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THE DIMENSIONS OF THE PRODUCT LIABILITY CRISIS

W. KIP VISCUSI*

I. INTRODUCTION

THE product liability crisis of the mid-1980s has sparked a variety of efforts to reform the tort system, including studies by the U.S. Department of Justice, the American Law Institute, the American Bar Association, and others.¹ The principal impetus for these reform efforts has been a perceived crisis in insurance markets. Reform efforts have called for damages caps, restrictions on pain and suffering damages, and similar measures to reduce the costs of liability. Thus, the dominant perception is that producers rather than the accident victims are the main victims of the crisis and that tort liability reform should be directed at diminishing these effects.

Although this is a prominent view, it is not altogether obvious that the tripling in product liability insurance premiums in a two-year period in the mid-1980s reflects a crisis that merits a comprehensive overhaul of the tort system. Consider the following possible explanations for the crisis.²

* George G. Allen Professor of Economics, Duke University and Associate Reporter, American Law Institute Project on Compensation and Liability for Product and Process Injuries. Thomas Dunn and Oren Lewin provided excellent research assistance.

¹ See Tort Policy Working Group, U.S. Dep't of Justice, Report on the Causes, Extent, and Policy Implications of the Current Crisis in Insurance Availability and Affordability (1986); Report of the ABA Action Commission to Improve the Tort Liability System (1987); and the American Law Institute, Compensation and Liability for Product and Process Inquiries (draft final report, 1989).

² These explanations are articulated in the excellent assessment of the crisis by Kenneth S. Abraham, The Causes of the Insurance Crisis, in 37 New Directions in Liability Law: Proceedings of the Academy of Political Science 54 (Walter Olson ed. 1988). Other assessments of the crisis appear in Kenneth S. Abraham, Making Sense of the Liability Crisis, 48 Ohio St. L. J. 399 (1987); George Priest, The Current Insurance Crisis and Modern Tort Law, 96 Yale L. J. 1521 (1987); Ralph A. Winter, The Liability Crisis and the Dynamics of

First, the rise in premiums may not reflect an escalation of the product liability burdens but rather may be simply a consequence of the underwriting cycle for the insurance industry. In particular, the premiums that firms receive for insurance are invested and are used to pay off losses that often occur many years after the premiums are paid. If interest rates are high, then the premiums that can be charged will be less since the firms will be able to earn a substantial return on the funds before paying off any losses. The decline in interest rates in the mid-1980s consequently forced firms to raise premiums, and to the extent that this influence is responsible for the higher premiums, there is no crisis in the underlying liability structure. Europeans were also believed to have withdrawn from the reinsurance market due to macroeconomic conditions. Thus, some have argued that the premium shift is in part a consequence of broader economic fluctuations that lie outside the domain of tort liability reform.

A second possible explanation is that the hike in premiums results from collusion among insurance firms who are using the rate increase to justify reform efforts to diminish their insurance costs in the future.

Such explanations betray an overly simplistic view of what the insurance industry is attempting to accomplish. Clearly, in the short run a reduction in liability costs may benefit insurance companies that have written policies for which they will have to pay off losses into the future. However, in the long run the insurance industry will profit from a high level of liability since that will increase the degree of coverage it can write. More tort liability generally means more business for the insurance industry. Collusive behavior that is designed to decrease the amount of insurance business appears implausible. A third explanation is that the liability crisis results from an increase in the level of liability burdens. The increased level could have come from either an increase in the riskiness of the products being marketed or a change in liability standards.

Finally, a fourth explanation is that the crisis stems from the uncertainty that has been introduced in the tort liability system from changes in legal doctrine. Highly volatile loss patterns limit the insurance industry's ability to write coverage. If a policy runs the risk of leading to substantial insurance payoffs that were unanticipated, as in the case of asbestos, then the premiums that must be charged will be raised to cover such future contingencies.

Competitive Insurance Markets, 5 *Yale J. Reg.* 455 (1988); Michael Trebilcock, *The Social Insurance—Deterrence Dilemma of Modern North American Tort Law: A Canadian Perspective on the Product Liability Insurance Crisis*, 24 *San Diego L. Rev.* 929 (1987); and Scott Harrington, *Prices and Profits in the Liability Insurance Market*, in *Liability: Perspectives and Policy* (Robert Litan & Clifford Winston eds. 1988). These concerns raise more generally the issue of the role of product liability as an insurance market. See Richard Epstein, *Products Liability as an Insurance Market*, 14 *J. Legal Stud.* 645 (1988).

At present, there is no consensus regarding the extent to which the explanations involving the role of the underwriting cycle, conspiracy among insurance companies, increased liability actions, and uncertainty have contributed to the product liability crisis. Moreover, how one diagnoses the tort liability crisis will play a critical role in determining the direction product liability reform should take, if indeed the tort liability system is responsible.

The assessment of the tort liability crisis presented in this article will augment consideration of federal court cases with a detailed analysis of insurance rate statistics. These insurance data offer the advantage that they capture the total economic influence of all product liability claims, not the unrepresentative and small segment of these claims litigated in federal courts. Moreover, since the data include information for several years after the prodefendant shift is believed to have begun, they will reflect the effect of any shift in judicial philosophy.

Sections II and III begin my assessment by focusing on litigation trends. In particular, these sections document the substantial rise in product liability litigation both in absolute terms and as a percentage of all civil liability actions. Damages amounts have also increased. Section IV examines the explosive nature of insurance premiums in recent years and explores the profitability of insurance companies during that period, which is closely linked to any explanations regarding an insurance industry conspiracy. Although the 1980s marked the most concentrated explosion in premium levels, the premium surge began in the 1970s. The premium growth in the 1970s exceeded that in the 1980s both in absolute and in real (that is, inflation-adjusted) terms. To assess the possibility that an insurance availability crisis has emerged, Section V utilizes the rate-making files of the insurance issue to explore this. The analysis documents the shrinking insurance market in the early 1980s that is hidden by the stability in premium levels. Section VI provides a detailed review of data pertaining to product liability policies to examine which industries are hardest hit by product liability costs. Section VII provides the conclusion regarding the legitimacy of the product liability crisis as well as an assessment of its overall character. There is indeed evidence of a substantially accelerating liability burden, but excessive attention to the mid-1980s insurance crisis aspects may have distracted attention from the more fundamental, long-term problems of product liability.

II. CONTRADICTIONS OF THE LIABILITY CRISIS

If the liability crisis is to be traced to the tort liability system, there must have been an increase in product liability litigation or awards generating this crisis. Although information is not available on a comprehen-

sive basis for courts at all levels, data are available that permit an assessment of the product liability litigation at the federal court level.³

Table 1 presents statistics on the number of personal injury product liability cases commenced in federal courts from 1975 to 1987. Examination of federal litigation trends provides a partial and potentially distorted view of all product liability claims. The overwhelming majority of claims are settled out of court, and court cases differ in character from all claims. Moreover, the mix of claims going to court changes over time. Nevertheless, federal litigation trends provide a good starting point for assessing relative changes in product liability litigation. Over the 1985–87 period, there was a considerable escalation in the number of personal injury product liability cases. In 1975 only 2,393 such cases were commenced, whereas by 1987 the number of such federal court cases rose to 14,145. For the most part, this increase seems to have occurred outside of the transportation area. The number of airline product liability cases has held fairly steady, although the amount fluctuates from year to year depending on random major catastrophes. Similarly, the number of marine-related cases is also fairly stable. Motor vehicle cases rose by roughly 50 percent over the 1975–87 period, but this increase is nowhere near as great as the more than sixfold rise in product liability cases generally. Although, as we will see below, much of the increase from other product litigation stems in part from the rise in asbestos litigation,⁴ litigation other than asbestos has increased greatly as well.⁵

One plausible explanation for the increase in product liability litigation is that this increase may reflect an upward trend in litigation generally. This possibility can be assessed using the statistics in Table 2 on personal injury product liability cases as a percentage of all federal civil cases. These data indicate that product liability litigation has become increasingly prominent. Whereas the product liability component of all civil cases was only 2.04 percent in 1975, by 1987 it had risen to 5.92 percent. These two comparison years are not in any way unrepresentative, as they

³ There have been a number of examinations of these litigation statistics. The main difference in the discussion here is that the product liability share of civil litigation is considered, thus adjusting for the increased litigiousness of society. Other studies include J. A. Henderson, Jr., & T. Eisenberg, *The Quiet Revolution in Products Liability: An Empirical Study of Legal Change*, 37 UCLA L. Rev. 479 (1990), and U.S. General Accounting Office, *Extent of Litigation Explosion in Federal Courts Questioned* (Jan. 1988).

