The Economic Consequences of Expanded Corporate Liability: An Exploratory Study

Peter Reuter

November 1988
A RAND NOTE

N-2807-ICJ

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Prepared for
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FOREWORD

During the last decade, U.S. corporations have been facing a significant expansion in both the type and magnitude of liabilities to which they are exposed. Courts have eased plaintiffs' burdens for obtaining recovery in well-established liability areas like product liability, and new types of liability have been established that affect corporate behavior in such areas as employee termination and environmental matters. The result has been a rapid increase in the frequency and costs of corporate litigation.

The legal doctrines underlying this expansion of corporate liability have been predicated on assumptions about how the tort system can best fulfill its joint purposes of compensation and deterrence. The theory of enterprise liability, for example, assumes that the best way to insure consumers against the risk of injury from the use of a product is for manufacturers to build the cost of supplying compensation for such injuries into the price of their product. Moreover, because manufacturers must bear those costs directly, they will have a strong incentive to produce safer products.

Although there is general agreement about the sources and nature of this expansion in corporate liability, there is much less agreement about its desirability or its effects. Critics of the expansion argue that it is an expression of an unrealistic desire for a "zero risk" society that not only imposes unreasonable costs on companies but, in the aggregate, impairs innovation, productivity, and competitiveness. Conversely, proponents of expanding liability not only support its objectives, but generally believe that the liability system achieves these objectives where such other mechanisms as regulation fail.

Although the legal doctrine behind the expansion of corporate liability as well as many of the arguments both for and against it are typically framed in terms of its wider social and economic effects, there is little tangible empirical evidence as to what these costs and benefits might be. Indeed, most of the evidence on the effects of
expanded corporate liability that has been marshaled to date has tended
to focus on the direct costs and benefits to litigants, e.g.,
defendants' legal, insurance, and indemnity payments and the amount of
plaintiffs' awards. From a policy perspective, these direct effects may
well be less important than the system's indirect effects on the
availability, quality, safety, and costs of the goods and services
produced and sold in the market.

This Note represents a first step toward an objective, empirical
assessment of the direct and indirect effects of the recent expansion of
corporate liability. It identifies the specific types of liabilities
that are of most significance to business and suggests how that
significance may vary across different types of firms and industries.
It explores the specific ways in which these liabilities can affect
corporate behavior and notes that the liability system's effects
interact with those of regulation and the market. Finally, it suggests
a strategy for undertaking the more detailed empirical research needed
on this topic.

Kevin F. McCarthy
Director, Institute for Civil Justice
SUMMARY

The legal liabilities facing U.S. corporations appear to have expanded substantially over the last decade. Traditional liabilities, notably those associated with defective products, have become more stringent, while new liabilities, particularly those associated with hazardous waste disposal and the discharge of employees, have emerged. The corporate sector has expressed considerable concern about the impact of these new liabilities on the economic performance of the nation, arguing that they have significantly reduced the productivity and international competitiveness of U.S. firms.

The few studies that have examined the effect of expanded corporate liability have focused on "direct costs," i.e., costs associated with indemnity and defense (often as captured in insurance premiums); some attention has also been given to the effect of such liability on the rate of product withdrawal and innovation. The studies suggest that the direct costs of product liability still represent a very small share of value added for most manufacturing firms (less than 1 percent), even in reputedly high exposure sectors.

Yet legal liabilities represent an important behavioral influence on corporations--and one that is only partly captured in indemnity and defense payments. This Note presents a framework for analyzing how expanded liability might affect such outcomes as productivity and international competitiveness and offers some preliminary evidence on the impact of expanded liabilities on the behavior of corporations. The Note does not provide a full cost-benefit analysis of the expansion of corporate liability.

The evidence was collected in a series of interviews with senior corporate officials. Some interviews were conducted individually. In addition, four focus groups were conducted. Participants were asked to discuss how their firms had changed their behavior in response to the expansion of particular liabilities.
ANALYTIC FRAMEWORK

Liability will affect the economy by influencing the behavior of individual corporations. Specifically, expanded liability will affect the costs and benefits associated with corporate decisions. For example, expanded product liability may lead firms to increase their investment in product safety testing or to institute more stringent decision rules with respect to the marketing of new products. Firms may, as a result, introduce fewer unsafe products, but they may also withhold a greater number of safe products. The same principle applies to the imposition of wrongful termination liability; firms now have incentives for more stringent review of termination decisions and for the establishment of new decision rules with respect to termination. Thus, more workers who should not be fired will be retained, but there may also be an increase in the number of workers retained who should in fact be fired.

These changes in corporate behavior may alter firms' outputs; for example, fewer new products may enter the market, or firms may slow their adjustment of work-force levels. This may in turn affect measured productivity and international competitiveness. However, the effects of legal change on economic performance can be traced only through an analysis of individual corporate behavior.

RESPONSES TO INDIVIDUAL LIABILITIES

Our interviews suggested that three specific liabilities--environmental, employment, and product--have had a particularly significant bearing on corporate decisionmaking. Other liabilities, such as those affecting directors and officers, have also expanded, but it would appear that their effects may be captured largely in direct costs.

The passage of Superfund (the Comprehensive Environmental Response, Compensation and Liability Act, or CERCLA) created a new and potentially large liability stemming from the cleanup costs of sites in which corporations have deposited hazardous waste. The total cleanup cost for
all sites may be on the order of several hundreds of billions of dollars; individual sites frequently cost tens of millions of dollars to clean up. The liability is spread very broadly; a firm may find itself burdened with considerable financial responsibilities at a site with which it had very little connection.

Many corporate decisions—e.g., site choice, corporate acquisitions, choice of process, and the handling of hazardous waste—have been affected by the creation of this liability. For example, focus-group participants from the chemical industry all reported that they had rejected a potential acquisition because of concern about the possible Superfund liabilities associated with its major manufacturing facilities. Site acquisition decisions in some industries have been greatly lengthened by such concerns.

Since 1980, there has also been a rapid shift among state courts away from the traditional "employment-at-will" doctrine toward rules that impose significant restrictions on an employer's right to fire a worker. Violation of these rules can lead to legal action in which an employee may seek a variety of damages for "wrongful termination." Juries have awarded substantial damages in such actions.

Concern with wrongful termination actions has led some firms to make substantive changes in their employment practices—changes that go far beyond more careful weighing of termination decisions. Hiring practices have changed substantially; because each new hire now represents a potential liability in the event of termination, greater expenditure is seen to be justified at the time of recruitment. Personnel management has become a more intensive process as well, reflecting the fact that wrongful termination liability is often triggered by failure to provide sufficient notice to an employee concerning deficiencies in his performance.

Two factors have increased the salience of product liability. First, the shift from negligence to strict liability has eased the plaintiff's barrier to obtaining damages for a product-caused injury. Second, jury awards in such cases have increased rapidly.
Firms report that these changes have led to alteration in many elements of their behavior. For example, potential acquisitions are now scrutinized for possible product liability. In the same manner, some firms have narrowed the range of use of their products, while others have limited their product lines to ensure that they do not enter areas of unfamiliar liability.

CONCLUSIONS

The effects of expanded liability on international competitiveness and productivity cannot yet be assessed precisely because it is necessary to acquire more quantitative information about changes in corporate behavior. Liability interacts with a number of other influences, including regulation and market forces. Moreover, the significance of liability varies among industries, as well as with such factors as cyclicalness of employment, nature of the process, and firm size.

This Note represents an early effort to understand the manner in which expanded corporate liability affects the corporate sector. Further research on specific industries and liabilities is necessary.
ACKNOWLEDGMENTS

The early interviews were conducted jointly with Patricia Danzon of the Wharton School of Business, University of Pennsylvania. Ina Hillebrandt led the first of the focus groups; Sandra Berry of RAND led the remaining three.

Robert Litan of the Brookings Institution and Charles Wolf of RAND provided helpful reviews of a draft. Debby Hensler and Kevin McCarthy of RAND also made useful comments on various drafts, as well as providing the initial concept of the study design. Douglas Bejarov of the American Enterprise Institute suggested the analytic framework described in Sec. II. John Barrow also provided considerable insight into issues of corporate behavior.

The author would also like to acknowledge the assistance of the numerous corporate executives who devoted considerable time to ensuring that the project developed a full understanding of the variety of changes engendered by expanded liability. Since one of the terms of participation was confidentiality, it is impossible to name them individually.

Supplemental funding for this research was received from the Committee for Economic Development (CED). An earlier draft of the Note was presented to the CED Subcommittee on Risk Management, Dispute Resolution, and Injury Compensation.
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I. INTRODUCTION

The last decade has seen a significant expansion in the set of legal liabilities to which U.S. corporations are exposed. Not only have courts eased plaintiffs' burdens for obtaining recovery in such traditional liability claims as those associated with defective products, but new areas of liability have emerged as well. For example, courts in most states now permit discharged employees to bring wrongful termination actions under a variety of new employment doctrines. Similarly, since 1980 the federal Superfund statute has allowed government suits requiring that corporations pay for the costs of cleaning up or preventing hazardous waste releases. At the same time, jury awards for some classes of injuries have risen sharply, further increasing potential corporate liability costs.

Assertions have been made that these changes have engendered considerable uncertainty among corporate management, imposing a substantial drain on senior executive time and inhibiting corporate innovation. It has also been claimed that expanded liability has had significant aggregate economic consequences, particularly in the form of lower productivity and reduced international competitiveness: "The present product liability litigation system has become an enormous burden on American productivity and commerce. It deprives consumers of needed products, limits job opportunities, and weakens our competitive position in world markets" (U.S. Senate, 1986, p. 6). These assertions have figured prominently in the debate about tort reform; those who advocate a return to negligence in product liability or the elimination of the right to sue for wrongful termination now claim, \textit{inter alia}, that the adverse economic consequences are sufficiently significant to warrant consideration.

Such costs are not dispositive in the tort reform debate. The new liabilities may attain social goals that justify their asserted cost. Nonetheless, it is clearly important to examine what those costs are.
The few prior efforts to systematically examine the impact of expanded corporate liability have focused narrowly on the consequences of what can be called "direct costs" (liability insurance premiums and claims costs, including legal defense expenditures)—particularly those of product liability. These studies have presented relatively modest figures for the pure insurance cost of expanded product liability or even, with less authority, for all corporate liabilities jointly. They have also given some attention to product withdrawals and to the inhibition of innovation by expanded product liability, but the data thus reported have had ambiguous implications.

Conspicuously missing from these reports is any systematic examination of the links between expanded liability and possible aggregate economic effects. The studies do not, for example, address the extent to which high direct liability costs may affect productivity or competitiveness. Nor do the advocates of tort reform clarify the nature of the connection, except in the most offhand way.

