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The Allocative Efficiency of Shifting from a Negligence System to a Strict-Liability Regime in our Highly-Pareto-Imperfect Economy: A Partial and Preliminary Third-Best-Allocative-Efficiency Analysis

Richard S. Markovits

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**THE ALLOCATIVE EFFICIENCY OF SHIFTING FROM A
 “NEGLIGENCE” SYSTEM TO A “STRICT-LIABILITY”
 REGIME IN OUR HIGHLY-PARETO-IMPERFECT
 ECONOMY: A PARTIAL AND PRELIMINARY THIRD-BEST-
 ALLOCATIVE-EFFICIENCY ANALYSIS**

RICHARD S. MARKOVITS*

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INTRODUCTION

This Article illustrates the importance of Second-Best Theory by examining its implications for the analysis of one of the most important tort law policy-issues—the allocative efficiency of shifting from a “negligence” plus “contributory-negligence”¹ system to a “strict-liability plus contributory-negligence” regime²—hereinafter of shifting from “negligence” to “strict liability.” Shifts from “negligence” to “strict liability” can affect accident-and-pollution-cost-avoidance-related (“APCA-related”) misallocation in four basic ways:

1. The quotation marks reflect the fact that the variants of these doctrines I will be comparing differ from the variants currently in use. In particular, the text that follows will assume that the “negligence” doctrine employs a negligence rule that (unlike our current rule) is defined in a first-best-allocatively efficient (“FBLE”) way but applied in the current non-FBLE way. The text also assumes that the contributory-negligence doctrine employs a contributory-negligence rule that (unlike our current rule) is defined in a FBLE way but applied in the current non-FBLE way. Some explanation of the preceding assertions may be useful. First, the current negligence rule is not defined in a FBLE way because it ignores the effects of avoidance-decisions on the accident-and-pollution-cost-related (AP-cost-related) risk costs various parties bear. Thus, the current negligence rule declares a potential avoider negligent for failing to make a particular avoidance-move if and only if (1) the private cost of the move to him (usually symbolized as a “B” for “burden”) is less than the amount by which it would have reduced weighted-average-expected AP costs ($\downarrow PL$) where “P” stands for the probability of the loss and “L” stands for the size of the loss rather than (2) the B of the rejected avoidance-move is less than the reduction in certainty-equivalent AP costs it would have effectuated ($\downarrow [PL+R]$) where “R” stands for the risk costs associated with the possible accident or pollution-event in question. Second, in practice, the rejection of only a few of the various types of avoidance-moves available to potential injurers and potential victims are assessed for negligence. See Sections II.1.A.(1).(C), II.1.A.(2).(B) and II.1.A.(2).(C).(ii), *infra*. Third, the current contributory-negligence rule is not defined in a FBLE way not only in that (1) it ignores the effects of avoidance-decisions on AP-cost-related risk costs but also in that (2) it characterizes as contributorily negligent a potential victim who has failed to make an avoidance-move that (A) would increase allocative efficiency given the potential injurer’s failure to avoid but (B) was less allocatively efficient than an avoidance-move that the potential injurer could or would have made (assuming that the relevant move’s private costs and benefits were not distorted)— i.e., because it defines as contributory negligence the failure to avoid of a potential victim who is a potential inferior-allocatively-efficient avoider rather than a potential most-allocatively-efficient avoider. (At times, the text will assume that a comparative-negligence doctrine might be substituted for a contributory-negligence doctrine.)

2. I realize, of course, that at present contributory negligence (or comparative negligence) does not normally apply in strict-liability cases.

- (1) by changing the amount of misallocation potential injurers cause by making allocatively inefficient accident-and-pollution-cost-avoidance ("APCA") decisions;³
- (2) by changing the amount of misallocation potential accident-and-pollution-cost ("AP-cost") victims generate by making allocatively inefficient APCA decisions;
- (3) by changing the sum of
 - (A) the allocative transaction-costs that are generated by the assertion and processing of accident-and-pollution-loss legal claims by victims against injurers,
 - (B) the allocative transaction-costs that are generated by the formation of AP-loss-covering insurance contracts and the processing of AP-loss first-party insurance claims,
 - (C) the allocative transaction-costs generated by the processing of government-transfer claims related to AP-cost losses, and
 - (D) the allocative cost of the revenue-raising or revenue-saving decisions the government makes to finance any AP-cost-related costs not covered by "user fees" and any AP-cost-related government transfers or transfer-related transaction-costs; and
- (4) by changing the extent to which first-party and third-party accident-and-pollution-loss insurance increases allocative efficiency
 - (A) by reducing AP-cost-related risk costs and
 - (B) by changing the misallocativeness of potential-injurer and potential-victim APCA decisions, the allocative efficiency of insurance-company APCA-research ("AP-CAR") choices, and insurance-company allocative operating costs not included in the insurance-contracting and insurance-claim-processing costs considered in (3) above.

In the vocabulary of the Introduction to this Symposium on Second-Best Theory and Law & Economics,⁴ this Article executes a partial and preliminary third-best-allocative-efficiency ("TBLE") analysis of the allocative efficiency of shifting from the negligence-regime variant it considers to the strict-liability regime variant it considers. In other words, this Article analyzes the allocative efficiency of this shift, taking into consideration not only the fact that the legal system and economy as a whole contain a huge number of relevant imperfections but also the inevitable cost and inaccuracy of the theoretical and empirical work that would be second-best ideal to execute. The analysis

3. The allocative inefficiency of a potential avoider's decision not to avoid equals the positive difference between the ex ante certainty-equivalent allocative benefits and costs that would have been generated by the avoidance-move the potential avoider rejected.

4. Richard S. Markovits, *Second-Best Theory and Law & Economics: An Introduction*, 73 CHI.-KENT L. REV. 3 (1998).

is partial in that it ignores two ways in which the shift from negligence to strict liability may affect the amount of AP-cost-related misallocation that potential injurers and potential victims generate: (1) in products-liability-case situations, it ignores the way in which such a shift may affect allocative efficiency by altering the amount of AP-cost-related misallocation that results because potential-victim consumers are not sovereign and potential-injurer suppliers cannot differentiate their prices to reflect differences in the certainty-equivalent AP costs that should be expected to be generated by different consumers' consumption of their product without incurring transaction-costs (that may or may not be privately prohibitive)⁵ and (2) in all cases, it ignores the ways in which such a shift may affect allocative efficiency by altering the allocative efficiency of first-party and third-party AP-cost insurance (transaction-cost consequences aside).⁶ The analysis is also partial in that it ignores the possibility that Pareto imperfections may cause an injurer or victim to choose a less-allocatively-efficient avoidance-move over a more-allocatively-efficient avoidance-move. The analysis is preliminary in that (1) it does not pursue all relevant theoretical issues (though it does pursue a dismally large number of such issues) and (2) it does not carry out TBLE investigations of any of the large number of empirical issues whose relevance its theoretical analysis establishes (investigations that would be *ex ante* allocatively efficient, taking account of their likely cost and the certainty-equivalent benefits that they would be predicted to generate, given their inaccuracy, by increasing the allocative efficiency of various policy-decisions).

Before proceeding to explain the way in which second-best or third-best analyses of the allocative efficiency of shifting from negligence to strict liability differ from what I will somewhat tendentiously characterize as their "standard" counterparts, I should specify what I mean by "the standard law-and-economics position" on these issues. The standard analysis is not really first-best in that it takes into consideration the fact that in practice the decisions of injurers not to avoid in certain ways will not be assessed for negligence. For example, the standard analysis acknowledges the fact that decisions by manufacturers not to avoid by reducing their unit outputs (in standard terminol-

5. See Richard S. Markovits, *Consumer Ignorance, Producer Transaction-Costs, and the Allocative Efficiency of Alternative Products-Liability Regimes* (1987) (unpublished manuscript, on file with author).

6. See Richard S. Markovits, *The Allocative Efficiency of First-Party and Third-Party Accident-and-Pollution-Cost Insurance* (1987) (unpublished manuscript, on file with author).

ogy, by reducing their “activity-levels”)—and occasionally by changing their locations—will never be assessed for negligence. To the standard analyst, this “imperfection” in our actual negligence regime creates the possibility that in some instances strict liability may be more allocatively efficient than the current version of negligence. Specifically, the standard analysis argues that *ceteris paribus* strict liability will tend to be allocatively superior to negligence because it provides injurers with appropriate incentives to avoid by reducing their activity-levels (and, in a few versions, changing their locations).⁷ Despite this conclusion, the standard analysis does not conclude that strict liability will always be as allocatively efficient as or more allocatively efficient than negligence because at least some *ceteris* are not *paribus*. In particular, the standard analysis assumes that strict liability will be more transaction-costly than negligence. The standard argument for this conclusion is first-best. According to that argument, the transaction-cost of running a strict-liability regime is higher than the transaction-cost of running a negligence regime because under strict liability there are justifiable legal claims, whose resolution is transaction-costly, whereas under negligence no legal claims are brought because no one is negligent (because it is in no injurer’s interest to be negligent) and no one brings an unjustified claim (because the only private benefits a claimant can obtain by making a claim are the damages the claim enables him to collect, judges and juries do not make any errors, transaction-costs do not make it profitable to bring nuisance-suits, and potential plaintiffs do not make any errors).⁸

Unfortunately, the standard analysis of the relative allocative efficiency of negligence versus strict liability is undermined by the failure of the relevant analysts to take account of The General Theory of Second Best. Thus, the standard analysis ignores a large number of other imperfections in the way in which negligence is applied. For example,

7. See William M. Landes & Richard A. Posner, *The Positive Economic Theory of Tort Law*, 15 GA. L. REV. 851 (1981). For this purpose, it is irrelevant whether the failure of negligence to be applied to activity-level choices is an allocatively inefficient feature of our system or an allocatively efficient response to the transaction-cost of determining the negligence of activity-level choices appropriately accurately. Of course, if a negligence system in which negligence was not applied to activity-level choices were less allocatively inefficient than one in which such choices were assessed for negligence, the standard analyst might conclude that our system should be changed by extending the application of negligence rather than by shifting to strict liability. The relative allocative efficiency of these two changes would depend on the cost of assessing the negligence of activity-level choices with varying degrees of accuracy and the transaction-cost of handling the (justifiable) claims that would be made under strict liability.

8. The analyses that I am denominating “standard” also do not advert to the possibility that the liability regime may affect the allocative-efficiency gains generated by insurance. See, e.g., *id.*

most standard analyses ignore the fact that manufacturer-injurer decisions not to reduce the AP costs they generate by shifting to a less-AP-cost-prone location⁹ are never assessed for negligence, and all standard analyses ignore the fact that many producer-injurer decisions not to reduce AP costs by shifting to a product-variant whose production and consumption combined are less AP-cost-prone¹⁰ or by doing APCAR into less AP-cost-prone production techniques, locations, and product-variants are never assessed for negligence. Similarly, the standard analysis also ignores the fact that in practice the rejection by AP-cost victims of many of the types of avoidance-options that are available to them are never assessed for contributory negligence. This fact is salient because it raises the possibility that a shift from negligence to strict liability may not increase the allocative efficiency of APCA decisions on balance. Thus, any tendency of a shift from negligence to strict liability to increase the allocative efficiency of potential-injurer avoidance, *inter alia*, by giving potential injurers an incentive to make otherwise-Pareto-perfect (“oPp”) allocatively efficient avoidance-moves—moves that would be allocatively efficient if the relevant private costs and benefits were not distorted by any Pareto imperfections¹¹—that they can reject without having to worry about their decision’s being assessed for negligence will be offset and perhaps outweighed by such a shift’s tendency to decrease the allocative efficiency of APCA decisions by potential victims by increasing the probability that they will be compensated for any AP costs they

9. Nuisance law does not invalidate this claim because it does not make the determination of whether an activity is a nuisance depend on whether its continuance would violate the corrected Hand test for negligence. See Richard S. Markovits, *The First-Best-Allocative-Efficiency of Nuisance Law* (1987) (unpublished manuscript, on file with author).

10. Products-liability law does not invalidate this claim because design-defect doctrine does not make a manufacturer’s liability depend on his negligence.

11. Welfare economics distinguishes seven so-called Pareto imperfections—i.e., economic conditions whose individual presence will tend to create situations in which somebody could be made better off without anyone’s being made worse off if resources could be reallocated costlessly. Those imperfections are (1) monopoly (imperfections in seller competition), (2) monopsony (imperfections in buyer competition), (3) externalities, (4) taxes on the margin of income, (5) departures from chooser sovereignty (imperfections in information that tend to cause individuals to misperceive the option that is in their interest), (6) chooser non-maximization, and (7) critically-distorting buyer surplus or its analogs (usually misdescribed as public goods). Welfare economics also distinguishes seven related Pareto optimal conditions, whose transaction-costless fulfillment guarantees that no reallocation of resources could make somebody better off without making anyone else worse off, even if resources could be reallocated without generating any transaction-costs. In fact, it might be preferable to speak of eight Pareto optimal conditions—the eighth of which is “no transaction-costs or other allocative costs need be generated to fulfill the first seven conditions.” If no Pareto imperfections are present (and this result has been secured without incurring any transaction-costs), the economy will be Pareto optimal (no shift to an alternative allocation of resources could make somebody better off without making someone else worse off even if it could be effectuated without generating any transaction-costs).

experience and hence deflating their incentive to make oPp allocatively efficient avoidance-moves they can reject without having to worry about their decision's being assessed for contributory negligence. Moreover, the standard analysis of the effect of a shift from negligence to strict liability on the amount of APCA-related misallocation that potential injurers and potential victims generate ignores the fact that since the avoidance-incentives and avoidance-decisions of both potential injurers and potential victims would be distorted by various Pareto imperfections in either a negligence or a strict-liability regime, the presence of these imperfections cannot be ignored when analyzing the likely impact of a shift from negligence to strict liability on the allocative efficiency of potential-injurer and potential-victim APCA choices. Similarly, the standard analysis of the allocative-transaction-cost consequences of a shift from any type of negligence system to any type of strict-liability regime ignores four sets of facts:

- (1) that potential-injurer negligence, doctrinal departures from the $B < (\downarrow[PL+R])$ formula for negligence (e.g., the doctrine that except in extreme cases the injurer will be assumed to be as able to avoid efficiently as the average member of the community), judge and jury error, transaction-cost considerations that may make it profitable for a defendant to settle groundless nuisance-suits, and "victim" error will all result in claims' being brought and dispute-resolving transaction-costs' being generated under negligence;
- (2) that shifts from negligence to strict liability may affect the amount of transaction-costs generated in the process of contracting for first-party AP-cost insurance (as a response to imperfections in AP-cost-related risk information) and settling first-party AP-cost insurance claims;
- (3) that shifts from negligence to strict liability may also affect the amount of transaction-costs generated by the making and processing of APCA-related government-transfer claims; and
- (4) that the extant Pareto imperfections distort the private transaction-costs of asserting and processing all types of AP-loss-related claims—in particular, almost certainly cause such private costs to be lower than their allocative counterparts.

Finally, the standard analysis of the allocative efficiency of a shift from negligence to strict liability also ignores the allocative-efficiency effects that such a shift will generate because

- (1) it will affect the net monetary cost to government of responding to AP costs and
- (2) the revenue-raising and revenue-saving decisions that the government makes are usually misallocative.

This Article attempts to remedy many of these deficiencies of what I am calling “the standard analysis” of the allocative efficiency of shifting from negligence to strict liability.

The Article is divided into seven parts. Part I sets out the basic “distortion-analysis” framework that the Article employs. In the text that follows, a private benefit, cost, or profit figure is said to be “distorted” if it diverges from its allocative counterpart. In particular, Part I defines the basic vocabulary of distortion analysis, explains why the amount of misallocation generated by resource-use choices of any given type will tend to increase with the mean and variance of the distribution of aggregate distortions in the private profitability of marginal (in the sense of last) resource-use choices of that type, and examines the policy-relevance of this conclusion.

Part II uses this distortion-analysis framework to analyze the effect of a shift from negligence to strict liability on the amount of APCA-related misallocation that potential injurers generate. Pareto imperfections of different types can cause potential injurers to make three different sorts of misallocative APCA-related decisions: (1) not to avoid when avoidance would have been allocatively efficient; (2) to avoid when not avoiding would have been allocatively efficient; and (3) to substitute a less allocatively efficient for a more allocatively efficient avoidance-move when the “more allocatively efficient” avoidance-move may be either more allocatively efficient or less allocatively efficient than no avoidance. As already indicated, this Article ignores this third possibility, which is most salient when the law internalizes some but not all types of AP costs that an actor can generate.¹² Hence, the aggregate distortions on which Part II focuses—the aggregate distortion in the private benefits a potential injurer whose

12. A tort law or environmental law that makes a producer liable for the air pollution but not the water pollution he generates is quite likely to cause this third type of APCA-related misallocation—e.g., to induce producers to shift from a more-allocatively-efficient air-polluting production-process to a less-allocatively-efficient water-polluting production-process. This third type of misallocation can also be caused by virtually all the other imperfections this Article will note and examine—e.g., may result if

(1) the air-pollution and water-pollution victims are not equally likely to seek legal advice about their possible claim or to bring legally justifiable claims,

(2) the air-pollution and water-pollution victims are not equally good at selecting their lawyers or equally able to pay for the legal help they would prefer,

(3) the percentages of the victims of the air pollution and water pollution that are “entitled victims” differ,

(4) the air-pollution and water-pollution victims are not equally-good witnesses,

(5) the rejection of the avoidance-move that will reduce air pollution is not equally likely as the rejection of the avoidance-move that will reduce water pollution to be the proximate cause of the resulting loss or to be incorrectly found not to be the actual or proximate cause of the resulting loss,

liability is governed respectively by negligence and strict liability can obtain by avoiding in the most profitable (least unprofitable) way available to him, the aggregate distortion in the private cost to a potential injurer of avoiding in the most profitable way available to him, and the aggregate distortion in the private profitability to a potential injurer whose liability is governed by negligence or strict liability of avoiding in the most profitable way available to him—will all be analyzed on the assumption that the relevant alternative for the potential injurer in question is not avoiding. In other words, none of the relevant analyses will focus on the aggregate distortion in the private cost, private benefits, or private profitability of making one avoidance-move rather than another: all will focus on the relevant aggregate distortion in making a particular avoidance-move as opposed to not avoiding.

Part II begins by listing the various imperfections that would individually distort the APCA incentives and/or the decision to avoid rather than not avoid of potential injurers whose liability is governed by the previously-described negligence rule. It then uses the distortion-analysis framework to analyze the aggregate distortions generated by those individual imperfections in the private benefits, private cost, and private profitability to potential injurers in general or potentially injurious producers in particular to avoid rather than not avoid. Part II then proceeds (A) to delineate the various ways in which a shift from negligence to strict liability will affect the non-monopoly distortions in the actual private benefits of avoidance to an injurer-avoider, in the potential injurer-avoider's perception of those benefits, or in the potential injurer-avoider's maximization, (B) to analyze the effect of a shift from negligence to strict liability on the impact of monopoly on the aggregate distortion in the private benefits and private profits yielded by the various types of avoidance-moves available to potentially injurious producers whose private profitability may be crit-

(6) the rejection of the avoidance-move that will reduce air pollution is not equally likely as the rejection of the avoidance-move that will reduce water pollution to be negligent or to be assessed for negligence or to be incorrectly found not to be negligent,

(7) the percentage of the air-pollution losses that fall into categories that the law deems to be recoverable is different from the percentage of the water-pollution losses that is recoverable,

(8) the wages of the air-pollution victims are not equally distorted by monopoly, taxes, and other standard Pareto imperfections as the wages of the water-pollution victims,

(9) the triers of fact misestimate the damages that result from air pollution and water pollution by different percentages,

(10) the air-pollution and water-pollution victims are not equally likely to settle or are likely to settle for different percentages of the award to which they are entitled, and

(11) the aggregate distortions in the private cost of the air-polluting and water-polluting production-techniques in question are not equal, etc.

ically affected by monopoly, given the other imperfections in the system, (C) to investigate the implications of the preceding analysis for the impact of a shift from negligence to strict liability on the aggregate distortion in the private profitability of the various types of APCA moves that are available to potentially injurious producers, and (D) to explore the implications of the preceding set of conclusions for the impact of a shift from negligence to strict liability on the amount of APCA-related misallocation that potentially injurious producers generate.

Next, Part III analyzes the effects of a shift from negligence to strict liability on the aggregate distortion in the private profitability of different types of avoidance-moves to potential victims and hence on the amount of APCA-related misallocation that potential victims generate when making avoidance/non-avoidance decisions. As this last clause suggests, Part III's analyses of the aggregate distortions in the private benefits ("PB"), private cost ("PC"), and private profitability ("P π ") of avoidance to a potential victim in the negligence and strict-liability regimes it studies will have the same focus as Part II's—i.e., will examine the aggregate distortions in the PB, PC, and P π to a potential victim of making the most profitable avoidance-move available to him as opposed to not avoiding rather than of making one avoidance-move rather than another. Part III's structure and conclusions parallel Part II's, though in Part III the issue is whether and the extent to which a shift from negligence to strict liability will increase (not decrease) the amount of APCA-related misallocation potential-victim APCA choices generate primarily by increasing the absolute value of the negative aggregate distortion in the private profitability of avoidance-moves to them.

Part IV then combines the results of Parts II and III to analyze the determinants of the likely effect of a shift from negligence to strict liability on the amount of APCA-related misallocation that potential injurers and potential victims generate combined. Part IV explains, *inter alia*, why it is unlikely that allocative efficiency would be best served by either a universal negligence regime or a universal strict-liability regime and explores the factors that influence the relative allocative efficiency of making members of particular industries or specific potential injurers strictly liable or liable only if found negligent.

Part V analyzes the effect of a shift from negligence to strict liability on allocative transaction-costs and public-financing-related allocative costs. Part V explains why the shift from negligence to strict liability may not increase legal transaction-costs. Part V also points

out that the effect of a shift from negligence to strict liability on transaction-costs will also reflect its impact on first-party-insurance-related transaction-costs, government-transfer-related transaction-costs, and (if I stretch standard terminology) the misallocation the government will cause when financing its AP-cost-related adjudicative and government-transfer activities.

Parts VI and VII analyze two specific issues that directly relate to the subject matter of this Article and execute second-best critiques of two highly respected analyses of these issues that are in fact atypically sophisticated. Specifically, Part VI criticizes Steven Shavell's analysis of the possible allocative efficiency of "proximate cause" dismissals, including his second-best-type argument that it will be more allocatively efficient to dismiss cases on "proximate cause" grounds when the injurer in question is strictly liable than when he is liable only if found negligent. In particular, Part VI criticizes Shavell's argument that the deflation in the private profitability of potential-injurer avoidance that proximate-cause dismissals generates will be more likely to reduce the aggregate distortion in the private profitability of potential-injurer avoidance in strict-liability cases than in negligence cases because "crushing liability" will be more likely to *ceteris paribus* inflate the private profitability of potential-injurer avoidance in strict-liability than in negligence cases.¹³

Part VII analyzes Landes and Posner's¹⁴ claim that by making the members of an industry strictly liable when it is in its infancy and liable only if found negligent when it is mature, the common law has adopted an allocatively efficient liability regime.

I should like to close this Introduction with an admission that by this juncture should be obvious. This Article is not simple. Although

13. See Steven Shavell, *An Analysis of Causation and the Scope of Liability in the Law of Torts*, 9 J. LEGAL STUD. 463 (1980). "Crushing liability" is caused by the dichotomous way in which the common law resolves cause-in-fact issues in tort cases in which the cause of the loss cannot be ascertained through direct evidence—i.e., in which it can be inferred only from evidence about the contribution that various potential injurers made to the ex ante probability of the loss' occurring. In particular, in such cases the common law concludes that any potential injurer whose activity contributed more than 50% of the ex ante probability of the relevant loss' occurring is the cause of the loss and then holds that injurer liable for all of the loss in question if he would otherwise be liable for any of it (if he was strictly liable or would be found negligent in a negligence regime). Such liability is said to be "crushing" because the damages that someone who will be subjected to it must anticipate having to pay are higher than his activity's contribution to certainty equivalent AP-costs. (The other side of this coin is that the common law imposes insufficient liability in this kind of case on all potential injurers whose activities contribute 50% or less of the ex ante probability of the relevant loss' occurring because it holds none of these actors to be the cause-in-fact of the relevant loss.)

14. Landes & Posner, *supra* note 7.

I have sought to make it as lucid as possible, it is not so easy to read as the articles and books it implicitly criticizes. Unfortunately, this difference is unavoidable. In my judgment, standard law-and-economics allocative-efficiency analyses are relatively simple to read because they are simplistic. Most assume that the only relevant imperfection in the system is the one that the policy under consideration is designed to reduce or eliminate. And the few that do take other imperfections into account consider only one or two additional imperfections and relatively few of the types of resource misallocation whose extents the relevant policy will affect. Second-best-allocative-efficiency (“SBLE”) analyses and third-best-allocative-efficiency (“TBLE”) analyses are far more complex. Even if they are executed without using sophisticated mathematics, they will be hard-going. My task is to demonstrate that the effort is worthwhile, but I cannot succeed unless readers put in the necessary effort.

I. DISTORTION ANALYSIS: THE VOCABULARY AND CONCEPTUAL STRUCTURE OF THIS ARTICLE

This Article’s analysis of the allocative efficiency of shifting from negligence to strict liability is based on the assumption that such a shift will decrease (increase) the amount of misallocation caused by avoidance-decisions of a given type if it decreases (increases) the mean and variance of the distribution of the distortions in the private profitability of the last avoidance-decisions of that type made by the various parties in a position to avoid in the way in question. Both for this reason and because I believe that the approach I call “distortion analysis” is the TBLE method for analyzing all allocative-efficiency issues, Part I defines the basic vocabulary of distortion analysis, investigates the policy-relevance of the concept of the aggregate distortion in the private profitability of a marginal resource-use choice of some type, and explains how to predict the impact of a policy on the mean (and variance) of the distribution of aggregate distortions in the private profitability of the various types of marginal choices it affects.

1. The Basic Vocabulary of Distortion Analysis

In the distortion-analysis terminology that I have developed, the private benefits that a choice confers on the chooser (“PB”), the private cost that a choice imposes on a chooser (“PC”), and the private profits a choice yields a chooser (“P π ”) are said to be “distorted” when they differ from their allocative counterparts—the allocative

benefits they generate (“LB”), the allocative costs they generate (“LC”), and their allocative efficiency (“LE”). More specifically, a PB, PC, or $P\pi$ figure is said to be “inflated” when it exceeds its allocative counterpart and “deflated” when it is lower than its allocative counterpart.

The distortion analyses that I execute distinguish two basic types of distortions: (1) the aggregate distortion in some figure (“ ΣD ”)—the net distortion in the indicated private figure generated by all the relevant Pareto imperfections in the economy acting in concert—and (2) seven individual-Pareto-imperfection-generated distortions (one for each type of Pareto imperfection)—the distortion that would be created by each particular type of Pareto imperfection if no other type of Pareto imperfection were present in the system. In the text that follows, the private figure whose distortion is being referred to is indicated in parentheses following the monopoly distortion (“MD”), the externality distortion (“XD”), or ΣD in question, and the type of choice that is involved is indicated by a subscript to the figure in parentheses. For example, $\Sigma D(PB_{\Delta APCA})$ stands for the aggregate distortion in the private benefits yielded by a specified marginal APCA move, and $MD(PC_{\Delta APCA})$ stands for the monopoly distortion in the private cost of a marginal (in the sense of last) APCA move (the subscript “ Δ ” stands for “marginal”).

Distortion analysis uses two other sets of terms worth noting at this juncture. First, distortion analysis distinguishes “additive” cases from “non-additive” cases. The former are cases in which the relevant ΣD can be expressed as a sum of the individual-Pareto-imperfection-generated distortions—i.e., cases in which $\Sigma D = MD + XD + \dots$. The latter are cases in which ΣD does not equal the sum of the individual-Pareto-imperfection-generated distortions—indeed, in which, in general, the individual-Pareto-imperfection-generated distortions do not even appear as arguments in the relevant aggregate-distortion formula.¹⁵

Second, in additive cases, distortion analysis distinguishes between “offsetting” and “compounding” Pareto imperfections or distortions. In particular, in additive cases, imperfections or distortions

15. See Richard S. Markovits, *Monopoly and the Allocative Inefficiency of First-Best-Allocatively Efficient Tort Law in Our Worse-Than-Second-Best World: The Whys and Some Therefores*, 46 CASE WESTERN L. REV. 313, 433-34 (1996).

are said to be “compounding” when they have the same sign and “offsetting” when they have the opposite sign.¹⁶

It will usually be far easier to predict the effect of a given policy on the mean and variance of the relevant $\Sigma D(P\pi_{\Delta\dots})$ distribution in additive than in non-additive cases because in additive cases we will be able to make the relevant predictions without measuring any relevant $\Sigma D(P\pi_{\Delta\dots})$ —viz., by focusing exclusively on the relative size and correlation between the eliminatable distortions and the remaining distortions.¹⁷ For this reason, it is unfortunate that most types of resource-uses present non-additive rather than additive cases. In the tort-law context on which this analysis is focusing, the only types of resource-use choices that present additive cases are choices among alternative production-processes or choices among product-variants or locations among which consumers are indifferent. All the other types of choices in question present non-additive cases. However, I am confident that, even in non-additive cases, the relevant predictions can be made at non-prohibitive cost.

2. The Allocative-Efficiency Relevance of $\Sigma D(P\pi_{\Delta\dots})$ Figures

For expositional reasons, this section’s analysis of the policy-relevance of $\Sigma D(P\pi_{\Delta\dots})$ figures proceeds on the assumption that all relevant choosers are sovereign maximizers. When this assumption is unrealistic, it will sometimes be desirable to relax it. However, in many situations, the actual departures from this assumption may be sufficiently costly to determine with a useful degree of accuracy and the net effect of these departures on the decisions the relevant choosers make may be sufficiently small and uncorrelated with the net distortion generated by the other imperfections the system contains to make it TBLE to ignore them.

16. Different imperfections of the same type as well as imperfections of different types may compound each other in relation to some types of resource uses and offset each other in relation to other types of resource-uses. See Richard S. Markovits, *A Basic Structure for Micro-Economic Policy Analysis in Our Worse-Than-Second-Best World: A Proposal and Related Critique of the Chicago Approach to the Study of Law and Economics*, 1975 WIS. L. REV. 950, 1009, 1030-32 (1975).

17. See Markovits, *supra* note 15, at 436-38.

A. *When the Marginal Choice in Question Is Marginal in the Sense of Being Infinitesimally Small as Well as in the Sense of Being Last*

When the last choice in question is marginal in the sense of being infinitesimally small as well as in the sense of being last, its private profitability is zero—at least when, as we are assuming, the choosers in question are sovereign maximizers. This proposition reflects the fact that sovereign maximizers will continue to make additional infinitesimally small choices of a particular type until the last such choice just breaks even. By definition, $P\pi_{\Delta\dots} \equiv LE_{\Delta\dots} + \Sigma D(P\pi_{\Delta\dots})$ where the “ \dots ” indicates that the relevant type of resource-use is not specified. The fact that $P\pi_{\Delta\dots}$ is zero for infinitesimally small last choices is significant in the current context because it implies that for such choices $LE_{\Delta\dots} = -\Sigma D(P\pi_{\Delta\dots})$. Thus, the fact that the extant Pareto imperfections have inflated the private profitability of a last, infinitesimally small choice—that $\Sigma D(P\pi_{\Delta\dots}) > 0$ —will imply that the choice in question was allocatively inefficient—that $LE_{\Delta\dots}$ for that choice was negative—assuming that the relevant chooser was a sovereign maximizer. Similarly, the fact that the extant Pareto imperfections have deflated the private profitability of a last, infinitesimally small choice—that $\Sigma D(P\pi_{\Delta\dots}) < 0$ —will also imply that allocative inefficiency is present in the situation in question if the relevant chooser is a sovereign maximizer because its implication on that assumption that $LE_{\Delta\dots} > 0$ for the last infinitesimally small choice in question implies that one or more additional, infinitesimally small, allocatively efficient choices of the relevant kind were rejected.

