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Résumé de l'article

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# Punitive Damages and the Demand for Insurance

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**RÉSUMÉ**

Le but de cet article théorique est d'examiner les effets de l'attribution des dommages exemplaires (dits punitifs) sur la demande en assurance. Nous montrons que cette demande est décroissante en fonction du montant des dommages exemplaires puisque ces-derniers sont inclus, en espérance, dans la prime d'assurance qui est payée. Notre modèle présente ainsi une autre raison qui sous-tend l'optimalité de l'assurance partielle même si les primes reflètent uniquement les pertes actuarielles.

***Mots clés :*** Demande en assurance, dommages punitifs.

Classification JEL : D81, G22

**ABSTRACT**

This study examines the theoretical effects of punitive damage awards on the demand for insurance. The demand for insurance is shown to be decreasing in the amount of possible punitive damage awards. The decrease in demand occurs as a result of these awards being priced into the insurance premium. This model shows yet another reason for the existence of partial insurance even with fairly priced insurance premiums.

***Keywords***: Demand for insurance, punitive damages.

JEL Classifications: D81, G22

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# 1. INTRODUCTION

In 1979, the Supreme Court of California, in *Royal Globe v. Superior Court*, gave third party claimants the right to obtain punitive damages from insurance companies as punishment for bad faith bargaining. The ruling was eventually reversed in 1988 in *Parvaneh Moradi-Shalal v. Fireman's Fund Insurance Companies*. Hawken, Carroll, and Abrahamse (2001) find that in the time between the Royal Globe case and its overturning, California bodily injury premiums rose between 17 and 29 percent, which translated into an 11 to 19 percent increase in total premiums. A similar study by Hamm (1999) finds that premiums increased only 15 percent during the time period which the Royal Globe ruling was in effect. Regardless, it is clear that the ruling had some non-negligible effect on premiums in California.

Although California does not currently allow for third party punitive damage awards for bad faith claims, approximately a dozen states are considering (or have passed) legislation that will allow for such awards. Georgia (passed), Arizona, Indiana, Iowa, Maine, Massachusetts, Mississippi, New Jersey, New York, Oklahoma, Oregon, Utah, and Virginia are all considering or have enacted legislation that will allow for punitive damages to be collected by third parties in bad faith lawsuits (Kelly (2001)).

In addition to the third party claimants, all states allow insureds to collect exemplary damages from insurers who are found to have acted in bad faith. Although cases where punitive damages are levied against insurers may be rare, that does not necessarily mean that the impact of punitive damages is minimal. In fact, the effects of punitive damages on the settlement process may be more important than the actual cases that receive punitive damage awards. In Texas (where insurance adjusters are required to divide settled claims into four elements, one of which is punitive damages (Koenig (1998)) between 1990 and 1993, an average of approximately ten percent of settled claims were influenced by punitive damages. Further, the punitive damage component was an average of 14% of the settled amount.

In addition to the third party punitive damage awards, and the effects punitive damages can have on the settlement process, punitive damages are occasionally levied against a defendant in a bad faith case.[1] Additionally, many cases have had punitive damages awarded for "low balling;" deficient, intrusive, or apparently biased investigation; alteration, loss or destruction of evidence; failure to retract an erroneous coverage position; failure to provide an adequate defense; cancellation of policy or termination of benefits; and outrageous conduct.

Obviously, punitive damages are very important to insurers and insureds when it comes to bad faith claims. In the model developed below, we seek to analyze the effects these punitive damages have on the demand for insurance. Though the threat of punitive damages are meant to lessen the risk that an insured does not get indemnified, the punitive damages (we will specifically focus on first party awards, but the analysis could be altered slightly to consider third party awards) that can be awarded to insureds for bad faith actually add another layer of risk that insureds must consider. In particular, since now insureds are potentially *over compensated* for their loss, they must consider how this outcome can affect insurance prices and demand.

Ultimately, we show that these punitive awards are actually welfare reducing. Perhaps ironically, introducing a mechanism that is meant to allow an insured to receive a fair settlement can actually reduce indemnities since less insurance will be purchased.

