

The Structure, Conduct, and Regulation of the Property–Liability Insurance Industry

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Dissatisfaction with property–liability insurance is widespread and seems to be growing. Insurance availability and affordability have become major issues in election campaigns nationwide, and Congress is threatening to impose new federal regulations. This unusual amount of attention seems to reflect fundamental changes in the nature of insurance and insurance markets. Insurers maintain that they are functioning as efficiently and effectively as possible under difficult circumstances. But a significant proportion of the public, public interest groups, legislators, and regulators believe that insurers themselves are a primary cause of the problems in property–liability markets.

This paper presents an analysis of the structure, conduct, and performance of the suppliers of property–liability insurance. The discussion is carried out in the context of the market problems that have plagued the property–liability insurance industry in recent years. The objective is to provide an indication of the relative roles of insurer conduct and external structural factors in creating the turmoil in this important market. The paper begins with an overview of the problems and issues in property–liability insurance markets. Each issue raises important questions about market structure and performance. Subsequent sections of the paper evaluate industry market structure and explore its implications for the solution of the problems confronted by the property–liability insurance industry.

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Problems in Property–Liability Insurance

Property–liability markets have undergone a series of crises during the past 20 years. Each crisis has spurred regulatory or legislative action in an attempt to solve the problem and return markets to normalcy. While some of these actions have been effective, the problems have not been eliminated and, in fact, continue to recur. Their persistence suggests that a different approach may be necessary. This section presents an overview of the market problems in property–liability insurance, in order to provide the context for the structure and performance discussion to follow.

Insurer Solvency

Perhaps the first to surface was the problem of insurer insolvency. During the late 1960s, numerous insurer insolvencies took place among so-called “high-risk” auto insurance companies. The primary cause of the failures was fraud and mismanagement (Olson 1970). Following congressional hearings and a major study by the U.S. Department of Transportation, the states implemented more stringent solvency monitoring and created state insurance guaranty funds to compensate policyholders owed money by failed insurers. Unfortunately, the insolvency problem has not gone away and, in fact, worsened during the 1980s. Guaranty funds may even have contributed to the insolvency problem by inducing insurers to take excessive risk (Cummins 1988).

Several market structure questions are raised by the insolvency issue: (1) How serious is the insolvency threat in property–liability insurance? (2) Does the organization of insurance markets provide appropriate incentives for the maintenance of solvency? (3) Is regulation the answer, or would less intrusive approaches be equally effective? The latter question is particularly important in view of the move to subject the industry to increased solvency regulation at the federal level.

Pricing and Rate Regulation

A second major problem concerns pricing and rate regulation. Workers’ compensation is the most heavily regulated line, with rates subject to prior regulatory approval in all but a handful of states. Private passenger auto insurance is regulated by about one-half of the states. Most commercial lines such as commercial auto and general liability in effect have been subject to minimal price regulation.

Although a trend towards deregulation of insurance rates appeared during the 1970s, the liability insurance crisis of 1984–85 (see below) and the problem of inflation in private passenger auto insurance (Cummins and Tennyson 1992) have focused renewed attention on rate regulation. In 1989, California voters reacted to rising insurance rates, particularly in

private passenger auto insurance, by approving Proposition 103, which enacted sweeping reforms of the property-liability industry and the regulatory system. Among its provisions were a mandatory 20 percent rate rollback, applicable to most lines of insurance, and the imposition of rate regulation in a market where competitive rating had been in effect for more than 40 years. Proposition 103 is symptomatic of public dissatisfaction with insurance and the insurance industry. Rising insurance costs have led to similar movements in other states ranging from Arizona to Pennsylvania.

A beneficial aspect of intensified rate regulation, particularly in Massachusetts, has been the development of more sophisticated rate-making methodologies (Cummins and Harrington 1987). These methods have the potential for use in rational rate regulation and in the monitoring of prices and profits under competitive regulatory regimes. Unfortunately, their lessons have not yet been absorbed by regulators in California and most other jurisdictions. The use of inappropriate methodologies can unfairly penalize insurers and destabilize insurance markets.

The questions raised by the price inflation/rate regulation issue are the following: (1) To what extent are price increases merely a reflection of underlying cost factors beyond the control of insurers? (2) Are insurers taking appropriate measures to control claims costs? (3) Is increased rate regulation likely to reduce the rate of insurance inflation, or could the market be restructured to permit market forces to control costs more effectively?