⁴ Available data from the Administrative Office of the U.S. Courts since 1984 and estimated asbestos shares of litigation in earlier years from Terence Dungworth, *Product Liability and the Business Sector: Litigation Trends in Federal Courts* (R-3668-ICJ, RAND Corp. 1988), indicate that the asbestos percentage of all litigation rose from just over 1 percent in 1975 to over 5 percent by 1987.

⁵ See data from the Administrative Office of the U.S. Courts.

TABLE 1
TRENDS IN PERSONAL INJURY PRODUCT LIABILITY CASES IN FEDERAL COURTS

Year	Total	Airline	Marine	Motor Vehicle	Other
1975	2,393	301	46	438	1,608
1976	3,016	160	140	385	2,331
1977	3,366	198	149	372	2,647
1978	3,600	237	139	350	2,874
1979	5,318	699	128	457	4,034
1980	6,876	283	89	535	5,969
1981	8,028	256	69	491	7,212
1982	7,908	374	122	556	6,856
1983	8,026	337	164	574	6,951
1984	7,677	371	133	652	6,521
1985	12,507	278	112	612	11,505
1986	12,459	216	93	656	11,494
1987	14,145	150	99	649	13,247

SOURCE.—Annual reports of the director of the Administrative Office of the U.S. Courts, tables "Product Liability Cases Commenced" (1975–87).

TABLE 2
PERSONAL INJURY PRODUCT LIABILITY CASES AS A PERCENTAGE OF ALL FEDERAL CIVIL CASES

Year	Total	Airline	Marine	Motor Vehicle	Other
1975	2.04	.26	.04	.37	1.37
1976	2.31	.12	.11	.29	1.79
1977	2.58	.15	.11	.29	2.03
1978	2.59	.17	.10	.25	2.06
1979	3.44	.45	.08	.30	2.61
1980	4.07	.17	.05	.32	3.53
1981	4.45	.14	.04	.27	4.00
1982	3.84	.18	.06	.27	3.33
1983	3.32	.14	.07	.24	2.87
1984	2.94	.14	.05	.25	2.50
1985	4.57	.10	.04	.22	4.09
1986	4.89	.08	.04	.26	4.51
1987	5.92	.06	.04	.27	5.54

SOURCE.—My calculations using data from the annual reports of the director of the Administrative Office of the U.S. Courts, tables "Product Liability Cases Commenced" and "Civil Cases Commenced" (1985–87).

reflect the steady upward trend of product liability cases generally as well as the increased role of product liability among all civil suits.

The airline and marine components of liability cases have had a decreasing share, and the motor vehicle share has been relatively flat, if not declining a bit. In contrast, other cases have been escalating considerably, in part because of the now-substantial share of asbestos litigation, which constituted 3.25 percent of all civil cases by 1987.⁶ Other cases, excluding asbestos and transportation, rose from 1.43 percent to 2.29 percent from 1984 to 1987, so that the increase in litigation for other products also has been great.⁷

What is particularly striking is that both the level of product liability cases as well as their share of all civil litigation jumped in the 1985–87 period. Since, as we will see below, the tort liability crisis with respect to insurance premiums emerged in 1985 and 1986, the rate increases that were observed in the insurance market coincided exactly with the escalation in product liability litigation.

In short, there is evidence at the federal court level of a substantial increase in product liability litigation, both in absolute terms as well as in relation to all civil litigation. It may be that society has become more litigious in recent years, but this increased legal conflict has not been uniform, as product liability suits have risen more than other civil litigation.

The level of awards in these cases has risen as well. The trend in the size of product liability verdicts has been upward, for a variety of reasons. First, medical price inflation has driven up the cost of the medical component of awards.⁸ Second, increases in worker wage rates due to inflation as well as real increases in the productivity of the economy have boosted the size of earnings losses.⁹

The upward trend in product liability verdicts has been substantial, although perhaps not as dramatic as the change in the number of cases filed. From 1980 to 1987, the average verdict rose from \$563,438 to \$1,325,443.¹⁰ The median verdict will be less subject to the influence of large product liability awards, which often happen to be outliers. Nevertheless, even the median verdict exhibited a substantial increase over the same period, as it rose from \$225,000 to \$430,000.¹¹

⁶ *Id.*

⁷ *Id.*

⁸ For medical price inflation rates, see the Economic Report of the President (1989).

⁹ *Id.* at 358, 360.

¹⁰ Jury Verdict Research, Current Award Trends in Personal Injury (1989).

¹¹ *Id.*

With litigation on the rise and court awards escalating as well, a natural inference might be that society is becoming increasingly risky. More specifically, the products we use are presumably more hazardous since they are generating considerably more litigation than in the past. Such a conclusion is not borne out by the accident statistics, which indicate that product safety has been improving throughout this century, as have safety records of all types.¹² Indeed, the only general pattern of an accident increase of any kind observed in this century has been the rise in motor vehicle accidents, as society became increasingly accustomed to using automobiles and driving substantial distances. Even in this case, accident rates have declined after one takes into account the changing age structure of the population and the change in the miles driven.¹³

The safety trends over the 1977–87 period, which includes the period in which the product liability crisis emerged, all fail to suggest a source for this crisis. Accident rates of all kinds declined by 20 percent; motor vehicle accidents dropped by 11 percent, work accidents declined by 25 percent, and home accidents declined by 26 percent.¹⁴

These statistics reflect a more general economic pattern. As society has become wealthier, we have demanded greater safety from our products, and as a result the societal risk levels have declined. The tort liability crisis cannot be traced to increasing product riskiness, although it no doubt has been influenced by increased awareness of classes of risks that formerly were not well understood, such as asbestos risks. However, even in the case of asbestos it is noteworthy that asbestos exposures in recent years have been dramatically reduced below the levels that were responsible for the wave of asbestos litigation in the courts today.¹⁵

Society's increased demand for safety has been reflected not only in the safety of the products that are sold but also in the actions of government agencies to promote safety. Beginning in the 1970s, agencies such as the U.S. Environmental Protection Agency, the Consumer Product Safety Commission, the Occupational Safety and Health Administration, and the National Highway Traffic Safety Administration took on the responsibility of promoting safety within their various domains.¹⁶ One would have

¹² National Safety Council, *Accident Facts* (1988). See also George Priest, *Products Liability Law and the Accident Rate*, in Litan & Winston eds., *supra* note 2.

¹³ National Safety Council, *supra* note 12, at 70–71. Mileage alone accounts for most of the higher accident rates.

¹⁴ *Id.* at 10.

¹⁵ The stringent asbestos regulations are reflected in the high costs per life saved. See John F. Morrall, *A Review of the Record*, 10 *Regulation* 30 (1986). Moreover, use of asbestos was recently banned.

¹⁶ The history of the emergence of social regulation is chronicled in Paul MacAvoy, *The Regulated Industries and the Economy* (1979).

expected these new efforts to relieve the tort liability system of some of the burdens of promoting safety by establishing an alternative institutional mechanism for addressing safety-related concerns.

Instead, what we observe is the opposite result. Safety has improved. Regulation is greatly expanded. Yet, the role of product liability has also escalated, even though the problems being addressed by the tort liability system have diminished as well. The main explanation appears to be that the current product liability regime is much more stringent than it has been in the past. This new regime, which has been termed "modern products liability law" by Richard Epstein¹⁷ and the "new judicial ideology of tort law" by Peter Schuck,¹⁸ has shifted the liability standards in a manner that will increase the liability costs on firms, for any given level of safety. Some of the consequences of this shift for insurance markets and economic costs borne by firms will be explored below.

III. THE RISING ROLE OF ASBESTOS LITIGATION

The rise of product liability litigation can be traced in substantial part to the surge in asbestos litigation in the 1980s. The relative role of asbestos suits within the set of all personal injury product liability cases at the federal level is illustrated in Figure 1.¹⁹ In 1975 virtually all product liability cases involved products other than those containing asbestos, as asbestos litigation constituted only 2 percent of all product liability litigation. The asbestos share remained negligible through much of the 1970s, but by 1981 the asbestos share of all product liability litigation had grown to one-fifth. Between 1986 and 1987 asbestos took the lead in terms of the share of all product liability litigation, and by 1987, 55 percent of all product liability cases in the federal courts were asbestos-related cases. This figure consequently indicates the fairly dramatic rise of litigation with respect to a single class of products.

Although the surge in asbestos-related cases has been particularly dramatic, the asbestos increase does not account for all of the increased litigation. Figure 2 summarizes the trends in personal injury product lia-

¹⁷ Richard Epstein, *Modern Products Liability Law* (1980).

¹⁸ Peter Schuck, *The New Judicial Ideology of Tort Law*, in Olson ed., *supra* note 2, at 4.

