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Deterring Fraud: The Role of General Damage Awards in Automobile Insurance Settlements

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Abstract

Awards for pain and suffering and other noneconomic losses account for over half of all damages awarded under third-party auto insurance bodily injury settlements. This article hypothesizes that third-party insurers use general damage awards to reduce the incentive to submit exaggerated claims for specific damages for injuries and lost wages. Consistent with this hypothesis, the article finds evidence using data on over 17,000 closed bodily injury claims that special damage claims that exceed their expected value receive proportionally lower general damage awards than claims that do not. Among the implications of this research is the possibility that insurers will be less zealous in challenging fraudulent special damage claims under a third-party insurance regime than they will be under a first-party insurance regime in which access to general damages is limited.

Introduction

It is commonly argued that the treatment of nonpecuniary losses under the U.S. tort system yields general damage awards[1] that are both inefficient and inequitable.[2] The

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[1] According to the American Law Institute, general damages encompass the following: (1) tangible physiological pain suffered by the victim at the time of injury and during recuperation, a period that may be lengthy but that is more often brief; (2) the anguish and terror felt in the face of impending injury or death, both before and after an accident; (3) the immediate emotional distress and long-term loss of love and companionship resulting from the injury or death of a close family member; (4) the enduring loss of enjoyment of life by the accident victim who is denied the pleasures of normal personal and social activities because of his permanent physical impairment (ALI, 1991).

[2] See, for example, Shavell (1987) for a discussion of the economic efficiency of general damage awards.

alarm sounded over general damages awards is in part attributable to the sheer size of these awards. Between 1985 and 1995 the median general damage award in jury cases awarding positive special damages for medical costs, personal property damage, lost wages, and other quantifiable damages came to $180,000 ($2001).[3] While the magnitude of general damage awards is clearly of concern to critics, the perception that these awards bear little relation to the actual damages suffered raises even greater alarm (ALI, 1991). The American Tort Reform Association (ATRA) argues, for example, "The broad and basically unguided discretion given juries in awarding damages for noneconomic loss is the single greatest contributor to the inequities and inefficiencies of the tort liability system" (ATRA, 2000, p. 19).

The vast majority of damage suits, of course, are settled out-of-court. This is especially true in the case of damages arising from automobile accidents. In 1997, more than 99 percent of all third-party bodily injury (BI) claims were settled routinely out-of-court by insurance companies.[4] In that same year, general damages accounted for 58 percent of total paid claims under third-party BI insurance.

It is a matter of popular lore among automobile insurance adjusters and plaintiff attorneys that general damages should amount to a simple multiple of compensation for specific economic harms (special damages) (Ross, 1980).[5] While this may be true of initial offers proffered by either side, evidence from automobile insurance settlements and jury awards clearly indicates otherwise. General damage awards vary enormously conditional on a given level of special damages and, while general and special damages are positively correlated, the relationship is not linear. In the closed automobile claim data used in this article, the unconditional elasticity of general damages with respect to special damages is 0.75, indicating that general damages decline as a fraction of special damages as special damages rise. In this article, I show that this inelastic relationship between general and special damages emerges as the solution to a principal-agent problem between insurers and claimants in which claimants possess private and hidden information about the true extent of their injuries.

The difficulty inherent in diagnosing the severity of the types of injuries typically suffered in automobile accidents—soft-tissue injuries or "sprains and strains"—makes automobile insurance fraud relatively inexpensive to perpetrate and costly to deter. By one estimate, 36 percent of all BI claims are thought to be fraudulent or exaggerated, inflating the cost of auto insurance by between 17 and 20 percent, or $5.2–$6.3 billion in 1996 (Insurance Research Council, 1996). Insurers have two basic strategies at their disposal for addressing fraud. One strategy is to detect fraud by conducting detailed audits of suspicious claims and challenge those for which they find

[3] Author's calculation using the RAND Civil Jury Database.

[4] Disputes arising over liability for and the extent and apportionment of damages incurred in automobile accidents represent nearly half of all civil cases tried to verdict in the United States (BJS, 2000).

[5] For example, the personal injury law center at http://www.nolo.com advises that general damages are valued at 1.5–2 times medical costs for minor injuries and five times medical costs for major injuries. http://www.autoaccidentclaims.com maintains general damages are worth two to four times total medical costs and lost wages.

sufficient evidence of fraud.[6] The expected value of this strategy, however, may be low since audits are expensive to conduct, many injuries are inherently difficult to objectively diagnose, and the cost of challenging a claim in court is high. A second strategy available to insurers is to deter fraud by designing an indemnity schedule that diminishes the incentive to commit fraud. In the case of first-party insurance, it has been shown that an optimal insurance contract in the presence of asymmetric information and costly state falsification, entails an indemnification schedule that is less responsive to damages claimed than would be the case were fraud not possible (Crocker and Morgan, 1998). That is, in a setting in which, at a cost, claimants can fraudulently inflate the value of their claim, and insurers have no ability to observe the true value of the claim, insurers may underindemnify large claims in order to create a disincentive to engage in fraud.

Crocker and Tennyson (2002) further demonstrate that third-party insurers also have an incentive to "flatten" the indemnification schedule. While third-party insurers cannot offer an insurance contract that *explicitly* offers less than full reimbursement for documented medical costs, lost wages, and other specific economic damages, they may, during negotiations, successfully challenge special damage claims that they suspect are exaggerated or otherwise fraudulent. In support of this hypothesis, Crocker and Tennyson (2002) find that special damages paid are less responsive to special damages claimed when the injury could be easily falsified. As just noted, though, challenging special damage claims can be costly for insurers.

This article, therefore, argues that general damages, which are inherently difficult to monetize and, consequently, highly negotiable, provide insurers an alternative means of flattening the total indemnification schedule when systematically underindemnifying special damages in a third-party setting is infeasible. Crocker and Tennyson (2002) make a similar point regarding general damages (p. 501), but it is not the central argument of their article as it is here. Crocker and Tennyson (2002) do not aim to explain the basic stylized fact that general damages decline as a proportion of special damages as special damages rise. They also test a different set of hypotheses: namely, do special and total damages paid respond less to special damages claimed when the claim is for a sprain or strain or lost wages than in the case of more easily verified injuries?[7] This article explores a more general, but complementary, hypothesis that the ratio of general to special damages paid responds systematically to deviations between the insurer's expected value of a claim and the value claimed by the injured party and so contributes to the existing literature by providing an alternative test of the costly state falsification hypothesis and offering an explanation based in economic theory for the observed relationship between general and special damage awards.

The remainder of the article has the following structure. I first describe the closed-claims data employed in this article and present evidence on the overall observed

[6] In theory and in practice, auditing also serves the purpose of deterring fraud (Picard, 2000; Tennyson and Salsas-Forn, 2002).

[7] Crocker and Tennyson (2002) find that total damages paid (the sum of special and general damages paid) are even less responsive to special damages claimed in the case of less verifiable injuries than are special damages paid. This finding is consistent with the central hypothesis of this article that general damages offer insurers greater leverage in effecting a flattened indemnification schedule in third-party settings.

relationship between general and special damages in "The IRC Closed-Claim Data." In "General Damages and the Claims Settlement Process," I argue that the costly state falsification model of Crocker and Morgan (1998) together with inherent differences between special and general damages implies that, within-injury categories, general damages paid should decline as a fraction of special damages paid as special damages claimed increase. I then show using the closed-claim data that within-injury patterns in the ratio of general to special damages paid are consistent with the predictions of the theoretical model and a simple characterization of the claims settlement process ("Within-Injury Variation in *GS_Rat*"). The article concludes in "Conclusions" section.

THE IRC CLOSED-CLAIM DATA

The data for this article come from a sample of 44,276 closed BI claims collected by the Insurance Research Council (IRC).[8] The sample represents a census of all auto claims closed by participating insurance companies over a 2-week period in 1997. The participating insurance companies represented 67 percent of the auto insurance market in 1997. The IRC data contain detailed information about accident circumstance, claimed injuries, settlement amounts, and demographic information about the claimants.

