple. To the contrary, it is virtually impossible to implement.²⁰

As argued at length below, under an income-dependent tort rule, wealthy potential tortfeasors can reduce their overall tort liability either by changing their work effort, by changing their engagement in the regulated activity (such as by decreasing or increasing their level of care), or, most likely, by doing some of both (adjusting both their work effort and the regulated activity). Thus, in a sense, the income-dependent tort rule gives wealthy potential tortfeasors *two degrees of freedom*, whereas the income-independent regime gives them only one. This Article argues that, given individuals' different care-taking skills *and* abilities to generate income, with the introduction of an income-dependent tort regime, there is no simple way to determine the amount of work and the amount of care-level investments for every individual. For example, Kaplow and Shavell argue that an income-dependent tort rule, which sets “damages higher when the injurer is wealthy and lower when the injurer is poor[,] . . . would induce the wealthy to take more care and the poor to take less care than is efficient.”²¹ In contrast, this Article demonstrates that when making the ex ante adjustment explicit, one might well conclude that rich injurers might still take insufficient care.

Kaplow and Shavell would presumably respond that whatever combination of changes in work activity and care-level investments occurred, it would still be possible to construct a tax-and-transfer regime (along with an efficient, income-independent tort rule) that would leave everyone at

20. In one of his arguments critiquing Kaplow and Shavell's thesis, Sanchirico makes an argument that comes close to ours. He seems to criticize Kaplow and Shavell for ignoring individuals' adjustments in both their work and precautionary efforts. See Sanchirico, *New Efficiency Rationale*, *supra* note 7, at 1073 (“As is appropriate in calculating these ‘before-versus-after’ gains and losses, *after* means not only after the rule change but also after individuals' consequent behavioral adjustments.”). However, it is not clear what Sanchirico makes out of this observation. He mentions it in passing to support another of his critiques of the double-distortion argument. Our analysis, in contrast, shows precisely how the behavior of the potential injurer will change under an income-dependent tort regime. In addition, Sanchirico does not discuss the high informational burden Kaplow and Shavell's alternative regime would impose on the taxing authority. We provide a detailed account of this critical informational burden in this Article and explain why it undermines the strongest version of the double-distortion point.

21. Kaplow & Shavell, *Efficiency in Redistribution*, *supra* note 6, at 669.

least as well off and would save resources for the efficient tort rule in its place. However, there are only two ways of constructing such a regime, neither of which provides a satisfactory answer. First, it would be possible to construct a *general* tax-and-transfer regime, a regime that applies the same tax function to all people at the same level of income. Such a regime, however, would be a *Pareto superior* regime only if we assume that all individuals are identical in every way except for differences in income—that is, only if all individuals are homogeneous. Even then, however, as this Article demonstrates below, the amount of information needed to construct such a *Pareto superior* regime is prohibitively large. In any case, once the fact that individuals are heterogeneous at given levels of income is taken into account, Kaplow and Shavell's results do not apply. And individuals almost certainly *are* heterogeneous at given levels of income both in their ability to generate income and in their skill in taking care. For example, individuals at a given level of income have different capacities for avoiding accidents and have different work/leisure tradeoffs. Thus, under Kaplow and Shavell's model, it becomes impossible to construct a general *Pareto superior* tax-and-transfer regime that leaves everyone as well off and saves resources.²²

There is a second way, however, of constructing a *Pareto superior* tax-and-transfer regime. Under the assumption of heterogeneous individuals within income groups, it would be possible in theory to construct a regime that has a *tailored* tax function for each individual. As this Article establishes below, however, such a regime would require the policymaker (in particular, the taxing authority) to have an enormous amount of information about each taxpayer. To take the tort tax example again, the taxing authority would need to know not only each individual's income level but also how much she has invested in accident avoidance, how much harm she has caused, and how accident-prone she is. Thus, this Article argues that what Kaplow and Shavell call a "simple alternative" is in practice (especially once their simplifying assumptions are relaxed) impossible to implement. It is disadvantageous not because of political impediments to modifying the tax

22. In their debate, both Kaplow and Shavell on the one hand and Sanchirico on the other seem to focus only on the issue of heterogeneity in care-taking skills. Kaplow & Shavell, *Should Legal Rules Favor the Poor?*, *supra* note 12, at 827–32. Remarkably, Kaplow and Shavell in a footnote explicitly admit that "in practice" their alternative *Pareto superior* regime is not *Pareto superior* at all. Specifically, they argue that "[i]n practice, redistribution through the income tax rather than through legal rules would not literally make everyone better off. Inevitably, some would gain more than others and a few might lose." Kaplow & Shavell, *Efficiency in Redistribution*, *supra* note 6, at 674 n.7. Nevertheless, they go on to argue that "[f]or reasons noted in Section II(a) one might expect legal rules to fare worse" than tax rules. *Id.* A glance at Section II(a) reveals that the main reasons are the contracting-around and the haphazardness arguments. *Id.* at 674–76. As we explained at length elsewhere, we largely agree that the haphazardness and the contracting-around arguments, though not the double-distortion argument, can serve as the basis for generally preferring the tax system over legal rules as the main (though perhaps not the sole) system for income redistribution. See Logue & Avraham, *supra* note 10, at 173–201.

code,²³ or because of individuals' behavioral quirks,²⁴ as some have argued, but rather because of the informational burden it imposes on the taxing authority.²⁵

Part I presents a number of graphs that compare the income-dependent with the income-independent legal regimes, and it highlights the exact ex ante adjustments that individuals will make once faced with taxation, whether a tort tax or income tax. Part II uses the graphs presented in Part I to reveal the informational burden the social planner faces when designing an alternative tax regime that meets Kaplow and Shavell's standards. Part III responds to possible objections to our argument, and Part IV concludes.

I. THE INCOME-DEPENDENT TORT REGIME

A. BACKGROUND

The purpose of this analysis, again, is to compare the overall efficiency of two types of regimes: a regime in which legal rules are *income independent* (in which all redistribution, if any, is accomplished through the tax-and-transfer system); and a regime in which legal rules are *income dependent* (set to redistribute from the rich to the poor). In keeping with the recent literature on redistributive legal rules, this Article makes this comparison using the example of tort rules coupled with an income tax.²⁶ To make the analysis manageable, we make a series of simplifying assumptions about individual taxpayers' tort characteristics and about accidents in general. These assumptions are borrowed from standard efficiency analyses of

23. See Logue & Avraham, *supra* note 10, at 252–57.

24. Christine Jolls, *Behavioral Economic Analysis of Redistributive Legal Rules*, 51 VAND. L. REV. 1653, 1656 (1998).

25. This fact is well known in the economics literature from which Kaplow and Shavell's analysis is drawn. For example, Mirrlees notes that “[t]here is no way of obtaining the information about individuals that is required [for making perfectly tailored transfers] except in a society of individuals who are truthful regardless of selfish considerations.” J. A. Mirrlees, *The Optimal Taxation*, in 3 HANDBOOK OF MATHEMATICAL ECONOMICS 1197, 1198 (1986).

26. In keeping with the literature on this subject, we focus on case-specific and not class-based redistributive rules. For an analysis of that distinction, see Logue & Avraham, *supra* note 10, at 182–83. It is somewhat difficult to determine precisely what Kaplow and Shavell's position is on the choice between class-based and case-specific redistributive rules. On the one hand, when they discuss the issue in general, they seem to deal with class-based redistributive rules. Yet in their “analysis” section, they use rules that are case-specific, in that each individual subject to the rule is supposed to pay (or receive) tort damages in accordance with the difference between his and some arbitrary cutoff income. Kaplow & Shavell, *Efficiency in Redistribution*, *supra* note 6, at 677. Sanchirico, too, is somewhat hard to pin down on this point. In one place he seems to endorse case-specific redistributive rules. In his view, “specific conditioning [of the redistributive legal rules] on the observable economic attributes of the particular parties before the court is actually welfare-improving.” Sanchirico, *New Efficiency Rationale*, *supra* note 7, at 1011. Elsewhere, however, he suggests that class-based rules are what he has in mind. *Id.* at 1027–28.

liability rules.²⁷ First, taxpayers are divided into potential injurers and potential victims, assuming that injurers can never be victims, and vice versa. We also assume that all accidents are “unilateral” in the sense that victims can do nothing to affect accident costs, that all accidents are of fixed severity (so that a potential injurer’s level of precautions can affect only an accident’s probability), and that the probability of accidents is affected only by injurers’ care-level investments (and not by changes in activity levels). In addition, a rule of strict liability is assumed. As is conventional in the literature on optimal taxation, this Article assumes that the government can observe only the general distributions of ability to generate income and of skill in taking care to avoid accidents; therefore, it assumes that the government cannot observe these characteristics on an individual, person-by-person, basis.²⁸

We begin our analysis a moment before the tort tax is imposed. Thus, assume that all tort rules are initially income-independent—that is, they are set only to achieve optimal injurer precautions. Under an income-independent tort regime, the tradeoff between labor and leisure is entirely independent of the legal rule chosen. In such a world, if there were no income tax, the individual would make work decisions that maximize her money plus psychic (leisure) income. However, when an income tax is added to this picture (which, by definition, is independent of the tort regime), individuals will have an incentive to substitute away from work and towards leisure.²⁹ This is the standard work-leisure distortion that economists associate with the introduction of an income tax. These observations are illustrated in the following charts.