Market Failure in Liability Insurance

The liberalization of liability rules and changing public and judicial attitudes toward lawsuits during the past 20 years have led to significant increases in the frequency and severity of liability claims. The result has been destabilization and, in some instances, the collapse of liability insurance markets.

The first to be affected was the market for medical malpractice insurance. Increasing uncertainty and rising costs in this market led most of the major multiple line insurers to withdraw in the mid to late 1970s. Eventually, tort reform and the introduction of medical mutuals led to the reestablishment of a market for this type of insurance. The problems of malpractice insurance subsequently spread to other types of liability insurance. Particularly hard-hit were segments of the market such as environmental pollution liability, where insurers faced significant difficulties in estimating claim costs. Unlike the malpractice case, well-functioning markets for risky coverages such as pollution liability have not been reestablished.

The culmination of the difficulties in the liability insurance market was the crisis of 1984-85. Industrywide, premiums increased by 78

percent in 1985 and 68 percent in 1986. Price increases exceeded several hundred percent for some policyholders; for many, coverage was unavailable at any price. A number of regulatory and public policy measures were adopted in response to the liability crisis such as risk retention groups (RRGs) and flex-rating plans, which require insurers to file for prior approval any rate changes exceeding a specified range.

Among the issues raised by the liability crisis are the following: (1) To what extent was the crisis unique to the 1980s; that is, are underlying structural factors present that make such crises likely to recur in the future? (2) Is increased rate regulation likely to prevent crises and stabilize liability markets? (3) Is tort reform needed to maintain the liability market? (4) Could the market be restructured to permit market forces to cope more effectively with future crises?

Underwriting Cycles

Reported underwriting profits in property–liability insurance follow a cyclical pattern that averages about six years in length. The usual description of the cycle is that of recurrent soft and hard markets. During a soft market, coverage is widely available and insurers compete vigorously in price. The price competition eventually causes profits to deteriorate. When prices and/or insurer equity levels become “too low,” a hard market develops. Hard markets are characterized by rising prices and reductions in the quantity sold. After prices rise sufficiently to restore profitability, the market softens and the cycle begins anew. Among the questions raised by the cycle are the following: (1) What causes the real cycle? (2) To what extent are price/availability crises such as the general liability crisis of 1984–85 just extreme forms of the ordinary price cycle? (3) What can be done to prevent cycles and stabilize insurance prices?

Anticompetitive Practices

Accusations of anticompetitive practices are a common element of the public policy debate about property–liability insurance. The existence of rating bureaus such as the Insurance Services Office (ISO) and the National Council on Compensation Insurance (NCCI) is viewed by many as impeding price competition. Critics have used the existence of bureau pricing as evidence in favor of the repeal of the McCarran-Ferguson Act, which currently exempts insurers from federal antitrust laws.

Other observers argue that bureau pricing is not anticompetitive. They point out that pooling of loss data is necessary in order to achieve statistical credibility and that the use of bureaus permits insurers to take

advantage of economies of scale in data collection, computer equipment purchases, and legal and actuarial expertise. They contend that many smaller companies would be forced out of the market by high expenses if they had to perform these tasks on their own. Even so, the ISO announced in 1989 that it would phase out advisory rate filings and limit its activities to serving as a statistical agent. The NCCI and other bureaus are also cutting back their rate filing activities.

A more serious problem is the allegation that insurers collude by using restricted output as a threat to obtain more favorable contract terms. This allegation resulted in a 1988 suit against the industry by 19 state attorneys general. The suit charges that insurers conspired to push for the adoption of claims-made forms to replace occurrence forms in general liability insurance.¹

Perhaps the most troublesome of the alleged antitrust issues is that of retroactive loss loading (Cummins and Tennyson 1992). Since insurance prices are set prospectively, insurers should have strong incentives to control claim costs. Any reductions in claim costs should flow through directly to profit. Furthermore, standard competitive pricing theory implies that insurers should not be able to pass along past pricing errors to future policyholders; that is, they should not be able to retroactively load past losses into future rates. However, much of the discussion of insurance inflation suggests that insurers do engage in retroactive loss loading and, as a result, do not have very strong incentives to control claim costs. The usual allegation is that insurers do not do enough to resist fraudulent claims and keep claim costs under control. Under this reasoning, mandatory rate rollbacks make sense because they refund part of the retroactive loss load to buyers and can be used to motivate insurers to take appropriate loss control measures.

