# Tort Liability Litigation Costs for Commercial Claims

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This article analyzes tort liability litigation costs using the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988–2004. Insurer costs to defend claims in which a suit was filed average $35,000 per claim in 2004$, which corresponds to a share of 0.18 of total expenditures. Claims with higher stakes and complexity lead to greater reliance on outside counsel and less reliance on in-house counsel. Total transactions costs for each dollar received by claimants average $0.75 for all claims and $0.83 for claims in which the claimant retained an attorney and a suit was filed.

## 1. Introduction

Tort liability provides compensation to injured parties, but it does so with substantial transactions costs. Plaintiffs generally pay a contingency fee of one-third of the total award or settlement. Information on actual defense expenditures is quite limited because of lack of data. Despite the importance of the transactions costs of litigation in the law and economics literature, there is little information about the costs to defend claims.

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This article greatly expands the range of knowledge about the level and determinants of litigation costs using data from the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988–2004, which provides information for a large sample of closed insurance claims in Texas for commercial liability lines. These data provide the first information on a per claim basis of actual defendants' expenses and the composition of these expenses and allow analysis of the characteristics of the claims that affect these expenses.

The most widely cited estimates of the share of total defense expenses attributable to litigation costs are provided in various reports by RAND. Hensler *et al.* (1987) use information from trials in Cook County and San Francisco and find that the ratio of total defendants' legal fees and expenses to the total litigation expenditures was 19% for auto, 30% for nonauto, and 37% for asbestos.[1] Carroll *et al.* (2005) estimate defendants' legal fees and expenses for asbestos claims using various proprietary and confidential data sources. Their study finds that the ratio of defense legal fees and expenses to the total litigation expenditures for asbestos suits was 31%.[2] Section 6 calculates comparable statistics for the Texas database.

A study by Black *et al.* (2005) using medical malpractice claims compares defense costs to total payouts. They report that the defense costs share of total payouts ranged from 8 to 15% over the 1988–2002 period. These

1. See Table 4.1. In this 1987 analysis, total litigation expenditures consist of defendant legal fees and expenses, plaintiff legal fees and expenses, and net compensation to the plaintiff. These estimates for asbestos are consistent with the earlier study by Kakalik and Pace (1986). The RAND studies include commercial and noncommercial tort claim trials in Cook County and San Francisco, but the asbestos trials pertain only to commercial claims. The Texas data that we analyze are broader in scope, as the data pertain to settlements as well as trials, but the claims are restricted to commercial claims. The RAND Cook County and San Francisco data include over 14,000 jury trials from 1960–1984.

2. See p. 95. Total spending is defined as gross compensation to claimants plus defense transactions costs. This study of commercial claims is based on interviews with insurance company analysts and defendants and a confidential database of defendants and trusts through 2000, where some claims are updated for 2001 and 2002. Their data for the litigation cost shares are from the early 1980s to 2001. The representation of defendants varies by year. There are over 60,000 defendant-year observations. Plaintiff costs are derived from the earlier RAND estimates coupled with interviews with insurers. These insurers report that they do not believe that the share of plaintiff expenses has changed.

defense costs shares are not directly comparable to those reported by RAND or to those reported in this article.[3]

We show that among claims in which a suit is filed and which result in an indemnity payment of at least $10,000 for bodily injury, insurer expenses for legal counsel and other costs correspond to a considerable portion of insurers' total expenditures including payments to claimants. This share averages 18% across all insurance lines. As our empirical results demonstrate, total insurer expenses vary in predictable ways by factors such as lines of insurance and severity of injury. Combined with plaintiff attorneys' fees, the total transactions costs average $0.83 for each dollar received by claimants.

In addition to providing new information on average defense expenses across different types of liability coverage, we also provide the first information on the allocation of such expenses among in-house counsel, outside counsel, and other litigation expenses. The allocation of expenditures between in-house counsel and outside counsel reflects their respective costs as well as their productivity in dealing with the particular type of claim.

We structure the empirical analysis of expenditures on defense litigation costs using a simple model of the economic decision that insurers face with respect to expenditures to defend a claim. Insurers choose how much to spend on different components of defense activities to minimize their total costs to resolve the claim.[4] Section 2 presents a basic theoretical model of the cost-benefit analysis undertaken by the insurer. The two main claim characteristics that influence expenditures to defend a claim are the scale of the claim and its complexity. Higher stakes make a higher level of spending on legal counsel desirable, but how higher stakes affect the mix of in-house counsel and outside counsel will depend on the relationship between these expenditures in reducing liability costs. Increased case complexity will

3. Black *et al.* (2005) analyze the sample of medical malpractice claims from the Texas Department of Insurance Commercial Liability Insurance Closed Claim Report. We analyze the entire set of commercial claims from this Texas dataset. The numerator in the calculation in Black *et al.* (2005) refers to defense costs incurred by the primary insurer, but the denominator refers to payout from all insurers. Thus, the reference points for the numerator and the denominator are not consistent. In addition, the denominator used by Black *et al.* (2005) excludes legal fees, but these are a component of the denominator in the studies by RAND.

4. For general introductions to the litigation model literature, see Cooter and Rubinfeld (1989), Posner (2003), Shavell (2004), and Kessler and Rubinfeld (2004).

increase the optimal level of expenditure as well as the reliance on outside counsel.

Section 3 describes the Texas Department of Insurance data used in the analysis. Section 4 provides summary statistics on litigation expenditures, as well as information on trends over the 1988–2004 period for which data are available. Five commercial lines are reported: general liability, auto liability, multiperil liability, medical professional liability, and other professional liability; we analyze the data overall and by insurance line. The statistical summary is of interest in its own right as it indicates substantial defense expenditures for all lines, with auto liability claims having the lowest average defense legal fees per claim of $23,000 in 2004$ and medical professional liability and other professional liability having the highest defense legal fees per claim of $62,000 and $51,000, respectively, in 2004$.

Section 5 presents a series of regression models for the determinants of the level of defense legal fees and the expense components. Insurers usually rely on outside counsel only, but they often rely on in-house counsel alone. They seldom use both in-house counsel and outside counsel. The empirical results indicate that larger claim levels increase defense expenditures, and for larger stakes cases and more complex cases insurers rely more heavily on outside counsel.

Section 6 presents summary measures of the efficiency of the tort system for all claims in the Texas Department of Insurance Commercial Liability Insurance Closed Claim database, including those for which no suit was filed. The transactions costs shares for claims in which the claimant retained an attorney and a suit was filed are 0.46 of total costs and 0.83 of the net payment to claimants. Similarly, for all liability claims, the transactions costs share of total costs is 0.43 and the transactions costs per dollar received by claimants is 0.75. These values are somewhat lower than for litigated claims. Section 7 is the conclusion.

## 2. Framework

To explore how the scale and complexity of litigation affect expenditures to defend claims, we make use of the following simple model. Although litigation expenditures arise within a game theoretic context, we abstract from these concerns and consider a reduced form version in which the

insurer's payment function incorporates the claimant's decisions regarding litigation expenses and effort.

The first component is the expected payment function, which includes expected settlement and award levels. It is a function of case complexity and legal counsel services. Let the expected payment function be given by $c(z, h_1, h_2)$ where $z$ is a measure of case complexity, $h_1$ is the level of in-house counsel services, and $h_2$ is the level of outside counsel services.[5] Cases are likely to be more complex if they arise infrequently, raise novel issues, require specialized expertise, or require a greater overall skill level.

Defense costs increase with case complexity and decrease with the level of defense services of either type, or $c_z > 0$, $c_1 < 0$, and $c_2 < 0$. The services of legal counsel have diminishing marginal effectiveness in reducing expected payments, or $c_{11} > 0$ and $c_{22} > 0$. We assume that increased case complexity diminishes the efficiency of in-house counsel and enhances the efficiency of outside counsel, or $c_{1z} > 0$ and $c_{2z} < 0$. The value of $c_{12}$ depends on the interrelationship between the two types of legal counsel expenditures, as this cross partial term could be positive if the expenditures are substitutes, negative if the expenditures are complements, or zero if the cost function is additively separable. Thus, the formulation recognizes the possibility that there may be no interactive effect of in-house counsel and outside counsel, and that the decision may involve choosing which type of legal services to use exclusively. By not constraining the sign of $c_{12}$, the formulation also imposes no assumption about whether in-house counsel and outside counsel are substitutes or complements, as this relationship will be examined empirically.

The price of a unit of in-house counsel services is normalized to equal one and is below the price $p > 1$ for a unit of outside counsel services. Because of the model's assumptions about the productivity of outside counsel in reducing costs for complex cases, it may be cost minimizing for the insurer to use outside counsel services despite the higher price. For example, it would not be efficient to maintain an in-house counsel staff devoted solely to claims that arise infrequently.

The final bit of notation is a cost scale parameter $s$, which is a constant and is not a function of $z$, $h_1$, or $h_2$. The $s$ term will multiply the expected

5. For simplicity, we consider case complexity and case scale to be defined as exogenous characteristics defined by the nature of the claim and the line of insurance.

payment function. We introduce the scale parameter to make it possible to do comparative statics with respect to case scale. This formulation makes it possible to evaluate the pure effect of case scale $s$ on the choice variables.

The insurer's objective is to choose $h_1$ and $h_2$ to minimize the sum of expected payments plus expenditures on legal counsel. That is, the insurer picks $h_1$ and $h_2$ to

$$\min_{h_1,h_2} Cost = s \bullet c(z, h_1, h_2) + h_1 + ph_2, \tag{1}$$

leading to the first-order conditions

$$0 = s \bullet c_1 + 1 \tag{2}$$

and

$$0 = s \bullet c_2 + p. \tag{3}$$

Outside counsel must meet a more demanding marginal efficiency requirement given its higher price.