Though this result may be intuitive, considering extra-compensatory awards has not been examined in the literature. Rather, many authors have modeled risks related to non-payment of claims, and its effects on the demand for insurance. Doherty and Schlesinger (1990), for one, show how the demand for insurance decreases as insureds face insolvency risk by the insurer. In addition to non-payment of claims (whether it is for reasons of insolvency, bad faith, or others), insureds often face another form of risk that we will study here.

Occasionally, insureds will obtain awards worth more than the claim from the court. These awards are most often the case when an insurer is found guilty of negotiating in bad faith. Vexatious suits can be filed against the insurer by the insured when the insured feels that the insurer has either wrongfully denied the claim or delayed claim payment. Courts can award damages in addition to the economic damage in these instances. As seen above, courts can, and do, award insureds punitive damages in cases in which the insurer has maliciously and intentionally bargained in bad faith. Combined, vexatious awards and punitive damage awards form additional "risks" that insureds must consider when purchasing insurance.

These risks will change the standard demand for insurance problem. Insureds can now obtain nothing (e.g. in the case of insolvency), a paid claim (e.g. the claim is settled), or more than the claim (e.g. in the case of vexatious claims). Although this paper will use punitive damages as the primary basis for extra-compensatory damages, the results are not confined to punitive damages. This paper examines the effects that these possible cases of insureds being more than indemnified have on the demand for insurance. That is, only the insurer can have punitive damages levied against him. The insured is never at risk for having to pay a punitive damage verdict.

The remainder of this paper is organized as follows: section two describes the relevant previous literature, section three develops our model. Section four concludes.

## 2. PREVIOUS LITERATURE

The earliest work modeling of the demand for insurance, Mossin (1968) and Smith (1968), showed situations where risk averse insureds would vary their demand for insurance. Mossin (1968) shows that with actuarially fair priced insurance, optimal behavior for risk averse insureds is to purchase full insurance. He further shows that purchasing less than full insurance is also optimal when the insurance is unfairly priced. Smith (1968) also proves that at its basic level, the demand for insurance is driven by the premium loading. The models in Mossin (1968) and Smith (1968) both prove the above mentioned characteristics of insurance purchased through a technology employed in this paper. As such, we will undertake a brief review of their model. Consider an (potential) insured that will incur a loss $L$ with probability, $p$. The insured will be able to purchase any proportion of insurance given by $\alpha$ ($\alpha$ is bounded below by zero, and above by one). His insurance premium will be the expected loss scaled by the proportion insured and by a loading factor. His premium is then given by $\alpha mpL$, where $m$ is the loading factor, greater than, or equal to one. Further, it is assumed that the individual has some initial, non-random, wealth $W$ such that his final expected wealth will be given by $A_L(\alpha) = W - \alpha mpL - L + \alpha L$ with probability, $p$, and $A_{NL}(\alpha) = W - \alpha mL$ with probability, $1 - p$. Now, assume the risk averse individual has a standard von Neumann-Morgenstern utility function, $U$, such that $U'' < 0 < U'$. Then, the individual simply maximizes his expected utility of final wealth over his choice of insurance purchase, $\alpha$. That program is simply:

$$\max_{\alpha} \; EU = pU(A_L(\alpha)) + (1-p)U(A_{NL}(\alpha))$$

The first order condition of this maximization problem is then given as:

$$\frac{\partial EU}{\partial \alpha} = pL(1-mp)U'(A_L(\alpha)) - (1-p)mpU'(A_{NL}(\alpha)) = 0$$

Because of the assumption of concavity of the individual's utility function, the second order condition of this problem is satisfied. As such, the optimal $\alpha$ will be an optimal solution. Setting $\alpha$ equal to one in the first order condition yields:

$$\left.\frac{\partial EU}{\partial \alpha}\right|_{\alpha=1}$$

$$= pL(1-mp)U'(A_L(1)) - (1-p)mpU'(A_{NL}(1))$$
$$= -U'(A_{NL}(1))pL[(1-p)m - (1-mp)].$$

It is then easy to see Mossin's and Smith's results. If the insurance is fairly priced, i.e. $m = 1$, then the first order condition evaluated at full insurance is equal to zero. Thus, the optimal level of insurance is full insurance, or $\alpha = 1$.