The anticompetitive allegations raise several important questions about industry market structure and conduct: (1) Is the insurance market actually competitive, or do significant anticompetitive elements remain? (2) Would small insurers be placed at a cost disadvantage if rating bureaus were further restricted? (3) Do insurers engage in retroactive loss loading or are they taking effective measures to control claims costs? These and other issues are explored in more detail below.

¹ Occurrence policies protect the insured against loss arising from any covered occurrence during the policy period regardless of when the lawsuit is filed (subject, of course, to statutes of limitations, and the like). Thus, losses due to a negligent act performed during the current contract period would be covered by the current contract even if lawsuits are filed and settled subsequent to the contract year. A claims-made policy covers the insured only for claims made in the current contract year. Claims-made policies are favored by insurers because they make claim costs more predictable.

The Structure of the Property–Liability Insurance Market

The insurance industry traditionally has been viewed as competitive (Joskow 1973). However, in view of the questions that have been raised about market conduct, it seems appropriate to take another look at the structure of the industry.

Numbers and Types of Firms

One of the myths about property–liability insurance is that the vast number of insurance companies (roughly 3,000) proves that competition exists. However, only about 1,900 firms play a significant role in the market, and 1,300 of these are clustered together in about 340 insurance groups under common ownership. After controlling for grouping, only about 1,000 independent entities operate in the property–liability insurance market.²

Since property–liability insurance is not a homogeneous product, it is appropriate to look at specific market segments when analyzing the number of firms. Insurance markets are segmented by line of business and by geographical location. Table 1 shows the principal lines of insurance and their premium volume in 1981, 1985, and 1989. A striking result is the overriding importance of automobile insurance, which represents nearly 45 percent of total industry revenues. The most important commercial line is workers' compensation, representing 14 percent of total premium volume, although liability coverages such as general liability and medical malpractice have been growing in importance.

The numbers of firms by line of insurance in 1981, 1985, and 1989 are shown in Figure 1. Between 400 and 500 firms write private passenger auto insurance. Although this indicates a market that has a viable number of competitive firms, the number of firms writing in any particular geographical area is likely to be much smaller, especially in problem areas such as inner cities, which have few suppliers. It is perhaps surprising that so many firms are in the general liability market, given the instability of the market during the 1980s. Unlike the malpractice market of the 1970s, the crisis conditions did not lead to a wholesale withdrawal of firms from the market. The number of firms writing general liability increased from 573 in 1981 to 617 in 1985 and 737 in 1989.

In a few markets, such as medical malpractice, workers' compensation, and reinsurance, the number of firms has been declining. To the

² These data are taken from *Best's Aggregates and Averages, 1989 Edition*. Oldwick, NJ: A.M. Best Company.

Table 1
 Net Premiums Written in Property-Liability Insurance
 Percent of Total

Line of Insurance	1981	1985	1989
Private Passenger Auto Liability	19.8	19.3	21.1
Private Passenger Auto Physical Damage	14.1	14.5	14.2
Commercial Auto Liability	4.8	5.4	5.8
Commercial Auto Physical Damage	2.7	2.8	2.5
Homeowners	11.5	9.6	8.5
Fire and Allied	5.1	4.3	3.4
Commercial Multiple Peril	6.9	8.3	8.4
General Liability	6.1	7.9	8.8
Medical Malpractice	1.3	2.0	2.1
Workers' Compensation	14.7	11.8	13.6
Reinsurance	3.3	3.9	3.3
Other	9.7	10.2	8.3
Total Premiums (Millions)	\$99,268	\$146,091	\$208,388

