

## **THE MARKET IN UNMATURED TORT CLAIMS: TWENTY YEARS LATER**

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Stephen Marks  
*Boston University School of Law*

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# THE MARKET IN UNMATURED TORT CLAIMS:

## TWENTY YEARS LATER

Stephen Marks\*

### Abstract

In 1989, Professor Robert Cooter argued for changes in the law that would facilitate the development of a market in unmatured tort claims. And yet it remains unadopted in all jurisdictions. There is a reason for this. In this paper I reexamine the proposal as to its likely intended and *unintended* effects. This article argues that, for such a market to work, three modifications must be made. First, the tort awards must be based on optimal-deterrence-damages rather than full-compensation damages. (The paper provides an explanation of full-compensation damages, optimal-deterrence damages, and optimal-insurance damages.) Second, potential tortfeasors must not be allowed to purchase the claims of their potential victims. Third, agreements between potential tortfeasors and the holders unmatured tort claims must be prohibited.

### I. Introduction

In an article<sup>1</sup> in 1989 in the Virginia Law Review, Professor Robert Cooter argued for changes in the law that would facilitate the development of a market in unmatured tort claims. An unmatured tort claim is a potential claim that a potential victim has before any injury has occurred. Cooter proposed that potential victims have the right to sell their unmatured tort claims. That is, Cooter proposed that potential victims be allowed to sell their right to sue even before an accident or injury ever occurs. Even TWENTY years later, the proposal remains both bold and imaginative. And yet it remains unadopted in any jurisdiction. There is a reason for this. In this paper I reexamine the proposal as to its likely intended and *unintended* effects. The unintended effects were overlooked in the original paper because of its static analysis. A dynamic analysis reveals these. These effects do not invalidate the proposal. I conclude that such Cooter's proposal has merit but that several modifications are necessary if the proposal is to

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\* Professor of Law, Boston University School of Law

<sup>1</sup>Robert Cooter "Towards A Market in Unmatured Tort Claims," 75 Va.L.R. 383 (1989)

succeed. Without these modifications the proposal will fail to accomplish its goals and will have serious adverse unintended effects. In short, this paper argues for the adoption of measures to permit the development of a *limited* market in unmatured tort claims. The primary limitation is the exclusion of potential injurers in the market for their own unmatured tort claims. Other modifications include a different measure of damages and a prohibition on liability limiting agreements.

## II. Background and Organization

In this paper we will use the following terms:

*Unmatured Tort Claim:* As indicated above, an unmatured tort claim is a claim that is based on possible future accidents.

*Market for Unmatured Tort Claims:* This would permit potential victims to sell their potential right to sue to others. The buyer of the unmatured tort claim would be able to sue the tortfeasor if and when an injury occurred to the victim whose tort claim the buyer has purchased.

If an injury occurs, a court may award damages. The amount of damages may be measured according to one of the following:

*Full-Compensation Damages:* The amount of damages that will give the victim the same amount of utility whether or not the injury occurs.

*Optimal-Insurance Damages:* The amount of damages that will give the victim the maximum expected utility over injury and no-injury states given the probability of injury. (This expected utility is just the probability of no injury times the utility if there is no injury plus the probability of an injury times the utility if there is an injury.)

*Optimal-Deterrence Damages:* The amount of damages that will induce the potential injurer to adopt the optimal level of care, where the optimal level of care is that which produces the maximum amount of expected utility over injury and no-injury states. (Again, this expected utility is just the probability of no accident times the utility if there is no injury plus the probability of an injury times the utility if there is an injury.)

Optimal-insurance damages may be lower than full-compensation damages.<sup>2</sup> This is the primary motivating factor in Cooter's proposal for a market in unmatured tort claims. By allowing potential victims to sell their claims to full compensation, they can purchase optimal insurance. Meanwhile, potential tortfeasors will be deterred since holders of the claims will be able to sue for full compensation. (Cooter assumes that full compensation is optimal for deterrence.) The result would be both optimal deterrence and optimal insurance. There are additional advantages to such a market. Since, under Cooter's proposal, potential tortfeasors could purchase the unmatured tort claims of their potential victims, transaction costs of negotiation and suit would be reduced since such potential tortfeasors would not sue themselves. Also, socially optimal institutional arrangements will develop naturally through the market rather than be determined through the political process. For example, drivers could sell their rights to their insurer. The insurer could then waive these claims in an agreement with other insurers. The result would be a system of no-fault insurance.

Given the potential advantages of a market for unmatured tort claims it is important to examine whether such a market will develop and the possible consequences if it does not. I show in this paper that the inclusion of potential tortfeasors in the market will effectively kill the market. Furthermore, incentives for optimal care by potential tortfeasors will disappear if potential tortfeasors are allowed to purchase the claims of their potential victims. These results are driven by moral hazard. That is, potential tortfeasors will act differently with and without the rights. Cooter suggests that the market will eliminate the moral hazard problem and thus the incentives for potential tortfeasors to adopt optimal care will remain intact. I show that, rather than the market eliminating the moral hazard problem, the moral hazard problem will kill the market unless potential tortfeasors are excluded. This effect becomes apparent when one introduces a time element into the analysis.

It is true that excluding potential tortfeasors from the market may eliminate the some of the transaction cost savings that could be realized if potential tortfeasors can buy the rights of their potential victims, given that potential tortfeasors will not sue themselves.

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<sup>2</sup>The seminal article in this area is Philip J. Cook and Daniel A. Graham, *The Demand for Insurance and Protection: The Case of Irreplaceable Commodities*, 91 Q.J.Econ 143 (1977). (Cook and Graham show that full compensation generally overinsures and overdeters.)