27. These are “homogenizing” assumptions. Abandoning them would not affect our conclusions; it would just make their demonstration more complex.

28. See, e.g., Shavell, *supra* note 12, at 414–15 (making the same assumption). By observing just the general distributions of these characteristics, the government is able to design only general tax schemes to be implemented by either the IRS or by the courts. See *infra* text following note 53 for details.

29. In keeping with Kaplow and Shavell’s analysis, we do not consider the possibility of abolishing the income tax altogether, but consider instead only the question of whether to supplement the income tax with redistributive legal rules on the margin.

Charts 1a & 1b: The Potential Injurer's Choices Under an Income-Independent Tort Regime

Chart 1a

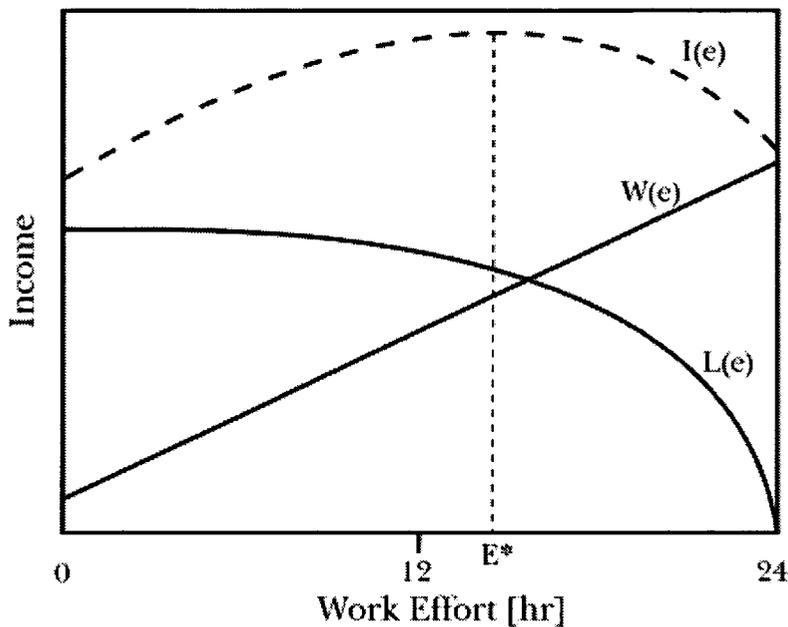


Chart 1b

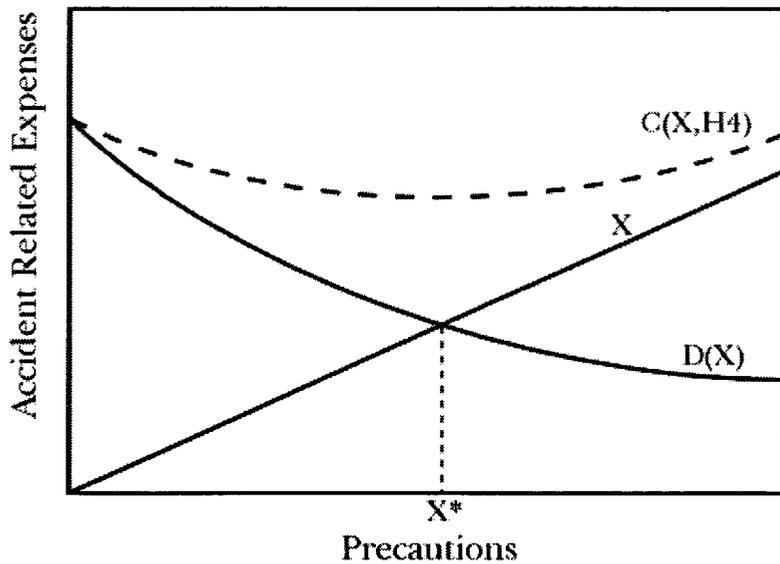


Chart 1a illustrates a potential injurer's *work/leisure* choices under an income-independent tort regime. We initially assume a flat tax on money income. The line denoted $W(e)$ represents the individual's money income (after the flat tax) as a function of her work effort measured in hours. Obviously, as work effort increases, income increases. The line in Chart 1a denoted $L(e)$ represents the individual's psychic (or leisure) income as a function of her leisure hours. Thus, under this model, the potential injurer can spend her time in two types of activities: work or the catch-all category, leisure. Thus, the more she works, the less time there is for leisure.³⁰ The line denoted $I(E)$ is the individual's total income: the sum of her money income and psychic (leisure) income. When choosing between work and leisure, therefore, the individual will seek to maximize her total income. This maximization problem is commonly called the work-leisure tradeoff. In Chart 1a, the point of maximization is denoted by E^* .

Chart 1b shows the same individual's *safety* choices with respect to the "regulated activity" in question; that is, the activity in which the individual may cause harm for which she is then held liable in tort. Again, we assume here a rule of strict liability, such that all injurers will be held liable for the full costs of any harm that they cause to third parties. The line denoted X represents the costs of accident avoidance (or safety costs) incurred by the potential injurer as a function of the amount of precaution she takes. The idea, put simply, is that precautions cost money; thus, the upward slope implies only that increasing amounts of investments in precaution require increasing amounts of sacrifice (assumed to be at a constant rate). The line denoted $D(x)$ represents the expected damages to third parties that the potential injurer expects to be liable for at any given level of precaution taken. In sum, the more precaution she takes, the more she spends on accident avoidance (X slopes upward). However, as she spends more on accident avoidance, the lower her expected tort damage ($D(x)$ slopes downward).³¹ The line denoted $C(X,H_4)$ is, therefore, the *total cost of*

30. For simplicity, following Kaplow and Shavell's approach, we assume, somewhat unrealistically, that the income function is linear with respect to work effort and that the tax is proportional or flat. Observe that $W(e)$ does not start from the origin. This is because some people—the unemployed, for example—receive money income even when they do not work. Our psychic income curve, however, is not linear. We make this adjustment to avoid the following problem. If both the work income and the psychic income curves are assumed to be linear, the individual will end up in a corner solution, choosing to spend either all her twenty-four hours working or all of them in leisure, depending on which activity gives her the higher (constant) marginal utility. *But see* Kaplow & Shavell, *Efficiency in Redistribution*, *supra* note 6, at 677 (applying linear work and psychic income functions).

31. The shape of the $D(x)$ curve assumes diminishing marginal damages per unit of precautions taken. Stated more technically, the expected harm function is convex, representing the fact that the probability of accidents, $P(X)$, is indeed a decreasing function of the level of precautions taken, yet in a diminishing manner. ($P' < 0$, $P'' > 0$). This assumption is standard in the deterrence literature. *See, e.g.*, STEVEN SHAVELL, *ECONOMIC ANALYSIS OF ACCIDENT LAW* 34–36 (1987).

accidents, with each point on the curve representing, for that level of precaution as well as for the fixed harm arbitrarily denoted H_4 the sum of the costs-of-precaution and the expected damages paid to third parties.³² If we ignore the work-leisure tradeoff for now on the current assumption that tort rules are independent of income, the individual will seek to minimize her total cost of accidents. Thus, there is a precautions-harm tradeoff that is analogous to the work-leisure tradeoff. On Chart 1b, that minimization point is denoted X^* .

To summarize, moments before the tort tax is introduced, still under an income-independent tort regime, the potential injurer is assumed to make two independent choices: how many hours to work, and how many safety precautions to take. Presumably, under the current assumptions, she would choose E^* and X^* .

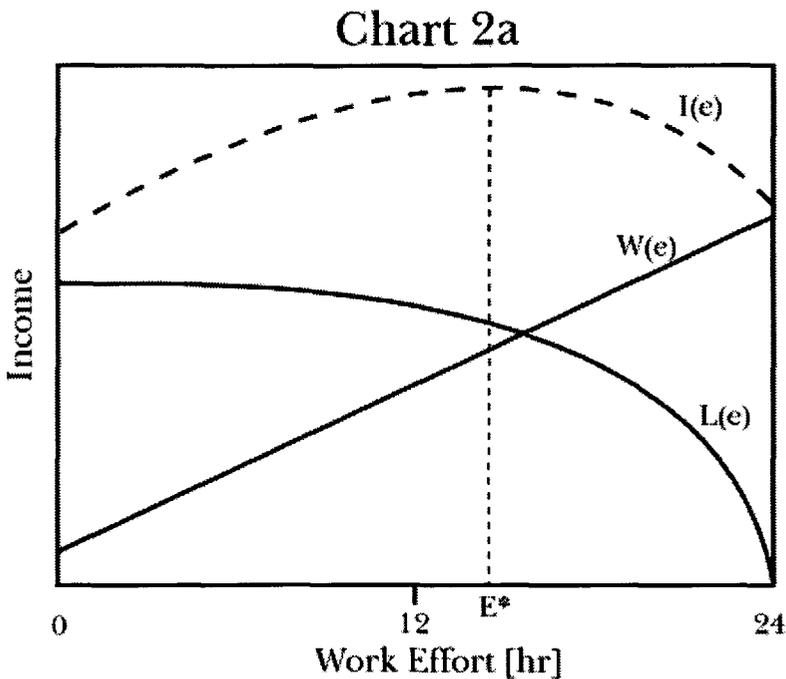
Next, consider what happens if the policymaker decides to achieve an additional amount of redistribution, not through the tax system, but through the legal system. Specifically, imagine that the policymaker chooses to adopt an income-*dependent* tort regime. Again, we are assuming, for simplicity, that the tort regime in effect is a strict-liability regime, under which injurers are required to pay damages for all harm caused to third parties. Recall that under the income-independent tort regime, such a rule gives potential injurers the incentive to invest efficiently (from a societal perspective) in accident precautions. Now, under an income-dependent strict-liability regime, the tort damages that an injurer must pay are made a function of the injurer's income level. For example, a wealthy tort defendant who is found to have caused an injury to some third party would be required to pay tort damages in excess of the harm caused. In contrast, a poor, but liable, tort defendant would be allowed to pay less than the harm caused.³³