If it is assumed that competitive markets exist, then pure profit loadings of insurance companies must be minimized. As a result, insurance policies should be assumed to be fairly priced and full insurance should be widely observed. However, most insurance policies are sold with risk sharing mechanisms in place. Other models put forth alternative explanations as for why these deductibles, coinsurance provisions, and other risk sharing mechanisms are utilized in a competitive market. Rothschild and Stiglitz (1976) show that risk sharing is an appropriate mechanism for insurers to screen insureds based on their loss probabilities. Insurers are posited to use risk sharing in an effort to have the high risk insureds distinguish themselves from the low risk. Low risk individuals are shown to desire less than full insurance (even if fairly priced) so that they may get rates that reflect their true risk class (as opposed to being lumped in with the high risk insureds). This result does not necessarily hold in competitive environments. Rothschild and Stiglitz further show that when considering competitive markets, there is again a separating equilibrium, but that this equilibrium may not always exist. However, when it does exist, it is again shown that the low risk types separate themselves by purchasing less than full insurance while the high risk types continue to purchase full insurance. Pauly (1968, 1974) shows that risk sharing in insurance can result from moral hazard. Insurers offer (and insureds purchase) products that supply less than full insurance so that the care taken by insureds is optimal. Otherwise, full insurance would create a tendency for insureds to lessen the care taken for loss prevention. With moral hazard and adverse selection, the information asymmetries between the insured and insurer create demand for insurance products that offer less than full coverage, even at actuarially fair premium levels.

More recent work has focused on insured's background risk as to the reason why full insurance is not undertaken. These models put forth some additional uninsurable risk that the insured faces. For instance, Doherty and Schlesinger (1990) develop a model where there exists a possibility that the insurance company will be insolvent. The insured therefore faces the chance that even if he incurs a loss, he will not get paid. In this model, the authors find that full insurance is not optimal even when the insurance is fairly priced.

In addition to the threat of insolvency, other works have analyzed situations where the insured faces another type of uninsurable background risk. These models assume that in addition to the insurable asset, the insured has some non-insurable, risky, asset that affects wealth. Various studies have altered how the structure of the insurable and non-insurable risk interact with each other. Schlesinger (2000) presents a model with a background risk that is independent and additive with respect to the insurable risk. He shows that with fair insurance, the background risk does not change the "typical" demand solution. That is, the insured still purchases full insurance. However, when a loading factor is introduced, the insured is shown to still purchase less than full insurance, but more insurance than if the background risk was not present.

What these models have yet to include is the possibility that the insured gets more than their incurred loss. This would most often happen if the insurer is taken to court and punished for bad faith negotiating. In this situation, the insured is likely to be awarded a verdict that exceeds his initial claim. The models presented here incorporate this possibility and determine the optimal level of insurance associated with this problem.

This paper approaches this problem by allowing the insured to face some threat of claim non-payment (whether the reason be insolvency, bad faith negotiating, etc.) as well the possibility of an award (any type of vexatious award as well punitive damages) beyond the initial claim. Within this framework, we show that awards that extend the level of compensation beyond the economic loss are welfare reducing. This result is particularly important considering the intent of punitive damage awards. These awards are meant to protect insureds from bad-faith negotiating by insurers, and to ensure that insureds are fairly compensated if they incur a loss. If instead these awards create an incentive for insureds to reduce insurance coverage, then the punitive damage awards are counterproductive.