The preceding discussion has two implications that should be emphasized. First, although the value of a positive $\Sigma D(P\pi_{\Delta\dots})$ for a last infinitesimally small choice will equal the amount of allocative inefficiency which that choice generated if the chooser is a sovereign maximizer, it will equal the total amount of misallocation generated by the relevant type of choice only in the rare case in which the last infinitesimally small choice of the relevant kind is the only choice of that kind that is not allocatively efficient. In most situations, the Pareto imperfections that critically inflated the private profitability of the last infinitesimally small choice to be made also critically inflated the private profitability of various intra-marginal, infinitesimally small choices of the relevant kind. Hence, when $\Sigma D(P\pi_{\Delta\dots}) > 0$ for such a choice, the total amount of misallocation generated by choices of the relevant

kind will normally exceed $\Sigma D(P\pi_{\Delta} \dots)$ when the chooser is a sovereign maximizer.

Second, and relatedly, although the absolute value of a negative $\Sigma(P\pi_{\Delta} \dots)$ for a particular kind of last infinitesimally small choice will equal the misallocation generated by the first additional choice of the relevant kind that the $\Sigma D(P\pi_{\Delta} \dots)$ in question caused to be rejected, it will be lower than the total misallocation of the relevant kind present in the relevant situation when the actual set of choices made diverge more than infinitesimally from their allocatively efficient counterpart.

Third, *ceteris paribus*, the amount of misallocation generated by infinitesimally small choices of any type will tend to increase with the absolute value of $\Sigma D(P\pi_{\Delta} \dots)$ for the type of choice in question. This conclusion reflects the fact that in any given situation the number of misallocative infinitesimally small choices made will increase with the absolute value of the relevant $\Sigma D(P\pi_{\Delta} \dots)$.

Fourth, *ceteris paribus*, the amount of misallocation generated by a given increase in the absolute value of $\Sigma D(P\pi_{\Delta} \dots)$ for any last infinitesimally small choice will increase with the original absolute value of the relevant $\Sigma D(P\pi_{\Delta} \dots)$. This conclusion reflects the fact, for example, that a choice or event that increases the value of the $\Sigma D(P\pi_{\Delta} \dots)$ for the (changing) last infinitesimally small choice of a given kind a particular actor makes from (+\$4.00) to (+\$4.10) will induce him to make additional infinitesimally small choices each of which misallocates resources by \$4 to \$4.10 while a choice or event that increases the value of the $\Sigma D(P\pi_{\Delta} \dots)$ for the (changing) last infinitesimally small choice of a given kind a particular actor makes from (+\$40) to (+\$40.10) will induce him to make additional infinitesimally small choices each of which misallocates resources by \$40 to \$40.10. Obviously, this argument will be unaffected if (to make the number fit the infinitesimally small character of the choices in question) I substitute (+\$.000000004) for (+\$4) and make comparable changes in the other numbers originally used.

Fifth, the amount of misallocation generated by resource-use choices of a given type will increase not only with the mean but also with the variance of the distribution of $\Sigma D(P\pi_{\Delta} \dots)$ figures for the various marginal choices of the type in question. This conclusion follows from its immediate predecessor. Because the average individual choice that is induced by something that increases the $\Sigma D(P\pi_{\Delta} \dots)$ for an actor's (changing) last choice of a particular kind from (+\$6) to (+\$8) will be more misallocative than the average individual choice

that is induced by something that increases the $\Sigma D(P\pi_{\Delta} \dots)$ for the actor's (changing) last choice of that kind from (+\$4) to (+\$6), *ceteris paribus* a situation in which one actor faces a $\Sigma D(P\pi_{\Delta} \dots)$ of (+\$8) and one of (+\$4) will be more misallocative than one in which two actors face $\Sigma D(P\pi_{\Delta} \dots)$ s of (+\$6).

In short, when the choices in question are marginal in the sense of being infinitesimally small, one can predict the effect of a policy on the extent of a particular kind of misallocation by predicting its effect on the mean and variance of the distribution of $|\Sigma D(P\pi_{\Delta} \dots)|$ figures for all last choices of the relevant kind. For example, the preceding analysis implies that one could predict the effect of internalizing some of the external costs that unit-output ("UO") producers generate on the amount of misallocation their unit-output-production decisions cause by analyzing the policy's impact on the $|\Sigma D(P\pi_{\Delta UO})|$ s distorting the private profitability of all marginal unit-output choices.

B. When the Marginal Choice in Question Is Incremental Rather Than Infinitesimally Small

When the last choices of a particular resource-use type are incremental rather than infinitesimally small, $P\pi_{\Delta} \dots$ may not (indeed, usually will not) equal zero even when the relevant choosers are sovereign maximizers. When $P\pi_{\Delta} \dots \neq 0$, $LE_{\Delta} \dots \neq -\Sigma D(P\pi_{\Delta} \dots)$. Since, then, the fact that a last incremental decision yielded positive profits does not guarantee that any additional positive decisions of the same kind would be profitable, the fact that the private profitability of an incremental choice is distorted does not guarantee the presence of misallocation even if the relevant choosers are sovereign maximizers. For example, the fact that the profitability of a last incremental choice is inflated does not guarantee that the choice was allocatively inefficient—that $LE_{\Delta} \dots < 0$ —even if the relevant choosers were sovereign maximizers: the relevant distortion will have "critically inflated" the private profitability of the choice in question (have made that choice profitable even though it was allocatively inefficient) only if $\Sigma D(P\pi_{\Delta} \dots) > |LE_{\Delta} \dots|$ and $LE_{\Delta} \dots < 0$; in all other cases, the relevant distortion will simply have made an allocatively efficient choice more privately profitable than allocatively efficient. Similarly, even if the relevant choosers are sovereign maximizers, the fact that the relevant imperfections deflated the private profitability of a last incremental choice does not guarantee that the least unprofitable choice of that kind to be rejected was allocatively efficient: the relevant distortion

will have "critically deflated" the private profitability of the rejected choice in question (have made that choice unprofitable even though it was allocatively efficient) only if the relevant $|\Sigma D(P\pi_{\Delta\dots})|$ was bigger than the associated $LE_{\Delta\dots} > 0$; in all other cases, the relevant distortion will have made it more profitable than allocatively efficient to reject an allocatively inefficient choice whose rejection was in any event profitable.

Obviously, these conclusions imply that individual applications of policies that reduce $|\Sigma D(P\pi_{\Delta\dots})|$ for incremental last choices will be less likely to reduce the amount of misallocation than the relevant type of choice generated than policies that reduce $|\Sigma D(P\pi_{\Delta\dots})|$ for last infinitesimally small choices: some policies that reduce the $|\Sigma D(P\pi_{\Delta\dots})|$ s for incremental choices will not reduce misallocation at all for the simple reason that the original distortions did not cause any misallocation in the first place. Nevertheless, *ceteris paribus*, the higher $|\Sigma D(P\pi_{\Delta\dots})|$ for a last incremental choice of any kind, the greater the probability that its removal would eliminate resource misallocation by altering the last decision of the relevant kind and perhaps by altering one or more intra-marginal or extra-marginal decisions of the relevant kind as well. And, *ceteris paribus*, the higher $|\Sigma D(P\pi_{\Delta\dots})|$ for the last choice of any kind, the greater the weighted-average-expected amount by which its elimination or any given reduction in its magnitude would reduce resource misallocation. Thus, the higher a negative $\Sigma D(P\pi_{\Delta\dots})$, the greater the probable allocative efficiency of any choice whose profitability was originally critically deflated that the distortion-reducing policy would induce. Similarly, the higher a positive $\Sigma D(P\pi_{\Delta\dots})$, the greater the probable allocative inefficiency of any choice whose profitability was originally critically inflated that the distortion-reducing policy would deter. Hence, even when the marginal choices in question are incremental, policies that reduce (increase) the mean of the distribution of $|\Sigma D(P\pi_{\Delta\dots})|$ figures for incremental marginal choices of a particular kind should be assumed to reduce (increase) the relevant type of misallocation on that account.

For analogous reasons, policies that reduce (increase) the variance of the distribution of $|\Sigma D(P\pi_{\Delta\dots})|$ figures for marginal choices of a particular kind should also be assumed to reduce (increase) the relevant type of misallocation on that account when the marginal choices in question are incremental as well as when they are infinitesimal. Admittedly, because policies that change the $|\Sigma D(P\pi_{\Delta\dots})|$ for incremental marginal choices are less likely to cause intra-marginal or

extra-marginal decisions to be altered when the choices in question are incremental, policies that reduce the variance of the relevant $|\Sigma D(P\pi_{\Delta} \dots)|$ distribution are less likely to reduce the relevant type of resource misallocation on this account when the relevant choices are incremental. However, because policies that affect $|\Sigma D(P\pi_{\Delta} \dots)|$ for incremental marginal choices will sometimes cause originally-non-marginal allocatively inefficient decisions to be reversed, policies that reduce the variance of the $|\Sigma D(P\pi_{\Delta} \dots)|$ distribution for incremental choices will still *tend* to reduce the relevant type of resource misallocation on this account.

Hence, regardless of whether the relevant marginal choices are infinitesimal or incremental, information on the effect of any policy on the mean and variance of the distribution of $|\Sigma D(P\pi_{\Delta} \dots)|$ figures for all marginal choices of the relevant type will be highly relevant to the impact of the policy on the amount of misallocation generated by the relevant type of choice in the economy.

3. Predicting the Effect of a Given Change in a Particular Individual-Pareto-Imperfection-Generated Private-Profitability Distortion on the Mean of the Distribution of Relevant $|\Sigma D(P\pi_{\Delta} \dots)|$ Figures

Of course, the conclusion that one can predict the effect of a policy on a particular type of misallocation from information about its impact on the mean of the $|\Sigma D(P\pi_{\Delta} \dots)|$ distribution for marginal choices of the relevant type would not be very useful if it were always impossible or prohibitively expensive to obtain such distortion-impact information. In my judgment, particularly if administrative agencies are created to collect the relevant data on a systematic as opposed to a case-by-case basis, it will be possible to predict the effect of a policy on the mean (and variance) of the relevant $|\Sigma D(P\pi_{\Delta} \dots)|$ distributions at non-prohibitive cost. Admittedly, such predictions will be more cost-effective in additive than in non-additive cases because, in additive cases, it will frequently be possible to generate the relevant conclusions without calculating $\Sigma D(P\pi_{\Delta} \dots)$ for the relevant choices before and after the policy-interventions in question—viz., solely on the basis of information on (1) the correlation between the individual-Pareto-imperfection-generated private-profitability distortion that can be reduced or eliminated and the private-profitability distortion that would be present if the target distortion were eliminated (the remaining distortion) and (2) the relative absolute size of the eliminatable and remaining distortions—the frequency with which the absolute

eliminatable distortion was lower than, higher than but less than twice as high as, and more than twice the absolute remaining distortion.¹⁸ However, I believe that it will also be cost-effective to analyze the effects of a policy on a particular type of misallocation by predicting its impact on the mean and variance of the associated $|\Sigma D(P\pi_{\Delta} \dots)|$ distribution even when the case in question is non-additive—i.e., even when the preceding shortcut is not available. In particular, in such cases, it will be TBLE to adopt the following five-step procedure:

- (1) develop formulae for the $\Sigma D(P\pi_{\Delta} \dots)$ for each of the types of avoidance-decisions whose profitability-distortion will be affected by the policy-choice in question;¹⁹
- (2) create a TBLE list of the marginal decisionmakers for each relevant type of resource-use choice;
- (3) generate a TBLE estimate of the pre-policy $\Sigma D(P\pi_{\Delta} \dots)$ for a TBLE sample of the marginal choices in each relevant resource-use category and derive a TBLE estimate of the pre-policy mean and variance of the relevant $|\Sigma D(P\pi_{\Delta} \dots)|$ distributions;
- (4) generate a TBLE estimate of the likely post-policy $\Sigma D(P\pi_{\Delta} \dots)$ for a TBLE sample of the marginal choices in each relevant resource-use category and derive a TBLE estimate of the mean and variance of the relevant $|\Sigma D(P\pi_{\Delta} \dots)|$ distributions; and
- (5) compare the pre-policy and post-policy mean and variance estimates and generate allocative-efficiency conclusions from these comparisons.²⁰

II. THE EFFECT OF SHIFTING FROM NEGLIGENCE TO STRICT LIABILITY ON THE AMOUNT OF APCA-RELATED MISALLOCATION THAT POTENTIAL INJURERS GENERATE WHEN MAKING AVOIDANCE/NON-AVOIDANCE DECISIONS, LEGAL TRANSACTION-COSTS ASIDE: A PARTIAL AND PRELIMINARY TBLE ANALYSIS

Part II analyzes the effect of a shift from negligence to strict liability on the amount of APCA-related misallocation that is generated by potential injurers when making avoidance/non-avoidance decisions. A potential injurer may make an allocatively inefficient avoidance/non-avoidance decision for three different sorts of reasons. First, one or more types of Pareto imperfections may critically distort the

18. *See id.*

19. *See* Richard S. Markovits, *The Causes and Policy Significance of Pareto Resource Misallocation: A Checklist for Micro-Economic Policy Analysis*, 28 STAN. L. REV. 1 (1975); *see also* Markovits, *supra* note 16.

20. The cost-effectiveness of this procedure would clearly be enhanced if the data it uses were collected on a systematic basis by properly-trained administrative personnel.

private cost and/or the private benefits and derivatively the private profitability of the relevant avoidance-decision—i.e., may render an allocatively efficient avoidance-decision privately unprofitable or an allocatively efficient avoidance-decision privately profitable. Second, the potential injurer may make an allocatively inefficient avoidance-decision because he is not sovereign—because he critically underestimates or overestimates the private profitability of the avoidance-decision in question. And third, a potential injurer may fail to make an allocatively efficient avoidance-decision because he fails to maximize (to make the best decision from his perspective, given his perception of the attractiveness of the options he faces). Admittedly, because two or more of these three possibilities may offset each other, misallocation is not guaranteed by any of them. For this reason, a full analysis of the effect of a shift from negligence to strict liability on APCA-related misallocation would address not only the three sets of imperfections just listed but also the relationship between or among them—roughly speaking, whether they tend to exacerbate or counteract each other.

To be TBLE, an analysis must contain the TBLE amount of both theoretical and empirical work. Part II's analysis is not TBLE—it is both partial and preliminary. It is partial because—as the Introduction indicated—it ignores (1) the possibility that the shift from negligence to strict liability may affect the amount of misallocation potential injurers generate by making the wrong type of avoidance-move from the perspective of allocative efficiency; (2) the possibility that such a shift may affect the amount of misallocation that will be caused in products-liability-case contexts by the combination of buyer and seller misperceptions of AP costs and the private cost sellers will have to incur to differentiate their prices to reflect inter-buyer AP-cost differences; and (3) the effect of such a shift on the allocative-efficiency gains generated by AP-cost-related insurance-policies.

Part II's analysis is preliminary in that its theoretical and empirical analyses of the possibilities it does address are less complete than would be TBLE. On the theoretical level, Part II is preliminary in that it does not develop formulae for the aggregate distortions in the private profitability of the various types of avoidance-moves available to potential injurers. On the empirical level, Part II's TBLE analysis is preliminary because it neither executes nor is informed by any, much less TBLE, empirical research into two sets of issues: (1) the magnitude of the various imperfections that individually distort the avoidance-incentives of potential injurers and victims and (2) the dis-

tribution of the types of avoidance-moves that the relevant potential injurers may find profitable to make. This distribution is relevant because (1) both the sign and the magnitude of the monopoly, non-tort-related externality, and tax distortions in the private profitability of marginal APCA choices vary from avoidance-move type to avoidance-move type and (2) in practice, rejections of only some types of avoidance-moves are assessed for negligence or contributory negligence.

Part II is divided into two sections. The first analyzes the aggregate distortion in the private profitability of avoidance-moves of different types to potential injurers who are liable only if found negligent. The second analyzes (1) the effect of a shift from negligence to strict liability on the aggregate distortion in the private profitability of APCA moves of different types to potential injurers in general as well as (2) the effect of a shift from negligence to strict liability on the mean and variance of the distribution of aggregate distortions in the private profitability of the different types of APCA moves available to potentially injurious producers in particular and hence on the amount of AP-cost-related misallocation such producers generate.

Before proceeding, I want to define a set of terms that the discussion that follows will sometimes employ. These terms distinguish different situations according to the possibilities for oPp allocatively efficient AP-cost avoidance. "Individual care" situations are situations in which the oPp most-allocatively-efficient response to the AP costs they involve is avoidance by one party (either the injurer or the victim [or conceivably somebody else]). "Joint care" situations are ones in which the oPp most-allocatively-efficient response to the relevant AP costs is for two or more parties to make avoidance-moves. In some such cases, the oPp most-allocatively-efficient response to the potential AP costs is for a potential injurer and potential victim both to avoid—e.g., for a potentially injurious property owner to shovel her walks to some extent and a pedestrian to wear appropriate shoes and walk with some care. In other joint-care cases, the oPp most-allocatively-efficient response is for two or more potential joint tortfeasors to avoid—e.g., for two or more polluters in a situation in which there is a threshold of pollution below which harm does not result to reduce their individual pollution sufficiently for the total pollution to fall below the threshold level. "No care" situations are ones in which the oPp most-allocatively-efficient response to the relevant potential AP costs is to allow them to occur. Within each of these categories, sub-

cases can be distinguished. For example, the discussion that follows will refer to a situation as being a no-care-with-possible-individual-avoidance-or-joint-avoidance situation when avoidance by one (or two or more) parties could prevent some or all of the AP costs in question though not in an oPp allocatively efficient way. Similarly, joint-care situations in which individual avoidance would be inferior-allocatively-efficient (better than no avoidance but allocatively inferior to allocatively optimal [most-allocatively-efficient] joint avoidance) will be referred to as joint-care-with-inferior-individual-care situations. And individual-care situations in which joint avoidance would be inferior-allocatively-efficient will be referred to as individual-care-with-inferior-joint-care situations.

1. The Distortions in the Private Profitability to Potential Injurers Who Are Liable Only If Held Negligent of the APCA Moves of Different Types Available to Them
 - A. *The Aggregate Distortion in the Private Benefits That APCA Moves of Different Types Yield a Potential Injurer Who Is Liable Only If Found Negligent*

The analysis of this section will proceed on four assumptions about the way in which “negligence” and “contributory negligence” are defined and applied: (1) that both concepts are defined to refer to the *private* cost that the relevant avoidance-move would have imposed on the potential avoider and the *private* benefits that it would have conferred on the potential avoider’s traditional tort victims (as opposed to the *allocative* costs and benefits it would have generated); (2) counterfactually, that when negligence determinations are made the private benefits of avoidance are assumed to include the benefits that avoidance would generate by reducing the risk costs that the potential avoider’s potential victims incur; (3) again counterfactually, that the potential victim will be said to be contributorily negligent only if the potential victim would be a potential most-allocatively-efficient avoider and not just a potential inferior-allocatively-efficient avoider if other things were equal—e.g., only if, in a case in which the potential victim’s avoidance and the potential injurer’s avoidance would produce the same reduction in certainty-equivalent AP costs, the potential victim’s cost of avoidance was lower not only than the reduction in certainty-equivalent AP costs that the potential victim’s avoidance would generate but also than the potential injurer’s cost of avoidance; and (4) the rejection of only those few types of avoidance-

moves whose rejection is currently assessed for negligence or contributory negligence will be assessed for negligence or contributory negligence.

(1) **The Imperfections That Distort the Actual and Perceived Benefits That APCA Moves Yield a Potential Injurer Who Is Liable Only If Found Negligent**

This section distinguishes and lists the most important subtypes of seven categories of imperfections that may cause potential injurers to make allocatively inefficient avoidance/non-avoidance decisions by distorting the actual or perceived private benefits of avoidance to a potential injurer who is liable in tort only if found negligent and/or by causing such a potential injurer to fail to maximize.

(A) **Imperfections That Do Not Relate to the Resolution of Either Causation Issue, to the Resolution of the Negligence Issue, to the "Personal Responsibility" of the Injurer, or to the Various Non-AP-Cost-Related Pareto Optimal Conditions**

Nine imperfections belong in this category:

- (1) some victims who are entitled to recover may not sue;
- (2) some victims may not be entitled to recover because the tort law restricts recovery (a) to parties on whom the accidents or pollution in question had a physical impact or (b) to parties who had reasonable grounds to believe that they might experience such a physical impact (because the tort law denies recovery to witnesses of an accident who were never at physical risk, to all relatives and friends of traditional AP victims except for their spouses who can recover for the loss of consanguinity, and to potential victims who bore preventable accident-and-pollution-loss-related risk costs—indeed, the common law does not allow even those parties who are considered to be entitled to recoveries to obtain compensation for the risk costs they sustained);
- (3) some victims may be barred from recovery by a fellow-servant rule or by the contributory negligence, "last clear chance," or "assumption of risk" doctrines or may have their recoveries reduced by the comparative-negligence doctrine;
- (4) although this outcome is inconsistent with the common law's normal attitude toward mitigation, traditional tort doctrine precludes those victims whom the injurer's failure to avoid has induced to incur costs to prevent the occurrence of the accident or pollution in question from recovering any such avoidance-costs they incurred for this purpose: this factor will be operative to the extent that avoidance is made profitable for victims who are in a position to engage in inferior-allocatively-efficient avoidance after a potential most-allocatively-efficient

- avoider has failed to avoid (a) by an applicable contributory-negligence doctrine, last-clear-chance doctrine, coming-to-the- nuisance doctrine, assumption-of-risk doctrine, or fellow-servant rule (which make the relevant positive avoidance-move profitable by declaring its rejection to bar the relevant victim's recovery), (b) by an applicable comparative-negligence doctrine (which tends to make the relevant move profitable by reducing the recovery of non-avoiding victims below the loss they sustained), or (c) by the mechanical transaction-cost of litigating or settling an accident-or-pollution-loss claim, the cost of the delay involved in obtaining compensation post-loss, the risk costs of trying to obtain compensation post-loss, and the difference between the weighted-average-expected recovery and the weighted-average-expected loss (which will make the relevant move profitable whenever taken together they exceed the cost of prevention to the victim);
- (5) although this outcome is also inconsistent with the common law's normal attitude toward mitigation, traditional doctrine precludes those victims who have incurred costs pre-accident or pre-pollution to reduce the mean or variance of the size-distribution of possible losses that may result from the injurer's conduct from recovering the costs they incurred for this purpose (regardless of whether their mitigation-decisions were oPp allocatively efficient): because a victim's failure to engage in pre-loss mitigation (as opposed to prevention) never is held to bar or reduce his recovery, this factor will be relevant only if the cost of the relevant oPp allocatively efficient pre-loss mitigation is expected to be less than the amount by which the mitigation would reduce the sum of (a) mechanical dispute-settling costs, (b) dispute-settling risk costs, and (c) the amount by which the weighted-average-expected loss is predicted to exceed the weighted-average-expected recovery;
- (6) in individual-care joint-tort situations or joint-care joint-tort situations in which individual care is inferior-allocatively-efficient, the common law does not allow a joint tortfeasor's fellow joint tortfeasors to recover any additional avoidance-expenses his failure to make a most-allocatively-efficient avoidance-move made it necessary for them to incur to prevent themselves from being negligent;²¹

21. I have substituted the expression "individual care" for the standard "separate care" because, linguistically, the latter expression gives the false impression that it covers situations in which avoidance by more than one actor who do not take into consideration each other's behavior could be oPp allocatively efficient. I have decided to continue to use the standard expression "joint care" despite the fact that it gives the sometimes-false impression that the avoidance of the multiple actors who are avoiding is consciously coordinated. I have made this choice because the expression "joint care" links up to the standard doctrinal term "joint tort." For an explanation of why the feature of the common law to which the text refers may cause injurers to make misallocative avoidance decisions in these types of situations, see Richard S. Markovits, *The Allocative Efficiency of the Joint-and-Several-Liability Rule, the No-Contribution Rule, and Various Positive-Contribution Rules in Different Types of Joint-Tort Situations* (1987) (unpublished manuscript, on file with author).

- (7) judges and juries may misestimate (in general, I suspect they tend to underestimate) those portions of victim-losses that victims are entitled to recover;
 - (8) victims who do sue may tend to settle for less than the verdict they would obtain at trial (a) because their expected mechanical trial-costs are higher than those of defendants (who tend to be repeat-players), (b) because they are more risk-averse than defendants, (c) because the dispute imposes more risk on them than on repeat-player defendants, who are able to reduce risk by holding a portfolio of similar disputes, (d) because they have a greater financial need than defendants to resolve a dispute quickly, (e) because defendants are more likely to be repeat-players who have a stake in developing a reputation for hanging tough, and (f) because plaintiffs are more likely to be influenced by lawyers on contingency fees who find settlements that are against their clients' interests to be in their own interests because the lawyers incur a higher percentage of the joint lawyer-client opportunity-costs of going to trial than of the weighted-average-expected increase in recovery that a decision to go to trial is predicted to generate; and
 - (9) in joint-tort cases, common-law loss-allocation rules that do not make negligent joint tortfeasors liable for the damage caused by non-negligent joint tortfeasors will always deflate PB_{APCA} for joint tortfeasors whose victims cannot recover the losses they sustain because of non-negligent behavior and will deflate PB_{APCA} for joint tortfeasors whose victims can recover their losses in full unless the damages such negligent joint tortfeasors must pay despite the fact that their negligence did not cause them (because their negligence makes them liable for some of the losses that the non-negligent joint tortfeasors would cause if no-one were negligent) equal or exceed the damage their negligence causes for which they are not liable.²²
- (B) Imperfections That Relate to the Resolution of the Various Causation Issues

Four imperfections belong to this category:

- (1) judges and juries may make false-negative or false-positive findings of cause-in-fact;
- (2) the proximate-cause doctrine may not deem the injurer to be a legally accountable cause of the loss even though his act was unambiguously a probabilistic cause of the loss and did increase weighted-average-expected accident-and-pollution costs on balance;
- (3) judges or juries may make false-negative findings on proximate cause; and

22. See Lewis A. Kornhauser & Richard L. Revesz, *Sharing Damages Among Multiple Tortfeasors*, 98 *YALE L.J.* 831, 847-50 (1989).

- (4) the failure of the common law to develop a proportionate-liability rule in pure-circumstantial-evidence cases (a) will deflate the private benefits that his avoidance will yield any potential injurer who contributed more than 0% but not more than 50% of the ex ante probability of the relevant loss' occurring and (b) will inflate the private benefits of potential-injurer avoidance that will reduce the potential injurer's contribution to the ex ante probability of the relevant loss' occurring to 50% or less from more than 50% but less than 100% when he otherwise may (correctly or incorrectly) be found to be negligent—i.e., in the above sorts of cases, the common law's binary approach to cause-in-fact and damages confront some potential injurers who are liable in tort only if found to be traditionally negligent with "insufficient liability" and some, with so-called "crushing liability."²³

(C) Imperfections That Relate to the Resolution of the Negligence Issue

Four imperfections belong to this category:

- (1) the private benefits that a particular potential-injurer avoidance-move will yield a potential injurer who is liable only if negligent will be deflated (though, *ceteris paribus*, not critically) if the potential injurer's rejection of the move in question would not in fact be negligent because its private cost to him would exceed the amount by which it would reduce the sum of his potential traditional victims' weighted-average-expected accident-and-pollution costs and related risk costs;²⁴
- (2) the private benefits that potential-injurer avoidance will yield potential injurers who are liable only if negligent will be deflated (perhaps critically) to the extent that there is a possibility that judges and juries may make false-negative findings on negligence because in practice the common law does not assess for negligence an actor's decision to reject many of the types of avoidance-moves he could have made—i.e., because in practice the concept of negligence is not applied to all the types of negative avoidance-choices made by a potential injurer;
- (3) the private benefits that potential-injurer avoidance will yield potential injurers who are liable only if found negligent will be deflated to the extent that judges and juries may make false-

23. For an explanation of "crushing liability," see Shavell, *supra* note 13.

24. Of course, on an oPp assumption, this deflation in the private benefits of avoidance will never critically affect the allocative efficiency of an avoidance-decision because on this assumption avoidance-decisions whose rejection is not negligent will never be allocatively efficient. However, in the actual world, in which avoidance-options whose rejection would not violate the Hand test may be allocatively efficient and in which the total private cost to an injurer of failing to avoid will exceed the damages the injurer is required to pay (by the transaction-costs he has to incur to handle the claim in question), this deflation may be critical—may render privately unprofitable an avoidance-move whose execution would be allocatively efficient.

- negative or false-positive²⁵ findings on negligence even when they do analyze the negligence of all relevant de facto negative avoidance-choices that the potential injurer made either because they make a straightforward factual error or because doctrine requires them to assume that all individuals who are not obviously handicapped in some relevant way are equally able to engage in allocatively efficient avoidance; and
- (4) the private benefits that potential-injurer avoidance will yield potential injurers who are liable only if found negligent will be inflated *ceteris paribus* to the extent that judges and juries may make false-positive errors on negligence in cases in which the defendant is a legally accountable cause-in-fact of the relevant loss and faces crushing liability if he is found liable.²⁶
- (D) Imperfections That Relate to Whether the Injurer Will Bear the Cost of the Damage-Awards Assessed Against Him

Two imperfections belong to this category:

- (1) the injurer may be partially or totally judgment-proof because he can declare bankruptcy and (in the case of corporate injurers) his shareholders enjoy the benefits of limited liability and
- (2) the injurer may be partially insured in a situation in which his future insurance premiums will not rise by the amount of the payments his insurance company must make on his behalf (an imperfection that will be critical, *ceteris paribus*, only if the insurance company does not condition its coverage on the insured's never rejecting an avoidance-move whose execution would reduce the traditional victim's or victims' certainty-equivalent AP costs by more than it would itself cost).
- (E) Pareto Imperfections That Distort the Private Benefits a Potential Injurer's Avoidance Will Yield Him by Distorting the Private Loss That Traditional Tort-Law Victims Sustain or the Non-AP-Cost Savings the Relevant Avoidance-Move Generates

Four items belong in this category:

- (1) the private benefits that a potential injurer's avoidance will yield him would tend to be inflated by any taxes his potential

25. False-negative findings of negligence deflate the PB of avoiding by reducing the amount of actual damages the avoider should expect to have to pay if he is negligent in failing to avoid. False-positive findings of negligence deflate the PB of avoidance by reducing the amount by which a potential injurer can reduce the damages he should expect to pay by making all oPp allocatively efficient avoidance-moves below the amount by which a decision to make all such avoidance-decisions would reduce the certainty-equivalent AP costs he generated.