I impose a number of restrictions on this sample of claims in order to focus the analysis on the typical, "bread-and-butter," BI case (see Table 1). First, I restrict the sample to claims in which an injury was reported and known to the insurer, the injury did not result in a fatality or permanent disability, and the injury was not of an unusually severe variety (permanent brain injury, loss of body part, paralysis, temporomandibular joint dysfunction, or loss of taste, smell, sight, touch, or hearing). These restrictions are intended to exclude unusually severe and rare injuries which, consequently, may receive unusual general damage awards. I then drop BI claims filed in the 13 states that in 1997 offered no-fault auto insurance in which claimants collect primarily from their own insurance regardless of fault. No-fault insurance prohibits claimants from suing for general damages unless special damages exceed some verbal or dollar threshold.[9] I further restrict the sample to claimants not at fault for the accident since it is unclear how adjusters use that information to adjust damage awards in the IRC data. Moreover, conditional on the claimant having any fault, degree of fault may be part of the overall settlement negotiation. Claims that go to trial are rare—1 percent of all claims—and may entail unusual damage assessments; these claims are dropped from the sample. Altogether, these restrictions eliminate 51 percent of the original sample with the largest reductions attributable to focusing on tort claims in which the claimant is not at fault.[10]

An important feature of the IRC data is its apportionment of total damages paid and claimed into special and general damages. Roughly one quarter of the remaining claims record missing or zero special or general damages claimed or paid. I drop 967

[8] The IRC was formerly known as the All-Industry Research Advisory Council (AIRAC). See IRC (1999) for more detail on the closed-claim data.

[9] In 1997, the strict no-fault states included Colorado, Florida, Hawaii, Kansas, Massachusetts, Michigan, Minnesota, New York, North Dakota, and Utah. Kentucky, Pennsylvania, and New Jersey offered so-called choice auto insurance in which drivers can choose between first and third-party coverage.

[10] A total of 5,381 claims are lost due to missing data on degree of fault.

TABLE 1
Sample Restrictions

Restriction	Sample Size
All claims	44,276
At least one injury claimed and highest injury known	41,333
Nonfatality, nonpermanent disability claim[a]	36,183
Tort claims[b]	30,053
Claimant not at fault[c]	21,987
Claim settled prior to trial	21,803
Positive age	21,696
Nonmissing special and generals damages paid	20,729
Positive special damages claimed	18,744
Positive special damages paid	17,590
Trim bottom and top one percent *GS_Rat*	17,415

[a]This also excludes rare injuries: permanent brain injury, loss of body part, paralysis, temporomandibular joint dysfunction, and loss of taste, smell, sight, touch, or hearing.
[b]We also drop claims in Puerto Rico.
[c]This includes 5,381 claims for which degree of fault is missing.
Source: 1997 IRC Closed-Claim Data.

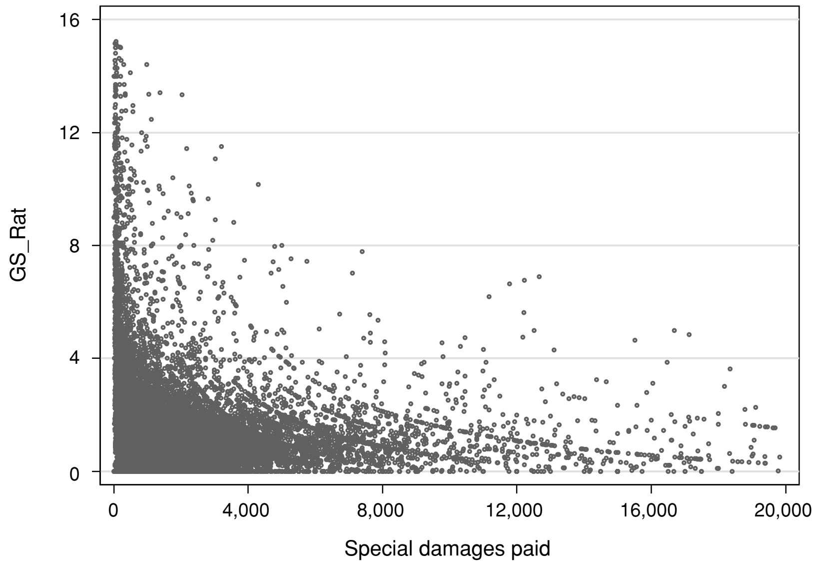
claims with missing data on special and general damages paid. Of those remaining, 1,955 recorded no special damages claimed. I drop these cases since it is unclear how a claim in which the claimant incurred no pecuniary losses would be treated by an insurer and reporting error could be responsible for many of these claims. About 6 percent of the remaining claims reported no special damages paid. These claims record median special damages claimed of $1,720, compared to $1,514 for claims in which both special and general damages were paid. Median general damages paid in this sample were somewhat higher—$2,500 compared to $1,686. In a variety of other dimensions—attorney representation, time to settlement, insurer scrutiny, injury severity—claims in which no special damages were paid are not distinguishable from other claims. In some of these cases, another insurance policy might have paid the special damages, but the claimant nonetheless recovered general damages from the BI insurer recorded in the data. The data, unfortunately, do not provide any indication of this. Regardless, since the dependent variable in this article is the ratio of general to special damages paid (*GS_Rat*), I must drop the remaining claims in which no special damages were paid.[11] Finally, in order to remove outliers, I rank claims by *GS_Rat* and trim the top and bottom 1 percent.[12] The final sample contains 17,415 claims.

To illustrate the large variation in general damages conditional on special damages in the closed-claim data, I plot *GS_Rat* against special damages claimed in Figure 1.

[11] In results not presented here, I define *GS_Rat* as the ratio of general damages paid to special damages claimed, which allowed me to retain the cases in which special damages were claimed but not paid. Employing this alternative definition of *GS_Rat* had no substantive impact on the results reported below.

[12] Before trimming, the largest *GS_Rat* ranges from 0 to 405.4. After trimming, *GS_Rat* ranges from 0 to 15.2.

FIGURE 1
Plot of *GS_Rat* and Special Damages Paid



Notes: See Table 1 for sample restrictions. Sample further restricted to claims with special damages less than $20,000.
Data source: 1997 IRC Closed-Claim Data.

It is clear from the figure that general damages decrease as a proportion of special damages paid as special damages paid increase. It is also clear from the figure that claims with similar levels of special damages paid receive a wide range of general damage payments. It is these two stylized facts that this research seeks to explain.

Table 2 tabulates *GS_Rat* across deciles of the special damages distribution. In the bottom decile of claims where mean special damages are $115, mean *GS_Rat* equals 3.30. This ratio falls by more than one third to 1.94 in the second decile where mean special damages total $303. The ratio falls again to 1.55 in the third decile and declines at a slower rate thereafter. In the tenth decile (mean special damages = $10,863), mean *GS_Rat* is 1.03. A similar pattern is evident if we look at medians in the final two columns of Table 2, although median *GS_Rat* in the bottom decile is only 2.50. Once again, though, *GS_Rat* falls by more than one third to 1.52 in the second decile and then continues to decline reaching 0.82 in the top decile of the special damages distribution. By either measure, it is clear that general damages account for a declining fraction of total settlements as total settlements increase. In the remainder of the analyses, I report median ratios.