¹⁹ The asbestos share statistics for 1984-87 are based on actual data reported in the Annual Report of the Director of the Administrative Office of the U.S. Courts. Figures for asbestos litigation before the statistical year 1984 are estimated values. In particular, the number of asbestos cases commenced are estimated as .9598 multiplied by the number of asbestos suits filed, which is a ratio of commenced to filed suits for asbestos for 1984-86. The share of nonasbestos cases is simply the total number of cases commenced minus the actual or estimated number of asbestos cases.

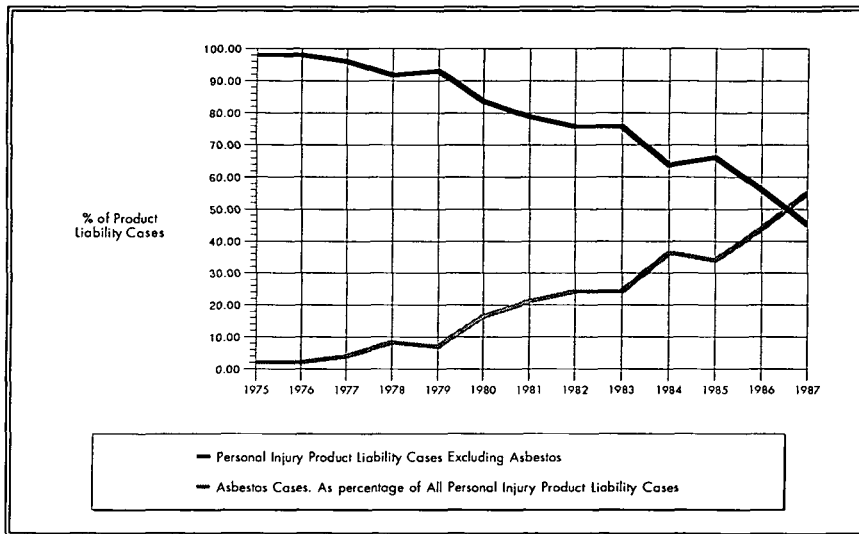


FIGURE 1.—Growth in relative share of asbestos and nonasbestos litigation. Sources: Annual reports of the director of the Administrative Office of the U.S. Courts, tables "Product Liability Cases Commenced" and "Civil Cases Commenced" (1975–87), and Terence Dungworth, *Product Liability and the Business Sector: Litigation Trends in Federal Courts* 36 (R-3668-ICJ, RAND Corp. 1988).

bility cases overall, and it also divides these trends into the share accounted for by asbestos and nonasbestos products. The overall liability case trend and the asbestos trend display marked increases. The total product liability caseload grew at an average annual rate of 15.9 percent over that period, with the greatest breaks in the trend occurring in 1979 and 1985. The asbestos caseload surge also was characterized by two break points, as both 1980 and 1984 represented shifts in the product liability caseload trend. Until 1977 there were fewer than 100 asbestos cases commenced annually, and by 1987 the number of such cases at the federal level had risen to 7,774.

Although the upward trends for the overall product liability total and for asbestos are the most dramatic, nonasbestos products displayed an increase as well. The number of such suits rose from 2,344 in 1975 to 6,371 in 1987, which is an annual growth rate of 8.7 percent. There was a jump in litigation for nonasbestos products in 1985, which coincided with the rise in premiums in that year. The tailing off of the number of nonasbestos product liability cases in 1986 and 1987 may reflect a dampening in such suits as a result of tort liability reforms enacted after the emergence of the insurance crisis in the mid-1980s.

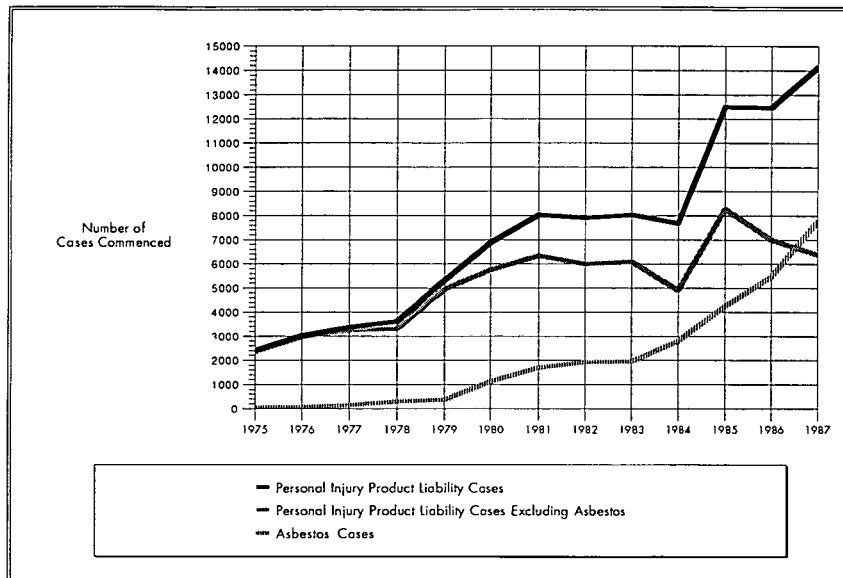


FIGURE 2.—Case trends for components of liability caseload. Sources: Annual reports of the director of the Administrative Office of the U.S. Courts, tables "Product Liability Cases Commenced" and "Civil Cases Commenced" (1975–87), and Terence Dungworth, *Product Liability and the Business Sector: Litigation Trends in Federal Courts 36* (R-3668-ICJ, RAND Corp. 1988).

This comparative stability in recent years for nonasbestos products has not, however, been sufficient to mute the overall increase that has occurred in product liability litigation. Figure 3 provides a different perspective on the role of such suits, as it calculates their fraction as a percentage of all civil cases commenced at the federal level. The civil share of nonasbestos products rose from 2 percent in 1975 to 2.7 percent in 1987. The fact that the nonasbestos share is rising indicates that there has been a change in the role of product liability. However, it is also noteworthy that the peak in the level of such cases was 3.5 percent in 1981, so that there appears to have been some stabilization in the role of product liability cases for nonasbestos products, but at a higher level than in earlier years. In contrast, the asbestos share of litigation continues to be on the rise, as it increased from 0.04 percent of all civil cases in 1975 to over 3 percent of all civil litigation in 1987. It is the asbestos component of product liability cases that is the main growth industry segment of this litigation market and that should be the greatest source of alarm for individuals assessing the future role of liability.

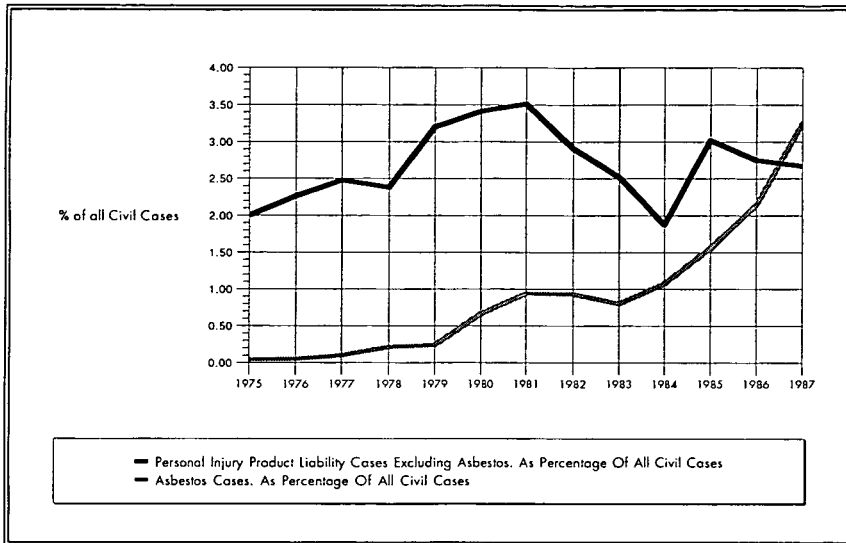


FIGURE 3.—Trends in product liability components of civil caseload. Sources: Annual reports of the director of the Administrative Office of the U.S. Courts, tables "Product Liability Cases Commenced" and "Civil Cases Commenced" (1975–87), and Terence Dungworth, *Product Liability and the Business Sector: Litigation Trends in Federal Courts* 36 (R-3668-ICJ, RAND Corp. 1988).

The overall potential scale of litigation such as the asbestos suits is enormous. Although the exact number of disease cases is not known, what is clear is that there is an increasing amount of litigation, particularly for job-related exposures.

IV. INSURANCE INDUSTRY TRENDS

Although federal court case counts and selected surveys of jury verdicts provide some insight into the nature of product liability activity, they abstract from cases not filed in federal courts as well as the value of out-of-court settlements. An additional measure that one could use to assess the extent of the change in product liability costs is the trend in insurance premiums. Fortunately, insurance data are quite extensive over a long period of time. Examination of the insurance premium data, which represent the insurance cost to the firm of product liability, reinforces the impression created by the earlier caseload statistics, and they extend the time horizon of our focus.