Expanded liability does more than raise the direct costs or affect the rate of product innovation and withdrawal; it also affects the behavior of corporations and of individuals within them in ways that may have far-reaching consequences for both the corporations and the economy in general. These behavioral effects will serve as our focus.

This Note thus begins the process of examining the relationship between expanded corporate liabilities and aggregate economic consequences. It presents a method of researching the problem, offers some evidence concerning the behavior of individual corporations, and provides some observations about the aggregate effects. The Note does not attempt to quantify those effects.

It is important to delineate some other limitations of this Note. It does not propose to provide a cost-benefit analysis of expanded liability. Corporations are not the intended beneficiaries of changes in liability; rather, it is consumers, employees, and citizens generally (in the case of environmental liabilities) that are the primary targeted beneficiaries. Attempts to measure the effects of expanded corporate liability on these other groups (both benefits and costs) would simply go beyond the scope of this preliminary effort.
One of the clear implications of the information we have collected, however, is that firms have changed their behaviors in some ways that are consonant with the goals of those who advocate expanded liability. There can be little doubt, for example, that the existence of potential Superfund liabilities has changed the way many corporations handle hazardous waste, just as the growth of product liability awards and of strict liability has increased the sensitivity of many corporations to product safety. That this Note focuses primarily on the costs of expanded liability should not be taken to mean that there are no commensurate benefits.

The Note is based in part on a review of existing studies, but it also incorporates the results of interviews with a number of corporate officials involved in liability-related matters. Some of these interviews were conducted at individual firms. In addition, we held four "focus groups"—discussions among groups of executives (risk managers, liability counsels, strategic planners, etc.) dealing with liability issues. Each group consisted of executives with a common corporate background; three were from firms in a single industry (semiconductors, pharmaceuticals, and chemicals), while the fourth consisted of executives from small manufacturing firms in the Los Angeles area. These focus groups not only served as a tool for developing information about the responses to changing liabilities, but also provided the basis for some hypotheses about the determinants of those responses. A fuller description of the procedures and outcomes of the focus groups is provided in the Appendix.

The next section of the paper presents an analytic framework for the study. This is followed by a brief review of recent studies of the direct costs of liability incurred by corporations. Section IV then outlines the principal liabilities and describes some of the individual firm responses that expansion or creation of these liabilities may have engendered. This is followed by an examination of certain potential aggregate consequences of the liabilities. The final section briefly summarizes the findings of the paper and outlines possible research directions.
II. ANALYTIC FRAMEWORK

FROM LIABILITY TO ECONOMIC EFFECTS

Insurance premiums and claims payments may provide only a partial measure of the effects of a liability on a firm. For example, a firm might respond to an expansion of product liability by increasing its investment in product testing to such an extent that its exposure to liability, as measured by claims experience over the years following the expansion, does not change. In this smoothly operating world, insurance premiums as well as defense and indemnity costs would remain unchanged. However, the economic consequences for the firm might be far-reaching, as the product would now be more costly, and the process of innovation might be so inhibited that the firm would lose significant market share.¹

For this reason, to focus only on direct costs would be misleading, since such costs may understate the economic effects of expanded liability for the firm or for the economy as a whole. Instead, each liability should be seen to represent a set of rules that provide incentives for firms and potentially shape their behavior in many dimensions. Concern with wrongful termination liability, for example, may lead firms to change their personnel management policies; employee performance may be monitored more formally in efforts to provide a better (i.e., legally more defensible) justification for subsequent termination decisions.

To understand the aggregate economic effects of expanded liability, we must first determine firms' responses to it and then the effects of those responses on what we shall call "firm-level outcomes"--e.g., labor productivity and innovation. The third step involves summing over firms to determine the aggregate economic consequences.

¹If all firms making this product are similarly situated, then the market-share effect will disappear. However, the innovation effect remains.
Our preliminary interviews indicate that behavioral responses seem to vary substantially across firms. Thus, it is likely that firm-level outcomes vary considerably. Aggregation of firm-level outcomes may in itself turn out to be a complex problem.

Figure 1 illustrates our approach to the problem of understanding the economic consequences of expanded corporate liability. The chain of reasoning proceeds from individual firm responses to aggregate consequences. This Note deals primarily with the first link in this chain: understanding the ways in which individual firms have adapted, if at all, to the expansion in specific liabilities. It focuses on behavior, making only some very preliminary suggestions about likely firm-level outcomes and their aggregate consequences.

LIABILITY TO INDIVIDUAL BEHAVIOR: THE FIRST LINK

Many of the responses described below can be better understood through a standard textbook framework for analyzing decisionmaking under uncertainty. Consider, for example, product marketing decisions and the effect of changing product liability rules. The firm can market or not market a product; the product may turn out to be "unsafe" (however that is judged by courts) or "safe."2 The following matrix of payoffs thus applies.

---

2 The accuracy of that decision by courts will not be taken up here. Certainly no one would claim that the liability system is entirely accurate. Some proper claims are not made, while others fail because they are not well presented. Similarly, juries may overcompensate some injured parties. At best, the liability system provides a "noisy" signal to corporations, a matter of some importance in any cost-benefit analysis of expanded liability. See Eads and Reuter, 1983.
Fig. 1—A schematization of the economic consequences of expanded liability
Decision Matrix

<table>
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<tr>
<th>Decision</th>
<th>Outcome</th>
<th>Safe</th>
<th>Unsafe</th>
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<tbody>
<tr>
<td>Market</td>
<td></td>
<td>$P_{11}$</td>
<td>$P_{12}$</td>
</tr>
<tr>
<td>Not Market</td>
<td></td>
<td>$P_{21}$</td>
<td>$P_{22}$</td>
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Each individual entry (the $P_{ij}$) represents the net income of the corporation associated with decision $i$ and outcome $j$.

Society seeks a set of rules that lead firms to the diagonal entries in Fig. 1; that is, the payoffs should be such that firms market products that are safe and do not market those that are not.\(^3\) Decisions to market products that are unsafe (Type I errors) will lead to injuries and, potentially, to litigation. Decisions to withhold products that are safe (Type II errors) will lower society's welfare, since desirable products will not be made available.

It should be noted that society will frequently be able to observe the occurrence of Type I errors--i.e., the marketing of those products that turn out to be unsafe--because such errors will tend to produce suits. But not all Type I errors will be publicly observed, since not all product-induced injuries result in suits.\(^4\) Significantly, society will rarely have occasion to observe Type II errors, since it is difficult to learn about products that are withheld from the market as a

\(^3\)A set of minimal conditions might be $P_{11} > 0$, $P_{12} > 0$, $P_{21} < 0$, $P_{12} < P_{21}$. Here the payoff for marketing a safe product ($P_{11}$) is positive, while withholding a safe product ($P_{21}$) or marketing an unsafe product ($P_{12}$) will have negative payoffs. Not marketing an unsafe product may have a positive or a negative payoff, but if negative it is smaller than the payoff associated with marketing the same product.

\(^4\)This is not a statement that any product which causes an injury should be categorized as unsafe. Some products are inherently dangerous (a concept recognized in the Restatement [Second] of Torts, 1965); the injuries they cause are justified by the benefits that flow from them. But the fact that not all product-caused injuries are recognized as such and engender claims against the manufacturer allows some Type I errors to remain unobserved.
result of liability concerns. This discrepancy may turn out to be a
source of bias in societal decisionmaking about liability regimes.

Product marketing decisions are made under uncertainty. Even after
extensive product testing has been conducted, a manufacturer cannot be
certain that a product will not cause injury and engender suits once it
is in the hands of distributors and consumers. Thus, under any
conceivable legal regime, producers as a group may make some errors of
both types. Ultimately, a firm will make its decision after
considering the payoffs associated with each potential decision and
outcome. We do not specify the particular decision rule that will be
used,⁵ but we do assert that the higher the negative payoff associated
with the marketing of an unsafe product, the greater the probability of
safety the firm will require before marketing a product.⁶

Now consider the effect of expanded liability rules:
Product-caused injuries will be more likely to lead to claims, and
claims will have higher expected payout.⁷ Thus relative costs of the
two types of errors will change; in particular, the cost of marketing an
unsafe product will rise.

Firms can respond to this in at least two ways. First, they may
invest more effort in determining the safety of their product, as a
consequence of which product testing may become more extensive and
costly. Second, firms may change their marketing decision rules; for
example, an automobile manufacturer may withhold the production of a car

⁵For example, a firm may be risk neutral and make its choice
simply on the expected profits, given the probabilities and payoffs.
Alternatively, a firm may be risk averse and thus take account of the
variance in payoffs when making its decision.

⁶We eschew any effort to specify the optimal rules here.
Generally, the optimal rule will be one in which (1) the private payoffs
in the decision matrix are equal to the social payoffs; and (2) the
decision rules of corporations are those of society. This is not the
paper in which to examine whether the current system produces such
results. But given that both safety and the determination of safety are
costly, the optimal rule will be one that allows for the occasional
occurrence of both types of error.

⁷The higher expected payout might arise from eased burdens of proof
(e.g., the shift from negligence to strict liability), higher jury
awards, or both.
with expected sales of one million units unless the probability of, say, ten fatalities is less than one in ten thousand rather than one in one thousand. Firms may take both kinds of action. If they adopt the second rule, however, they will tend to make more Type II errors; that is, more safe products are likely to be withheld than was the case under the old liability rule. Even with extensive testing, the firm may still overestimate the risk associated with a given product.

This analysis applies to other liability-related decisions as well. Consider the decision to acquire a site that might have hazardous waste liabilities. The decision is to acquire or not to acquire; the outcome is either that the site has hazardous waste that will need to be cleaned up or that it does not. As the liability associated with hazardous waste cleanup expands, the payouts change; the cost of acquiring a contaminated site rises. Firms will now either invest more in testing for site contamination or change their decision rule, acquiring a site only if the probability of contamination is now one in one thousand rather than one in one hundred. Note again that society will observe only Type I error, i.e., the acquisition of sites that require cleanup; in general, the rejection of sites that are not contaminated (Type II error) will not be publicly observed.8

The objective of expanded liability is to reduce one kind of error, generally what we have called the Type I error, e.g., fewer unsafe products should be marketed. That such a reduction is not costless is well recognized. What tends to be less well recognized is that in an uncertain world, reduction of the frequency of Type I errors may well be associated with increasing the frequency of Type II errors. We shall see that many of the impacts with which we are concerned can be interpreted as those associated with this second kind of error.