Still, there may remain other significant transaction costs savings. For example, third-party insurers could buy the claims and then agree not to sue each other. Furthermore, other advantages remain. Primary among these is the ability to have optimal deterrence and optimal insurance.

Here is how the rest of the paper is organized:

Section III provides an example that demonstrates the relationship among full compensation, optimal insurance, and optimal deterrence. Full compensation may both overinsure and overdeter. Therefore, Cooter's proposal must be modified so that unmatured tort claims give a right to optimal-deterrence damages rather than to full-compensation damages. Because the optimal deterrence and optimal insurance measures of damages differ, the market for unmatured tort claims still may function to provide optimal deterrence and optimal insurance as Cooter suggests.

Section IV demonstrates how inclusion of potential tortfeasors in the market for unmatured tort claims will effectively kill that market and lead to suboptimal precaution. Thus in order for the market to develop and to accomplish its purpose, potential tortfeasors must be excluded.

Section V demonstrates that agreements between potential tortfeasors and the holders of unmatured claims could lead to suboptimal results. Effectively, allowing such agreements would allow potential tortfeasors to accomplish indirectly that which they could not accomplish directly under the above modifications. Thus the proposal must be modified to prohibit liability-limiting agreements.

### **III. Full Compensation, Optimal Deterrence, and Optimal Insurance**

In what follows, we define and examine three measures of damages, full-compensation damages, optimal-insurance damages, and optimal-deterrence damages. Let us start by considering a product that can cause injury. Suppose for now that the potential tortfeasor, the manufacturer, will pay to the victim compensation if the product injures the victim. Both the cost of production and expected damages will be reflected in the price of the product. The product gives the victim a certain amount of utility that depends on price and on whether the victim gets injured.

The following numerical example will demonstrate the principles. We begin by assuming that the potential victim (let us call this person K) is risk averse (has diminishing marginal utility of wealth) and has the following expected utilities of wealth:

Wealth (\$)	Utility with no Product (utils)	Utility with Product and no Injury (utils)	Utility with Product and Injury (utils)
850	145	165	-390
860	150	170	-400
870	154	174	-408
880	157	177	-414
890	159	179	-418
900	160	180	-420
.	.	.	.
.	.	.	.
<b>1000</b>	164	184	-402
.	.	.	.
.	.	.	.
3870	.	.	-26
.	.	.	.
.	.	.	.
5850	215	235	165

Suppose that K begins with a wealth of \$1000 and suppose (for now) that there is a no-liability rule (the consumer bears all of the risk) and that the risk of injury is 1%. Under these facts, K will purchase the product. Purchasing the product will decrease the consumer's wealth by \$100, from \$1000 to \$900, but total utility will increase from 164 to 174:

**Table 1: Expected Utilities with No Compensation**

		<b>Prob</b>	<b>Initial Wealth</b>	<i>less</i> <b>Amt Spent on Product</b>	<b>Wealth After Purchase</b>	<b>Utility</b>	<b>Total Expected Utility</b>
<b>Do not purchase Product</b>	No Injury	1.0	\$1000	0	\$1000	164	164
<b>Purchase Product</b>	No Injury	.99	\$1000	\$100	\$900	180	174 <sup>3</sup>
	Injury	.01	\$1000	\$100	\$900	-420	

*Full compensation and Optimal Insurance*

Full compensation makes the victim whole, that is, gives the victim the same utility whether or not the accident occurs. In our example, full compensation is \$5000. To see this, assume that if K is injured, then K receives \$5000. Potential injurers (such as the manufacturers of products) thus must pay \$5000 with a probability of 1%. This is an expected cost of \$50 which is passed on to consumers, that is, to K. Thus the price of the product will increase to \$150 so that if the product is purchased, and no injury occurs, the consumers' wealth will be \$850. If an accident occurs, the consumer will receive \$5000 and have a total wealth of \$5850. In either case, total utility will be 165, which is what we mean by full compensation.

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<sup>3</sup> This is  $(180 \times .99) + (-420 \times .01) = 174$

**Table 2: Utilities with Full Compensation**

		<b>Initial Wealth</b>	<i>less</i> <b>Amt Spent on Product</b>	<i>plus</i> <b>Damages Received</b>	<b>Final Wealth</b>	<b>Total Utility</b>
<b>Purchase product</b>	No Injury	1000	150	0	850	165
	Injury	1000	150	5000	5850	165

We should note things. 1) K's utility is still higher from purchasing the product than from not purchasing the product. (Recall that the utility from not purchasing the product is 164. See Table 1.) However, with slightly different numbers (suppose the utility of \$1000 wealth without the product were 166), full compensation could lead to the product not being purchased. 2) The consumer's utility is lower than in a regime where there is no liability. (With no liability, the expected utility was 174. See Table 1.)

Thus providing full-compensation damages lowers expected utility as compared to a no-liability rule. This is not to say that a no-liability rule is optimal. Rather this demonstrates that full-compensation insurance does not maximize utility. It is possible that some level of insurance short of full-compensation insurance maximizes utility.

*Full compensation and Optimal Deterrence*

That optimal deterrence and full compensation differ is well known in extreme circumstances. Calculations for the value of a life from risk-taking activity (so-called hedonic damages) reflect the realization that optimal deterrence requires a payment that is below full compensation. In the case of death, full compensation implies an infinite payment. But this is true of many traumatic injuries. For example, there is probably no sum of money that would compensate most people for quadraplegia. Yet most of us risk this every day by getting into an automobile. Hedonic damages for death and other risk-based assessments of injuries are attempts to get optimal deterrence, not full compensation (which is impossible in these cases) or even optimal insurance. (In this sense, hedonic damages are misnamed since 'hedonic' evokes thoughts of lost pleasure.)