Statistics in Table 3 provide information on trends in general liability insurance coverage, which includes insurance for ownership of property,

TABLE 3
TRENDS IN GENERAL LIABILITY INSURANCE

Year	Net Premiums Written (\$ thousands)	Annual Percentage Change	Real Percentage Change	Percentage of Total Insurance. All Lines
1958	784,377	6.24
1959	872,985	+ 11.3	+ 10.5	6.32
1960	974,919	+ 11.7	+ 9.8	6.63
1961	1,036,538	+ 6.3	+ 5.2	6.83
1962	1,074,076	+ 3.6	+ 2.6	6.63
1963	1,106,437	+ 3.0	+ 1.6	6.53
1964	1,126,939	+ 1.9	+ .6	6.23
1965	1,153,478	+ 2.4	+ .7	5.82
1966	1,222,539	+ 6.0	+ 3.0	5.60
1967	1,345,697	+ 10.1	+ 6.8	5.71
1968	1,488,002	+ 10.6	+ 6.1	5.77
1969	1,739,589	+ 16.9	+ 10.9	6.01
1970	2,170,457	+ 24.8	+ 18.0	6.66
1971	2,418,737	+ 11.4	+ 6.8	6.85
1972	2,590,683	+ 7.1	+ 3.8	6.66
1973	2,741,493	+ 5.8	- .4	6.52
1974	2,989,837	+ 9.1	- 1.8	6.70
1975	3,085,226	+ 3.2	- 5.4	6.22
1976	4,251,298	+ 37.8	+ 30.2	8.07
1977	5,845,075	+ 37.5	+ 29.2	8.07
1978	6,490,064	+ 11.0	+ 3.2	7.95
1979	6,612,474	+ 1.9	- 8.5	7.34
1980	6,414,678	- 3.0	- 14.5	6.71
1981	6,046,292	- 5.7	- 14.6	6.09
1982	5,668,459	- 6.2	- 11.7	5.45
1983	5,679,295	+ .2	- 2.9	5.21
1984	6,479,268	+ 14.1	+ 9.3	5.48
1985	11,544,152	+ 78.2	+ 72.1	8.01
1986	19,364,658	+ 67.8	+ 65.6	10.97
1987	20,873,777	+ 7.8	+ 4.0	10.80
	Net Premiums Annual Average	Annual Percentage Change	Real Percentage Change	Percentage of Total Insurance (Average)
1958-67	1,069,798	+ 6.2	+ 4.5	5.95
1967-77	2,932,039	+ 15.8	+ 9.1	6.65
1977-87	9,517,312	+ 13.6	+ 6.7	7.40
1958-87	4,506,383	+ 12.0	+ 6.8	6.67

SOURCE.—Economic Report of the President (1989), and A.M. Best Company, Inc., Best's Aggregates and Averages, various years. Annual averages and growth rates computed by me.

manufacturing or contracting, the sale and distribution of products, as well as professional services. These statistics provide general insight into the pattern in the product liability area, and in Sections V and VI we will focus more specifically on the product liability coverage alone.

Examination of the insurance premium data, which represent the insurance cost to the firm of product liability, reinforces the impression created by the earlier caseload statistics. Moreover, these data extend the time horizon of our focus so that we can obtain a longer-term perspective on the period in which the product liability crisis emerged. This longer perspective is instructive in that it highlights the extent to which the product liability crisis of the 1980s represents a departure from the long-run pattern.

The decade 1958–67 was a period of relatively gradual change in terms of the extent of the liability insurance increase. The total value of general liability insurance premiums written rose from \$0.78 billion to \$1.35 billion. Total premiums increased steadily throughout that period, but the overall increase was less than double. Nevertheless, the steady increase in premiums did exceed the rate of inflation in every year, so that there was a positive real growth rate, as is indicated by the third column of statistics in Table 3. This growth was comparable to that of other insurance lines, as general liability insurance comprised roughly 6 percent of the total insurance coverage in 1958 and in 1967.

The next decade marked a dramatic acceleration in the product liability burden. The total magnitude of general liability insurance premiums written from 1968 to 1977 rose from \$1.49 billion to \$5.85 billion. This increase represents a more than tripling of the total cost of product liability insurance. During the 1967–77 period the annual growth rate in general liability insurance was 15.8 percent, with a real growth rate of 9.1 percent. The growth in premiums consequently outstripped the rate of inflation by over 9 percent. The overall share of the general liability insurance among all insurance lines also increased from 5.8 percent in 1968 to 8.1 percent in 1977, marking an increase in the role of general liability coverage.

The decade of greatest interest is the period from 1978 to 1987. This decade marked the period in which the product liability crisis achieved national prominence.²⁰ The total change in the product liability burden

²⁰ A recent paper by James A. Henderson and Theodore Eisenberg challenges the claim that doctrines of tort liability continued to evolve in favor of plaintiffs during the 1980s. See Henderson & Eisenberg, *supra* note 3. Henderson and Eisenberg's sample of federal court cases indicated that beginning in the early 1980s there was an increased percentage of prodefendant decisions. This development does not necessarily imply that the tort crisis is abating. Although these decisions could mark a return to an earlier era, they also may suggest simply that the courts are not pushing the boundaries further in the proplaintiff

over the course of that decade is similar to what occurred in the previous decade. What differs is the distribution of the increase across different years, as it is more concentrated in the 1980s than it was in earlier eras.

Overall, net premiums written tripled from their level of \$6.49 billion in 1978 to \$20.87 billion in 1987. What is especially remarkable was the tremendous concentration of this increase in a two-year period. In particular, from 1984 to 1985 there was an increase in net premiums written from \$6.48 billion to \$11.54 billion. This increase was then followed by a subsequent rise in net premiums to \$19.36 billion in 1986. The view that a product liability crisis had emerged stemmed from a tripling in the level of net premiums within a two-year period in the case of the most recent decade, as compared with the more general spreading of the increase in earlier decades.

The overall ten-year trend for the most recent decade of statistics was not, however, historically different from the previous decade. The annual growth rate in premiums was 13.6 percent from 1977 to 1987, as compared with 15.8 percent from 1967 to 1977. Moreover, the real increase in premiums, that is the increase adjusting for inflation, was actually less from 1977 to 1987 than in the previous decade. The overall share of all insurance devoted to general liability coverage increased by just under 1 percent in that decade.

The general picture that emerges is that the explosion in product liability costs has been underway for two decades, and is not simply a mid-1980s phenomenon. This timing coincides with the expansion in tort liability, which has been a gradual process over the past few decades and was not concentrated solely in the mid-1980s.

The temporal pattern of the insurance premium trends also is suggestive of which liability doctrines have been of greatest consequence. Although premiums rose in the 1960s, it was the 1970s and 1980s when the

direction. Some expected proplaintiff breakthroughs are not occurring, but this does not mean that we have reverted to the liability regime of the 1950s. For that to occur, there must be an overturning of proplaintiff precedents, not simply increased reluctance to give plaintiffs new areas for court victories.

Some of the evidence cited by Henderson and Eisenberg is mixed. Although the fraction of defense victories exceeds 50 percent in most of the 1980s, the difference from 50 percent is not great (the statistical significance of any discrepancy from 0.5 is not clear and is not reported by the authors). Moreover, although for the decisions of greatest consequence—what Henderson and Eisenberg term “groundbreaking decisions”—there has been a rise in prodefendant judgments (*id.* at 511), it is the *level* of victories, not the trend, that is of greater consequence. The level of proplaintiff judgments in groundbreaking decisions exceeds the level of prodefendant judgments for every year except 1988. *Id.* at 512. The breakthrough cases have continued to favor plaintiffs, although less so than in the past, indicating that on balance the pivotal cases remain proplaintiff. The total stock of legal precedents remains proplaintiff as well.

greatest escalation in premiums occurred. This timing suggests that it was not the emergence of strict liability and section 402A of the *Restatement of the Law of Torts* that was most influential; rather, it was the development of design defect doctrine and the application of defect tests to hazard warnings that were responsible for the greatest increase in product liability litigation.²¹

The rather uneven performance in the recent decade, however, merits further discussion. If in fact there was an escalation in the product liability burden being generated over the past decades, why was it that insurance premiums held steady and in fact declined in the early 1980s before escalating rapidly beginning in 1985?

Two explanations appear prominent. The first is that focusing on premiums alone may be a misleading index of the health of the industry. Premiums reflect the net effect of both the price and quantity of insurance sold. Thus, premiums could hold steady in the situation in which the cost of insurance has risen and the amount of coverage has declined, which would be one possible ramification of an escalation in the liability burden. If this were the case, there would be a crisis in terms of availability of insurance reflected in the fact that people purchased insurance less and in some cases were denied coverage altogether. Evidence with respect to this availability crisis will be presented in the subsequent section and will indicate that there was in fact an availability problem that is masked by these relatively flat premium statistics over the 1979–84 period.

