

The International Comparative Legal Guide to: Product Liability 2006

A practical insight to cross-border Product Liability work



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Forecasting Product Liability by Understanding the Driving Forces

NERA Economic Consulting - Lucy P. Allen, Denise N. Martin, Simona Heumann, Paul Hinton and Faten Sabry

I. Introduction

Product liability forecasts are critical in many situations, including:

- Determining the appropriate level of reserves for financial reporting purposes.
- Calculating the expected burn rate of insurance or assisting in negotiating the proper price for insurance buy-backs or for settlement of insurance policies.
- Assessing solvency in cases of alleged fraudulent conveyance, which can arise from asset transfers.
- Determining an appropriate discount to the purchase price when considering an acquisition of a company with potential exposure to product liability or mass torts.
- Evaluating exposure to mass torts or claims from sales of a potential new product.

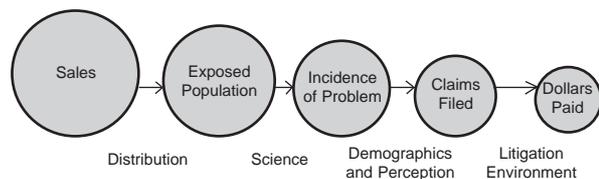
In each of these situations, the critical task is to understand and model the underlying cause-and-effect relationships that create exposure for a firm. Past payments by themselves are often not a good predictor of the future and of such exposure. By examining each of the drivers of liability, though, using claims history where available (as exists for many torts in the U.S.), it is possible to develop a rigorous estimate even in countries or for products where little or no exposure has existed before.

II. Driving Forces in Product Liability

Product liability may result from product failure (e.g., a design flaw or contamination attributable to poor quality control), product misuse (e.g., failure to follow instructions or to take recommended precautions), or adverse side effects (e.g., injury/disease/death) associated with an otherwise properly-functioning and properly-used product. Product liability can produce damage claims from individuals for either personal injury or property damage; or from companies or communities for commercial damages, or environmental damage.

Understanding and modeling the forces that convert the sale of a product into a claim filing and then propel that claim to be settled or dismissed is the key to estimating product liability. The fundamental framework outlined in this chapter involves five distinct stages, as seen in the exhibit below. The product is sold in the market. The consumption of this product leads to an 'exposed population' of people at

risk for the problem or disease. From this exposed population, an incidence of the problem may develop. From those people who develop the problem, only some will ultimately elect to file a claim. Through litigation, the claims filed will result in settlements or dismissals. The forces that bring the forecast from one stage to the next involve varying elements of medical science, human psychology, statistics and probability. (See Frederick C. Dunbar, Denise N. Martin and Phoebus J. Dhrymes, *Estimating Future Claims*, Andrews Professional Books, 1996.) These stages and these forces are explored in more detail below.



In mass torts, repeated litigation and claim settlement, which provide measures of incidence, claim filing rates and the value of typical damages per claim, provide a basis to estimate future liability. Liability risks for new products and for products with only a limited litigation history can be more difficult to analyse. Understanding the driving forces of future claims allows forecasts to be made even in the absence of a significant claims history.

A. From Sales to the Exposed Population

Most forecasts of mass tort claims devote considerable attention to determining the size of a population from which actual claimants may arise. By convention, this affected population is often the total number of people ever exposed or likely to allege exposure to the product causing the claimed injury or other damage. In some cases, the product will have been taken off the market or made safe by the time of the estimate, so the affected population will have ceased to grow. For defects causing personal injury, the surviving potentially affected population will therefore be smaller than the initial population and will continue to decline over time as a result of actuarial mortality. Similarly, for defects causing property damage, the stock of affected products will continue to diminish over time as they are replaced.

For mass tort claims arising from allegedly defective or harmful consumer products, the named defendant may be either the manufacturer of the end product (e.g., breast

implants) or the manufacturer of an input to this product (e.g., silicone). The approach to estimating the affected population will differ by type of manufacturer. When estimating the population of consumers of an end product, one approach is to use historical sales data. Typically, the sales data must first be adjusted to reflect only those units that actually made it into the hands of the ultimate consumer. This figure is likely to be a fraction of those manufactured because, for example, a portion of sales may represent distributors' inventories. These and other non-consumption sales should be subtracted from the total sales to estimate the actual end-user sales and thus the potentially exposed consumer population.