32. For reasons that will be clear below, we arbitrarily denote the fixed level of harm to be H_4 .

33. As in Kaplow and Shavell's model, our hypothetical tort tax is a function of the difference between the tortfeasor's income and some arbitrary cutoff income. To demonstrate the complexity of taking into account ex ante adjustments to the legal rules, we implement a simple "tort tax" that is equal to 1% of the difference between the tortfeasor's income and an arbitrary cutoff income of \$30,000. Thus, tortfeasors who earn \$100,000 will, if they are held liable, pay a positive tort tax of \$700, whereas those who earn \$0 will pay a negative tort tax (i.e. receive a transfer) of \$300, with a linear relationship for intermediate incomes. Kaplow and Shavell demonstrated the consequences of collecting and redistributing some function of the difference between individual income and a cutoff income of \$33,333, also in the range of incomes \$0 to \$100,000. Kaplow & Shavell, *Efficiency in Redistribution*, *supra* note 6, at 669–71. However, Kaplow and Shavell assumed that after individuals made their adjustments to the legal rule—both in their work-leisure decision and in their care level decisions—the redistributive scheme would be linear. What is hidden in the Kaplow and Shavell analysis is the complex tax function needed to get the linear ex ante adjustments scheme. *Id.* Our Appendix demonstrates how we modeled the tort tax. The way we chose to model the tort tax, as well as the choice of numbers, is arbitrary and does not influence the qualitative results of our paper. Thus, our tort tax model is, in principle, identical to the model used by Kaplow and Shavell with one major difference: no hidden steps.

The general thrust of Kaplow and Shavell's argument is that redistributing through a legal rule (or making the legal rule income-dependent) is less efficient than redistributing precisely the same amount directly through the tax system (and keeping legal rules income-independent). This is because the former produces two non-offsetting distortions (the work-leisure distortion plus the regulated-activity distortion), whereas the latter produces only one distortion (the work-leisure distortion).³⁴ Charts 2a and 2b are the first steps in our explanation of how individuals would respond to an income-dependent tort regime.

**Charts 2a & 2b: Individuals' Choices in the Income-Dependent World
(The Double-Distortion Argument)**



34. For a short reference to the non-offsetting distortions issue, see Kaplow & Shavell, *Should Legal Rules Favor the Poor?*, *supra* note 12, at 824 n.5.

Chart 2b

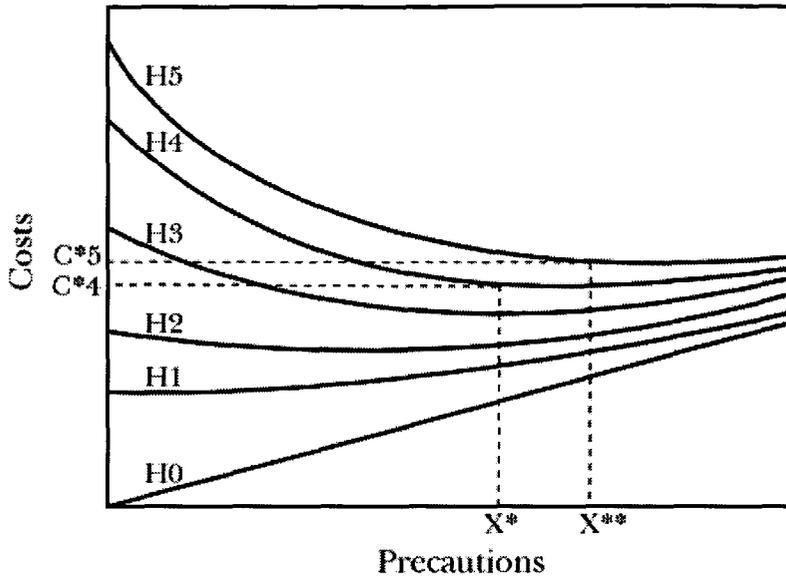


Chart 2a shows the potential injurer's work-leisure choices under the income-dependent, strict liability tort regime. Curve $I(e)$, the total income curve, was copied directly from Chart 1a above, on the assumption that the income tax has not changed. Chart 2b is somewhat different than Chart 1b above, however. Chart 2b presents a map of all the *possible* total-accident-cost functions (the C curves), which are functions that include precaution costs plus expected damages paid to third parties at each level of precaution taken (represented by X), all as a function of the different levels of fixed harms H_0 to H_5 . One way to understand this map of total-accident-cost functions is to imagine that each cost function (each line on the chart) corresponds to a different type of risk and that each risk has a different potential maximum (fixed) harm.³⁵ Under the previous income-independent tort regime, we arbitrarily assumed that the fix harm was H_4 ; here we show the cost functions, C , for both smaller (H_0 to H_3) and larger (H_5) harms.

Notice that total-accident-cost curves H_0 through H_5 entail widely different total accident costs at low or zero levels of precaution expenditures. Thus, if the individual expends no effort or money to prevent accidents of any kind, there are a number of different types of risks that might materialize, each with a different magnitude of fixed harm. Note,

35. Recall our assumption that the harm is fixed, and thus, precautions taken by a potential tortfeasor can only influence the probability of accident. See *supra* text accompanying notes 27–28.

however, that as the individual increases her precaution expenditures, all of the lines begin to converge. The intuition there is that as precaution investments increase, the probability (and hence the expected value) of damages paid to third parties *decreases*. Therefore, once the probability of harm has fallen sufficiently low, the total-accident-cost curve for all types of harms will be solely a function of the precaution expenses.³⁶

Now we can start putting Kaplow and Shavell's double-distortion insight into our framework. Recall that under an income-dependent tort regime, a wealthy injurer's tort damages are set higher than the victim's loss in order to introduce a redistributive component to the legal rule. The ex ante effect of this adjustment from the wealthy *potential* injurer's perspective is that conditioned on being involved in an accident, she now faces a higher total-accident-cost function.³⁷ For example, in Chart 2b above, when a redistributive legal rule is introduced, the potential injurer no longer faces the total-accident-cost function represented by curve H4; rather, she now faces H5. As a result, the potential injurer will no longer choose X*, which corresponded to the total-accident-cost minimizing point prior to the rule change, C*4, when the relevant curve was H4. She will instead choose a higher level of precautions, perhaps X**, corresponding to the new cost minimizing point, C*5, on the new total-accident-cost curve, H5.³⁸

It is important to observe that this is not the end of the story, as our next section explains.

B. MAKING THE EX ANTE ADJUSTMENTS EXPLICIT AND INTRODUCING HETEROGENEITY

This section offers a description of how one would expect a potential injurer to adjust ex ante to the introduction of such a rule. We argue that in order to minimize her overall total-accident-cost function (which, under an income-dependent tort regime, is now a function of her after-tax income, as well as her precaution costs and residual expected harm), the potential injurer would make ex ante adjustments along both the work-leisure dimension and the precaution-cost dimension. In particular, we

36. One might wonder why, for some types of risk, the total-accident-cost curve is a straight line even at low levels of precaution. See line H0 in the chart. This line merely represents a type of risk (which if materialize causes a fixed harm of zero) for which the optimal care level is zero. Indeed, as can be seen in the chart, the total cost minimizing point for H0 is the origin.

37. The same type of an analysis would apply to a poor potential injurer who would now face a lower total-accident-cost function.

38. The higher total-accident-cost curve the potential injurer faces under the income-dependent tort regime is the point of divergence between the private problem the injurer faces (minimizing *her* total private expenditures) and the social problem the social planner faces (minimizing the total social accident costs). Indeed, as Kaplow and Shavell argue, choosing X** is, despite being privately optimal, socially inefficient. The socially optimal level of care, the one that minimizes total social costs, is still X*, as it was before.

demonstrate that the potential injurer may indeed (as the Kaplow and Shavell paradigmatic example assumes) take more than the efficient level of care (greater than X^*), but that she may also take insufficient care (less than X^*). Chart 3 is the first step in this explanation.