Totally differentiating Equations (2) and (3) and setting $dp = 0$ so as to focus on the effects of scale $s$ and complexity $z$, we have

$$\begin{bmatrix} -c_1 ds - sc_{1z} dz \\ -c_2 ds - sc_{2z} dz \end{bmatrix} = \begin{bmatrix} sc_{11} & sc_{12} \\ sc_{21} & sc_{22} \end{bmatrix} \begin{bmatrix} dh_1 \\ dh_2 \end{bmatrix}. \tag{4}$$

The determinant $D$ of the matrix of second partial derivatives is positive at the cost minimizing set of choices, or

$$D = s^2 c_{11} c_{22} - s^2 (c_{12})^2 > 0. \tag{5}$$

Solving the comparative statics analysis of Equation (4) for the effect of the exogenous parameters $s$ and $z$ on the choice variables yields

$$\partial h_1/\partial s = (s/D)[-c_1 c_{22} + c_2 c_{12}], \tag{6}$$

$$\partial h_2/\partial s = (s/D)[-c_2 c_{11} + c_1 c_{12}], \tag{7}$$

$$\partial h_1/\partial z = (s^2/D)[-c_{1z} c_{22} + c_{2z} c_{12}], \tag{8}$$

and

$$\partial h_2/\partial z = (s^2/D)[-c_{11}c_{2z} + c_{12}c_{1z}]. \tag{9}$$

The derivatives of the effects of case scale and case complexity on litigation services hinge on the sign and magnitude of $c_{12}$. The value of $\partial h_1/\partial s$ is positive if the two types of litigation services are complements so that $c_{12} \leqslant 0$. If the litigation services are substitutes and $c_{12}$ is very large and positive, higher values of $h_1$ diminish the marginal productivity of $h_2$, and as a result the sign of $\partial h_1/\partial s$ is ambiguous. Similarly, $\partial h_2/\partial s$ will be positive if $c_{12} \leqslant 0$ and will be ambiguous if $c_{12} > 0$. Case complexity $z$ will decrease the value of in-house counsel if $c_{12} \geqslant 0$; otherwise the relationship is ambiguous. In contrast, $\partial h_2/\partial z$ will be positive if $c_{12} \geqslant 0$, and otherwise is ambiguous. Thus, case complexity will boost the level of $h_2$ and decrease the level of $h_1$ if $c_{12} > 0$.

In the absence of large interactive effects of $h_1$ and $h_2$ in the payment function, increasing the case scale will boost $h_1$ and $h_2$, while increasing case complexity will reduce $h_1$ and increase $h_2$. However, given the interrelationship of the two types of expenditures, as embodied in $c_{12}$, the effects of levels on defense services of case scale and complexity are theoretically ambiguous. The main exception to this ambiguity is that if there is only one type of defense service, increasing the case scale will unambiguously increase defense services. The empirical results provide information on the directions of these effects.

## 3. Data Description

The data we use for our study are from the Texas Department of Insurance (TDI) Commercial Liability Insurance Closed Claim database.[6] We analyze data from all available years, which currently include the

6. Black *et al.* (2005) and Hersch *et al.* (2007) examine transactions costs for medical malpractice claims using the TDI data. The annual TDI reports include information on average defense costs. See Texas Department of Insurance (various years). The 2004 report is available at www.tdi.state.tx.us/reports/pc/documents/taccar2004.pdf.

years 1988–2004.[7] The Texas legislature requires detailed reports for all commercial claims for which the total indemnity payments by all insurers for bodily injury are at least $10,000. Claims involving property damage but no bodily injury are not in the TDI sample. There are two reporting forms used by the TDI: a short form for claims for which the indemnity payment for bodily injury is at least $10,000 but is below $25,000, and a long form for claims for which indemnity payments for bodily injury are at least $25,000. The long form reports information on the type of injury and how the injury occurred that is not reported on the short form, but both forms include information on litigation expenses, which are the key variables of interest in this paper. The lines of insurance represented in the Texas data are monoline general liability, commercial auto liability, commercial multiperil liability, medical professional liability, and other professional liability.

Commercial insurance lines consist of insurance purchased by businesses, as opposed to personal insurance that provides coverage for individuals.[8] General liability insurance provides coverage for the liability risks caused by a business's products and operations, as well as by its independent contractors. Commercial auto liability insurance provides businesses with liability coverage for commercial vehicles. Commercial multiperil liability insurance covers risks to the business due to perils that are named in the insurance policy, such as fire. Medical professional liability is insurance purchased by doctors and other medical professionals to address the liability from their patients. Other professional liability is insurance purchased by directors and officers of corporations as well as other nonmedical professionals such as lawyers to address liability from shareholders and from clients. This mix consequently includes both the types of insurance lines not generally associated with a tort liability "crisis," such as auto liability, as well as lines that may be more volatile, such as medical professional liability. The TDI dataset includes some self-insurers but

7. All dollar values reported throughout the paper are adjusted to 2004$ using the standard measure of general price trends published by the Bureau of Labor Statistics, the Consumer Price Index for All Urban Consumers (CPI-U).

8. For definitions of these lines of insurance, see the Insurance Information Institute (2005).

not necessarily all.[9] Tillinghast–Towers Perrin (2006) estimates that the self-insured share of commercial liability costs increased from 26.8% in 1988 to 33.4% in 2004.[10]

The focus on commercial liability captures a large share of the overall insurance market. Tillinghast–Towers Perrin (2006) estimates that in 2005, the total US tort costs of commercial lines were $143 billion, as compared to $87 billion for personal lines. The commercial insurance climate in Texas may differ from the remainder of the country, but we would still expect that commercial lines will comprise most of the insurance market in Texas. Texas is a large state, accounting for 7% of all direct premiums written for property/casualty insurance in the US.[11] The growth in direct premiums written for most commercial lines was greater for Texas than the US in the sample period 1988–2004.[12]

The Texas data include 176,866 paid claims across these five policy types over the 1988–2004 period.[13] Because our primary focus is on litigation expenditures, we begin by restricting the sample to 97,320 observations in which a suit was filed, the claimant used an attorney, and the insurer reports positive attorney expenses. We refer to the sample of 97,320 cases as our

9. For example, the Texas Department of Insurance (2004), p. 2 reports claims from 328 insurance companies and 6 self-insurers in 2004.

10. There are no available data to determine the impact on defense expense trends created by the omission of self-insured claims. One might hypothesize that the self-insured are larger firms facing larger claims and incurring greater costs for legal counsel, but this does not necessarily imply that the economic factors motivating their choice of in-house counsel or outside counsel defense expenses differs from that of insurance companies.

11. These calculations are based on data for 2004 from the Insurance Information Institute (2006), p. 29.

12. For example, the nominal percentage growth of direct premiums written from 1988–2004 was 105% for Texas and 71% for the US for commercial auto liability, 219% for Texas and 135% for the US for medical malpractice, 120% for Texas and 73% for the US for multiperil liability, and 150% for Texas and 127% for the US for "other" insurance. Whereas US workers' compensation premiums rose by 49% for the US, they declined by 6% in Texas. These calculations are based on data from the Insurance Information Institute (1990, 2006).

13. An additional 21 claims appear in the dataset but are missing information for all variables and are dropped. One other claim is dropped because it is missing information on policy type.

litigation sample.[14] Subsequently, we expand the analysis in Section 6 to include all claims in the TDI dataset to assess the role of transactions costs, including claims not involving litigation.

As the data reported in Table A1 indicates, most defense expenses are incurred in claims for which a suit was filed. The average total insurer costs to defend claims for cases in which no suit was filed are $995, which is a weighted average of the mean defense expenses reported in rows 1 and 2 of Table A1.[15] The mean value is greater for claims for which the parties resorted to alternative dispute resolution without filing a lawsuit. To distinguish between total insurer costs including payments to the claimant and the insurer costs to defend the claim, we adopt the following terminology. The term "defense expenses" refers only to the insurer costs to defend the claim.[16] The "insurer payment" refers to the amount of the settlement or court award paid by the primary insurer for the claim. "Total insurer costs" include the total defense expenses plus the amount of the insurer payment.

The key outcomes of interest are total defense expenses and the allocation of defense expenses between in-house counsel and outside counsel. The key parameters are case scale and case complexity. All data are reported by the primary insurer. The primary insurer reports the breakdown of defense expenses into three categories: outside defense counsel, allocated expenses for in-house defense counsel, and allocated loss adjustment expenses.[17] The sum of these three categories gives total defense expenses. Our variables for

14. In constricting the litigation sample, 71,633 claims are dropped from the full sample of 176,866 paid claims because no suit was filed, an additional 233 claims are dropped because the claimant did not use an attorney, and 7,680 claims are dropped because insurer attorney defense expenses are reported as zero. Whether a suit is filed or not varies considerably by insurance line. Our calculations from the full sample of 176,866 paid claims show that, overall, a suit is filed for 60% of the paid claims. By line, the percent with a suit filed are: general liability-80%, commercial auto liability-42%, commercial multiperil liability-69%, medical professional liability-90%, and other professional liability-80%.

15. More specifically, $995 = (66,960 × $820 + 4,673 × $3,506)/(66,960 + 4,673).

16. For 17% of the claims, the insured also employed an attorney, but the associated expenses are not reported in the TDI data.

17. The reporting form asks for the amount of "other allocated loss adjustment expenses, such as court costs and stenographers." Because court costs and stenographers are only given as examples of other costs, insurers responding to the survey presumably include other pertinent costs as well. The reporting form provides no additional detail.

case complexity are intended to capture claims for which outside counsel will be more productive. The insurance line serves as one measure of case complexity, as it is widely believed that auto liability cases are less complex and that cases linked to tort liability reform, such as medical malpractice, are more complex.[18] The insurance line may also capture case scale effects. Case complexity is also represented by whether the claim involved multiple parties as defendants,[19] as multiple defendants often have disputes over the division of liability.[20] The complexity of a claim may also vary with the frequency of the injury type. Data on the type of injury are available on the long form only. The survey reports whether the injury resulted in a fatality, as well as 17 injury types, such as brain damage, back injuries, and so forth, and a catch-all "other" injury category. Except for fatalities, insurers are instructed to record all injuries applicable to the claim, so multiple injuries can be reported for the same claim.

To control for the scale of the case, we note that any information on actual awards or settlements will be endogenously determined with the defense expenditure decision and should not be included as an explanatory variable without taking into account this endogeneity through instrumental variables methods. However, it is difficult to imagine any instrument that would affect the scale of the case but not affect defense expenses. Instead, we use information unique to the Texas dataset on initial indemnity reserves and initial expense reserves to control for scale. These variables are reported for the time when the claim was filed, which will generally be before a suit is filed. These reserve amounts, which are established based on the insurer's experience with the case type and the nature and extent of injuries, will

18. Hensler *et al.* (1987) specifically notes that auto liability cases are less complex. Even among paid claims in the sample, our calculations using the TDI data indicate that more than half of auto claims do not result in a suit being filed. However, those auto claims in which a suit is filed may be more complex than the typical auto liability case.