In Table 3, I consider a number of simple explanations for the observed pattern in *GS_Rat*. One possible explanation is that policy limits constrain general damage awards in the more extreme cases. Consider, for example, a claimant who sustains an injury entailing $6,000 in special damages and whose policy limit is $10,000. General damages paid by the insurer at most could total $4,000 in this case. An individual sustaining a less serious injury could exact a proportionally more generous general

TABLE 2
GS_Rat by Special Damages Paid Decile

Special Damages Paid Decile	Mean		Median	
	Specials	*GS_Rat*	Specials	*GS_Rat*
Low	115	3.30	108	2.50
20	303	1.94	300	1.52
30	523	1.55	514	1.13
40	815	1.45	810	1.14
50	1,174	1.41	1,170	1.18
60	1,646	1.34	1,640	1.19
70	2,213	1.36	2,207	1.20
80	2,949	1.20	2,942	1.05
90	4,187	1.14	4,095	0.97
High	10,863	1.03	7,944	0.82

Notes: See Table 1 for sample restrictions.
Source: 1997 IRC Closed-Claim Data.

TABLE 3
GS_Rat by Special Damages Decile: Sample Restrictions

Special Damages Paid Decile	All	Policy Limits ≥ 4 × Special Damages	*GS_Rat* = Generals/ Medical Costs	No Attorney
Low	2.50	2.50	2.57	3.00
20	1.52	1.53	1.69	1.69
30	1.13	1.12	1.30	1.44
40	1.14	1.13	1.31	1.09
50	1.18	1.18	1.44	0.95
60	1.19	1.18	1.31	0.97
70	1.20	1.19	1.33	0.94
80	1.05	1.05	1.18	0.93
90	0.97	0.97	1.12	0.80
High	0.82	0.83	1.12	0.75
n	17,415	16,581	16,981	9,142

Notes: See Table 1 for sample restrictions.
Source: 1997 IRC Closed-Claim Data.

damage award since the policy limit would be less binding. In practice, though, policy limits are not binding in the vast majority of cases. Over 80 percent of all claimants in this sample have single policy limits of at least $25,000; 58 percent of policy limits exceed $50,000. In the second column of Table 3, I drop all observations in which the claimant's policy limits are not at least four times as large as his or her special damages. This sample restriction has little effect on the pattern of *GS_Rat*. As before, the ratio declines with increases in special damages.

While we might expect general damages to increase with medical costs, it is less clear that they should increase with lost wages. Medical costs might reasonably proxy for pain and suffering whereas lost wages capture other characteristics of the claimant less correlated with pain suffering. If this is true and lost wages increase more than proportionally with medical costs, then we might observe general damages falling as a fraction of special damages as special damages rise. The trouble with this explanation is that lost wages increase much more slowly than do medical costs (the elasticity of lost wages with respect to medical costs is 0.53 in our sample). Moreover, I show in column 3 of Table 3 that *GS_Rat* follows the same pattern as before when specified as the ratio of general damages to medical costs, thus removing the potentially confounding effect of lost wages.

Yet another reason why we might observe *GS_Rat* declining with special damages is the possibility that general damage awards pay attorney costs and attorney costs tend to decline as a proportion of the total award as the award increases. As a quick check of this hypothesis, I restrict the sample in the next to last column of Table 3 to claimants not represented by an attorney (53 percent of the total sample). As can be seen, *GS_Rat* continues to decline with special damages in the nonattorney sample.[13]

The most straightforward explanation for why the ratio of general to special damages declines with special damages may be that pain and suffering simply is not proportionally related to injury costs. More expensive injuries do not necessarily entail proportionally more pain and suffering than less expensive injuries. As we shall see, however, a model of the claims settlement process put forth in the following section, and the empirical analyses of "Within-Injury Variation in *GS_Rat*" section, suggest an alternative explanation.

GENERAL DAMAGES AND THE CLAIMS SETTLEMENT PROCESS

Fraudulent claiming is thought to be a particularly acute problem in auto insurance.[14] For the purposes of this article, we can divide fraudulent claims into two categories. The first type of fraudulent claim involves the explicit collusion between claimant and

[13] I directly control for all three of these variables—policy limits, lost wages, and attorney representation—in the regressions reported in "Within-Injury Variation in *GS_Rat*" section.

[14] There are at least three studies of the extent of claim falsification in auto insurance claims. The Florida Insurance Research Center estimated that 13 percent of Florida personal injury protection (PIP) claims are suspected of some form of claim falsification (IRC, 1993). A similar study by the Automobile Insurers Bureau of Massachusetts found that 9 percent of Massachusetts PIP claims were strongly suspicious and 20 percent were moderately suspicious (Derrig and Weisberg, 1995). The most comprehensive study of claim falsification for automobile injuries was conducted by the Insurance Research Council (IRC) using their 1992 closed-claim data. Senior claims personnel in 28 insurance companies reviewed 12,212 BI and 3,007 PIP claims in nine states and reported their level of suspicion regarding claim falsification in each claim. Overall, 36 percent of these claims displayed some evidence of falsification. The claims personnel suspected 20 percent of BI claims involved buildup only, 13 percent fraud and buildup, and 3 percent fraud only. A substantial fraction of consumers themselves apparently believe claim falsification is justifiable. Tennyson (1997) reports that about 20 percent of automobile insurance consumers agreed at least somewhat with the statements "It is all right to increase a claim by a small amount to make up for the deductible" and "It is all right to increase a claim by a small amount to make up for past premiums."

a medical service-provider to make claims for nonexistent injuries and treatments. The second type of fraudulent claim involves the intentional exaggeration of real injuries. This may commonly involve pursuing excessive treatment for real injuries.[15] From a legal perspective, both types of claiming are fraudulent since they involve deliberate deception on the part of the claimant. From an insurer's perspective, however, the second type of fraudulent claiming, often referred to as buildup, is a softer, more difficult to prove, and more common form of fraud.[16]

There are two basic methods by which an auto insurer can reduce the prevalence of fraudulent claiming. The first method is via *ex post* monitoring and verification of claims.[17] Insurers investigate the validity of special damage claims by contacting doctors, performing their own medical exams, verifying wage rates and work absences, and conducting other research. *Ex post* monitoring is costly and uncertain, however, and apparently relatively rare in third-party auto insurance. In only 2 percent of our closed-claim sample, for example, did the insurer request an independent medical exam to verify injury claims; in fewer than one-third of claims did the insurer audit submitted medical bills. Challenging an auto insurance claim in court is perhaps the most extreme example of *ex post* verification, the cost of which is so high to both the insured and insurer that it is very rare for an auto claim to be settled in court, especially those in which fault or liability is not in question. Claimants formally filed suit in only 16 percent of the IRC auto claims and only 1 percent of those suits were actually tried in court.

A separate approach to deterring fraud is known in the economics literature as costly state falsification. In this environment, it is assumed that claimants can, at a cost, permanently conceal the magnitude of their actual loss from the insurer. Such costs might include the expected cost of any penalties associated with being found guilty of fraud as well as costs associated with defending the proposed damage amount like obtaining fraudulent receipts for medical treatment, hiring a lawyer, and building a case for expected costs incurred in future periods (e.g., future medical bills and lost wages). Under the assumption that the cost of concealing the actual loss is increasing in the level of fraud perpetrated, Crocker and Morgan (1998) show that the solution to the principal-agent problem entails an optimal insurance contract that overindemnifies small losses and underindemnifies large losses. A completely flat indemnification schedule, of course, would eliminate any incentive to engage in fraud. The optimal contract, then, lowers the incentive to engage in fraud at the cost of less consumption smoothing for the risk-averse insured.

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[15] A third type of fraudulent claim involves staged-accidents and the like. The theory I present below is more relevant to the problem of exaggerating special damages beyond their true value following a real accident.

[16] A similar categorization of fraudulent claiming can be found in Weisberg and Derrig (1991), Carroll and Abrahamse (2001), and IRC (1996).

[17] In the economics literature, this strategy has been referred to as costly state verification and was originally analyzed by Townsend (1979). Bond and Crocker (1997) derive conditions for an optimal first-party insurance contract when insurers can verify actual loss at a cost and insured parties may engage in evasive activities that increase the costs of verification. They demonstrate that the optimal insurance contract in this environment overindemnifies easily monitored losses and underindemnifies claims exhibiting higher verification costs.