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8 This example points to the potentially nonproductive effects of increased uncertainty. Here we considered site acquisition behavior rather than cleanup decisions. Lowering Type I error does not result in cleanup; potential buyers simply have spent more on testing. Of course, this is only a partial analysis of responses to new hazardous waste liabilities; they also provide incentives for cleanup.
III. PRIOR STUDIES

The growing concern with liability has generated a small number of studies of direct liability costs. One that has received particular attention is that conducted by the Conference Board (Weber, 1987). Since this study represents the most systematic effort to date to examine corporate responses to liability, it warrants extensive review.

The Conference Board study reported on survey responses from 232 corporations with minimum revenues of $100 million.\(^1\) Three kinds of corporations were covered: manufacturers (product liability), service corporations (professional liabilities), and utilities ("general liability"). Forty percent of the individuals filling out the questionnaire were risk managers, and 19 percent were chief counsel. The surveyed areas of interest to us were insurance (price, coverage, and availability); litigation experience (number, costs, nature); and "management decisionmaking" (price increases, product mix). The most interesting substantive finding of the survey was its claim that expanded liability has had a minor effect on costs and only a modest impact on other dimensions of corporate life.

The survey questionnaire asked about insurance premiums, deductibles, and coverage for each of the last five years. Although respondents reported that premiums had risen substantially,\(^2\) it was found that coverage and deductibles had changed only modestly.

Of particular interest were the survey results concerning management responses. Here the focus was on the impact of liability insurance, for the study noted that firms were loath to provide information on their litigation expenses.\(^3\) The study asserted that

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\(^{1}\) The report provided no figures on the response rate for the survey.

\(^{2}\) Unfortunately, only range data were provided, and no estimate was made of the average percentage increase.

\(^{3}\) "[Firms] are even hesitant to share such information with their own trade association" (Weber, p. 13).
price increases were the most common response (scarcely surprising) but that such increases were rarely as much as 1 percent. Even for high-risk industries, responses were unexpectedly sunny; e.g., a manufacturer of aircraft parts and other engineered materials asserted that liability premiums constituted only a modest fraction of one percent of its sales.4

But the study becomes somewhat confused at this point. In analyzing the significance of product liability, for example, it fails to draw a distinction between two potential consequences of the production of defective products: reputational loss and liability. This flaw is illustrated in its description of the food processing industry (Weber, p. 14), in which quality control is accorded high priority for reasons often unrelated to liability. Consumers in the U.S. expect processed foods to present zero risk; thus, a small number of injuries may result in a significant decline in a producer's market share, regardless of litigation costs and outcomes. Liability is probably not important for the food processing industry simply because a more significant deterrent mechanism—reputational loss—focuses attention on product safety. In other industries, these cofactors are not as strong.

Respondents were also asked about the discontinuation of products, and one-quarter of the firms were found to have recalled or discontinued a product or service as a result of liability concerns. But respondents said that the amounts involved were small; almost half the revenues affected were less than $1 million. The author of the study used this material as evidence that the product liability crisis was overstated. The study contained little information about indirect effects on corporate behavior.5

4The interest of this observation is lessened by the failure to provide information on the share of the firm's total revenues coming from this high-hazard activity.

5One interesting observation about such indirect effects came from a large retailer, which stated that it would not sell a product for which the manufacturer could not obtain product liability insurance; this affected the product mix it was able to offer (Weber, p. 10).
The 1987 Conference Board study generated substantial concern in the corporate community. Many executives believed that it understated the economic damage wrought by expanded product liability--in part because the survey that provided its empirical basis was directed toward middle management, whose perspective on their corporations was felt to be limited (McGuire, 1988, p. v). The Conference Board thus carried out a second study of the impact of product liability (McGuire, 1988) based on the perceptions of the chief executive officers (CEOs) of a sample of manufacturers.6

The CEOs provided a rather different set of responses. For example, the percentage of firms now reporting product withdrawal rose to 36 percent, compared with 25 percent in the earlier survey. Even more important was a difference in tone. Unlike the prior respondents, the CEOs asserted that liability had had a substantial adverse effect on their corporations: "[h]alf the CEOs responding to the survey believed that the product liability system had had a major impact on the ability of U.S. firms to remain competitive in world markets" (McGuire, p. 3). Moreover, the respondents overwhelmingly believed that their product liability problems would become worse in the near future.

A more detailed study of the impact of liability on firms, albeit in a limited range of industries, was carried out by a group of machinery manufacturer trade associations (American Textile Machinery Manufacturers' Association, 1984). The firms surveyed (medium sized, most with sales between $5 million and $10 million) were all machinery manufacturers, a sector that has long been among those claiming to be heavily affected by expanding liability. This study reported modest figures for the share of operating costs stemming from liability premiums: "On the average [sample] firms' insurance premium rates were

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6The sample had three components. Two hundred seventy large manufacturers provided responses (out of 2,000 approached, a 13.5 percent response rate), as did 280 small manufacturers (out of 2,000 approached, a 14 percent response rate). An additional sample of medium-sized manufacturers was also obtained, but no information was provided about either the size or the response rate for this sample. The response rate for the first two samples is low enough that there must be considerable question about their representativeness.
$3.30 per mil (thousand) of total turnover sales" (ATMMA, p. 4). The firms had only a small number of suits pending at the time of the survey; the average number was three, and one-third of the firms had no such suits.\footnote{This is consistent with the figures reported by Dungworth (1988) concerning product liability suits in federal courts. Machinery manufacturers account for a significant share of all such suits, but only one firm has many suits against it. The others average 1.5 suits per annum.} Nor were the figures on the product innovation effects very large: "Only 13.5 percent of the responding firms said they had ever dropped an existing product line because of product liability risk; another 11.5 percent said they had decided against development of a new product line because of high product liability risks" (ATMMA, p. 5).

Concern about the impact of liability on international competitiveness was the primary factor motivating the machinery industry study. All the machinery industries studied were subject to considerable foreign competition; yet, as discussed in more detail below, none saw liability as substantially impairing its competitive position internationally.

The federal government's Tort Policy Working Group (1986) reported insurance premium figures for a number of industries, showing that the costs of various kinds of liability insurance had risen dramatically in the mid-1980s. The Machinery and Allied Products Industry (MAPI), for example, reporting on its member firms, cited increases in premiums for individual lines of insurance varying from 40 percent (in comprehensive general liability) to 300 percent (for directors and officers). In only one industry did the Working Group offer a measure of total insurance costs; it reported that "the cost of liability insurance to air frame manufacturers in 1985 was about $135 million, with a total cost of $175 to $200 million for the entire industry that includes manufacturers of engines, electronics and parts" (Tort Policy Working Group, p. 13). This compared with total revenues of about $1.2 billion.

The only systematic study of the direct costs of liabilities associated with wrongful termination actions has also pointed to relatively low figures. Dertouzos, Holland, and Ebener (1988) analyzed data on payments and litigation costs for California employers involved
in such actions. They concluded that the total cost of trials of wrongful termination actions amounted to only $2.56 per worker in states allowing such actions: "Even if 100 times as many employees file complaints but settle out of court for $30,000 (both high numbers), the total cost of wrongful termination adds up to only $29.40 per worker... less than one-tenth of one percent of the total labor bill."

There are stray figures from other sources as well. Oreoff (1987) reports that Dow Chemical, whose domestic sales totaled $5 billion in 1986, spent $100 million on legal and insurance costs in the United States; its $6 billion in overseas sales required only $20 million in insurance and legal costs.8 Although the difference between the two figures is impressive, it is also worth noting that the higher U.S. figure still represents only 2 percent of total U.S. sales. An internal report of a major undiversified oil company yielded an estimate of only a fraction of one percent of revenues going to legal and insurance costs.

We should comment here on the general problem of interpreting figures on liability costs and suits, such as those reported from the machinery industry study. How well do they measure the scale of the "problem" of liability? Sales figures provide only a crude base for measuring the impact of liability costs. At a minimum, value added (which subtracts the costs of inputs purchased from other firms) is a better base for scaling the salience of liability as a cost factor to the firm.9 Yet none of the existing studies provided a value-added measure. For the machinery manufacturing industry, value added is likely to represent a large share of total sales, so that changing the base would still produce a liability cost share of less than 1 percent.

The choice of base depends on the use to which the figure is to be applied. For the individual CEO, it can be argued that, to the extent

8 "Legal and insurance costs" is a broader category than direct liability costs, since it presumably includes legal costs associated with nonliability actions.
9 Consider a firm whose value added is only 10 percent of total revenues. If liability accounts for 20 percent of operating costs, it would appear as only 2 percent of revenues.
that all the costs of product liability were truly reflected in insurance premiums, comparison with the firm's total costs would be relevant in considering where to devote cost control efforts. In a competitive industry, however, the CEO might be concerned primarily with the difference between his liability costs and those of other firms.\textsuperscript{10} If the issue is whether product liability has become an important social problem, comparison of total expenditures with some broad measure of economic activity (e.g., gross national product) provides a basis for determining whether misallocations resulting from liability (as reflected in direct costs) could pose a concern.

Similar problems arise in scaling other observations that have been recorded in the various studies. The machinery manufacturers were small firms in terms of their overall sales. For a firm with sales of $5 million, three suits with expected defense and indemnity costs of $50,000 each would represent a significant potential burden, particularly given the difficulty of predicting claims outcomes. And one can note that either "fully" one-quarter or "only" one-quarter of firms made product innovation or withdrawal decisions based on liability concerns. Moreover, should one count the percentage of firms affected or the share of total sales affected? We further note no mention of the extent to which products withdrawn or withheld from the market should have been retained or introduced (i.e., the incidence of Type II errors). The Conference Board studies and others come perilously close to asserting that all liability-induced product withdrawals should be counted as costs of the product liability system, though even the most extreme critic of the existing system would surely allow that some unsafe products have entered the marketplace.

As has already been argued, the existing literature includes only part of the costs engendered by expanded corporate liability. To that extent, it is not necessary at this stage to determine the most appropriate method for scaling the various indicators of the effects of

\textsuperscript{10}One reviewer suggested that the most appropriate measure is liability costs as a share of expected net revenues. Given that net revenues for most firms are a modest share of total revenues or even value added, this would make liability costs appear much more significant.
liability (insurance and claims payments, products dropped, etc.). We shall see that the scaling issue becomes quite different when we consider the indirect consequences of liability.