19. Texas Department of Insurance (various years) refer to multiparty claims as more complex than single party claims. The TDI also flags claims in which more than one insurer reported the same injury (e.g., "duplicates"). Two percent of the claims in the sample we analyze are reported by more than one insurer. Because our analysis is based only on the payments and defense expenses for that particular insurer, there is no overlap.

20. In his case study of a law firm that does insurance defense work, Kritzer (2006) discusses the complexities arising when multiple insurers attempt to allocate liability.

serve as exogenous variables influencing subsequent defense expenditures. Unlike the final reserve amounts, initial reserve levels are set by insurers before any actual defense expenditures are incurred and payment levels are revealed. In the empirical section, we provide supportive empirical evidence that these reserve amounts are exogenous measures of scale.

We also include a variable for a linear time trend in the regression estimates. In tracking trends in defense expenses, we compare defense expenses to total insurer costs. Although the primary insurer reports its own payment to close the claim as well as the payments made by other parties, because defense expenses pertain to the primary insurer only, we analyze trends in average defense expenses relative to average primary insurer payments.

Because the TDI thresholds are not adjusted for inflation, more recent claims that would have had indemnity payments below $10,000 in 1988$ will be included in the TDI sample. The inclusion of smaller claims with correspondingly smaller defense costs could understate the trend in absolute (real) levels of defense costs over time. However, changes in the mix to smaller claims would not greatly affect estimates of trends based on a comparison of defense costs to total insurer costs, as indemnity payments are also affected in the same direction by the threshold. We present trend statistics for the full sample of claims and for the sample that would have exceeded the $10,000 threshold in 1988$. To consider the role of the changing mix in the TDI sample to smaller cases, we include in the regressions an indicator variable for claims with indemnity payments of $10,000 or more in 1988$.

We make one adjustment to the regressions because of an unusual occurrence in 1997. One carrier submitted an unusually high number of related claims for the "other products manufacturers" business class, with this carrier representing 6,852 of the total 17,173 claims (40%) for 1997.[21] Most of these claims are smaller than the typical claim and also have lower defense expenses than the typical claim, which leads to anomalously low average defense expenses and low average total insurer costs relative to the remaining 16 years of data. Although we are not able to identify the specific insurer involved, we identify claims likely to be associated with this

21. Texas Department of Insurance (1997), p. 2. The role of this carrier was to greatly increase the number of paid claims for 1997. The maximum number of paid claims for the years other than 1997 is 12,891 in 1993.

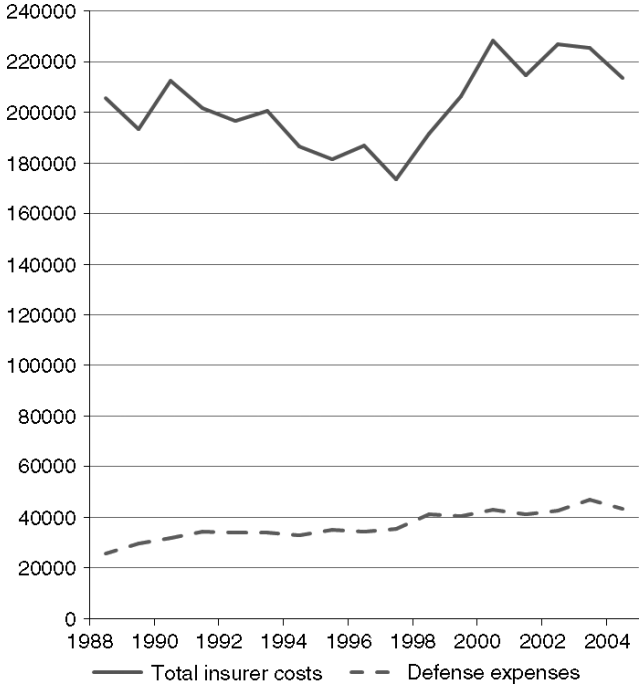


**Figure 1.** Defense Expenses and Total Insurer Costs per Claim, 1988–2004.
**Note**: Figure reports average annual values per claim in 2004$. The "high claim anomaly 1997" claims are excluded.
Source: Authors' calculations based on a sample of 17 annual averages from the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988–2004, as described in Table 1.

carrier by defining an indicator variable for claims in 1997 with "other products manufacturers" as the business class and "general liability" as the policy type.[22] We include this indicator variable, which we name "high claim anomaly 1997, " in the regressions, and we exclude these claims in

22. We assume that the policy type was general liability, as 98% of the claims in 1997 with business class "other products manufacturers" had general liability as the policy type, making it the only insurance policy category large enough to accommodate all of the carrier's related claims. We note that although this indicator variable picks up some claims not due to this one insurer, there were only 7,042 such claims in total in 1997, so this one carrier represents 97% of the claims of this type for 1997.

the growth rates shown in Table 2 and in the trend lines shown in Figure 1, as their inclusion considerably distorts the appearance of the trend.

## 4. Litigation Expenses by Insurance Type

Table 1 provides an overview for the litigation sample of average defense expenses and total insurer costs for the primary insurer by each of the five insurance policy types. Panel A reports means and standard deviations; Panel B reports the corresponding median values. The final column in both panels reports the averages or medians for all five commercial lines in the Texas data.

The first three rows of Table 1, Panel A report the mean and standard deviation of the levels of insurer spending on legal counsel and other expenses, with the information for the total of these expenditures reported in the fourth row. The average expenditures for in-house counsel are quite modest and range from an average of $498 for other professional liability to $3,766 for medical professional liability. Outside counsel expenditures, reported in the second row of Table 1, are considerably larger than in-house counsel expenditures. Auto liability has the smallest average expenditure at just over $17,000. Multiperil liability and general liability are about 50% greater, with outside counsel expenses around $25,000. The highest expenditures on outside counsel are for medical professional liability and other professional liability, with average outside counsel expenditures of around $43,000.

Expenditures on other legal expenses are more modest than for outside counsel but are considerably larger than for in-house counsel. With the exception of medical malpractice, which has other expenses above $14,000, these expenses are in the range of $4,900–$7,300 per claim.

The total defense expenses for these three cost components average $34,662 across all lines. Auto liability claims have the lowest level of defense expenses, averaging $23,071. The highest expenses are for medical professional liability and other professional liability, with average expenses of $61,243 and $50,698, respectively. These are also the two lines that involve the greatest level of payments, as reflected in the total insurer costs reported in the fifth row of Table 1. The average defense expenses share relative to the primary insurer's average total insurer costs is reported in the sixth row of Table 1, Panel A. These values average 0.182 across all lines,

**Table 1.** Insurer Litigation Costs per Claim by Insurance Policy Type[a]

Panel A: Means (standard deviations)

| | General Liability | Auto Liability | Multiperil Liability | Medical Professional Liability | Other Professional Liability | All lines |
|---|---|---|---|---|---|---|
| In-house counsel | 1,012 | 1,036 | 1,796 | 3,766 | 498 | 1,606 |
| | (5,645) | (4,450) | (7,872) | (17,175) | (3,804) | (8,829) |
| Outside counsel | 26,369 | 17,163 | 24,262 | 43,308 | 42,956 | 25,846 |
| | (78,561) | (97,291) | (55,062) | (67,613) | (79,731) | (81,658) |
| Other expenses | 6,015 | 4,872 | 7,295 | 14,169 | 7,244 | 7,211 |
| | (18,450) | (37,991) | (38,615) | (26,034) | (14,487) | (31,239) |
| Defense expenses | 33,396 | 23,071 | 33,353 | 61,243 | 50,698 | 34,662 |
| | (88,154) | (129,479) | (76,402) | (83,964) | (85,049) | (103,476) |
| Total insurer costs | 160,699 | 158,296 | 168,599 | 325,419 | 241,501 | 190,034 |
| | (342,268) | (318,633) | (279,667) | (549,425) | (730,503) | (381,373) |
| Average defense expenses/ average total insurer costs | 0.208 | 0.146 | 0.198 | 0.188 | 0.210 | 0.182 |
| Observations | 30,137 | 34,535 | 14,997 | 16,602 | 1,049 | 97,320 |

(*continued overleaf*)

**Table 1.** (*Continued*)

Panel B: Medians

| | General Liability | Auto Liability | Multiperil Liability | Medical Professional Liability | Other Professional Liability | All lines |
|---|---|---|---|---|---|---|
| In-house counsel | 0 | 0 | 0 | 0 | 0 | 0 |
| Outside counsel | 10,570 | 7,698 | 11,781 | 26,849 | 23,615 | 11,201 |
| Other expenses | 1,391 | 1,578 | 2,511 | 7,013 | 2,278 | 2,110 |
| Defense expenses | 13,943 | 10,962 | 16,707 | 40,555 | 28,376 | 16,014 |
| Total insurer costs | 58,954 | 59,856 | 70,504 | 183,784 | 95,485 | 75,158 |
| Median defense expenses/ median total insurer costs | 0.237 | 0.183 | 0.237 | 0.221 | 0.297 | 0.213 |
| Observations | 30,137 | 34,535 | 14,997 | 16,602 | 1,049 | 97,320 |

[a] All dollar values are in 2004$. The source for these values and all subsequent tables is authors' calculations based on the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988–2004. The sample is comprised of paid claims of at least $10,000 in which a suit was filed, the claimant used an attorney, and the insurer reports positive attorney expenses. Defense expenses and its components refer to the primary insurer costs to defend the claim. Total insurer costs equal the sum of defense expenses and the amount of settlement or court award paid by the primary insurer.

with a low of 0.146 for auto liability to a high of 0.210 for other professional liability. Table 1, Panel B reports the median values that correspond to the entries in Panel A. Because of the skewed distributions of the defense costs, the median values are below the means. For example, for all lines the median total defense expenses are $16,014, as compared to the mean value of $34,662. It is particularly noteworthy that the median expenses for in-house counsel are zero for all lines.

The statistics in Table 1 provide mixed evidence regarding the general belief that auto liability is a less complex line of commercial liability insurance. Auto liability has the lowest total defense expenses and the smallest share of defense expenses divided by total insurer costs. However, the relative share of in-house counsel expenses out of the total expenditures on legal counsel is lower for auto liability than for multiperil liability and medical professional liability. These statistics pertain only to cases in which a suit was filed. Section 6 examines all claims, including those in which no suit was filed, and finds much lower transactions costs for auto liability claims.