Another contributor to premium fluctuations is the influence of changes in the interest rates. When interest rates are high, firms can charge lower premiums since they can earn a substantial return on the premiums before the losses must be paid, which is typically with a several-year lag in the case of product liability coverage.

During the early 1980s, interest rates were high, and as a result there was substantial price competition among insurance firms.²² This price competition lowered the cost of insurance to insurance purchasers. However, with extreme rate competition in the property and casualty insur-

²¹ For the history of the development of product liability law, see Richard Epstein, *supra* note 2; George L. Priest, *The Invention of Enterprise Liability: A Critical History of the Intellectual Foundations of Modern Tort Law*, 14 J. Legal Stud. 461 (1985); and Marshall Shapo, *The Law of Products Liability* (1987).

²² Insurance Information Institute, *Insurance Facts: 1983–1984 Property/Casualty Fact Book* (1983). The insurance industry conspiracy explanation is perhaps the least plausible since it assumes a substantial degree of coordination among the firms, which is difficult to achieve. For example, in 1988, 3,800 companies sold property and casualty insurance in the United States, which does not create a favorable environment for a rate-making conspiracy. The low profits earned by firms in the mid-1980s also suggests that the conspiracy theory is not sound.

ance lines, firms began to experience underwriting deficits whereby the losses that would occur under policies exceeded the premiums paid.²³ Firms were still able to make a profit on the insurance despite this deficit through the return they earned on investment income. The ability to maintain a viable insurance operation of the kind in which total losses experienced will eventually exceed premiums hinges on being able to earn a profitable rate of return on the premium investments, which is necessarily tied to the interest rates. The periods of high interest rates during the early 1980s arose from the Reagan administration's economic policies of large deficits and a tight monetary policy. The result was high interest rates, such as a 9.6 percent interest rate on three-month Treasury bills in 1984.²⁴ In 1985, interest rates dropped by over 2 percent, and by mid-1985 the insurance industry had reached the stage where investment income failed to offset the underwriting losses so that the softness in the insurance market was eliminated.²⁵ The insurance industry functioning shifted from a situation of price competition to one in which firms had to rely on higher premiums to ensure the viability of their insurance lines, thus contributing to the dramatic escalation in premiums in 1985. Premiums continued to increase in 1986, which is not unexpected since interest rates dropped further in that year, as reflected by the 1.5 percent decline in the Treasury-bill rate from 1985 to 1986. Interest rates held fairly steady in 1987, as did the premium level.

Although the overall pattern of premiums is consistent with the pattern of interest rates over that period as well as the role of price competition during the period of high interest rates, this evidence does not rule out the possibility that the industry experienced a period of substantial profitability throughout this hectic swing in premium levels. The rate of return on net worth earned by the property/casualty insurance industry indicates that the crisis did indeed affect the profitability of the insurance industry.²⁶ Two comparison industries of banks and the median for Fortune 500 U.S. corporations experienced relatively steady, two-digit rates of return throughout the past decade. In contrast, the returns experienced in the insurance industry have been quite volatile, reaching as high as 18.1 percent in 1978 and as low as 1.8 percent in 1984. The period of the early 1980s in which the premium levels were stable because of the

²³ Insurance Information Institute, *Insurance Facts: 1984-1985 Property/Casualty Fact Book* (1984).

²⁴ Economic Report, *supra* note 8, at 390.

²⁵ Insurance Information Institute, *Insurance Facts: 1985-1986 Property/Casualty Fact Book* (1985).

²⁶ Insurance Information Institute, *Insurance Facts: Property/Casualty Fact Book* (1988).

substantial price competition were not particularly lucrative, as the annual rates of return were below those in the comparison industries and below the overall 1978–87 average for the property/casualty insurance industry. The escalation of premiums in 1985 did not restore profitability to the industry, and it was only with the premium increase in 1986 that the rates of return achieved levels comparable to those experienced in other industries. Overall, the profitability pattern suggests that the product liability crisis was in fact a real phenomenon, linked both to the emerging product liability burden as well as to the temporary fluctuations in interest rates, which in turn generated price competition in the industry. The low profitability of the insurance industry in the early 1980s is not the kind of pattern one would expect if firms were colluding in an effort to alter premiums in a profit-maximizing fashion.

V. ROOTS OF THE LIABILITY CRISIS, 1980–84

One can obtain a more detailed perspective on the economic conditions underlying the liability crisis by analyzing insurance industry data developed for rate-making purposes for product liability insurance. This information, which has never been previously published or discussed in the literature, is gathered by the Insurance Services Office to advise companies on the risks associated with various kinds of product liability coverage. These data do not include all coverage related to product liability but nevertheless do provide a useful statistical base for analyzing insurance rate trends in detail. The data base includes information on over 60,000 policies per year over the five-year period, with total premiums for bodily injury and property damage coverage of over \$500,000,000 in each year. Thus, these data provide a substantial sample from which one can make judgments regarding the performance and incidence of product liability coverage.

Table 4 presents overall national statistics for product liability, where panel A of the table pertains to bodily injury data and panel B pertains to property damage insurance. In each case, the table provides information on premiums, claims, losses, loss amounts per claim, and the loss ratio (that is, the ratio of losses to premiums). This information is provided not only for each year, but the table also includes annual growth rates as well as the five-year changes in these magnitudes.

Consider first the pattern of premiums, which exhibited a downward decline in Table 3 for general liability insurance coverage more generally. The same pattern is evidenced in Table 4 for product liability insurance coverage, as premiums for bodily injury insurance dropped by almost 8 percent from 1980 to 1984, and premiums for property damage dropped

TABLE 4

PRODUCT LIABILITY TRENDS: NATIONWIDE TOTALS, 1980-84 (Yearly Percentage Growth)

Year	Premiums (\$)	Claims	Losses (\$)	Loss per Claim (\$)	Ratio
A. Bodily injury data:					
1980	361,171,432 (. . .)	20,242 (. . .)	318,763,939 (. . .)	15,748 (. . .)	.883 (. . .)
1981	323,268,398 (- 10.49)	21,216 (4.81)	272,578,237 (- 14.49)	12,848 (- 18.42)	.843 (- 4.46)
1982	280,081,272 (- 13.36)	19,173 (- 9.63)	263,649,183 (- 3.50)	13,720 (6.79)	.939 (11.39)
1983	284,954,194 (1.74)	20,233 (5.53)	293,908,122 (11.73)	14,526 (5.88)	1.031 (9.82)
1984	333,272,327 (16.96)	18,533 (- 8.40)	278,155,904 (- 5.36)	15,009 (3.32)	.835 (- 19.08)
5-year average (5-year per- centage change)	316,549,525 (- 7.72)	19,879 (- 8.44)	285,291,077 (- 12.74)	14,370 (- 4.69)	.906 (- 5.43)
B. Property damage data:					
1980	244,653,743 (. . .)	14,969 (. . .)	119,221,880 (. . .)	7,965 (. . .)	.487 (. . .)
1981	240,392,829 (- 1.74)	18,441 (23.19)	159,563,140 (33.84)	8,653 (8.64)	.664 (36.21)
1982	213,560,024 (- 11.16)	18,682 (1.31)	160,078,318 (.32)	8,569 (- .97)	.750 (12.93)
1983	212,447,719 (- .52)	19,571 (4.76)	163,003,830 (1.83)	8,329 (- 2.80)	.767 (2.36)
1984	222,216,604 (4.60)	18,360 (- 6.19)	158,438,124 (- 2.80)	8,630 (3.61)	.713 (- 7.07)
5-year average (5-year per- centage change)	226,654,184 (- 9.17)	18,005 (22.65)	152,061,058 (32.89)	8,429 (8.35)	.676 (46.31)

by over 9 percent. Notwithstanding inflation in the economy, companies were able to maintain stable premiums by engaging in "cash-flow" underwriting; companies were willing to take losses with respect to the premiums and payouts for any particular policy in order to reap the returns associated with investing these premiums. The decline in premiums does not enable us to ascertain whether this drop was solely a result of price competition or whether there was also a drop in insurance coverage. We will explore this insurance availability issue in much greater detail below, as the evidence will indicate that the premium drop is not necessarily an

index of industry good health. The final noteworthy aspect of the premium levels is that bodily injury coverage tends to be more expensive than property damage coverage, as the bodily injury share is roughly one and one-half times greater than the property damage amount.