## 3. BASIC MODEL

Consider an insured (with standard von Neumann-Morgenstern utility), $U$, such that $U'' < 0 < U'$, who will face a loss of $L$ with probability $p$ or no loss with probability $1 - p$. Conditional on a loss, the insurer will operate in one of three states: (1) insurer pays the claim (whether he settles or loses a court judgment) (this occurs with probability $q_1$); (2) insurer does not pay claim (this includes the insurer winning a court judgment) (this occurs with probability $q_2$); (3) insurer pays the claim and additional damages resulting from bad faith negotiating ($D$) (this occurs with probability $1 - q_1 - q_2$).

In addition to these three states, the insured will often not suffer a loss. Therefore, there are four possible wealth outcomes for the insured. First, assume he suffers no loss. His final wealth is then simply his current asset level ($W$) less the insurance premium he pays ($P(\alpha)$, where $\alpha$ is the level of insurance chosen). Second, the insured suffers a loss, but does not get paid by the insurer. In this case, his final wealth is equal to $W - P(\alpha) - L$. Third, the insured suffers a loss and is indemnified by the insurance company. His final wealth in this case is $W - P(\alpha) - L + \alpha L$, where, again $\alpha$ ($\alpha \in [0,1]$) is the level of insurance he chooses. In the final state, the insured is indemnified, but also obtains an extra award ($D$). In this case, his final wealth is $W - P(\alpha) - L + \alpha L + D$. We further assume that initial wealth $W$ is large enough to cover the premium and loss so that even in the worst-case scenario, the insured's final wealth is nonnegative.

The insured will choose $\alpha$ to maximize his expected utility, as given below:

$$EU = (1-p)U(W-P(\alpha)) + pq_2U(W-P(\alpha)-L) + pq_1U(W-P(\alpha)-L+\alpha L)$$
$$+p(1-q_1-q_2)U(W-P(\alpha)-L+\alpha L+D)$$

where the premium for the insurance ($P(\alpha)$) is given by the following:

$$P(\alpha) = \alpha mpL(1-q_2) + mp(1-q_1-q_2)D.$$

We will further suppress the arguments within the utility function for notational ease. Let $W_1 = W - P(\alpha)$, $W_2 = W - P(\alpha) - L$, $W_3 = W - P(\alpha) - L + \alpha L$, and $W_4 = W - P(\alpha) - L + \alpha L + D$.

Notice that the premium anticipates the punitive damage award. As given above, the premium is the total expected loss of the insurer. Also, it is assumed that the loading factor ($m$, $m \geq 1$) is the same for the expected loss as well as the expected punitive damage award. This need not be the case.[2] One loading factor is used for simplicity.

The insured's complete program is now given by the following:

$$\max_{\alpha} \; (1-p)U(W_1) + pq_2U(W_2) + pq_1U(W_3) + p(1-q_1-q_2)U(W_4). \quad (1)$$

The first order condition of the maximization problem is shown below:

$$\begin{aligned} &-(1-p)U_1'\frac{\partial P(\alpha)}{\partial\alpha} - pq_2U_2'\frac{\partial P(\alpha)}{\partial\alpha} - pq_1U_3'[\frac{\partial P(\alpha)}{\partial\alpha} - L] \\ &-p(1-q_1-q_2)U_4'[\frac{\partial P(\alpha)}{\partial\alpha} - L] = 0 \end{aligned} \quad (2)$$

where:

$$\frac{\partial P(\alpha)}{\partial\alpha} = mpL(1-q_2).$$

We further suppress the arguments of the utility function for notational ease. $U_i$ represents the utility of the insured with wealth $W_i$, not a state dependent utility function. Rearranging, the following result is obtained:

$$q_1U_3' + (1-q_1-q_2)U_4' = BU_1' + CU_2' \quad (3)$$

where $B = \frac{(1-p)m(1-q_2)}{1-mp(1-q_2)}$ and $C = \frac{q_2mp(1-q_2)}{1-mp(1-q_2)}$.

Normalizing (3) by dividing through by $1 - q_2$ results in:

$$JU_3' + KU_4' = MU_1' + NU_2'$$

where $J = \frac{q_1}{1-q_2}$, $K = \frac{1-q_1-q_2}{1-q_2}$, $M = \frac{B}{1-q_2}$ and $N = \frac{C}{1-q_2}$.