Table 2 presents average growth rates over time in average defense expenses and in the ratio of average defense expenses to the average total insurer payment for the litigation sample. In each instance, we calculate the average values of defense expenses and total insurer payments for each of the 17 years of data, by policy type and across all lines. The regression of the natural log of the variable of interest, for example average defense expenses, against time yields the estimated growth rate over the sample period.[23] All calculations exclude the "high claim anomaly 1997" claims. We present two sets of growth rates to account for the effect of inclusion of smaller claims over time, arising from the nominal payment cutoff of $10,000 in 1988$.

Consider first the results using all claims in the litigation sample, reported in the first two rows of Table 2. Overall, defense litigation costs rose by an average of 2.9% annually, with the greatest increases exhibited by medical professional liability and auto liability. The role of defense expenses as a

23. Thus, to calculate the growth rate of defense expenses relative to insurer payments in Table 2 (as well as in Figure 1), we use the ratio of the average annual defense expenditures to average annual total insurer costs rather than using the average of the individual claims ratios, which would be distorted by small claims outliers.

**Table 2.** Growth Rates in Insurer Litigation Costs by Insurance Policy Type[a]

| | General Liability | Auto Liability | Multiperil Liability | Medical Professional Liability | Other Professional Liability | All Lines |
|---|---|---|---|---|---|---|
| Growth rate of average defense expenses | 1.4* | 3.5* | 2.8* | 3.7* | 2.4* | 2.9* |
| | (0.4) | (0.5) | (0.5) | (0.5) | (1.0) | (0.3) |
| Growth rate of (average defense expenses/average total insurer costs) | 2.2* | 3.4* | 2.5* | 2.3* | 0.7 | 2.3* |
| | (0.5) | (0.6) | (0.4) | (0.5) | (1.1) | (0.4) |
| Growth rate of average defense expenses, indemnity payments at least $10,000 in 1988$ | 1.9* | 4.3* | 3.3* | 3.8* | 2.7* | 3.5* |
| | (0.4) | (0.6) | (0.5) | (0.5) | (1.0) | (0.3) |
| Growth rate of (average defense expenses/average total insurer costs), indemnity payments at least $10,000 in 1988$ | 2.0* | 3.2* | 2.3* | 2.3* | 0.6 | 2.1* |
| | (0.5) | (0.6) | (0.4) | (0.5) | (1.1) | (0.4) |

[a] Standard errors in parentheses.
* Significant at 5% level. All dollar values are in 2004$. All estimates exclude the "high claim anomaly 1997" claims. Growth rates are estimated from a regression of the log of the indicated dependent variable on a time trend.
Source: Authors' calculations based on a sample of 17 annual averages from the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988–2004, as described in Table 1. Defense expenses and its components refer to the primary insurer costs to defend the claim. Total insurer costs equal the sum of defense expenses and the amount of settlement or court award paid by the primary insurer.

share of total insurer costs has grown as well at an average annual rate of 2.3%. Auto liability defense expenses relative to insurer payment amounts rose by the greatest amount, at 3.4%, while the 0.7% growth rate for other professional liability is not statistically significant. Restricting the growth rate estimates to claims with payments at least $10,000 in 1988$, reported in rows 3 and 4, shows that the growth rate in average defense expenses is consistently higher if the small stakes claims that do not meet the 1988$ threshold of $10,000 are eliminated. This threshold cutoff has little effect on estimates of the growth rate of average defense expenses to average total insurer costs because the numerator and denominator of this calculation are affected similarly by the bracket creep adjustment.

One might expect that the defense costs share of total payments would increase if the claims process was becoming more complex and litigious. The rising scale of the payment levels will affect defense expenses as well, where the extent will depend on the elasticity of defense expenses with respect to payment levels. If that value is above 1.0, rising payment levels could account for the growth in the defense expenses share. However, the empirical analysis below shows that this elasticity value is actually well below 1.0, so that the increase in payment levels over time does not account for the growth in the ratio of defense expenses to insurer costs. The increased complexity of cases or factors other than simply the rising stakes of litigation must account for the rising share of defense expenses.

Figure 1 illustrates the trends in average defense expenses and average total insurer costs that underlie these growth rates for the litigation sample. As Figure 1 shows, average defense expenses per claim have been steadily rising over time. In contrast, average total insurer costs have fluctuated with a less consistent trend.

## 5. The Determinants of Defense Expenses

We estimate four defense expenditure equations for the litigation sample. The first is for the total defense expenses, and the next three are for each of the three components of expenses. The equations include the same explanatory variables. The equations take the following form:

$$\ln(Costs) = \alpha + \beta\, s + \gamma\, z + X'\lambda + \varepsilon,$$

where we use the notation of Section 2 in which $s$ represents case scale and $z$ represents case complexity. The vector **X** represents other control variables, and $\varepsilon$ is a random error term.

The empirical analysis consequently estimates a reduced form model of defense expenses in which the intervening endogenous settlement and trial decisions are not explicitly modeled. Thus, our focus is on how different categories of defense costs outcomes are affected by the exogenous variables in the equation above. Calculations (not reported in tables) based on the litigation sample show that the overwhelming share of cases in the sample, 95.7%, consists of claims settled before trial. An additional 1.6% settled after a trial had begun, and 2.7% are the result of a court award. The defense expenses share relative to total insurer costs increases with these lengthier legal proceedings, as the defense expenses share is 0.178 for settlements before trial, 0.221 for settlements during trial, and 0.227 for completed trials. The similarity of the defense expenses share for settlements during trial and completed trials is not surprising. The share for settlements before trial is 4–5 percentage points below these values, or about one-fourth of the total share amount. The similarity may be attributable to the selection of cases, as the dominator in the calculation changes as well. The regression equation consequently estimates average effects across these three classes of outcomes rather than disentangling the underlying selection effects and endogeneity influences embedded within the model.

To control for the case scale, we use information on the initial reserve amounts established by the insurer given the characteristics of the claim. When insurers establish their reserve amounts for a claim, they should reserve an amount that corresponds to the actual expected costs for that case type. The estimate of the expected costs will change as additional information is acquired. At the time when the insurer sets the initial reserve amount, little is known other than the claim amount and the characteristics of the injury and the persons injured. Although in retrospect all claims in the sample should have had nonzero reserve amounts, at the time when the initial reserves are set the available information on the claim may not indicate a high expected payout or expenses. Indeed, data on all claims reported to the TDI for 2004 show that the number of claims with zero

payment is nine times greater than the number of claims with payment of at least $10,000.[24]

Insurers subsequently set a reserve amount that is reported on the TDI claim form as the final reserve amount. At this point the insurer will know whether a suit will be filed and will have more information about legal costs incurred and the likely payment amount. The final full information values consist of the actual defense expenses and payment amount. The final indemnity reserve amounts and the actual payment amount will be endogenously affected by the defense expenses because unlike the initial indemnity reserve, these values are the result of the defense expenses allocations.

Thus, the regressions control for the initial indemnity reserve as a measure of the total expected payment amount associated with the claim and for the initial expense reserve as a measure of the expected level of defense expenses. Because these initial reserves are predetermined, they are exogenous to the actual realized litigation expenditures. We also include an indicator variable equal to one for claims in which initial expense reserves are reported as zero.[25]

The initial reserve amounts have relatively low explanatory power in predicting actual expenses, which is what one expects given their predetermined character. A regression of actual defense expenditures on initial expense reserves yields a coefficient of 0.89 ($p$-value = 0.00), demonstrating that on average, actual expenditures track expected expenditures closely. However, the $R$-squared in this equation is only 0.04, showing that there is a great deal of variation across cases in actual expenditures for any given initial expense reserve amount.[26] A regression of actual defense expenditures on initial indemnity reserves shows a similarly weak relation, with a coefficient of 0.08 ($p$-value = 0.00) and an $R$-squared of 0.03.

24. There were 9,019 claims with payments of at least $10,000 and 82,516 with zero payment. See Texas Department of Insurance (2004).

25. Half of the cases in the litigation sample report the value zero for the initial expense reserve. Because most claims do not result in payment, these may be true zeros for which no litigation costs are expected. The initial indemnity reserve is reported as zero for only 8% of the claims in the sample.

26. Restricting this regression to the 50% of the observations reporting nonzero initial expense reserves yields an $R$-squared of 0.09.

We use a series of variables to indicate the complexity of the case. As discussed above, the TDI considers cases involving multiple defendants to be more complex than single party claims. Auto liability claims are generally regarded to be less complex than the average tort claim, but other lines such as multiperil liability may be less complex as well. Insurance lines for which tort law and the treatment of these cases by the courts has been in flux over the sample period may be more complex. Medical professional liability is one such line, where the extent of change is reflected in the dramatic growth in premiums over the sample period. Injuries that occur frequently should be more routine and less complex. Table A2 reports the distribution of injury frequency as well as the mean total award by all parties to the claim and the standard deviation for the long form claims. We report total award amounts paid by all insurers, not just the primary insurer, to provide a comprehensive measure of the stakes and complexity of claims involving different injury types. Back injuries are the most commonly specified category, and one would expect such frequently occurring injuries to be less complex because of their routine nature. These injuries also have very low payment levels per claim so that the back injury category will involve less complexity and lower payment scale. Brain damage and spinal cord injuries have the opposite characteristics; these are infrequently occurring injuries with very high insurer payments. The regressions also include a time trend variable to capture time-related growth in the costs components, an indicator for claims with indemnity payments of at least $10,000 in 1988$, and the indicator for "high claim anomaly 1997."

As demonstrated in Section 2, the predicted effects of these factors vary according to whether we are analyzing total defense expenditures or the division of these expenses between in-house counsel and outside counsel. Higher levels of the initial reserve scale variables should have a positive effect on the total defense expenditures, as higher levels of expenditures are warranted for larger scale cases. The direction of the effect of scale on the different components of defense expenses may be different. The case complexity variables also may have differential effects in that case complexity should increase outside counsel expenses and reduce in-house counsel expenses.

While total defense expenses are always nonzero, the expense components often have zero values. Typically, insurers utilize in-house counsel

services or outside counsel services, but not both.[27] Only 3% of claims in the litigation sample involve the use of both in-house counsel and outside counsel, while 86% use outside counsel alone, and 11% use only in-house counsel.