Estimating the population potentially exposed in an occupational setting (rather than as a consumer) requires a different approach. Researchers typically begin with annual employment data, available from government sources for a variety of industries as far back as the exposure occurred. In such datasets, industries are typically grouped according to the Standard Industrial Classification (SIC) system. Employment data are available for an extended history for broad industrial groupings, such as construction and manufacturing, represented by one-digit and two-digit SIC codes. Three-digit and four-digit SIC code breakdowns provide employment data for more narrow industry and occupation classifications.

In situations where a new product is being developed, or a firm is contemplating selling an existing product into a new geographic region, it is possible to estimate the population that might be affected by anticipated future sales. Such estimation might draw on:

- Marketing studies conducted during the product development stage, which will typically identify the demographic group of interest (e.g., women in their child-bearing years). These same studies can be used to identify relevant geographic targets, allowing the potentially exposed population to be limited accordingly.
- Employment data from the Bureau of Labor Statistics or other government/union sources, which can be used together with turnover and age profile statistics to estimate the population exposed in an occupational setting.
- Population statistics from the U.S. Census or other sources, which can be used to estimate the size and specific demographics of the targeted customer base.
- Anticipated market share or forecasted sales data, which can be used to fraction the targeted population into an estimate of the potentially exposed population. In circumstances where sales forecasts are used, it is important to control for the number of products likely to be purchased by each customer, so as not to overestimate the exposed population.
- Studies of product use, which can be used to develop a proper estimate of the number of unique users of a product over time, accounting for repeated use by some users and switching between products. For example, a forecasted market share of 20% may result in potential exposure of more than 20% of the targeted population (if it is expected that over time former product users of one brand will try some other brand and new users will try the original product) or less than 20% (if the users of a particular brand have a higher

frequency of repeat purchasing).

Since the U.S. legal/regulatory environment is most susceptible to claims through litigation, the U.S. exposed population (if any) should typically be considered first.

B. From the Population to Incidence or Injury: Application of Science

At the most basic level, the association between exposure and disease is governed by a dose/response relationship - a concept developed for toxicology. In the case of asbestos, for example, the dose/response curve indicates the probability that an exposed individual will contract a disease within a certain period of time (i.e., incidence rate) as a function of various factors such as: the amount of fibers inhaled (the dose, usually a function of the duration of exposure and the intensity or fibers per cubic foot of air); the background risk of the disease (such as in the case of lung cancer, which depends on age); and the length of time since first exposure (or latency period). In the cases of lung cancer and mesothelioma, dose/response relationships have been estimated by observing samples of asbestos workers through time. For example, if an exposed population is the number of men who worked as insulators from 1941 to 1945 and are still alive in 2001 and are 80 years old and an estimate for this exposed population is developed, an existing dose/response relationship can be used to determine the probability in each year of individuals from the exposed population getting lung cancer ("incidence").

Generally, epidemiology of this type is transferable across borders. Typically, the only adjustments that would need to be made in the case of asbestos, for example, are those needed to adjust for differences in exposure levels over time in different countries.

When a company is deciding whether to develop a new product or market an existing product in a new geography, three types of risks should be estimated: (1) product failure; (2) product misuse; or (3) adverse side effects associated with an otherwise properly-functioning and properly-used product. Identification of these hazards is helpful in the assessment and quantification of the risk of a new product.