For example, hedonic damages for death are positive even though the victim cannot be made whole and even if the victim would not have insured against death. The same is true in less extreme cases.

Let us turn back to our example. So far we have considered a product whose probability of causing injury is fixed. Suppose, however, that the producer could take more care and that more care reduced the probability of injury. Suppose, for example, that some costly technology exists for reducing the probability of an accident to zero. Suppose that this technology costs \$40. Suppose again that there is a full compensation rule, which means that if an accident happens the manufacturer must pay \$5000 to the victim. A manufacturer then has the choice of paying \$40 to prevent the accident or paying \$5000 whenever the accident occurs. The latter option has an expected cost of \$50, since the probability of an accident without care is 0.1. Thus the manufacturer will pay \$40 to prevent the accident and factor the cost into the price of products. This means that the price of the product will be \$140, that K's wealth after purchase will be \$860, and that the injury will not happen.

**Table 3: Utility with Full Compensation and \$40 Cost of Care**

	<b>Initial Wealth</b>	<b>Amount Spent on Product</b>	<b>Final Wealth</b>	<b>Total Utility</b>
<b>Purchase product (injury does not occur)</b>	\$1000	\$140	\$860	170

This is worse than if there are no damages. In that case, the potential injurer does not take care, the consumer purchases the product, and the consumer has an expected utility of 174. (See Table I.) Thus a full compensation liability rule will cause the manufacturer to buy \$40 of prevention, with a resultant expected utility for the consumer of 170, while a no liability rule will result in no care with a resultant expected utility for the consumer of 174. Clearly, a full-compensation liability rule overdeters.

The notion that full-compensation provides too great a level of deterrent effect fuels some discussions about tort reform. For example, in the medical profession there is concern about excessive testing. In the small aircraft industry excessive precaution may be leading to prices that few can afford.

Even though full compensation can overdeter, this does not mean that zero compensation is optimal. Suppose that the level of compensation were set at \$3000 rather than \$5000. This would mean that a manufacturer would employ a means of prevention if it costs less than \$30 but would not employ it if it cost more than \$30. (This is because its expected liability without the means of prevention is \$30, that is, a 1% chance of \$3000.) Thus the manufacturer would not employ a means of prevention that cost \$40. Suppose the means of prevention cost \$20. Then the manufacturer would employ it. The cost would be reflected in the price of the product and thus the consumer's wealth would be reduced to \$880. With a wealth of \$880 the consumer has a utility of 177 which is better than 174:

**Table 4: Utility with \$3000 Compensation and \$20 Cost of Care**

	<b>Initial Wealth</b>	<b>Amount Spent on Product</b>	<b>Final Wealth</b>	<b>Total Utility</b>
<b>Purchase product (injury does not occur)</b>	\$1000	\$120	\$880	177

Thus deterrence is beneficial. It turns out that, in our example, \$3000 is the optimal –deterrence damages. Again, for the manufacturer, prevention will be adopted if the cost,  $c$ , is less than \$30. Conversely if  $c$ , the cost of prevention is greater than \$30, the manufacturer will not adopt it:

**Table 5: Manufacturer Cost With Cost of Care  $c$  and \$3000 Damages**

	<b>Cost of Product</b>	<b>Cost of Care</b>	<b>Cost of Liability</b>	<b>Total Cost</b>
<b>Manufacturer Does Not Adopt Care</b>	100	0	30	130
<b>Manufacturer Does Adopt Care</b>	100	$c$	0	$100 + c$

A cost of prevention \$30 is also the breakeven point for the consumer:

**Table 6: Consumer Utility with \$3000 Damages**

		Prob	Initial Wealth	<i>less</i> Price of Product	Final Wealth	Utility	Total Utility
<b>Manufacturer Does Not Adopt Care and Consumer Buys Product</b>	No Injury	.99	1000	100	900	180	174
	Injury	.01	1000	100	900	-420	
<b>Manufacturer Adopts Care and Consumer Buys Product</b>	No Injury	1.0	1000	130	870	154	174

If the cost of care is greater than \$30 and if the manufacturer adopts care, then the price will be greater than \$130 and utility will be less than 174. In such cases, K would prefer that the manufacturer not adopt the care. Conversely, if the cost of care is less than \$30 then and if the manufacturer adopts care, then the price will be less than \$130 and the expected utility will be greater than 174. In such cases, K would prefer than the manufacturer adopt care. Thus with damages of \$3000 the preferences of K and the manufacturer are aligned.

*Optimal Deterrence and Optimal Insurance*

So we know that full-compensation damages may overdeter and provide too much insurance. It also turns out that optimal-deterrence damages may provide too much insurance. To see this, let us set damages to the optimal-deterrence level, that is, to \$3000. Suppose that the only possibility is for the manufacturer to pay \$40 for care that reduces probability to zero. In such a case the manufacture will not adopt care. The price of the product will be set at \$130 reflecting production costs and damages. If the consumer purchases the product then the expected utility will be, in our model, 172 utils:

**Table 7: Expected Utility with \$3000 Damages and \$40 Cost of Care**

		Prob	Initial Wealth	<i>less</i> Price of Product	<i>plus</i> Damages	Final Wealth	Utility	Expected Utility
<b>Purchase Product</b>	No Injury	.99	1000	130	0	870	174	172
	Injury	.01	1000	130	3000	3870	-26	

This is still a worse result than if there were no damages and no deterrence. Yet we do want to give the manufacturer the incentive to adopt care when efficient to do so because if the cost of care drops, say to \$20, then the consumer is better off with the producer adopting care. (Recall that with a cost of care of 20, the utility that the consumer gets is 177. See Table 4.) In general, full-compensation damages will be greater than or equal to optimal-deterrence damages, and optimal-deterrence damages will be greater than or equal to optimal-insurance damages.<sup>4</sup>

*The Market for Unmatured Tort Claims*

So how do we get both optimal deterrence and optimal insurance? Cooter’s model suggests that the courts grant full-compensation damages, but that the potential victim can sell the right to collect these damages to others. These others can then sue the tortfeasor. The potential victims can then buy optimal insurance. As we have demonstrated above, full-compensation damages will lead to overdeterrence. Still, Cooter’s point is well-taken. We can modify Cooter’s proposal as follows:

*Modification 1:* Courts should award optimal-deterrence damages (rather than full-compensation damages).