In summary, the available data on the direct costs of corporate liability suggest that such costs constitute a small but nontrivial share of the aggregate expense of doing business in America. The significance of such liability varies among industries; only for the general aviation industry is it certainly of first-order importance. These data, however, provide only a partial account of the consequences of expanded liability. We now turn to the manner in which firms have changed their behavior--the first step along the path of assessing aggregate effects.
IV. THE VARIETIES OF LIABILITIES

The expansion of corporate liability in the last decade has been very broad. Among the liabilities that have recently expanded are environmental, employment-related, product, directors' and officers', workplace injury, and third-party (such as customers' and visitors'). In this section, we briefly discuss changes in the scope of each and suggest some of the behavioral responses they might engender, incorporating illustrations from our interviews and focus groups. The reader should recognize the preliminary nature of the empirical assertions; they are based on executives' descriptions of their firms' experiences, and their validity remains to be tested. That, indeed, is the next step on the research path that we are following.

ENVIRONMENTAL LIABILITIES

With the creation of Superfund (the Comprehensive Environmental Response, Compensation and Liability Act, or CERCLA) in 1980, corporations were faced with a new set of liabilities for closed hazardous waste sites.¹ The concept underlying such liability was broadly interpreted; any location that received potentially hazardous waste might now be subject to CERCLA action. Thus, a factory at which barrels of chemicals had been stored for a short period of time in the past might be eligible for corrective action (to be financed in part by the site owner) if some of those chemicals had leaked into the ground. The liability was strict, retroactive, and joint and several. This final factor is of particular significance since it implies that a single party may be liable for the entire costs of cleanup if the other parties cannot be located or are fiscally insolvent.

The initial suits generated by CERCLA are unusual in that the primary plaintiff is likely to be the government rather than private parties. Additionally, the suits are generally concerned with prevention, not with compensation; the initial liability is to clean up a site (i.e., to remove a potential threat to health or the environment) rather than to compensate injured parties. Many cases, and certainly the vast majority of those involving federal enforcement of Superfund, have hundreds of defendants; at least one case involves 800 potentially responsible parties (PRPs). Few large manufacturing corporations are likely to avoid involvement in some site; over 1100 sites are already on the national priority list, and thousands more are subject to state action. CERCLA also permits recovery for personal injury and property damage resulting from the release of hazardous waste. Few such suits have yet been filed, but some observers believe that they promise to be as expensive as the cleanup actions.

The expenditures that are likely to arise from Superfund and related state laws have been variously estimated at $50 to $200 billion over the next several decades (Office of Technology Assessment, 1985, p. 3). More precise estimates are simply not possible because the cleanup process is still nascent. But the enactment of the Superfund Amendments and Reauthorization Act (SARA) in 1986 has made it likely that the final expenditure will be nearer the upper than the lower bound of these estimates. SARA substantially increased the stringency of the cleanup standards and hence the likely average cleanup cost per site; that higher cost may also raise the already substantial transaction costs associated with the program.²

²Indeed, many large service corporations have found themselves involved in CERCLA suits through their efforts to dispose of chemicals used for photocopying or waste oil.

³The amount that a litigant is willing to invest in a suit is an increasing function of his potential loss; see Posner, 1987, p. 532. Although there are no systematic estimates of the total transaction costs associated with Superfund, some of the early sites have involved transaction costs comparable to the cleanup costs at stake. Quarles (1985) provides an example of a site at which litigation costs threatened to exceed cleanup costs.
The extension of environmental liabilities has potentially far-reaching effects on corporate behavior. For example, it may already have affected the liquidity and value of fixed plant, at least in some industries. The semiconductor group expressed concern that the acquisition of existing facilities exposed purchasers to potential liabilities arising from the undiscovered presence of hazardous substances; one participant cited his firm's discovery of some barrels of polychlorinated biphenyls (PCBs) in the rafters of a purchased facility. Experiences such as these gave firms a preference for developing new sites rather than for acquiring and converting existing factories; they also lowered the market value of existing facilities. More generally, they substantially complicated and lengthened the site acquisition process, since the purchaser now had to investigate the environmental liabilities that it might be acquiring along with the site. Participants from the semiconductor group believed that this had had a significant bearing on their firms' site acquisition behavior.

It is interesting to contrast this view with that expressed in the chemical group. For the chemical firms, environmental liability was likely to be a second-order consideration in their choice of sites because they were constrained by the availability of local land-use permits; few sites were available for use in an extremely hazardous process. Representatives of these firms expressed doubt that a new chemical plant had been built in the U.S. in the last ten years. This points to the variation across industries in both the significance of particular liabilities and the responses to such liabilities. Regulation can dampen the impact of a liability, a matter taken up later in this Note.

In the small-firm focus group, the concern was with underground storage tanks, a familiar element in almost any manufacturing facility for decades. Such tanks almost inevitably leak over time, but given the

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*Site testing is a complex and, inevitably, a judgmental process. The example referred to a part of a site the purchaser might not expect to test. Though the barrels, given their location, had not leaked into the site, the cost of disposing of them in a manner that minimized future liability represented a significant expenditure.*
new liabilities associated with leakage, all the firms had pulled up their tanks to minimize future problems. They were driven to this by a variety of considerations. One firm was unable to obtain liability coverage as long as the tanks remained underground; it had thus removed the tanks but had not disposed of them and did not propose to do so, given the expense of safe disposal. For another, the issue had become acute because the proprietor personally owned the land on which the plant and the tanks were situated; he had been concerned that the land might lose its value if leakage continued.

All the focus-group participants agreed that expanded environmental liabilities had made their firms more sensitive to the environmental consequences of their decisions; the size of the potential liabilities was simply too large to be ignored. One representative of the pharmaceutical industry pointed out that his multinational firm would no longer place storage tanks underground with little regard for possible long-term leakages, as it had ten years earlier. Moreover, it was not just in the U.S. that this firm had changed its behavior but also in overseas facilities. This illustrated another theme among the groups: Large firms tended to have uniform policies, leading liability-induced changes to be enforced even in places where the liability did not apply.5

Corporate acquisition decisions have also been affected. The pharmaceutical and chemical groups both reported that a critical consideration influencing potential acquisitions was the determination of liabilities that might be associated with sites currently occupied by the candidate firm. Each participant from the chemical industry had at some time rejected a candidate acquisition offered by a large parent because of uncertainties about the environmental liabilities of its major plant. Although all the candidates were ultimately purchased by foreign firms, participants in the chemical group believed that the new owners were unaware of the potential liabilities they had acquired.

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5The focus group consisting of small firms provided just two observations on the issue of adoption of uniform policies. In both cases the participant contrasted his U.S. plant policies with those applying to the foreign plants.
Not surprisingly, hazardous waste liabilities have also affected the manner in which firms dispose of wastes. For example, two large firms reported efforts to centralize decisions concerning waste disposal—issues that had previously been left to individual plant personnel. The corporate staff believed that these personnel generally lacked awareness of the potential corporate liabilities associated with hazardous waste as well as knowledge of how to control those liabilities. At least one had moved to a national contractor for hazardous waste disposal; each plant had to deal exclusively with that contractor.

Of course, added care in waste disposal may have desirable consequences, but the net effect of joint-and-several liability on individual firms is far more complex. Some large corporations, fearing exposure to liability stemming from negligence on the part of other firms, have decided to avoid mixing their wastes with those of other firms. This will tend to raise the cost of disposal unnecessarily (from society's point of view), since there will be too many disposal sites, and economies of scale will not be tapped.

The legal liabilities associated with hazardous waste generation and disposal are still expanding. The introduction in 1988 of the "community right to know" Superfund provisions (Title III of SARA), which require that firms provide their communities with information about which hazardous substances are being used or kept at particular sites, may have a substantial effect on some industries, particularly chemical manufacturers.

EMPLOYMENT LIABILITIES

Starting about 1980, a series of California court decisions restated the basic doctrine of employer-employee contracts. Under this doctrine, employment now acquired the characteristics of a property right in some respects; employers could no longer terminate at will but had to show that the termination met certain substantive and procedural requirements. Failure to do so could result in large jury awards; punitive damages were not uncommon in California. The doctrine has now
spread to a number of other states. Whereas in 1982 only two states recognized the existence of implied contracts as the bar to termination of employment, by 1985 31 states had adopted that doctrine. Indeed, by 1985 only ten states still adhered to the traditional at-will doctrine.  

This liability has generated significant and costly litigation, at least in California. Dertouzos, Holland, and Ebener (1988) estimate that the average trial award for a wrongful termination case in California from 1980 to 1986 was $646,000, entailing legal costs of $80,000.  

This new doctrine has many possible consequences. We set out here two of the more significant, without any claim that this is a complete statement.  

First, employers may be hampered in their ability to adjust their employment levels expeditiously, since in many circumstances the new doctrine requires that employers follow fairly lengthy procedures before they may dismiss a worker. The employee must be provided with a written statement specifying the weaknesses in his performance that need to be remedied, along with a program for correcting those weaknesses. A period must also be allowed for him to improve his performance. In economic terms, these measures increase the costs of adjusting employment levels in the firm, which may lead to more extensive use of outside contractors and to slower adjustment of firm employment levels in response to cyclical changes. This slowing of adjustment refers not only to contraction but also to expansion, since firms will be more inclined to expand overtime than to hire new employees.  

One semiconductor risk manager said that, at least in some instances, his firm planned to buy out an employee with six months of pay rather than incur the risk of being sued. Others in the group thought this a reasonable strategy. Given the high educational level of the work force in the semiconductor industry along with the

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6 Note that this change is less relevant to unionized employees, whose employment rights are subject to explicit contractual specification.  
7 This is purely a hypothesis; none of the interviews or focus groups provided evidence of such a shift.  
8 The group discussed the difference in this respect between Western Europe and California. In some European countries, such as West
volatility of semiconductor sales, firms in this industry were likely to be profoundly affected by changes in the legal doctrine.

Second, employer-employee relationships will become increasingly formal, with more paperwork created to ensure that any subsequent dismissal decisions can be justified. Not only will the paperwork be expensive, but as the semiconductor group suggested, its volume will make managers less inclined to dismiss weak employees. Other groups cited the creation of termination review committees to which managers had to submit the basis for termination decisions; the committee was to review each decision as an objective third party.

One participant said that a line manager now had to obtain approval from three layers of management before a worker could be dismissed; his firm was concerned about the liabilities it might face from a wrongful termination decision. He feared that a manager might decide that it was less trouble to keep a weak employee than to have to persuade three layers of management of the correctness of the decision.

Participants in all three industry groups commented on the emotional nature of the suits arising from wrongful termination actions; such suits were seen to involve highly personal matters, more closely resembling divorce actions than classic corporate liability issues. The litigation also placed high demands on the manager involved. As a result, as one participant put it, managers had become "gun-shy"—reluctant to terminate an employee for fear of having to enter into the warfare of a legal suit, even without concern about personal financial liability.