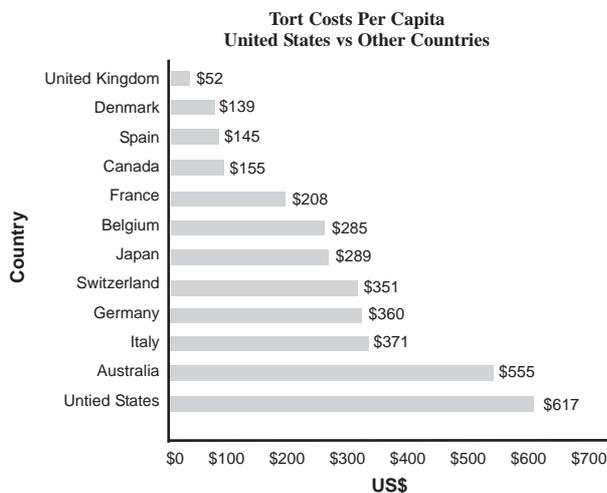
C. From Incidence to Claims

Estimates of future claims, rather than incidence, require a second-stage analysis. This requires estimating a filing rate that indicates the conditional probability of making a claim given exposure and the development of a disease. As a starting point, some historical claim filing frequency typically serves to indicate this likelihood. (See Dunbar, Martin and Dhrymes, 1996.) If the observed claim rate is 1% of the historically predicted incidence in a given cohort, a forecaster may estimate that 1% of all future incidences in this cohort will result in a claim. Alternatively, he or she may expect the filing rate to increase or decrease for a variety of exogenous reasons. (See James S. Kakalik, Patricia A. Ebener, William L. F. Felstiner, Gus W. Haggstrom and Michael G. Shanley, "Variation in Asbestos Litigation Compensation and Expenses," 1984, Rand R-3132-ICJ, The Institute for Civil Justice.)

Whenever possible, filing rates should be calculated separately for different age groups (as older members of an exposed population have been shown to claim less

frequently) and according to the type and/or severity of the alleged disease, as the filing rate typically increases with disease severity. Regression analysis or a statistical comparison of averages across groups can be used to determine whether or not there is a significant difference in the filing rates of different groups defined along these and other lines.

Claims values vary from country to country, which may affect the level of claim filings. Some examples of factors that could contribute to increases in tort costs are the type of claims filed, increases in medical cost inflation, and increases in the size of lawsuits. The chart below depicts each country's tort costs per capita. The U.S. has the highest percentage. (See statement of Russel L. Sutter before the U.S. Senate Judiciary Committee, Subcommittee on Administrative Oversight and Courts, October 16, 2003.)



Notes and Source
 Data on tort costs were obtained from Russel L. Sutter's Testimony for the United States Senate Judiciary Committee, Subcommittee on Administrative Oversight and the Courts, October 16, 2003. Data on GDP and population were obtained from the IMF's *International Financial Statistics Yearbook*, 2001. Exchange rates were obtained from a Federal Reserve Bank release dated January 4, 1999.

D. From Claims to Dollars Paid

To forecast liability, it is also necessary to assign dollar values to projected claims. The costs of product liability may include each of the following components:

- Replacement/repair costs (associated with honouring product warranties and, to a more significant extent, in product recalls).
- Reputational costs (apart from any payment to claimants and resources used to dispose of a claim, reputational damage may be done to the company or to a brand).
- Administrative costs associated with claims management and payment.
- Defence costs (which depend on the company's historical and expected litigation strategy).
- Indemnity costs (which can include the costs of settlement/verdict, as well as any expected verdicts/punitive damages awards).
- Costs of medical monitoring or other remedial actions that are required.

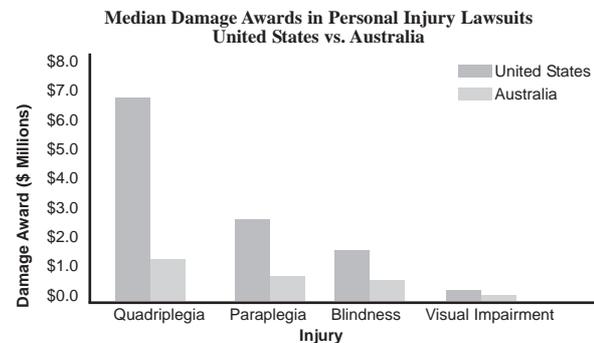
Estimated per claim values are, when possible, based on prior settlements, either through the use of simple averages or values predicted using regression analysis. More

sophisticated attempts have used regression analysis to control for not only disease, but also for the age of the claimants, the jurisdiction, the law firm, the occupation resulting in alleged exposure and the years of alleged exposure.

Historical settlements provide a starting point for estimating future claim values. In general, the level of the settlements reflects the economic loss (including the value of pain and suffering) to the claimant as a result of exposure to the defendant's product. However, when settlements are determined in an environment with trial docket and other tort system pressures, and these pressures are expected to be relieved in the future, historical claim values must be adjusted to reflect the effect of changing conditions.