Chart 3: The Privately Optimal Accident Costs, C^* , as a Function of Harm Faced by the Injurer

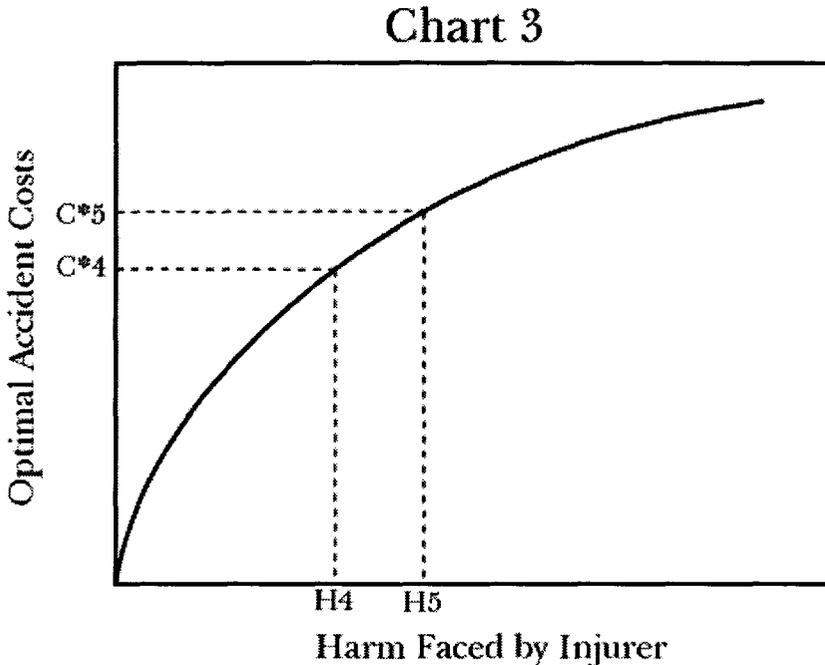


Chart 3, which is derived from Chart 2b, depicts a curve that consists of all of the potential injurer's total-accident-cost minimizing points for all of the various potential harms threatened. Thus, the values C^*4 and C^*5 , which were copied from chart 2b, represent the total-accident-cost minimizing values for the total-accident-cost functions C_4 and C_5 , respectively.³⁹ Next, to be able to see how the accident-cost-minimizing decision will interact with the work-leisure decision, we need to superimpose Chart 3 of total-accident-cost minimizing points onto the graph of the work-

39. Note the change of axes. To understand why this curve has this particular curvature, first notice that, for an extremely low level of harm, say H_0 , the optimal level of care is indeed zero. See *supra* note 30. Second, observe that the graph is concave, representing the facts that (a) the higher the level of maximum harm threatened, the higher the optimal level of accident costs, C^* ; and (b) the optimal level of costs increases in a diminishing way with harm. That this function is concave can be proved more formally by the envelope theorem.

leisure tradeoff shown in Chart 2a above. Unfortunately, these two graphs (the total-accident-cost minimizing points and the work-leisure tradeoff) have different X-axes: harm faced by injurer (in dollars) and work effort (in hours), respectively. As a result, two transformations to Chart 3 above are required in order to be able to present them together. In the Appendix, we show the transformations needed to get to Chart 5 below. Thus, Chart 5 presents the work-leisure and the accident-cost-minimizing decisions a potential tortfeasor faces *ex ante* under the *income-dependent* tort regime.

Chart 5: The Total-Accident-Cost Minimizing Points and the Optimal Work-Leisure Tradeoff, as a Function Of Effort ⁴⁰

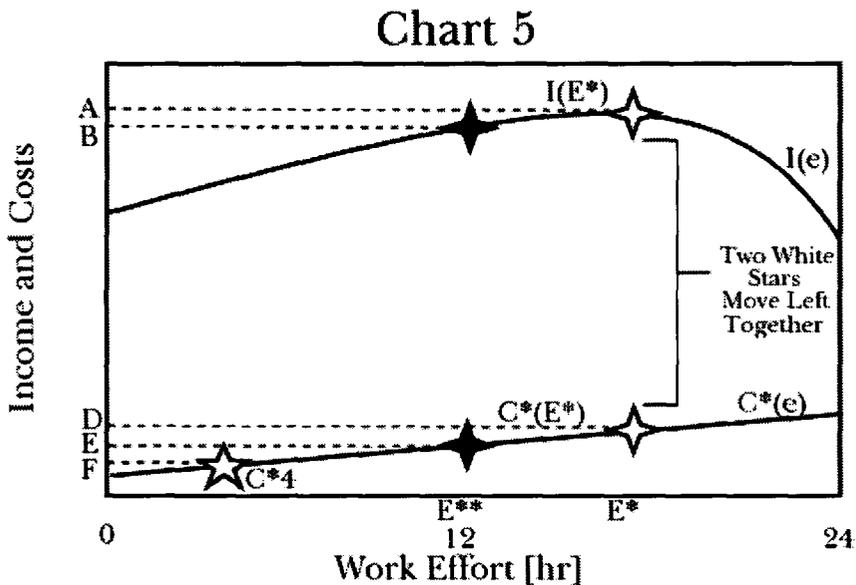


Chart 5 is composed of two curves. As before, line $I(e)$, taken from Chart 1a above, is the total after-tax money income plus psychic income *before* the policy maker imposes the new income tax. Line $C^*(e)$ is the collection of total-accident-cost minimizing points as a function of effort. This curve is copied from Chart 4b in the Appendix and represents the privately optimal accident costs under the income-dependent tort regime. It is a transformation of the total-accident-cost minimizing points, C^* from Chart 3 above, to a representation that is a function of work effort rather

40. Chart 5 assumes that E^* is to the right of C^*4 . This need not necessarily be the case. We will comment in the following footnotes how the analysis changes when E^* is to the left of C^*4 .

than of harm.⁴¹ What Chart 5 demonstrates is the more complicated set of ex ante optimization decisions that the potential injurer faces. Specifically, the potential injurer will, under this model, choose a level of work effort and accident precautions that maximizes the difference between her after-tax money income and psychic income on the one side and accident costs on the other. This individually optimal solution for the potential injurer will occur at a level of work effort and accident precautions that maximizes the vertical distance between $I(e)$ and $C^*(e)$ in Chart 5.

To see how this process might work, consider how the various ex ante incentives might interact with each other. Imagine first that the potential injurer starts at point E^* , taken from Chart 1a above. At this point, her work-leisure tradeoff would have been optimized just before the introduction of the new tort tax (that is, just before the tort rule was made income dependent, her total after tax income, including psychic income, would have been $I(E^*)$). Recall that her socially optimal level of precautions was at C^*4 , corresponding to the H4 level of fixed harm that we arbitrarily assumed under the income-independent tort regime.

Now we demonstrate what happens when an income-dependent tort tax is introduced. For methodological reasons we first assume that when the new tort tax is introduced, the potential injurer cannot change her work effort. In that case, the potential tortfeasor would have an incentive to increase her accident-prevention investments, moving to point $C^*(E^*)$ in Chart 5.⁴² At that temporary point, her net gain would be equal to the vertical distance between A and D.

The potential injurer, however, would not stay at that point for long. Relaxing now the assumption that she cannot change her work effort, we observe that the potential injurer, knowing the relationship between work effort and total-accident-costs, would also reduce her work effort in order to reduce her income-dependent tort liability. Specifically, she would presumably settle on the level of work effort *plus* accident precautions that would also maximize her total after-tax money income, plus psychic income, minus her accident costs. Put differently, the potential tortfeasor realizes that if she reduces her work effort, it would also reduce her tort liability, moving her simultaneously to the left on curves $C^*(e)$ and $I(e)$. The

41. The reader might wonder why $C^*(e)$ looks flatter when depicted in Chart 5 than when it was depicted in Chart 4b in the Appendix. The reason lies in the different scales of the two charts. Recall that Chart 4b depicts changes ranging from a negative income tax of \$300 (to those who earn \$0) to a positive income tax of \$700 (from those who earn \$100,000). When compared to the possible annual incomes, which can be more than ten times larger in magnitude, the $C^*(e)$ curve looks flat. Again, $C^*(e)$ is exactly copied from Chart 4(b), but normalized for a different scale; thus it looks flat, but is not really so.

42. Recall that in our model the tort tax is represented by the injurer facing a larger than the H4 level of fixed harm. That move, of course, can be thought of as part of the double-distortion that Kaplow and Shavell complain of: the "overinvestment" in accident precautions. See *supra* note 15 and accompanying text.

intuition behind this result is that the more the individual reduces her after-tax money income by working less, the less will be her incentive to invest (or overinvest) in safety, because less income is at stake. This is why working less hours causes both white stars at Chart 5 to move left together.

The main issue is whether by working less than E^* , the potential injurer gains more by having less tort-related expenditures than she loses by having less total net income. The answer is always yes. To see this point, observe that when we start to move to the left along the total income curve, $I(e)$, the individual makes less net total income. However, as is true at the optimum E^* , the slope remains, by definition, zero. Thus, at least for the first infinitesimal step, she does not lose any total income at all. In contrast, when we make the same infinitesimal step to the left on the optimal accident costs curve, $C^*(e)$, because the slope is always positive, the injurer necessarily incurs less tort-related expenditures. Again, under the income-dependent tort regime, the two white stars move left together because working fewer hours causes the potential tortfeasor to earn less income. Since less income is at stake, however, there is an incentive to take fewer precautions. Thus, when the injurer works less she gains more than she loses, at least for the first infinitesimal step. This "slopes advantage" remains up to the point where both curves have the same slopes, at which point the individual should stop reducing her amount of work. Continuing to reduce the amount of work will make her lose more in total net income than she earns by having to pay lower tort costs.

In Chart 5 the gain-maximizing point is represented by the two black stars, and the net gain is represented by the vertical distance BE (which is larger than the vertical distance AD). In general, however, the point where the slopes of both curves are equal (which is the point where the individual will stop reducing her work effort) could fall anywhere to the left of E^* .