In a third-party insurance environment, it is reasonable to assume that insurers cannot, without cause, underpay claimed damages since the insured party, if 100 percent at fault, is legally liable for all damages incurred. The third party insurer cannot simply state *a priori* that they will systematically underindemnify large losses. Insurers can, however, underpay claims if they are willing to accept exposure to extracontractual liability, consequential and punitive damages, and additional legal costs associated with defending the settlement in court. Thus, the optimal insurance contract in the third-party insurance environment trades-off the benefits of reducing the claimant's incentive to falsify claims with the legal and administrative costs associated with claims underpayment.

Crocker and Tennyson (2002) formalize this trade-off with a principal-agent model which I sketch here in order to highlight how insurers might use general damages to achieve the optimal insurance contract. Claimants possess private information about special and general damages they sustain in auto accidents, x_s and x_g. At a cost of $\xi(x_s - s)^2$, a claimant can claim special damages, s, that exceed their actual value ($s > x_s$). The claimant faces a similar cost function associated with claiming general damages, g, above their true value $\theta(x_g - g)^2$. Claimants receive indemnification according to known schedules $S(s)$ and $G(g)$ and seek to maximize utility in the post-accident state choosing s and g:

$$\max_{s,g} U\big(W - x_s - x_g + S(s) + G(g) - \xi(x_s - s)^2 - \theta(x_g - g)^2\big). \tag{1}$$

I assume, as in Crocker and Tennyson (2002), that insurers choose a linear indemnification schedule:[18]

$$\begin{aligned} S(s) &= (1-\beta)\alpha + \beta s, \\ G(g) &= (1-\gamma)\delta + \gamma g. \end{aligned} \tag{2}$$

Insurers then choose the parameters of $S(s)$ and $G(g)$ in order to minimize the cost of indemnification conditional on the claimant's choice of s and g in Equation (1). Importantly, insurers face a cost of underpaying claims, $c(s - S(s))$ and $d(g - G(g))$, where I assume these cost functions are increasing for values of $s > S(s)$ and $g > G(g)$ and equal to zero otherwise (i.e., there are no legal or administrative costs associated with overpaying claims).[19]

The sole difference between the model presented here and that presented in Crocker and Tennyson (2002) is the specific assumption that insurers employ separate

[18] See Crocker and Morgan (1998) for a more general solution to the costly-state falsification problem that permits nonlinear indemnification schedules.

[19] Formally, the insurer's problem can be characterized as follows:

$$\min_{\alpha,\beta,\delta,\gamma} \int_0^\infty T(\alpha,\beta,\delta,\gamma,s,g) f(x)\,dx + \int_{\bar{s}}^\infty c(s - S(s)) f(x_s)\,dx_s + \int_{\bar{g}}^\infty d(g - G(g)) f(x_g)\,dx_g$$

s.t. Equation (1),

where $T = S + G$, $f(x)$ is the known probability distribution of actual losses and $[\bar{s}, \infty]$ and $[\bar{g}, \infty]$ is the range of x_s and x_g that results in claims underpayment.

indemnification schedules for special and general damages and that underpaying special damages is more costly than underpaying general damages (i.e., $c(\cdot) > d(\cdot)$. $\forall s - S(s) = g - G(s)$). This assumption is justified by the fact claimants can easily marshal evidence that they incurred special damages by showing receipts for medical services rendered and, perhaps less easily, demonstrating that their injuries resulted in lost wages. In order to challenge those costs, insurers must argue that either the receipts are fraudulent or the services rendered excessive. On the other hand, general damages, for which there is no generally accepted objective method for quantifying, are inherently unverifiable. Consequently, general damages may be far more negotiable than special damages and the legal consequences of underpaying general damages potentially less severe. For similar reasons, from the claimant's perspective, exaggerating special damage claims may be more costly than exaggerating general damage claims ($\xi > \theta$).

The IRC data provide evidence that, in fact, special damages may be relatively costly to challenge. In our sample, special damages claimed equal special damages paid in 80 percent of all claims with positive special damages claimed and paid. In 16 percent of cases, special damages paid are less than special damages claimed. In 3 percent of claims special damages are overpaid.[20] For claims in which special damages paid are less than special damages claimed, the closed-claim survey asks insurers to indicate why. In 28 percent of these cases insurers indicated that they had disallowed particular costs. Thus, it would appear that in only 4 percent of all claims did the insurer successfully challenge claimed costs on the basis of the appropriateness of the claimed treatment.[21] The IRC data do not record general damages claimed, and so a direct comparison between claimed and paid general damages is not possible.

Although unnecessary for the theoretical implications of this model I derive below, it is worth noting that the primary motivation claimants have to inflate special damage claims may be to leverage higher general damage awards (Ross, 1980; Derrig and Weisberg, 1994: Carroll and Abrahamse, 2001). Absent gross fraud in which a claimant obtains false receipts for services not rendered, payments for special damages cover actual expenses. Medical costs represent 86 percent of total special damages paid in the IRC data and inflating medical payments makes little sense if those payments cover real expenses and the insured does not have some perverse taste for unnecessary medical procedures. A similar, although weaker, argument can be made in the case of wage loss payments to the extent that these payments compensate individuals for actual time away from work and individuals are not using these payments to finance leisure.[22]

[20] If I include claims in which no special damages were paid, but positive special damages claimed, the percentage of claims underpaid increases to 21 percent. The percentage underpaid is similar if we compare medical expenses paid and claimed, wage loss paid and claimed, and other expenses paid and claimed.

[21] This analysis assumes that adjusters who complete the IRC data forms do not engage in any *ex post* justification of settlement amounts by adjusting special damages claimed to equal special damages paid. It is unclear why adjusters would do this on an anonymous survey form, but the possibility cannot be ruled out.

[22] Median wage loss payments come to $425 in the 30 percent of claims with positive wage loss claims. Thus, wage loss payments would finance, at best, a rather short vacation.

In terms of our model, this suggests that while claimants can inflate claims so that $s > x_s$, this inflation is not beneficial in itself; that is, claimants cannot appropriate positive differences between s and x_s absent gross fraud. Payments for general damages, on the other hand, can be used to finance consumption in general. Maximizing postaccident consumption makes sense regardless of what level of pain and suffering a claimant actually experiences. Consequently, it would seem that not only is it less costly for the insurer to "flatten" the indemnification schedule via general damages, but that the main reason claimants have to inflate special damages in the first place is to achieve higher general damage awards.[23]

The slopes of the indemnification schedules $S(s)$ and $G(g)$ are governed by the insurer's choice of parameters β and γ conditional on the claimant's falsification costs and the insurers expected cost of underindemnification. Crocker and Tennyson (2002) show that the insurer's optimal choices of β and γ are increasing in the claimant's cost parameters ξ and θ and, following similar logic, it can be shown that the insurer's optimal choices of β and γ are increasing in the cost parameters c and d as well.[24] This implies that for categories of claims that are either easy to falsify or less costly to underpay, insurers will choose flatter indemnification schedules. So, if $c < d$ or $\theta < \xi$ then insurers will choose $\gamma^* < \beta^*$.[25]

The degree to which claims are over or underpaid depends not only on the slope of the indemnification schedule, but its intercept as well. In the case of auto insurance settlements, it stands to reason that the intercept of the indemnification schedule could be related to the expected value of the claim. A typical sequence of events in the claim settlement process might be as follows. A claimant sustains some set of injuries, Ω, in an automobile accident and reports this information to the insurer before making any specific damage claim. It is common practice (and legally required in many states) for the insurer to set aside a reserve that reflects the insurer's expectation of the total settlement, $\hat{T} = \hat{s}(\Omega) + G(\hat{s}; \Omega)$, where $\hat{s}$ is expected special damages. This expectation, or reserve, becomes the focal point for the insurer's subsequent settlement negotiations with the claimant. Replacing α with $\hat{s}$ and δ with $\hat{g}$ in Equation (2) implies that, were the insurer immune from the costs of under or over payment of claims, and so could choose $\beta = \gamma = 0$, the insurer would simply pay the expected value of the claim.