Defence costs depend heavily on a company's chosen litigation strategy and may be a large proportion of the total liability. Historical defence costs per case may not be predictive of future costs, however, if litigation strategy changes over time. For example, the heavy burden of defending mass torts can make group settlement strategies attractive. These are designed to minimise discovery and other litigation costs but may induce the filing of weak or unsubstantiated claims the settlement of which, even for small per case amounts, raises liability costs. As such, companies initially adopting such strategies may revise their approach over time.

The dollars paid to claimants for the same injury varies dramatically across countries. A NERA study conducted in 2000, for example, compared litigation awards in the U.S. and Australia to forecast liability in Australia for a product for which there was substantial claims experience in the US. The chart below summarises the difference in the litigation awards for several distinct injuries.



Notes and Sources
 Data for United States obtained from "JVR Personal Injury Valuation Handbooks" Includes verdicts from 1991-1997.
 Data for Australia obtained from "Australian Tort Reports" 1987-1998. Analysis does not include claims with reports of multiple injuries. Data reported in Australian dollars have been converted to United States dollars using exchange rates obtained from the IMF's *International Financial Statistics Yearbook* - 1993 and April 1999.

III. Dissecting the Forces Behind the Filing Rate

Estimation of the filing rate - the force that translates the incidence (or alleged incidence) of injury or defect into a claim - is one of the most important and complicated steps of forecasting liability. While product defects or personal injury may be expected to occur in the underlying population in the same rates across countries, the number of claims that emerge may differ substantially because of the different litigation environments that exist. As described below, other drivers of the filing rates include claimant demographics (including age), the strength of the scientific link between

exposure and injury/defect, the awareness of this link (affected, e.g., by publicity) and the dollar value likely to be awarded to the claimant.

A. Levels of Litigiousness in Different Countries

When forecasting liability, it is necessary to understand the likely level of litigiousness within the affected jurisdiction or country. A survey is one tool to assess varying levels of litigiousness. In 2002, for example, NERA conducted a survey of lawyers in different countries and found that expected changes of litigiousness varied from country to country. The results of the 2002 survey are set forth in the table below.

Country	Number of Respondents	Percent Believing It Will Be Less Difficult to Sue other Parties in Next 5-10 Years	Percent Believing There Will Be An Increase in The Number of Cases Filed Against Other Parties in Next 5-10 Years
(1)	(2)	(3)	(4)
United Kingdom	25	32%	68%
Germany	28	25%	68%
Brazil	25	76%	76%
Hong Kong	10	30%	70%
Australia	25	16%	72%
United States	8	25%	50%
China	2	100%	50%

B. Why Do People File Lawsuits?

The number and costs of civil litigation cases in the United States have skyrocketed, with many recent verdicts in excess of one hundred million dollars - a phenomenon that was practically unheard of in the 1970s. People are now filing suits for novel reasons such as coffee burns or fattening burgers.

Why do people file lawsuits? What percentage of people who have been injured by a particular product, for instance, file claims? A growing body of literature in the fields of psychology, economics and law examines the causes and consequences of filing claims. (See Fred Dunbar and Faten Sabry, "The Propensity to Sue: Why Do People Seek Legal Actions?", NERA Economic Consulting, May 2004.)

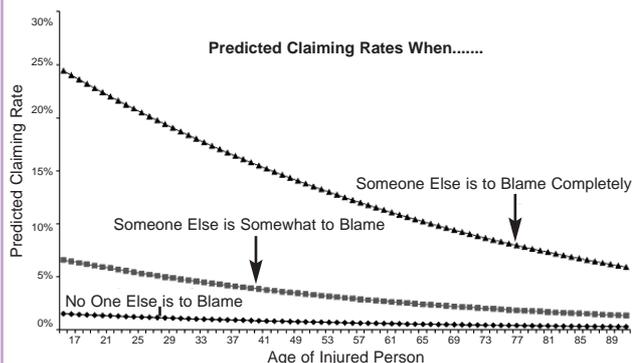
NERA has modeled the factors that affect the probability of taking any claiming action. This includes any attempts to obtain direct payment from the injurer or from insurance and contacting a lawyer.