Examination of the claims performance of these policies provides a mixed view. In the case of bodily injury insurance, there is a decline in claims, losses, and loss amounts per claim over the five-year period. The year-to-year pattern is uneven so that a conclusion that there is strong evidence of a declining market may be overly precise, but there is certainly no evidence in the bodily injury data of an escalation in the liability burden as reflected in claims, losses, and losses per claim. What should be emphasized, however, is that there may nevertheless have been an escalation in the liability costs imposed, but these would not be evidenced in an increase in the claims-related variables if insurance firms had cut back their coverage over that time period. Once again, the key to understanding whether there is a crisis related to product liability hinges on whether there has been a change in insurance coverage. In the absence of such a decline in coverage, the comparatively steady premium levels provide no evidence of an emerging liability crisis.

The pattern of claims-related variables for property damage are more in line with what one would expect if a product liability crisis existed. Claims rose by 23 percent, losses rose by 33 percent, and loss per claim amounts rose by 8 percent over the five-year period. These increases may stem in part from the perhaps unrepresentative nature of the 1980 claims levels. Moreover, one would have expected an increase in the loss amounts and loss per claim amounts simply as a result of inflation. Indeed, if the loss per claim amounts had simply kept pace with inflation over that five-year period, then they should have risen by 31 percent, as opposed to the 8 percent increase that actually occurred. Once again, the pattern is too stable to be consistent with a scenario in which insurance is simply playing a constant relative role over time. The decline in the inflation-adjusted amount of the loss per claim level is an index of the likely change in the composition of the risks being insured.

The final component in each of the sets of data in Table 4 is the loss ratio, which is the key index of insurance industry profitability, as it provides the ratio of losses to premiums. If one abstracts from the lag before the losses must be paid, then a loss ratio below 1.0 is essential for insurance to be viable. With a typical level of 20 percent of premiums going to various insurance-related expenses such as marketing, insurance industry operations, claims settlement costs, and normal profits, one would expect that firms should find it difficult to maintain loss ratios below 1.0, unless the lag before losses must be paid is great.

What we find is that particularly in the case of bodily injury coverage, loss ratios are quite high, averaging .91 over the five-year period and reaching a high of 1.03 in 1983. What this final statistic indicates is that, if one excludes the influence of all administrative costs as well as interest earned on premiums, from an underwriting standpoint the insurance industry will be paying out more in terms of losses than it has taken in through premiums. Such a situation cannot be viable in the long run if interest rates decline. In the 1985–86 period such an interest rate drop occurred, leading to a dramatic escalation in premiums.

The loss ratios for property damage coverage are lower than those for bodily injury, but they represent a much more dramatic rate of change, as these loss ratios increased by 46 percent over the five-year period. Overall, there is a substantial narrowing of the loss ratios for the two sets of coverage, as the loss ratio for bodily injury coverage exceeded that for property damage coverage by .39 in 1980, and the gap was reduced to .13 by 1984. This narrowing is exactly what one would expect in a competitive market. If the distribution of losses over time of all types of coverage is the same, then in a competitive market firms should equalize the loss ratios across different kinds of coverage to ensure their equal profitability. The narrowing of the loss ratios is consistent with such an economic effect.

Overall, the data in Table 4 send more gradual signals of alarm than the statistics considered earlier. The liability crisis did not stem from an emerging pattern of escalating claims and losses, as these were apparently kept under control by restrictions in coverage. The loss ratios reached alarmingly high levels that could not be sustained in the long run, and the declining premium amounts indicated an underlying difficulty with the product liability insurance market more generally. In particular, in a situation in which the economy was expanding, as gross national product (GNP) increased by 47 percent over the 1980–84 period,²⁷ what we have is a product liability insurance pattern in which premiums declined by almost 10 percent. Relative to the pattern displayed by the economy at large, which is the basis for what is to be insured by the industry, premiums should have increased by roughly 60 percent more than they did over the 1980–85 period. The comparative stability that is observed in this situation is a signal of an industry that is in fact in turmoil.

Although the 1985–86 period marked the emergence of the product liability crisis in terms of premium levels, there was an earlier manifestation of the presence of a liability crisis with respect to availability. A

²⁷ Economic Report, *supra* note 8, at 308.

rational insurance firm will deny product liability coverage in situations in which risks cannot be effectively pooled and spread or where risks are highly unpredictable. Although no precise measure exists of the number of situations in which coverage was denied, and indeed one might not even wish to pose the question in exactly this manner since one would want to know whether it was denied at a particular price, we can establish the extent to which firms chose to exit the market for product liability insurance.

One would expect as time went on that there would be an increase in the exposure level (that is, the level of risks covered) associated with a particular policy. In most instances the exposure level is the dollar volume of product sales insured, and in a growing economy one would expect there to be a rise in exposure levels if the role of insurance is constant. Table 5 presents exposure statistics with respect to industries experiencing different patterns of exposure, and it also provides information on the share of total premiums in each exposure group. In each case, industries are divided into two categories. The first consists of industries that experienced a drop in exposure over the five-year period, which is a very strong test for a decline in availability since one would have expected a substantial increase in exposure in that time period. Although the dominant unit used to measure the level of exposure is the dollar volume of sales covered by insurance, in some cases physical units are used instead. Since exposure units are not always comparable across all industries, the procedure that I used was to analyze which industries increased their insurance coverage and which did not.

The results in Table 5 provide for several breakdowns for several types of product liability insurance. Results for both bodily injury and property damage coverage are provided, and in each case results are reported for monoline coverage (that is, coverage for only product liability) as well as multiline coverage (that is, product liability coverage that is part of a broader insurance policy). The patterns in Table 5 are quite consistent with a belief that there was a crisis in availability in the early 1980s. Whereas one would have expected insurance to dramatically increase, in many cases it did not. For overall bodily injury coverage, 41 percent of all industries representing 44 percent of all premiums experienced a decrease in exposure levels over that period. This pattern is especially striking in the case of multiline bodily injury coverage, for which 67 percent of all industries and 75 percent of all premiums reflected a decrease in exposure levels. There appears to have been less of a problem with respect to decreased exposure in the case of property damage, as only 19 percent of all industries and 21 percent of all premiums experienced a decrease in exposure, which is roughly half of the decrease amount that

TABLE 5
CHANGE IN PRODUCT LIABILITY INSURANCE EXPOSURE LEVELS, 1980-84

INSURANCE LINE	PERCENTAGE OF INDUSTRIES WITH FIVE-YEAR PERCENTAGE CHANGE IN EXPOSURE		PERCENTAGE OF TOTAL 1980 PREMIUMS WITH FIVE-YEAR PERCENTAGE CHANGE IN EXPOSURE	
	<0	≥0	<0	≥0
Bodily injury:				
Multiline	66.8	33.3	74.6	25.4
Monoline	20.9	79.1	31.1	68.9
Total	41.3	58.7	43.7	56.3
Property damage:				
Multiline	37.1	62.9	30.6	69.4
Monoline	64.9	35.1	72.8	27.2
Total	18.9	81.1	20.9	79.1

was observed in the case of bodily injury. Nevertheless, in the case of monoline property damage coverage for policies addressing solely product liability concerns, 65 percent of all industries and 73 percent of all premiums experienced a decrease in exposure.

In a period in which there was substantial growth in the dollar value of the GNP, which was spurred in part by inflation, one would have expected the level of exposure to increase dramatically as well since this exposure level is tied to the dollar value of sales in most cases. Instead, what we have is a situation in which there are often dramatic declines in the level of exposure affecting substantial segments of the market and, for some classes of coverage, affecting the majority of industries and the majority of premiums involved. This is an extremely strong test of insurance availability since the absence of growth and the presence of declines in the dollar value of exposure represent a striking gap from what should have been expected in a normally functioning market in which there should have been very substantial expansion.

What these exposure results suggest is that the relative stability and slight declines of premiums should not be viewed as a sign of comparative industry health. We do not have an insurance market in which premium stability has been maintained solely through price competition. Rather, there has been an important and dramatic drop in the quality of insurance purchased in many sectors that indicates that there is a legitimate availability issue in this market.

On a national basis, premiums held fairly steady or declined, which represented a substantial drop in the real value of the insurance market.

Perhaps the main evidence with respect to price competition is how prices changed in relationship to losses that were experienced. As the data in Table 4 indicate, the surge in loss ratios in 1982 and 1983 reflects a failure of insurance prices to keep pace with the losses, which is the pattern one would expect with greater price competition. Thus, we have a highly changing market in terms of the mix of firms purchasing insurance. These shifts in the composition of insurance purchasers are much greater than the pattern of loss ratios suggests since loss ratios reflect only the relationship between losses and premiums charged, which should be constant over time if there were no fluctuation in interest rates. In a market situation in which demand for insurance was expanding due to the growing GNP, and the price of insurance as measured by the inverse of the loss ratio was not rising on a national basis, one would have expected there to be a dramatic increase in insurance premiums. The fact that there was not such an increase suggests that there was an insurance availability problem or, at the very least, that the price competition varied substantially in different insurance contexts.