26. *Ceteris paribus*, if no false-positive findings of negligence were ever made, crushing liability could inflate the private profitability of avoidance critically only in strict-liability cases: if the negligence issue is correctly resolved, crushing liability will never even increase the private value of an oPp allocatively inefficient positive avoidance-decision to a potential injurer who is liable only if negligent since the potential injurer will never be liable for rejecting such an avoidance-move—i.e., will not be found negligent for failing to avoid in the relevant circumstances.

victims would have to pay on any wages their accident or illness would cause them to lose (because tort damage-awards are based on gross rather than net wages);²⁷

- (2) the private benefits that a potential injurer's avoidance will yield him would tend to be deflated because imperfections in seller competition (on balance) deflate both components of those benefits—the component that relates to the tendency of all potential-injurer avoidance-moves to reduce the amount of gross wages the potential injurer causes to be lost (the amount of damages the potential injurer should expect to have to pay because his behavior will cause his victims to lose gross wages)²⁸ and the component that relates to the tendency of potential-injurer avoidance-moves that are resource-saving

27. Admittedly, this tax-impact is somewhat offset by the partial failure of damage-awards to reflect inflation. In effect, this imperfection is a variant of imperfection (A)(2)—reflects the fact that the set of victims who are entitled to recover does not include consumers of the products whose outputs would have been higher had the accident not disabled the traditional victim and beneficiaries of the additional taxes that the disabled worker would have otherwise paid.

28. Two premises or sets of premises underlie the assertion that imperfections in seller competition deflate the component of the private benefits of avoidance to potential injurers that reflects the tendency of the avoidance to reduce the amount of wages the potential injurer should expect his victims to lose through the illnesses and injuries he caused. The first set, which can be derived by combining a priori analyses with uncontroversial empirical assumptions, relates to the monopoly distortion in the private value to their employers of the services provided by marginal workers who perform different types of functions. This monopoly distortion is relevant because it converts into a monopoly distortion in the private benefits a potential injurer will obtain by making an avoidance-move that prevents him from disabling workers for whose associated gross-wage loss he will be liable. Thus, *ceteris paribus*, monopoly *deflates* the marginal revenue product and hence gross wage of any worker who functions by increasing his employer's unit output because monopoly causes the marginal revenue that the employer obtains by selling the additional units of output that the worker's efforts enable him to produce below the price which that output's consumers would have been willing to pay for the units in question. Conversely, monopoly *inflates* the private value to his employers of any worker who functions by creating a new product-variant, a new distributive outlet, or additional capacity or inventory (by creating a quality-or-variety-increasing ["QV"] investment) because monopoly deflates the private cost of using such QV investments by deflating the private value of the relevant resources to their alternative employers by more than it deflates the private benefits of using such QV investments by causing that use to generate buyer surplus. Finally, monopoly *deflates* the private benefits that any worker who executes production-process research ("PPR")—research designed to discover an alternative, cheaper method of producing a relevant quantity of an existing product—generates for his employer by deflating both the original private cost of the resources that the PPR discoveries enable his employer to save on his original output and any additional profits the relevant discovery enables him to realize by expanding his output (because the use of the discovered process reduces the height of the producer's marginal cost curve above his pre-discovery output).

The second premise is more legitimately contestable. That premise is that the percentage of workers whose disablement avoidance would prevent and who function by increasing unit output or executing PPR projects—workers whose gross wages monopoly deflates—not only exceeds the percentage of the relevant workers who function by creating QV investments—workers whose gross wages monopoly inflates (by more than they are deflated by taxes on the margin of income)—but exceeds it sufficiently to outweigh any possible positive difference between the absolute percentage-inflation of the net wage for QV-investment-creating labor and the weighted-average absolute percentage-deflation of the net wage for unit-output-increasing and PPR-executing labor. For a more detailed discussion, see Markovits, *supra* note 15, at 346-64.

- (AP costs aside) to reduce the private costs the avoiding injurer incurs;²⁹ and
- (3) the non-tax and non-monopoly imperfections such as externalities of production or consumption, monopsonies, or human errors by a product's consumer that distort the private value of a worker's services to his employer, hence the worker's gross wage, hence the private loss a victim sustains when injured in a way that reduces the gross wages he receives, and hence the private benefits that a gross-wage-loss-preventing avoidance-move confers on a potential injurer who would be liable for his victims' gross-wage losses; and
 - (4) the private benefits that avoidance-moves that are resource-saving (AP costs aside)—shifts to less-AP-cost-prone product-variants that are cheaper to produce (AP costs aside) and reductions in unit output—generate on that account tend to be deflated because monopoly tends on balance to deflate the private cost the avoider would otherwise have incurred to buy the resources the avoidance-move causes him not to buy.
- (F) Imperfections That Relate to Potential-Injurer Non-Sovereignty and Non-Maximization³⁰

Four imperfections belong to this category:

- (1) the potential injurer may operate on the basis of false-negative or false-positive assumptions about the negligence of a decision not to avoid because he misestimates the amount by which his avoidance would reduce certainty-equivalent AP costs or the cost of avoidance to him—e.g., if the potential injurer underestimates the amount by which he can reduce AP costs and/or overestimates the private cost of avoidance to him sufficiently to lead him to conclude incorrectly that his failure to avoid will not be negligent, those errors will deflate the injurer's perception of the private benefits of avoidance even if

29. The assertion that monopoly will also deflate the component of the private benefits of avoidance-moves that save resources (AP costs aside) reflects analogous premises or sets of premises to those delineated in the preceding footnote. The only difference is that, in this case, the first set of premises will refer to the monopoly distortion in the private product in their most-privately-productive alternative use of the labor and other resources the avoidance-move in question would save and the second premise will refer to the proportion of those saved resources whose most-privately-productive alternative use would have been unit-output-increasing, QV-creating, and PPR-executing respectively.

30. See George Loewenstein & Richard Thaler, *Anomalies: Intertemporal Choice*, 3 J. ECON. PERSPECTIVES 181-93 (1989); GEORGE LOEWENSTEIN & DRATEN PRELEC, *Anomalies in Intertemporal Choice: Evidence and an Interpretation*, in CHOICE OVER TIME (George Loewenstein ed., Russell Sage Found. 1992); GEORGE LOEWENSTEIN, *The Fall and Rise of Psychological Explanations in the Economics of Intertemporal Choice*, in CHOICE OVER TIME 3-34 (George Loewenstein ed., Russell Sage Found. 1992); DRATEN PRELEC & GOERGE LOEWENSTEIN, *Decision Making over Time and Under Uncertainty: A Common Approach*, 37 MGMT. SCI. 770-76 (1991).

- the actual private benefits of avoidance to him are not deflated;
- (2) even if the potential injurer's misestimate of the amount by which his failure to avoid will increase certainty-equivalent accident-and-pollution losses does not lead him to reach a false conclusion on whether he will be found negligent, it will lead him to reach a false conclusion about the private benefits his avoidance would yield him (the damages for which he could be liable that his avoidance would prevent) when the negative avoidance-decision in question would be negligent;
 - (3) even if the potential injurer may underestimate or overestimate the probability that he will be (or will be found to be) a cause-in-fact and a proximate cause of a loss, underestimates of these probabilities will lead him to underestimate the private benefits that his avoidance would yield him (will deflate the potential injurer's personal perception of the private benefits that his avoidance would yield him even if the actual private benefits that his avoidance would yield him are not deflated); and
 - (4) the potential injurer may fail to maximize (a) because he is inattentive (though, of course, one could say that the cost of avoidance should include the cost of avoiding the inattentiveness that would prevent what would otherwise be allocatively efficient avoidance), (b) because he does his maths wrong, or (c) because there is a conflict of interest between the potential injurer who will have to pay (say, a corporation) and the actor who makes the relevant avoidance-decision (say, an employee)—a conflict that is likely to be most important in cases in which the loss may be detected only after the passage of a considerable period of time, given that (i) the employee who is responsible for the avoidance-decision in question is likely to be working for a different company, retired, deceased, or in any event insufficiently penalizable by the relevant employer at the time at which the loss is detected and the employer is sued and (ii) the relevant employee's current rewards are a function of the company's current profits or his estimated contribution to its current profits.

To the extent that insurance companies are better informed than the potential injurers that they insure about the damages that the insured are likely to have to pay and about the effect on these damages of the different types of avoidance-moves available to the insured, liability-insurance premiums accurately reflect both the damages the potential injurer will have to pay if he does not avoid and the amount by which various avoidance-moves will reduce those damages, and insurers condition their coverage on the insured's making certain avoidance-moves and/or establishing institutional structures (e.g., worker-management safety committees) that will help them detect accident-and-pollution risks and devise profitable ways of responding to them,

insurance may deter potential-injurer misperceptions and non-maximization. Indeed, insurance may have this effect even for potential injurers who choose to self-insure if they do so after informing themselves of the terms on which they could obtain insurance from insurance companies.

(G) Imperfections That Relate to the Extent to Which Tax Law and Innovation Law Internalize or Overinternalize What Would Otherwise Be the External Benefits of Production-Process APCAR

Because no producers will be held negligent for failing to shift to the oPp allocatively efficient AP-cost-reducing locations or product-variants that APCAR may discover, no such discoveries will ever be used and no APCAR into such possibilities will ever be allocatively efficient. However, because producers will be held negligent for failing to use any oPp allocatively efficient production-process that APCAR discovers, production-process APCAR projects may be allocatively efficient in a negligence regime. It may therefore be highly relevant to take account of the knowledge-creation external benefits that production-process APCAR may generate as well as the possibility that tax law and “innovation law”—patent, copyright, and trade-secret law—may not only internalize what would otherwise be the external benefits of knowledge-creation efforts but overinternalize them by making such APCAR more privately profitable than it is allocatively efficient. This topic will be explored in far more detail later in Part II. For this reason, I have departed from the list-format used to expoit the preceding six sets of imperfections on which this section has focused.

- (2) Three Comments on the Preceding List of Imperfections and Distortions
- (A) The Signs of the Distortions Caused by the Listed Individual Imperfections

The first relevant generalization is that the vast majority of the possibilities in the foregoing list refer to imperfections that will deflate the private benefits of avoiding to potential injurers whose liability is determined by the application of a negligence doctrine. Indeed, the only imperfections that clearly inflate the ex ante private benefits that a potential injurer should anticipate realizing by avoiding are the crushing-liability possibility discussed in item (B)(4)—a possibility

that has a deflating counterpart that is probably at least as important across all cases, the insufficient-liability possibility to which item (B)(4) also refers—and the tax distortion listed as item (E)(1). Admittedly, in some cases, the relevant private benefits may also be inflated by the inability of tort law to deal with situations in which the certainty-equivalent loss rises non-proportionately with the number of members of any most-allocatively-efficient avoidance-team who do not avoid—an imperfection listed as item (A)(9), by the non-tax and non-monopoly imperfections listed as item (E)(3), and by the tax-law and innovation-law provisions briefly discussed under heading (G). However, across all cases, these imperfections seem unlikely to inflate the relevant private benefits. Moreover, although many seem to believe that the relevant private benefits are inflated on balance by the errors in damage-awards listed as item (A)(7), I think such errors tend to deflate the private benefits potential injurers can obtain by avoiding.

(B) The Fact That the Aggregate Percentage-Distortion in the Relevant Private Benefits— $\% \Sigma D(PB_{APCA}) \equiv \Sigma D(PB_{APCA}) / LB_{APCA}$ —Varies with the Type of Avoidance-Move in Question

For at least two reasons, the magnitude of the percentage-deflation in the private benefits of avoidance to a potential injurer who is liable in tort only if found negligent (and the likelihood that this deflation will critically affect the private profitability of the relevant avoidance-move) varies with the nature of the avoidance-move in question. The first is that, in practice, courts do not assess for negligence the decision of potential injurers to reject many of the types of avoidance-moves that may be oPp allocatively efficient. I will illustrate this point first by focusing on the avoidance-options available to a producer and then by focusing on the avoidance-options available to a car driver.

Producers may be able to avoid in any of the following five ways: (1) shifting to a known, less-AP-cost-prone production-process; (2) shifting to a known, less-AP-cost-prone location; (3) shifting to a known product-variant whose production and consumption combined are less-AP-cost-prone; (4) reducing their unit outputs or going out of business altogether; and (5) doing research into less-AP-cost-prone production-processes, locations, or product-variants. In practice, the only type of avoidance-move whose rejection is assessed for negligence is the first—a refusal to adopt a known, less-AP-cost-prone production-process. Admittedly, producers are sometimes held liable

because of their location-choice, but such liability-impositions are made under nuisance law and are not based on negligence calculations. Producers are never held negligent for failing to shift to a less-AP-cost-prone product-variant, to reduce their unit outputs, or to do accident-and-pollution-cost-avoidance research ("APCAR"). The negative distortion in the private benefits that all avoidance-moves other than shifting to a known, less-AP-cost-prone production-process will yield potentially injurious producers is therefore likely to be very high if the producer's tort liability is governed by a traditionally defined and traditionally applied negligence doctrine.

The situation is not significantly different when the potential injurer in question is a car driver. In particular, the only types of car-driver avoidance-moves whose rejection will be assessed for negligence are rejecting a known, safer method of driving the car and choosing not to make a repair that would make the car less dangerous to operate (avoidance-moves that are analogous to shifting to a known, safer production-process). Decisions by car drivers about whether to drive at all, which route to take, what type of car to use (a Juggernaut Eight as opposed to a Deux Cheveaux or Yugo), or (less importantly) whether to do research into the issues previously listed in this sentence are never in practice assessed for negligence.

My discussion of the second reason why the aggregate percentage-distortion in the private benefits that potential injurers can obtain by avoiding varies with the type of avoidance-move in question—viz., that the monopoly percentage-distortion in the relevant private benefits varies with the type of avoidance-move in question—will assume that the relevant potential injurer is a producer. In practice, the importance of this second consideration is limited by the first because (1) in practice the only type of avoidance-move whose rejection is assessed for negligence is a shift to a known, less-AP-cost-prone production-process and (2) one of the factors that cause the monopoly percentage-distortion in the private benefits of avoidance to vary will never be present in production-process-choice situations and the other will be present in such situations only if the relevant producer is not a sovereign maximizer. I persevere nevertheless with this monopoly percentage-distortion issue (1) because one could imagine a negligence system in which APCA decisions relating to more or all types of APCA moves were assessed for negligence and (2) because the monopoly percentage-deflation issue will be relevant for all types of APCA moves under a strict-liability regime.

In any event, there are three premises in the argument that the monopoly percentage-deflation in the private benefits of APCA moves to potential-injurer producers who are or may be liable for their victims' losses will vary with the type of APCA move in question. The first is that monopoly deflates two types of private benefits that potential-injurer avoidance can generate for potential injurers: (A) the benefits that all such avoidance-moves yield potential injurers who would otherwise be liable for the wage-losses that their victims suffer (by deflating the potential victims' gross wages on balance) and (B) the benefits that APCA moves that are resource-saving (AP costs aside) yield on that account (by deflating on balance the private benefits that the saved resources would yield those who would employ them if they were saved). The second premise is that monopoly does not distort three other types of private benefits that potential-injurer APCA can yield potential injurers who would otherwise be liable for the losses they inflicted on their victims: (A) the benefits all APCA moves can yield by sparing the potential injurer's potential victims the pain, suffering, and reduced ability-to-enjoy that they would otherwise experience and for which the injurer would otherwise be liable, (B) the benefits that an APCA shift to a product-variant or location whose average dollar value to its consumers is higher than the average dollar value of its more-AP-cost-prone alternative to its presumably-somewhat-different consumers; and (C) the negative benefits that an APCA shift to a product-variant or location whose average dollar value to its consumers is lower than the average dollar value of its more-AP-cost-prone alternative to its consumers. The third premise is that the percentage of all the private benefits that any given APCA move yields that is distorted by monopoly varies from APCA-move type to APCA-move type. In particular, this percentage (A) is higher for APCA moves that are resource-saving (AP costs aside) or that involve shifts to product-variants or locations that are "less-highly-valued" or not "more-highly-valued" in the relevant sense and (B) is lower for APCA moves that are not resource-saving (AP costs aside) or that involve shifts to "more-highly-valued" product-variants or locations. This third premise reflects the fact that, given the net private benefits the shift in question yields its potential-injurer maker, the amount of those benefits that belong to the types that monopoly distorts will be higher the smaller the amount of those benefits that belongs to the types that monopoly does not distort.

This argument implies that, *ceteris paribus*, (1) the aggregate percentage-deflation in the private benefits of making a resource-saving

APCA move such as reducing unit output or shifting to the production of a product-variant or use of a location (whose consumption and production combined are less-AP-cost-prone) that is less expensive to produce (use), AP costs aside, will be higher than (2) the aggregate percentage-deflation in the private benefits of making an avoidance-move that is resource-neutral or resource-consuming, AP costs aside, such as switching to a less-AP-cost-prone but otherwise-equally-expensive or otherwise-more-expensive production-process, location, or product-variant or doing research designed to discover production-processes, locations, or product-variants (in the general case in which the resource-cost of the research is higher than any non-AP-cost-related savings generated by the use of the discovery it yields). The preceding argument also implies that, *ceteris paribus*, (1) the aggregate percentage-deflation in the private benefits a potential injurer who would otherwise be liable can obtain by shifting to a less-AP-cost-prone product-variant or location that is valued more highly by its consumers than its more-AP-cost-prone alternative is valued by its presumably-somewhat-different consumers is lower than (2) its counterpart for shifts to equally-highly-valued or, a fortiori, less-highly-valued alternatives.

- (C) The Aggregate Distortion in the Private Benefits of Different Types of Potential-Injurer APCA Moves Under Negligence
- (i) Three Generalizations That Apply to the $\Sigma D(PB_{APCA})$ s to All Types of Potential Injurers of Avoiding Rather Than Not Avoiding

The first generalization that applies to $\Sigma D(PB_{APCA})$ s to all types of potential injurers of avoiding rather than not avoiding is that any imperfection that precludes the relevant potential victims from recovering anything causes $\% \Sigma D(PB_{APCA})$ to be (-100%) and renders irrelevant all the other imperfections that are present in the system. The preceding list of imperfections contains many that could produce this result—viz., imperfections (A)(1)-(A)(5), (A)(7), (B)(1)-(B)(4), (C)(1)-(C)(3), and (D)(1)-(D)(2).

The second generalization is that the imperfections just listed will normally not reduce to zero the private benefits the relevant potential injurer should expect to obtain by avoiding. In some cases, this conclusion reflects the fact that the relevant potential injurer will normally not be certain of the presence or relevance of the imperfection in question—e.g., that his potential victims will not sue, that their

losses will not be of the type that is recoverable or will not be found to be recoverable, that his potential victims will be or will be found to be contributorily negligent, that his failure to avoid will not be negligent or will not be found to be negligent, that his conduct will not be the actual or proximate cause of the relevant loss or will not be found to be the actual or proximate cause of that loss, etc. In other cases, this conclusion reflects the fact that the relevant imperfection deflates the private benefits that the potential injurer can obtain by avoiding by less than 100%. For example, some but not all of the relevant potential victims may not be or may not be found to be "entitled victims," some but not all of the "entitled victims" losses may not be or may not be found to be recoverable, some but not all of the "entitled victims" may fail to bring their claims, "entitled victims" may fail to bring some claims but not all claims, triers of fact may incorrectly find the injurer not to be the negligent, actual, or proximate cause of some but not all of the recoverable losses he generated, the cost to the potential injurer of behaving negligently may be reduced but not eliminated by his inability to pay (he may be partially but not totally judgment-proof) or by his insurance coverage, etc.

The third generalization is that when the private benefits that potential injurers can obtain by avoiding are not totally eliminated by the imperfections listed in the first paragraph of this section, the total distortion in those private benefits will also be affected by a number of the other imperfections in our original list—viz., by the details of the comparative-negligence doctrine listed in (A)(3), (A)(6)-(A)(9), (B)(4), and (E)(1)-(E)(4). For example, if we assume that the relevant potential injurer is risk-neutral, the ex ante private benefits he will anticipate obtaining by avoiding will be deflated by 46% if (1) the imperfections listed in the paragraph discussed in the first generalization deflate the ex ante private benefits to him of avoiding by 40% and (2) monopoly deflates by 10% the damages he will have to pay if he is held liable (ex ante damages that absent monopoly would equal 60% of the allocative AP costs his conduct would be predicted to generate).

- (ii) $\Sigma D(PB_{APCA})$ for the Different Types of Avoidance-Moves Available to Potential Injurers Who Are Producers

It may be useful to conclude this section by investigating its implications for the aggregate percentage-distortion in the private benefits of APCA moves of each type that may be available to potentially inju-

rious producers who are liable only if found negligent. The analysis that follows will distinguish five different ways in which producers can avoid:

- (1) shifting to a less-AP-cost-prone production-process;
- (2) shifting to a less-AP-cost-prone location that is equally attractive to the relevant product's consumers;
- (3) shifting to the production of a product-variant whose production and consumption are less-AP-cost-prone combined;
- (4) reducing unit output;
- (5) executing APCAR projects.

The avoidance-moves in question will be respectively symbolized as "PPS" (for production-process shifts), "LS" (for location-shift), "PVS" (for product-variant shift), " \downarrow UO" (for reduction in unit output), and "APCAR." Correspondingly, the aggregate distortion in the private benefits that avoidance-decisions of the relevant type generated for the producer who made it will be symbolized as $\Sigma D(PB_{PPS})$, $\Sigma D(PB_{LS})$, $\Sigma D(PB_{PVS})$, $\Sigma D(PB_{\downarrow UO})$, and $\Sigma D(PB_{APCAR})$.

(a) $\% \Sigma D(PB_{PPS})$ Under Negligence

$\Sigma D(PB_{\Delta PPS})$ is more complicated to analyze than the other $\Sigma D(PB_{\Delta \dots})$ concepts because under our current negligence approach, injurers will sometimes be liable for failing to shift to known, alternative production-processes. In particular, because the practice is to assess PPS rejections for negligence, $\% \Sigma D(PB_{PPS})$ will be (-100%) if and only if one or more of the following sets of conditions is fulfilled:

- (1) the relevant potential injurer would definitely be incorrectly held not to have been the cause of the loss or correctly or incorrectly held not to have been the proximate cause of the loss;
- (2) the relevant producer's decision not to avoid in this way was either (A) not negligent or (B) absolutely certain to be found not negligent even though it was negligent;
- (3) all the relevant victims were either (A) not legally-entitled victims or (B) absolutely certain to be found not entitled even though they were entitled;
- (4) all the relevant victims were barred from recovery on contributory negligence, assumption of risk, or "last clear chance" grounds (regardless of whether they actually were contributorily negligent, had assumed the risk, or had foregone a "last clear chance" to prevent the loss);
- (5) all the relevant victims were certain to prevent the loss by engaging in pre-loss avoidance;
- (6) the potential injurer in question was certain to be freed from legal liability by a charitable-exemption or sovereign-immunity

doctrine (or, if the potential injurer is not a producer, by a fellow-servant rule); and/or

- (7) the potential injurer in question was certain not to bear the cost of paying any of the damages he caused because the legally-entitled victims were certain not to sue or not to sue him (in a joint-tort case) or because he was fully insured or 100% judgment-proof.

In virtually all other cases, $\% \Sigma D(PB_{PPS})$ will be negative though $|\% \Sigma D(PB_{PPS})|$ will be less than (-100%) . Thus, *ceteris paribus*, $\Sigma D(PB_{PPS})$ will tend to be negative to the extent that (1) there is some probability (even if it is less than 100%) that one or more of the above possible conditions is fulfilled, (2) one or more of the above conditions is partially fulfilled—e.g., some but not all victims are not legally entitled, (3) some losses are unrecoverable, (4) comparative negligence reduces potential-injurer liability, (5) triers of fact tend to underestimate victim losses, (6) victims tend to settle for less than they could recover at trial, (7) monopoly and/or other standard Pareto imperfections reduce the victims' private losses below their allocative counterparts, etc.

Indeed, in only two sets of cases may my general conclusion that $\Sigma D(PB_{PPS})$ is negative be incorrect. The first contains those cases in which triers of fact either are on the weighted average likely to overestimate the loss a potential injurer has imposed on his victims and/or may impose punitive damages on the potential injurer if they find him liable. The second contains those cases in which cause-in-fact conclusions are based on circumstantial evidence on the percentage of the ex ante probability of the relevant loss' occurring that the potential injurer's activity contributed and the potential injurer's activity accounts for more than 50% but far less than 100% of the probability of the relevant loss' occurring.

I should emphasize, however, that my own suspicion is that even when both these inflating circumstances are present, $\Sigma D(PB_{PPS})$ may well be negative—that the inflating distortions generated by damage overestimates, punitive damages, and crushing liability will often fail to overcome the deflating distortions generated by the imperfections listed in the preceding paragraph. I therefore think that in the overwhelming majority of cases $\Sigma D(PB_{PPS})$ will be negative.

- (b) $\% \Sigma D(PB_{LS})$, $\% \Sigma D(PB_{PVS})$, $\% \Sigma D(PB_{LUO})$, and $\% \Sigma D(PB_{APCAR})$ for Projects Designed to Discover oPp Allocatively Efficient, Less-AP-Cost-Prone Locations and Product-Variants Under Negligence

Fortunately, $\% \Sigma D(PB)$ for these four types of marginal avoidance-moves can be analyzed simultaneously and simply. Not only are the relevant $\Sigma D(PB)$ s negative, the relevant $\% \Sigma D(PB)$ s are (-100%). This conclusion follows from this Article's assumption that the negligence system it investigates is applied in the way that negligence is currently applied in our legal system—viz., that a producer's rejection of the four types of avoidance-moves listed in the preceding heading is never assessed for negligence³¹—and that potentially injurious producers would not be held liable for failing to make locations-shifts or product-variant shifts under nuisance law or design-defect products-liability doctrine.

* * * * *

In short, this section has explained why $\Sigma D(PB_{APCA})$ is likely to be negative for all the various types of avoidance-moves available to producers in jurisdictions in which their liability is governed by the kind of negligence regimes on which it focuses.

B. The Aggregate Distortion in the Private Cost of APCA Moves of Different Types to a Potential Injurer Who Is Liable Only If Held Negligent

I will continue to concentrate on the avoidance-moves that may be available to potentially injurious producers. I will also continue to classify the "costs" that a shift to a less-highly-valued product-variant or location generates on that account as a "negative benefit" and the "negative costs" that a resource-saving avoidance-move generates as a "positive benefit."

Within this framework, potential-injurer avoidance-moves can generate three types of private and/or allocative costs. First, all avoidance-moves that are resource-consuming (AP costs aside) generate private costs equal to the extra costs that their execution impose on the potential avoider and allocative costs equal to the net allocative product that the net consumed resources would have generated in their alternative uses. Second, all avoidance-moves that increase the

31. When the locations in question are not attributes of the total product that the relevant seller offers for sale, economists would consider the location-shift to be a production-process shift. This article classifies such location-shifts separately because, in practice (unlike the rejection of other types of production-process shifts), the rejection of such location-shifts has never been assessed for negligence. (In part, this last statement reflects the fact that the determination of whether a private producer is a "nuisance" does not turn on whether his continued operation would fail the corrected Hand-test for negligence.)

amount of accident and pollution costs that the potential-injurer avoider generates that are not internalized to him (by the legal system, private contracts, or non-contractual social relationships) will generate allocative costs though no private costs on that account. An avoidance-move could generate this latter type of cost in various situations—e.g., if the law made a negligent producer liable for the damage done by the water pollution but not the air pollution he generated or if a negligence law that was applied to location-choices (among locations to which consumers were intrinsically indifferent) as well as to the other choices that lawyers would classify as production-process choices ignored the effect of a producer's location-choice on the amount of road-congestion and air-pollution externalities his employees generate when traveling to and from work while considering the effect of his location-choice on the amount of air pollution and water pollution his operation generated directly. Third, producers who reduce the AP costs they generate by reducing their unit outputs generate private costs equal to the incremental revenue they would have obtained by selling the units of output that they chose not to produce and allocative costs equal to the allocative value that the consumption of these units of output would have generated. This section (1) analyzes the aggregate distortion in each of these three types of private costs and (2) examines the implication of these analyses for the aggregate distortion in the private costs of the various types of avoidance-moves available to producers.

- (1) The Aggregate Distortion in Two Types of Private Costs AP-Cost Avoiders May Incur by Avoiding³²
 - (A) The Aggregate Distortion in the Private Costs Potential Injurers Incur Because Their Avoidance-Moves Are Resource-Consuming (AP Costs Aside)

32. The text ignores the possibility that PC_{APCA} may also be distorted by the fact that APCA moves that reduce certain types of AP costs that the law attempts to internalize may also generate other types of AP costs that the law does not attempt to internalize or internalizes inadequately. No doubt, some avoidance-moves that reduce covered AP costs reduce non-covered AP costs as well—e.g., in a regime in which producers are liable for the air pollution they generate but not for the water pollution they cause, some production-process shifts will reduce water pollution as well as air pollution. The private cost of such moves will be inflated on this account (if I count the reduction in non-covered AP costs as a negative cost). However, I suspect that the kind of avoidance-move (production-process shifts) that a switch from no liability to conventional negligence liability is likely to induce a producer to make more often will increase the amount of non-covered AP costs the “avoider” generates—e.g., will increase the amount of water pollution a producer causes at the same time that it reduces the amount of air pollution he causes.

Various Pareto imperfections can distort the private costs that an avoidance-move that is resource-consuming (AP costs aside) generate on that account. In the one direction, monopoly deflates those private costs of APCA just as it deflates the private costs of all other types of resource-uses.

I suspect that the monopoly percentage-deflation in these APCA costs varies somewhat with the type of producer avoidance-move in question. Thus, the monopoly percentage-deflation in the private costs of APCAR moves of all types is probably absolutely lower than the monopoly percentage-deflation in the private cost of all other types of APCA moves. In the case of APCAR expenditures designed to discover less-AP-cost-prone production-processes or physical products, this conclusion reflects the following premises: (1) technologically skilled and creative resources are specialized, (2) APCAR moves designed to discover less-AP-cost-prone production-processes or product-variants tend on that specialized-resource account to withdraw a higher percentage of the resources they consume from both technologically-innovative quality-or-variety-investment-creating (hereinafter QV-investment creating) and technologically innovative production-process-research-executing (hereinafter PPR-executing) uses than the percentage of the economy's resources devoted to such uses, (3) more of the economy's technologically skilled and creative resources are allocated to QV-creating than to PPR-executing uses (so that the absolute amount of "additional" resources that resource-specialization causes APCAR to withdraw from technologically-innovative QV-creating uses is higher than the absolute amount of "additional" resources that resource-specialization causes APCAR to withdraw from technologically innovative PPR-executing less), and (4) the monopoly percentage-inflation in the private benefits yielded by marginal QV investments is much higher than the monopoly percentage-deflation in the private benefits yielded by marginal PPR projects.³³ In the case of APCAR expenditures designed to discover less-AP-cost-prone locations, this conclusion reflects the last three of these premises and the premise that the same training, knowledge, and personal capacities that enable someone to discover a location that is more profitable for non-AP-cost reasons and/or consumer-evaluation reasons will be relevant to the discovery of locations whose preferability is critically affected by their use's AP-cost consequences. Although the sign of the distortion in the private cost of APCAR

33. See Markovits, *supra* note 15, at 349-63.

moves is therefore even more contestable than the sign of the monopoly distortion in the private profitability of resource-uses that withdraw resources from alternative uses in the same proportion that the economy allocates resources to those alternative uses, I will proceed on the assumption that $MD(PC_{APCAR})$ is negative.