The key results of the NERA model are:

1. The perception of the cause of injury affects the claiming rate significantly, ranging from 2% if no others are blamed to 34% if the injured person believes that another person or organisation is completely to blame for the accident, assuming all other factors are held constant. On average, a person who blames another person or firm for his injury, no matter what type, is 4.5 times more likely to sue than one who does not blame anyone for his injury.
2. Age, income and education are important demographic factors in explaining the claiming rate. There is a negative relation between age and claiming behaviour. The older the injured person, the less likely is he or she to take some claiming action, as shown in

the chart below. The probability of a 40-year old filing a claim is 25% higher than a 60-year old. Income and education are negatively correlated with the claiming rate. The propensity to claim for a person with an education beyond the 12th grade level is 40% less than that of a person with education less than or equal to the 12th grade level. The propensity to claim for a person in the lowest income group in the survey is 55% higher than that of a person with similar injury but who is classified to be in the highest income group.

Predicted Claiming Rate by Age and Perceived Cause of Injury



3. The sex of the injured person does not have a statistically significant effect on propensity to claim.
4. In the U.S., the state where the accident takes place has an effect on the claiming rates. Accidents that take place in Texas, Mississippi, New York, West Virginia and California are more likely to result in claiming/filing.
5. The type of accident also has an effect. The probability to claim due to a car accident is 3.45 times more likely than it is in any other type of accident.
6. For any given level of injury, the claiming rate is positively correlated with the perception of the injury. For those with a severe injury as determined by objective measures, the average claiming rate is 45% if he or she perceives the injury as severe, and declines to 25% if the injury is perceived as not serious.

C. Plaintiffs' Lawyers' Incentives

Incentives of plaintiff's lawyers are a strong force driving the claiming rate. In the U.S., plaintiffs' attorneys discover, pursue and negotiate claims through either the tort system or a trust distribution process.

In the U.S., the typical reward for the plaintiffs' attorney is 25% of a trust distribution and a higher percent (often estimated to be in the 30% to 40% range) of tort recoveries. Plaintiffs' attorneys can perform a number of services for their clients including: research on defendants; medical testing; paperwork necessary to make and close a trust claim; legal pleadings and discovery to pursue a claim in the tort system; and negotiating with attorneys for defendants and distributing the recovery. In the U.S., contingent fee agreements are a way to cover expenses and reward plaintiffs' attorneys for taking risks.

The varying fee arrangements among different countries yield different incentives for both plaintiffs and their attorneys. While parties in the U.S. bear their own legal fees regardless of outcome, in the U.K. the loser at trial bears his

opponents' legal fees as well. The U.S. contingency fee system, through rewarding lawyers that win higher damages for their clients, guarantees payment in the case of settlement while leaving award at trial subject to favourable adjudication. This creates further incentive to settle. The fee-shifting in the U.K. yields fewer suits in situations where the outlook is unfavourable to plaintiffs and more suits in situations where the outlook is more favourable to them. Through these different influences on the potential costs and benefits of entering into litigation, the incentives among plaintiffs and their attorneys will differ from country to country. (See Shavell, Steven, *Foundations of Economic Analysis of Law*, The Belknap Press of Harvard University Press, 2004.)

A profit maximising law firm will increase the number of claimants that it can represent up to the point where the cost of an additional claimant exceeds the expected fee from that claimant with cost including the opportunities for the lawyers to be earning fees on work that is foregone by prospecting for and serving the new claimant. There are several ways that law firms can increase their profits:

1. Reduce the costs of processing claims. Early in the asbestos litigation, U.S. plaintiffs' law firms coordinated on discovery and documents to spread the costs of going to court. They also developed standardised procedures for administering claims that could be shared. Affiliations between the large mass tort firms and local counsel extended the reach of the large firms and led to an efficient division of labour: the local firms would acquire the claimants and the national firm would pay the local firm for its claims and negotiate the settlements.

2. Increase the number of claims filed by the population manifesting a compensable disease. Favoured plaintiffs' law firms, in alliance with union leaders, found low cost ways to screen for asbestos-caused conditions. During the 1980s, these screening programmes are believed to have led to a doubling of claims per year over a period of several years.