VI. THE INDUSTRIAL INCIDENCE OF PRODUCT LIABILITY COSTS

The role of product liability costs varies substantially across different industries. Table 6 summarizes the distribution of premiums by industry sector as well as by two-digit industry, where these statistics represent averages over 1980–84. Although one may generally view product liability in terms of consumer products subject to defects, in fact this is not the main orientation of the premium distribution. Just under half of all bodily injury premiums are for manufacturing, and the great majority of these products, such as the major categories of fabricated metals and industrial machinery and equipment, are not consumer items. The leading two-digit industry in Table 6, miscellaneous manufacturing industries, does, however, consist of a large variety of risky consumer products, including sporting goods, toys, lighters, matches, games, and Christmas trees. However, products in this group are by no means responsible for the preponderance of all product liability premiums.

Perhaps the most surprising pattern is the prominence of the construction industry, which accounts for over 21 percent of premiums directly and an additional 2.6 percent through the building materials and garden supplies component. One-fourth of all product liability premiums are directly related to construction, and many others will also have a construction-related component.

In addition, products used in production contexts also have a prominent share of the product liability burden. Durable goods and wholesale

TABLE 6
INDUSTRIAL DISTRIBUTION OF PRODUCT LIABILITY PREMIUMS, 1980-84

SIC Number	Industry	Premium Share Bodily Injury (Percentage)	Premium Share Bodily Injury (Percentage)
	Agriculture, forestry, and fishing	5.17	5.11
1	Agricultural products—crops	.28	.34
2	Agricultural products—livestock	4.39	4.15
7	Agricultural services	.50	.62
	Mining	.94	.88
12	Coal mining	.02	.03
13	Oil and gas extraction	.85	.76
14	Nonmetallic minerals, except fuels	.07	.09
	Construction	21.13	35.64
15	General building contractors	5.80	9.08
16	Heavy construction except building	2.78	2.93
17	Special trade contractors	12.55	23.63
19	Firearms and ammunition	.02	.01
	Manufacturing	48.32	38.79
20	Food and kindred products	2.89	1.91
21	Tobacco products	.02	.00
22	Textile mill products	.41	.34
23	Apparel and other textile products	1.30	.27
24	Lumber and wood products	.84	1.16
25	Furniture and fixtures	1.60	.31
26	Paper and allied products	.45	.57
28	Chemicals and allied products	2.32	2.59
29	Petroleum and coal products	.11	.25
30	Rubber and miscellaneous plastics products	1.79	1.42
31	Leather and leather products	.37	.09
32	Stone, clay, and glass products	.98	1.21
33	Primary metal industries	.78	1.31
34	Fabricated metal products	6.77	6.00
35	Industrial machinery and equipment	5.25	3.71
36	Electronic and other electric equipment	2.54	3.20
37	Transportation equipment	2.06	1.17
38	Instruments and related products	1.33	.68
39	Miscellaneous manufacturing industries	16.51	12.60
	Transportation and public utilities	2.08	2.66
42	Trucking and warehousing	.06	.12
44	Water transportation	.37	.16
47	Transportation services	.13	.05
49	Electric, gas, and sanitary services	1.52	12.60
	Wholesale trade	5.33	4.83
50	Durable goods	4.06	4.38
51	Nondurable goods	1.27	.45
	Retail trade	14.38	9.64
52	Building materials and garden supplies	2.55	2.60
53	General merchandise stores	.39	.20

TABLE 6 (Continued)

SIC Number	Industry	Premium Share Bodily Injury (Percentage)	Premium Share Bodily Injury (Percentage)
54	Food stores	1.42	.57
55	Automotive dealers and service stations	.30	.17
56	Apparel and accessory stores	.40	.16
57	Furniture and home-furnishing stores	.56	.64
58	Eating and drinking places	5.19	1.89
59	Miscellaneous retail	3.57	3.41
	Services	2.24	2.18
70	Hotels and other lodging places	.34	.11
72	Personal services	.02	.02
73	Business services	.25	.34
75	Auto repair, services, and parking	.32	.26
76	Miscellaneous repair services	.20	.37
79	Amusement and recreation services	.00	.00
80	Health services	.06	.03
86	Membership organizations	.19	.15
89	Services, not elsewhere classified	.86	.90
99	Nonclassifiable establishments	.36	.28

trade, industrial machinery, fabricated metals, electronic equipment, transportation equipment, and related groups make up a substantial portion of the premium share.

The absence of a dominant consumer orientation is also reflected even more strongly in the case of the property damage results, which indicate a much greater orientation toward construction and business-related product liability costs. Although this differential for bodily injury and property damage is expected, the overall extent of the orientation away from retail consumer products and services is particularly striking.

In a competitive market, insurance firms should attempt to equalize the prices they charge for any given amount of coverage so that the loss ratios experienced in different industries will be equal. This equalization is difficult to achieve in practice because of the highly volatile nature of the losses that may be experienced under the policies. Despite the fact that the industry groups considered are fairly aggregative and the statistics have been averaged over 1980–84, there is substantial variation in the loss ratios, as is indicated by the two columns of statistics in Table 7. Many quite prominent industries have loss ratios in excess of 1.0, including miscellaneous manufacturing products, paper and allied products, and chemicals. At the other extreme, many industry groups have extremely low loss ratios, as is true throughout the construction industry

TABLE 7
PRODUCT LIABILITY INSURANCE LOSS RATIOS BY INDUSTRY, 1980-84

SIC NUMBER	INDUSTRY	LOSS RATIOS	
		Bodily Injury	Property Damage
	Agriculture, forestry, and fishing	.71	.42
1	Agricultural production—crops	.52	.74
2	Agricultural products—livestock	.77	.36
7	Agricultural services	.25	.65
	Mining	.39	.38
12	Coal mining	.09	.24
13	Oil and gas extraction	.40	.34
14	Nonmetallic minerals, except fuels	.43	.82
	Construction	.63	.71
15	General building contractors	.66	.70
16	Heavy construction except building	.50	.44
17	Special trade contractors	.64	.74
19	Firearms and ammunition	7.02	5.94
	Manufacturing	1.19	.76
20	Food and kindred products	.76	.85
21	Tobacco products	.26	.16
22	Textile mill products	.92	.48
23	Apparel and other textile products	.52	.33
24	Lumber and wood products	.75	.73
25	Furniture and fixtures	.90	.64
26	Paper and allied products	6.89	.82
28	Chemicals and allied products	1.49	1.08
29	Petroleum and coal products	1.05	1.02
30	Rubber and miscellaneous plastics products	.81	1.07
31	Leather and leather products	.61	.26
32	Stone, clay, and glass products	1.38	.97
33	Primary metal industries	.75	.30
34	Fabricated metal products	.95	.47
35	Industrial machinery and equipment	1.31	.73
36	Electronic and other electric equipment	1.07	.50
37	Transportation equipment	1.02	.45
38	Instruments and related products	.80	.26
39	Miscellaneous manufacturing industries	1.36	.97
	Transportation and public utilities	.71	.57
42	Trucking and warehousing	.19	.36
44	Water transportation	.17	.52
47	Transportation services	.10	.09
49	Electric, gas, and sanitary services	.91	.60
	Wholesale trade	.74	.65
50	Durable goods	.82	.65
51	Nondurable goods	.50	.59
	Retail trade	.56	.43
52	Building materials and garden supplies	.52	.51
53	General merchandise stores	.50	.35
54	Food stores	.83	.30
55	Automotive dealers and service stations	.53	.28
56	Apparel and accessory stores	.48	.02

TABLE 7 (Continued)

SIC NUMBER	INDUSTRY	LOSS RATIOS	
		Bodily Injury	Property Damage
57	Furniture and home-furnishing stores	.58	.40
58	Eating and drinking places	.42	.09
59	Miscellaneous retail	.71	.60
	Services	.79	.50
70	Hotels and other lodging places	.59	1.08
72	Personal services	1.04	.13
73	Business services	.84	.68
75	Auto repair, services, and parking	.84	1.06
76	Miscellaneous repair services	.38	.23
79	Amusement and recreation services	.57	.04
80	Health services	.26	.05
86	Membership organizations	1.12	.21
89	Services, not elsewhere classified	.89	.38
99	Nonclassifiable establishments	.25	.02

and the mining industry in the case of bodily injury coverage. Because these loss ratios may be highly volatile, one should not necessarily conclude that there are substantial inequities of insurance pricing. What these statistics do highlight is the considerable uncertainty that is present in the insurance industry, as the information that is presented in this table is the primary information used by the Insurance Services Office for rate-making advice to the industry.