The private cost of the extra non-AP-cost resources consumed by avoidance-moves that are resource-consuming (AP costs aside) may also be distorted by taxes on the margin of income. In particular, to the extent that such moves withdraw labor from the production of leisure, taxes on the margin of income will tend to inflate their private cost by raising the gross wage the avoider must pay the relevant workers above the private value and *ceteris paribus* the allocative value of the leisure they have to forego to work for him (because they will work only if their net wage equals the private value to them of the leisure they have to forego to do so).

Although, obviously, the sign of the tax distortion in the private cost of resource-consuming APCA moves of all types cuts against the following conclusion, I will proceed on the assumption that the aggregate distortion in the private cost of all such moves that do not increase the amount of externalities the avoider generates that are not covered by the law is negative.

(B) The Distortion in the Private Cost to Potential Injurers of Reducing the AP Costs They Generate by Reducing Their Unit Outputs

Ceteris paribus, each of the various possible types of Pareto imperfections will tend to distort the private cost a potential injurer must incur to reduce the AP costs he generates by decreasing his unit output—i.e., the marginal or incremental revenue he must forego to reduce his output by one or more units. Thus, *ceteris paribus*, these private “costs” will be deflated if the producer in question is a monopolist to the extent that he faces a downward-sloping demand curve and does not practice perfect price discrimination because (1) marginal revenue will be less than price for such a seller and (2) on oPp assumptions the price for which the forgone unit would have sold will equal the allocative value that its production and consumption would have generated. *Ceteris paribus*, the relevant private “costs” will or may also be deflated in six situations: if (1) the buyer in question is a monopsonist who does not engage in perfect price discrimination because in this case the price he pays for the last unit he purchases will

understate its cost to him, hence its private value to him, and hence the allocative value its production and consumption would generate on oPp assumptions; (2) the buyer(s) in question undervalued the unit(s) consumed; (3) the buyer(s) in question failed to maximize—stopped purchasing the good at a point at which its dollar value to him (them) exceeded its price; (4) the consumption of the relevant unit(s) generated an external benefit; (5) a sales tax was levied on the unit(s) in question so that its gross price and hence its private value to its consumer exceeded its net price—the revenue it would yield its producer if he were a perfect competitor; or (6) the sale of the unit(s) in question generated buyer surplus for some reason not previously discussed.

In the other direction, the relevant private “cost” will tend to be inflated if (1) the buyer(s) in question overvalued the unit(s) in question, (2) the buyer(s) in question failed to maximize by paying more for the unit(s) in question than it (they) was (were) worth to him (them), or (3) the consumption of the relevant unit(s) generated an external cost.

Obviously, then, the sign of the aggregate distortion in the private “cost” of avoiding by reducing unit output cannot be determined through a purely a priori analysis. However, I am confident that in the vast majority of cases, monopoly and tax imperfections cause this distortion to be negative—i.e., reduce the private cost of avoiding in this way below its allocative counterpart.

(2) The Aggregate Distortion in the Private Cost of the Various Types of Avoidance-Moves Available to Potentially Injurious Producers

The analyses that follow assume that the APCA shifts selected will not increase the amount of any type of externalities the actor in question generates.

(A) The Aggregate Distortion in the Private Cost of Shifts to Less-AP-Cost-Prone Production-Processes — $\Sigma D(PC_{PPS})$

Sovereign, maximizing producers will always shift to production-processes that are less expensive, AP costs aside (hereinafter otherwise-less-expensive production-processes), even if tort law does not give them an incentive to avoid AP costs. Therefore, if producers are sovereign maximizers, all production-process shifts that tort law induces will be resource-neutral or resource-consuming. For simplicity,

this section assumes that the shifts in question are resource-consuming, AP-cost consequences aside.

Two types of Pareto imperfections will tend individually to distort PC_{PPS} : tax imperfections and monopoly imperfections (imperfections in competition). Tax imperfections inflate PC_{PPS} to the extent that the shifts in question withdraw some of the resources that they consume (AP-cost consequences aside) from the production of leisure. This conclusion reflects the fact that taxes on the margin of income raise the gross wage the avoider must pay a worker to induce him/her to sacrifice leisure above the allocative value of the foregone leisure—on oPp assumptions, its private value to the worker in question, which again on oPp assumptions will equal the net wage he/she receives. (Unemployment insurance will produce the same effect by inflating the net wages necessary to induce a potential worker to forego leisure above the allocative value of the foregone leisure.)

PC_{PPS} will also be distorted by monopoly. Footnote 28's analysis of the monopoly distortion in the private benefits that avoidance-moves generate by preventing accidents and illnesses that would cause their victims to lose wages applies in the current context as well. Just as monopoly on balance deflates the PB that avoidance generates by "saving resources" that are subsequently devoted to unit-output-increasing, QV-creating, and PPR-executing uses, it on balance deflates the non-AP-costs avoidance generates by withdrawing resources from unit-output-increasing, QV-creating, and PPR-executing uses. In fact, because I suspect that the percentages of the resources that APCA production-process shifts save that are devoted to the three uses just listed equal the percentages of the resources that such shifts consume that are withdrawn from the three types of uses in question, the percentage monopoly deflation in the relevant PC will approximately equal the percentage-monopoly deflation in the relevant PB.

The sign of $\Sigma D(PB_{PPS})$ cannot be predicted on an a priori basis. However, the fact that only a small percentage of the resources APCA production-process shifts consume are withdrawn from the "production" of leisure and my belief that $\%MD(PC_{PPS}) \cong MD(PC_{PPS}/LC_{PPS})$ is not only negative but absolutely quite high lead me to conclude that $\Sigma D(PC_{APCA})$ is negative—that, taken together, the relevant imperfections deflate PC_{APCA} .

- (B) The Aggregate Distortion in the Private Cost of Shifts to Less-AP-Cost-Prone Locations or Product-Variants That Would Not Affect the Value of the Product or Service in Question to Any

Consumer— $\Sigma D(PC_{LS})$ and $\Sigma D(PC_{PVS})$ for Shifts That Do Not Affect Consumer Evaluation of the Producer's Services or Product (When $\Delta CE=0$)

The same analysis and conclusion apply to these types of shifts as to their predecessor.

- (C) The Aggregate Distortion in the Private Cost of Shifts to Locations or Product-Variants Whose Production and Consumption Combined Generate Lower AP Costs When the Shift Does Affect Consumer Evaluation of the Producer's Services or Product— $\Sigma D(PC_{LS})$ and $\Sigma D(PC_{PVS})$ When $\Delta CE \neq 0$

The analysis of the aggregate distortion in the private cost of these types of shifts differs from that of its predecessors only in that such shifts may be resource-saving (AP costs aside) rather than resource-consuming or resource-neutral (AP costs aside). In particular, if the average dollar value to their consumers, of the relevant units of the product-variant or location that reduces AP costs is lower than its counterpart for the product-variant or location whose production and consumption combined generate more AP costs, the APCA shift in question may be to an otherwise-less-expensive product-variant or location (whose cost advantages would be outweighed by its revenue disadvantages, tort-law consequences aside). In this case, the relevant Pareto imperfections would tend to deflate the cost-savings the shift in question generates—a result that is listed as item (E)(4) in section II.1.A.(1)'s list of the imperfections that distort the private benefits of avoidance by potential injurers who are liable only if found negligent. *Ceteris paribus*, the presence of these deflated benefits will increase $|\%MD(PB)|$ for location or product-variant shifts by reducing the percentage of the LB of such shifts that monopoly does not distort—the percentage that reflects the avoidance-move's tendency to prevent pain, suffering, and reductions in the ability to enjoy. Of course, AP-cost-reducing shifts of these kinds are equally likely to be to otherwise-more-expensive locations or product-variants that consumers prefer, AP costs aside. In this case, the relevant Pareto imperfections will tend to deflate the extra costs in question (presumably by the same percentage by which it deflates the other costs of the move in question that it does distort). *Ceteris paribus*, the presence of these deflated costs will not affect $|\%MD(PC_{LS})|$ because the percentage of these costs that monopoly does not distort (the percentage that reflects the leisure that is foregone to produce the otherwise-more-ex-

pensive product) probably equals the percentage of the other costs of the location-shift or product-variant shift attributable to foregone leisure.

(D) The Aggregate Distortion in the Private Cost of Avoiding by Reducing Unit Output or Shutting Down Altogether— $\Sigma D(PC_{\downarrow UO})$

$PC_{\downarrow UO}$ equals the revenue loss the relevant producer incurs by reducing his unit output. In general, $\Sigma D(PC_{\downarrow UO})$ will tend to be less than zero. Although all the various Pareto imperfections can affect $\Sigma D(PC_{\downarrow UO})$, the preceding conclusion primarily reflects three facts: (1) virtually all unit-output producers are imperfect competitors who face downward-sloping demand curves; (2) virtually no such producers find it profitable to engage in perfect price discrimination; and (3) the marginal or incremental revenue that a seller who faces a downward-sloping demand curve will give up by reducing his unit output if he would not otherwise have engaged in perfect price discrimination on the units in question will be less than the value of these units to their potential consumers—roughly speaking, the price for which they could have been sold, which (again roughly speaking) equal their allocative value on oPp assumptions.

(E) The Aggregate Distortion in the Private Cost of APCAR— $\Sigma D(PC_{APCAR})$

The execution of APCAR projects will always be resource-consuming. Monopoly will deflate PC_{APCAR} for the same reasons that it deflated PC_{PPS} . Admittedly, $|\%MD(PC_{APCAR})|$ is probably lower than $|\%MD(PC_{PPS})|$. This conclusion reflects the following argument:

- (1) resources that are technically skilled and creative or locationally knowledgeable are specialized in their use; therefore
- (2) the percentages of the resources that APCAR expenditures consume that are withdrawn from QV-creating and non-APCAR PPR-executing uses are probably higher than the percentages of the resources that APCA production-process shifts consume that are withdrawn from such uses;
- (3) more technologically skilled and locationally knowledgeable resources are devoted to QV creation than to non-APCAR PPR execution; therefore
- (4) the difference between the percentages of the resources that APCAR projects and APCA production-process shifts consume that are withdrawn from QV creation probably exceeds

the difference between the percentages of the resources that they consume that they withdraw from non-APCAR PPR uses;

- (5) for a variety of reasons, $|\%MD(PB_{(QV)})|$ exceeds $|\%MD(PB_{(PPR)})|$; hence
- (6) even though $\%MD(PB_{(QV)}) > 0$ and $\%MD(PB_{(PPR)}) < 0$, $|\%MD(PC_{APCAR})|$ is probably lower than $|\%MD(PC_{PPS})|$.

C. The Aggregate Percentage-Distortion in the Private Profitability of the APCA Moves of the Different Types That May Be Made by Potentially Injurious Producers Who Are Liable for the AP Costs They Generate Only If Found Negligent

This section combines the conclusions that its predecessors reached about $\Sigma D(PB_{\Delta APCA})$ and $\Sigma D(PC_{\Delta APCA})$ for the various types of avoidance-moves available to potentially-injurious producers to reach conclusions about the sign and magnitude of $\Sigma D(P\pi_{\Delta APCA}) \equiv \Sigma D(PB_{\Delta APCA}) - \Sigma D(PC_{\Delta APCA})$ and $\% \Sigma D(P\pi_{\Delta APCA}) \equiv \Sigma D(P\pi_{\Delta APCA}) / LE_{\Delta APCA}$ for each such type of avoidance-move (where "LE" stands for "allocative efficiency"). The analysis proceeds on the currently realistic assumption that the only type of negative avoidance-decision that producers can make that will be assessed for negligence is a decision not to shift to a known, less-AP-cost-prone production process.

This section has five parts—one for each of the five different types of avoidance-moves that potentially injurious producers can make. Each part begins by analyzing $\% \Sigma D(P\pi_{\Delta APCA})$ for the relevant type of avoidance-move on the assumption that the $\% \Sigma D(P\pi_{\Delta APCA})$ in question is not affected by monopoly. It then analyzes the impact of monopoly on the relevant $\% \Sigma D(P\pi_{\Delta APCA})$ figure.

It should be emphasized at the outset that these second analyses are not analyses of $MD(P\pi)$ for the potential-injurer APCA moves in question. Analyses of $MD(P\pi_{\Delta APCA})$ would be inapposite because $MD(P\pi)$ is defined to equal the distortion that monopoly would cause in the private profitability of the choice in question if monopoly were the only type of Pareto imperfection in the system. More specifically, any analysis of $MD(P\pi_{\Delta APCA})$ would be inapposite because it would have to be based on one of three sets of assumptions that are not satisfied in the current context. All three of these sets of assumptions contain the assumption that the economy contains no Pareto imperfections not caused by imperfections in tort-law doctrine, tort-law-claiming processes, or tort-law official desisionmaking. In addition, the relevant three sets of assumptions respectively assume that either

- (1) injurers are strictly liable and victims always use tort law to collect their losses from their injurers;
- (2) injurers are liable only if found negligent, the rejection of all APCA moves is assessed for negligent, and victims always use tort law to collect their losses from their injurers; or
- (3) all AP costs that tort law fails to internalize to injurers are independently internalized by other government policies or by social reactions not induced by law.

(1) $\% \Sigma D(P_{\pi_{\Delta PPS}})$ in a Negligence Regime

(A) $\% \Sigma D(P_{\pi_{\Delta PPS}})$ Ignoring the Effects of Monopoly

Since rejections of APCA production-process shifts are assessed for negligence, the fact that in practice the rejection of many types of avoidance-moves is not assessed for negligence will not deflate PB_{PPS} and $PB_{\Delta PPS}$ as it will the private benefits and profits of the other kinds of avoidance-moves available to potentially injurious producers. In the absence of monopoly (and, as we shall see, even given monopoly), $\% \Sigma D(P_{\pi_{\Delta PPS}})$ for shifts to less-AP-cost-prone production-processes whose PC are less than the ($\downarrow[PL+R]$) that they would yield will therefore not be so negative as $\Sigma D(P_{\pi_{\Delta LS}})$, $\Sigma D(P_{\pi_{\Delta PVS}})$, $\Sigma D(P_{\pi_{\Delta \downarrow UO}})$, and $\Sigma D(P_{\pi_{\Delta APCAR}})$. On the other hand, the aggregate percentage-distortion in the P_{π} of APCA production-process shifts whose PC exceeds the reduction in $(PL+R)$ they would generate will be similar to its counterpart for APCA location-shifts, product-variant shifts, unit-output reductions, and APCAR expenditures since producers will generally not be found negligent or liable for rejecting such avoidance-moves.

Still, if monopoly had no relevant impact, $\% \Sigma D(P_{\pi_{\Delta PPS}})$ would almost always be quite negative. Thus, as we saw, $P_{\pi_{\Delta PPS}}$ will tend to be deflated by the following facts, among others: some actual victims are not "entitled victims;" some "entitled victims" will not sue; victims will tend to settle for less than the award to which they are entitled; triers of fact will make false-negative and false-positive findings of negligence; some suits will be correctly or incorrectly dismissed on proximate-cause grounds; some suits will be incorrectly dismissed on cause-in-fact grounds or "correctly" dismissed on cause-in-fact grounds, given the failure of the common law to develop a "proportionate liability" rule to cover cases in which causation can be proved only through evidence of the alleged injurer's contribution to the ex ante probability of the relevant loss' occurring; some victims' recoveries will be blocked or reduced by their contributory negligence, as-

sumption of risk, or failure to take advantage of a last clear chance to prevent the loss; triers of fact will tend to underestimate the loss entitled victims actually suffered; taxes will inflate the private cost of APCA production-process shifts, etc.

Admittedly, in a few cases, the deflation in $P\pi_{\Delta PPS}$ that these imperfections generate may be fully countered or overbalanced by the prospect of juries' overestimating the victim's losses or imposing punitive damages on the injurer, by crushing liability, or by the tendency of the combination of joint-and-several liability and the no-contribution rule to critically inflate the private profitability of avoidance to a potential inferior-allocatively-efficient avoider (while critically deflating the private profitability of avoidance to a potential most-allocatively-efficient avoider) in an individual-care joint-tort situation. But in virtually all cases, including some cases in which the three inflating imperfections just described are operative, $\% \Sigma D(P\pi_{\Delta PPS})$ will be negative in a negligence regime if monopoly has no effect on the distortion in question. In this connection, one should note that, in a negligence regime, crushing liability can induce a potential injurer to make an allocatively inefficient avoidance-move only when there is some prospect of the trier of fact's making a false positive finding of negligence and the rejection of the APCA move in question would be allocatively inefficient despite the fact that the rejection was not negligent.

(B) The Effect of Monopoly on $\% \Sigma D(P\pi_{\Delta PPS})$ for Injurers Who Are Liable Only If Found Negligent

(i) When $(\downarrow[PL+R]_{\Delta PPS})=PC_{\Delta PPS}$

I will assume that a potentially injurious producer will be found negligent for failing to shift to a less-AP-cost-prone production-process whose use would reduce certainty-equivalent AP-costs by an amount equal to the extra production-costs its use caused him to incur. Although this implies that (absent monopoly) $\Sigma D(P\pi_{\Delta PPS})$ will not be so negative in this case as it would be if the rejection of the PPS in question would not be negligent, $\Sigma D(P\pi_{\Delta PPS})$ will still almost always be negative in this sort of situation, absent monopoly. The sign and magnitude of the effect of monopoly on $\Sigma D(P\pi_{\Delta PPS})$ for production-process shifts in this category depend on a number of empirical considerations:

- (1) the absolute magnitude of the negative $\%MD(PB_{\Delta UO})$, of the positive $\%MD(PB_{\Delta QV})$, and of the negative $\%MD(PB_{\Delta PPR})$;

- (2) the extent to which the percentage of the resources that such shifts consume that are withdrawn from unit-output-increasing uses is higher than the percentage of the resources that they save that are devoted to unit-output-increasing uses; relatedly,
- (3) the extent to which the percentages of the resources that such shifts consume that are withdrawn from QV-creating and PPR-executing uses are lower than the percentages of the resources that they save that are respectively devoted to QV-creating and PPR-executing uses;
- (4) the percentage of the allocative costs that such shifts generate that reflects the shift's tendency to reduce the amount of leisure that is produced (because monopoly does not systematically distort the private value of leisure);
- (5) the percentage by which $PB_{\Delta PPS}$ is reduced below $(\downarrow[PL+R]_{\Delta PPS})$ by the various imperfections that can have this effect in negligence regimes; and
- (6) the percentage of the allocative benefits $(\downarrow\text{allocative}[PL+R])$ that such shifts generate that are attributable to the shifts' preventing pain, suffering, and reductions in the ability to enjoy (whose private value monopoly does not distort).

In my judgment, $\Sigma D(P\pi_{\Delta PPS})$ will tend to be positive in this sort of case and monopoly will therefore tend to reduce the absolute value of the negative $\% \Sigma D(P\pi_{\Delta PPS})$ of shifts in this $(\downarrow[PL+R]_{\Delta PPS})=PC_{\Delta PPS}$ category for two reasons:

- (1) monopoly distorts (on balance deflates) a higher percentage of the allocative costs than of the allocative benefits such shifts generate—(A) the percentage that sacrificed leisure constitutes of the relevant LC is lower than (B) the sum of (i) the percentage that prevented pain, suffering, and reduced ability to enjoy constitute of the relevant LB and (ii) the percentage by which PB falls below $(\downarrow[PL+R])$ because some victims do not sue, victims settle for less than their actual loss, triers of fact make false-positive and false-negative findings of negligence, some victims cannot recover or have their recoveries reduced because they are found to have been contributorily negligent, to have assumed the risk, or to have foregone a last-clear chance, etc.—and
- (2) the percentage by which monopoly deflates the PBs that it distorts is lower than the percentage by which it deflates the PCs that it distorts (because a higher percentage of the PCs than of the PBs are inflated by monopoly—because the percentage of the resources that such moves save that are devoted to QV-creating uses is higher than the percentage of the resources such moves consume that are withdrawn from such uses).

Still, even when this effect of monopoly is taken into account, I am confident that $\Sigma D(P\pi_{\Delta PPS}) < 0$ when $(\downarrow[PL+R]_{\Delta PPS})=PC_{\Delta PPS}$.

(ii) When $(\downarrow[PL+R])_{\Delta PPS} < PC_{\Delta PPS}$

In this case, the injurer in question will not be found negligent, at least if (as I will assume) the trier of fact makes no false-positive errors on the negligence issue. Absent monopoly-effects, $\% \Sigma D(P\pi_{\Delta PPS})$ will be very negative in these cases. The effect of monopoly on $\% \Sigma D(P\pi_{\Delta PPS})$ will be quite different in this case. Because $PB_{\Delta PPS}$ for the potential injurer will be zero regardless of the competitiveness of the economy, monopoly will not change $\Sigma D(PB_{\Delta PPS})$ in this case. Because monopoly will still deflate $PC_{\Delta PPS}$ in this case to the same extent that it deflates $PC_{\Delta PPS}$ in the $(\downarrow[PL+R])_{\Delta PPS} = PC_{\Delta PPS}$ case, it will reduce the absolute value of the (higher) negative $\Sigma D(P\pi_{\Delta PPS})$ far more in this case than in the $PC_{\Delta PPS} = (\downarrow[PL+R])_{\Delta PPS}$ case. However, I am confident that in this sort of case monopoly will not critically affect $\Sigma D(P\pi_{\Delta PPS})$ —i.e., it will not induce the relevant potential injurer to avoid.

(iii) When $(\downarrow[PL+R])_{\Delta PPS} > PC_{\Delta PPS}$

In this case, the producer's rejection of the production-process shift in question clearly will be negligent. Absent monopoly, $\% \Sigma D(P\pi_{\Delta PPS})$ will therefore tend to be less negative in this case than in the preceding case. However, because the absolute deflation that monopoly generates (given all other imperfections) in the $PB_{\Delta PPS}$ will be higher relative to the absolute deflation monopoly generates in $PC_{\Delta PPS}$ when $(\downarrow[PL+R])_{\Delta PPS} > PC_{\Delta PPS}$ than when $(\downarrow[PL+R])_{\Delta PPS} = PC_{\Delta PPS}$ or $(\downarrow[PL+R])_{\Delta PPS} < PC_{\Delta PPS}$, $MD(P\pi_{\Delta PPS})$ will be less positive in the current case than in either of its predecessors and indeed may even be negative. Monopoly will therefore decrease the absolute value of the negative $\Sigma D(P\pi_{\Delta PPS})$ less in this case than in its predecessors. Indeed, it may even increase the absolute value of the negative $\Sigma D(P\pi_{\Delta PPS})$ if $(\downarrow[PL+R])_{\Delta PPS}$ is sufficiently above $PC_{\Delta PPS}$ for $|MD(PB_{\Delta PPS})|$ to exceed $|MD(PC_{\Delta PPS})|$.

(2) $\% \Sigma D(P\pi_{\Delta LS})$ in a Negligence Regime

The analysis of $\Sigma D(P\pi_{\Delta LS})$ in a negligence regime differs from the analysis of $\% \Sigma D(P\pi_{\Delta PPS})$ in a negligence regime in only two respects. The first is the more important. Because rejections of location-shifts are not in practice assessed for negligence, $\Sigma D(P\pi)$ in the absence of monopoly will be as negative for *all* APCA location-shifts as it is for those APCA production-process shifts whose rejection would not be

found negligent. The second difference relates to the fact that ΔCE for APCA location-shifts may be non-zero. As previously shown, when $\Delta CE < 0$, $|\%MD(PB_{LS})|$ will tend to be absolutely higher than it would otherwise be and when $\Delta CE > 0$, $|\%MD(PB_{LS})|$ will tend to be absolutely lower than it would otherwise be. Accordingly, when $\Delta CE < 0$, $MD(P\pi_{\Delta LS})$ will be less positive than would otherwise be the case and may be negative. When $\Delta CE > 0$, $MD(P\pi_{\Delta LS})$ will be more positive than it would otherwise be. The effect of monopoly on what would otherwise be the negative $\Sigma D(P\pi_{\Delta LS})$ will obviously alter accordingly.

(3) $\% \Sigma D(P\pi_{\Delta PVS})$ in a Negligence Regime

Both parts of the analysis of $\% \Sigma D(P\pi_{\Delta PVS})$ in a negligence regime—the analysis of $\% \Sigma D(P\pi_{\Delta PVS})$ in the absence of any monopoly effects and the analysis of the effect of monopoly on $\% \Sigma D(P\pi_{\Delta PVS})$ —are identical to their counterparts for the analysis of $\% \Sigma D(P\pi_{\Delta LS})$. Once more, then, $\% \Sigma D(P\pi_{\Delta PVS})$ will almost always be highly negative under negligence.

(4) $\% \Sigma D(P\pi_{\Delta \downarrow UO})$ in a Negligence Regime

If monopoly had no effect on $\% \Sigma D(P\pi_{\Delta \downarrow UO})$, $\% \Sigma D(P\pi_{\Delta \downarrow UO})$ would be highly negative for any reduction in unit output that would reduce AP costs because no producer is ever found negligent for failing to reduce the AP costs that he generated by reducing his unit output. In reality, however, monopoly will tend to reduce $|\% \Sigma D(P\pi_{\Delta \downarrow UO})|$ by making it profitable for producers to reduce their unit outputs below what would be the allocatively efficient level if AP costs (or externalities in general) could be ignored. This conclusion reflects the “fact” that the percentage by which monopoly deflates $PB_{\Delta \downarrow UO}$ is lower than the percentage by which it deflates $PC_{\Delta \downarrow UO}$.

$PC_{\Delta \downarrow UO}$ equals the marginal or incremental revenue that a producer foregoes by reducing his unit output. On oPp assumptions, $\%MD(PC_{\Delta \downarrow UO}) \equiv MD(PC_{\Delta \downarrow UO}/LC_{\Delta \downarrow UO})$ for a producer who would not have engaged in price discrimination on the foregone units had he produced them will be $(P-MR)/P$ for a marginal reduction in unit output and $([\text{average } P - \text{average } MR]/\text{average } P)$ for an incremental reduction in unit output (when, roughly speaking, the averages in question refer to the average heights of the demand and conventional marginal revenue curves for the product in question over the relevant range in output).

$PB_{\Delta\downarrow UO}$ is the private-cost savings the producer enjoys when he no longer has to purchase the additional resources that he would have used to produce the units of output that he decided not to produce. I will assume, *ad arguendo*, that the P/MC ratio of each product whose output might be reduced for APCA reasons equals the weighted-average P/MC ratio of the products whose outputs would have been reduced had the APCA unit-output reductions not been effectuated (weighted by the variable-cost reductions the producers of these other products would have experienced). In this case, the percentage by which monopoly would deflate $PB_{\Delta\downarrow UO}$ would be the same as the percentage by which it would reduce $PC_{\Delta\downarrow UO}$ if all the resources that the production of the eliminated units of output would have consumed would have been withdrawn from (all the released resources that the production of any eliminated units of output would have consumed would have been devoted to) unit-output production. In reality, however, some of the resources would have been withdrawn from (would be devoted to) the production of leisure, the creation of QV investments, and the execution of PPR projects. In my judgment, $\left| \%MD(PC_{\Delta\downarrow UO}) \right|$ is reduced by this reality—reduced, in fact, below $\left| \%MD(PC_{\Delta\downarrow UO}) \right|$. This conclusion reflects my judgment that

- (1) $MD(PB_{\Delta\text{leisure}})=0$, $MD(PB_{\Delta QV})>0$, and $MD(PB_{\Delta PPR})<0$;
- (2) $\left| \%MD(PB_{\Delta QV}) \right|$ is far higher than $\left| \%MD(PB_{\Delta PPR}) \right|$; and
- (3) the percentage of the resources that the production of any foregone units of output would have consumed that would have been withdrawn from QV creation is far higher than the percentage that would have been withdrawn from leisure-production and PPR execution.

In any event, this conclusion implies that monopoly tends to inflate $P\pi_{\Delta\downarrow UO}$ and hence to reduce the negative value of $\Sigma D(P\pi_{\Delta\downarrow UO})$.

Of course, a more complete analysis would be far more complicated. The monopoly inflation of $(P\pi_{\Delta\downarrow UO})$ will be bigger (smaller) when the P/MC ratio of the product in question is lower (higher) than its weighted-average counterpart for the products whose unit outputs would be reduced if additional units of the product in question were produced. The negative $\% \Sigma D(P\pi_{\Delta\downarrow UO})$ will be higher to the extent that the creation and use of the additional QV investments that the unit-output reduction causes to be made or the consumption of the additional leisure it causes to be “produced” would generate external costs. The negative $\% \Sigma D(P\pi_{\Delta\downarrow UO})$ will be lower to the extent that these QV investments, leisure, and PPR projects generate external benefits. $\% \Sigma D(P\pi_{\Delta\downarrow UO})$ will also be absolutely higher to the extent

that the effective tax rate applied to the profits yielded by QV investments and PPR expenditures is lower than the effective tax rate applied to the profits yielded by unit-output production.

Still, everything considered, it should be clear that in a negligence regime $\% \Sigma D(P_{\pi_{\Delta LUO}})$ for APCA unit-output reductions is very negative.

(5) $\% \Sigma D(P_{\pi_{\Delta APCAR}})$ in a Negligence Regime

(A) $\Sigma D(P_{\pi_{\Delta APCAR}})$ Ignoring the Effects of Monopoly, Taxes on the Margin of Income, and Knowledge-Creation Externalities

If monopoly, taxes on the margin of income, and externalities of knowledge-creation had no effect on $\% \Sigma D(P_{\pi_{\Delta APCAR}})$, $\% \Sigma D(P_{\pi_{\Delta APCAR}})$ would be highly negative. At least in the negligence regime now being analyzed, $\% \Sigma D(P_{\pi_{\Delta APCAR}})$ will tend to be most negative for APCAR projects that are designed to discover less-AP-cost-prone, oPp allocatively efficient locations or product-variants, for, like our actual negligence system, the negligence regime this section is considering will give potentially injurious producers no incentive to avoid by shifting to less-AP-cost-prone locations and product-variants even if the shifts in question would be oPp allocatively efficient. If one ignores (1) the possible political advantages of making discoveries of these kinds, (2) the possibility that nuisance law and design-defect products-liability law could conceivably enable a discoverer of a less-AP-cost-prone, oPp allocatively efficient location or product-variant to profit by using the discovery himself or selling the right to use the discovery or the discovery itself to others, and (3) the possibility that the tax law's accelerated depreciation provisions might make it profitable to execute allocatively inefficient investments, APCAR projects that are designed to discover less-AP-cost-prone, oPp allocatively efficient locations and product-variants will never be profitable.

However, APCAR projects that are designed to discover less-AP-cost-prone, oPp allocatively efficient production-processes may be profitable in the type of negligence regime analyzed by this section because this regime will make producers liable for not using such a discovered process once it has been discovered.³⁴ Of course, all the

34. I ignore the doctrinally-tricky issue that would arise if the license fee that the discoverer charged raised the PC to the producer of using the discovered production-process above the (\downarrow [PL+R]) its use would generate.

imperfections that deflate $P_{\pi_{\Delta PPS}}$ in the absence of monopoly will on that account deflate $P_{B_{\Delta APCAR}}$ for this type of project because $P_{B_{\Delta APCAR}}$ (the profits the researcher realizes by using, licensing, or selling his discovery once it has been made) can be no higher than $P_{\pi_{\Delta PPS}}$ for the production-process shift that the discovery makes possible.