None of the focus-group participants from small firms had been subject to a wrongful termination action. Only one of the participants was concerned with this particular liability and had substantially changed termination procedures as a result. Although this participant was concerned with the legal cost of ensuring the propriety of his Germany, many employees have statutorily protected rights that require large payments before dismissal. Although the scheduled payments were high, the group agreed that they generally preferred the greater certainty provided by the European system; a firm did not have to consider the risk of a punitive damage award if it failed to follow the correct procedures.
firm's termination procedures, he stated that of all employees who had been put on notice of possible termination action, about 10 percent had responded by improving their performance to such an extent that the termination decision was reversed.

Wrongful termination is only the latest, albeit perhaps the highest-stakes, form of employment-related liabilities. The actions can revolve around a broad array of employee rights issues. One of the chemical industry lawyers cited a suit brought by a female employee who asserted that a supervisor had given her an unfavorable evaluation because she had rejected his sexual advances. The supervisor denied any such advances. The firm had no way of knowing who was telling the truth, but the lawyer was convinced that no male supervisor in that plant would ever give a female employee an unfavorable rating again.

Participants in all three groups also noted that liability concerns had essentially eliminated employer references; no firm felt prepared to incur the risks inherent in providing an unfavorable reference to a former employee. Instead, firms now provided information only on the period during which a given employee had worked for the firm and the nature of his assignment. Although it is possible that informal references can still be obtained from former supervisors, it is clear that an important source of employee information has been largely curtailed—to the detriment of both employers and workers.10

Still other long-range effects may be of considerable concern to corporations. If supervisors are inhibited from firing or adversely rating employees who perform poorly, the work force of a firm that is not growing will become poorer over time. Good workers will continue to

9An employee receiving an unfavorable reference can bring a tort action against the firm providing the reference, alleging any number of grounds for personal injury (emotional disturbance) or loss of earnings. The employee may not prevail, but the threat of such an action is real.

10James Dertouzos suggests that references have become "coded." Examples of disguised adverse references are "Jones is a hard worker" and "Jones makes the most of his abilities." The codes permit only rather gross signaling and are less informative than the more candid versions of yesteryear. Anecdote suggests that even informal references can be difficult to obtain if the prospective employer is unknown to the former supervisor.
leave at roughly the same rate as they would under an "at-will" doctrine, attracted to new opportunities in other firms that seek their services.\textsuperscript{11} It is primarily poor workers whose exit is impeded.

The variation in employment liability across states may affect employment decisions. One participant from the chemical industry stated that these liabilities had influenced his firm's decision not to build a facility in California.

The responses described above amply illustrate the analytic framework presented earlier. The increased attention to justifying termination decisions and, more generally, to justifying all employment-related decisions (e.g., pay increases and job assignments) is the cost of ensuring that Type I errors (e.g., incorrect employee dismissals) occur less often. This attention constitutes a cost. But it also increases the probability that Type II errors will be made—i.e., that employees who should in fact be fired are undeservedly retained, or that unfavorable ratings are withheld from employees who warrant them. Since some of the cost of Type I errors (litigation stress) is borne by line managers, who cannot be effectively indemnified by the firm, it is likely that the firm cannot ensure, even with explicit knowledge of the various risks, that an appropriate balance is maintained between the two types of error.

\textbf{PRODUCT LIABILITY}

We treat product liability relatively briefly in this Note, simply because changes in it have received such widespread attention. The shift from a negligence standard to strict liability, along with increasing jury awards, appears to have greatly increased the level of payments (indemnity and defense) under this liability. Data from Cook County show that the average product liability jury awards, in constant dollars, have grown from $265,000 in 1960-1964 to $828,000 in 1980-1984 (Peterson, 1987, p. 22). Many observers believe that the number of product liability suits has also grown rapidly. Although it appears unlikely that total payments under this line of liability yet amount to

\textsuperscript{11}Note, though, that firms may make fewer new hires if (1) they are less able to dismiss poor workers, and (2) recruiting costs rise.
a significant share of corporate value added, the rate of growth has led some firms to project that the share will be significant in the near future.

Apart from the possible increase in product safety, the expansion of corporate product liability may have affected corporate behavior in a number of ways.\textsuperscript{12} For example, some firms will no longer deal with suppliers who cannot show adequate insurance coverage; in the event that a primary firm is sued, it wishes to ensure that it can obtain appropriate payments from a component manufacturer whose product turns out to be implicated in the injury. Since some small firms have difficulty obtaining the necessary coverage, they may be forced out of this market as a result. One executive, who was involved in Latin American purchases for a large U.S. distributor, reported difficulties arising from the fact that rural Latin American cooperatives were not in a position even to apply for such coverage. This greatly lengthened the negotiations required for the transaction, and it was unclear whether the deals could in fact be consummated.

The rate of product innovation may decline as well, since new products represent unknown hazards; more investment must now be made in pinpointing those hazards and in presenting the results to management and insurers. Firms may choose to narrow their product lines to avoid having to estimate unfamiliar liabilities, a matter taken up below. As firm specialization increases, there may be a decline in the competitiveness of particular product markets.

The pharmaceutical group noted that the inhibiting effect of expanded product liability is difficult to quantify because it permeates a firm's decisionmaking process. They offered the example of the bench chemist who simply chooses not to pursue his curiosity about pregnancy-related drugs because he knows that the firm's senior management is unlikely to fund later and more costly stages of the development process for such a high-hazard product. Surveys of senior management concerning the products not introduced because of liability issues may, as a result, miss much of the relevant behavior.

\textsuperscript{12} For more detail on corporate responses to product liability changes, see Eads and Reuter, 1983.
Some firms have responded to the expansion in product liability by attempting to restrict the applications of their products and the nature of the users to whom they will sell. For example, one chemical manufacturer refused to permit a product to be used in the manufacture of aircraft landing gear, although it believed that this application would have enhanced the safety of the gear. Its counsel believed that the potential liability costs far outweighed any potential profits.\footnote{All such statements raise the question of why there is not some price at which the firm is willing to incur the risk. It is difficult to raise such pricing issues with persons whose prime responsibilities are litigation and risk management.} The same firm had also resisted the suggestion of one of its divisions that the firm market its considerable warning-labeling skills. The counsel expressed the view that this would involve the firm in all suits against products for which such labels were provided.

The focus groups as well as the individual interviews all suggested that corporations currently pay more attention to product safety, both in introducing new products and in considering the acquisition of new firms. Even within the last five years, participants noted, the salience of product liability in acquisitions and mergers had increased sharply. One chemical firm noted that it had rejected the majority of potential acquisition candidates because of product liability concerns.

**WORKPLACE LIABILITIES**

Injuries to employees represent one class of injuries for which the tort system has been largely displaced for a long period of time. The workers' compensation system provides an alternative remedy in which smaller, scheduled compensation is available to injured employees with a correspondingly reduced burden of proof on the claimant.

The expansion of product liability for manufacturers has led to some "leakage" from the workers' compensation system. Workers who are injured by a piece of equipment may bring a tort action against the manufacturer of that equipment in addition to making a workers' compensation claim, although the compensation payment is subject to
subrogation to the product liability claim. In a study of 1985 product liability claims in excess of $100,000, about 60 percent involved workplace injuries (Soular, 1986).

Nonetheless, it would appear that the tort system is currently used only to a limited extent in direct claims against employers for workplace injuries. Such claims can be made where a charge of gross negligence or an intentional tort may be sustained. But the vast majority of claims and payments for workplace injuries are still made within the workers' compensation system.

In at least some states, it would appear that there has been some expansion of coverage in the system, which may be related to the general expansion of liability. More conditions, such as mental health problems, are now eligible for compensation. This may not reflect an effort to motivate workers to stay within the workers' compensation system so much as a response to changes in general social attitudes as to what constitutes a compensable injury. It is not clear whether the schedules of payments allowed under that system have been much affected by the growing generosity of jury awards in nonvehicular personal injury tort actions. Most of the schedules provide, in addition to medical expenses, economic compensation whose modest ceiling is expressed in terms of a share of the average industrial wage in the state. Changes in these ceilings appear to come fairly slowly.

In light of this, we give no additional consideration to workplace liabilities, except as a subclass of claims under product liability.

DIRECTORS' AND OFFICERS' LIABILITY

There has recently been a surge of suits against the directors and officers of corporations alleging personal responsibility for such torts as defective products or losses arising from merger rejections. As reported by Romano (1987), the annual Wyatt Company survey of directors' and officers' (D&O) liabilities showed that the percentage of firms with at least one liability claim against a director rose from 7 percent in 1974 to 18 percent in 1984. The same survey reported that the average cost for a paid claim, excluding legal fees, was almost $2 million in 1986, compared with less than $900,000 in 1980.
Romano also reports that the Wyatt Company index of the cost of D&O insurance, taking account of changes in deductibles and coverage, rose from 54 in 1984 to 682 in 1987. A number of executives with whom we met reported insurance premiums so high that their firms had decided to indemnify the directors and officers directly. In the semiconductor group, there were references to premiums of $750,000 for coverage of only $1 million. One firm was deterred from going public by the expense and difficulty of obtaining adequate D&O coverage.

Apart from the cost of obtaining the insurance, the increase in this liability may have affected both the composition and the behavior of corporate boards. At a minimum, as various group participants stated, meetings are longer and minutes shorter than they used to be, as boards deliberate more carefully but report less of their deliberations.

The semiconductor group suggested that boards had become more professional. The CEO was, in general, less likely to recruit former public officials or nonbusinessmen. New board members were now more likely to be corporate executives and were thus likely to have a better command of the consequences of board decisions. The group also said that it had become significantly more difficult to obtain outside directors and that their boards had less than the desired ratio of outside to inside directors.

Moreover, some focus-group participants said that their boards now expected more information from the corporate staff. One executive said that whereas his staff had once sent material to its board only a few days in advance and had then had little expectation that most of it would be read, they were now required to provide such material at least two weeks in advance and felt that most board members did review it. Others disagreed, saying that the only change was that board members were now more likely to query corporate counsel about their own liability exposure with respect to a particular decision.

Has the behavior of boards changed? For example, does the potential personal liability of directors make boards more risk averse? Boards may be less willing to enter into high-liability product lines because of such concerns. We obtained only one indication of such a
response: A pharmaceutical company's board had decided not to enter the contraceptive device market in view of liability concerns, although it is not clear whether that was the result of personal or corporate liability risks. Both the pharmaceutical and chemical groups were skeptical that personal liability played much role in their boards' decisions.