$J$, $K$, $M$, and $N$ are all less than one and greater than zero. Furthermore, $J + K = 1$, always, and $M + N = 1$ if $m = 1$.

Assume, for now, that $m = 1$.[3] In this case, $J + K = 1$ and $M + N = 1$. It is also known that since $U_3 < U_4$, then $U_3' > U_4'$. Therefore, $U_3' > MU_1' + NU_2'$. Since $U_1' < U_2'$, it is easy to see that $U_3' > U_1'$ which then implies that $U_3 < U_1$. This then implies that the optimal level of insurance is less than 1.

If the assumption that $m = 1$ is relaxed, the same result does not necessarily hold. $J + K = 1$ regardless of the level of $m$ implying that

$U_3' > MU_1' + NU_2'$. However, if $m$ is large enough such that $M$ and $N$ are negative, then it is possible that $U_3 = U_1$, implying that full insurance is optimal.

It is also interesting to see how this result compares to the result of traditional background risk models where there are no possibilities of awards beyond the economic loss. If bad faith bargaining awards are disallowed, the same solution as Doherty and Schlesinger (1990) is obtained. Mathematically the result would be:

$$U_3' = MU_1' + NU_2'.$$

Notice that with the inclusion of punitive damage awards:

$$U_3' > MU_1' + NU_2'.$$

Therefore, the optimal level of insurance after punitive damage awards are added to the background risk model has *decreased*. It seems likely that the punitive damage awards act as "over-insurance" to the insured. The insured then attempts to "undo" this exogenously determined over-insurance by reducing the amount of insurance purchased. This is especially true when the premium is a function of the additional awards.

This result would seem contrary to the intent of punitive damages as a public policy mechanism. In this case, punitive damages are included as part of the legal process as a means to reduce the incentive for the insurer to act in bad faith. From the insured's perspective these awards, therefore, allow for a fairer (and timely) loss settlement. If these punitive awards are actually reducing the amount of insurance purchased, they are having an unintended effect. That is, rather than an insured being fully compensated for their loss, the insured is reducing the insurance in place and thereby reducing their compensation from a loss.

## 3.1 Comparative Statics

It is useful to look at some comparative statics of the above result in order to determine how the optimal level of insurance can change with parameter variation. Specifically, how does the optimal level of insurance vary with changes in the level of extra-compensatory damages? Mathematically, that requires solving for $\frac{d\alpha^*}{dD}$. To derive this result, the Implicit Function Theorem (IFT) is used. The IFT asserts that:

$$\frac{d\alpha^*}{dD} = -\frac{\dfrac{\partial^2 EU}{\partial\alpha\partial D}}{\dfrac{\partial^2 EU}{\partial\alpha^2}}. \tag{4}$$

Because of concavity, the denominator of (4) will be negative.[4] Therefore the sign of (4) will always be the same as the sign of the numerator. The numerator is:

$$\frac{\partial^2 EU}{\partial\alpha\partial D} = -q_1 U_3'[\frac{\partial P(\alpha)}{\partial D}] - (1-q_1-q_2)U_4'[\frac{\partial P(\alpha)}{\partial D} - 1]$$
$$+BU_1'[\frac{\partial P(\alpha)}{\partial D}] + CU_2'[\frac{\partial P(\alpha)}{\partial D}] < 0$$

where

$$\frac{\partial P(\alpha)}{\partial D} = mp(1-q_1-q_2) > 0.$$

Since $\frac{\partial \alpha^*}{\partial D} < 0$, then as the level of $D$ increases, the optimal level of insurance decreases. Therefore, if risk averse individuals prefer more insurance to less (capped, of course, at full coverage), it appears as if the punitive damage awards are welfare reducing to risk averse insureds. This is again consistent with insureds undoing the over-insurance effects of punitive damage awards by purchasing less insurance.