Our analysis differs from that of Kaplow and Shavell's paradigmatic example in the following way: according to our analysis, under the income-dependent tort regime, the point where both curves' slopes are equal (which is the point where the individual will stop reducing her work effort) could fall *anywhere* to the left of E^* . Recall that Kaplow and Shavell argue that under *income-dependent* tort regimes rich tortfeasors will take excessive care. Our analysis, by contrast, shows that in general, different potential tortfeasors will make choices that might fall to the left of C^* .⁴³ This means that they might take *insufficient* care rather than excessive care.⁴³ More

43. This result is not necessarily robust in more general models. As mentioned above, Kaplow and Shavell seem generally to recognize the fact that people make ex ante adjustments. They claim in passing that "when an individual with income contemplates earning additional income by working harder, his total marginal expected payments equal the sum of his marginal tax payment and the expected marginal cost on account of accidents." Kaplow & Shavell, *Efficiency in Redistribution*, *supra* note 6, at 671. They do not, however, explain why this statement is true. It is interesting to observe that whenever the individual's ex ante adjustments make her

importantly, as different individuals have different capacities to generate income as well as different skill in taking care, different individuals will have different ending points that maximize their total net gain.

II. THE DESIGN OF AN ALTERNATIVE *PARETO*-IMPROVING TAX

The more general claim that Kaplow and Shavell make is that they can replace any income-dependent legal rule with a modified income tax that will make everyone better off.⁴⁴ In the previous Part we argued that Kaplow and Shavell's analysis was not clear as to the exact way in which potential tortfeasors would make their adjustments along the two margins. It follows, then, that an untailed income tax regime may only coincidentally be equivalent, for some potential tortfeasor, to the income-dependent tort regime; yet for most potential tortfeasors, this will not be the case. Some potential tortfeasors will work more and some will work less than others; some will take excessive care and others insufficient care.

As we mentioned above, Kaplow and Shavell might also argue that it is possible to construct an individually tailored tax rule that will make every single individual indifferent between the two regimes. Although we agree with this claim in theory, we argue that the informational burden imposed on the tax-and-transfer system makes the claim impossible to implement. The formidable informational burden is not salient in Kaplow and Shavell's non-formal analysis for two distinct reasons. First, they assumed homogeneity among individuals. Second, they did not fully develop the way in which potential tortfeasors would make their *ex ante* adjustments, as we did above. Notwithstanding Kaplow and Shavell's claim that their scheme is "simple," we disagree. Charts 6a and 6b help present our point.⁴⁵

First, consider what happens if the policymaker decides to increase *in general* the amount of income redistribution in the tax system. Under the current assumption that the tort system is independent of income, such a redistributive policy decision must be implemented through the tax system. Thus, the income tax, which is still assumed to be flat, is made somewhat greater. The result is that the individual now will expect to earn less money for each hour worked prior to the new tax, and therefore, will tend to work

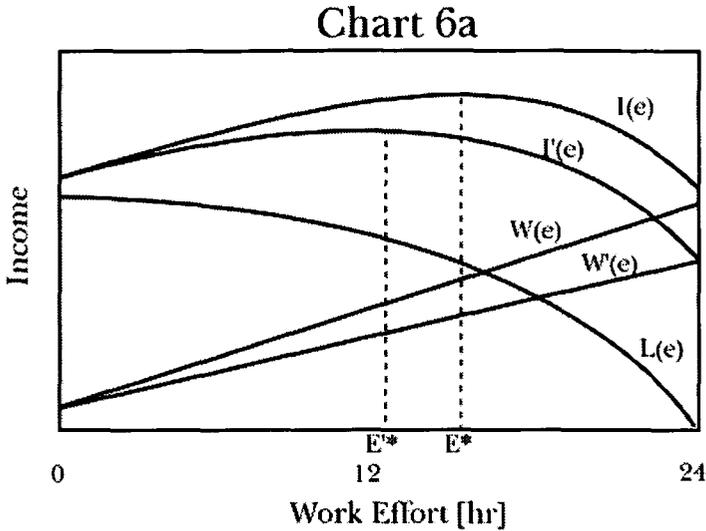
fall to the left of C*4, there is a potential that she would be better off than before (even before the new tax was imposed). Specifically, it well may be that BE (representing the net gain after the potential tortfeasor made her adjustments towards the new tort tax) will be larger than AF (which represents the individual net income before the new tax was imposed at all). This does not strike us as counterintuitive because this potential tortfeasor is a "winner" in this particular example. After all, that is why we have a redistributive tax system: to make some people worse off and others better off than before the tax was imposed.

44. See *supra* text accompanying notes 11–18.

45. Interestingly, the formal analysis in Kaplow and Shavell's Appendix, in contrast, makes it very clear that the informational burden on the tax authorities is extraordinary (see their equation A3). Kaplow & Shavell, *Efficiency in Redistribution*, *supra* note 6, at 678. However, as far as we can discern, this point has escaped academic scrutiny.

less. This is the traditional work distortion associated with an income tax.⁴⁶ Chart 6a represents this substitution effect graphically.

Chart 6a: The Work Distortion Associated with the Income Tax in an Income-Independent World



This chart shows the individual's work-leisure choices with the introduction of the new income tax. Specifically, $W'(e)$ represents the new after-tax work income, and the dotted line $I'(e)$ represents the sum of after-tax work income and psychic income.⁴⁷ As Chart 6a shows, the individual will choose to work fewer hours than she worked before; that is, she shifts from E^* to E'^* . In sum, imposing a new tax on income in a world in which tort rules and tort damages are income-independent induces a substitution away from work and towards leisure, whereas there is no change in the individual's investment in accident precautions. The individual continues to spend X^* on accident precautions, since those costs are unrelated to after-tax income.

But Kaplow and Shavell do not simply argue that they can design a *general* alternative tax rule. They argue that they can design a tax regime that will leave the individual completely indifferent between the new tax regime

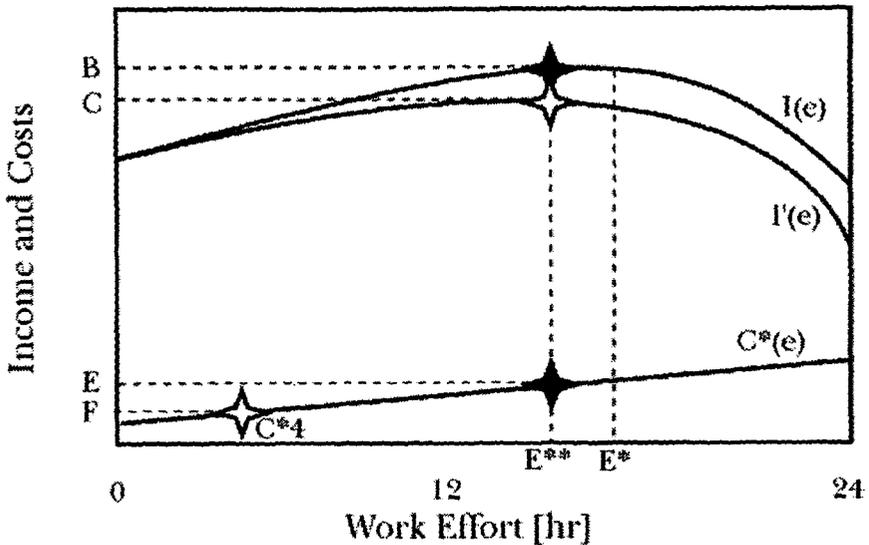
46. This work distortion is also called the substitution effect, as the individual is induced by the change of relative prices between work and leisure to "substitute" toward leisure. Of course, there can also be an income effect that cuts the other way; that is, in order to maintain a given desired level of income, taxpayers may respond to an increased income tax by working more. But that change in behavior is inherent in any type of tax, even a lump-sum tax, and therefore is not considered distortionary. In any case, discussing income effects is beyond the scope of this Article.

47. By "after-tax," we mean after the work-income tax has been collected. Thus, we assume no tax on leisure or psychic income.

and the income-independent regime, both in the number of hours they choose to work and their net total income. The next chart presents the way that the policy maker can design an income tax that would leave the potential tortfeasor indifferent between this new tax regime and the income-dependent tort regime.

Chart 6b: The Design of an Alternative Pareto Improving Tax Regime

Chart 6b



As before, line $I(e)$, taken from Chart 5 above, is the total of after-tax money income plus psychic income *before* the policy maker imposes the new income tax. Line $C^*(e)$ is the collection of total-accident-cost minimizing points as a function of effort. This curve is also copied from Chart 5 above.

As our analysis in the previous Part demonstrated, a potential tortfeasor temporarily starts at point E^* , but gravitates toward the point where the vertical distance between her income curve, $I(e)$, and the accident cost curve, $C^*(e)$, is maximized. In the previous Part we argued that E^{**} could be anywhere, depending on the slopes of the two curves (the income curve, $I(e)$, and the accident cost curve, $C^*(e)$). Without loss of generality we now assume this maximizing point to be at the level of E^{**} hours of work. As was explained before, at this post-adjustment point the individual net gain is represented by the vertical distance, BE , between the two black stars in Chart 6b.