So, now let us consider what this model of the claims settlement process implies about the ratio of general to special damages paid. First, note that $s = \hat{s} + \epsilon$; that is, claimed special damages are equal to the insurer's initial expectation about the size of the claim plus an error term, which represents the degree to which a given claim deviates from its expected value. Second, let us assume that claimants base general damage

[23] Prima facie evidence for this claim is reported in Derrig and Weisberg (1994). Using a sample of PIP claims from Massachusetts, they show an unusual concentration of claimed medical costs at the tort threshold for claims involving a sprain or strain. This concentration is not evident for nonsprain claims, suggesting that claimants with sprains and strains, a class of injury that might be relatively easy to exaggerate, inflate claimed medical costs precisely so that they can sue for general damages.

[24] The proof of these later comparative static results is parallel to the proof of $\partial\beta^*/\partial\xi > 0$ in Crocker and Tennyson (2002) and is available from the author upon request.

[25] Note that insurers will choose $0 < \beta, \gamma < 1$ so long as $\xi, \theta < \infty$ and $c, d > 0$.

claims on a multiple of special damages claimed ($g = \sigma s$).[26] Given the indemnification schedule in Equation (2), we then have

$$\frac{G}{S} = \frac{(1-\gamma)\sigma(s-\epsilon) + \gamma\sigma s}{(1-\beta)(s-\epsilon) + \beta s} \tag{3}$$

from which we derive two comparative static results of interest:

$$\begin{aligned} \frac{\partial G/S}{\partial \epsilon} &= \frac{s\sigma(\gamma-\beta)}{S^2}, \\ \frac{\partial^2 G/S}{\partial \epsilon \partial \gamma} &= \frac{s\sigma}{S^2}. \end{aligned} \tag{4}$$

The first comparative static tells us that, if the cost of underpaying special damages is higher than the cost of underpaying general damages, or if the cost of falsifying general damages is less than the cost of falsifying special damages (so that $\gamma^* < \beta^*$), then the ratio of general to special damages will be higher for special damage claims that fall short of their expected value than for special damage claims that exceed their expected value. The second comparative static implies that the slope of G/S with respect to ϵ will steepen as the cost of falsifying general damages decreases (because $\partial\gamma^*/\partial\theta > 0$). For example, suppose, as presumed by Crocker and Tennyson (2002), it is less costly to falsify general damages for soft-tissue injuries, like sprains and strains, than it is for more apparent injuries, like lacerations or breaks. This second comparative static tells us that insurers will reduce general damages in proportion to special damages for soft-tissue injuries that exceed their expected value more than they will for claims for less easily falsified injuries that exceed their expected value.

Insurers face potentially high costs in explicitly underindemnifying third-party BI claims since, in principle, the insured party is strictly liable for damages incurred by the third party. The existence of general damages, however, offers insurers a means for accomplishing this underindemnification. There is no set method for quantifying general damages and so the cost of underindemnifying these losses is likely to be far lower than the cost of underindemnifying special damages. In effect, general damages offer a mechanism by which third-party insurers can offer the first-party optimal insurance contract described by Crocker and Morgan (1998). The implication of this characterization of the claims settlement process is that we should expect insurers to pay proportionally lower general damages to claimants who demand special damages that exceed their expected value. I now turn to an empirical investigation of this implication.

WITHIN-INJURY VARIATION IN *GS_Rat*

The key testable implication of the model presented above is that the ratio of general to special damages paid (*GS_Rat*) should respond negatively to differences between

[26] Of course, claimants may not claim general damages in this manner, a point I discuss in conclusion.

claimed and expected special damages. We do not observe expected special damages in the IRC data, but we do observe information about the claim that an adjuster is likely to use in forming some initial expectation about the claim value (i.e., the reserve). When setting the initial reserve, the adjuster is likely to possess information about the type of injuries sustained (e.g., neck sprain, concussion, laceration) in the accident and some measure of how serious those injuries are (e.g., did the claimant go to the emergency room, how badly damaged was the vehicle).

Consequently, I first divide the IRC sample by most serious injury sustained (as judged by the adjuster). These injury categories are as follows: minor burns, lacerations, contusions; serious laceration, scarring or permanent disfigurement; neck sprain or strain; back sprain or strain; other sprain or strain; knee or shoulder injury; disc injury; fracture; internal organ injury; concussion; and psychological, emotional injury. I then divide the sample by injury severity. I classify an injury as severe if the claimant received more than emergency room care at a hospital (2 percent of claims), experienced a temporary disability (22 percent of claims), was unable to perform normal activities for more than 9 days (19 percent of claims), the claimant sustained three or more separate injuries (11 percent of claims), or the passenger compartment of the claimant's automobile was compromised (21 percent of claims); 44 percent of the sample claims are defined as severe by this definition. I assume that the mean or median special damage claim value within injury classes serves as the adjuster's expected value for a given claim and so, within injury classes, we should observe *GS_Rat* declining as special damages claimed increase.

Table 4 shows *GS_Rat* by special damages quintile and most serious injury sustained, where the special damages quintile is generated within injury type. The first thing to note is that *GS_Rat* generally declines as special damages rise within all injury classes reported in Table 4, although in some cases, the decline is not monotonic. The second notable aspect of Table 4 is that *GS_Rat* is remarkably consistent across injury types despite their different average costs. For example, the median special damage award for burn and minor laceration claims in the first quintile is \$100 contrasted with a median special damage award for disc injury claims in the first quintile of \$2,250. Despite the large difference in median special damage awards, *GS_Rat* is quite similar in the two injury categories (2.22 versus 2.41). Similarly, median *GS_Rat* in the fifth quintile of special damage awards in neck sprain and knee/shoulder injury claims is 0.95 and 0.97, respectively, despite large differences in median special damages (\$4,350 versus \$9,272). Nonetheless, it is apparent from the table that certain injuries—disfigurement and psychological injury most clearly—command proportionally higher general damages at all levels of special damages incurred. These injuries may indeed entail greater pain and suffering.

In Table 5, I show how *GS_Rat* varies within injury types by severity for three classes of injuries: neck sprains, back sprains, and knee and shoulder injuries. Here, as in Table 4, we see that *GS_Rat* falls within injury type. We also see that while more severe injuries tend to entail higher special damages, the ratio of general to special damages varies comparatively little across severity, within injury type. Median *GS_Rat* for less severe back sprains, for example, is 1.18, while median *GS_Rat* for more severe back sprains is 1.23. Median special damages for more severe back sprain claims, however, are substantially higher than in less severe back sprain claims: \$2,457 versus \$1,245.

TABLE 4
GS_Rat by Special Damages Quintile and Injury Type

	Most Serious Reported Injury					
	Burns/Minor Lacerations		Disfigurement		Neck Sprain	
Specials Claimed	Specials	*GS_Rat*	Specials	*GS_Rat*	Specials	*GS_Rat*
Low	100	2.22	570	2.79	200	1.70
40	300	1.36	1,994	2.15	639	1.12
60	547	1.03	3,026	2.52	1,360	1.16
80	993	1.06	5,090	1.82	2,394	1.07
High	2,475	1.12	10,740	1.49	4,350	0.95
n	978		207		8,756	
	Back Sprain		Other Sprain		Knee/Shoulder	
	Specials	*GS_Rat*	Specials	*GS_Rat*	Specials	*GS_Rat*
Low	260	1.67	200	2.00	200	1.83
40	874	1.18	520	1.11	636	0.99
60	1,750	1.18	1,128	1.24	1,392	1.32
80	2,774	1.05	2,213	1.05	3,098	1.34
High	4,832	0.88	4,215	0.99	9,272	0.97
n	4,382		1,368		830	
	Disc		Fracture		Internal Organ	
	Specials	*GS_Rat*	Specials	*GS_Rat*	Specials	*GS_Rat*
Low	2,250	2.41	864	2.12	1,754	0.90
40	4,989	2.04	2,302	1.97	4,094	0.86
60	8,099	1.49	5,089	1.68	8,132	1.60
80	14,976	0.93	10,000	1.39	17,134	1.06
High	24,624	0.68	22,070	0.58	30,160	0.11
n	152		447		66	
	Concussion		Psychological			
	Specials	*GS_Rat*	Specials	*GS_Rat*		
Low	309	1.82	75	3.33		
40	1,334	0.80	240	1.46		
60	2,500	0.95	505	1.86		
80	4,980	1.10	1,504	2.47		
High	9,452	0.84	4,754	1.31		
n	162		67			

Notes: All figures are median values computed within special damage quintiles. See Table 1 for sample restrictions.
Source: 1997 IRC Closed-Claim Data.