- (B) The Effect of Monopoly, Taxes on the Margin of Income, and Knowledge-Creation Externalities on $\% \Sigma D(P_{\pi_{\Delta APCAR}})$
- (i) The Effect of Monopoly, Taxes on the Margin of Income, and Knowledge-Creation Externalities on $\% \Sigma D(P_{\pi_{\Delta APCAR}})$ for Projects Designed to Discover Less-AP-Cost-Prone, oPp Allocatively Efficient Production-Processes—on $\% \Sigma D(P_{\pi_{\Delta PP-APCAR}})$

Monopoly distorts the PC of all types of APCAR projects. In negligence regimes, the distinctive feature of the analysis of the monopoly distortion in the P_{π} of APCAR projects designed to discover less-AP-cost-prone, oPp allocatively efficient production-processes is that monopoly also distorts $P_{B_{\Delta APCAR}}$ for such projects because such projects (unlike APCAR into other avoidance-options) do yield some private benefits.

Monopoly distorts $P_{C_{\Delta APCAR}}$ by distorting the PB that the resources that the execution of APCAR projects consumes would have generated in their alternative uses. I suspect that the percentages of the resources that the execution of APCAR projects consumes that are withdrawn from QV-creating and non-APCAR PPR-executing uses are higher than their counterparts for APCA shifts to known, less-AP-cost-prone production-processes, locations, and product-variants. Because (1) $\%MD(P_{B_{\Delta QV}})$ is positive while $\%MD(P_{B_{\Delta PPR}})$ is negative, (2) $|\%MD(P_{B_{\Delta QV}})|$ is greater than $|\%MD(P_{B_{\Delta PPR}})|$, and (3) more technologically creative and locationally knowledgeable resources are probably devoted to QV-creation than to non-APCAR PPR-execution, the preceding suspicion leads me to conclude that $|\%MD(P_{C_{\Delta APCAR}})|$ is absolutely lower than $|\%MD(PC)|$ for PPS, though both are almost certainly negative.

$P_{B_{\Delta APCAR}}$ are the profits that an APCA discoverer would realize on his discovery, ignoring the cost of making it. Because in our negligence regime, decisions by potentially injurious producers to reject any oPp allocatively efficient production-processes an APCAR project discovers will be assessed for negligence, $P_{B_{\Delta APCAR}}$ for such

projects will not be zero. I have already explained how monopoly will change the aggregate distortion in the private benefits of the relevant APCAR by changing the aggregate distortion in the private profits that the discovery's users would obtain by using it if they did not have to pay anything to do so once they would be negligent for failing to use the discovered production-process. It would be convenient if $MD(PB_{APCAR})$ for such projects could be equated with $MD(P\pi)$ for the use of the production-process discovery (the weighted average array of such discoveries) that the relevant APCAR project is expected to generate. However, even if, as the definition of MD requires, I assume that absent monopoly "innovation law" would perfectly internalize the externalities that the relevant knowledge-creation would generate in its absence, $MD(P\pi_{PP-APCAR})$ would diverge from $MD(P\pi_{PPS})$ for three reasons.

First, to the extent that the discoverer does not use the discovery himself, he may have to share some of the benefits its use generates with its actual users—his licensees or the purchasers of his patents. This "bilateral monopoly" distortion will obviously tend to make the impact of monopoly on $\Sigma D(PB_{PP-APCAR})$ more negative.

Second, to the extent that the discoverer is unionized, some of the potential profits that the use of the discovery could enable him to realize may have to be shared with his employees. Again, this possibility increases the negative impact of monopoly on $\Sigma D(PB_{PP-APCAR})$.

Third, because the discovery of a less-AP-cost-prone production-process whose rejection would be assessed for negligence will make producers liable for losses for which they would not otherwise have been liable if they fail to use the discovered process, $PB_{PP-APCAR}$ for a discoverer who produces any of the good in question himself will be lower than the PB that the discovery's users will realize by using the discovery once they have been made liable for any losses that resulted from their not using it. This distortion is a "monopoly" distortion to the extent that it increases with the sales of the discoverer.

In my judgment, the amount by which monopoly, *ceteris paribus*, will deflate $P\pi_{APP-APCAR}$ in these three ways will almost always exceed the amount by which monopoly inflates $P\pi_{APPS}$ —i.e., if one did not have to consider the impact on $\Sigma D(P\pi_{APP-APCAR})$ of tax imperfections and imperfections in the policies designed to internalize what would otherwise be externalities of knowledge-creation, I would conclude that monopoly would make $\% \Sigma D(P\pi_{APP-APCAR})$ even more negative than it would be in the absence of monopoly.

Of course, tax distortions and externalities of knowledge-creation cannot be ignored. In my judgment, the research provisions and general accelerated-depreciation provisions of our tax code would tend to inflate $P_{\pi_{APP-APCAR}}$ on oPp assumptions. However, I suspect that this inflation is not big enough to change my conclusion that if externalities of knowledge-creation could be ignored, monopoly would make even more negative a $\Sigma D(P_{\pi_{APP-APCAR}})$ that would be negative in its absence.

Unfortunately, "the externality of knowledge-creation" imperfection is the joker in the pack. *Ceteris paribus*, the certainty-equivalent profitability of a research expenditure should equal its allocative efficiency. I simply have no idea whether—in the absence of monopoly distortions, tort-law distortions, and tax distortions—our present system of "innovation law"—patent law, copyright law, and trade-secret law—would inflate or deflate the private profitability of this type of research. In part, the difficulty of reaching a conclusion on this issue reflects

- (1) the fact that individual research-efforts do not raise from 0% to 100% the probability that a specifiable discovery will be made on a particular date but increase from X% to Y% the probability that or advance the probable date on which a number of possible discoveries some of which can be described imprecisely if at all *ex ante* will be made;
- (2) the fact that the probability that a given researcher will make a discovery first will depend on the number of others working in the relevant area;
- (3) the fact that the value of patent or copyright protection depends as much on the breadth of the relevant protection as on its length (as well as on the fact that it is difficult to assess the breadth of the protection given to discoveries of different types);
- (4) the fact that it is difficult to generalize about the extent of the profits discoverers can realize by investing in assets that are complementary to their discovery before others learn of it;
- (5) the difficulty of determining the ability of discoverers who do not seek patent or copyright protection to keep their discoveries secret, etc.

In any event, my inability to judge whether our current innovation law would overreward or underreward PP-APCAR if the only possible imperfection in the system were externalities of knowledge-creation³⁵ precludes me from guessing about either the sign of

35. Speculations on this issue would have to be based on the private value of publically-awarded monopolies of given length and breadth, the ability of discoverers to keep their decisions secret and to capitalize on their discoveries not only by using them directly but also by

$\Sigma D(P\pi_{\Delta PP-APCAR})$ or the impact that monopoly, taxes, and knowledge-creation externalities have individually or collectively on $\Sigma D(P\pi_{\Delta PP-APCAR})$.

- (ii) The Effect of Monopoly, Taxes on the Margin of Income, and Knowledge-Creation Externalities on $\Sigma D(P\pi_{\Delta APCAR})$ for Projects Designed to Discover Less-AP-Cost-Prone, oPp Allocatively Efficient Locations and Product Variants—on $\Sigma D(P\pi_{\Delta L-APCAR})$ and $\Sigma D(P\pi_{\Delta PV-APCAR})$

The version of negligence now under consideration reduces $PB_{L-APCAR}$ and $PB_{\Delta PV-APCAR}$ to zero. Absent monopoly, taxes, or knowledge-creation externalities, $\Sigma D(PB_{\Delta L-APCAR})$ and $\Sigma D(PB_{\Delta PV-APCAR})$ will therefore equal $(-PB_{LS})$ and $(-PB_{PVS})$ respectively. Because these types of APCAR projects generate no private benefits, $MD(PB)$ for them will be zero and, *ceteris paribus*, monopoly will inflate (reduce the negative value of) $\Sigma D(P\pi_{\Delta L-APCAR})$ and $\Sigma D(P\pi_{\Delta PV-APCAR})$ by the amount by which it deflates the PC of these types of projects. On balance, taxes on the margin of income (*viz.*, the net effect of our accelerated-depreciation provisions [which inflate $P\pi_{\Delta APCAR}$]) and the taxes levied on the income that would be earned by any workers who would sacrifice leisure to work on the relevant APCAR projects (taxes which deflate $P\pi_{\Delta APCAR}$) will also tend to reduce the absolute value of the negative $\Sigma D(P\pi)$ for these types of APCAR projects. Clearly, however, even the combined effect of monopoly and taxes on the margin of income is extremely unlikely to make any such projects profitable. Nor will such a result be generated by innovation law. Because in a negligence regime, no one will ever be found negligent for failing to shift to the less-AP-cost-prone locations and product-variants that these projects may discover, (1) no one will ever use these discoveries unless their use would be profitable, AP-cost-consequences aside, (2) with the latter possible exception, innovation law will not be able to inflate the PB that such projects yield (because there will be no such PB to inflate), and (3) with the latter conceivable exception, no or virtually no L-APCAR or PV-APCAR projects will be executed in a negligence regime, regardless of whether any such

investing in assets whose use is complementary to them, the relationship between the length and breadth of any monopoly publically awarded or privately achieved and the number of days by which the relevant research efforts should have been predicted *ex ante* to advance the dates of discoveries of different degrees of importance, the tax distortion in the private costs and benefits of PPR, and many other similarly difficult-to-obtain pieces of information.

projects would be allocatively efficient if the discoveries they yielded were used.

* * * * *

This section has executed a partial and preliminary TBLE analysis of the value that $\% \Sigma D(P_{\pi \Delta APCA})$ will have for the various types of avoidance-moves that may be available to potentially injurious producers in a negligence regime in which negligence is defined in terms of all the relevant private costs and benefits of avoidance but applied in the partial and imperfect way in which it is currently applied in the United States. It has concluded that in such a negligence system $\% \Sigma D(P_{\pi \Delta APCA})$ will be substantially negative for the overwhelming majority of all types of avoidance-options available to potentially injurious producers.

Admittedly, some such potential injurers may have incentives to overavoid in a few cases—viz., when crushing liability, the prospect of damage-overestimates, or the prospect of punitive damages inflates the private profitability of avoidance in situations in which there is a possibility of a false-positive finding on negligence or when an allocatively inefficient avoidance-move's rejection would be negligent. But the negligence system that this section has analyzed will deflate the private profitability of the overwhelming majority of marginal avoidance-moves.

Of course, many allocatively efficient avoidance-moves will still be privately profitable—i.e., the deflation in $(P_{\pi \Delta APCA})$ will not always be critical. But a huge number of allocatively efficient avoidance-moves will be rendered unprofitable by the imperfections discussed in this section. In the negligence system that this section has investigated, no or virtually no allocatively efficient AP-cost-reducing location-shifts, product-variant shifts, unit-output reductions, or APCAR expenditures on projects designed to discover less-AP-cost-prone, oPp allocatively efficient location or product-variant shifts will be privately profitable. Moreover, a large number of allocatively efficient, AP-cost-reducing production-process shifts and APCAR expenditures on projects designed to discover less-AP-cost-prone, oPp allocatively efficient production-processes will also be privately unprofitable. Potentially injurious producers and potential injurers in general will cause a great deal of APCA-related misallocation in the regime this section has studied.

Of course, at least in allocative-efficiency terms, these conclusions may not justify the partial and preliminary TBLE analysis that yielded them. Some might claim that first-best-allocative-efficiency ("FBLE") analysis would have yielded the same conclusions a lot more simply and cheaply. Would this claim be correct? Assume that TBLE analysis should not be given the credit for the discovery that such a negligence system fails to give potentially injurious producers any reason to avoid not only by reducing their unit output (changing their activity-level) but also by shifting their locations, changing the product-variant that they produce, or executing APCA research. Even on this assumption, this section's third-best analysis would deserve credit for generating the following important conclusions:

- (1) despite the fact that rejections of shifts to less-AP-cost-prone production-processes are assessed for negligence, the private profitability of marginal shifts of this kind is distorted—almost certainly is deflated in almost all cases; relatedly,
- (2) potentially injurious producers will often find it *ex ante* and *ex post* profitable to be negligent by rejecting shifts to less-AP-cost-prone, oPp allocatively efficient production-processes;
- (3) the misallocation that the rejection of individual production-process shifts yields is probably smaller than the difference between the $(\downarrow[PL+R])_{PPS}$ and PC_{PPS} for the shifts in question;
- (4) the misallocation caused by the rejection of each less-AP-cost-prone, oPp allocatively efficient location-shift, product-variant shift, and APCA expenditure that will be rejected under the negligence system just studied (or our current negligence system) will also differ in predictable ways from the differences between the $(\downarrow[PL+R])$ and PC of the rejected moves in question;
- (5) one cannot eliminate the APCA-related misallocation that injurers generate under the negligence system this section studied or under our current negligence system by accurately assessing for negligence the rejection of all types of APCA options; and
- (6) the analysis of the allocative-efficiency gains that would be generated by assessing all rejections of APCA moves for negligence is extremely complicated—requires consideration not only of first-best imperfections in tort-law doctrine, claiming-processes and behaviors, and official decisionmaking but also of monopoly, tax, and knowledge-creation-externality imperfections (*inter alia*).

The importance of this final conclusion is enhanced by the fact that shifting from negligence to strict liability will generate allocative-efficiency losses as well as allocative-efficiency gains. It will also increase transaction-costs and increase the amount of APCA-related misallocation that potential victims generate. One will therefore not

be able to assess the allocative efficiency or overall desirability of such a shift without making a quantitative prediction of its impact on the amount of APCA-related misallocation that potential injurers generate. Clearly, to be third-best-allocatively-efficient, any approach to predicting the effect of a shift from negligence to strict liability on the amount of APCA-related misallocation producers generate will have to take account of most if not all of the imperfections this section has identified in the way in which this section has shown they should be considered.

2. The Effect of Shifting From Negligence to Strict Liability on $\Sigma D(P\pi_{\Delta APCA})$ for the Various Types of Avoidance-Moves Available to Potentially Injurious Producers and on the Amount of APCA-Related Misallocation That Such Producers Generate

A. *Thirteen Ways in Which the Non-Monopoly Distortions in $PB_{\Delta APCA}$, Perceived $PB_{\Delta APCA}$, or Potential-Injurer Maximization Will Be Affected by a Shift From Negligence to Strict Liability*

First, second, and third, unlike the private benefits of avoidance to potential injurers who are supposed to be liable solely for the consequences of their correctly defined but traditionally applied negligence, the private benefits of avoidance to strictly liable potential injurers will not be deflated (1) by the fact that injurers who are liable only if negligent are not liable for the losses caused by their non-negligent rejection of effective avoidance-moves, (2) by the fact that in practice injurers sometimes will not be found negligent for rejecting avoidance-moves whose private cost to them is less than the reduction that the moves in question would generate in the sum of the weighted-average-expected accident-and-pollution costs and accident-and-pollution-related risk costs the potential injurers cause because in practice the rejection of many types of avoidance-moves is not assessed for negligence, and (3) by the fact that judges or juries sometimes make false-negative findings on the negligence issue even when they do attempt to assess the negligence of the relevant injurer's rejection of all the various avoidance-moves available to him. In other words, the private benefits of avoidance to strictly liable potential injurers will not be distorted by items (C)(1), (C)(2), and (C)(3) on the list of imperfections that distort the private benefits that avoidance yields potential injurers whose liability is determined by a correctly defined but traditionally applied negligence doctrine.

Fourth, crushing liability is more likely to inflate the private benefits of avoidance to potential injurers who are strictly liable than it is to inflate the private benefits of avoidance to potential injurers whose liability is governed by negligence. This conclusion reflects two facts: (1) some injurers who will be found to be legally accountable causes of a loss will not be negligent and (2) some such injurers whose failure to avoid was oPp allocatively inefficient will not be found negligent—i.e., the part of item (B)(4) in our negligence-case list that relates to crushing liability will be more important in strict-liability cases.³⁶

Fifth, the percentage by which the private benefits of avoidance—moves to strictly liable potential injurers is deflated by judge-or-jury underestimates of actual victim-losses is likely to exceed its counterpart for avoidance—moves to potential injurers who are liable only if found negligent. This conclusion reflects the fact that in strict-liability cases the plaintiff will often be prevented from introducing evidence about injurer-misconduct, evidence that will probably tend to lead to an increase in the amount of damages awarded—i.e., item (A)(7) in the list of factors that distort the private benefits avoidance yields potential injurers whose liability is governed by negligence is probably smaller than its counterpart in strict-liability cases.

Sixth, to the extent that (1) victims do not sue because their distrust of the (white-dominated) legal system leads them to believe that debatable issues such as negligence will be resolved against them and (2) the private transaction-cost of litigating deters victims with uncertain prospects of recovery from suing, the deflation in the private benefits that potential-injurer avoidance will yield them that is generated by the failure of victims who are entitled to recoveries to sue—item (A)(1) in the list of possible imperfections that would distort the private benefits of avoidance to potential injurers whose liability is governed by negligence *ceteris paribus*—may be smaller in strict-liability cases than in negligence cases.

Seventh, the amount by which the private benefits that potential-injurer avoidance will yield potential injurers is *ceteris paribus*-deflated by the fact that settlements fall below weighted-average-expected trial-outcomes—item (A)(8) in the distorting-factor list for potential injurers whose liability is governed by negligence—will probably be smaller in strict-liability cases than in negligence cases. This conclusion reflects (1) the fact that the shift from negligence to strict liability will reduce both the mechanical transaction-cost and the

36. See *infra* Part VI.4. at 118-23.

risk cost of litigating for both parties and (2) the fact that the absolute reductions in both types of costs are likely to be bigger for plaintiffs than for defendants because plaintiffs are likely to face higher costs of both kinds than defendants (in the case of mechanical transaction-costs because plaintiffs are not so likely to be repeat players as defendants and in the case of risk costs because plaintiffs will tend to be smaller and more risk-averse than defendants as well as because the fact that plaintiffs are less likely to be repeat-players implies that they will be less able to decrease the risk they face by establishing a portfolio of risky “ventures”—including tort litigations).

Eighth, in joint-tort cases, both the common law’s fixed-share (usually per capita) rule and the common law’s proportional-share (usually proportional to pollutants generated) rule for apportioning losses among joint-tortfeasors who are strictly liable deflate PB_{APCA} .³⁷

Ninth, because a strictly liable potential injurer’s perception of the private benefits that his avoidance will yield him will not be affected by his conclusions about the negligent character of any negative avoidance-decision he is considering, the errors delineated in (F)(1) in the negligence-case list will be irrelevant for potential injurers who are strictly liable.

Tenth through twelfth, injurer misperceptions of the losses they will cause or for which they will be held legally accountable—items (F)(2), (F)(3), and (F)(4) in the negligence-case list—will distort the perceived benefits of avoidance less often and to a lesser extent for strictly liable injurers. This conclusion reflects the fact that because strictly liable potential injurers will have to pay damages more often than potential injurers whose liability is governed by negligence and may on that account also be more likely to consider and take out tort-liability insurance, the legal system and tort-liability-insurance provid-

37. See *Kornhauser & Revesz*, *supra* note 22 at 856-60. No contribution rules also distort avoidance-incentives in joint-tort cases under strict liability. See *id.* at 163. Moreover, in no-care joint-tort situations, the shift from negligence to strict liability will *ceteris-paribus*-critically-inflate the private benefits of oPp allocatively inefficient avoidance-moves to both joint tortfeasors when (1) the joint tortfeasors’ liability is governed by the combination of joint-and-several liability and the no-contribution rule, (2) the potential injurers could prevent part or all of the loss in question or remove themselves from the list of causes-in-fact of at least part of any such loss that occurred through joint-avoidance moves, whose combined private cost exceeds the reduction in the sum of the certainty-equivalent AP costs that they would generate, (3) the private cost of at least one of the relevant joint-care moves was less than the reduction in the above sum that the relevant package of moves would generate, and (4) one of the potential injurers concludes that if the preventable loss occurs because neither he nor the other potential avoider has avoided, the victim will choose to recover damages from him that exceed his participation in the least-allocatively-inefficient set of joint-avoidance moves available to the injurers. See Markovits, *supra* note 21.

ers may be more likely to provide misperception-detering and non-maximization-detering information to potential injurers who are strictly liable than to injurers who will be held liable only if they are found negligent.

Thirteenth, because injurers who are strictly liable are more likely to consider and take out insurance, insurance is more likely to enable potential injurers to avoid misperceptions and failures to maximize that would cause them to make positive and/or negative avoidance-decisions that were not in their own interest—i.e., the items listed under (F) in the negligence list may be less important for potential injurers who are strictly liable in torts.

B. The Impact of Monopoly on the Effect of a Shift From Negligence to Strict Liability on $\Sigma D(P\pi_{\Delta APCA})$ for Potential Injurers

We have seen that monopoly tends to deflate $PB_{\Delta APCA}$ on its own and to reduce the absolute value of $\Sigma D(PB_{\Delta APCA})$ when its impact is analyzed on realistic assumptions about the other imperfections in the system. This conclusion implies that the impact of a shift from negligence to strict liability on $\Sigma D(PB_{\Delta APCA})$ for various potential-injurer avoidance-moves will be smaller in the presence of monopoly than it otherwise would have been.

C. The Effect of a Shift from Negligence to Strict Liability on the Aggregate Distortion in the Private Profits That Different Types of Marginal APCA Moves Yield Potential Injurers: Some Generalizations

A shift from negligence to strict liability will substantially affect the distortion in the private benefits that potential-injurer avoidance will yield potential injurers in three types of situations. First, when some of the potential injurers to which the strict-liability rule will apply have the opportunity to make one or more avoidance-moves whose rejection would not be found negligent (because it would not be negligent, because it would not or might not be assessed for negligence, or because it would not or might not be found negligent even though it would be negligent and would be assessed for negligence), the shift to strict liability will eliminate the *ceteris-paribus*-deflation that the negligence doctrine would generate in the private benefits that the potential injurer's relevant avoidance-move would yield him. The impact of the shift to strict liability on the APCA-related misallo-

cation that potential injurers cause will be greater on this account (1) the greater the extent to which the relevant potential injurer has the opportunity to make avoidance-moves whose rejection would not be scrutinized for negligence or whose rejection might not be found negligent even though it was negligent and would be assessed for negligence and (2) the greater the percentage by which $\Sigma D(P\pi_{\Delta APCAR})$ is deflated by other imperfections in tort-law doctrine, tort-law-claiming processes, tort-law decisions, and independent Pareto imperfections.

Second, in cases in which a potential injurer has contributed more than 50% but less than 100% of the *ex ante* probability of the occurrence of a loss whose cause-in-fact can be determined only from circumstantial evidence relating to this percentage, a shift from negligence to strict liability will inflate the private benefits to potential injurers of potential-injurer avoidance-moves whose rejection would not be found negligent and may, as a result, cause $\Sigma D(P\pi_{\Delta APCAR})$ to be positive for potential-injurer exits, less drastic potential-injurer avoidance-moves that will reduce the individual potential injurer's contribution to the *ex ante* probability of the relevant loss' occurring to 50% or below by reducing the potential-injurer's share of pollution-prone production (decisions to reduce the unit output produced in a given plant, to build a smaller plant in the first place, or to divest some plants), and decisions to make location-changes or product-variant changes or engage in APCAR that will also cause the injurer's contribution to the relevant *ex ante* probability to be 50% or lower.

And third, when the strict-liability rule in question will apply *inter alia* to no-care joint-tort cases, it will sometimes critically inflate the private benefits of avoidance to joint-tortfeasors who are in a position to make *oPp* allocatively inefficient joint-avoidance moves.

However, when the preceding three possibilities are not relevant, it is difficult to predict whether the shift from negligence to strict liability will increase or decrease the deflation in the private benefits of potential-injurer avoidance to potential injurers. Thus, in the one direction, three facts all favor the conclusion that the aggregate deflation of the private benefits and profits that potential injurers should expect to obtain by avoiding will tend to be larger when the potential injurers are supposed to be liable only if negligent than if they are strictly liable: (1) the fact that a lower percentage of victims who are entitled to a recovery are likely to assert their claims under negligence; (2) the fact that settlements will tend to fall further below trial-outcomes under negligence than under strict liability; and (3) the fact that injurer-errors on the probability that they will be found negligent

are irrelevant under strict liability. In the other direction, the opposite conclusion is favored by (1) the fact that damage-awards are likely to fall less far below traditional-victim losses under negligence than under strict liability, (2) the “fact” (my guess) that insurance is more likely to correct injurer misperceptions (underestimates, I suspect) of the amount of losses for which they will be held legally accountable under strict liability than under negligence, and (3) the fact that both common-law rules for distributing joint-tort losses in strict-liability cases will always deflate joint-tortfeasor avoidance-incentives while only some of the common law’s rules for distributing joint-tort losses in negligence cases will do so. Unfortunately, I cannot make an informed judgment about the way in which these conflicting considerations net out across all cases.

D. The Effect of Shifting From Negligence to Strict Liability on $\Sigma D(P\pi_{\Delta APCA})$ for the Various Types of Avoidance-Moves Available to Potentially Injurious Producers

- (1) The Effect on Both $\Sigma D(P\pi_{\Delta APPS})$ for Potentially Injurious Producers and the Amount of Misallocation They Generate When Choosing Among Production-Processes

The various effects of a shift from negligence to strict liability on $\Sigma D(P\pi_{\Delta APPS})$ can be combined into six groups. First, because the rejection of a known, less-AP-cost-prone production-process will be assessed for negligence, the shift from negligence to strict liability will eliminate the deflation in the private profitability to a potential injurer of such an avoidance-option whenever (1) his rejection of the move in question was not negligent or (2) there was some possibility that the trier of fact might make a false-negative finding on the negligence issue.

Second, when the potentially injurious producer’s activity contributes more than 50% but less than 100% of the ex ante probability of a loss’ occurring whose cause can be established only through this type of evidence, the shift to strict liability will impose “crushing liability” in two sets of cases in which it would not otherwise be present—viz., (1) when the relevant producer might not be found negligent because he was not negligent and (2) when the trier of fact might make a false-negative finding on the negligence issue.

Third, in some no-care joint-tort cases in which allocatively inefficient joint avoidance is possible, the shift from negligence to strict lia-

bility will generate a *ceteris paribus* critical inflation in the private profitability of oPp allocatively inefficient joint-avoidance moves.

Fourth, the shift from negligence to strict liability will also affect a number of other imperfections that distort $P\pi_{\Delta PPS}$ for potentially injurious producers. For example, the shift to strict liability will reduce the deflation caused by the failure of victims to sue and the tendency of victims to settle for less than they could have obtained at trial while it will increase the deflation caused by the tendency of juries and judges to underestimate damages. The net impact of these effects of the shift from negligence to strict liability on $\% \Sigma D(P\pi_{\Delta PPS})$ will vary from case to case, and I cannot provide a useful guess on the sign much less the weighted-average magnitude of the resulting changes in $\Sigma D(P\pi_{\Delta PPS})$. The information currently available is far less than TBLE.

Fifth, regardless of whether the shift to strict liability affects the actual distortion in the private profitability to a producer of shifting to a known, less-AP-cost-prone, oPp allocatively efficient production-process, it may affect the perceived profitability of such avoidance-moves by producing court decisions and jury awards that lead producers to revise their misestimates (probably underestimates) of their prospective tort liability both directly and by inducing them to consider taking out tort-liability insurance. Again, it would almost certainly be TBLE to collect additional information on the above issues before assessing the allocative efficiency of shifting from negligence to strict liability either across the board or in some specific subset of cases.

Sixth and finally, some or many of the potential allocative-efficiency effects that a shift to strict liability might generate by inducing potentially injurious producers to shift to less-AP-cost-prone production-processes may be prevented by the transaction-costs that individual potential victims would have to incur to make and pursue the relevant legal claims. If the extra externalities generated by producer-decisions to use more-AP-cost-prone, oPp allocatively inefficient production-processes are pollution externalities that impose a small amount of costs on each of a large number of neighbors of the polluter, the potential injurers in question may be able to rely on claims' never being made or pursued, at least if class-action rules preclude lawyers from bringing successful class-action suits. Although "class-action law" is therefore relevant to this section's inquiry, I will not analyze its allocative efficiency here. However, this transaction-cost problem may substantially reduce both the allocative efficiencies and

the allocative inefficiencies that a shift from negligence to strict liability will generate by inducing potential injurers to alter their APCA choices of all kinds.

The preceding analysis implies that the shift from negligence to strict liability is not likely to have a substantial percentage-effect on the amount of APCA-related misallocation that potentially injurious producers generate when deciding whether to adopt known, less-AP-cost-prone production-processes. The shift in liability-standard will not induce such producers to adopt less-AP-cost-prone production-processes when their decision not to do so would not be negligent because in such cases even the damages they would avoid inflicting on entitled victims would be smaller than the extra non-AP cost of using the less-AP-cost-prone production-process. Indeed, because monopoly seems likely to inflate the private profitability of adopting such production-processes, their adoption probably would not be allocatively efficient when their rejection would not be negligent (though the fact that not all victims of injurious activities are “entitled victims” cuts in the opposite direction). Moreover, if false-negative findings on the negligence issue usually occur in close cases, the shift to strict liability will also not increase allocative efficiency substantially by precluding such errors and the deflation in $\Sigma D(P\pi_{\Delta PPS})$ generated by the prospect of their occurring.

I do suspect that the shift from negligence to strict liability will tend to reduce the extent to which producer-underestimates of their tort-liability exposure causes them to misallocate resources by rejecting less-AP-cost-prone production-processes. Admittedly, however, this suspicion is not based on anything like TBLE data on this issue—in fact, it rests on little more than an inadequately-informed hunch.

And, of course, the shift from negligence to strict liability will induce producers to adopt allocatively inefficient though less-AP-cost-prone production-processes in “crushing liability” situations and in some joint-tort no-care situations in which joint-avoidance is possible. Admittedly, however, “crushing liability” situations probably occur quite rarely (for reasons unrelated to the potential injurers’ reducing the scale of their operations sufficiently to decrease to 50% or below their contribution to the ex ante probability of the relevant loss’ occurring).

On balance, then, I cannot tell whether the shift to strict liability will increase or decrease the amount of APCA-related misallocation

that potentially injurious producers generate when choosing among known production-processes. I suspect that the percentage-impact of a shift from negligence to strict liability on the amount of misallocation producers generate when making such choices would tend to be small.

(2) The Effect on Both $\Sigma D(P\pi_{\Delta LS})$ for Potentially Injurious Producers and the Amount of Misallocation They Generate When Choosing Among "Known" Locations

The analysis of these issues differs in two respects from the analysis of their PPS counterparts. The first, and by far the more important, relates to the absolute impact of the shift from negligence to strict liability on $\Sigma D(P\pi_{\Delta AP CA})$. In particular, the shift from negligence to strict liability will eliminate the deflation in $P\pi_{\Delta LS}$ for all location-choices caused by the fact that in practice rejections of less-AP-cost-prone locations are never assessed for negligence.

The second is that because the shifts to less-AP-cost-prone locations may be to otherwise-less-expensive as well as to otherwise-more-expensive locations (when ΔCE is respectively greater than and less than zero), $MD(P\pi_{\Delta LS})$ and the impact of monopoly on $\Sigma D(P\pi_{\Delta LS})$ will be different from $MD(P\pi_{\Delta PPS})$ and the impact of monopoly on $\Sigma D(P\pi_{\Delta PPS})$.