The parameters for total defense expenses are estimated by ordinary least squares (OLS) regression, and these total defense expenses regression results report robust standard errors to account for any heteroskedasticity that may arise. Because of the large number of zero values for the defense expenses components, we use tobit regression for the equations estimating the expense components. The use of the tobit estimator has the greatest effect on the in-house counsel expense results because of the very large number of zero values.[28] The tobit estimator simultaneously takes into account the probability of a nonzero value and the level of the expenses.

Table 3 reports the OLS regression results for the log of defense expenses and the tobit regression estimates for the log of the three component categories: in-house counsel, outside counsel, and other expenses. The two indemnity reserve variables are also in terms of natural logs so that the coefficients in the defense expenses equation equal the pertinent elasticities.[29] The bracketed values in the tobit regression results correspond to the marginal effect of a one unit change in the variable when all independent variables are at their mean level. Table 4 adds variables representing injury type to the regressions reported in Table 3. Adding the injury type variables to the regression will capture some effects of the reserve variables, the policy type, and the multiple defendant variables in Table 3. As a result, we begin by focusing on the results in Table 3.

The indemnity reserve amount has a significant positive effect on total defense expenses, outside counsel, and other expenses. Increasing the

27. We thank Bernard Black for calling this aspect of the Texas medical malpractice data to our attention. The same phenomenon is also true of other insurance lines.

28. Tables A3 and A4 present the OLS counterparts to Tables 3 and 4. The marginal effects are generally quite similar for both sets of results.

29. We add one to all values before taking natural logs because some claims report zero values for reserve categories or defense expenses categories.

**Table 3.** Defense Expenses per Claim Regressions[a]

| | OLS | Tobit | Tobit | Tobit |
|---|---|---|---|---|
| | **Log (Defense Expenses)** | **Log (In-house Counsel)** | **Log (Outside Counsel)** | **Log (Other Expenses)** |
| Log (initial indemnity reserve) | 0.054** | −0.079* | 0.062** | 0.119** |
| | (0.002) | (0.037) | (0.006) | (0.007) |
| | | [−0.011] | [0.055] | [0.090] |
| Log (initial expense reserve) | 0.136** | −0.807** | 0.284** | 0.055** |
| | (0.004) | (0.064) | (0.011) | (0.013) |
| | | [−0.112] | [0.252] | [0.041] |
| Initial expense reserve reported as zero | 0.967** | −6.273** | 2.118** | 0.382** |
| | (0.035) | (0.561) | (0.098) | (0.119) |
| | | [−0.869] | [1.885] | [0.287] |
| Multiple defendants | 0.487** | −0.910** | 0.648** | 0.607** |
| | (0.009) | (0.161) | (0.027) | (0.032) |
| | | [−0.126] | [0.577] | [0.456] |
| General liability | 0.454** | −1.030** | 0.639** | 0.560** |
| | (0.010) | (0.182) | (0.031) | (0.037) |
| | | [−0.143] | [0.569] | [0.421] |
| Multiperil liability | 0.292** | 2.135** | −0.036 | 0.572** |
| | (0.011) | (0.194) | (0.035) | (0.042) |
| | | [0.296] | [−0.032] | [0.430] |
| Medical professional liability | 0.707** | −1.039** | 0.507** | 0.902** |
| | (0.012) | (0.231) | (0.038) | (0.046) |
| | | [−0.144] | [0.451] | [0.678] |
| Other professional liability | 0.623** | −8.250** | 1.502** | −0.296* |
| | (0.035) | (0.890) | (0.109) | (0.134) |
| | | [−0.143] | [1.337] | [−0.223] |
| High claim anomaly 1997 | −1.251** | −23.526** | −0.003 | −13.358** |
| | (0.025) | (1.045) | (0.076) | (0.145) |
| | | [−3.261] | [−0.002] | [−10.043] |
| Indemnity payments at least $10,000 in 1988$ | 0.681** | −1.213** | 0.935** | 1.302** |
| | (0.015) | (0.282) | (0.051) | (0.063) |
| | | [−0.168] | [0.832] | [0.979] |
| Time trend | 0.030** | 0.159** | 0.011** | −0.035** |
| | (0.001) | (0.015) | (0.003) | (0.003) |
| | | [0.022] | [0.010] | [−0.026] |
| Constant | 6.771** | −6.417** | 3.933** | 3.143** |
| | (0.038) | (0.648) | (0.111) | (0.136) |
| *R*-squared | 0.29 | — | — | — |

[a] Robust standard errors in parentheses for OLS regression, standard errors in parentheses for tobit regressions. Bracketed values are marginal effects of a one unit change in the variable evaluated at the mean of the independent variables. Omitted insurance policy type is auto liability.

* Significant at 5% level;

** significant at 1% level. Number of observations = 97,320 for each column.

Source: Authors' calculations based on the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988–2004.

**Table 4.** Defense Expenses per Claim Regressions Including Injury Type[a]

| | OLS | Tobit | Tobit | Tobit |
|---|---|---|---|---|
| | Log (Defense Expenses) | Log (In-house Counsel) | Log (Outside Counsel) | Log (Other expenses) |
| Log (initial indemnity reserve) | 0.027** | 0.007 | 0.021** | 0.080** |
| | (0.002) | (0.038) | (0.006) | (0.007) |
| | | [0.001] | [0.019] | [0.060] |
| Log (initial expense reserve) | 0.117** | −0.722** | 0.251** | 0.040** |
| | (0.004) | (0.064) | (0.011) | (0.013) |
| | | [−0.100] | [0.223] | [0.030] |
| Initial expense reserve reported as zero | 0.808** | −5.582** | 1.847** | 0.260* |
| | (0.033) | (0.563) | (0.097) | (0.119) |
| | | [−0.774] | [1.644] | [0.195] |
| Multiple defendants | 0.294** | −0.292+ | 0.367** | 0.379** |
| | (0.009) | (0.167) | (0.027) | (0.033) |
| | | [−0.041] | [0.327] | [0.285] |
| General liability | 0.457** | −0.727** | 0.604** | 0.635** |
| | (0.010) | (0.184) | (0.031) | (0.038) |
| | | [−0.101] | [0.537] | [0.477] |
| Multiperil liability | 0.313** | 2.326** | −0.040 | 0.653** |
| | (0.011) | (0.196) | (0.035) | (0.043) |
| | | [0.322] | [−0.036] | [0.491] |
| Medical professional liability | 0.630** | −0.229 | 0.316** | 1.039** |
| | (0.012) | (0.255) | (0.041) | (0.050) |
| | | [−0.032] | [0.282] | [0.781] |
| Other professional liability | 0.561** | −7.489** | 1.321** | −0.209 |
| | (0.034) | (0.893) | (0.109) | (0.134) |
| | | [−1.038] | [1.176] | [−0.157] |
| High claim anomaly 1997 | −1.203** | −22.689** | −0.043 | −12.721** |
| | (0.023) | (1.061) | (0.078) | (0.147) |
| | | [−3.144] | [−0.039] | [−9.564] |
| Indemnity payments at least $10,000 in 1988$ | 0.363** | −1.151** | 0.620** | 0.667** |
| | (0.016) | (0.298) | (0.053) | (0.066) |
| | | [−0.160] | [0.552] | [0.502] |
| Time trend | 0.025** | 0.168** | 0.006* | −0.042** |
| | (0.001) | (0.015) | (0.003) | (0.003) |
| | | [0.023] | [0.005] | [−0.031] |
| Death | 0.838** | −3.115** | 1.253** | 1.031** |
| | (0.014) | (0.271) | (0.042) | (0.051) |
| | | [−0.432] | [1.116] | [0.775] |
| Amputation | 0.652** | −0.969 | 0.863** | 1.086** |
| | (0.031) | (0.629) | (0.101) | (0.123) |
| | | [−0.134] | [0.769] | [0.816] |
| Burns—heat | 0.612** | −3.940** | 1.020** | 1.247** |
| | (0.031) | (0.651) | (0.094) | (0.114) |
| | | [−0.546] | [0.908] | [0.938] |
| Burns—chemical | 0.353** | −0.665 | 0.471** | 0.728** |
| | (0.058) | (1.079) | (0.168) | (0.205) |
| | | [−0.092] | [0.420] | [0.547] |
| Systemic poisoning—toxic | 0.686** | −6.295** | 0.786** | −0.613** |
| | (0.041) | (1.173) | (0.116) | (0.172) |
| | | [−0.872] | [0.700] | [−0.461] |

(*continued overleaf*)

**Table 4.** (*Continued*)

| | OLS | Tobit | Tobit | Tobit |
|---|---|---|---|---|
| | Log (Defense Expenses) | Log (In-house Counsel) | Log (Outside Counsel) | Log (Other expenses) |
| Systemic poisoning—other | 0.174+ | −1.698 | 0.385 | 0.228 |
| | (0.089) | (1.607) | (0.247) | (0.302) |
| | | [−0.235] | [0.343] | [0.171] |
| Eye injury/blindness | 0.418** | −1.607* | 0.648** | 0.539** |
| | (0.034) | (0.708) | (0.111) | (0.136) |
| | | [−0.223] | [0.577] | [0.405] |
| Respiratory condition | 0.328** | −3.497** | 0.552** | −0.525** |
| | (0.039) | (0.838) | (0.106) | (0.140) |
| | | [−0.485] | [0.492] | [−0.395] |
| Nervous condition | 0.360** | −2.222** | 0.854** | 0.441** |
| | (0.034) | (0.676) | (0.104) | (0.126) |
| | | [−0.308] | [0.760] | [0.332] |
| Hearing loss | 0.192** | −0.632 | 0.148 | 0.415* |
| | (0.059) | (1.098) | (0.174) | (0.211) |
| | | [−0.088] | [0.131] | [0.312] |
| Circulatory condition | 0.243** | −2.498* | 0.682** | 0.163 |
| | (0.047) | (0.999) | (0.147) | (0.180) |
| | | [−0.346] | [0.607] | [0.122] |
| Multiple injuries | 0.232** | 0.220 | 0.178** | 0.724** |
| | (0.010) | (0.180) | (0.031) | (0.038) |
| | | [0.030] | [0.159] | [0.544] |
| Back injury | 0.360** | 0.638** | 0.231** | 0.833** |
| | (0.009) | (0.172) | (0.030) | (0.036) |
| | | [0.088] | [0.205] | [0.626] |
| Skin disorder | 0.325** | −4.999** | 1.042** | −0.446* |
| | (0.057) | (1.397) | (0.183) | (0.225) |
| | | [−0.693] | [0.927] | [−0.335] |
| Brain damage | 0.939** | −1.497** | 1.164** | 1.122** |
| | (0.021) | (0.396) | (0.063) | (0.076) |
| | | [−0.208] | [1.036] | [0.844] |
| Scarring | 0.105** | −1.380** | 0.393** | −0.026 |
| | (0.024) | (0.465) | (0.074) | (0.090) |
| | | [−0.191] | [0.349] | [−0.020] |
| Spinal cord injuries | 0.850** | −2.139** | 1.171** | 0.710** |
| | (0.035) | (0.638) | (0.100) | (0.121) |
| | | [−0.296] | [1.042] | [0.534] |
| Other injuries | 0.358** | 0.040 | 0.307** | 0.536** |
| | (0.011) | (0.210) | (0.035) | (0.043) |
| | | [0.006] | [0.273] | [0.403] |
| Constant | 7.224** | −8.040** | 4.656** | 3.659** |
| | (0.037) | (0.662) | (0.112) | (0.137) |
| *R*-squared | 0.35 | — | — | — |