Kaplow and Shavell argue that they can construct a modified tax schedule that will give incentives to the potential tortfeasor to continue choosing E^{**} as her optimal work-leisure decision, and, in addition, that this increased income tax will happen to leave her as well off as before. Put differently, Kaplow and Shavell claim they can design point E'^* from Chart

6a above to fall exactly at E^{**} at Chart 6b above. Line $I'(e)$ represents the individual's total income: the sum of her money income and psychic (leisure) income, under the new modified income tax. Recall that in the income-independent world, the potential tortfeasor makes her precaution decisions independently of her work-leisure decisions. Thus, in that world, she will choose C^*4 as her optimal accident related costs. Under Kaplow and Shavell's modified income tax, the individual net gain is equal to CF. It is the vertical distance between the new net income $I'(e)$ and the socially optimal accident costs C^*4 .

Kaplow and Shavell claim that they can construct a new income tax that "leaves individuals with the same income as in the initial regime" while still providing them with incentives so that their "work effort is unaffected by the new regime."⁴⁸ Put differently, Kaplow and Shavell claim they can design an income tax that can do two things. First, it will leave the potential tortfeasor indifferent because CF (her net gain under Kaplow and Shavell's modified income tax regime) is equal to BE (her net gain in the income-dependent tort regime). Second, it will provide the potential tortfeasor with incentives to chose E^{**} as her privately optimal work effort. Line $I'(e)$ represents both parts of their claim in that its maximizing point is exactly at E^{**} , while CF is equal to BE.

Is such a tax regime "simple" to construct? Part of the answer would be that it is hard because the tax-and-transfer system would need information that only the courts may hold. The other part of the answer would be that, in fact, it is impossible since the tax-and-transfer system will need information that only the individual, at best, privately possesses (and has no reason to reveal).

To see this point, observe that the authorities in Kaplow and Shavell's modified tax schedule must first know the potential tortfeasor's net work income function $W(e)$ and her psychic income function $L(e)$. These two properties are needed to know the tortfeasor's total net income function, $I(e)$. Without knowing $I(e)$, it is impossible to design an equivalent income tax schedule. However, one may argue that these properties are relatively accessible because, presumably, the tax authorities already possess this information—it is the same type of information they need to optimally construct the current income tax regime. The next two properties that the tax authorities need to know are the tortfeasor's precaution function, $P(x)$, and the expected harm the individuals face. This information is needed for two purposes: first, to be able to construct for each potential tortfeasor her $C^*(e)$ function, and second, in order to pinpoint C^*4 . Without knowing these two properties, it would be impossible to design an income tax regime that will leave the potential tortfeasor indifferent. Unfortunately, these two properties are observable, if at all, only by the courts. More probable,

48. Kaplow & Shavell, *Efficiency in Redistribution*, *supra* note 6, at 673.

however, is that under a strict liability regime, which is the regime that both we and Kaplow and Shavell assume, even the courts do not have this information.⁴⁹

It is important to recognize that it is not enough to know the general shape or curvature of the functions. The tax authorities will need to know the exact materialization of this function for every individual (if heterogeneity is introduced) in order to be able to design an individually tailored tax that will leave the injurers indifferent.⁵⁰ Clearly, there is no tax authority in the world that possesses or that can acquire enough information for every single individual. We thus reject the claim that this modified tax regime (especially if heterogeneity is introduced) is “simple.” Rather, we think it is impossible.⁵¹

III. RESPONSE TO OBJECTIONS

In this Part we respond to some possible objections to our arguments in this Article. First, it could be argued that if courts have the information needed to implement an income-dependent tax regime, they could just share the information with the taxing authority, which could then design the tailored *Pareto superior* tax rule. If that turns out to be possible (at relatively low cost), such a result would be consistent with our overall framework. In such a case, the court would be the better “proxy observer” with respect to

49. See generally Logue & Avraham, *supra* note 10. To be sure, it is impossible to observe an individual's “precaution function.” Even the individual herself will not have this information. As a result, just as we use income as a proxy for ability, we must find proxies for the precaution function. The two best proxies are care taken and harm caused. Thus, one could suggest that the courts, under a negligence regime, might gather information regarding an individual's precaution taken and harm caused and then provide that information to the taxing authority. At that point, the taxing authority would make the distribution decision. Sharing information in this way, however, would be costly. Moreover, it raises difficult issues of institutional comparative advantage.

In any event, the tort regime assumed in Kaplow and Shavell's analysis is one of strict liability, a regime under which courts make no effort to observe the level of precautions taken, for there is no due care standard against which to measure them. Thus, under Kaplow and Shavell's assumptions, there is no government actor that is well situated to gather information about the precaution function and expected harm presented by individuals. However, according to Kaplow and Shavell's modified tax regime, there is, nevertheless, a need to know both the precaution function and the expected harm of each individual. One response to this critique might be to argue that under a strict liability regime, courts will not have the relevant information either; hence, an income-dependent strict liability rule will not be any better at solving this problem. To understand how courts can apply a redistributive scheme under an income-dependent strict liability regime, see *infra* text following note 55.

50. For a list of the types of information needed by the tax authorities under Kaplow and Shavell's framework, see Kaplow & Shavell, *Efficiency in Redistribution*, *supra* note 6, at 678 equation A3.

51. Recall that our model is simpler than Kaplow and Shavell's in that we assume that individuals are either injurers or victims. If we adopt the more realistic assumption that individuals can be both injurers and victims, as Kaplow and Shavell did, the information burden is further exacerbated.

accident-proneness, and the tax system would be the better redistributor with respect to that proxy.⁵² However, there will presumably be some cost associated with the transfer of this information from the court to the legislature. In any event, we do not argue that the legal system has a comparative advantage over the tax system in redistributing income. Rather, it is Kaplow and Shavell who argue that for any income-redistributive legal rule, a tax-and-transfer alternative can *always* be designed that is *Pareto superior*. That is the core point of their model. But in practical terms, such a regime cannot be implemented because of the informational burden we discussed above.⁵³

A related critique might be that for the policymaker to hit the target amount of redistribution using a tort tax, she would have to know in advance all the information we cite (such responses as taking additional care or working less, etc.) to set the tort tax correctly. If the policymaker has that information, however, so the critique goes, she also would be able to achieve the same redistribution through the tax system, and in a more efficient manner. This argument has problems, too. Recall that the policymaker has information regarding the *general* distributions of ability to generate income and skill in taking care (accident-proneness) in society. Based on this limited information the policymaker can design a two-dimensional tax schedule that determines the overall tax (income tax and tort tax) each citizen needs to pay, based on income and tort activity. The policymaker can safely assume that on average, she is promoting equality of welfare compared to the world of income tax only. Indeed, this complex tax schedule is meant to achieve a more egalitarian society (in the sense of equality of welfare, not of income only) by taking into account not only income (either as a proxy for individuals' ability to generate income, which in turn is a proxy for their overall well-being, or as a direct proxy for the overall well-being), but also their care level and harm caused (as a proxy for their accident-proneness their precaution function—which in turn is, again, a proxy for their overall well-being).

52. Logue & Avraham, *supra* note 10, at 177.

53. One might object to our impossible-informational-burden argument by claiming that the tax-and-transfer system could simply mimic the consequences of an income-dependent legal regime. Thus, the argument goes, if an income-dependent legal regime caused a person to pay an extra \$10,000 a year in the form of a tort tax, then the alternative income-independent tax regime could simply add \$10,000 to the person's tax liability and restore the efficient tort rule. This objection, however, is flawed. If it means that the taxing authority can mimic the consequences of a tort tax even before it is imposed, the objection commits the same mistake that we identified above. That is, the objection overlooks the fact that there is no way the taxing authority could anticipate individual hypothetical *ex ante* adjustments to the tort tax and then mimic it. If, on the other hand, the objection means that the taxing authority could look at historical data and see how individuals made their adjustments to the tort tax, and then mimic it, the objection still would be flawed. Even if it were possible for the taxing authority to use historical data in this way, which is doubtful, such an approach could work only if an income-dependent legal regime first had been in place for some time.

Let us assume that both the IRS officials and the court system receive this complex tax schedule. Starting with the court system, a judge could, at relatively low cost, acquire the information about an individual's income from the IRS and would be able to observe individual harm caused and care-level investments, which, as has been shown, are relevant to the overall welfare analysis.⁵⁴ Switching to Kaplow and Shavell's alternative tax rule, recall that in order to design an alternative *Pareto-superior* modified tax regime (a regime that leaves nobody worse off), the IRS must know individuals' accident-proneness. However, even if we assume that taxpayers will report this information honestly, under Kaplow and Shavell's regime, the individual taxpayers would not be able to fill out their 1040 forms with all of the relevant information, for they do not know their own accident-proneness. Thus, whereas it is enough for the social planner to know the general distributions of skills in society in order to design an income-dependent tort rule, the IRS would need to know the accident-proneness of each individual to implement a *Pareto-superior* alternative tax rule.⁵⁵

The above critique can now be restated: just as judges can implement the complex tax schedule by using reports about individual income (a proxy for ability), so too could the IRS, with less cost, implement the same tax schedule by using reports about individual investments in care and harm caused (proxies for accident proneness). First, observe that such an objection no longer claims that redistributing through the IRS is *Pareto superior*, but rather that it is less costly. Second, a problem with such a regime is that individual taxpayers would have an incentive not to reveal their care level investments, given that they know it to be unobservable to the IRS. That is, they would have an incentive to behave strategically. A response to this argument might be that the court could share this information with the IRS. But doing so would be costly—much more costly than for the courts to share data about individual income with the IRS. And, if the tort rule were one of strict liability, even the courts would not have the care-level information to share; instead, the information would be taken into account implicitly, as the rule would apply disproportionately for those classes of individuals who tend to be accident prone. This is an assumption that both Sanchirico and Kaplow and Shavell make in their analyses.