3. Increase the volume of non-meritorious claims through the use of group settlements, favourable bankruptcy trust design and plaintiff-friendly medical experts.

4. Increase the value of claim. Plaintiffs' law firms have developed a number of strategies to increase the value of claims.

- a. *Court congestion.* The primary problem with the tort system, as recognised by the U.S. Supreme Court, is that a defendant is unable to mount a reasonable defence when it has to try dozens, hundreds or thousands of cases at the same time. Plaintiffs' attorneys with large numbers of claimants recognise this problem and use it to settle claims without allowing defendants to properly determine their actual share of the liability. By preventing the defendants from so doing, the plaintiffs' attorneys are able to make each defendant pay more than its appropriate share.
- b. *Docket pressure.* Even those defendants who do take some asbestos cases through to trial are unable to try all the cases. For those defendants, claim values also increase as the volume of cases with impending court dates grows. The values are especially increased for claims with impending court dates against those defendants who never try cases.

- c. *Venue shopping.* Several venues have been favourable for in-state plaintiffs' law firms at the expense of out-of-state defendants. Plaintiffs' attorneys file their cases in these venues, thereby increasing the values of the claims.
- d. *Pressure on remaining defendants, after insolvencies.* In the wake of insolvencies, plaintiffs' attorneys will often turn their attention and demands to the remaining solvent defendants, thereby increasing the settlement demands against these defendants.
- e. *Applying tort system values, containing tort pressures, to trust values.* When designing the payment structure of trusts, plaintiffs' attorneys will argue that the values should be based on the historical settlements paid by the defendant even though these historical settlements were subject to all of the above-mentioned tort system pressures, which served to inflate past settlements.

5. Create surges in claims. Plaintiffs will create a surge in claims filed against defendants to pressure defendants to stop taking action adverse to their interests and in response to a foreseen switch in criteria.

- a. *Surges as a pressure tactic.* Some defendants might take actions adverse to the interests of plaintiffs' lawyers, such as seeking legislative help to alleviate the problems of the asbestos litigation system. Plaintiffs' lawyers will create a surge in claims against those defendants to pressure them from pursuing that course.
- b. *Surges in response to a change in criteria.* As defendants or trusts attempt to change (or institute more stringent) criteria under which they will pay claims, plaintiffs' attorneys will respond by increasing the number of claims filed prior to the change, creating a temporary surge in claims. Then, once the change is instituted, they will shift their focus to those defendants with less stringent criteria, increasing the rate of claims filings against those companies or trusts.
- c. *Bar dates.* The establishment of a bar date can be another factor motivating plaintiffs' attorneys to create a claim surge. With the goal of establishing claim priority, plaintiffs' attorneys will attempt to corral all the claimants they can prior to the bar date.

D. Forecasting Claims for Bankruptcy Trusts

In some cases, institutional failure has contributed to a company's bankruptcy. Claims forecasting can play a role in the ensuing bankruptcy process. In U.S. asbestos litigation, for example, some of the §524 bankruptcy trusts included the payment of unimpaired claims. The inclusion of these payments may have been due to the pressure exerted on debtors by the need to appease plaintiffs' attorneys so that the parties would be able to form a coalition to win plan confirmation. The plaintiffs' attorneys acquired leverage to bargain for these payments pursuant to §524, which requires a 75% supermajority vote of asbestos claimants before a plan to emerge from bankruptcy can be approved. Nevertheless, in an effort to escape the pressures inherent in the tort system, other debtors have attempted to use claims forecasting within the bankruptcy process to weed out invalid claims that they were forced to settle at a premium when they were subject to past tort pressures. (See Frederick C. Dunbar and Faten Sabry, "Forecasting Claims

in an Era of Tort Reform,” Law Journal Newsletters, LJM’s Product Liability Law and Strategy™, November/December 2004.)