[a] Robust standard errors in parentheses for OLS regression, standard errors in parentheses for tobit regressions. Bracketed values are marginal effects of a one unit change in the variable evaluated at the mean of the independent variables.
+ significant at 10%;
* significant at 5% level;
** significant at 1% level. Number of observations = 97,320 for each column.
Source: Authors' calculations based on the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988–2004.

scale of the case lowers expenditures on in-house counsel. The results are consistent with our hypothesis that larger scale cases with greater indemnity reserves will warrant the more expensive outside counsel, but will not have greater in-house counsel expenses.

The level of total defense expenditures exhibits the expected positive elasticity with respect to the initial expense reserve, and the magnitude of the elasticity is more than double that for initial indemnity reserves. The most noteworthy initial expense reserve effect is the negative effect on in-house counsel expenses. Whereas cases with large initial expense reserves have higher outside counsel expenses, in-house counsel costs are less. The expense reserve reported as zero coefficient follows the same pattern as the initial expense reserve variable. Ex post, these claims should have had a positive initial expense reserve. This indicator variable functions in the same way as a higher value for the initial expense reserve because after the fact, the insurers should have reserved more than they initially anticipated.

The estimated coefficients for the case complexity variable "multiple defendants" are consistent with the predicted pattern of resource allocation for defense expenditures as well. The presence of multiple defendants boosts overall defense expenses as well as the costs of the different expense components, with the exception of in-house counsel expenses.

Relative to the omitted category of auto liability, all liability categories have significant positive effects on total defense expenses. The insurance categories with the highest total defense expenses, controlling for reserve amounts, are medical professional liability and other professional liability. Notably, these two insurance lines spend much more on outside counsel relative to auto liability. Similarly, general liability also has a defense expenditure mix more skewed toward outside counsel. The only insurance line that places a greater reliance on in-house counsel than auto insurance is multiperil liability. This type of insurance, which focuses on damages to the commercial enterprise, primarily involves insured commercial establishments filing claims for liability losses involving personal injury rather than individual third parties filing claims against companies or physicians.

The time trend variable indicates that, controlling for the other included variables in Table 3, there is a 3.0% annual growth rate in total defense

expenditures. For the defense expenses components, in-house counsel expenditures have been growing at an annual rate of 2.2%. Outside counsel expenses have grown at a rate of 1.0% annually, with a rate of decline of other expenses of 2.6%, after taking into account the reserve amounts and other factors.[30]

Other determinants of defense expenses include the nature of the injury involved in the claim. Although the Texas short form data for smaller claims do not include information on the nature of the injury, the long form data for payments of at least $25,000 do include this information. In Table 4 we add an indicator for whether the injury was fatal as well as the set of 17 injury categories. These injury categories are not mutually exclusive because insurers could report multiple injuries associated with the same claim. Because these injuries are not reported for any short form claim, the coefficients reflect the effect of reporting the injury, relative to a short form claim or to the claim not having a report of that injury.[31]

The injury variables reflect both case complexity and the scale of the claim. Every injury category variable has a statistically significant positive effect on total defense expenses, though the systematic poisoning–other variable is only significant at the 10% level. The largest effects are for fatal injuries and very serious injury types: amputations, burns–heat, systemic poisoning–toxic, brain damage, and spinal cord injuries. Back injuries are the only injuries in which there is a significant positive effect on both in-house counsel and outside counsel expenditures. As indicated in Table A2, back injuries are the most frequent injury category, reported for 32% of all long form claims. One would expect in-house counsel to be better able to handle lower stakes, routine claims such as these. These results are

30. It is a bit surprising that the growth rate in total defense expenses exceeds the growth rate for any of the components. Such a pattern could arise because there is no mathematical constraint imposed within this multiple regression context. If all variables other than the time trend are excluded, the growth rate coefficients are 0.0175 for defense expenses, 0.0198 for in-house counsel, 0.0004 (not significant) for outside counsel, and -0.0657 for other expenses.

31. Table A5 reports the corresponding results for only long form claims, which are similar to the results for the full sample, except that the reference point has changed. The indicator for "indemnity payments at least $10,000 in 1988$" is not included because all long form claims meet this cutoff. The same coefficient patterns described in the following paragraphs for Table 4 also hold for Table A5.

consistent with the more general pattern in the regressions that increasing the scale and complexity of a claim raises overall defense costs, increases the reliance on outside counsel, and decreases the reliance on in-house counsel.

As one might expect, controlling for injury type in Table 4 reduces the magnitudes of the estimated elasticity of defense expenses with respect to the initial indemnity reserve. The elasticity of total defense expenditures with respect to the initial indemnity reserve drops from 0.054 to 0.027 after adding controls for injury type.[32]

## 6. Measures of the Efficiency of Tort Liability

For the entire sample of 176,866 claims in the TDI database, there is information on defense costs as well as whether the claimant retained an attorney. With reasonable assumptions it is possible to calculate the role of transactions costs relative to total costs of the claim as well as in relation to the net payment amount received by claimants. Analysis of all claims, not simply those in which a suit was filed, should lead to a lower estimate of the magnitude of transactions costs. For purposes of this calculation, we assume that for claimants who retained an attorney the claimant's litigation costs are one-third of the payment level, which is consistent with available evidence.[33]

The first efficiency measure is the transactions costs share of total litigation costs.[34] For claims in which the claimant retained an attorney, this value is (defense expenses + (1/3) insurer payment)/(insurer payment + defense expenses). Most claimants retained an attorney. Even for claims that were settled without a lawsuit, 84% of claimants retained an attorney. For claims in which no claimant attorney was used, the transactions costs share of total costs is (defense expenses)/(insurer payment + defense expenses). These cost estimates understate actual costs as they exclude the value of claimant time and out-of-pocket expenses.

32. This elasticity value changes even further to 0.022 based on the regressions in Table A5 that restrict the estimates to the sample of claims with payments of at least $25,000.

33. The study of tort litigation costs in Cook County and San Francisco notes that contingency fees were typically one-third of the award and averaged "about 30% of total compensation." See Hensler *et al.* (1987), pp. 25–26.

34. These share calculations adopt the same formulation reported in Hensler *et al.* (1987) and Carroll *et al.* (2005).

**Table 5.** Tort Liability Transactions Costs by Disposition Stage

| Disposition of Claim | Transactions Costs/Total Costs | Transactions Costs/Net Payment | Number of Observations |
|---|---|---|---|
| No suit filed | 0.30 | 0.43 | 66,960 |
| Alternative dispute resolution—no suit filed | 0.34 | 0.51 | 4,673 |
| Alternative dispute resolution—after suit filed | 0.45 | 0.80 | 28,790 |
| Suit filed, settlement before trial | 0.45 | 0.81 | 72,057 |
| Settlement during trial | 0.48 | 0.91 | 1,606 |
| Court verdict | 0.52 | 1.07 | 1,021 |
| Settlement after verdict | 0.47 | 0.90 | 1,104 |
| Settlement after appeal | 0.47 | 0.90 | 654 |
| Summary judgment | 0.58 | 1.37 | 1 |
| Average | 0.43 | 0.75 | 176,866 |

Source: Authors' calculations based on all claims in the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988–2004. For claims in which the claimant retained an attorney, transactions costs/total costs equal (defense expenses + (1/3) insurer payment)/(insurer payment + defense expenses). For claims in which no claimant attorney was used, transactions costs/total costs equal (defense expenses)/(insurer payment + defense expenses). For claimants who retained an attorney, transactions costs/net payment equal (defense expenses + (1/3) insurer payment)/((2/3) insurer payment). For claimants who did not retain an attorney, transactions costs/net payment equal (defense expenses)/(insurer payment).

The transactions costs in relation to the net payment amount received by the claimant are defined analogously. For claimants who retained an attorney, this value is (defense expenses + (1/3) insurer payment)/((2/3) insurer payment). If the claimant did not retain an attorney, the transactions costs per net payment amount is simply (defense expenses)/(insurer payment).

Table 5 reports each of these tort liability efficiency measures by stage of disposition. The transactions costs shares of total costs average 0.43 and range from 0.30 for claims in which no suit was filed to a high of 0.58 for cases in which there was a summary judgment.[35] The transactions costs per net payment amount are higher, averaging 0.75. As with the total cost measure, the lowest values are for claims in which no suit was filed. Court verdicts and summary judgment claims generate more transactions costs than the value of the net payment received by the claimant. Several other

35. Note that this category includes only a single claim.

**Table 6.** Tort Liability Transactions Costs by Insurance Line

| | Transactions Costs/Total Costs | | Transaction Costs/Net Payment | | Number of Observations | |
|---|---|---|---|---|---|---|
| | Litigation Sample | All Claims | Litigation Sample | All Claims | Litigation Sample | All Claims |
| General liability | 0.47 | 0.45 | 0.89 | 0.82 | 30,137 | 39,553 |
| Auto liability | 0.43 | 0.30 | 0.76 | 0.64 | 34,535 | 93,616 |
| Multiperil liability | 0.47 | 0.44 | 0.87 | 0.78 | 14,997 | 23,325 |
| Medical professional liability | 0.46 | 0.45 | 0.85 | 0.82 | 16,602 | 18,972 |
| Other professional liability | 0.47 | 0.46 | 0.90 | 0.84 | 1,049 | 1,400 |
| Average | 0.46 | 0.43 | 0.83 | 0.75 | 97,320 | 176,866 |

Source: Authors' calculations based on all claims in the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988–2004. For claims in which the claimant retained an attorney, transactions costs/total costs equal (defense expenses + (1/3) insurer payment)/(insurer payment + defense expenses). For claims in which no claimant attorney was used, transactions costs/total costs equal (defense expenses)/(insurer payment + defense expenses). For claimants who retained an attorney, transactions costs/net payment equal (defense expenses + (1/3) insurer payment)/((2/3) insurer payment). For claimants who did not retain an attorney, transactions costs/net payment equal (defense expenses)/(insurer payment).

settlement categories are not far behind as there are transactions costs of at least $0.90 for every dollar received by claimants for settlements during trial, settlements after verdict, and settlements after appeal. The level of transactions costs in litigated cases is higher in both absolute and relative terms.