## 4. CONCLUSION

Utilizing a basic model of the demand for insurance, we show that punitive damage awards reduce the demand for insurance. Though punitive damage awards are ostensibly used to protect policyholders from bad faith actions on the part of insurers, these awards are shown to reduce levels of insurance. These results are a direct result of the extra-compensatory awards being priced into the insurance policy. The insured does not have access to a "free" lottery. Rather, the amount he is expected to obtain via the court system will be priced into his insurance policy. As such, the price of the insurance goes up, which leads to a decrease in the demand. Though intuitive, this result is quite important. Bundling a pure insurance product with a punitive damage lottery seems to be welfare reducing. That is, insureds are buying less insurance with the potential punitive damage award included, than without. That is, insureds are undertaking a less than optimal transfer of risk.

Given data availability, this is a potentially empirically testable conclusion. Variability with respect to jury awards vary across the United States. In states where juries are more sympathetic to plaintiffs, and offer higher punitive awards (or punitive awards with a higher probability), we should see demand for insurance reduced. An additional extension would be to consider the insurer and insured's bargaining process in the shadow of punitive damages (Eckles (2010)).

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## Notes

1. For example, in 2001 a Kentucky jury awarded an insured $98,000 (her policy limit was $25,000); a California couple was awarded an $11 million punitive damage verdict; a California jury awarded an insured $40 million in punitive damages for bad faith; in 2001 a Texas jury awarded Melinda Ballard $17 million in punitive damages in a bad faith claim. Most recently, as jury in Mississippi imposed a $2.5 million penalty on State Farm for denying Hurricane Katrina related claims (this award was subsequently reduced to $1 million). [This list is taken from Foggan (2001). Also see Foggan (2001) for a list of recent cases resulting in punitive damages for the reasons listed.]

2. Applying a larger (smaller) loading on the punitive damage component of the premium will serve to increase (decrease) the effect of punitive damages on the demand for insurance.

3. Allowing $m$ = 1 is a standard assumption made consistent with competitive insurance markets.

4. See Appendix A for proof.

# APPENDIX A

Proof that $\frac{\partial^2 EU}{\partial\alpha\partial D} < 0$:

It is known that:

$$\frac{\partial^2 EU}{\partial\alpha\partial D} = -q_1 U_3''[\frac{\partial P}{\partial D}] - (1-q_1-q_2)U_4''[\frac{\partial P}{\partial D} - 1] + BU_1''[\frac{\partial P}{\partial D}] + CU_2''[\frac{\partial P}{\partial D}]$$

Then $\frac{\partial^2 EU}{\partial\alpha\partial D} < 0$ if:

$$-q_1 U_3''[\frac{\partial P}{\partial D}] < (1-q_1-q_2)U_4''[\frac{\partial P}{\partial D} - 1] - BU_1''[\frac{\partial P}{\partial D}] - CU_2''[\frac{\partial P}{\partial D}]. \quad (5)$$

Dividing through by $U_3''$ and $\frac{\partial P}{\partial D}$, (5) reduces to:

$$-q_1 > (1-q_1-q_2)\frac{U_4''}{U_3''}[1-[\frac{\partial P}{\partial D}]^{-1}] - B\frac{U_1''}{U_3''} - C\frac{U_2''}{U_3''} \quad (6)$$

Because $U_2 < U_3$, by prudence, $U_2'' < U_3''$. Since $U'' < 0$, $\frac{U_2''}{U_3''} > 1$. Therefore, $-\frac{U_2''}{U_3''} < 1$. Similarly, $-\frac{U_1''}{U_3''} < 1$ and $\frac{U_4''}{U_3''} < 1$. Then, (6) holds if:

$$-q_1 > (1-q_1-q_2)[1-[\frac{\partial P}{\partial D}]^{-1}] + B + c \quad (7)$$

Assuming $m = 1$, then (7) becomes:

$$-q_1 > (1-q_1-q_2)[1-[\frac{1}{p(1-q_1-q_2)}]] + 1 - q_2$$

$$\frac{1}{2} > p(1-q_2)$$

Only the innocuous assumptions that $p \leq \frac{1}{2}$ and that $q > 0$ are further needed to obtain the result.