Potential victims could then be allowed to sell the right to these damages to others. The potential victims can then buy optimal insurance. This will result in optimal

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<sup>4</sup> See Cook and Graham, *id.*, at page 144.

deterrence and optimal insurance. However, as will be shown in the following sections, additional modifications are necessary.

#### **IV. Why the Market Must Exclude Potential Tortfeasors**

In Cooter's proposal potential tortfeasors would be allowed to purchase unmatured tort claims from their potential victims. This would give additional advantages by eliminating significant transaction costs involved in negotiation and litigation, since tortfeasors would never sue themselves.

In this section I show that a market for unmatured tort claims will develop only if potential tortfeasors are prohibited from purchasing the claims of their potential victims. Potential tortfeasors who hold unmatured tort claims related to their own torts, will engage in socially suboptimal behavior due to moral hazard. Cooter argued that moral hazard will be corrected by the market. I make the opposite argument. Moral hazard will not be corrected by the market. Rather, moral hazard will destroy the market. The result will be that, if tortfeasors are not prohibited from buying unmatured tort claims from their victims, there will be insufficient incentives for optimal precaution even if courts award optimal-deterrence damages.

The reason to suspect that a secondary market will never develop is that potential tortfeasors are always in a better position than other secondary buyers to purchase unmatured tort claims both for reasons of moral hazard and for reasons of transaction costs. Unmatured tort claims are always more valuable to the tortfeasor than to anyone else. The problem is exacerbated by other types strategic behavior as well. The problem may be mitigated through compulsory insurance, but it is not solved. This is demonstrated below.

##### *The contingency of behavior*

What level of care will a potential tortfeasor adopt? The answer is: it depends. This answer is so important to the following discussion that it is useful to take a few moments and ponder what it means.

An unmatured tort claim represents a right to sue the tortfeasor for any accident that occurs within a specified time period. Suppose that such a tort claim is sold on January 1, 2012 and that it has a duration of one year. How much care will be adopted during the

2012 year? It depends on whether the potential injurer owns the unmatured tort claim or if someone else does. We can call this the contingent behavior principle:

*Contingent Behavior Principle.* The behavior of the potential injurer is flexible. In particular, the behavior of the potential injurer can differ depending on who owns the unmatured tort claim.

The importance of the contingent behavior assumption is its interaction with value. The value of the above unmatured tort claim on January 1, 1993, depends on the expected behavior of the potential injurer in 1993. We can call this the contingent value principle.

*Contingent Value Principle.* The value of the unmatured tort claim depends on the expected behavior of the potential injurer in during the actual period of the unmatured tort claim.

The two principles together imply that value is contingent on who owns the tort claim.

*An example*

Let us consider a very simple situation. Suppose that there are four possible levels of care (including zero) that a potential injurer can adopt. The injury is one in which the victim suffers some loss.

Units of Care	Cost of Care	Probability of Injury
0	0	.06
1	15	.03
2	30	.01
3	45	0

Let us suppose that the level of care that is socially optimal is 2 units and that the optimal deterrence damages is \$1000. These two assumptions are consistent since \$1000 damages will induce the potential injurer to adopt 2 units of care. This can be seen in Table 9.<sup>5</sup>

Units of Care	Cost of Care	Probability of Injury	Expected Liability	Expected Private Cost
0	0	.06	60	60
1	15	.03	30	45
2	30	.01	10	40
3	45	0	0	45

Damages of \$1000 are the optimal-deterrence level of damages. Let us also assume that the level of damages that is optimal from an insurance standpoint is \$600. Thus the ideal outcome would be for the potential injurer to adopt 2 units of care and for the potential victim to receive \$600 every time an injury occurs. Unfortunately, a simple damage rule of \$600 will not provide the proper deterrence. With damages of \$600 the private payoffs are:

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<sup>5</sup>Actually anything between 750 and 1500, noninclusive, would do. However, I chose 1000 because it is also optimal if we allow fractional levels of care.

<b>Table 10</b>				
Units of Care	Cost of Care	Probability of Injury	Expected Liability	Expected Private Cost
0	0	.06	36	36
1	15	.03	18	33
2	30	.01	6	36
3	45	0	0	45

Thus with damages of \$600 the potential injurer will adopt 1 unit of care. The probability of an accident will be 3 times higher than optimal (that is, .03 rather than .01).

A market for unmatured tort claims allows potential victims to sell their claims. For example, a potential injurer could sell an unmatured claim to a third party for \$10. Such a claim would give the holder a right to bring an action for optimal-deterrence damages against the tortfeasor. That is, the third party would bring an action against the potential injurer for \$1000 whenever there was an injury. This would give the potential tortfeasor the incentive to adopt 2 units of care, the optimum, and the resultant probability of an accident would be .01. The potential victim could then buy \$600 worth of insurance for \$6 and would pocket the remaining \$4. Both the third party and the insurer break even since the probability of an accident will be .01 under these conditions. We get both optimal deterrence and optimal insurance.