Tables 4 and 5 hint that the within-injury special damage quintile may be at least as strong a predictor of *GS_Rat* as the overall level of special damages. That is, *GS_Rat* is governed by how special damages claimed vary within claims of a similar nature rather than how special damages claimed vary over the entire sample. We can test this hypothesis formally with the following regression:

TABLE 5
GS_Rat by Special Damages Quintile, Injury, and Severity

	Injury Severity			
	Less Severe		More Severe	
Specials Claimed	Specials	*GS_Rat*	Specials	*GS_Rat*
A. Neck sprains				
Low	150	1.83	444	1.59
40	478	1.14	1,255	1.21
60	970	1.09	2,186	1.18
80	1,775	1.09	3,412	1.04
High	3,234	0.94	6,000	0.91
B. Back sprains				
Low	179	1.92	551	1.51
40	568	1.17	1,439	1.28
60	1,245	1.18	2,457	1.23
80	2,184	1.01	3,708	1.01
High	3,620	0.88	6,844	0.83
C. Knee and shoulder				
Low	113	2.75	394	1.42
40	341	1.27	1,210	1.06
60	640	1.00	2,490	1.38
80	1,226	1.56	5,469	1.24
High	3,498	1.07	13,912	0.84

Notes: All figures are median values computed within special damage quintiles. See Table 1 for sample restrictions. See text for definition of severity.
Source: 1997 IRC Closed-Claim Data.

$$GS\_Rat_{ik} = \beta_o + S_i^q \beta_1 + S_{ki}^q \beta_2 + Injury_i \beta_3 + X_{ik}\beta_4 + \eta_{ik}, \tag{5}$$

where S_i^q is a vector of indicator variables for the ith claim's overall special damages quantile, S_{ki}^q is a vector of indicator variables for the within injury special damages quantile for the ith claim of injury type k, $Injury_i$ is a vector of injury types, X_{ik} is a vector of claimant and accident characteristics like gender, marital status, and accident location (see Table 6 for variable definitions and means), and η_{ik} is a $N(0, \sigma)$ random disturbance. Omitting the highest quantile, the model implies the q elements of $\hat{\beta}_2$ will decline absolutely across the q quantiles. That is, holding the overall special damages quantile constant, *GS_Rat* should decline across within-injury type special damage quantiles.[27] I report the results of estimating Equation (5) (setting $q = 5$) in Table 7.[28]

[27] One concern in estimating Equation (5) is that S_i^q and S_{ki}^q may be highly colinear making it difficult to separately identify $\hat{\beta}_1$ and $\hat{\beta}_2$. Cross-tabulation of S_i^q and S_{ki}^q ($q = 5$), however, shows that 46 percent of the observations lie off the diagonal, suggesting there is sufficient variation across overall and within-injury special damages quintiles.

[28] An alternative approach would be to estimate ϵ directly by regressing claimed special damages on injury and accident characteristics and then test how *GS_Rat* varies with ϵ. The trouble with this approach, however, is that ϵ is mean zero by definition and its variance depends on

TABLE 6
Variable Names and Summary Statistics

Variable	Definition	Mean	Std. Dev.
GS_Rat	General/special damages paid	1.572	1.751
S_q	Overall special damages quintile		
S_q^k	Within injury special damages quintile		
Burns	Burn or minor laceration	0.056	0.230
Disfigurement	Disfigurement or serious laceration	0.012	0.108
Neck sprain	Neck sprain	0.503	0.500
Back sprain	Back sprain	0.252	0.434
Other sprain	Other sprain	0.079	0.269
Knee/shoulder	Knee or shoulder injury	0.048	0.213
Disc injury	Disc injury	0.009	0.093
Fracture	Fracture	0.026	0.158
Internal organ	Internal organ injury	0.004	0.061
Concussion	Concussion	0.009	0.096
Psychological	Psychological injury	0.004	0.062
Severe	Severe injury	0.436	0.496
Sprain	Sustained a sprain or strain	0.833	0.373
Attorney	Hired an attorney	0.472	0.498
Central	Accident occurred in central city	0.335	0.471
Long	Days to settlement ≥75th percentile	0.517	0.500
Wage	Any lost wages claimed	0.302	0.459
Male	Male	0.435	0.492
Male_m	Gender missing	0.014	0.116
Married	Married	0.312	0.463
Single	Single	0.416	0.493
Divorced	Divorced	0.011	0.105
Widowed	Widowed	0.022	0.145
Marital_m	Marital status missing	0.240	0.427
Limit ($100k)	Policy limit	0.803	1.707
Limit_m	Policy limit missing	0.048	0.213
Location_1	Accident occurred in central city	0.333	0.471
Location_2	Accident occurred in suburb	0.222	0.416
Location_3	Accident occurred in medium-size city	0.313	0.464
Location_4	Accident occurred in small town	0.087	0.281
Location_5	Accident occurred in rural setting	0.041	0.198
Location_m	Accident location missing	0.005	0.067
State	Accident state		

Notes: See Table 1 for sample restrictions. See text for definition of severity.
Source: 1997 IRC Closed-Claim Data.

The first column of Table 7 is consistent with Figure 1 and Table 2; holding claim characteristics constant, general damages decline as a fraction of special damages as special damages increase. The coefficient on the overall special damages quintile falls

the overall fit of the regression. If we regress GS_Rat_i on $\hat{\epsilon}$ (e.g., $=GS\_Rat_i = \beta_i s_i + \delta_i \hat{\epsilon}_i + \nu_i$), the magnitude of $\hat{\delta}$ will mechanically depend on the overall fit of the regression we use to predict s and generate $\hat{\epsilon}$. Thus, I choose to categorize claims nonparametrically as described above.

TABLE 7
The Effect of Special Damages Claimed on *GS_Rat*

	(1)	(2)	(3)
S_1	1.955	0.694	
	(0.049)*	(0.104)*	
S_2	0.81	0.102	
	(0.046)*	(0.081)	
S_3	0.533	0.127	
	(0.042)*	(0.064)	
S_4	0.273	0.067	
	(0.04)*	(0.048)	
S_1^k		1.347	1.873
		(0.094)*	(0.045)*
S_2^k		0.54	0.748
		(0.075)*	(0.042)*
S_3^k		0.359	0.443
		(0.059)*	(0.04)*
S_4^k		0.188	0.235
		(0.046)*	(0.039)*
Burns	−0.078	0.213	0.351
	(0.056)	(0.059)*	(0.055)*
Disfigurement	1.741	1.597	1.545
	(0.114)*	(0.114)*	(0.114)*
Back sprain	0.057	−0.001	−0.024
	(0.03)	(0.03)	(0.03)
Other sprain	0.043	0.104	0.133
	(0.047)	(0.047)	(0.047)*
Knee/shoulder	0.282	0.305	0.322
	(0.059)*	(0.058)*	(0.059)*
Disc injury	0.725	0.341	0.207
	(0.134)*	(0.137)	(0.132)
Fracture	0.928	0.719	0.64
	(0.08)*	(0.082)*	(0.079)*
Internal organ	0.072	−0.234	−0.335
	(0.2)	(0.201)	(0.199)
Concussion	0.222	0.148	0.13
	(0.128)	(0.127)	(0.128)
Psychological	0.657	0.905	1.058
	(0.198)*	(0.197)*	(0.197)*
Severe	0.286	−0.001	−0.129
	(0.028)*	(0.035)	(0.027)*
Attorney	0.449	0.478	0.472
	(0.031)*	(0.031)*	(0.031)*
Central	−0.18	−0.182	−0.175
	(0.066)*	(0.065)*	(0.066)*
Long	0.228	0.24	0.235
	(0.028)*	(0.028)*	(0.028)*