Still, one might argue that the double-distortion argument continues to have some intuitive appeal. After all, there is more pie to slice if we use legal rules only to achieve efficiency. That intuition does hold true, but only under a very restrictive assumption; that is, only if the *better off* group (in

54. We are aware that the analysis here assumes a regime of negligence and not of strict liability. As the discussion *infra* shows, the same logic applies when the regime is one of strict liability. See *infra* text following note 55.

55. Again, our arguments here, as in the rest of the Article, do not suggest that income-dependent tort rules are superior to income-independent ones. Rather, our argument is merely that an income-independent regime is not necessarily always *Pareto superior*.

terms of their total welfare), from whom we want to transfer resources, also consists entirely of the *income rich* (as identified by the IRS). That assumption would hold in two cases: first, if *all* the rich (at any given level of income) were defendants facing the same lawsuits (and thus subject to the same tort tax)—in this situation, we basically restore the homogeneity assumption we relaxed in this Article—and second, if individuals' incomes were the ultimate end (rather than their well-being or welfare). Indeed, in that case Kaplow and Shavell's double-distortion argument would have been correct and relevant for policy-making. If all that we cared about was reducing income gaps in society, there would be no economic reason to use tort law, for example, to tax the defendants because the IRS could tax the rich with less overall distortion. The problem with this second case, of course, is that hardly any theorist, and definitely not Kaplow and Shavell, treats income inequality as the ultimate end of redistributive policy.⁵⁶

Put differently, the problem with the intuition of the double-distortion argument is that it ends up running afoul of one or the other of the following two facts: first, that equality of welfare and not equality of income is the social goal; and second, that in an environment of incomplete information, redistributive legal rules can contribute to the social goal of better equalizing welfare precisely because people with different inner, and unobservable, characteristics (albeit with the same income) react differently to redistributive legal rules. Redistributive legal rules allow the policymaker to distinguish between people with the same income yet different total welfare. The policymaker can do this by exploiting the fact that people with the same income interact differently with the same legal rules. This different reaction (what we called the *ex ante* adjustments that people make in response to legal rules) is a signal the policymaker can use to better achieve equality of welfare.⁵⁷

56. The Appendix in Kaplow & Shavell, *Efficiency in Redistribution*, *supra* note 6, which deals with individuals' utility functions, makes clear that what Kaplow and Shavell are after is welfare and not income. Indeed, Kaplow and Shavell are major advocates of the welfarist approach. See generally Kaplow & Shavell, *Fairness Versus Welfare*, *supra* note 8. For the purpose of this Article we, too, adopt the welfarist approach, which is mainly characterized by the fact that its ultimate end is the general welfare, and thus treats income only as one proxy for that end.

57. See Logue & Avraham, *supra* note 10 (taking such an approach). Some readers who are familiar with the sub-literature of optimal taxation in the literature on public finance may wonder why we obtained different results from the 1971 celebrated "production efficiency" result of Diamond and Mirrlees and the 1976 "uniform commodity taxation" result of Atkinson and Stiglitz. In *Optimal Taxation and Public Production*, 61 AM. ECON. REV. 261 (1971), Diamond and Mirrlees basically showed (stated loosely here) that the economy should be on its production frontier at the optimum even when the government cannot impose a perfectly tailored lump sum tax but *can* impose a (linear) tax on all factors at different rates. In *The Design of Tax Structure: Direct Versus Indirect Taxation*, 6 J. PUB. ECON. 55 (1976), Atkinson and Stiglitz showed (again, stated loosely here) that when the government can use a non-linear (namely, a progressive) income tax, there is no need to use commodity taxation. Taken together, these results imply that the government should not use indirect tax instruments such

IV. CONCLUSION

This Article contends that, while Kaplow and Shavell's argument that the tax-and-transfer system is *always* better than legal rules in redistributing income is theoretically sound, given their assumptions, their observation should not serve as a policy-making aid. Specifically, we argue that Kaplow and Shavell's *Pareto*-efficiency conclusion must change once some of their simplifying assumptions are relaxed. Kaplow and Shavell argue that they can design a "simple" alternative tax regime (while maintaining an income-independent legal regime) that is *Pareto superior* to any income-dependent (or income-redistributive) legal regime. Such a regime would be *Pareto superior* because it would suffer from a single distortion rather than two distortions, as the income-dependent legal regime does. Under their income-independent legal regime, the argument goes, there is only the work-leisure distortion, whereas under the income-dependent legal regime, there is not only the same work-leisure distortion but also a regulated-activity distortion.

The first part of our critique of this *Pareto*-efficiency story involves the double-distortion argument. To the extent Kaplow and Shavell have in mind designing a general (non-tailored) alternative tax regime, their *Pareto superior* argument fails to take into account the full consequences of the fact that, under the income-dependent legal regime, individuals would take advantage of the *two degrees of freedom* they have under the income-dependent regime. That is, individuals would adjust both their work effort and their regulated activity. Thus, we argue that it is impossible to know, a priori, the exact amount of work effort and of care level investments, which, therefore, poses an informational burden on the ability of the policy maker to design a *Pareto superior* rule.⁵⁸ Moreover, once heterogeneity is introduced, Kaplow and Shavell's *Pareto superior* argument fails to take into account the fact that

as differentiated commodity taxation and that redistribution should be achieved solely with a direct (non-linear) income tax. Indeed, as Kaplow and Shavell have observed, redistributive legal rules could be seen as (or at least compared with) differentiated commodity taxation so the Diamond and Mirrlees and the Atkinson and Stiglitz results would presumably (maintaining their other assumptions, such as that utility functions are separable between goods, legal rules, and leisure) continue to apply to the context of legal rules. Our work here should be seen in light of other recent work in the optimal taxation literature that shows that once the assumption of complete information is relaxed, the above results no longer hold. For example, Stiglitz himself showed that when the assumptions that the government (1) can observe people's skills, and (2) can impose differentiated tax rates on each type as in the Diamond and Mirrlees model, are relaxed and (3) needs, rather, to base taxation on income only—the production efficiency result breaks down. Joseph E. Stiglitz, *Self Selection and Pareto Efficient Taxation*, 17 J. PUB. ECON. 213, 213–40 (1982). Recently, Naito has shown that both the uniform commodity taxation result and the production efficiency result break down if, among other things, the government has incomplete information vis-à-vis people's skills. Hisahiro Naito, *Re-examination of Uniform Commodity Taxes Under a Non-linear Income Tax System and Its Implication for Production Efficiency*, J. PUB. ECON. 71 (1999) 165, 173–81 (1999).

58. See *supra* text accompanying notes 20–21.

different individuals would make different ex ante adjustments to maximize their total net income, making any simple alternative tax regime no longer *Pareto* improving.

Second, to the extent that Kaplow and Shavell have in mind a tailored alternative tax regime, their *Pareto superior* argument is correct in theory but is no longer simple to implement. The reason is that, in order to execute the tailored alternative tax regime, the informational burden on the taxing authority would be considerable. Under such an alternative regime, however, the taxing authority would need to have detailed information about each taxpayer, information such as the individual's innate accident-proneness, her investments in accident avoidance ("care levels"), the harm she has caused, and so on—information that tax authorities do not usually have.⁵⁹ In contrast, under the income-dependent legal regime, courts do possess most, if not all, of this required information. As a result, for a court to add the redistributive component to its tort rulings, it would only need further information about individual income, information that is relatively accessible.

Again, we do not therefore argue that income redistribution should generally be done through the legal system. In fact, we hold the view that the tax system is generally better suited for that task. However, we believe so for the old (pre-Kaplow and Shavell) reasons—that is, because of the contracting-around problem and haphazardness problem mentioned in the introduction. Our point here is that Kaplow and Shavell's *Pareto superior* argument, despite being theoretically correct, adds little of policy importance to the redistributive rules debate because it is virtually impossible to implement.⁶⁰ To use a somewhat fanciful (but we think

59. It seems that Shavell was aware of this problem. In his 1981 paper, he admits that "if the income tax would not be altered on adoption of new liability rules, then in strict logic the argument given for use of efficient rules does not apply." Shavell, *supra* note 12, at 417. Shavell emphasizes the fact that such a world would be "impractical" because "no one would really expect the income tax structure to be adjusted in response to each and every change in legal rules." *Id.* Shavell seems to refer to administrative impediments; his prescription to this "impractical" world is to consider alterations of the income tax whenever the changes in the legal rules resulted in a "sufficiently important" shift in the distribution of income. *Id.* Our point is that even when changes in legal rules result in a "sufficiently important" shift in the distribution of income, the social planner still would not have enough information to alter the income tax in a *Pareto superior* way. As explained before, the impediments to applying a *Pareto superior* legal rule that we have addressed in this Article, are informational and not administrative. For a demonstration of this problem, see *supra* note 53 and accompanying text.