In Cooter's proposal, however, the potential injurer will also be able to bid for the unmatured tort claim. In this case, there would be the additional advantage of transaction costs savings since the potential injurer would not sue itself. Unfortunately, the entry of the potential injurer into the market for unmatured tort claims will destroy the market and also destroy the incentives for optimal care. To see why this result comes about we must look at pricing.

*Parties to the transaction*

There are three different types of parties. There are potential victims, the potential injurer, and potential third party purchasers. The potential victim sells the tort claim. Potential buyers include the potential injurer and potential third party purchasers.

## *Pricing*

We begin our discussion by asking how much a potential third party purchaser would be willing to pay for an unmatured tort claim. The potential third-party purchaser realizes that if the claim is purchased and enforced, the potential injurer will have an incentive to adopt two units of care. The probability of injury will then be .01 yielding an expected liability of \$10. Thus the most a potential third party purchaser will be willing to pay is \$10.

How much will the potential injurer be willing to pay? The potential injurer makes this calculation. If I purchase the claim and adopt zero units of care then my costs are just the price of the claim, since I will not sue myself. If I do not purchase the claim, then I have private costs of \$40. Thus the potential injurer is willing to pay up to \$40 for the claim. (See Table 9.)

Suppose that the potential injurer makes a bid of \$11, wins, and adopts zero units of care in 2012. Now suppose that potential third party purchasers observe that in 2012 the accident rate is 6%. Suppose that they reason that if they had the claim it would be worth \$60, that is \$1000 times .06. Based on this reasoning, on January 1, 2013, a potential third-party purchaser bids \$50 and wins the claim. The potential injurer immediately adjusts for this liability exposure and adopts 2 units of care. In 2013 the third-party purchaser collects only \$10. Of course, it is unlikely that a sophisticated third-party purchaser would make such a mistake, but surely it would not do so twice. The next year the potential injurer again bids \$11 and is uncontested.

The results are that 1) only potential tortfeasors will be in the market for their own unmatured tort claims and 2) the potential injurer will adopt a suboptimal level of care.

## *Insurance*

Under some arrangements the presence of insurance can mitigate the incentive problem but cannot solve it. Let us look at pricing in this case.

In order to see the effects of insurance, let us start with a simple example. Let us suppose that the purchaser of the unmatured tort claim is required to provide the optimal level of insurance, in this case \$600, to the potential victim. Let us call this a *bundled* claim. In this case, the third-party purchaser would have the right to collect \$1000 from the potential injurer whenever there was an accident but it would have to pay \$600 to the

victim. Thus the third-party purchaser would collect \$400 for every accident. Under such a circumstance the third-party purchaser knows that the potential injurer will have the incentive to adopt 2 units of care. Thus the probability of an accident would be .01 and the claim would be worth \$4 to the purchaser.

Suppose that the potential injurer also offers to buy a bundled claim. With the bundled claim, the potential injurer must pay \$600 whenever there is an accident. The potential injurer will thus adopt 1 unit of care. (See Table 10.) The cost to the potential injurer will be \$33. Without the tort claim the potential injurer will face \$1000 in liability per accident and thus will adopt 2 units of care. That is, cost will be \$40. Thus the potential injurer will be willing to pay up to \$7 for the bundled claim.

The third-party purchaser is willing to pay up to \$4 for this bundled claim. The potential injurer is willing to pay up to \$7. Suppose that the potential injurer makes a bid of \$5, wins, and adopts 1 unit of care in 1993. Now suppose that potential third party purchasers observe that in 2012 the accident rate is 3%. Suppose that they reason that if they had the claim they would have collected \$12, that is \$400 times .03. Based on this reasoning, on January 1, 2013, a potential third-party purchaser bids \$8 and wins the claim. The potential injurer immediately adjusts for this liability exposure and adopts 2 units of care. In 2013 the third-party purchaser collects only \$4. Again, it is unlikely that a sophisticated third-party purchaser would make the mistake of bidding over \$4, but surely it would not do so twice. The next year the potential injurer again bids \$5 and is uncontested. The potential injurer adopts one unit of care. This is suboptimal.

### *Exacerbating considerations*

In addition to the above advantages (due to moral hazard), the tortfeasor has additional advantages in terms of transaction costs and information. That is, the tortfeasor saves the considerable transaction costs of post-accident bargaining, settlement and trial. Furthermore, the potential tortfeasor has information on precaution technology and accident rates that are unavailable to others in the secondary market. In some senses, avoiding transaction costs is socially good, so long as doing so did not have other adverse consequences. In the case of unmaturing tort claims, these advantages help to drive non-potential tortfeasors from the market and result in poor incentives for care. One additional effect of the possible asymmetry of information is that outside bidders would

suffer from winner's curse problems<sup>6</sup> . This makes it even less likely that a secondary market will develop.

Finally, if we add to our model strategic behavior, the possibility exists for extremely low pricing and no secondary market. That is, the potential tortfeasor may offer to buy the unmatured tort claim at an extremely low price with an additional conditional offer to beat any competitors offer by, say, 10 percent. Given the transactions costs that are entailed in valuing an unmatured tort claim the incentives of any secondary buyer to conduct such a valuation disappear in the face of such an offer. Thus the price that a potential tortfeasor will be able to set will be limited only by the information and bargaining power of the sellers. Neither information nor bargaining power of sellers (for example, of employees) are likely to be great. The result is that potential tortfeasors would be seriously underdeterred.