Although estimation of future claims is a common feature of bankruptcy proceedings, using bankruptcy protection to bring more control over the settlement of a mass tort claim creates a conundrum for claims estimation. One purpose of estimation pre-bankruptcy is for the defendant firm to understand the nature of its future liability, assuming it were to remain in the tort system. If the claims are removed from the tort system and become part of a bankruptcy estate, the purpose of the estimation is to determine the size of a §524(g) trust. The two estimates cannot be the same, as the very act of declaring bankruptcy and using a Trust Distribution Process (TDP) to handle claims (in lieu of the tort system) creates circumstances that materially impact the number and value of future claims. A TDP uses claims handlers to determine valid claims. In the tort system, on the other hand, plaintiffs’ attorneys may negotiate group settlements based on tort system pressures placed on the defendant and then decide who among the group of their clients will receive what proceeds from the settlement. (See White, Michelle, “Explaining the Flood of Asbestos Litigation,” NBER Working Paper 9362, December 2002.) Relieving defendants of the pressure to make group settlements will allow a more systematic approach to various defences, especially exposure criteria, which would also select out claims that had been paid pre-bankruptcy.

E. The Probability of Unfounded Claims

It is now well accepted that the way the tort system handles personal injury mass torts is in need of repair. (See, e.g., *Amchem Products, Inc. v. Windsor*, 521 U.S. 591 1997; American Bar Association Commission on Asbestos Litigation, Report to House of Delegates, Recommendation, February 2003; Rothstein, Paul S., “What Courts Can do in the Face of the Never-Ending Asbestos Crisis,” *MISS. LAW J.*, Fall 2001; Bell, Griffin B., *Asbestos Litigation and Judicial Leadership*, National Legal Center for the Public Interest, 2002; and American Academy of Actuaries, *Overview of Asbestos Issues and Trends, Public Policy Monograph*, December 2001.) One of the most obvious and alarming signs is that unfounded claims - claims without any medical impairment - continue to be filed and paid in large numbers. In the U.S., such claims are notorious and ubiquitous in the history of asbestos litigation, but asbestos is no exception: claims of this type have been documented in litigation involving Agent Orange, breast implants, Dalkon Shield and diet drugs.

Calls for tort reform have focused on the greed of the plaintiffs’ bar. This view, however, is an oversimplification: the breakdown results from a complex set of institutional failures that have received less attention. Other institutions that share in the blame include a small number of state court systems with pro-plaintiff procedures, legislatures in those same states that have been slow to adopt tort reform, the U.S. Congress, which has until recently failed to heed repeated calls for tort reform, and a number of medical professionals that certify impairment where none exists. (See ABA Report, 2003; Rothstein, 2001; Carroll, Stephen J., et al., “Asbestos Litigation Costs and Compensation,” Rand Institute for Civil Justice, 2002; and White, 2002.)

In the past few years, in the U.S., a number of favourable

institutional changes may have begun to turn the tide of asbestos litigation. Bankruptcy trusts have enacted or have proposed to enact more stringent criteria. State and federal courts have begun to create inactive dockets that stay payment of claims if and until a compensable injury arises.

Encouragingly, such reforms have recently extended outside the asbestos arena, with a clamp down on the medical profession specifically. In late 2002, for example, a federal judge dismissed 78 plaintiffs from a class action involving the diet drug Fen-Phen because suspect doctors supported the claims of those plaintiffs. This decision could provide another step towards ending unfounded claims. (See Frederick C. Dunbar and Denise Neumann Martin, “Clearing Uninjured Plaintiffs From the Tort System: The Road to a Solution,” *Legal Background*, Vol. 18 No. 31, July 25, 2003.)

F. Impact of Tort Reform on Filings

Given that accurate forecasts incorporating future changes in tort system claiming rates are needed in both the tort and the bankruptcy context, NERA has used regression models to analyse the impact of state tort reform on filings in different states in the U.S. during the period from 1991 to 2002. (See Dunbar and Sabry, November/December 2004. See also Joan Schmit, Mark J. Browne, and Hane Duck Lee: “The Effect of State Tort Reforms on Claim Filings,” *Risk Management & Insurance Review*, Vol. 1, 1997. This article estimated the effects of tort reform using data for the period 1984 to 1990.)