To obtain a more precise assessment of the performance of the market for product liability insurance, it is helpful to examine in detail the critical measures of insurance industry operation for selected industries. Table 8 presents such results on a year-by-year basis for the narrowly defined industry groups (five-digit level) that had the largest premiums in 1980 for bodily injury coverage and property damage coverage.

Many of the most prominent industries in terms of premiums are construction related, including carpentry for detached residences, general contracting—building construction, and plumbing—pipe fitting.

A particularly interesting set of results is for carpentry. The quantity of insurance purchased declined dramatically in 1982 and 1984 for both bodily injury and property damage coverage, as indicated by the drop in exposure levels in those years. This exposure level drop in turn was reflected at least to some extent in premiums, but the premium impact was not as great as the exposure decline because of the role of rising insurance prices, as reflected by the premium per exposure amount. One

TABLE 8

CHANGES IN INSURANCE COVERAGE FOR PRODUCTS WITH FIVE LARGEST PREMIUMS IN 1980

	1980	1981	1982	1983	1984
A. Bodily injury coverage:					
Miscellaneous services and manufacturing:					
Percentage change in exposure	N.A.	N.A.	N.A.	N.A.	N.A.
Percentage change in premiums	N.A.	-4.64	-11.73	3.84	20.46
Premiums per exposure	N.A.	N.A.	N.A.	N.A.	N.A.
Loss per exposure	N.A.	N.A.	N.A.	N.A.	N.A.
Loss ratio	1.40	1.17	1.48	1.63	1.36
Carpentry for detached residences:					
Percentage change in exposure	N.A.	7.16	-57.86	18.86	-181.15
Percentage change in premiums	N.A.	-17.92	-27.62	-5.75	11.71
Premiums per exposure	.51	.39	.67	.53	.73
Loss per exposure	.32	.36	.75	.69	.80
Loss ratio	.63	.92	1.13	1.31	1.10
Restaurants:					
Percentage change in exposure	N.A.	-98.37	-97.89	-53.24	-97.85
Percentage change in premiums	N.A.	-24.55	-83.66	-68.98	-98.68
Premiums per exposure	.00	.11	.82	.55	.34
Loss per exposure	.00	.02	.51	.10	.04
Loss ratio	.27	.22	.62	.19	.11
General contracting-building construction:					
Percentage change in exposure	N.A.	-37.59	16.12	6.61	29.24
Percentage change in premiums	N.A.	-29.77	-11.32	4.30	29.14
Premiums per exposure	.30	.34	.26	.25	.25
Loss per exposure	.59	.20	.06	.11	.08
Loss ratio	1.96	.58	.23	.45	.32
Miscellaneous wholesalers-durable goods:					
Percentage change in exposure	N.A.	2.79	1.80	13.82	17.61
Percentage change in premiums	N.A.	-7.45	.12	12.01	19.76
Premiums per exposure	.34	.30	.30	.30	.30
Loss per exposure	.12	.15	.22	.16	.18
Loss ratio	.37	.51	.75	.53	.62
B. Property damage coverage:					
Miscellaneous services and manufacturing:					
Percentage change in exposure	N.A.	N.A.	N.A.	N.A.	N.A.
Percentage change in premiums	N.A.	.16	-11.34	2.33	27.41
Premiums per exposure	N.A.	N.A.	N.A.	N.A.	N.A.
Loss per exposure	N.A.	N.A.	N.A.	N.A.	N.A.
Loss ratio	.80	1.26	1.09	1.07	.74
Carpentry for detached residences:					
Percentage change in exposure	N.A.	7.18	-57.39	23.73	-175.95
Percentage change in premiums	N.A.	-14.40	-28.11	-3.83	-.72
Premiums per exposure	.30	.24	.41	.32	.42
Loss per exposure	.07	.09	.27	.16	.12
Loss ratio	.22	.39	.67	.51	.29

TABLE 8 (Continued)

	1980	1981	1982	1983	1984
General contracting—building construction:					
Percentage change in exposure	N.A.	-21.62	-1.49	6.64	35.67
Percentage change in premiums	N.A.	-4.89	-1.91	-3.51	-.67
Premiums per exposure	.38	.46	.46	.41	.30
Loss per exposure	.29	.35	.43	.29	.26
Loss ratio	.69	.83	1.01	.72	.72
Miscellaneous wholesalers—durable goods:					
Percentage change in exposure	N.A.	6.53	1.60	15.19	17.07
Percentage change in premiums	N.A.	7.04	2.58	7.89	6.72
Premiums per exposure	.42	.42	.43	.40	.36
Loss per exposure	.29	.35	.43	.29	.26
Loss ratio	.69	.83	1.01	.72	.72
Plumbing—pipe fitting:					
Percentage change in exposure	N.A.	-42.37	-14.61	-7.18	-1.60
Percentage change in premiums	N.A.	-6.98	-21.41	-13.74	-13.97
Premiums per exposure	.81	1.30	1.20	1.11	.97
Loss per exposure	.26	.59	.87	1.10	1.12
Loss ratio	.33	.45	.73	.99	1.15

NOTE.—N.A. = not applicable.

would expect in any economic market that as the price rises the quantity purchased will decline, and that is what in fact happened in the carpentry industry segment. It should be noted that the shift in premium per exposure levels was accompanied by a comparable movement in the loss per exposure levels so that the price fluctuations that did occur reflected the underlying risks generated by the particular firms receiving coverage.

In some instances, both expansions and contractions in the market are observed. In the case of bodily injury coverage for general contracting—building construction, exposure levels and premiums dropped in 1981, but there was a resurgence of the market in later years. In this market the decline followed a rise in the prices as reflected by the higher premium per exposure amount, and the expansion coincided with a decline and then a steadying of the price.

The industry displaying the most vigorous expansion throughout the period is that of miscellaneous wholesalers—durable goods, which had increasing exposure and premium levels for both bodily injury and property damage coverage. In each case, the price of insurance as measured by the premium per exposure level remained steady. Relative to other rising prices in the economy, the real price of insurance actually declined, thus fostering a demand for additional coverage in an expanding economy.

Such patterns suggest that there is indeed an availability crisis, but the character of the crisis does not appear to be that dissimilar from the functioning of other economic markets. In particular, as the price of insurance rises, the quantity purchased will decline. Moreover, in situations in which the prices have escalated, the loss structure has changed similarly so that the relationship between premiums and losses has been maintained. Since the overall national statistics indicate high and, in some cases, increasing loss ratios in the 1980-84 period in which insurance coverage dropped substantially, the price increases do not appear to be arbitrary but instead appear to have been generated at least in part through the influence of the changing legal structure for product liability insurance. Indeed, the very high loss ratios that were experienced were evidence of substantial price competition brought about by high interest rates. Price competition did not imply lower prices that would ensure a growing market for insurance. However, this price competition did lead to a situation where the overall premiums received often did not exceed the total value of the losses experienced.

VII. CONCLUSION

Examination of a variety of sources of statistics indicates that the product liability crisis is real, and it is not simply imagined or contrived by the insurance industry. Litigation in the product liability area has escalated dramatically, but to some extent the industry was able to mute the effect of this escalation because of the influence of rising interest rates in the early 1980s as well as because the shrinking market for product liability insurance masked much of the explosion that was occurring in terms of the costs of product liability coverage. The dominant pattern in the early 1980s was one of a disappearing insurance market. This phenomenon prompted many public accounts of a crisis in availability, which were often accompanied by case studies of, for example, day-care centers or municipal playgrounds that were denied liability coverage.

Once interest rates began to decline in the mid-1980s, it became essential for insurance companies to raise the price of insurance to establish a better relationship between losses and premiums. The escalation in premiums that took place did not mark the advent of a liability crisis but simply a different manifestation of an ongoing crisis. In particular, there was a crisis in availability experienced in the first half of the 1980s, and a crisis in terms of escalating prices that emerged in 1985. Each of these phenomena was generated by the dramatic growth in the liability burden.

This escalation in the cost of liability and the level of litigation more generally has not been restricted to the 1980s but has been the result of

a longer-term shift in the role of product liability in American society. These shifts have had a profound effect on the product liability insurance market, which is but the most visible symptom of the widespread economic ramifications of the changing role of tort liability. Although the greatest surge in litigation has been for asbestos-related claims, other product liability litigation has risen as well. The market evidence in no way implies that earlier liability regimes were superior to the more costly liability regime now in place, but they do suggest that there has been a sufficiently fundamental shift in the effect of liability that a careful reexamination of its functions is warranted.

The timing of the expansion in insurance premiums also indicates the major sources of the higher litigation rates. Although premiums rose in the 1960s, the greatest expansion occurred in the 1970s and to a somewhat lesser extent in the 1980s. This pattern suggests that it is the role of product defect doctrine and hazard warnings cases rather than the adoption of strict liability that has led to the urgency with respect to the need for product liability reform.