(*continued*)

TABLE 7
(Continued)

	(1)	(2)	(3)
Wage	−0.196	−0.163	−0.166
	(0.029)*	(0.029)*	(0.029)*
Const.	0.601	0.737	0.821
	(0.086)*	(0.086)*	(0.082)*
Obs.	17,415	17,415	17,415
R^2	0.161	0.175	0.169

Notes: Omitted variables include S_5, S_5^k, and *Neck Sprain*. Regression includes all variables listed in Table 6 except *Sprain*. Standard errors are in parentheses.
*Significant at the 95 percent confidence level or better.
Source: 1997 IRC Closed-Claim Data.

monotonically from 1.96 for the lowest quintile to 0.81, 0.53, and 0.23 at the second, third, and fourth quintiles. In the second column, I add within-injury severity special damages quintiles, S_{ki}^q. Holding the overall special damages quintiles constant, we observe that the coefficients on S_{ki}^q decline monotonically across quintiles (1.35, 0.54, 0.36, 0.19). Note that the pattern of coefficients on S_i^q is less clear now. The coefficient on the lowest overall quintile is still larger than the coefficients on the remaining overall quintiles, but the coefficients on the top four quintiles no longer decline monotonically. We can infer from these results that the within-injury special damages quintile is at least, if not more, important for predicting the ratio of general to special damages than is the overall level of special damages.[29] Consistent with the theory of "General Damages and the Claims Settlement Process" section, claims that fall below their expected value receive proportionally higher general damage awards than claims that exceed their expected value. The sharp decline in *GS_Rat* between the first and second quintiles is also consistent with the model of "General Damages and the Claims Settlement Process" section which predicts *GS_Rat* will decline with special damages at a decreasing rate.

In the third column of Table 7, I drop the overall special damages quintile so that we examine how the ratio of general to special damages varies across claims with particular characteristics. The median claim of a given injury type receives general damages totaling about 1.3 times special damages. As we saw in Table 4, certain injury types command proportionally higher general damage awards. Disfigurement claims, for example, receive general damages totaling 2.8 times special damages at the median. Fractures and psychological claims also receive proportionally higher general damage claims. Claims represented by an attorney and claims that took an unusually long time to settle[30] receive proportionally higher general damage awards

[29] An analysis of variance model with S_i^q and S_{ki}^q as the only independent variables reports a partial sum of squares of 393.3 for S_i^q and 1,274.8 for S_{ki}^q.
[30] I classify a claim as taking an unusually long time to settle if the number of days to settle was at the 75th percentile or more given the injury sustained.

as well. Claims involving a wage claim or originating in a central city area, receive proportionally lower general damage claims.[31]

The theory also implies that the slope of *GS_Rat* with respect to ϵ will steepen as falsification costs fall. I test this hypothesis by interacting S_{ki}^{q} with indicators for claims that involved soft-tissue injuries that are relatively difficult to diagnose. This is similar to the approach used by Crocker and Tennyson (2002). In a similar vein, insurers might also choose to flatten the general damages indemnification schedule for claims that generally raise "red-flags." I assume that insurers will be more suspicious of claimants who hired an attorney,[32] were injured in a central city location and took an unusually long time to settle their claim.

Table 8 reports coefficient estimates from four separate models in which the within-injury special damage quintile is interacted with indicators for sprains (column (1)), attorney representation (column (2)), central city location (column (3)), and unusually lengthy time to settlement (column (4)). The variable *Main effect* represents these indicators in their respective models (e.g., *Main effect* = *Sprain* in column (1)). Consistent with the hypothesis, in all four instances, we observe a steepening of the relationship between within-injury special damages and *GS_Rat*.[33] This steepening is evident in Figure 2 which summarizes the estimated coefficients in Table 8. In the first panel of Figure 2, we see that sprain injuries receive proportionally lower general damages at all levels of special damages. This is consistent with the findings of Crocker and Tennyson (2002) who, using closed-claim data from 1992, report that total damages paid decline more rapidly as special damages increase in the case of sprain injuries than in the case of nonsprain injuries.[34] Moreover, the decline in *GS_Rat* is greater at higher special damage quintiles than at lower special damage quintiles, which is consistent with a relative flattening of the general damages indemnification schedule. We observe a similar steepening in the relationship between special damage quintile and *GS_Rat* in the case of claims represented by an attorney, claims occurring in a central city, and claims that take an unusually long time to settle.

To summarize the empirical evidence presented in this section, I find that the relationship between general and special damages is governed largely by the within-injury distribution of special damage claims, which is consistent with the hypothesis that insurers proportionally decrease (increase) general damages awards for special damage claims that exceed (fall short of) their expected value. I also find, consistent with theory, that the relationship between *GS_Rat* and special damages steepens for claims of a more suspicious nature. I stress that this evidence is *consistent* with the theory put forth, but not does refute alternative hypotheses. Most importantly, I assume that claimants follow a simple rule of thumb in making general damage claims. Specifically,

[31] The model includes a variety of additional covariates whose coefficients I do not report in Tables 7 and 8. Complete results are available from the author upon request.

[32] Claimants who invest in an attorney may make it more difficult for insurers to detect fraud thereby creating an incentive to flatten the indemnification schedule for these claims. See, for example, Bond and Crocker (1997).

[33] While the interaction terms are not always individually significant at conventional levels, they are, in all cases, jointly significant at better than the 1 percent confidence level.

[34] This is also consistent with the possibility that sprain injuries simply entail less pain and suffering than nonsprain injuries and so receive proportionally lower general damage awards.