Admittedly, $\Sigma D(P\pi_{\Delta LS})$ would not equal zero even if potentially injurious producers were strictly liable for the AP costs generated by their failure to shift to less-AP-cost-prone locations. In most cases, however, the other imperfections that distort $P\pi_{\Delta LS}$ most likely deflate it. Hence, in my less-than-TBLE-informed judgment, the presence of these other distortions, some of whose magnitudes will be affected by the shift to strict liability, actually increases the allocative-efficiency gains that a shift from negligence to strict liability will generate by making potentially injurious producers liable for the AP-cost consequences of their failure to shift to less-AP-cost-prone locations because on balance these imperfections deflate $P\pi_{\Delta LS}$.

Once more, I want to close by noting that these possible allocative-efficiency gains from a shift from negligence to strict liability will be thwarted if the relevant shifts to less-AP-cost-prone locations create small gains for a large number of neighbors of the potential injurer in question—at least if the transaction-costs they would have had to incur as individuals to sue the polluter for failing to shift his location

are prohibitive and class-action law precludes lawyers from bringing successful class actions.

(3) The Effect on Both $\Sigma D(P_{\pi_{\Delta PVS}})$ for Potentially Injurious Producers and the Amount of Misallocation They Generate When Choosing Among Known Product-Variants

The analysis of these issues differs from the analysis of their PPS counterparts in the two ways that the analysis of the same LS issues differed from their PPS counterparts. However, there is an important difference between the PVS and LS analyses. More of the AP costs that PV shifts can prevent will be accident-costs that are more concentrated on individual victims, and less are pollution costs that are relatively unconcentrated. Hence, the conclusion that shifts from negligence to strict liability will reduce the amount of APCA-related misallocation generated by producers' product-variant choices by eliminating the distortion caused by the fact that producer-rejections of less-AP-cost-prone product-variants are never assessed for negligence will be undercut to a lesser extent than its counterpart for location shifts by the possibility that the transaction-costs facing individual victims will be prohibitive and "class action" suits will be unavailable.

(4) The Effect on Both $\Sigma D(P_{\pi_{\Delta UO}})$ for Potentially Injurious Producers and the Amount of Misallocation They Generate When Choosing How Many Units of Output to Produce

I have already explained why monopoly tends to inflate the private profitability of reducing unit output. Unfortunately, there is no simple way to analyze the significance of this fact for the allocative efficiency of the unit-output reductions that will be generated by the tendency of a shift from negligence to strict liability to internalize some of the external benefits that AP-cost-reducing unit-output reductions will generate. The relevant analysis is complicated by the fact that even if the only two types of Pareto imperfections in the system were imperfections in seller competition and externalities of production and consumption, $\Sigma D(P_{\pi_{\Delta UO}}) \neq MD(P_{\pi_{\Delta UO}}) + XD(P_{\pi_{\Delta UO}})$.

Admittedly, it is artificial to split up the allocative-efficiency consequences of the reductions in unit output that a shift from negligence to strict liability would induce into various components. However, for heuristic reasons, the discussion that follows distinguishes between

- (1) the allocative-efficiency effect that this change in liability-rule would have if it did not alter the total amount of resources

devoted to producing units of existing products (its effect on relative-unit-output ["RUO"] misallocation, which is present to the extent that allocative efficiency would be higher if the goods in production were produced in different proportions to each other, controlling for the amount of resources devoted to the production of units of existing products) and

- (2) the allocative-efficiency effect this change in liability-rule would have by altering the total amount of resources devoted to unit-output production (and concomitantly the total amount devoted to QV creation, PPR execution, and leisure production combined) by altering what might be called aggregate-UO (Σ UO) misallocation.

For simplicity, this discussion analyzes the impact of a shift from negligence to strict liability on RUO misallocation on the assumption that the only two types of Pareto imperfections in the system are imperfections in seller competition and externalities of goods/service production and consumption. This analysis focuses on the distortion affecting the private profitability of producing the last unit of any product X whose unit-output production would withdraw resources exclusively from the unit-output production of other goods Y1 . . . N. Five new symbols must be introduced: "MC*," "MRT_{Y/X}," " Δ UOX," "AMLV," and "ave P." "MRT_{Y/X}" stands for the marginal rate at which Y can be transformed into X. "MC*" represents the adjusted marginal cost of producing a marginal unit of the good in question. On our current assumptions, MC* is adjusted to reflect the externalities generated by the production and consumption of the relevant product's marginal unit so that $(MC_X^*/MC_Y^*) = MRT_{Y/X}$. " Δ UOX" stands for the marginal unit of good X, and "AMLV" stands for average marginal allocative value—how much better off we are in monetary units on the average if the incremental units of the good in question are consumed by their actual consumers rather than being costlessly destroyed. "Ave P" stands for the average price for which a set of units could have been sold. The following set of equations will yield a formula for $\Sigma D(P\pi_{\Delta UOX})$ based on the current assumptions:

- (1) $\Sigma D(P\pi_{\Delta UOX}) \equiv \Sigma D(PB_{\Delta UOX}) - \Sigma D(PC_{\Delta UOX});$
- (2) $\Sigma D(PB_{\Delta UOX}) \equiv PB_{\Delta UOX} - LB_{\Delta UOX} = MR_X - P_X;$
- (3) $\Sigma D(PC_{\Delta UOX}) \equiv PC_{\Delta UOX} - LC_{\Delta UOX} = MC_X - MRT_{Y/X}(AMLV_Y) = MC_X - (MC_X^*/MC_Y^*)(ave P_Y) = MC_X - (MC_X^*/MC_Y^*)(P_Y);$
- (4) $\Sigma D(P\pi_{\Delta UOX}) = (MR_X - P_X) - (MC_X - [MC_X^*/MC_Y^*]P_Y) = -P_X + (MC_X^*/MC_Y^*)P_Y$ (since $MR_X = MC_X = MC_X^*([P_Y/MC_Y^*] - [P_X/MC_X^*])$ (multiplying the preceding expression by $[MC_X^*/MC_X^*]$ and collecting terms).

Hence, assuming for simplicity that the shift from negligence to strict liability will not alter MC_X^* by changing unit output, the shift will decrease RUO misallocation if and only if it brings (P_X/MC_X^*) closer to the relevant weighted-average (P_Y/MC_Y^*) .

For two reasons, it is not at all clear that the shift from negligence to strict liability will have this effect. To facilitate my explanation, note that $(P/MC^*)=(P/MC)(MC/MC^*)$. The first reason why the shift from negligence to strict liability may not reduce RUO misallocation is that it may not bring (MC_X/MC_X^*) closer to (MC_Y/MC_Y^*) . For example, if the percent of X's MC^* that would be external under negligence was identical to the percent of Y's MC^* that would be external under negligence and X's victims would be far more likely to sue than Y's under strict liability (perhaps because the damage done by X's production was far more concentrated than the damage done by Y's), the shift from negligence to strict liability might actually increase the difference between the two MC/MC^* ratios—i.e., might make (MC_X/MC_X^*) far higher than (MC_Y/MC_Y^*) when the two ratios were equal under negligence. The second reason is that even if the shift to strict liability does bring (MC_X/MC_X^*) closer to (MC_Y/MC_Y^*) , it might not bring (P_X/MC_X^*) closer to (P_Y/MC_Y^*) because (P_X/MC_X) might not originally have equaled (P_Y/MC_Y) and/or because the two industries might pass on different percentages of the increase in their MCs that the shift to strict liability generated. Although this analysis does not quite capture the critical interactions (since the relationships are multiplicative rather than additive), it does suggest why I cannot conclude that the shift to strict liability will reduce the amount of RUO misallocation generated by the unit-output decisions of potentially injurious producers.

The shift from negligence to strict liability will also probably not reduce "aggregate-UO" (ΣUO) misallocation. In my judgment, our economy currently devotes too few of its resources to unit-output production and too many to QV creation (at least of a non-creative kind) and leisure production. My uncertainty about whether and to what extent our innovation law fails to internalize or overinternalizes what would otherwise be knowledge-creation externalities leaves me uncertain about whether from the perspective of allocative efficiency we devote too few or too many resources to PPR execution. These conclusions primarily reflect the distorting influences of taxes on the margin of income and imperfections in seller competition.

In my judgment as well, policies that decrease ΣUO will misallocate resources on this account on balance by directing resources out of

UO production and into QV creation, leisure production, and PPR. Although I am operating on far worse than TBLE data, my judgment is that the shift from negligence to strict liability would increase Σ UO misallocation if it reduced Σ UO and decrease Σ UO misallocation if it increased Σ UO. If the shift from negligence to strict liability would internalize only those AP costs generated by the production of existing products and services, it clearly would increase Σ UO misallocation by reducing Σ UO. In fact, however, such a policy would also internalize AP costs generated by leisure consumption, the creation and use of QV investments, and the execution of PPR. The critical issue, then, is whether these three latter types of resource-uses are more or less AP-cost-prone than unit-output production. If I assume that the tort law affected by the shift to strict liability does not cover congestion costs or the externalities the creation of a new product imposes on those consumers of its predecessors who value having the latest thing, that will depend on whether

- (1) the non-internalized driving-congestion and driving-pollution costs generated by leisure activities (which may include driving) are a higher percentage of the allocative cost of producing and consuming leisure than the production and consumption AP costs generated by the non-internalized production and consumption of incremental units of existing products (including the non-internalized congestion and pollution costs the relevant workers generate while commuting) are of the real cost of producing and consuming those extra units of output;
- (2) the AP costs generated by the construction of the new production plants built to produce new products, the additional or superior distributive outlets some QV investments create, or the added capacity that QV investments in speed of delivery may involve is a higher percentage of QV-creation costs than AP costs are of the relevant incremental-unit-output-production costs; and
- (3) the AP costs generated by doing PPR is a higher percentage of the allocative cost of PPR than AP costs are of the relevant unit-output-increasing costs.

These questions are extremely difficult to answer, in part because increases in the amount of resources going to QV creation and leisure consumption may affect both residential and commercial location-decisions that in turn influence the amount of AP costs individuals generate in both their working (commuting) and leisure activities. However, if I had to guess on the thoroughly inadequate information-base at my disposal, I would guess that unit-output production is more AP-cost-prone than its weighted-average alternative and that the shift from negligence to strict liability would probably therefore increase

Σ UO misallocation by causing Σ UO to decline and QV creation, PPR, and leisure-production to increase.

Accordingly, I suspect that the shift from negligence to strict liability would probably tend to increase rather than decrease the amount of misallocation that potentially injurious producers generate when making their UO decisions.

- (5) The Effect on Both $\Sigma D(P_{\pi_{\Delta}APCAR})$ for Potentially Injurious Producers or Independent Researchers and the Amount of Misallocation They Generate When Choosing How Many Resources to Devote to APCAR

Under both our current negligence regime and the negligence regime currently under analysis, neither a potentially injurious producer's rejection of an APCAR expenditure nor a potentially injurious producer's rejection of any less-AP-cost-prone, oPp allocatively efficient location or product-variant that the APCAR might discover will be assessed for negligence though a producer's rejection of a discovered less-AP-cost-prone, oPp allocatively efficient production-process will be assessed for negligence. The shift from negligence to strict liability will therefore eliminate whatever deflation in $\Sigma D(P_{\pi_{\Delta}APCAR})$ this feature of our negligence system generates for projects designed to discover less-AP-cost-prone, oPp allocatively efficient locations and product-variants and will also eliminate the deflation that monopoly will cause in $\Sigma D(P_{\pi_{\Delta}APCAR})$ into production-processes when the researcher is a producer of the good to whose production the discovered production-process would relate.

Ceteris paribus, these conclusions would imply that the shift from negligence to strict liability would substantially reduce the amount of AP-cost-related misallocation generated by APCAR decisions. Unfortunately, as previously seen, the relevant *ceteris* are not *paribus*. I simply do not know whether or to what extent our tax law and "innovation law" internalizes or overinternalizes what would otherwise be externalities of the relevant knowledge-creation. Clearly, many of the APCAR projects whose execution would be induced by a shift from negligence to strict liability would be allocatively efficient. But if tax law and "innovation law" overinternalize the relevant knowledge-creation externalities, some, many, or most of the APCAR expenditures that a shift from negligence to strict liability would induce might well be misallocative. My information-base is probably so far from being TBLE that I should not speculate on the allocative efficiency of the

impact of a shift from negligence to strict liability on APCAR misallocation. Still, I cannot believe that our innovation law overinternalizes what would otherwise be the internal benefits of the knowledge-creation that APCAR entails sufficiently to make the extra APCAR that a shift from negligence to strict liability induces producers and independent researchers to execute an allocative-efficiency wash or allocatively inefficient on balance. I will therefore assume in what follows that the shift from negligence to strict liability will reduce the amount of APCAR-related misallocation that potential injurers and potential independent researchers generate.

* * * * *

If forced to predict the effect of a shift from negligence to strict liability on the amount of APCA-related misallocation that potentially injurious producers and independent APCA researchers generate, I would probably guess that the shift would reduce such misallocation. This guess would reflect my uncertainty about the sign of such a shift's effect on PPS misallocation and my belief that the amount by which such a shift would probably increase allocative efficiency by inducing potentially injurious producers to adopt known, less-AP-cost-prone, oPp allocatively efficient locations and product-variants and potentially injurious producers and independent researchers to do additional APCAR exceeds the amount by which it would probably decrease allocative efficiency by inducing potentially injurious producers to reduce their unit outputs. Obviously, a considerable amount of additional theoretical work and a huge amount of empirical work must be done to make this analysis TBLE.

Still, I have no doubt that additional work of these kinds would be TBLE. Even if one concedes that Second-Best Theory does not deserve credit for my extension of the standard activity-level argument to include location-shifts, product-variant shifts, and APCAR decisions, the partial and preliminary TBLE analysis this section has executed has produced many surprising conclusions about the allocative-efficiency effects of a shift from negligence to strict liability. Thus, I have shown that

- (1) the effect of such a shift on the allocative efficiency of the production-process choices of potentially injurious producers is uncertain;
- (2) crushing liability may not actually lead to resource misallocation;

- (3) a shift from negligence to strict liability is likely to increase the allocative efficiency of the location and product-variant choices of potentially injurious producers;
- (4) such a shift in the liability regime will probably tend to misallocate resources by inducing potentially injurious producers to reduce their unit outputs; and
- (5) although I am far from confident about the effect of such a shift on APCAR misallocation, it seems most likely that it would decrease such misallocation.

More importantly, by delineating and analyzing the determinants of the effects of a shift from negligence to strict liability on injurer-created APCA-related misallocation, I have provided a basis for subsequent empirical research and more refined policy analyses not only of the allocative efficiency of a universal shift from negligence to strict liability but also of the allocative efficiency of more selective shifts that focus on the peculiarities of the positions of members of particular industries or, perhaps, the peculiarity of the positions of particular potential injurers.

III. THE EFFECT OF SHIFTING FROM NEGLIGENCE TO STRICT LIABILITY ON THE DISTORTION IN THE PRIVATE PROFITABILITY OF AVOIDANCE TO POTENTIAL VICTIMS AND HENCE ON THE AMOUNT OF APCA-RELATED MISALLOCATION THAT POTENTIAL VICTIMS GENERATE

1. $\Sigma D(P_{\pi_{\Delta APCA}})$ for Potential Victims Under Negligence

A. $\Sigma D(P_{B_{APCA}})$ for Potential Victims Under Negligence

$P_{B_{APCA}}$ for potential victims can be distorted for two reasons: (1) the potential-victim potential avoider will not have to bear the cost that an accident or pollution-event imposes on him initially and (2) the loss the potential-victim potential avoider bears initially does not equal the allocative loss generated by the relevant accident or illness.

- (1) The Reasons Why in a Negligence Regime the Potential-Victim Potential Avoider May Not Ultimately Bear the AP Costs He Initially Bears

Obviously, to the extent that a potential victim will not ultimately have to bear the costs that an accident-event or pollution-event imposes on him initially, the private benefits and profitability of avoidance to him will be *ceteris paribus* deflated. This conclusion implies that, *ceteris paribus*, the incentives of a potential victim whose injurer

is liable only if found negligent to make an avoidance-move will be deflated to a greater extent

- (1) the smaller the probability that the victim in question would be held not to be entitled to recover because he was not the type of victim whom tort law entitles to recover;
- (2) the smaller the probability that the injurer will be incorrectly held not to be the cause-in-fact of the victim's loss;
- (3) the smaller the probability that all of the victim's possible injurers will be held not to be the cause-in-fact of the victim's loss because the only relevant evidence on this issue was circumstantial and each possible injurer contributed 50% or less of the ex ante probability of the relevant loss' occurring;
- (4) the smaller the probability that the injurer will be found not to be the proximate cause of the victim's loss, either because that finding is correct under the prevailing "proximate cause" doctrine or because a false-negative finding on proximate cause is made;
- (5) the smaller the probability that his injurer would not be held negligent because no oPp allocatively efficient avoidance-move was available to him;
- (6) the smaller the probability that his injurer would not be held negligent because all oPp allocatively efficient avoidance-moves that would be available to him were types of moves whose rejection would not in practice be assessed for negligence;
- (7) the smaller the probability that the trier of fact would make a false-negative finding on the negligence issue even if he did assess the injurer's negligent rejection of an oPp allocatively efficient avoidance-move;
- (8) the smaller the probability that the victim would be barred from recovery by a "fellow servant" rule or an "assumption of risk" doctrine even if he was not contributorily negligent;
- (9) the smaller the probability that the potential victim's rejection of the avoidance-move in question would be found contributorily negligent (because it would be contributorily negligent or the trier of fact would make a false-positive finding of contributory negligence);
- (10) the smaller the probability that the relevant court would employ a contributory-negligence doctrine as opposed to a comparative-negligence doctrine (in cases in which the potential victim's rejection of the avoidance-move in question would be found contributorily negligent);
- (11) the smaller the probability that the potential victim's rejection of the avoidance-move in question would be held to bar his recovery on "last clear chance" grounds;
- (12) the smaller the amount by which the weighted-average-expected damages that the victim would be awarded would fall below his actual loss;
- (13) the smaller the amount by which the sum for which the victim should expect on the weighted average to settle will fall be-

- low the weighted-average-expected damages he should anticipate being awarded if he goes to trial;
- (14) the smaller the transaction-cost to the victim (including the private value of his time, the aggravation he will experience, his lawyers' fees, and his court fees) of seeking compensation for his losses; and
 - (15) the smaller the percentage of the loss that is not covered by first-party insurance taken out by the victim or State subsidies of various kinds (unemployment insurance, disability benefits, and medical-care subsidies).

I want to elaborate on one of the preceding items—item (9), which deals with the relevance of contributory negligence. Part II explained that in practice potential injurers' rejection of many of the various types of avoidance-moves available to them are never assessed for negligence. It is equally true that in practice potential victims' rejection of many of the various types of avoidance-moves available to them is never assessed for contributory negligence. When the potential victim is a producer, his rejection of APCA location-shifts, product-variant alterations, unit-output reductions, and APCAR expenditures will not be assessed for contributory negligence any more than the potential injurer's rejection of these types of moves will be assessed for negligence. Indeed, because the coming-to-the-nuisance doctrine does not make the second locator's "liability" depend on his contributory negligence, the fact that this doctrine is in force in many jurisdictions does not require this claim to be qualified significantly (though it does affect the extent to which $PB_{\Delta APCA}$ for victims is deflated by this restriction in the types of choices assessed for contributory negligence).

Equally important, the rejection of many types of APCA moves that are available to non-producer victims is never assessed for negligence. For example, although pedestrian-victims in automobile accidents may be held contributorily negligent for crossing against the light or running out into the street between two cars in the middle of a block, their decisions to wear dark clothing, to cross the street at a corner where many accidents have occurred, to go for a walk on a dark, rainy night, to take more walks rather than fewer walks, etc., are never assessed for contributory negligence. Similarly, although automobile-driver victims of automobile accidents may be held contributorily negligent for driving their car in a careless fashion or driving a car knowing that it has mechanical faults that make it accident-prone, their decisions to drive a more vulnerable car that meets government standards, to drive on dark, rainy nights, to take certain routes, or to

drive more rather than less will never be assessed for contributory negligence.

Just as the fact that potential-injurer rejections of various types of avoidance-moves that will never be assessed for negligence can critically deflate $P_{\pi_{\Delta APCA}}$ for avoidance-moves that potential injurers can reject without being found negligent on that account, the fact that potential-victim rejections of various types of avoidance-moves that will never be assessed for negligence can critically deflate $P_{\pi_{\Delta APCA}}$ for these types of potential-victim avoidance-moves when the victim would otherwise be able to obtain compensation from the injurer in question.

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The preceding analysis implies that under negligence $\% \Sigma D(PB)$ will be substantially negative for almost all types of potential-victim avoidance-moves whose rejection will not be assessed for contributory negligence. The possible exception is potential-victim APCAR expenditures designed to discover potential-victim or potential-injurer less-AP-cost-prone, oPp allocatively efficient options whose rejection would be assessed for negligence or contributory negligence. The preceding analysis also implies that $\% \Sigma D(PB)$ will be somewhat negative for potential-victim avoidance-moves whose rejection will be assessed for contributory negligence. In fact, this latter conclusion will have to be qualified only when the prospect that the victim's losses will be overestimated by the relevant triers of fact outweighs the other imperfections that deflate $PB_{\Delta APCA}$ for victims. This analysis' assumption that the current definition of contributory negligence has been corrected to make potential victims contributorily negligent only if they are potential most-allocatively-efficient avoiders eliminates the other reason why in our actual negligence regime $PB_{\Delta APCA}$ for potential victims may be inflated—may equal ($\downarrow[PL+R]$) for the potential victim's inferior-allocatively-efficient avoidance-move rather than the lower PC for the most-allocatively-efficient avoidance-move available to the relevant potential injurer.

- (2) The Reasons Why the Loss of a Potential Victim Who Is a Potential Avoider May Diverge from the Allocative Loss the Injurious Event Generates

Basically, the (\downarrow private[PL+R]) facing the potential victim who is a potential avoider can diverge from the allocative benefits his avoid-

ance would generate for two reasons. The first is that even in an oPp economy, the relevant potential victim's avoidance would benefit other potential victims than himself. Although these others may be parties who would be entitled to recover from the injurer, usually they will be "unentitled victims" such as the friends and relatives of the potential avoider in question, who suffer when he is injured.

The second is that Pareto imperfections that are not caused by tort-law imperfections, tort-claiming-process imperfections, or tort-law-decisionmaker errors can distort the private benefits of avoidance. Thus, to the extent that the avoidance-move would prevent illnesses or injuries that would impose uncompensated losses on the victim by reducing the wages he/she earned, monopoly would deflate the PB of the victim APCA-move in question if the victim functioned by increasing his/her employer's unit output or executing his employer's PPR project and would inflate the PB of the victim APCA-move in question if the victim functioned by creating a QV investment.

Moreover, to the extent that the avoidance-move was resource-saving, AP costs aside (a decision not to install a swimming pool in the backyard of a house near a noise-polluting or water-polluting factory or a decision not to produce units of output whose quality would be reduced by environmental pollution), monopoly would also tend to deflate and taxes on the margin of income would tend to inflate (though almost always to a lesser extent) this component of PB_{APCA} just as it did when the APCA move in question was being made by a potential injurer rather than a potential victim.

Monopoly will also deflate the PB that victims can obtain by doing research into AP-cost-reducing moves that they or, indeed, their potential injurers can make. The analysis of these possibilities is also identical to our earlier analysis of $MD(P\pi_{APCAR})$ for potential-injurers' APCAR except to the extent that $\Sigma D(P\pi_{APCAR})$ for APCAR projects designed to discover oPp allocatively efficient avoidance-moves that potential victims can make (research that could also be done by potential injurers) will also be affected by whether potential victims will be held contributorily negligent for not making any such moves that are discovered. As the preceding sentence suggests, $\Sigma D(P\pi)$ for potential-victim APCAR expenditures will also be affected by taxes on the margin of income and knowledge-creation externalities (or overinternalizations). I suspect that tax-law Pareto imperfections will tend to inflate the $P\pi$ of victim APCAR-expenditures and "innovation law" will have an effect on $\Sigma D(P\pi)$ for victim-APCAR whose potential im-

portance is far too big to ignore but whose size and magnitude cannot be usefully gestimated.

B. $\% \Sigma D(PC_{APCA})$ for Potential Victims Under Negligence

Monopoly deflates the PC of the resource-consuming APCA moves available to potential victims for the same reasons that it deflates PC_{APCA} for resource-consuming APCA moves available to potential injurers. Monopoly also deflates the PC of APCA reductions in unit output by potential victims for the same reasons that it deflates $PC_{\downarrow UO}$ for potential injurers.

C. $\Sigma D(P\pi_{\Delta APCA})$ for Potential Victims Under Negligence

In my judgment, $P\pi_{\Delta APCA}$ will often be critically deflated for potential-victim APCA moves and rarely be critically inflated for such moves. My conclusion that $P\pi_{\Delta APCA}$ for potential-victim APCA moves will often be critically deflated primarily reflects the following facts:

- (1) in the type of negligence regime this Article is investigating, potential victims' rejection of many of the various types of avoidance-moves available to them will not be assessed for contributory negligence and even when the potential victim's failure to avoid is assessed for contributory negligence, false-negative findings may be made on that issue and
- (2) in many of the cases in which potential victims will not be found contributorily negligent for rejecting oPp allocatively efficient avoidance-moves, the percentage of his loss that the potential victim in question will be able to recover from his injurer or the State is substantial.

Moreover, I suspect that $P\pi_{\Delta APCA}$ may also be critically deflated for a few potential-victim avoidance-moves whose rejection would not be contributorily negligent under the "corrected" Hand formula—viz., because an oPp allocatively inefficient avoidance-move was actually allocatively efficient. These cases will primarily arise when $P\pi_{\Delta APCA}$ for the potential-victim avoidance-move in question was critically deflated by the net effect of Pareto imperfections that are not caused by deficiencies in tort-law doctrine, tort-law-claiming processes, or tort-law decisionmakers or decisions. This possibility is most likely to be a reality when the potential-victim avoidance-move in question is an APCAR expenditure or some other non-activity-level APCA move that is resource-saving, AP costs aside.

I can imagine only three types of circumstances in which a potential victim might unambiguously overavoid in the type of negligence regime under consideration:

- (1) the potential victim vastly exaggerated the amount by which his avoidance would reduce (PL+R) in situations in which he will not be able to recover his losses from his injurer, his own insurance, or the State,
- (2) the potential victim is a producer who avoids by reducing his unit output, or
- (3) "innovation law" "overinternalizes" what would otherwise be the external benefits of knowledge-creation.

Admittedly, a potential victim who will not be able to recover any losses he suffers from accidents or pollution may also be induced to engage in inferior-allocatively-efficient avoidance when his certainty-equivalent recovery from his injurer, who was a potential most-allocatively-efficient avoider, is significantly less than his certainty-equivalent loss, but such inferior-allocatively-efficient avoidance will presumptively increase allocative efficiency in comparison with the situation that would prevail if neither the potential victim nor the potential injurer, who was the potential oPp most-allocatively-efficient avoider, avoided.

Under the negligence system under consideration, both potential victims and potential injurers will tend to underavoid from the perspective of allocative efficiency. Although this conclusion may seem paradoxical, the analysis has shown that it is not.

2. The Effect of a Shift From Negligence to Strict Liability on the Distortion in the Private Profitability of Avoidance to Potential Victims and the Amount of APCA-Related Misallocation That Potential Victims Generate

A shift in the injurer-liability standard from negligence to strict liability will alter the aggregate distortion in the private profitability of avoidance to potential victims by changing (almost certainly, reducing) the ex ante weighted-average-expected percentage of any losses that accidents and pollution impose on them initially that they should expect to bear ultimately in cases in which the contributory-negligence doctrine, the "last clear chance" doctrine, the "coming to the nuisance" doctrine, or the "assumption of risk" doctrine would not preclude them from recovering should they fail to avoid. A shift from negligence to strict liability will affect the percentage of any AP loss that victims should expect to collect from their injurer(s) in a variety of different ways:

- (1) by eliminating the losses that victims have to bear because their injurers' injurious choices were not negligent by making injurers liable when they would not otherwise have been lia-

- ble—indeed, in “crushing liability” cases by making injurers’ ex ante liability exceed their contribution to ex ante AP costs;
- (2) by eliminating the losses that victims have to bear because in practice many different types of decisions injurers make not to avoid are never assessed for negligence;
 - (3) by eliminating the losses that victims have to bear because judges or juries make false-negative findings on the negligence-issue even when they do examine the negligence of the relevant injurer’s decision not to avoid;
 - (4) by reducing the losses that victims bear because the mechanical transaction-costs and the risk costs that victims must incur to pursue claims as well as the tendency of victims to underestimate their chances of success on the negligence-issue lead them not to make claims that would have been successful (by reducing the various victim-costs in question, though these tendencies will be offset by the tendency of the shift to reduce the damage-awards that successful victims obtain by making it more difficult for plaintiffs to provide judges and juries with evidence of injurer wrongdoing);
 - (5) by reducing the losses that victims bear because the fact that the mechanical transaction-cost and risk costs of litigating are higher for them than for defendants causes them to settle for less than the compensation that they would expect on the weighted average to be awarded at trial (by reducing such litigation-costs for both parties);
 - (6) by reducing the mechanical transaction-costs and risk costs that successful victim-litigants have to bear because the common law respectively does not normally allow and never allows successful plaintiffs to recover such costs; and
 - (7) by increasing the losses that victims have to bear because on balance damage-awards fall below AP losses (by preventing the submission of evidence of injurer-wrongdoing to the court).

The first six items in the preceding list suggest that in all cases in which a victim’s failure to avoid will not bar his recovery a shift from negligence to strict liability will reduce the percentage of any accident or pollution costs that victims initially bear for which they will fail to obtain compensation. For this reason, the list implies that in virtually all such cases a shift from negligence to strict liability will reduce the percentage of the AP losses that victims initially sustain that they should expect on the weighted average to bear in the end and thereby will increase the extent to which, *ceteris paribus*, the private benefits and private profitability of avoidance to potential victims will be deflated. Of course, as I have already suggested, this tendency of any shift from negligence to strict liability to increase the deflation in the private benefits of avoidance to victims will be misallocative only if the contributory-negligence doctrine (or some equivalent) would not

bar recovery by victims any time that they failed to make an allocatively efficient avoidance-move. Unfortunately, as just shown, the decision by potential victims to reject many of the various types of avoidance-moves available to them will never be assessed for contributory negligence, and some such rejections that are assessed for contributory negligence will incorrectly be found not to be contributorily negligent.

At least in conjunction with hard-to-contest empirical assumptions, the preceding theoretical results do justify the conclusion that the shift from negligence to strict liability almost certainly will tend to increase the amount of APCA-related misallocation that potential victims generate. Admittedly, the shift from negligence to strict liability could cause potential victims to make allocatively inefficient APCAR expenditures, but any such overavoidance induced by the shift will almost certainly be outweighed by its more general tendency to deter victims from engaging in allocatively efficient avoidance by increasing the negative value of $\% \Sigma D(P_{\pi_{\Delta APCA}})$ for the overwhelming majority of marginal and extra-marginal potential-victim APCA moves.