60. Somewhat ironically, Kaplow and Shavell make a similar criticism of Sanchirico's paper, arguing that:

Although one or another qualification may turn out to be relevant in some instances, we would need to have sufficient evidence (or, at minimum, plausible empirical conjectures) in order to know what, if any adjustments to legal rules should be made. Yet, as we have explained, the relevant information does not seem likely to be forthcoming.

revealing) analogy, whereas it is theoretically possible to approach the speed of light, the practical difficulties involved in actually implementing this theoretical possibility prohibits the creation of super high-speed spacecraft. No one argues that we should stop building slow yet practical spacecraft because for every such spaceship, there is an alternative, albeit purely theoretical, design that would travel faster.

The upshot of our argument is that with respect to the debate over income-redistributive legal rules, the focus should be on institutional comparative advantage (legal rules vs. the IRS) while taking into account the informational burden needed to make proper redistribution. The focus should also be on the haphazardness and contracting-around problems and whether, despite those problems, there may be some potential supplementary income-redistributive role for legal rules. In a previous article two of us analyzed this question in more detail.⁶¹

Kaplow & Shavell, *Should Legal Rules Favor the Poor?*, *supra* note 12, at 835. We agree and think that the same critique applies to their redistributive scheme, for whatever information is needed to pre-plan the adjustments to legal rules is also needed to design the alternative *Pareto-superior* tax regime, and more.

61. See generally Logue & Avraham, *supra* note 10.

APPENDIX

This Part addresses the transformations needed to see how the accident-cost-minimizing decision will interact with the work-leisure decision. To that end we need to superimpose Chart 3 total-accident-cost minimizing points, C^* , onto the graph of the work-leisure tradeoff shown in Chart 2a above. Unfortunately, these two graphs (the total-accident-cost minimizing decision, C^* , and the work-leisure decision) have different variables on their X-axes: harm faced by injurer (in dollars) and work effort (in hours), respectively. We now show the transformation needed in order to present the total-accident-cost minimizing graph, C^* , (from Chart 3) on the same X-axis (effort in hours) as the work-leisure tradeoff (from Chart 2).

Recall that Chart 3 depicts the total-accident-cost minimizing points (in dollars) as a function of the harm faced by injurer. For our transformation we need to make a few assumptions. However, these assumptions build on the following intuition: while damages under the income-independent regime are contingent only on harm to a third party (as represented by curves H0 through H5 in Chart 2b), damages under the income-dependent tort regime are a function of the injurer's income as well. Beginning with that intuition, the first transformation assumes that the relationship between the two functions—the damages under the income-dependent tort regime and the after-tax money income function—is linear; in other words, we assume that the “tort tax” under the income-dependent tort regime is linear in after-tax income.⁶² As a result, one would expect to see the same curvature as the one in Chart 3 for a graph that depicts the relationship between the total-accident-cost minimizing graph, C^* , and the injurer's income (upon which the damages under the income-dependent tort regime are now dependent). Chart 4a presents the relationship between the total-accident-cost minimizing graph, C^* , and the injurer's after-tax income.

62. Kaplow and Shavell make the same assumption. Kaplow & Shavell, *Efficiency in Redistribution*, *supra* note 6, at 669–70. They also assume linearity in their formal appendix. *Id.* at 677.

Chart 4a: The Total-Accident-Cost Minimizing Points, C^* , as a Function of After-Tax Income

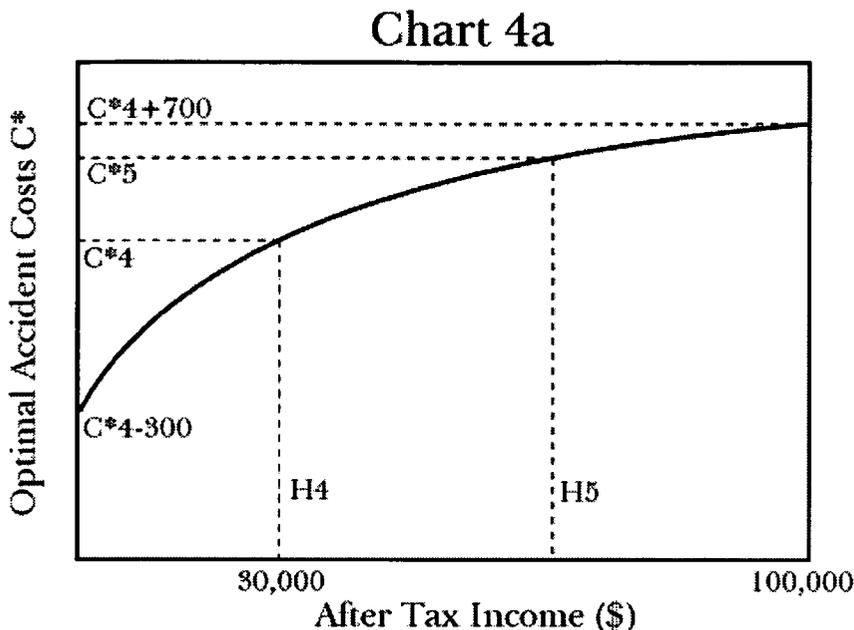


Chart 4a demonstrates, indeed, the same curvature as in Chart 3, which depicted the total-accident-cost minimizing points (in dollars) as a function of the harm faced by the injurer. However, there is one major difference: the relevant range for which the graph is depicted. Chart 3 depicted the optimal costs, C^* , for the whole range of possible harms. For the first transformation we need to depict the optimal costs, C^* , as a function of the harm, but only for a smaller range. Specifically, we are interested in depicting the graph when the amount of damages is comprised of not only the harm, but also of, for example, a 1% tort tax on the difference between the tortfeasor's income and some arbitrary cutoff income. Thus, we depicted only a segment from the original concave graph—a segment around the optimal level of damages, $H4$, which corresponds to an after-income-tax income of \$30,000.

To better see this point, it is instructive to recall that we chose a “tort tax” that is equal to 1% of the difference between the tortfeasor’s income and some arbitrary cutoff income of \$30,000. Thus, Chart 4a depicts changes ranging from a negative tort tax of \$300 (to those who earn \$0) to a positive tort tax of \$700 (from those who earn \$100,000). Kaplow and Shavell did roughly the same thing when they attempted to demonstrate the consequences of collecting and redistributing 1.5% of the difference between individual income and a cutoff income of \$33,333, also in the range of incomes \$0 to \$100,000.⁶³

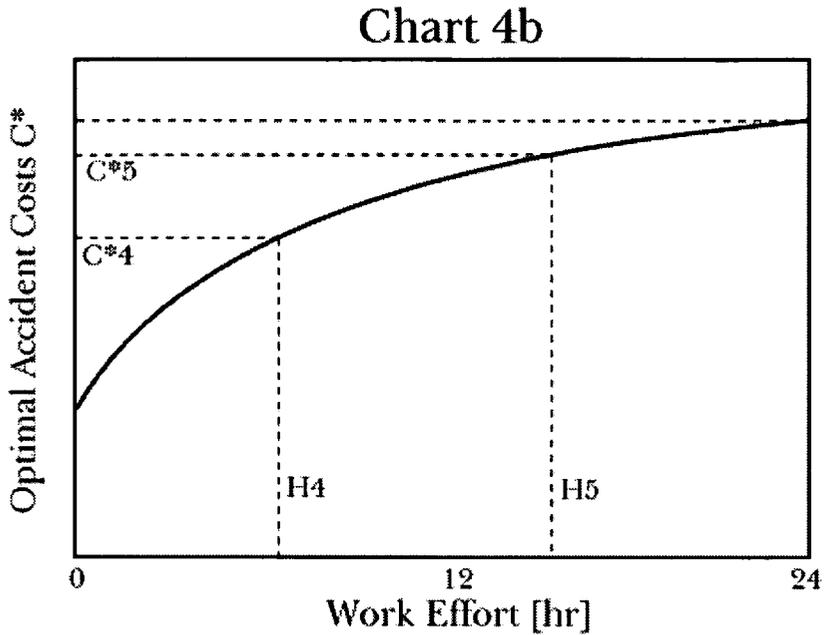
For the second transformation, assume that the relationship between the after-tax money income and the number of work hours is also linear.⁶⁴ The result is that we can now assume that the relationship between the total-accident-cost minimizing points, C^* , as a function of the potential tortfeasor’s work effort, continues to be a concave function.⁶⁵ Chart 4b presents this relationship.

63. Kaplow & Shavell, *Efficiency in Redistribution*, *supra* note 6, at 669–71. The choice of numbers is arbitrary and does not influence the qualitative results of our paper. *See also supra* note 22 and accompanying text.

64. Again, Kaplow and Shavell make the same assumption. *See* Kaplow & Shavell, *Should Legal Rules Favor the Poor?*, *supra* note 12, at 822.

65. The reason this can be said is that if the total-optimal-accident-cost curve, C^* , is a concave function of the level of damages, and the level of damages under the income-dependent tort regime in turn is a linear function of income, and income in turn is a linear function of work effort, then it must be that the optimal accident cost curve, C^* , is a concave function of the level of work effort. Note that Chart 4b is depicted for a person who earns \$100,000 while working 24 hours a day. If a person earned only \$50,000 for the same hours, Chart 4b is different. Just as Chart 1a is for a specific person, so is Chart 4b. This does not change any qualitative result in our analysis.

Chart 4b: The Total-Accident-Cost Minimizing Points, C^* , as a Function of Work Effort



In essence, Chart 4b demonstrates that the potential injurer's work-leisure decisions (how many hours to work) influence not only her after-tax income but also her total (privately optimal) accident costs, C^* .