In Table 6, we present these efficiency measures for different lines of insurance. The table reports results for two different samples—the litigation sample of claims analyzed in previous sections in which the claimant retained an attorney and a suit was filed, and the full sample of all TDI claims.

Auto liability has the lowest transactions costs, both relative to total costs and in relation to net payment to claimants. The discrepancy is much greater for all claims than for the litigation sample because of the large number of auto liability claims settled without a suit being filed or an attorney being retained by the claimant.

The insurance line with the lowest degree of efficiency is other professional liability, for which the full sample values of transactions costs average 0.46 relative to total costs and 0.84 relative to the net payment to claimants. These values are, however, very similar to those for general liability, medical professional liability, and multiperil liability. Auto liability is the only insurance line with a distinctively lower pattern of transactions costs measures.

## 7. Conclusion

Using Texas Department of Insurance Commercial Liability Insurance Closed Claim data for the 1988–2004 period, we find that the main factors that influence defense expenditures and the allocation of expenditures between in-house and outside counsel are the scale and the complexity of the case. In-house counsel and outside counsel are substitutes, as insurers typically employ only one type of legal counsel. Claims with higher stakes entail greater overall defense costs, higher outside counsel costs, and lower in-house counsel costs. More complex cases have effects that parallel those of the overall scale of the case in that greater case complexity raises total defense costs, increases reliance on outside counsel, and decreases the utilization of in-house counsel.

Defense expenditures for claims in which a suit was filed, the claimant used an attorney, and the insurer reports positive attorney expenses have grown at an annual rate of 3.0%, controlling for liability lines and initial

reserve amounts. Insurers' tort defense expenses for these claims are substantial, ranging from 15% of total insurer costs for auto liability to 21% of total insurer costs for general liability and other professional liability.

Analysis of all claims reported in the Texas Department of Insurance database, including those in which a suit was not filed, indicates that the transactions costs associated with the tort system are considerable. On average, the total transactions costs for each dollar received by claimants are \$0.75 for all claims and \$0.83 for claims in which a suit was filed, the claimant retained an attorney, and the insurer reports positive attorney expenses. Auto liability claims have the lowest level of transactions costs relative to net payments to the claimant, especially from the standpoint of all claims, not just claims for which a suit was filed. Transactions costs relative to net payment amounts are higher and very similar for all other commercial lines.

## Appendix

**Appendix Table A1.** Primary Insurer Payments and Defense Expenses by Disposition Stage[a]

| Disposition of Claim | Number of Observations | Percent of Cases | Mean Payment | Mean Defense Expenses |
|---|---|---|---|---|
| No suit filed | 66,960 | 37.86 | 42,856 | 820 |
| Alternative dispute resolution—no suit filed | 4,673 | 2.64 | 85,743 | 3,506 |
| Alternative dispute resolution—after suit filed | 28,790 | 16.28 | 160,593 | 32,502 |
| Suit filed, settlement before trial | 72,057 | 40.74 | 137,267 | 28,300 |
| Settlement during trial | 1,606 | 0.91 | 329,473 | 90,673 |
| Court verdict | 1,021 | 0.58 | 157,991 | 60,355 |
| Settlement after verdict | 1,104 | 0.62 | 324,564 | 86,777 |
| Settlement after appeal | 654 | 0.37 | 619,389 | 166,293 |
| Summary judgment | 1 | 0.00 | 492,783 | 286,823 |
| Total | 176,866 | 100.00 | 108,778 | 19,553 |

[a] All dollar values are in 2004\$. The source for these values and all values in the Appendix tables is authors' calculations based on the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988–2004.

**Appendix Table A2.** Total Awards by Injury Type, Claims at Least $25,000[a]

| | Injury Type (%) | Total Award | |
|---|---|---|---|
| | | Mean | Standard deviation |
| Death | 16.9 | 659,616 | 1,195,271 |
| Amputation | 1.8 | 659,025 | 1,441,142 |
| Burns—heat | 2.1 | 827,506 | 2,241,727 |
| Burns—chemical | 0.6 | 624,559 | 2,364,283 |
| Systemic poisoning—toxic | 2.8 | 163,801 | 544,742 |
| Systemic poisoning—other | 2.8 | 470,472 | 1,990,681 |
| Eye injury/blindness | 1.4 | 450,277 | 771,737 |
| Respiratory condition | 3.3 | 248,480 | 889,300 |
| Nervous condition | 1.6 | 376,633 | 790,455 |
| Hearing loss | 0.6 | 635,200 | 1,956,996 |
| Circulatory condition | 0.8 | 437,655 | 812,399 |
| Multiple injuries | 27.2 | 244,714 | 664,059 |
| Back injury | 31.7 | 186,978 | 432,011 |
| Skin disorder | 0.5 | 511,741 | 1,307,809 |
| Brain damage | 5.0 | 1,283,447 | 2,356,158 |
| Scarring | 3.4 | 537,248 | 1,570,494 |
| Spinal cord injuries | 1.8 | 1,278,256 | 2,346,267 |
| Other injuries | 21.6 | 274,117 | 705,444 |

[a] All dollar values are in 2004$. The total award is the combined amount of the settlement or court award paid by all parties, unlike all other tables in this paper, which report payments by the primary insurer. Number of observations = 68,932.
Source: Authors' calculations based on the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988–2004. The sample is restricted to claims with indemnity payments of at least $25,000, as these are the only claims for which injury type is reported.

**Appendix Table A3.** Defense Expenses per Claim Regressions, OLS Estimates[a]

| | Log (In-house Counsel) | Log (Outside Counsel) | Log (Other Expenses) |
|---|---|---|---|
| Log (initial indemnity reserve) | −0.010* | 0.059** | 0.084** |
| | (0.005) | (0.005) | (0.006) |
| Log (initial expense reserve) | −0.116** | 0.265** | 0.066** |
| | (0.010) | (0.010) | (0.011) |

**Appendix Table A3.** (*Continued*)

| | Log (In-house Counsel) | Log (Outside Counsel) | Log (Other Expenses) |
|---|---|---|---|
| Initial expense reserve reported as zero | −0.931** | 1.981** | 0.490** |
| | (0.086) | (0.092) | (0.100) |
| Multiple defendants | −0.090** | 0.617** | 0.575** |
| | (0.023) | (0.024) | (0.026) |
| General liability | −0.111** | 0.607** | 0.480** |
| | (0.026) | (0.028) | (0.030) |
| Multiperil liability | 0.388** | −0.003 | 0.475** |
| | (0.033) | (0.034) | (0.033) |
| Medical professional liability | −0.026 | 0.504** | 0.847** |
| | (0.033) | (0.034) | (0.038) |
| Other professional liability | −0.807* * | 1.396** | −0.189 |
| | (0.061) | (0.065) | (0.122) |
| High claim anomaly 1997 | −1.219** | −0.131* | −6.109** |
| | (0.052) | (0.056) | (0.073) |
| Indemnity payments at least $10,000 in 1988$ | −0.148** | 0.873** | 1.066** |
| | (0.045) | (0.048) | (0.049) |
| Time trend | 0.025** | 0.013** | −0.022** |
| | (0.002) | (0.002) | (0.003) |
| Constant | 2.268** | 4.304** | 3.905** |
| | (0.095) | (0.102) | (0.113) |
| *R*-squared | 0.02 | 0.05 | 0.23 |

[a] Robust standard errors in parentheses. Omitted insurance policy type is auto liability.
* significant at 5% level;
** significant at 1% level. Number of observations = 97,320 for each column. These results are the OLS counterparts to the tobit estimates in the final three columns of Table 3.
Source: Authors' calculations based on the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988–2004.

**Appendix Table A4.** Defense Expenses per Claim Regressions Including Injury Type, OLS Estimates[a]

| | Log (In-house Counsel) | Log (Outside Counsel) | Log (Other expenses) |
|---|---|---|---|
| Log (initial indemnity reserve) | 0.001 | 0.020** | 0.049** |
| | (0.005) | (0.005) | (0.006) |
| Log (initial expense reserve) | −0.105** | 0.235** | 0.051** |
| | (0.010) | (0.010) | (0.011) |
| Initial expense reserve reported as zero | −0.839** | 1.727** | 0.365** |
| | (0.086) | (0.091) | (0.099) |
| Multiple defendants | −0.022 | 0.351** | 0.361** |
| | (0.024) | (0.024) | (0.027) |
| General liability | −0.074** | 0.577** | 0.533** |
| | (0.027) | (0.028) | (0.030) |

(*continued overleaf*)