#### *Excluding Potential Tortfeasors*

The above discussion indicates that the unmatured tort claim will end up in the hands of the potential injurer and that the potential injurer will adopt a suboptimal level of care. It also indicates that no market will ever develop. Nevertheless a market for unmatured tort claims can accomplish its goal of optimal insurance and optimal deterrence if potential injurers are excluded from the market:

*Modification 2:* Potential tortfeasors should not be able to purchase unmatured tort claims from their potential victims.

In such a case the tort claim will end up in the hands of third-party purchasers who will enforce the claims against potential injurers. Potential injurers will adopt the optimal level of care. Potential victims will be able to obtain optimal insurance. In short, in order for a market in unmatured tort claims to accomplish its twin goals of optimal

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<sup>6</sup>The winner's curse refers to the phenomenon in which bidders are uncertain about the true value of the "item" put up for bid. In such a case, the winner of the auction is likely to be a bidder that has overestimated. Thus by winning the winner loses. Experienced bidders compensate for the winner's curse by lowering their bids. For a discussion of the winner's curse see William Samuelson and Stephen Marks, *Managerial Economics*, The Dryden Press, 1992.

insurance and optimal deterrence, potential tortfeasors must not be allowed to purchase the claims of their potential victims.<sup>7</sup>

## V. Liability-Limiting Agreements

The next issue involves liability-limiting agreements between the holders of the claims and the potential tortfeasors. Consider the case of an insurance company that provides insurance to the employees and that has purchased the claims (as part of an insurance package) from employees. It should be clear from the above discussion that the employer could afford to pay the insurer a fee not to enforce the full extent of the claims. For example, the employer could offer the insurance company a fee in exchange for limiting the damages to \$600. In this case, the employer could reduce caution to one unit. The maximum fee that the employer could offer for this is \$7 since this is the amount it would save. (Compare Tables III and IV.) Such an agreement would cost the insurer \$4. This is calculated as follows. The insurance company would collect more damages since it would be collecting \$18 (3% of \$600) rather than \$10 (1% of \$1000) for a gain of \$8. However, it would also be paying out \$18 (3% of \$600) rather than \$6 (1% of \$600) for a loss of \$12. On net it loses \$4 so it will require a fee of at least \$4. Thus a mutually advantageous deal could be struck. The fee would be greater than \$4 and lower than \$7. The potential injurer would adopt one unit of care.

In short, if we allow liability-limiting agreements between holders of claims and the potential tortfeasor we would get similar results to those that we would get by letting potential tortfeasors in the market. In particular, we would get insufficient incentives for care. Hence, our last modification:

*Modification 3:* Potential tortfeasors should not be able to enter into liability-limiting agreements with the holders of unmatured tort claims.

With the three modifications, the market for unmatured tort claims could produce optimal deterrence and optimal insurance.

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<sup>7</sup>Those who believe that the tort law has developed along efficient lines will be encouraged by the consistency of the above reasoning with developments in the early nineteenth century when courts invalidated waivers of liability as against public policy. See Cooter, *id.*, footnote 7, for examples of such cases.

## VI. Conclusions

The above discussion in no way strikes at the heart of the argument for a market in unmatured tort claims. Rather it suggests that in order to accomplish its goals three modifications are necessary. First, the claims must be based on optimal-deterrence damages rather than full-compensation damages. Second, potential tortfeasors must not be allowed to purchase the claims of their potential victims. Third, agreements between potential tortfeasors and the holders of unmatured tort claims must be prohibited.

Of course, this will not end debate on this issue. The market for unmatured tort claims, as modified, will accomplish the goal of optimal deterrence and optimal insurance only if we determine the size of optimal deterrence awards. There have been some attempts to do this<sup>8</sup>, but the discussion must continue. Furthermore, while the modified market for unmatured tort claims can produce both optimal deterrence and optimal insurance, it does not eliminate transaction costs of the tort system. Thus it must be compared to, or considered in conjunction with, proposals that might mitigate transaction costs. Nevertheless, it is time to give the market for unmatured tort claims another look.

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<sup>8</sup> See, inter alia, Patricia Danzon, *Tort Reform and the Role of Government in A Private Insurance Markets*, 23 J.Leg.Stud. 517 (1984).

## Technical Appendix

### *Overdeterrence*

In this section Cooter's model of a wealth-neutral accident is used to demonstrate mathematically the problem of overdeterrence. The problem of overdeterrence can be seen using the model that Cooter has provided. Let us suppose that a consumer purchases a good for a price of  $s$  and that the good produces a utility of  $U(w-s)$ , where  $w$  means wealth, if it causes no injury and  $V(w-s)$  if it injures the consumer. The probability of injury is  $p$ . The consumer has an expected utility equal to

$$(1-p)U(w-s) + pV(w-s).$$

First, as an aside, let us replicate Cooter's argument that full compensation overcompensates. To do this, we allow the consumer to purchase perfectly fair insurance.

$$(1-p)U(w-s-pA) + pV(w-s-pA+A).$$

$A$  is the amount of insurance purchased and  $pA$  is the premium. Now suppose that  $V = U-k$ . That is, the accident simply shifts the utility function downward. This is Cooter's wealth-neutral accident. Then the above expression becomes:

$$(1-p)U(w-s-pA) + pU(w-s-pA+A) - pk \tag{1}$$

If we maximize this expression over  $A$ , to determine the amount of insurance that the consumer will choose, and if we simplify, we get the following first order expression:

$$U'(w-s-pA) = U'(w-s-pA+A)$$

which is fulfilled only if  $A$  is zero. That is, the consumer will choose not to insure. As Cooter points out, in this case the potential victim will not want to insure since marginal utility is unaffected by the accident even though total utility falls. In this case, any compensation is overcompensation. (See Cooter for an especially clear explanation of this.)