IV. THE NET EFFECT OF A SHIFT FROM NEGLIGENCE TO STRICT LIABILITY ON THE AMOUNT OF APCA-RELATED MISALLOCATION THAT POTENTIAL INJURERS AND POTENTIAL VICTIMS GENERATE COMBINED

Part II analyzed the various determinants of the effect of a shift from negligence to strict liability on the amount of APCA-related misallocation generated by potential injurers in general, potentially injurious producers in particular, and potential APCAR researchers who are not potential injurers in the conventional sense of that term. Part III then analyzed the various determinants of the effect of such a shift on the amount of APCA-related misallocation generated by potential victims. Part IV next analyzes the various determinants of the combined effect of such a liability-rule change on the APCA-related misallocation generated by potential injurers, potential victims, and potential APCAR researchers who are neither traditional injurers nor victims.

Parts II and III also reached some tentative conclusions about the sign of the effect of a shift from negligence to strict liability on the APCA-related misallocation generated by the actors on which they respectively focused. Although these conclusions could not be demonstrated through a priori analysis, Part II argued that a universal

shift from negligence to strict liability would almost certainly reduce the amount of APCA-related misallocation generated by potentially injurious producers even if one ignored its consequences for the allocative efficiency of their APCAR decisions. Part II also argued that although the worse-than-TBLE character of the data currently at our disposal is particularly troublesome in this connection, it seems likely that a universal shift from negligence to strict liability would decrease the amount of APCA-related misallocation generated by potential APCA researchers—indeed, by both those potential researchers who are traditional potential injurers (because they are also producers) and those independent potential researchers who are not potential injurers.

Conversely, Part III argued that a universal shift from negligence to strict liability would almost certainly increase the amount of APCA-related misallocation generated by potential AP-cost victims. Even if one could be certain of the effect of such a shift on the amount of APCA-related misallocation generated by potential injurers and independent APCAR researchers, this last conclusion would raise questions about the sign of the effect of a universal shift from negligence to strict liability on the total amount of APCA-related misallocation generated by potential injurers, potential victims, and potential independent researchers.

The paucity of empirical information makes me hesitate (even if insufficiently) to speculate on the net effect of a universal shift from negligence to strict liability on the APCA-related misallocation those actors collectively cause. If forced to do so, I would guess that a universal shift from negligence to strict liability would reduce the amount of APCA-related misallocation these actors generate on balance. But I would not recommend that anyone place much weight on this far-worse-than-TBLE prognostication.

But so what? The point of this analysis is not to generate allocative-efficiency conclusions now but to prepare the way for the additional theoretical and empirical work whose execution would generate more reliable allocative-efficiency conclusions. Even the work this Article has completed enables me to offer some useful speculations about the likely content of the allocative-efficiency conclusions that a TBLE analysis would yield. First, and not surprisingly, such an analysis is likely to reveal that neither a universal strict-liability regime nor a universal negligence regime would be TBLE: (1) almost certainly it will be more allocatively efficient to impose strict liability on members of some industries while making members of other industries liable

only if found negligent and (2) it may be allocatively efficient as well to make the standard of liability applicable to the various potentially injurious producers operating within an industry depend on their individual characteristics, the circumstances in which they are operating, and the relevant-characteristic distributions of their likely victims and their likely victims' situations.

Second and more specifically, the preceding analysis implies that, *inter alia*, the probability that it will be allocatively efficient to impose strict liability on a potential injurer will be directly related to

- (1) the certainty-equivalent amount by which he will be able to increase allocative efficiency by shifting to known, less-AP-cost-prone locations or product-variants;
- (2) the certainty-equivalent amount by which he will be able to reduce AP-costs and increase allocative efficiency by reducing his unit output—the lower his P/MC ratio relative to its weighted-average counterpart for the products whose unit outputs would be increased if his were reduced;
- (3) the certainty-equivalent amount by which he will be able to increase allocative efficiency by doing APCAR—the greater the opportunities for technological advances and the smaller the proportion of what would otherwise be the external benefits of knowledge-creation that innovation law internalizes for APCA discoveries in the industry in question; and
- (4) the probability that victims will sue (the more knowledgeable and confident the relevant victims, the smaller the transaction-costs they will have to incur to sue relative to the size of the loss they individually sustained, the greater the prospects for class actions against members of the relevant industry, etc.).

The preceding analysis also implies that the probability that it will be allocatively efficient to impose strict liability on a potential injurer will be directly related to

- (1) the certainty-equivalent amount of crushing liability, trier-of-fact damage overestimates, and punitive damages the potential injurer will face;
- (2) the certainty-equivalent amount by which his potential victims' recovery will be reduced by their contributory negligence, assumption of risk, failure to take advantage of a last clear chance, etc.;
- (3) the probability that the potential injurers in question are judgment-proof;
- (4) the certainty-equivalent amount by which the potential injurer's potential victims would increase allocative efficiency by making avoidance-moves whose rejection will not be considered to be contributorily negligent; and
- (5) the probability that the potential injurer's potential victims would engage in allocatively efficient avoidance if the law made it profitable for them to do so, etc.

Obviously, I could extend these lists to take into consideration all the various imperfections that Parts II and III demonstrated could distort $\Sigma D(P\pi_{\Delta APCA})$ or APCA decisionmaking from the perspective of allocative efficiency. In practice, how refined the TBLE analysis will be will depend on (1) the cost of obtaining data of different degrees of accuracy on the various parameters that it would be allocatively efficient to consider if it were costless to do a perfect job of collecting and analyzing the implications of such data and (2) the certainty-equivalent amount by which additional data-collection and analysis would enable us to increase the allocatively efficiency of our policy decisions if perfect work of these kinds could be executed costlessly.

V. THE CONSEQUENCES OF SHIFTING FROM NEGLIGENCE TO STRICT LIABILITY ON THE ALLOCATIVE TRANSACTION-COST OF DEALING WITH AP-COST LOSSES

Virtually all economists agree that a shift from negligence to strict liability will increase private transaction-costs. All economists also implicitly assume that the relevant private transaction-costs equal their allocative counterparts. Part V explains why the argument that underlies the former consensus is unconvincing and why and how the implicit assumption just delineated is incorrect.

1. The Consequences of Shifting From Negligence to Strict Liability on the Private Transaction-Costs That Injurers, Victims, Courts, Insurance Companies, and Other Agencies of Government Incur When Dealing with AP Costs

There are two problems with the argument that has led to the consensus view that a shift from negligence to strict liability will increase the above transaction-costs. First, the argument that has led to the standard economic conclusion that such a shift to strict liability will increase the private transaction-costs generated by the making and processing of legal claims is based on unrealistic implicit premises. Second, the standard transaction-cost claim ignores the consequences of a shift from negligence to strict liability on the private transaction-costs generated by private-insurance contracting and government transfers. This section analyzes each of these problems in turn.

A. The Effect of the Shift From Negligence to Strict Liability on the Private Transaction-Costs the Parties and Courts Incur When Making and Resolving AP-Cost-Related Tort-Law Claims

The standard economic conclusion is that the shift from negligence to strict liability will increase the private transaction-costs that injurers, victims, and “the courts” incur when making and resolving AP-cost-related tort-law claims. On the oPp assumptions the relevant economists are implicitly adopting, this conclusion is warranted. To see why, note the following two “facts:”

- (1) if injurers, victims, judges, and juries are sovereign maximizers and the legal system makes it privately profitable for judges and juries to make legally-correct decisions, no transaction-costs will ever be generated by the making and processing of AP-cost-related tort-law claims in a negligence regime because, on these assumptions, no potential injurer will ever be negligent and no actual victim will ever bring an AP-cost-related tort-law claim and
- (2) under strict liability, private transaction-costs will be generated by AP-cost-related tort-law claiming because AP-cost-loss claims will be valid.

In reality, of course, AP-cost-related tort-law claims are made in a negligence regime for at least five reasons. First, some claims are made because potential injurers are sometimes negligent because they are not sovereign maximizers. Second, some claims are made because one or more of the tort-law doctrinal, claiming-process, and decision-making imperfections that Part II listed make it ex ante profitable for potential injurers to be negligent (a separate possibility if one defines potential-injurer sovereignty to be compatible with a potential injurer’s uncertainty about whether the various imperfections in tort-law doctrine, claiming processes, and decision-making will actually eliminate or critically reduce his liability). Third, some claims are made because the private transaction-costs that potential injurers must incur to defend a suit make it profitable for the potential injurer to pay off someone who is in fact making a nuisance claim. Fourth, some claims are made because potential injurers may be found negligent despite the fact that their behavior would not qualify as negligent under the Hand test—this result could obtain because the trier of fact made a simple mistake, because the trier of fact did not appreciate the stochastic character of due care, or because tort-law doctrine instructs the trier of fact to assume (often counterfactually) that the defendant was as able as the average member of the community to avoid the AP cost in question in an allocatively efficient way. Fifth, some claims

may be made because victims (or potential plaintiffs) are not sovereign maximizers.

Once one admits that legal claims may be made in a negligence regime, the standard a priori argument for the conclusion that the shift from negligence to strict liability will increase the private transaction-costs generated by legal claims will no longer be applicable. Instead, the analysis of the effect of a shift from negligence to strict liability on the private transaction-costs generated by legal claims will have to include empirical investigations of the four ways in which such a shift will affect such transaction-costs.

First, one will have to analyze the way in which a shift from negligence to strict liability will increase legal transaction-costs by changing the number and amount of valid claims. Unfortunately, the sign of this effect cannot be predicted on an a priori basis. On the one hand, the shift will increase the number and amount of valid claims by increasing the percentage of losses for which injurers are liable. On the other hand, as Part IV indicated, the shift will also affect the number and amount of valid claims by changing the number and amount of losses that take place by increasing potential-injurer avoidance and decreasing potential-victim avoidance. Admittedly, although the preceding two conclusions imply that one cannot predict the effect of a shift from negligence to strict liability on the number and amount of valid claims on an a priori basis, I am confident that the shift from negligence to strict liability will tend to increase legal transaction-costs by increasing the number and amount of valid legal claims.

Second, one will have to examine the extent to which a shift from negligence to strict liability will tend to increase legal transaction-costs by increasing the percentage of valid legal claims that are actually asserted both by reducing the transaction-cost to victims of pursuing their claims and by making them more optimistic that justice will be done by eliminating a factual issue (negligence) that they may fear juries will resolve incorrectly against them.

Third, one will have to investigate the extent to which a shift from negligence to strict liability will tend to decrease legal transaction-costs directly by decreasing the transaction-cost of litigating or settling any relevant claim by making it unnecessary to try or discuss the negligence issue.

Fourth, one will have to study the uncertain effect that a shift from negligence to strict liability will have on legal transaction-costs by influencing the percentage of claims that are settled. *Ceteris*

paribus, legal transaction-costs will tend to be lower if claims are settled as opposed to litigated. Unfortunately, one cannot predict the impact of a shift from negligence to strict liability on settlement rates on an a priori basis because such a shift will have offsetting effects on two of the major factors that economic theory indicates will determine whether a given dispute is settled as opposed to litigated. Assuming for simplicity that neither party expects to obtain any strategic gains or suffer any strategic losses from the resolution of the dispute in question (e.g., that no favorable or unfavorable legal precedent will be set at trial, that no effective method of proof or argument will be revealed, and that the relevant parties' negotiating reputations will be unaffected), maximizing sovereigns will settle whenever the joint savings that settlement will generate for them by obviating litigation (which is more transaction-costly than settlement negotiations) exceed any positive difference between the weighted-average-expected amount the plaintiff expects to obtain at trial and the weighted-averaged-expected sum the defendant believes the plaintiff will be awarded. A shift from negligence to strict liability will have an uncertain effect on the probability that this condition will be satisfied because it will simultaneously decrease the joint transaction-cost savings that settlement will generate (because the negligence issue will be more expensive to litigate than to discuss during settlement negotiations in both mechanical and risk-cost terms) and decrease the likely extent to which defendants and plaintiffs disagree about trial-outcomes (because defendants and plaintiffs will probably be unduly optimistic about the resolution of both the negligence issue and all other relevant issues).

The preceding analyses imply that the effect of a shift from negligence to strict liability on legal transaction-costs cannot be predicted on an a priori basis. Although my intuition is that shifts to strict liability will increase legal transaction-costs, the more I speculate about this issue, the less certain I become. Certainly, it would be TBLE to do far more research on the various empirical issues this question implicates. Nevertheless, the following analysis will assume that the shift from negligence to strict liability will increase legal transaction-costs.

B. The Effect of the Shift From Negligence to Strict Liability on the Private Transaction-Costs That Insurance-Buyers and Insurance Companies Incur When Entering Into Insurance-Contracts as Well as on the Private Transaction-Costs That Government Redistributive Agencies and Their Clients Generate Because the Latter Have Incurred AP Costs

The relevant transaction-cost literature ignores the possible effect of a shift from negligence to strict liability on the private transaction-costs associated with accident-and-pollution-loss-insurance and government transfers. To the extent that a shift from negligence to strict liability would reduce the number of first-party insurance policies that potential AP-cost victims take out by more than they increase the number of insurance policies that potential AP-cost injurers take out, the shift may reduce the amount of transaction-costs that insurance-contracting generates (though, of course, the more relevant effect is the allocative efficiency of any associated change in insurance-contracting). Similarly, to the extent that the shift from negligence to strict liability reduces the number and amount of disability, unemployment, and welfare claims the government must process and pay by enabling the relevant victims to collect from their injurers and perhaps to finance their timely participation in rehabilitation programs that reduce the probability of their being dependent on State help, the shift may reduce the transaction-costs generated by the relevant government-transfer programs.

Although I suspect that a shift from negligence to strict liability will reduce both insurance-related transaction-costs and government-transfer transaction-costs, I have no sense of the magnitude of these two impacts. Still, these possibilities almost certainly reduce the overall-transaction-cost disadvantage of shifting from negligence to strict liability.

2. The Relationship Between the Allocative and Private Transaction-Cost Consequences of a Shift From Negligence to Strict Liability

Three points need to be made in this connection. First, just as monopoly deflates the private cost of all other types of resource-uses, it deflates the private-transaction-cost consequences of a shift from negligence to strict liability. Thus, if the shift increases (decreases) the private transaction-costs in question by \$X, it will increase (decrease) the allocative transaction-costs in question by more than \$X.

The second and third points are not quite on point but fit best at this juncture. The second point turns on the fact (assumption) that a shift from negligence to strict liability will have a non-zero net impact on the amount of transaction-costs the government incurs for which it does not receive compensation. On the one hand, a shift from negligence to strict liability will increase the net transaction-cost to the government of supplying judicial and court services by increasing the amount of such services it must supply in a regime in which parties are not required to pay the conventionally calculated dollar-cost to the government of supplying them. On the other hand, a shift from negligence to strict liability will probably reduce the transaction-cost to the government of its various transfer-programs by reducing the number of AP-cost-related transfer-claims made to the government and concomitantly the transaction-cost of handling all AP-cost-related transfer-claims.

The second point is that the allocative cost associated with these uncompensated transaction-costs exceeds its private counterpart not only for the reasons previously discussed but also because the government will tend *ceteris paribus* to misallocate resources when it finances the net fiscal loss in question. Certainly, this conclusion will be warranted if the government finances this fiscal loss by raising taxes on the margin of income or by taking steps that increase inflation. It will also be warranted if the government finances this fiscal loss by cutting or eliminating other expenditures that would have been allocatively efficient.

The third point relates to the tendency of a shift from negligence to strict liability to reduce the amount of AP-cost-related transfer-payments that the government must make. This fiscal saving does not equal its allocative counterpart. Indeed, in itself, the obviation of the government transfer would have no allocative-efficiency significance because on oPp assumptions income transfers have neutral allocative-efficiency impacts. Still, since the government would almost certainly have to misallocate resources to finance the government transfers in question, any tendency of a shift to strict liability to obviate them will count for its allocative efficiency on this account as well.

* * * * *

Part V has demonstrated the inadequacy of the standard analysis of the way in which a shift from negligence to strict liability will affect allocative efficiency by altering transaction-costs (and the misalloca-

tion government generates when financing its activities). The conventional analysis of the effect of such a shift on legal-claim transaction-costs is undermined by its unrealistic oPp assumption. Although the conventional conclusion that such a shift will increase private legal transaction-costs is probably correct, the standard analysis does not provide a useful framework either for evaluating this conclusion or determining the amount by which a shift from negligence to strict liability is likely to increase private legal transaction-costs. The standard analysis also ignores the likely effects of such a shift in liability rules on accident-and-pollution-insurance contracting-costs and on government-transfer transaction-costs. The failure of the standard analysis to consider these possibilities may reflect its oPp assumption: first-party AP-cost-loss insurance exists because of imperfections in the information available to potential victims, and government-transfer programs are both responses to Pareto imperfections (the externalities generated by the AP losses individuals suffer) and causes of Pareto imperfections. If I had to operate on the currently available, far-worse-than-TBLE information, I would guess that a shift from negligence to strict liability probably would tend to reduce both insurance-related and government-transfer-related transaction-costs. Finally, the conventional analysis ignores the distinction between private and allocative transaction-costs and disregards both the effect of a shift from negligence to strict liability on the fiscal position of the government and the allocative-efficiency significance of this effect.

The purported TBLE analysis that this part has executed is both partial and preliminary. However, it has established the allocative efficiency of substituting a more-or-less-refined analysis that does take Second-Best Theory into account for the conventional FBLE analysis of this transaction-cost issue.

VI. THE ALLOCATIVE EFFICIENCY OF MAKING THE DECISION WHETHER TO REJECT A LEGAL CLAIM ON "PROXIMATE CAUSE" GROUNDS DEPEND ON THE STANDARD OF INJURER-LIABILITY

In 1980, Steven Shavell wrote an excellent article³⁸ analyzing, *inter alia*, the factors that determine the allocative efficiency of an appropriate "proximate cause" doctrine (or, put slightly differently, the factors that an allocatively efficient proximate-cause doctrine would make relevant to the determination of whether a suit should be de-

38. See Shavell, *supra* note 13.

cided on proximate-cause grounds). According to Shavell, proximate-cause doctrines have the following three allocative-efficiency-relevant effects:

- (1) they change the transaction-cost of dealing with the AP costs that are generated;
- (2) they alter the amount of APCA-related misallocation generated by potential injurers; and
- (3) they affect the amount of APCA-related misallocation generated by potential victims.

Most of what Shavell has to say about these issues is not only correct but illuminating. However, I do disagree with him on a number of points. Part VI begins by briefly discussing my objections to Shavell's treatment of (1) the transaction-cost consequences of various proximate-cause doctrines, (2) the effect of any proximate-cause doctrine on the amount of APCA-related misallocation that victims cause, and (3) the significance of the probability of the loss, the size of the loss the relevant accident or pollution-event generated, and the "foreseeability" of the loss for the allocative efficiency of deciding a suit arising out of the loss on proximate-cause grounds. Part VI then proceeds to use Parts I and II of this Article to criticize Shavell's analysis of whether and how an allocatively efficient proximate-cause rule would take into consideration the standard of liability that is applicable to the injurer in question (negligence or strict liability)—an analysis that focuses on (A) the fact that a potential injurer's rejection of some types of avoidance-moves is never assessed for negligence and (B) the crushing-liability imperfections caused by the failure of the common law to develop a "proportionate liability" doctrine to govern cases in which cause-in-fact conclusions must be based on data on the relevant potential injurer's contribution to the ex ante probability of the relevant loss' occurring.

1. Shavell's Analysis of the Transaction-Cost Consequences of any Plausible Proximate-Cause Doctrine

Shavell believes that any plausible proximate-cause doctrine will tend to reduce transaction-costs.³⁹ He recognizes that in individual cases in which proximate-cause is "seriously disputed," the proximate-cause doctrine may actually increase transaction-costs.⁴⁰ He also recognizes the possibility ("an unlikely possibility in [his] opinion") that such disputes over proximate cause could be sufficiently important for

39. See *id.* at 471 & 480.

40. *Id.* at 471 n.25.

the doctrine to raise legal transaction-costs across all cases.⁴¹ I have no disagreement with any of this. However, I do think that Shavell's analysis of the transaction-cost issue is deficient in seven respects.

First, Shavell does not seem to recognize that the proximate-cause doctrine will rarely if ever reduce trial-costs once a case comes to trial (though it might deter some legal claims from ever being made). This conclusion reflects the fact that in current practice the proximate-cause issue is not resolved before the liability issue is tried—the fact that, in current practice, the plaintiff and defendant will put on their whole cases even if the plaintiff ends up losing on proximate-cause grounds. Although one could imagine a regime in which the proximate-cause issue is resolved first, it is not even clear that a shift to such a regime would reduce trial-costs: allocatively efficient versions of the proximate-cause doctrine (see *infra*) may make it more costly to try the proximate-cause issue than either the cause-in-fact issue in a strict-liability regime or the cause-in-fact issue and the negligence issue in a negligence regime.

Second, Shavell ignores the fact that if, as he supposes, proximate-cause dismissals lead to an increase in the number of accidents by deflating the avoidance-incentives of potential injurers, they will tend to increase total legal transaction-costs (as well as insurance-contracting and government-transfer-claiming transaction-costs) on that account by increasing the number of claims that must be processed.

Third, Shavell ignores the possibility that the proximate-cause doctrine may affect the transaction-cost of dealing with the cases that are brought by deterring settlements. On the one hand, the fact that the doctrine will not decrease and may increase trial-costs (it will certainly increase them in a strict-liability case) suggests that it will tend to reduce legal transaction-costs by encouraging settlement. On the other hand, the doctrine may increase (decrease) dispute-processing transaction-costs by decreasing (increasing) settlement by decreasing (increasing) the difference between the alleged injurer's and victim's weighted-average-expected trial-outcome predictions.

Fourth, Shavell ignores the effect of the proximate-cause doctrine on the number and value of the AP-cost-insurance contracts taken out and/or the transaction-costs generated by the AP-cost-insurance contracting-process.

Fifth, Shavell ignores the effect of the proximate-cause doctrine on the amount of AP-cost-related government-transfer claims made

41. *Id.*

and on the transaction-costs generated by the making and resolution of such claims.

Sixth, although this is only partly a transaction-cost-related point, Shavell ignores the effect that a proximate-cause doctrine will have on the misallocation caused by the government when financing its activities by altering the net AP-cost-related expenditures that the government must make (uncompensated court-costs, additional-government-transfer-related government-incurred transaction-costs, and additional government transfers). If the proximate-cause doctrine increases such net government expenditures, it will increase misallocation on this account; if it decreases such net government expenditures, it will decrease misallocation on this account.

Seventh and finally, Shavell fails to point out that the effect of any proximate-cause doctrine on private transaction-costs is absolutely smaller than its impact on allocative transaction-costs.

2. Shavell's Analysis of the Impact of any Plausible Proximate-Cause Doctrine on the Amount of APCA-Related Misallocation That Potential Victims Cause

Shavell recognizes that the prospect of proximate-cause dismissals will tend to reduce the amount of APCA-related misallocation that potential victims cause when there is some prospect of their not being found contributorily negligent for failing to make oPp-allocatively-efficient avoidance-moves.⁴² However, his analysis of this possibility is deficient in three respects.

First, he does not seem to realize the frequency with which under current law victims will not be held contributorily negligent for rejecting oPp allocatively efficient avoidance-moves. His illustration of this possibility is suggestive in this respect: he "suppose[s] that, for a certain category of product-liability accidents, victims know that courts ignore all but gross instances of contributory negligence."⁴³ In fact, although there is no such product-liability doctrine, courts (as previously indicated) fail to assess for negligence the rejection by victims of a wide variety of the various types of avoidance-options available to them.

Second, Shavell fails to mention the large number of other imperfections that distort the private profitability of avoidance to potential victims, their perceptions of that profitability (though his comments

42. See *id.* at 496.

43. *Id.*

on the possible tendency of injurers to underestimate the likelihood of certain types of losses⁴⁴ should apply to victims as well), and/or their ability to make decisions that maximize their own interests. As already seen, these imperfections are important because the greater the absolute aggregate distortion in the perceived profitability of avoidance to potential victims in the absence of a proximate-cause rule, the greater the allocative-efficiency consequences of any change in that absolute aggregate distortion the proximate-cause doctrine generates.

Third, in part for the preceding reasons, Shavell does not seem to consider the possibility that any proximate-cause doctrine may decrease the APCA-related misallocation caused by potential victims more than it increases the APCA-related misallocation caused by potential injurers.

3. Shavell's Analysis of the Significance of the Probability of the Loss, the Size of the Weighted-Average-Expected Loss, and the Foreseeability of the Loss for the Allocative Efficiency of Rejecting Any Claim to Recover the Loss on Proximate-Cause Grounds

Shavell argues that the probability of a loss' occurring has no bearing on the allocative efficiency of rejecting claims to recover the loss on proximate-cause grounds. In his judgment, this conclusion is justified because as the probability of the loss declines, the (putative) transaction-cost advantage of rejecting the claim declines proportionately with the (putative) net avoidance-incentive disadvantage of rejecting the claim.⁴⁵ This argument seems plausible though it would be undercut if the transaction-cost of trying a low-probability-loss suit were higher relative to the amount in controversy. If so, the fact that the probability of the accident was low would favor the allocative efficiency of a doctrine that would reject the relevant claims on proximate-cause grounds, at least to the extent that such a doctrine would deter the relevant suits from being brought or prosecuted.

Shavell contrasts the allocative-efficiency irrelevance of the probability of the accident with the allocative-efficiency relevance of the magnitude of the loss. According to Shavell, the allocative efficiency of rejecting claims on proximate-cause grounds will be inversely related to the weighted-average-expected size of the loss the accident entailed. In his view, this conclusion follows from the fact that although the (putative) avoidance-incentive disadvantages of re-

44. *See id.* at 490-91.

45. *See id.* at 484-85.

jecting claims on proximate-cause grounds increases with the size of the loss, the transaction-cost advantages of doing so do not vary with the size of the loss.⁴⁶ In my judgment, this argument is based on an unrealistic assumption that the transaction-cost generated by a given suit will not increase with the amount in controversy. I expect that the costs parties incur when litigating a suit—e.g., the quality of the lawyers they hire, the amount of time they authorize their lawyers to devote to the suit or the amount of time contingency-fee lawyers find it profitable to devote to the suit, the number and quality of the expert witnesses the parties choose to call, etc.—increases proportionately with the amount in controversy. If I am correct, the size of the loss will be no more relevant to whether a proximate-cause dismissal would be allocatively efficient than was the probability of the loss.

Shavell also analyzes the relevance of the “unforeseeability” of the accident for the allocative efficiency of dismissing suits to recover the loss it imposed. Shavell argues that both “casual empiricism” and various psychological studies imply that injurers tend to underestimate the probability of “unforeseeable” accidents and that this tendency favors the allocative efficiency of rejecting claims related to “unforeseeable” accidents because it implies that on this account such rejections will cause potential injurers to cause less APCA-related misallocation than would otherwise be the case.⁴⁷ Although Shavell concedes that this argument is undercut by (1) the transaction-cost of assessing foreseeability or potential-injurer underestimates of the probability of the loss and (2) the tendency of the foreseeability test to “reduce[] the incentive of parties to investigate or, at least, to carefully contemplate the potential consequences of their actions,”⁴⁸ he fails to consider the possibility that in many cases the “specifically unforeseeable” may be foreseeable. Thus, because manufacturers who put a new pollutant into the air may have a pretty good idea of the magnitude of the loss this decision will cause even though they cannot foresee the specific character of the loss—e.g., the specific diseases it will cause—a decision to reject a claim made against them on the ground that the specific loss was unforeseeable would tend to cause them to increase the APCA-related misallocation they generated, *ceteris paribus*, by inflating the perceived profitability to them of polluting the atmosphere.

46. See *id.* at 488-89.

47. See *id.* at 491.

48. *Id.* at 492.

4. Shavell's Analysis of the Relevance of the Standard of Injurer-Liability (Negligence or Strict Liability) for the Allocative Efficiency of Proximate-Cause Verdicts: Inter Alia, Shavell's Second-Best Crushing-Liability Argument

Shavell's analysis of the relevance of the standard of injurer-liability for the allocative efficiency of a proximate-cause doctrine focuses exclusively on the effects of proximate-cause dismissals on the amount of APCA-related misallocation potential injurers generate. Shavell argues that in the one direction strict liability disfavors the allocative efficiency of rejecting claims on proximate-cause grounds because when the injurer is strictly liable the prospect of such an outcome will increase the amount of APCA-related misallocation the potential injurer generates on oPp assumptions not only by deflating the private profitability to him of exercising due care but also by deflating the private profitability to him of reducing his activity-level. In fact, a stronger version of this argument is justified because proximate-cause claim-rejections will *ceteris paribus* deflate the private profitability to a strictly liable potential injurer not only of showing due care and reducing his activity-level but also of changing his location, changing the product-variant he produces (when he is a producer), and increasing his expenditures on APCAR. Indeed, when potential injurers are strictly liable, proximate-cause claim-rejections may also cause misallocation by deterring independent researchers (who are not potential injurers) from doing APCAR that would be allocatively efficient if the discoveries it yielded would be used when it was allocatively efficient for them to be used.

Second and in the other direction, Shavell argues that strict liability favors the allocative efficiency of rejecting claims on proximate-cause grounds because (1) the crushing-liability inflation of $\Sigma D(P_{\pi_{APCA}})$ is likely to be larger and more common when the potential injurer is strictly liable than when he is liable only if found negligent and (2) *ceteris paribus*, the amount of APCA-related misallocation that the dismissal of claims on proximate-cause grounds will cause injurers to generate will be inversely related to the amount by which $P_{\pi_{\Delta APCA}}$ for them is *ex ante* inflated by crushing liability: indeed, as Shavell recognizes, proximate-cause claims-rejections may actually reduce the amount of APCA-related misallocation that potential injurers facing crushing liability cause by reducing the absolute positive value of the $\Sigma D(P_{\pi_{APCA}})$ s they face or changing a positive $\Sigma D(P_{\pi_{APCA}})$ into a smaller, negative $\Sigma D(P_{\pi_{APCA}})$.

If no other relevant imperfection were present in the system, Shavell's argument would establish his conclusion. Shavell is correct in asserting that (1) strictly liable potential injurers will confront crushing liability more often and (2) when crushing liability occurs, it will tend to inflate the avoidance-incentives of strictly liable potential injurers by more than it will inflate the avoidance-incentives of potential injurers who are liable only if found negligent. The former claim reflects the fact that strictly liable potential injurers will always satisfy the other requirements for liability in potential-crushing-liability cases while potential injurers who are liable only if found negligent will face crushing liability only when their behavior was negligent (in which case the crushing-liability distortion should not be critical) or will be incorrectly found to be negligent. The latter claim reflects the fact that the *ex ante* weighted-average-expected damages that strictly liable injurers will confront will be the product of the loss and its probability and not that product *times* the probability of a false-positive finding of negligence's being made against them.

Nevertheless, there are two problems with Shavell's argument, both of which reflect the fact that a large number of other imperfections distort (indeed, on balance deflate) the private profitability of potential-injurer avoidance under negligence and/or strict liability. The first problem is the prominence that Shavell gives to the crushing-liability imperfection. Crushing liability may produce huge distortions when it occurs, but it occurs far less frequently than the other imperfections that *ceteris paribus* distort $P\pi_{APCA}$ that vary according to whether the potential injurer is strictly liable or liable only if found negligent. Indeed, this conclusion would still be justified even if polluting activities were made more actionable than they are today (because in most of these cases, the problem will be one of insufficient liability rather than crushing liability because many pollution losses could be generated by a unit of a specific pollutant [say, asbestos] that has many sources, none of which accounts for 50% or more of the *ex ante* probability of a loss' occurring whose actual cause-in-fact cannot be identified).