The behavior of corporate officers may also be affected. One corporate counsel said that he and his staff lawyers had been unwilling to become members of Superfund defendant steering committees, formed by the major PRPs at most sites, until the board of the firm had explicitly indemnified them for any liabilities that might arise from the actions of such committees. Notwithstanding that indemnity, he admitted to some unease about long-tail liabilities associated with sites; even his large employer might not be there forever to deliver on the indemnity. On the other hand, no one believed that corporate executives were deterred from becoming officers by the risk of acquiring liability; at most, some corporate counsel said that the new officers might inquire about the new liabilities they now had to consider.

In summary, we found little evidence suggesting that the growth of D&O liability, or even the drying up of insurance for such liability, had significantly affected the behavior of firms. It may have induced some change in the composition of boards, but it seems less likely to have changed the boards' decisionmaking processes or the outcomes of those processes.

OTHER LIABILITIES

These five liabilities do not exhaust the list of emerging legal liabilities that firms must consider. Two others deserve at least brief mention, although we have no indication at this stage that they have assumed broad significance.

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14 One risk manager suggested that his board was now less likely to recruit flamboyant members because of a concern about the effect of this on the cost of their liability insurance.
Liabilities to Noncontractual Third Parties

The obligations of hosts to those on their premises have greatly expanded. Thus, a supermarket may find itself sued by a customer who was assaulted in an ill-lit parking lot or by an outside contractor whose employee slipped on a poorly maintained pavement.¹⁵ This can lead not simply to better lighting, maintenance, and security but also to lessened access to premises.

Contractual Liabilities

There is a general concern with what has been called the "tortification of contracts," i.e., the use of tort doctrines in the adjudication of contract actions. Juries have awarded punitive damages in a number of suits; indeed, the largest punitive damage awards sustained on appeals appear to have been in contract actions. Contracts have now become a source of potential liabilities; this may affect corporate willingness to enter into certain kinds of arrangements.

There was general agreement in the focus groups that concerns with potential liabilities had led to more care in the drafting of contracts. However, none of the participants believed that this arose from the possibility that the contract itself might become the source of a tort action; the concern was simply that a well-drawn contract could help prevent a tort action on another basis.

CONCLUSIONS

The material presented here suggests that liability may have induced critical changes in the way firms carry out their business, if not in their outcomes (productivity, product variety, etc.). Yet we have only begun to explore the range of behavioral changes induced by expanded liability. One reviewer pointed to a subtler effect that was given little attention in our interviews: the growing influence of lawyers on corporate decisionmaking. Lawyers are heavily oriented toward documentation and orderly process; to many observers this

¹⁵One indicator of the growth of this liability is the recent emergence of a law reporter on this topic, the Security Law Newsletter.
translates into less concern with substance than with form. The reviewer suggested that "legal sensitivity tends to focus on the 'proximate cause' of events. A problem of toxic effluent is interpreted in terms of the effluent rather than inquiring whether the antecedent manufacturing process could be changed so that the effluent is of a different chemical quantity or quality." It may well be that a review of the chain of command and the backgrounds of senior executives will show that lawyers now have more power in corporations than they did before the expansion of liability.

An illustration of the breadth of behavioral changes arising from liability is given in Fig. 2, which outlines some of the consequences of expanded environmental liability. The row entries constitute a partial list of the primary decision areas for a firm, while the column entries represent different dimensions of those decisions; the first three (policies, procedures, and organization) represent formal decision processes, presumably managed by the firm, while the fourth (informal processes) represents changes in employee behavior that are not the result of deliberate central management decisions.

On the basis of the information collected so far, we believe that environmental liabilities affect not only every dimension of the handling of waste, as might be expected, but also aspects of at least three other critical decision areas. For example, locational decisions are affected; many firms' policies now require consideration of potential Superfund liabilities (policies), while the board will require documentation of the environmental status of a site before authorizing its acquisition (procedures), and a panoply of lawyers and technical personnel will have to sign off on the documentation before it can be submitted to the board (organization). Similar changes will occur in the handling of acquisitions, since these may involve the same liabilities. Product development policies can be changed to the extent that a new product can represent future environmental liabilities.

Thus, while we cannot quantify the effect of expanded liability on firm-level outcomes, let alone its aggregate consequences, the depth of the induced changes in firm behavior seems profound enough to suggest that such influence may be substantial.
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<tr>
<th>Category</th>
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Fig. 2—Effects of environmental liability on corporate behavior
V. AGGREGATE CONSEQUENCES

In the previous section, we suggested that expanded liability has had complex effects on the behavior of corporations. Without a clear understanding of those behavioral effects, it is difficult to determine the macroeconomic consequences. What follows is thus a preliminary attempt to examine the three adverse macroeconomic consequences of expanded liability that have already received some attention: lower productivity, impaired international competitiveness, and reduced product innovation and variety. We discuss each in turn, although all are closely linked. Our primary objective is to point to the difficulty of inference rather than to draw final conclusions.

PRODUCTIVITY

The connection between expanded corporate liability and productivity is particularly elusive. Here we present some possible links between the two.

One very simple link\textsuperscript{1} arises from the fact that expanded product liability raises the price of certain kinds of equipment. As workplace machinery becomes more expensive as a result of liability concerns, more safety devices must be installed, and these devices may worsen the performance of the equipment. More costly (and less productive) capital equipment will lead firms to choose a lower capital/labor ratio, thus reducing the productivity of labor.

No estimate of the significance of this effect is currently available. Quantifying it is conceptually simple but empirically demanding; it would be necessary to measure the extent to which liability concerns have added to the cost of equipment (and worsened performance) for particular industries. From this, one could calculate the expected change in the capital labor ratio for each industry, and that in turn would lead to a measure of the reduction in per-man-hour output.

\textsuperscript{1}This hypothesis was suggested by Stephen Carroll of RAND.
Other links between liability and productivity, however, may be equally significant, though more difficult to quantify even in principle. For example, the measured productivity of R&D expenditures may be reduced because an increased percentage of those expenditures must be devoted to determining the risks associated with potential misuses of a product. A manufacturing liability counsel estimated that 10 percent of his firm's substantial R&D expenditures were now devoted to testing extreme liability concerns.\(^2\)

Expanded environmental liabilities also lead to more rigorous testing of the environmental consequences of new products and processes. This reduces the capital available for investment in plant and equipment, leading again to a decline in measured productivity. A similar effect can be expected from any environmental liability-induced decline in the value of existing plants; resources will be devoted to replacing plants that, absent these liability concerns, could continue to function.

The change in employment relationships resulting from new employer liabilities may also affect productivity as more resources are devoted to personnel management rather than to production. If supervisors are less willing to fire unproductive workers, the workforce will tend to be less productively employed as some workers stay in inappropriate jobs. Semiconductor executives, who are in a highly cyclical industry, believe that their firms have been hindered in adjusting to downturns by concerns about liability awards against them. As a result, they maintain that the productivity of their workers has declined, although no one in the group was willing to estimate the magnitude of this effect.

The chemical group participants argued that the diversion of senior management time to liability and litigation was a serious cost. Yet costing such time in terms of the hourly compensation is likely to turn

\(^2\)Improvements in product safety are not included in standard measures such as gross national product, though they increase the welfare of the nation. A shift of investment to more testing of products may thus be incorrectly measured as leading to a decline in national welfare. Hence we refer here only to "measured productivity."
up a relatively small figure simply because senior management compensation constitutes a small share of total production costs in the manufacturing sector. A more persuasive argument might hold that the focus on liability and litigation diverts senior management from long-term strategic decisionmaking, thus decreasing the effectiveness of corporate management and lowering productivity.

INTERNATIONAL COMPETITIVENESS

It is generally believed that the legal liabilities facing U.S. firms are much greater than those affecting their foreign competitors. Some contend that this has reduced the ability of U.S. firms to compete both here and overseas. In competitive markets with relatively undifferentiated products, even small cost differences can greatly affect market shares of firms; thus, even if liability costs are only a modest share of production costs, U.S. firms might find themselves significantly handicapped in both domestic and foreign markets.

Foreign plaintiffs may attempt to bring suits in U.S. courts for injuries inflicted by U.S. products sold overseas. There are numerous advantages to bringing a suit in the U.S. rather than in any other country. Because only the U.S. permits contingent fees, lawyers can finance suits here that are beyond the means of less affluent plaintiffs. Punitive and other damages also appear to be more generous in the United States.

The principal issue to be decided by the U.S. court before accepting the case is called *forum non conveniens*: Is it more convenient, given such matters as the location of the relevant documents and witnesses, to have the trial in a particular U.S. court or to have the matter heard in a foreign court? For a variety of reasons, most foreign claimants appear to be rejected by U.S. courts. However, some foreign claimants alleging injury from the products of U.S. firms have been able to bring U.S. suits.

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3 See Orffice (1987) for an articulate statement of the perceptions of a CEO of a major corporation.
4 A good discussion of these issues is contained in Besharov (1987).
This constitutes a disadvantage for U.S. firms operating in foreign markets, who must concern themselves, as European or Japanese firms need not, with the possibility of carrying U.S. product liability costs in foreign markets. Thus, McDonnell Douglas Corporation, in selling airliners in China, had to include an allowance for the insurance costs of protecting against possible U.S. claims by victims of an air crash in China. Its European rival would not have had to concern itself with such a contingency.

There is a symmetric problem related to foreign firms operating in the U.S. In principle, they are subject to the same liabilities as are U.S. firms. However, foreign firms may have significant procedural advantages. For example, a foreign firm may be subject (in U.S. litigation) to the discovery rules of its home country, which are likely to be much more restrictive than those faced by U.S. firms. Similarly, treaties on execution of judgment are weak and can make it difficult for successful plaintiffs to collect verdict amounts. In the view of some observers, these factors reduce the incentives of U.S. lawyers to bring claims against foreign firms operating in the United States.

The problem is likely to increase over time for some industries because of the long tail of liability. Workplace machinery, for example, may be used for up to 50 years; the manufacturer's liability continues throughout that time. Similarly, 70 percent of all U.S. general aviation planes have been in service for ten years or more (International Trade Administration, 1986, p. xvii). Each year's insurance, whether a claim made or an occurrence policy, must therefore include coverage for injuries caused by older machinery. Domestic firms that have been in these industries for a long time would appear to be acquiring an increasing cost burden in relation to foreign entrants.