I will show that in this type of wealth-neutral accident, full compensation also produces overdeterrence. First note that if  $A=0$  then expression (1) becomes

$$U(w-s) - pk.$$

The producer produces the good. For simplicity let us suppose that the only expense in producing the good is care,  $c$ . The probability of accident is a function of the level of care,  $c$ . The probability decreases as  $c$  increases, but at a decreasing rate. (We say that  $p'$  is negative and  $p''$  is positive.) Suppose now that the producer is in perfect competition and also that there is Coasian bargaining. In this case, profits will be bid to zero, that is,  $c=s$ . Furthermore, utility will be maximized. That is, we maximize the following expression:

$$U(w-c) - p(c)k.$$

Notice that in perfect competition the consumer will pay a price of  $s=c$ . Thus the consumer balances price and safety. The optimal  $c$  is chosen so that the first order condition is zero:

$$U'(w-c^*) + p'(c^*)k = 0. \tag{2}$$

Now let us remove the assumption of Coasian bargaining and replace it with a damage rule that requires the producer to pay damages of  $d$  whenever there is an accident. Let us make this a full compensation rule so that

$$U(w-c^*+d) - k = U(w-c^*)$$

which is to say that utilities in the accident state and nonaccident state are equated. Dividing through by  $d$  and rearranging a bit we get the equality in following expression:

$$\{U(w-c^*+d) - U(w-c^*)\}/d = k/d < U'(w-c^*).$$

The inequality comes from the fact that the expression to the left of the equality is the slope of a line connecting  $w-c^*$  and  $w-c^*+d$  on the utility function and  $U'(w-c^*)$  is the slope of the tangent at  $w-c^*$ . Because of risk aversion the utility function is concave and the tangent has a greater slope. Now if we substitute  $k/d$  into expression (1) above we get:

$$k/d + p'(c^*)k < 0 \text{ or, equivalently}$$

$$1 + p'(c^*)d < 0.$$

Now note that the producer will want to maximize profit  $s - c - p(c)d$ . (Remember that  $s$  is fixed by market since the firm is a price-taker.) The producer will choose a  $c^{**}$  so that the first order condition is satisfied:

$$1 + p'(c^{**})d = 0.$$

Finally, recall that  $p'$  is negative but becomes less negative as  $c$  increases due to diminishing marginal returns. (That is,  $p''$  is positive.) This implies that the expression  $1 + p'(c)d$  is increasing in  $c$  and thus  $c^{**}$  is greater than  $c^*$ . Thus the producer is overdeterred.

### *The market for unmatured tort claims*

Consider an employer who must pay for safety. Cost of safety is  $c$ . The probability of an accident  $p(c)$  where  $p$  falls with  $c$ , but at a decreasing rate due to diminishing marginal returns to safety. If an accident happens  $D$  is paid, where  $D$  is the optimal deterrence level of damages. (I am assuming that we have made the modification suggested in the previous section.) The optimal level of care is, by definition, the amount that minimizes:

$$c + p(c)D.$$

Let us call the value that minimizes the above expression, that is, the optimal level of care,  $c_d$ . In the following examples we assume that the secondary market for unmatured tort claims is unrestricted. That is, potential tortfeasors can buy the claims of their potential victims.

First, for simplicity, consider the case where there is no insurance. There are two possibilities. Either the employer purchases the unmatured tort claims and the employers costs are  $c + t$ , where  $t$  is purchase price of the claims. Or, others purchase the claims and enforce them in court. In this case the expected costs to the potential injurer are  $c + p(c)D$ . In the first case, the employer has no liability and no incentive to adopt care and sets  $c$  to zero. In the second case  $c$  is set to  $c_d$ . In other words, the action of the employer is conditional whether the employer wins the bid. This is true even if the rights must be purchased yearly.

How much will the employer be willing to pay for the rights? To find the answer we subtract the cost with the rights,  $t$ , from the cost without the rights  $c_d + p(c_d)D$ . The difference is  $c_d + p(c_d)D - t$ .

The employer is willing to pay up to  $c_d + p(c_d)D$  for the rights. Suppose that the employer has a standing offer to purchase the rights for  $[0.5c_d + p(c_d)D]$ . Since the rights are only worth  $p(c_d)D$  to an outsider the employer will always win the bid. The employer will also adopt zero level of care. Again, note that the rights will not be worth  $p(0)D$  to an outsider because as soon as an outsider wins the bid, the employer will optimize by adopting  $c_d$ . This dramatic example shows that not only will a secondary market not develop, but also that the effects on care level could be dramatically bad in terms of deterrence.

Does insurance fix this? Let us now suppose that the employer provides insurance to all employees. In the case of an accident the insurance pays  $I$ .  $I$  is less than  $D$  reflecting the notion that optimal insurance is less than optimal deterrence damages. Now we have the following costs:

$$\begin{array}{ll} c_i + p(c_i)I + t & \text{if the employer buys the rights, and} \\ c_x + p(c_x)I + p(c_x)D & \text{if someone else buys the rights.} \end{array}$$

We have chosen  $c_i$  to minimize  $c + p(c)I$  and  $c_x$  to minimize  $c + p(c)I + p(c)D$ . In neither case does the employer adopt  $c_d$ . Furthermore we can again show that a secondary market will not develop. The difference between the two expressions is

$$\{[c_x + p(c_x)I] - [c_i + p(c_i)I]\} + p(c_x)D - t.$$

The expression in the brackets  $\{ \}$  is positive since  $c_i$  minimizes  $c + p(c)I$ . Again we can imagine a standing offer by the employer of, say,

$$0.5\{[c_x + p(c_x)I] - [c_i + p(c_i)I]\} + p(c_x)D.$$

Given this offer, the employer would always win the bid, since it is worth  $p(c_x)D$  at most to an outsider. Furthermore the employer would end up adopting a level of care equal to  $c_i$ , which is less than the optimal level of care  $c_d$ . (Once the employer has the rights, the cost of buying the rights is a fixed cost. This is true even they must be purchased yearly.) Thus again the optimal deterrence level of care  $c_d$  would not be adopted. Furthermore, no secondary market would ever develop.