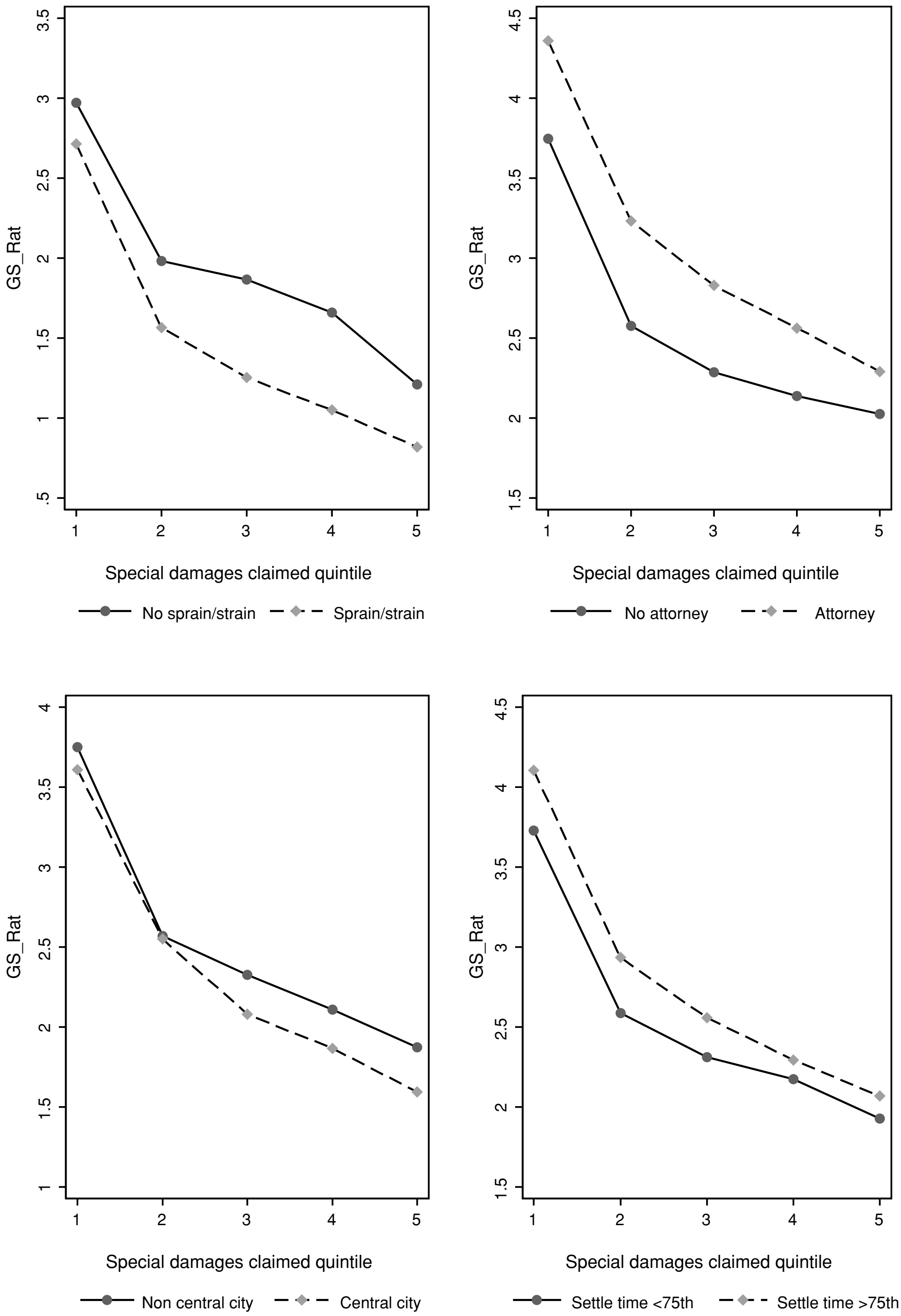
TABLE 8
The Effect of Special Damages Claimed on *GS_Rat*: Interactions

	(1)	(2)	(3)	(4)
S_1^k	1.759	1.718	1.874	1.801
	(0.097)**	(0.068)**	(0.052)**	(0.068)**
S_2^k	0.769	0.549	0.695	0.658
	(0.096)**	(0.069)**	(0.051)**	(0.069)**
S_3^k	0.654	0.258	0.451	0.383
	(0.095)**	(0.071)**	(0.049)**	(0.07)**
S_4^k	0.45	0.11	0.234	0.245
	(0.095)**	(0.076)	(0.049)**	(0.073)**
S_1^k * *Main effect*	0.135	0.349	0.142	0.235
	(0.104)	(0.103)**	(0.083)	(0.089)**
S_2^k * *Main effect*	−0.022	0.392	0.263	0.207
	(0.104)	(0.091)**	(0.082)**	(0.086)*
S_3^k * *Main effect*	−0.218	0.28	0.035	0.108
	(0.104)*	(0.087)**	(0.081)	(0.085)
S_4^k * *Main effect*	−0.218	0.162	0.04	−0.017
	(0.104)*	(0.088)	(0.08)	(0.086)
Sprain	−0.391	−1.062	−1.071	−1.074
	(0.074)**	(0.197)**	(0.197)**	(0.197)**
Attorney	0.517	0.263	0.496	0.493
	(0.031)**	(0.068)**	(0.03)**	(0.031)**
Central	−0.21	−0.187	−0.28	−0.186
	(0.066)**	(0.066)**	(0.083)**	(0.066)**
Long	0.217	0.238	0.246	0.139
	(0.028)**	(0.028)**	(0.028)**	(0.066)*
Const.	1.21	2.027	1.874	1.928
	(0.101)**	(0.217)**	(0.212)**	(0.217)**
Main effect	*Sprain*	*Attorney*	*Central*	*Long*
Obs.	17,415	17,415	17,415	17,415
R^2	0.151	0.168	0.168	0.168

Notes: Omitted variables include S_5 and S_5^k. Regression includes all variables in Table 6 other than specific injuries. In column (1), S_i^k is calculated within sprain and severity cells. Interaction term *Main effect* varies across specifications as noted. Standard errors are in parentheses.
*Significant at the 95 percent confidence level or better.
**Significant at the 99 percent confidence level or better.
Source: 1997 IRC Closed-Claim Data.

I assume claimants multiply special damages by a factor that varies by injury and accident type, but not by special damages claimed. While anecdotal evidence provides support for this assumption, it cannot be explicitly verified since general damages claimed are not reported in the closed claim data. It is possible that the pattern we observe in *GS_Rat* arises because $g(s)$ in fact increases with s at a decreasing rate within injury types. These results are also consistent with a model in which general damages are completely unrelated to special damages claimed (e.g., claimants demand some fixed amount of general damages regardless of special damages claimed).

FIGURE 2
Effect of Claim Characteristics on the Slope of *GS_Rat*



Notes: *GS_Rat* computed from estimated coefficients in Table 8.
Data Source: 1997 IRC Closed-Claim Data.

Conclusions

Third party BI claimants have an incentive to inflate special damage claims in order to leverage higher general damage awards. This article hypothesizes that insurers respond in this environment by offering proportionally lower general damage payments to special damage claims that exceed their expected value. It is especially costly to challenge special damage awards in a third-party setting; general damages, however, are highly negotiable, and insurers can use these damages to optimally "flatten" the overall indemnification schedule.

Data on the ratio of general to special damages from more than 17,000 closed BI claims is broadly consistent with this hypothesis. It is clear from these data that insurers rarely challenge third-party special damage claims; in more than 80 percent of claims, insurers fully pay special damage claims. In contrast, first-party auto insurers in no-fault states where access to general damages is limited, fully pay special damage claims in only 35 percent of claims.[35] Indeed, many no-fault states require first-party insurers to schedule special damages or directly contract for less than full compensation of claimed special damages. These statutory provisions presumably exist in order to combat *ex post* moral hazard in an environment in which challenging claimed special damages is costly and insurers have no alternative means for flattening the overall indemnification schedule. Interestingly, restrictions on general damage awards in no-fault states may cause insurers to be more zealous in their oversight of special damage claims, which could have the effect of reigning in medical costs in those states. The IRC data provide some evidence that insurers, statutory provisions aside, do in fact successfully challenge special damages claims more frequently in no-fault states than they do in tort states. Future empirical work might explore how audit strategies adopted by insurers and state insurance regulators differ across fault and no-fault states.

This article shows that general damages decline proportionally with special damages within specific injury types. I interpret this as evidence that insurers effectively overindemnify general damages when special damages are below their expected value and underindemnify general damages when special damages are above their expected value. Jurisprudence and economic theory provide little guidance as to how general damages *should*, in a normative sense, vary with special damages. Indeed, as stated in the "Introduction" section, this lack of guidance is thought to be one of the greatest weaknesses in the American tort system today. This article provides a positive explanation, based in economic theory, for the observed pattern in general damages. Admittedly, though, the empirical evidence presented here cannot rule out other explanations.

A tighter test of the model presented here would be to measure how *GS_Rat* varies with the adjuster's level of suspicion; a model of optimal insurance contracting would predict that the more suspicion a claim raises, the more likely it is that its general damage award will be proportionally reduced. I do note, however, that regardless of the insurer's motivation, a declining *GS_Rat* schedule, within injury types, creates disincentives to engage in claims fraud assuming that most claims fraud is intended

[35] Author's calculation from a similar sample of PIP claims closed over a two week period in 1997.

to leverage higher general damage awards. Claimants cannot expect to leverage a constant fraction of special damages into general damage awards. One implication of this finding is that the aggregate cost of claim fraud to insurance companies and policyholders may be substantially less than what is commonly estimated.

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