The second problem with Shavell's analysis is that one cannot assess the relevance of the standard of liability for the amount of misallocation that proximate-cause dismissals will generate by looking at just two of the many imperfections that distort $\Sigma D(P\pi)$ for the relevant avoidance-moves even if the magnitude of the distortions caused by these imperfections or indeed by their very existence is affected by the standard of liability. The effect of proximate-cause claim-rejec-

tions on APCA-related potential-injurer-generated misallocation will depend on how often and to what extent they will reduce such misallocation by preventing overavoidance by critically reducing what would otherwise have been a critical inflation of the private profitability of some avoidance-move and how often and to what extent they will increase such misallocation by causing underavoidance by critically increasing a negative distortion in the private profitability of some avoidance-move or creating a critical deflation in an $\Sigma D(P\pi_{APCA})$ that would not otherwise have been deflated. To determine the answer to these questions, one must know the allocative efficiency of the various avoidance-moves available to the potential injurers in question, the aggregate distortion in those moves that would be present if there were no possibility of proximate-cause claim-rejections both under negligence and under strict liability, and the effect of the proximate-cause rule under consideration on those aggregate distortions. A proximate-cause rule will clearly decrease any positive $\Sigma D(P\pi_{APCA})$ and increase the absolute value of any negative $\Sigma D(P\pi_{APCA})$. The more often a proximate-cause-doctrine-generated decrease in a positive $\Sigma D(P\pi_{APCA})$ would reduce a positive $\Sigma D(P\pi_{APCA})$ from a magnitude that was higher than the negative LE_{APCA} for the move in question to a magnitude that was lower than the absolute value of that negative LE_{APCA} , the more often the doctrine would increase allocative efficiency by deterring overavoidance, and the higher the absolute negative (LE_{APCA})s and original $\Sigma D(P\pi_{APCA})$ s in those cases in which the doctrine was critical, the greater the increase in allocative efficiency that would result from the doctrine when it had this effect. Similarly, the more often the proximate-cause-doctrine-generated increase in the absolute value of a negative $\Sigma D(P\pi_{APCA})$ increased that absolute value from a level that was lower than the associated LE_{APCA} to one that was higher than the relevant LE_{APCA} , the more often it would decrease allocative efficiency by deterring allocatively efficient avoidance, and the higher the positive (LE_{APCA})s and original negative $\Sigma D(P\pi_{APCA})$ s in those cases in which the doctrine was critical, the greater the average misallocation the doctrine would cause in each case in which it deterred allocatively efficient avoidance.

This straightforward repetition of Part I's analysis implies that a proximate-cause doctrine will tend to be more allocatively efficient in strict-liability cases than in negligence cases (because the amount of injurer-generated APCA-related misallocation that the proximate-cause rule will cause relative to the transaction-cost savings it purportedly will generate will be lower in strict-liability cases than in negli-

gence cases) if, in strict-liability cases, $\Sigma D(P_{\pi_{APCA}})$ is positive more often for avoidance-moves whose profitability might be critically affected by a proximate-cause doctrine or, if in strict-liability cases, $\Sigma D(P_{\pi_{APCA}})$ is less negative for avoidance-moves whose profitability might be critically affected by proximate-cause dismissals. Shavell's argument is deficient because one cannot ascertain these facts by looking at only two of the many imperfections that would individually distort $\Sigma D(P_{\pi_{APCA}})$. The preceding analysis implies that information on these other imperfections is important because they will affect (1) the identity of the avoidance-moves whose profitability may be critically affected by a proximate-cause doctrine and (2) the value that $\Sigma D(P_{\pi_{APCA}})$ would have for the relevant moves if there were no possibility of injurers' being freed from liability on proximate-cause grounds.

Part II argued that $\Sigma D(P_{\pi_{APCA}})$ is likely to be negative for virtually all potential-injurer avoidance-moves under negligence but particularly negative for those moves whose rejection will never be assessed for negligence (moves whose profitability will not be critically affected by a proximate-cause doctrine). Part II also argued that $\Sigma D(P_{\pi_{APCA}})$ is likely to be negative, though less negative, for the vast majority of relevant moves available to strictly liable potential injurers, including many in which crushing liability is present, and positive for a few potential-injurer avoidance-moves. These predictions seem to favor Shavell's conclusion that strict liability favors the allocative efficiency of a proximate-cause doctrine, but Part II's analysis reveals the empirical contingency of this conclusion. For example, if it turned out that the percentage by which jurors underestimated victim-damages was far higher in strict-liability cases than in negligence cases and that even in strict-liability cases the overwhelming majority of the avoidance-moves whose profitability would be critically affected by a proximate-cause rule were shifts to known, less-AP-cost-prone, oPp allocatively efficient production-processes, strict liability might disfavor the allocative efficiency of proximate-cause dismissals because in the vast majority of relevant cases, $\Sigma D(P_{\pi_{APCA}})$ would be more negative (absent the possibility of proximate-cause verdicts) in strict-liability cases than in negligence cases.

The point of this analysis is not to demonstrate that Shavell's conclusion is wrong. I would not be at all surprised if proximate-cause dismissals would have less of a tendency to cause strictly liable potential injurers to cause APCA-related misallocation than they would be to cause potential injurers who are liable only if found negligent to

cause APCA-related misallocation if the rejection by potential injurers of all the various types of avoidance-moves available to them were assessed for negligence and could be adequately assessed for negligence. The point is that this conclusion cannot be demonstrated by an analysis that ignores (1) most of the various imperfections that distort $\Sigma D(P\pi_{APCA})$ for potential injurers to whom negligence or strict-liability doctrines apply as well as (2) the fact that the magnitude of some of these ignored imperfections and the existence of others depends on whether the potential injurer in question is strictly liable or liable only if found negligent.

In short, although Shavell's crushing-liability argument is one of the few second-best arguments in the literature and should be valued as such, the argument is far too partial. To be TBLE, an analysis of the significance of the standard of liability for the effect of a proximate-cause doctrine on the amount of APCA-related misallocation that potential injurers generate would have to consider many more of the imperfections that are present under negligence and strict liability and not just the two imperfections on which Shavell's analysis focused. Indeed, as the next two paragraphs reveal, because strict liability may disfavor the allocative efficiency of any proximate-cause doctrine on two other accounts, I would not be surprised if it turned out to be TBLE to consider all the imperfections that will affect the amount by which the standard of injurer-liability will influence the APCA-related misallocation that any proximate-cause doctrine induces potential injurers to generate if the question to be answered is the relevance of the standard of liability to the overall-allocative-efficiency of a proximate-cause doctrine.

Shavell's analysis of the relevance of the standard of liability to the allocative efficiency of proximate-cause claim-rejections also ignores two other important issues. First, it ignores the possibility that because negligence cases are more expensive to try than strict-liability cases, transaction-cost considerations will tend to make it more allocatively efficient to use a proximate-cause doctrine in negligence cases than in strict-liability cases, at least to the extent that the prospect of proximate-cause verdicts deters cases from being brought or litigated.

Second, Shavell ignores the fact that proximate-cause claim-rejections may reduce the amount of APCA-related misallocation that potential victims generate by more in strict-liability cases because regardless of whether there is a proximate-cause doctrine, $\Sigma D(P\pi_{APCA})$ for avoidance-moves whose rejection by potential victims will not be assessed for contributory negligence will be more negative in strict-

liability cases (in which the victims' probability of recovery is higher) than in negligence cases.

* * * * *

This discussion of Steve Shavell's analysis of causation and proximate cause does not do it justice. Shavell makes real contributions to the analysis of many issues that I have ignored. However, I hope that this selective critique of Shavell confirms the importance of Second-Best Theory by showing that it can raise and answer important questions that even someone as skilled and careful as Shavell has partially ignored.

VII. THE ALLOCATIVE EFFICIENCY OF THE ALLEGED COMMON-LAW PRACTICE OF MAKING MEMBERS OF AN INDUSTRY STRICTLY LIABLE IN TORT WHEN IT IS IN ITS INFANCY AND LIABLE ONLY IF NEGLIGENT WHEN IT IS MATURE

In 1981, William Landes and Richard Posner contributed an excellent article entitled "The Positive Economic Theory of Tort Law" to a *Georgia Law Review* symposium on "Modern Tort Theory."⁴⁹ Among other contributions, this article improved on earlier law-and-economics studies

- (1) by acknowledging the fact that and explaining the reasons why tort suits would be brought against injurers who would be liable only if found negligent,⁵⁰
- (2) by acknowledging and analyzing the significance of the fact that the transaction-cost of trying a tort suit arising out of a given accident or pollution event will be higher if the defendant is liable only if found negligent rather than strictly liable,⁵¹
- (3) by recognizing that not only injurer-decisions to lower their activity-levels but also injurer-decisions not to shift to less-AP-cost-prone locations are generally not assessed for negligence,⁵²
- (4) by recognizing and analyzing the significance of the fact that victim activity-level and location choices are also not assessed for negligence—that in application contributory-negligence doctrine is as first-best-imperfect as negligence doctrine, and
- (5) by acknowledging the transaction-costliness of litigating tort suits and the presence of imperfections in the information available to potential injurers and victims and analyzing the relevance of such transaction-costs and information-imperfec-

49. Landes & Posner, *supra* note 7.

50. *See id.* at 879-80.

51. *See id.* at 874-75.

52. *See id.* at 878.

tions for the allocative efficiency of particular tort-law doctrines.⁵³

Part VII focuses on Landes and Posner's argument that their hypothesis that the common law is allocatively efficient is supported by the purported fact that the common law holds members of a given industry strictly liable when it is in its infancy and liable only if found negligent when it is mature. Even though many of the strengths of Landes and Posner's work carry over to their analysis of this issue, their analysis of the allocative efficiency of this alleged common-law decision-pattern is flawed by four sets of deficiencies, two of which relate closely to this Article's central theme.⁵⁴ First, Landes and Posner's analysis fails to take account of monopoly imperfections, tax imperfections, AP-cost-externality imperfections, and creation-of-knowledge-externality imperfections. This deficiency undermines the "survival"-related argument they make to support their claim that it is allocatively efficient to make members of a given industry strictly liable when it is in its infancy and liable only if negligent when it is mature. Second, Landes and Posner's infant-industry *versus* mature-industry argument ignores the possible impact of an industry's change from infancy to maturity on the extent to which a shift from negligence to strict liability will affect the amount by which its members reduce the APCA-related misallocation they generate by reducing

53. *See id.* at 910-11.

54. I have a number of other objections to the Landes and Posner article that are not so connected with the argument of this piece. Four examples should suffice. First, Landes and Posner's argument that the Hand formula's failure to take risk costs into account, *see id.* at 867-68, can be reconciled with their claim that the common law is allocatively efficient by citing the fact that people who want to avoid risk can and do take out accident insurance is clearly unsuccessful. So long as APCA choices increase the allocative costs that parties generate to reduce the risk and the risk costs they bear, tort law will have to take this reality into account if it is to be allocatively efficient. Second, Landes and Posner's assumption that the Coase Theorem is correct, *see id.* at 854, is incorrect. *See* Richard S. Markovits, *A Constructive Critique of the Traditional Definition and Use of the Concept of "The Effect of a Choice on Allocative Efficiency": Why the Kaldor-Hicks Test, the Coase Theorem, and Virtually All Law-and-Economics Welfare Arguments Are Wrong*, 1993 ILL. L. REV. 485, 514-16 (1993). Third, Landes and Posner's attempt to justify ignoring various factors (such as risk costs and the fact that some individuals' maximands include the welfare of others or the extent to which corrective justice is done) that are relevant to the allocative efficiency of a choice by arguing that they must avoid "complicat[ing] [their] theory to the point where any empirical observation is consistent with it," Landes & Posner, *supra* note 7, at 862, is also unconvincing. Fourth and finally, Landes and Posner's treatment of some individual decisions or doctrines is undermined by their failure to take into consideration the full range of avoidance-options available to the parties involved. Thus, their treatment of *Adams v. Bullock*, 125 N.E. 93 (N.Y. 1919), *see* Landes & Posner, *supra* note 7, at 893-94, is undercut by their failure to consider the possibility that the defendant trolley-car company (being sued by a 12-year-old for burns he received when an 8-foot-long wire he had swung over the side of a bridge came into contact with the defendant's necessarily uninsulated wires located beneath the bridge) might have been negligent for failing to post warnings on all bridges and other locations where the wires could not be placed underground. *See id.*

their unit outputs without going out of business (relative to the transaction-cost consequences of shifting from negligence to strict liability in the two situations): Landes and Posner's failure to consider monopoly, tax, and externality imperfections of various sorts would have precluded them from analyzing this issue satisfactorily in any case. Third, Landes and Posner fail to consider the possibility that potential injurers may be able to reduce the APCA-related misallocation they cause by shifting their location, altering the product-variant they produce, or doing APCAR: this omission accounts for Landes and Posner's failure to consider whether the allocative efficiency of making members of an industry strictly liable when it is in its infancy and liable only if negligent when the industry has matured is favored or disfavored by the relationship between the ability of producers to reduce APCA-related misallocation by shifting locations, changing product-variants, or doing APCAR and the maturity of the industry in which the producers are operating. Fourth, Landes and Posner's argument is deficient in that even if it could establish the allocative inefficiency of making members of mature industries strictly liable as opposed to liable only if negligent, it could not establish the allocative efficiency of making members of infant industries strictly liable or members of mature industries liable only if negligent as opposed to not liable at all or liable if and only if some other condition were fulfilled. Part VII addresses each of these deficiencies of the Landes and Posner argument in turn.

1. The Relevance of Monopoly, Tax, and Various Sorts of Externality Imperfections for Landes and Posner's "Survival"-Related Argument

Landes and Posner make a survival-related argument for their claim that it is allocatively efficient to make members of an industry strictly liable when it is in its infancy and liable only if negligent when it is mature:⁵⁵

During the early stages of development of a new product or activity, we lack sufficient experience to determine whether the benefits of the product exceed its full costs including costs to third parties (e.g., property owners who suffer ground damage from airplane crashes). One way to gather such information is to hold the producer or user strictly liable for accidents to third parties resulting from the activity. Strict liability forces the innovator to internalize all the costs of his activity. If the activity still flourishes in spite of a strict liability standard, we can be confident that its benefits exceed

55. See *id.* at 911.

its full costs or, equivalently, that eliminating or greatly reducing the new activity would not be optimal. At this point the argument in favor of strict liability weakens. Experience already has demonstrated that the activity's benefits exceed its full costs, and society is now being burdened with the greater administrative costs associated with an increasing number of claims brought about by the growth of the activity. We would predict, therefore, a shift toward negligence and away from strict liability as a new industry or activity matures.⁵⁶

This argument is deficient in that it assumes that the private profitability and allocative efficiency of new activities (indeed, of all activities) will be equal to each other if their AP-cost externalities are fully internalized by tort law—or, at least, that other Pareto imperfections will never critically distort the private profitability of an enterprise. In so doing, it ignores the wide variety of other imperfections that distort the private profitability of activities—most importantly, monopoly imperfections, tax imperfections, the externalities that would otherwise have been generated by the resource-uses from which the new activity withdraws the resources it consumes, and the external benefits that any knowledge-creation generated by the new activity (which may be negative if “innovation law” overinternalizes what would otherwise be the relevant external benefits). One simply cannot assume that the fact that an infant industry which has survived despite the fact that its members had to pay all the AP costs they generated (inter alia, because they were strictly liable for these costs) demonstrates the allocative efficiency of the industry's survival or creation. Nor can one assume that the death of an infant industry in these circumstances

56. *Id.* at 910-11. Landes and Posner admit that their “hypothesis” has two weaknesses: There are, however, two factors that may work against the hypothesis. First, strict liability may not provide information on the full costs of a new activity because an accident may result in a large number of small claims, each of insufficient amount to provide an incentive to bring a suit. If there is no feasible means of aggregating small claims, we are in effect in a world of no liability and can offer no hypothesis on the relative advantages of different liability rules. The other factor is that strict liability, even at the early stages of a new activity, reduces the incentives for the potential victim to take care or alter his activity level to minimize risk. These disadvantages of strict liability will tend to be minor, however, when the activity begins on a small scale, when the probability of being a victim is small, and when the victim would have to take care or change his activity level to avoid the accident before he had knowledge of whether he was likely to be a victim. If the victim's care is an important component of due care in the early stages of an activity, as it was for airplane collisions and injuries to pedestrians from automobiles (because the cost of pedestrian care is often trivial), strict liability would be inefficient even initially and we would predict that it would not be adopted.

Id. at 911. I agree with Landes and Posner's discussion of their two qualifications except for the casual conclusion expressed in the last sentence of the quoted material: even if victim avoidance can increase allocative efficiency to an important extent in the early stages of a potential-injurer activity, strict liability may not be inefficient in that the allocative-efficiency gains it generates (in comparison with negligence) by inducing potential injurers to reduce their unit outputs (and change their locations, alter their product-variants, and execute APCAR) may exceed the allocative-efficiency losses it generates by deterring allocatively efficient avoidance by victims.

demonstrates the allocative inefficiency of its survival or creation. Surviving infant industries are more likely to be allocatively inefficient than dying infant industries are to be allocatively efficient. This conclusion is not a corollary of my argument that the private profitability of QV investments is usually inflated, because the creation of new industries is more likely than the creation of most QV investments to involve an external-benefit-generating creation of knowledge. However, the preceding conclusion is favored by my conclusion that $\Sigma D(P\pi_{\Delta QV})$ is positive.

Obviously, this second-best critique of Landes and Posner's survival-related argument does not disprove their conclusion. However, I do think that it shows why Second-Best Theory cannot be ignored.

Landes and Posner's survival argument has another flaw that is not related to Second-Best Theory. Even if lifetime private profits always equaled lifetime allocative efficiency, one could not assume that the fact that an infant industry survived strict liability demonstrates the allocative efficiency of its survival because the members of the infant industry may have been willing to accept losses during their industry's infancy in order to obtain the gains that they would secure in their industry's maturity when the shift from strict liability to negligence enabled them to avoid compensating the victims of some of the AP-costs they generated.

Even if the above criticisms were not justified, Landes and Posner's survival argument would not be nearly so powerful as they believe. In particular, even if Landes and Posner were correct in arguing that the fact that an infant industry survived the imposition of strict liability demonstrated the allocative efficiency of its survival, this would prove that strict liability would not be able to increase allocative efficiency by eliminating allocatively inefficient mature industries only if the relevant conditions were the same in the industry in its mature and infant stages. Once one recognizes that the relevant *ceteris* may not be *paribus*—e.g., that an industry's products may become less attractive to consumers over time, that its non-AP-costs may rise over time, or that the pollution or accidents it causes may become more costly over time (because of population-shifts or changes in the polluting activities of others)—it becomes clear that strict liability may not only increase allocative efficiency by eliminating a mature industry whose survival through its infancy was allocatively efficient but may be as likely to do so as it was originally able to increase allocative efficiency by eliminating the industry before it was founded or in its infancy. In particular, strict liability will be as likely

to lead to the allocatively efficient destruction of a mature industry as it will be to cause the allocatively efficient prevention of the creation of a new industry or destruction of that industry in its infancy if the percentage of mature industries that experience changes that make their operation allocatively inefficient despite the fact that they were allocatively efficient in their infancy is as high as the percentage of infant industries whose infancy is allocatively inefficient.

2. Landes and Posner's Failure to Address the Relevant Less-Drastic-UO-Reduction Issue

Landes and Posner's activity-level argument focused exclusively on the ability of strict liability as opposed to negligence to induce drastic, allocatively efficient activity-level changes—viz., exits. As previously shown, a shift from negligence to strict liability may also increase allocative efficiency by inducing potentially injurious producers to reduce without eliminating their production. Landes and Posner completely ignore the issue of whether the choice of strict liability over negligence will increase allocative efficiency more (relative to its transaction-cost disadvantages) by inducing members of an industry to make less-drastic unit-output reductions when the industry is in its infancy than when it is mature.

Of course, Landes and Posner's failure to acknowledge the existence of monopoly, tax, and externality imperfections (other than the ones that would be internalized by the specific applications of the strict-liability rule in question) would preclude them from analyzing this issue satisfactorily even if they did address it. As Part II demonstrated, the allocative efficiency of the tendency of strict liability to induce any potential injurer to whom it applies to reduce his unit output depends on whether its imposition increases or decreases the difference between that producer's P/MC^* ratio and the weighted-average P/MC^* ratio of the products whose unit outputs would increase if that producer's output were reduced. This issue is complex to analyze because it requires the simultaneous analysis of the effect of strict liability on both sets of P/MC ratios and on both sets of MC/MC^* ratios. For heuristic purposes, assume that the choice of strict liability over negligence will have the same effect on both sets of MC/MC^* ratios and that this effect will be the same in both the infancy and the mature phase of any given industry. On this assumption, the amount by which subjecting members of an infant industry to strict liability will increase allocative efficiency by inducing them to reduce their unit outputs will exceed the amount by which subjecting

the same firms to strict liability when their industry is mature will increase allocative efficiency by inducing them to reduce their unit-outputs (in each case relative to the allegedly-disadvantageous transaction-cost consequences of doing so) if (for example) (1) the P/MC ratios of members of an infant industry generally are lower than their weighted-average counterparts for the products from whose production the infant industry's production withdraws resources while (2) the P/MC ratios of members of the same industry when it is mature are equal to or higher than their weighted-average counterparts for the products whose production will decline if the unit output of the mature industry is increased.⁵⁷

Because infant industries may have no close substitutes, their production probably withdraws resources from the production of products that have a weighted-average P/MC ratio equal to the economy-wide average. Although there are obvious exceptions to the following "rule," the P/MC ratios of members of most mature industries approximately equal the weighted-average counterparts of their resource-sources. If this is correct, the less-drastic activity-level-change consequences of strict liability will be relatively more allocatively efficient in an industry in its infancy than in the same industry in its maturity if infant industries tend to be more competitive than average while mature industries tend to be (as a corollary) slightly less competitive than average. Unfortunately, I see no relevant pattern. Some industries start out monopolistic and become more competitive: the copy-machine and computer industries fit this description. Others start out competitive and become more monopolistic: the automobile industry seems to fit this pattern.

Admittedly, even on the theoretical level, the preceding analysis is far worse than TBLE. But for present purposes, that is unimportant, for the goal here is not to disprove Landes and Posner's conclusion about the allocative efficiency of moving from strict liability to negligence as an industry matures but to show that their failure to recognize the presence of monopoly, taxes on the margin of income, AP-cost externalities, and non-AP-cost externalities and to take cognizance of Second-Best Theory would preclude them from investigat-

57. The tendency of a shift from negligence to strict liability to induce potential injurers to reduce their unit outputs will be more likely to favor the shift's allocative efficiency when the relevant industry is in its infancy than when it is mature if the y-intercept of the demand curve for the industry's products is higher in its mature stage than in its infancy. For an explanation, see Richard S. Markovits, *The Relevance of the Maturity of an Industry to the Allocative Efficiency of Making Its Members Strictly Liable as Opposed to Liable Only If Found Negligent* (1992) (unpublished manuscript, on file with author).

ing issues that are highly relevant to this question even if they recognized these issues' existence.

3. Landes and Posner's Failure to Investigate the Possibility That the Maturity of an Industry May Affect the Extent to Which Strict Liability Will Reduce the Amount of APCA-Related Misallocation Potential Injurers Generate by Inducing Them to Make Location-Shifts, Product-Variant Alterations, or APCAR Expenditures

Although the allocative efficiency of making members of an infant industry strictly liable and shifting the liability standard to negligence when the industry matures will clearly be affected by the relationship between the maturity of an industry and the amount by which its producers can reduce the APCA-related misallocation they generate by making appropriate location-shifts, product-variant alterations, and APCAR expenditures, Landes and Posner totally ignore this issue. Again, it is unclear whether, across-the-board, this issue favors or disfavors Landes and Posner's "efficiency of the common law" hypothesis. On the one hand, strict liability may be more allocatively efficient relative to negligence when an industry is in its infancy than when it is mature because

- (1) its members will have exploited fewer of the opportunities to make shifts to locations and product-variants that are known to be both less-AP-cost-prone and more allocatively efficient and
- (2) its members will have pursued fewer of the APCAR projects that will eventually be allocatively efficient to pursue.

On the other hand, strict liability may tend to be less allocatively efficient relative to negligence when an industry is in its infancy than when it is mature because

- (1) its members may be less aware of the AP-cost-superiority, allocative efficiency, and private profitability under strict liability of known, less-AP-cost-prone and more-allocatively-efficient location and product-variant alternatives;
- (2) its members may not have the information-base necessary to perceive the allocative efficiency or private profitability of APCAR projects they could imagine and execute allocatively efficiently; and
- (3) its members may not have the information-base necessary to imagine potentially-allocatively-efficient APCAR projects and/or to increase allocative efficiency by executing them despite the fact that, at a later stage of the industry's development, they will be able to imagine such projects and increase allocative efficiency by executing them.

Of course, my basic goal is not to criticize Landes and Posner's conclusion but to show that their failure to acknowledge the variety of avoidance-moves available to potential injurers has precluded them from investigating issues that are highly germane to their hypothesis and that might be TBLE to analyze in some detail.

4. A Logical Error in Landes and Posner's Claim That Their "Allocative Efficiency of the Common Law" Hypothesis Would Be Confirmed by the Confirmation of Their Infant-Industry *Versus* Mature-Industry Argument

Landes and Posner thought that their "survival"-related argument established the allocative inefficiency of making members of mature industries strictly liable. In fact, it did not. But even if it did, this fact would not establish the allocative efficiency of the alleged common-law pattern of making members of an industry strictly liable when it is in its infancy and liable only if found negligent when it is mature (and hence confirm the "efficiency of the common law" hypothesis) because it would not establish the allocative efficiency either (1) of making members of mature industries liable only if negligent as opposed to not liable at all or (2) members of infant industries strictly liable rather than liable only if found negligent, liable under other conditions, or not liable at all. This objection reflects the tendency of injurer-liability to increase both allocative transaction-costs and the amount of APCA-related misallocation that potential victims generate.

In fact, even if Landes and Posner's actual argument were replaced with a correct argument of the type they were trying to make, it would not establish the allocative efficiency of the alleged common-law standard-of-liability pattern on which this section has focused or, concomitantly, the "allocative efficiency of the common law" hypothesis. At best, the type of argument Landes and Posner were trying to make could establish that the overall allocative efficiency of strict liability relative to that of negligence was greater in an industry in its infancy than in its mature stage of development. That fact would not establish the allocative efficiency of the common law's alleged tendency to make members of an industry strictly liable when the industry is in its infancy and liable only if found negligent when the industry is mature because it is fully consistent with

- (1) negligence's being more allocatively efficient than strict liability both when an industry is in its infancy and when it is mature,

- (2) strict liability's being more allocatively efficient than negligence both when an industry is in its infancy and when it is mature, and
- (3) some standard of liability other than either strict liability or negligence's being more allocatively efficient than either of those standards when an industry is in its infancy and/or when an industry is mature.

In short, neither the argument that Landes and Posner did make nor the sort of argument they tried to make can establish the allocative efficiency of the common law's response to the maturation of an industry and, therefore, neither can confirm the hypothesis that the common law is allocatively efficient.

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The basic goal of Part VII has not been to disprove Landes and Posner's conclusion that their "efficiency of the common law" hypothesis is confirmed by the common-law pattern of making members of a given industry strictly liable when it is in its infancy and liable only if found negligent when the industry is mature. Nevertheless, Part VII's analyses suggest that it is extremely unlikely that such a universal pattern would be allocatively efficient. More specifically, the preceding analyses imply that the relative allocative efficiency of strict liability and negligence at different stages of a given industry's development will vary from industry to industry depending on whether (1) the industry would start competitive and become more monopolistic or vice versa, (2) the y-intercept of the demand curve for the industry's products is higher or lower when it is mature than when it was in its infancy, and (3) industry members are more able to increase allocative efficiency by making location-shifts, product-variant alterations, and APCAR expenditures earlier or later in their industry's development process. But, this point aside, I hope that Part VII has confirmed my claim that, to be useful, allocative-efficiency analyses must take into consideration all the ways in which resources are allocated and The General Theory of Second Best.

CONCLUSION

Virtually all extant law-and-economics analyses of the allocative efficiency of any policy choice either proceed on the implicit assumption that the only Pareto imperfection in the economy is the particular imperfection toward which the relevant policy is specifically directed or take into account only one or two of the myriad of other imperfec-

tions that are second-best relevant to the analyses in question. The currently accepted economic analysis of the allocative efficiency of shifting from negligence to strict liability is no exception to this generalization. Because this otherwise-Pareto-perfect or otherwise-near-Pareto-perfect premise is clearly indefensible empirically, the arguments that traditional analysts have made about the various possible allocative-efficiency effects of such a shift in liability-standards cannot be cited to support their conclusions in the real world.

This Article is an attempt to delineate and exemplify the way in which one should analyze the allocative efficiency of a shift from negligence to strict liability and various other standard-of-liability allocative-efficiency issues in a highly-Pareto-imperfect world. For the most part, the conclusions that the Article established were negative. Thus, the Article demonstrated the inadequacy of the standard analyses of the allocative efficiency of a universal shift from negligence to strict liability, the allocative efficiency of making the proximate-cause doctrine take into consideration the standard of injurer-liability, and the allocative efficiency of the purported common-law practice of making members of a given industry strictly liable in its infancy but liable only if found negligent when it is mature. Relatedly, by delineating the factors that affect the right answers to these allocative-efficiency questions, the Article revealed concomitantly what needs to be known to generate TBLE predictions of the allocative efficiency of shifting from negligence to strict liability either universally or selectively in particular situations and how far from TBLE the extant data-base is.

Non-lawyers, lawyers, and particularly legal academics generally prefer that articles have clear bottom-lines. I want to close by explaining why the fact that a question mark appears above the (final) bottom-lines of this Article (as well as above many intermediate bottom-lines) does not imply that it has no value. First, in the long run, by delineating the factors that are relevant to answering the allocative-efficiency questions that this Article has addressed, the Article may encourage the collection and analysis of empirical data that will increase the allocative efficiency (and overall desirability) of State decisions related to these issues. Second, by illuminating the way in which allocative-efficiency predictions should be made in our highly-Pareto-imperfect world, this Article may improve the allocative-efficiency analysis of a large variety of other types of policies as well. Third, by revealing the difficulty of reaching well-grounded allocative-efficiency conclusions, this Article may lead evaluators and decision-makers to make their decisions appropriately reflect rights-considerations, distri-

butional values, and process-related (participation) values. And, fourth and finally, by refuting the claim that the economic analysis of allocative efficiency is an algorithm for the correct resolution of common-law issues, it may also lead lawyers, academic commentators, and judges to improve the quality of their common-law analysis in general.

The kind of analysis that this Article presents is tough to execute and hard to read. This Article was partially designed to persuade its readers that the benefits of taking Second-Best Theory seriously exceed the admittedly high costs of doing so. At a minimum, I hope you grant my analysis the same concession that Mark Twain made to Richard Wagner's music: "It's not so bad as it sounds."