Nonetheless, there is surprisingly little evidence suggesting that liability currently hinders international competitiveness.⁵ For example, the risk manager of a major pharmaceutical firm (one whose

⁵Some small markets do constitute an exception. For example, the Tort Policy Working Group reports that "there are no longer any domestic producers of trampolines or ice hockey protective equipment" (1987, p. 19).
sales exceeded $1 billion, about 50 percent of which was in overseas markets) reported that only once had his firm paid a claim brought by a foreigner in U.S. court—and that had been a contractual rather than a product liability claim, although it involved a defective product. He volunteered that his insurer would probably not reduce the firm's premium by more than a dollar if he self-insured foreign risks. None of the focus-group participants had experienced more than a small number of foreign claims in U.S. courts, even though the chemical and pharmaceutical groups included firms with large foreign sales. They did not view such claims as a handicap to their competitive position.

Participants in the chemical group argued that U.S. liability did raise their costs in a way that affected their international competitiveness. Liability raised their home market costs in relation to the costs incurred by foreign producers in their home markets. Both product liability (product development costs) and environmental liability (plant operating costs) figured in that. Given that their pricing in foreign markets reflected production costs in their home market, these participants concluded that they were at a disadvantage both at home and abroad. Some participants pointed out, however, that other nations had more generous nonliability compensation schemes, generating higher employer tax rates, so the net effect was unclear.

A series of studies of the international competitiveness of American industries carried out between 1984 and 1986 by the International Trade Administration (ITA) of the U.S. Department of Commerce also yielded some negative information. Of seven industries studied, liability rated mention only for general aviation. Even in that industry it was not clear that liability had placed U.S. producers at a significant disadvantage in relation to their foreign competitors.

Although insurance premiums now constitute a large percentage of total production costs for a small plane—and while U.S. manufacturers have to provide insurance for a growing number of aging planes, with total production falling rapidly—foreign producers have fared little

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6 The seven were construction equipment, flexible manufacturing systems, general aviation, international construction, mining machinery, pharmaceuticals, and software.
better than domestic producers in the segment that is most vulnerable to liability concerns.\(^7\) Most foreign penetration has been into the commuter and business jet sector of the industry, where liability costs are a less significant share of total costs than they are in the "recreational" plane sector. For single-engine planes and light twin-engine planes (less than 4,400 pounds empty weight), imports were valued at only $5.3 million in 1985, compared with U.S. exports in those categories of $61.8 million (ITA, 1986, pp. 36-37); at the larger end of the market, the U.S. was heavily a net importer.

The machinery industry study cited earlier (American Textile Machinery Manufacturers' Association, 1984) also suggested that the problem is still very slight. The relevant paragraph is worth citing at length:

"Companies were also asked whether they perceive the product liability situation in the U.S. as hampering their ability to compete with foreign manufacturers. Just under 19 percent of those responding answered affirmatively. The vast majority indicated they do not see the product liability situation as creating a problem with foreign competition. Follow-up to this question by site visits demonstrated that most companies believe that foreign competitors have the same problem with product liability in this country" (p. 39).

Indeed, some U.S. machinery industry executives believed that the complexity of U.S. liability presented a trade barrier to foreign entrants, who were deterred by having to deal with such a new and daunting type of legal action.\(^8\) Both the chemical and pharmaceutical

\(^7\)The statement about the relative insurance costs of different segments of the business is only an inference. The premium associated with a particular class of plane is likely to be a function of insurer expectations concerning the number of passengers, pilot experience, hours of use, and the sophistication of safety equipment. These considerations suggest that we would expect smaller planes to have higher percentage premium costs than do larger planes, commuter planes, or business jets. See "Pulling Out of a Nose Dive" (The Economist, June 18, 1988, p. 82), which also points to the lower liability of the business plane sector and the rapid decline in shipments it has experienced.

\(^8\)It should be noted that this study was carried out in 1984, before the impact of the most recent insurance crisis had been felt. One of the study's authors (personal interview) felt that liability might be more salient now.
groups also believed that potential U.S. liabilities were a deterrent for foreign firms, whose management was unfamiliar with methods one could use to control these liabilities.\(^9\)

The issue is one that may yet become serious. The Supreme Court's statement of guidelines on the *forum non conveniens* allows the individual court a great deal of discretion. A California appellate court recently issued a decision that would seem to offer considerable promise for foreign claimants,\(^10\) and if only one major state provides a hospitable climate for these claimants, the number of such suits may blossom, and insurance costs may become a significant disadvantage for U.S. firms operating in foreign markets.

As to the advantage of foreign firms in the U.S. markets, we can only report that it has not yet become a salient issue. This may simply reflect the fact that domestic manufacturers are in no position to measure the liability costs of their foreign competitors within the U.S.

**PRODUCT INNOVATION AND VARIETY**

The one indirect liability cost that has received some systematic attention is the possible reduction in the extent of product innovation, particularly by firms in high-liability industries such as pharmaceuticals and chemicals. As noted earlier, Weber (1987) asked his sample firms about the frequency of product withdrawals and decisions not to introduce products for liability reasons. It is claimed that firms are more reluctant to introduce new products in high-liability industries simply because novelty involves less ascertainable risks. The allocation of more R&D to "defensive testing" will also lower the rate of innovation.

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\(^9\)One participant in the chemical group told of an instance in which his firm had had difficulty persuading a foreign supplier to sell it a product for use in the U.S. market. The U.S. lawyer had finally traveled to Europe and had managed to convince the supplier that the legal climate in North Carolina, where the product was to be used, was not as "hostile" as in states more frequently discussed in the press.

\(^10\) Corrigan v. Shiley, rev. denied, California Supreme Court (1986); cert. denied sub nom., U.S. Supreme Court (1986).
Recent breaches in the wall of the "subsequent remedial action" doctrine may have exacerbated this effect (see Hoffman and Zuckerman, 1987). A corporate counsel reported that his firm had delayed certain product innovations out of concern that they might weaken the firm's position in ongoing product liability litigation.

It is possible that some products will no longer be available. Oreffice (1987) cites the drug Bendectin as a telling example of the problem. This drug, which was taken by expectant mothers to reduce the nausea associated with pregnancy, is alleged to have caused birth defects. Although the scientific evidence for such a connection seems to be slight, birth defects are difficult to account for, and the desire on the part of a jury to provide compensation to parents of a child with such defects is understandably great. Though Oreffice claims that only one jury has found against the manufacturer (Merrell Dow), litigation costs have been sufficiently high to spur the withdrawal of the drug from the market. No substitute product has been introduced.

Curiously, the focus groups yielded few instances in which products available in other nations have not yet been made available here by virtue of liability concerns, and this seemed a reasonable test of whether liability issues have yet had an impact on product variety. Some pharmaceuticals are still making their way through the hurdles of FDA regulation and are already available elsewhere, but apart from Bendectin, no one could offer an example of a major product withheld solely from the U.S. market as a result of liability concerns.\footnote{One pharmaceutical firm was considering not marketing a product that was in the latter stages of FDA clearance because of postmarketing problems in European markets. We were left unclear whether the firm might also decide to withdraw the product from the European market as well.}

There have been some studies of lags in the introduction of drugs into the U.S. market compared with foreign markets, but these have focused primarily on regulatory influences (e.g., Grabowski, 1980). Indeed, regulation more generally may have narrowed the range of products available in some product markets in the U.S.; certain kinds of machinery used in non-European foreign markets may not be available in
this country because they fail to meet Occupational Safety and Health Administration (OSHA) safety standards. But we are aware of no study showing that liability concerns have deprived U.S. consumers of any products (other than pharmaceuticals) that are available in foreign markets.

Expanded liability may take quite some time to work through to reduced innovation and product variety. After all, as many as ten years may elapse between an initial R&D commitment and the ultimate introduction of a new product into the marketplace (Mansfield, 1968), particularly in product lines associated with high hazards. Hence we may not yet have observed much impact even if product liability expansion had a significant effect as many as ten years ago.

We return to the distinction between the two types of decision errors firms may make. It is easier for the public to obtain information about the introduction of unsafe products, since the injuries such products generate may lead to suits or to recalls. There is no comparably systematic source of information, however, regarding useful products that are withheld from the market. Even formal questioning of firms about decisions not to market, as has been done through surveys, will consistently underestimate the extent of such effects, for the decisions may be made at low levels in a firm's hierarchy.

Some products are now available from only a small number of firms. For example, the Tort Policy Working Group reports that G. D. Searle had withdrawn from the intrauterine device (IUD) business, leaving only a single producer in the U.S. market (1987, p. 20). It is possible that the lack of competition and the emerging liability barrier to entry may have some inhibiting effect on innovation.

OTHER AGGREGATE EFFECTS

In the course of this research, other, more subtle, effects emerged. We list here two that may be of some interest.
Narrowing the Scope of Firm Activities

As liability has assumed more importance, it has also become more variegated. Each sector of the economy has distinct liability problems. That provides a disincentive for firms to diversify, since diversification requires that senior management become knowledgeable about the liabilities associated with new activities.

A senior counsel of one very large manufacturer (whose sales exceeded $10 billion) offered the example of a pesticide that his firm had developed for use in its own facilities. There was an external market for the pesticide, and thus the manufacturing division of the firm had decided to sell it to other firms operating the same kind of facility.

The counsel strongly disagreed with this decision. The firm knew little about pesticides, which were distinct from the rest of its product line. If any human or environmental problems came to be associated with the pesticide, the counsel felt that the very size of the firm would make it an attractive target for suits. In his view, the market was simply not large enough to justify the liability risk. It might indeed be a small-probability event, but the counsel's office was not expert enough in this area to be sure.

Handicapping Small Firms

The increasing significance of liability may have created a handicap for small firms in relation to their larger competitors. They have more limited options with respect to liability. In particular, self-insurance may not be an option, and they must buy insurance at premiums that will generally reflect not their own experience but that of the industry in which they operate. The significance of this problem is likely to vary considerably across industries.

Consider a large firm contemplating the introduction of a new product in a high-liability area. If the product represents only a small share of the total output of the firm, its insurance premiums are not likely to be greatly affected by this innovation. A small firm that is considering the same decision may find itself unable to obtain
insurance if it does begin the new product line. An insurer will rate the firm primarily on the new product and may be unwilling, for the relatively small premium it can hope to obtain, to write the policy.

An executive of a Fortune 500 manufacturer told of the effort his company had made to outsource the manufacture of a new component. The large manufacturer had given a development contract to a startup firm to develop this component using a relatively innovative and potentially high hazard process. The development had been successful, but the small firm had been unable to obtain insurance and consequently was unable to enter into market production of the component. The large firm, which was largely self-insured, had been forced to make the component itself.