**Appendix Table A4.** (*Continued*)

| | Log (In-house Counsel) | Log (Outside Counsel) | Log (Other expenses) |
|---|---|---|---|
| Multiperil liability | 0.416** | −0.006 | 0.539** |
| | (0.033) | (0.034) | (0.033) |
| Medical professional liability | 0.080* | 0.327** | 0.939** |
| | (0.035) | (0.036) | (0.042) |
| Other professional liability | −0.701** | 1.231** | −0.134 |
| | (0.061) | (0.064) | (0.123) |
| High claim anomaly 1997 | −1.130** | −0.168** | −5.664** |
| | (0.053) | (0.055) | (0.074) |
| Indemnity payments at least $10,000 in 1988$ | −0.172** | 0.570** | 0.543** |
| | (0.047) | (0.050) | (0.051) |
| Time trend | 0.026** | 0.008** | −0.028** |
| | (0.002) | (0.002) | (0.003) |
| Death | −0.335** | 1.189** | 0.941** |
| | (0.034) | (0.034) | (0.044) |
| Amputation | −0.101 | 0.825** | 0.959** |
| | (0.087) | (0.087) | (0.101) |
| Burns—heat | −0.413** | 0.962** | 1.070** |
| | (0.069) | (0.070) | (0.091) |
| Burns—chemical | −0.105 | 0.447** | 0.545** |
| | (0.133) | (0.137) | (0.185) |
| Systemic poisoning—toxic | −0.140* | 0.774** | −0.054 |
| | (0.070) | (0.071) | (0.121) |
| Systemic poisoning—other | −0.218 | 0.354+ | 0.161 |
| | (0.196) | (0.210) | (0.254) |
| Eye injury/blindness | −0.209* | 0.613** | 0.491** |
| | (0.092) | (0.097) | (0.115) |
| Respiratory condition | −0.131+ | 0.530** | −0.209+ |
| | (0.071) | (0.072) | (0.115) |
| Nervous condition | −0.313** | 0.791** | 0.394** |
| | (0.081) | (0.078) | (0.105) |
| Hearing loss | −0.058 | 0.149 | 0.311+ |
| | (0.148) | (0.161) | (0.179) |
| Circulatory condition | −0.316** | 0.632** | 0.145 |
| | (0.110) | (0.110) | (0.157) |
| Multiple injuries | 0.064* | 0.176** | 0.603** |
| | (0.027) | (0.029) | (0.029) |
| Back injury | 0.141** | 0.234** | 0.709** |
| | (0.027) | (0.028) | (0.028) |
| Skin disorder | −0.541** | 0.963** | −0.362+ |
| | (0.123) | (0.114) | (0.215) |
| Brain damage | −0.153** | 1.116** | 1.055** |
| | (0.055) | (0.056) | (0.067) |
| Scarring | −0.192** | 0.358** | −0.023 |
| | (0.061) | (0.061) | (0.075) |
| Spinal cord injuries | −0.247** | 1.119** | 0.700** |
| | (0.084) | (0.087) | (0.110) |
| Other injuries | 0.051 | 0.299** | 0.475** |
| | (0.032) | (0.033) | (0.036) |

**Appendix Table A4.** (*Continued*)

| | Log (In-house Counsel) | Log (Outside Counsel) | Log (Other expenses) |
|---|---|---|---|
| Constant | 2.051** | 4.982** | 4.361** |
| | (0.097) | (0.102) | (0.114) |
| *R*-squared | 0.02 | 0.07 | 0.24 |

[a]Robust standard errors in parentheses. Omitted insurance policy type is auto liability.
+ significant at 10% level;
* significant at 5% level;
** significant at 1% level. Number of observations = 97,320 for each column. These results are the OLS counterparts to the tobit estimates in the final three columns of Table 4.
Source: Authors' calculations based on the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988–2004.

**Appendix Table A5.** Defense Expenses per Claim Regressions Including Injury Type, Claims at Least $25,000[a]

| | OLS Log (Defense Expenses) | Tobit Log (In-house Counsel) | Tobit Log (Outside Counsel) | Tobit Log (Other Expenses) |
|---|---|---|---|---|
| Log (initial indemnity reserve) | 0.022** | −0.005 | 0.018** | 0.051** |
| | (0.002) | (0.045) | (0.007) | (0.008) |
| | | [−0.001] | [0.016] | [0.041] |
| Log (initial expense reserve) | 0.118** | −0.861** | 0.270** | 0.056** |
| | (0.004) | (0.078) | (0.013) | (0.015) |
| | | [−0.119] | [0.241] | [0.045] |
| Initial expense reserve reported as zero | 0.837** | −7.129** | 2.091** | 0.440** |
| | (0.039) | (0.699) | (0.117) | (0.137) |
| | | [−0.986] | [1.867] | [0.357] |
| Multiple defendants | 0.282** | −0.193 | 0.333** | 0.422** |
| | (0.009) | (0.188) | (0.030) | (0.035) |
| | | [−0.027] | [0.298] | [0.342] |
| General liability | 0.413** | −0.529* | 0.527** | 0.511** |
| | (0.012) | (0.234) | (0.038) | (0.044) |
| | | [−0.073] | [0.471] | [0.415] |
| Multiperil liability | 0.250** | 2.586** | −0.120** | 0.527** |
| | (0.013) | (0.248) | (0.042) | (0.050) |
| | | [0.357] | [−0.107] | [0.428] |
| Medical professional liability | 0.484** | 0.233 | 0.088+ | 0.683** |
| | (0.014) | (0.301) | (0.047) | (0.056) |
| | | [0.032] | [0.079] | [0.554] |
| Other professional liability | 0.476** | −8.013** | 1.175** | −0.525** |
| | (0.041) | (1.117) | (0.127) | (0.150) |
| | | [−1.108] | [1.050] | [−0.426] |
| High claim anomaly 1997 | −0.531** | −7.535** | −0.528** | −7.698** |
| | (0.063) | (1.744) | (0.176) | (0.240) |
| | | [−1.042] | [−0.472] | [−6.244] |

(*continued overleaf*)

**Appendix Table A5.** (*Continued*)

| | OLS Log (Defense Expenses) | Tobit Log (In-house Counsel) | Tobit Log (Outside Counsel) | Tobit Log (Other Expenses) |
|---|---|---|---|---|
| Time trend | 0.024** | 0.163** | 0.009** | −0.038** |
| | (0.001) | (0.019) | (0.003) | (0.003) |
| | | [0.023] | [0.008] | [−0.031] |
| Death | 0.501** | −3.035** | 0.891** | 0.419** |
| | (0.016) | (0.337) | (0.051) | (0.060) |
| | | [−0.420] | [0.796] | [0.340] |
| Amputation | 0.371** | −0.870 | 0.568** | 0.557** |
| | (0.031) | (0.674) | (0.105) | (0.124) |
| | | [−0.120] | [0.507] | [0.452] |
| Burns—heat | 0.329** | −3.860** | 0.714** | 0.690** |
| | (0.031) | (0.696) | (0.098) | (0.115) |
| | | [−0.534] | [0.638] | [0.560] |
| Burns—chemical | 0.100+ | −0.504 | 0.176 | 0.234 |
| | (0.055) | (1.137) | (0.172) | (0.203) |
| | | [−0.070] | [0.157] | [0.190] |
| Systemic poisoning—toxic | 0.086 | −8.675** | 0.727** | −2.396** |
| | (0.054) | (1.278) | (0.146) | (0.175) |
| | | [−1.199] | [0.649] | [−1.943] |
| Systemic poisoning—other | −0.065 | −1.503 | 0.104 | −0.178 |
| | (0.088) | (1.681) | (0.253) | (0.298) |
| | | [−0.208] | [0.092] | [−0.144] |
| Eye injury/blindness | 0.182** | −1.544* | 0.402** | 0.113 |
| | (0.034) | (0.750) | (0.115) | (0.135) |
| | | [−0.213] | [0.359] | [0.092] |
| Respiratory condition | −0.038 | −4.523** | 0.491** | −1.576** |
| | (0.043) | (0.896) | (0.118) | (0.141) |
| | | [−0.625] | [0.438] | [−1.279] |
| Nervous condition | 0.313** | −2.168** | 0.772** | 0.385** |
| | (0.033) | (0.708) | (0.106) | (0.124) |
| | | [−0.300] | [0.689] | [0.312] |
| Hearing loss | 0.178** | −0.648 | 0.135 | 0.368+ |
| | (0.055) | (1.147) | (0.177) | (0.207) |
| | | [−0.090] | [0.121] | [0.298] |
| Circulatory condition | 0.180** | −2.475* | 0.588** | 0.096 |
| | (0.045) | (1.044) | (0.150) | (0.177) |
| | | [−0.342] | [0.525] | [0.078] |
| Multiple injuries | −0.062** | 0.526* | −0.162** | 0.165** |
| | (0.012) | (0.241) | (0.040) | (0.046) |
| | | [0.073] | [−0.145] | [0.134] |
| Back injury | 0.027* | 1.006** | −0.155** | 0.197** |
| | (0.012) | (0.249) | (0.041) | (0.048) |
| | | [0.139] | [−0.139] | [0.160] |
| Skin disorder | 0.257** | −5.018** | 0.921** | −0.486* |
| | (0.054) | (1.462) | (0.187) | (0.221) |
| | | [−0.694] | [0.822] | [−0.394] |
| Brain damage | 0.733** | −1.451** | 0.943** | 0.764** |
| | (0.021) | (0.430) | (0.067) | (0.078) |
| | | [−0.201] | [0.842] | [0.620] |
| Scarring | 0.060* | −1.421** | 0.352** | −0.121 |
| | (0.024) | (0.487) | (0.076) | (0.089) |
| | | [−0.196] | [0.314] | [−0.098] |

**Appendix Table A5.** (*Continued*)

| | OLS Log (Defense Expenses) | Tobit Log (In-house Counsel) | Tobit Log (Outside Counsel) | Tobit Log (Other Expenses) |
|---|---|---|---|---|
| Spinal cord injuries | 0.632** | −2.070** | 0.933** | 0.318** |
| | (0.034) | (0.676) | (0.103) | (0.121) |
| | | [−0.286] | [0.833] | [0.258] |
| Other injuries | 0.079** | 0.167 | 0.008 | 0.034 |
| | (0.013) | (0.269) | (0.044) | (0.051) |
| | | [0.023] | [0.007] | [0.027] |
| Constant | 8.072** | −8.899** | 5.604** | 5.284** |
| | (0.043) | (0.801) | (0.130) | (0.152) |
| *R*-squared | 0.22 | — | — | — |

[a] Robust standard errors in parentheses for OLS regression, standard errors in parentheses for tobit regressions. Bracketed values are marginal effects of a one unit change in the variable evaluated at the mean of the independent variables. Omitted insurance policy type is auto liability.
+ significant at 10%;
* significant at 5% level;
** significant at 1% level. Number of observations = 68,982 for each column. These results directly parallel those in Table 4 but are based on a sample that is restricted to claims with indemnity payments of at least $25,000, as these are the only claims for which injury type is reported.
Source: Authors' calculations based on the Texas Department of Insurance Commercial Liability Insurance Closed Claim database for the years 1988–2004.

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