Reforms were classified into the following categories:

1. Caps on non-economic damage awards. Damages for non-economic losses are for pain and suffering, emotional distress, loss of consortium or companionship, and other intangible injuries.
2. Limits on punitive damages awards. While punitive damages awards are not common, their perceived frequency and size have grown in recent years. There are 33 states that have reformed their punitive damages laws.
3. Limits on joint-and-several liability. Joint-and-several liability means that any of the multiple co-defendants can be deemed responsible for all of a victim’s damages. Only seven states have banned the application of the doctrine, but 42 states limit its application in some manner.
4. Sanctions on frivolous suits or defences. Federal Rule of Civil Procedure 11 allows a court to impose sanctions when a groundless lawsuit is filed. Similar rules have been adopted recently in three states, e.g., Texas SB 31, 1995.
5. Changes to the collateral source rule. The collateral source rule states that plaintiffs’ losses are not to be offset by insurance proceeds from other sources, based on the theory that the plaintiff pays for the insurance and should receive the benefit. According to the American Tort Reform Association, 35% of total payments to medical malpractice claimants are for expenses already paid from other sources. The collateral source rule has been modified or abolished by 23 states; the efforts of two states to reform the rule were struck down as unconstitutional.

6. Venue reform. Venue - or forum - shopping has been a fact of life in asbestos and pharmaceutical litigation. Mississippi's reform in 2002 limits jurisdiction of civil actions to the county where the defendant resides or the county where the alleged act occurred. See Mississippi H.B. 19 (Special Session), 2002. Venue reform also occurred in one other state, Texas, in the late 1990s.

NERA collected data on the dates of enactment of the various types of tort reforms in 29 states during the period 1991 to 2002. We used regression analysis to analyse the relationship between the tort filings in state courts per 100,000 people as a function of the various types of reforms using regression analysis. For each state and year, the models also take into account the effects of the following:

1. Population density, as measured by average population per 10 square miles.
2. Number of lawyers per 100,000 people.
3. Vehicle miles travelled per 1,000 miles of road.
4. A No-Fault indicator used to describe the state auto insurance system.
5. The per cent of each state's gross state product attributable to manufacturing and construction.
6. Unemployment rate in each of the states.

High Tort Filings Cause Reform...

NERA found that the past frequency of tort filings in a given state has a highly significant and positive impact on predicting whether a state would enact tort reform legislation. States with relatively high litigation levels are more likely to enact tort reform. This is consistent with the observation that states such as Texas and Mississippi have been recent candidates for tort reform. For example, if a state's filing increased by 60%, then it becomes 37% more likely that this state will enact tort reform.

...Which Then Causes Filings to Decline

NERA found that, once enacted, certain types of tort reform decrease the number of filings in that state by a statistically significant amount. However, tort reform does not cause an immediate decline in the volume of filings. Instead, NERA found that, on average, filings do not decline until 2 years after passage. The effect of the decline, however, is persistent.

The three types of reform that have the most significant negative impact on filings are: restricting joint-and-several liability; venue shopping; and application of the collateral source rule. The estimated impact of each of these reforms varies somewhat, depending on certain technical adjustments made to the regression analysis. However, certain of the results are substantial. For example, the average effect of each of these reforms individually is a 20% decline in filings, although each reform does not have equal impact. Venue reform has the largest impact, causing approximately a 25% reduction in filings. If a state were to pass all three reforms, the models show that filings would be cut in half.

Even relative to the historic range of errors involved in claims forecasting, these are significant declines in the filing rate. In states where tort reform has occurred recently, using historic rates of filings will cause over-prediction of future claims. Moreover, even if there is not yet tort reform in high volume states, our results show that the high volume of filings can be expected to self-correct in the long run. To the extent an analyst forecasts high future claims, the very fact of high filings causes an institutional adjustment, such as tort reform, that then causes the claims to decline from the forecast levels.

IV. Conclusion

Claims forecasting involves many uncertainties and behavioural influences that cause it to deviate from exact science. However, by keeping in mind the fundamental progression of events from the sale of a potentially harmful product to the final settlement of a claim, one can break this complex task down into clear, scientific methodologies. While different products, venues and time periods can result in varying influences on the resulting filing rates, adhering to this robust framework allows a versatile approach that can even calculate accurate predictions for products not yet on the market. By learning from past experience in the United States, these methodologies can also be extended to accommodate new products and markets on the international level.

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