In general the reduced availability of liability insurance, arising from expansion of a variety of liabilities, will increase the relative riskiness of small businesses. Inasmuch as the encouragement of the small business sector is considered desirable, this must be counted as a cost.
VI. CONCLUSIONS AND FUTURE RESEARCH

Supporters of tort reform often claim that expanded corporate liability has had significant, negative economic effects—and that these effects argue against the maintenance of the current tort system. Determination of the economic consequences is thus an important element in the tort reform debate.

Existing studies of the impact of liability, which focus narrowly on direct costs, point to a rather modest effect on corporate America. These studies, which have emphasized product liability, find that total expenditures, mostly captured in insurance premiums, are quite modest. As a share of value added in the nonagricultural economy, the cost of product liability insurance is very small. It is, of course, much higher in some industries than in others, but even in most supposedly high risk industries, it is in general a modest amount.

Some of the concern voiced in the corporate community, however, is clearly not so much with present costs as with projections of future costs. Some indicators of liability costs have been rising at dramatic rates. For example, many observers cite data on product liability jury verdicts of a million dollars or more, which show an annual rate of increase of 12 percent between 1980 and 1986 (Jury Verdict Research Inc., 1988).1 The increases have been occurring long enough that today's 1 percent of total manufacturing costs can readily be projected to be 3 percent in a few years.

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1The cited figures come from reports by plaintiffs' lawyers of cases in which they won verdicts of more than $1 million. It is not known whether the probability of such a verdict being reported has increased over time or what percentage of the verdict is finally paid. However, Peterson (1987) reports data for Cook County and San Francisco consistent with such increases; whereas in the period 1960-1964 there were only 2 verdicts of $1 million or more in Cook County (representing 0.1 percent of trials), there were 67 such verdicts in 1980-1984 (representing 3.5 percent of trials).
But direct costs are not the critical measure of economic impact. Even if the figure were 5 percent rather than 0.5 percent of costs, direct costs would not necessarily pose a problem for the corporate sector or for American society. A larger figure would make it more likely that there is some problem with the existing system, but the heart of the problem is not that the price of goods may be nontrivially raised by this element of costs. That might reflect appropriate insurance, even if somewhat inefficiently provided—an issue that is already the subject of extensive debate (Priest, 1987). Rather, it is important to determine whether liability has affected other aspects of economic behavior in a way that harms society—and in a manner that has not been adequately measured.

It is also important to note that the changes we have discussed represent more than simply costs. For example, increased professionalism and diligence on the part of directors is clearly desirable both to society and to the corporation. Better employee evaluations induced by potential wrongful termination liability yield some benefits to firms as well as to employees. And concern with environmental liabilities spurs firms to evaluate more carefully the long-range consequences of product and process changes, again yielding benefits both to society and to corporations. Thus, we must ensure that future research provides a careful accounting of all the consequences of corporate responses to liabilities.

The current project has aimed at developing hypotheses about changes in corporate behavior that have arisen from the various expanded liabilities. It should be evident from the exploratory nature of the earlier sections that we are entering an area of research which is little developed. It is not possible at this time to make any quantitative statements about the significance of the indirect effects of expanded liability; some of these effects may be transitory and of little aggregate significance, no matter how much they disturb senior executives. But there are sufficient effects, and enough that appear at first impression to be significant, to justify more detailed and quantitative investigation.
In these final paragraphs, we set out some suggestions for the next steps of such an investigation. In terms of Fig. 1, we have explored only the manner in which liability has affected corporate behavior; we are scarcely at the stage of determining firm-level outcomes, let alone aggregate effects.

It is likely that considerable variation exists among firms in the salience of particular liabilities and in the nature of the response that is engendered. For semiconductor manufacturers, product liability is a modest problem, while environmental and wrongful termination represent serious liabilities; for pharmaceutical manufacturers, product liability is by far the most salient liability. The hazard of a firm's product, the materials it uses in its processes, its size, the cyclical nature of employment, and the speed of technological innovation are only some of the relevant factors determining the importance of different liabilities. Similarly, it is necessary to take account of other influences that interact with liability, such as regulation.

Various research approaches have been proposed for studying these effects. For some, the classic economic approach is appropriate: Specify a model and collect the data to estimate parameters about how firms have behaved in response to changes in legal doctrine. For others we need to carry out studies oriented toward direct analysis of the corporate decisionmaking process.

There is no a priori theoretical framework for developing hypotheses about the impact of expanded liability. We are dealing here with a complex set of changes and an even more complex set of potential responses. We believe that it is necessary to spend more time determining from corporate managers—such as liability counsel, strategic planners, and risk managers—how different firms have responded to changes in particular liabilities.

That is the easy step. The more difficult steps involve choosing which liabilities and responses to submit to further investigation and then actually formulating methods for estimating their aggregate effect.
One clear conclusion does emerge from this work. The aggregate effects of expanded liability can be determined only by an examination of the intermediate link between liability and corporate behavior. It will not be uniform across firms. Our strategy must therefore be to build up from disaggregated studies across liabilities and industries.
APPENDIX: FOCUS GROUPS

A critical part of this exploratory research effort was the use of four "focus groups"—interviews at which groups of executives from different corporations discussed their firms' responses to changes in various liabilities. This Appendix briefly describes how the groups were formed, the manner in which they were conducted, and our appraisal of their utility.

Focus groups constitute a standard element of market research and some other varieties of survey research (Fern, 1982). For example, a researcher wishing to conduct a study of gambling behavior in urban areas might hold a small number of focus groups in efforts to learn which elements of gambling are deemed most sensitive to particular populations, which are most salient, and what language is used in discussing particular forms of gambling. The group discussion, by virtue of the interactions among subjects, can provide more insight into these matters than can a comparable number of individual interviews.

Given the absence of a research literature on how firms have changed in response to expanded liability, we decided that focus groups might provide an efficient means of determining what liabilities were salient for which groups as well as some hypotheses about the most significant responses. In order to stimulate discussion, we grouped firms according to industry and size, although each participant came from a different firm.

There was some concern that participants from different firms might be unwilling to talk freely out of reluctance to reveal proprietary information or because of antitrust issues. Although participants sometimes discussed examples without giving specific names of products, processes, or persons, the researchers who participated felt that the discussions were generally open. Certainly most participants contributed actively and provided a great deal of specific information about firms' responses.
Group Selection

We chose the semiconductor industry for our first group for two reasons. First, that industry was geographically concentrated and in a location that was convenient for the research staff. Many firms were headquartered near San Jose, the center of "Silicon Valley." Since we were uncertain that senior executives would be willing to invest a great deal of time on behalf of an outside organization's research project, we thought it was important that the meeting be held at a convenient location for them. Second, liability was not obviously a critical issue for firms in this industry; thus, if it had turned out that our procedures needed to be refined, we would not have lost a significant candidate industry as a result.

The chemical and pharmaceutical industries were chosen next because they appeared to be among those most seriously affected by product and environmental liability. If firms in these two industries seemed not to have changed their behavior substantially in response to expanded liability, then it was unlikely that such responses were generally significant in manufacturing.

Most of the participants in the first three groups were senior liability counsels for their firms. Although we tried to recruit risk managers and strategic planners as well, we could not control the firms' choices of participants.

Liability counsel may have a somewhat narrow view of responses to legal changes; much of their work concerns litigation, the development of internal rules or legal advice about specific decisions. They are not the most obvious candidates to describe a corporation's behavior, as expressed in terms of management and planning. Nonetheless, many of them clearly were intimate with a wide range of issues, a fact of interest in itself since it suggested the growing role of liability counsel. Indeed, the lawyers commented on the increasing range of decisions in which they were involved.

The semiconductor group also consisted primarily of large firms, with more than $250 million in annual sales. The chemical and pharmaceutical firms were large corporations as well, with at least $1
billion in sales. In light of this, we decided to hold a fourth focus group involving small corporations. We chose chemical and pharmaceutical firms with sales ranging from $5 million to $50 million, all located within an hour’s drive of RAND’s headquarters in Santa Monica.

Recruitment

Each group was recruited in a slightly different manner. In the case of the semiconductor manufacturers, we started with a list of firms that were members of the Semiconductor Industry Association. The list provided addresses and phone numbers of member firms, and we identified all those that seemed to be headquartered near San Jose. A telephone call was made to identify the most relevant individual in each firm, and he was then sent a letter explaining the project and the purpose of the focus group.

The pharmaceutical group was recruited in much the same fashion. Northern New Jersey turned out to be the location of many of the major producers in the industry, and thus the group was held there.

For the chemical industry, we were able to obtain cooperation from the primary industry association, which identified a relevant official in each firm and made recruiting calls on behalf of the project. For this group, the participating executives were sent to Washington, D.C. (at the firms' expense).

The final group, consisting of small firms, was recruited through the use of a listing of firms by industry group, location, and annual sales. We generated a list of all firms that met three criteria: (1) their primary activity was in one of two specific three-digit Standard Industrial Classification codes; (2) their headquarters were located in the 213 telephone area code; and (3) their most recent annual sales figure was between $5 million and $50 million.

Recruitment was slow and time-consuming. For the first and last groups, approximately 35 firms were contacted, producing eight semiconductor participants and four small-firm executives. Fewer contacts were needed for the chemical and pharmaceutical groups. The most serious difficulties were associated with the recruitment of firms
as group participants; common among these were lack of corporate
interest in the project, difficulty finding the right person within the
firm, and last-minute cancellations as more pressing professional
obligations arose. None of the respondents was paid for participation,
and all group sessions were held over lunch.

It is clear that the recruitment process produced firms and
executives who were particularly concerned about liability. For this
reason, the groups would be an inappropriate sample from which to draw
representative conclusions. In view of our purpose, however—which was
to learn about a range of opinions and behavioral responses—biases
against recent liability trends did not necessarily constitute a major
disadvantage. Moreover, while most participants agreed that recent
developments had had adverse effects on their firms, they also
acknowledged that developments had improved at least some ways in which
their firms did business.

Each discussion was led by a moderator and covered a specified set
of topics. But because the goal was to learn about what was salient to
the participants as well as to permit freedom of discussion, no effort
was made to use a directive schedule with these groups.

Focus groups represent an early step on a research path. We have
used them to provide hypotheses as a preliminary step to development of
plans for more quantitative research. In that capacity they were
productive.
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A special bibliography (SB 1064) provides a list of other RAND publications in the civil justice area. To request the bibliography or to obtain more information about The Institute for Civil Justice, please write the Institute at this address: The Institute for Civil Justice, The RAND Corporation, 1700 Main Street, P.O. Box 2138, Santa Monica, California 90406-2138, (213) 393-0411.