Other arrangements also lead to similar results. Suppose that potential victims have no insurance and buyers compete by promising insurance plus a lump sum. Persons in the secondary market could afford to bid a lump sum up to

$$L_s = p(c_d)D - p(c_d)I.$$

The employer could bid a lump sum representing the differences in costs between obtaining the rights and not,

$$L_t = [c_d + p(c_d)D] - [c_i + p(c_i)I].$$

Note that

$$\begin{aligned} L_t - L_s &= [c_d + p(c_d)D] - [c_i + p(c_i)I] - [p(c_d)D - p(c_d)I] \\ &= [c_d + p(c_d)I] - [c_i + p(c_i)I]. \end{aligned}$$

The above expression is positive since  $c_i$  minimizes  $c + p(c)I$ . Thus the employer could adopt a standing offer of

$$L_s + 0.5\{[c_d + p(c_d)I] - [c_i + p(c_i)I]\}.$$

Given this offer, the employer would always win the bid. Furthermore the employer would end up adopting a level of care equal to  $c_i$ , which is less than  $c_d$ . (Again, once the employer has the rights, the cost of buying the rights is a fixed cost. This is true even they must be purchased yearly.) Thus the optimal deterrence level of care  $c_d$  would not be adopted. Furthermore, no secondary market would ever develop.

It is not necessary that the same outside entity both buys the claims and provides the insurance although there are reasons not included in the model to believe that this will happen. For example if we consider the optimal level of resources spent in enforcing the claim we can reason as follows. Suppose that there are two entities; A provides insurance for employees and B has purchased the unmatured claims from the employees. Suppose B spends  $z$  amount in enforcing the claims and that this affects the probability of an accident. Now suppose that there is a merger between A and B. The optimal amount spent enforcing the claims goes up since the marginal benefits of enforcing claims and reducing the probability of an accident increases. Although we have not made the argument in a formal mathematical sense, the reasoning indicates that it is likely that the firm providing insurance will also purchase the unmatured tort claims.

### *Liability-Limiting Agreements*

Consider the case of an insurance company that provides insurance to the employees and that has purchased the claims (as part of an insurance package) from employees. It should be clear from the above discussion that the employer could afford to pay the insurer a fee not to enforce the full extent of the claims. For example, could offer the insurance company a fee not to make any claims. In this case, the employer could reduce caution to zero. The maximum fee that the employer could offer for this is therefore:

$$c_d + p(c_d)D. \quad (3)$$

The minimum fee that the insurance company would be willing to accept is the loss of revenue due to suit plus the increased cost of insuring the employees given that the employer will now adopt zero caution:

$$p(c_d)D + [p(0)I - p(c_d)I]. \quad (4)$$

If we subtract expression (4) from expression (3) we will get the size of the zone of potential agreement:

$$[c_d + p(c_d)D] - [p(c_d)D + p(0)I - p(c_d)I].$$

The question is whether this is positive. If it is positive then some agreement is possible. We can rewrite it as follows:

$$c_d + p(c_d)I - [0 + p(0)I].$$

Whether this is positive depends on the function  $c + p(c)I$ . This function is minimized at  $c_i$  which is greater than zero but less than  $c_d$ . We cannot tell whether the above expression is positive or negative. There does, however, exist the possibility that it is positive and therefore it is possible that an agreement could lead to the adoption of zero care.

Other agreements are also possible. For example, to find the most beneficial agreement to both parties (but not necessarily to the employees) we note that they could agree that the insurance company limits its damages to  $X$ . Then the benefit of the agreement to the employer over no agreement would be

$$[c_d + p(c_d)D] - [c_x + p(c_x)X] - F$$

where  $c_x$  minimizes  $c + p(c)X$  and  $F$  is the agreed upon fee, and the benefit to the insurer would be

$$F - [p(c_d)D - p(c_x)X] - [p(c_x)I - p(c_d)I].$$

The expression in the first bracket represents lost collections from the employer and the second bracket represents increased payouts to the employees. Adding these benefits together and simplifying yields:

$$[c_d + p(c_d)I] - [c_x + p(c_x)I]$$

Note that  $X$  has disappeared from the expression. However, it is  $X$  that determines  $c_x$  since  $c_x$  is just the  $c$  that minimizes  $c + p(c)X$ . The  $c_x$  that minimizes expression (5) is just  $c_i$ , since  $c_i$  minimizes  $c + p(c)I$  therefore it follows that  $X=I$ . That is the maximum bargaining surplus is generated by the insurance company limiting its claim to  $I$ . In this case the employer will adopt a level of care equal to  $c_i$ . Given this, the maximum fee that the employer will pay for such a limitation is

$$[c_d + p(c_d)D] - [c_i + p(c_i) I],$$

and the minimum fee that the employer will accept is

$$[p(c_d)D - p(c_i)I] + [p(c_i)I - p(c_d)I].$$

The bargaining surplus is the difference, that is, after simplification:

$$[c_d + p(c_d)I] - [c_i + p(c_i)I].$$

This is always positive since  $c_i$  minimizes  $c_i + p(c_i)I$ . The result is that there are strong incentives for a deal to be struck and for the level of care to be set at  $c_i$ . That is, the employer will be underdeterred. Thus we would not allow such deals to be made.