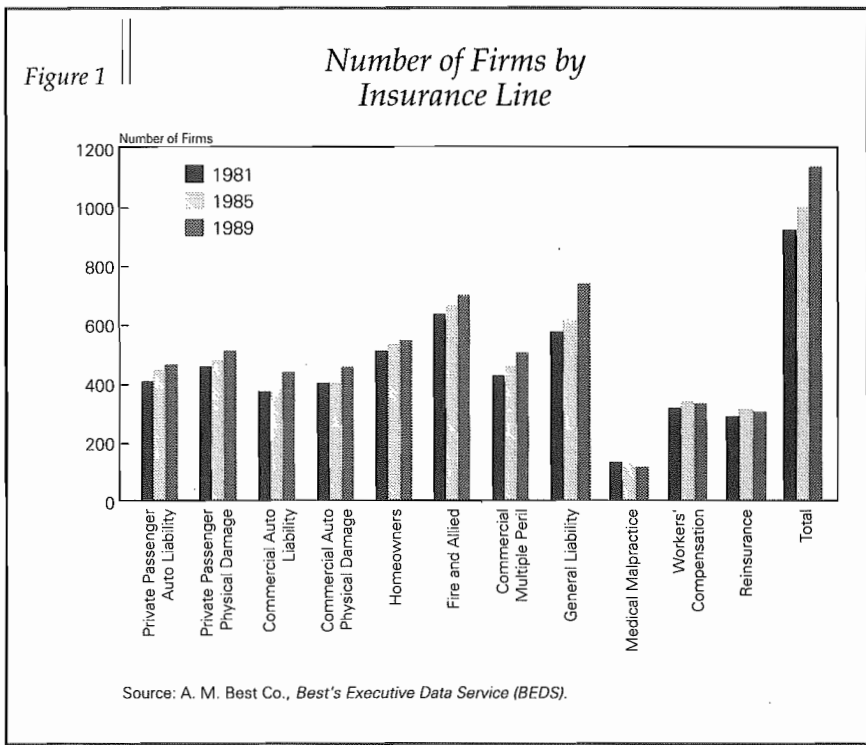
Source: A. M. Best Co. 1990. *Best's Aggregates and Averages*.

extent that weaker firms made these exits, the decline in the number of firms should not be viewed as an adverse development. For example, it is widely believed that underpricing by thinly capitalized reinsurers contributed to market conditions that led to the 1984-85 crisis. However, all three lines are also considered relatively risky, and the decline in the number of competitors may indicate that supply problems are on the horizon.

Organizational Form

The issue of organizational form in insurance has attracted considerable attention in the academic literature. The predominant organizational forms in insurance are stock companies, mutuals, and reciprocals. Stock companies are owned by stockholders, whereas mutuals have no capital stock and are nominally owned by their policyholders. Reciprocals are associations of buyers who agree to mutually insure one another. Because most modern reciprocals are not distinguishable from mutuals, they are grouped together with mutuals for the statistical analysis presented below.³

³ Reciprocals differ from mutuals in being unincorporated and in being operated by an attorney-in-fact, which may be a corporation. The traditional reciprocal maintained separate accounts for each member into which premiums were deposited and proportion-



The existence and continued survival of different organizational forms in insurance is generally attributed to the fact that they have differential advantages in dealing with particular types of insurance. According to the economic theory of agency, the modern firm is viewed as a nexus of contracts entered into by various parties to bring about the production or distribution of goods and services. The three major contracting groups in insurance are owners, managers, and policyholders.

The owners are the residual claimants to the firm's assets. In the modern stock company, ownership is typically separated from management; that is, the owners do not manage the firm themselves but instead hire professional managers. The managers become the agents of the

ate claim assessments made. If deposits were insufficient to pay claims, members could be assessed, within limits defined by the reciprocity agreement. Members withdrawing from the pool were permitted to take their account balance. Most modern reciprocals typically are not assessable and do not maintain separate member accounts. The Lloyds association, modeled after Lloyds of London, is a fourth organizational form. Lloyds associations have not proved to be a viable organizational form in this country.

owners; they are hired to act on behalf of the owners. However, the managers have their own objectives, which may diverge from those of the owners. For example, the owners may want to maximize the value of their equity share in the firm while the managers (agents) want to maximize their own compensation or prestige. To prevent the managers from acting opportunistically in those situations where their interests and the owners' interests diverge, the owners must expend resources to monitor and control management behavior and provide incentive compensation to align the managers' interests more closely with their own. These activities generate agency costs.

In addition to owner-manager conflicts, potential conflicts also arise between owners and policyholders and between managers and policyholders. For example, owners want maximum flexibility with respect to pricing and underwriting, while policyholders prefer stable premiums and no uncertainty with regard to coverage amounts or availability. Stockholders also may have an incentive to increase firm risk, thus reducing the value of debt (policy) claims and increasing the value of owners' equity. To protect themselves from exploitation by owners, policyholders must incur agency costs, for example, to monitor the insurer's financial condition after purchasing the policy. Conflicts can also arise between policyholders and managers. Most insurance services are delegated by company management to insurance agents, and the agent's interest may diverge from that of the policyholder. For example, the agent can maximize his own value by charging a high price and giving minimal service, whereas the policyholder is looking for a lower price and better service.

Mayers and Smith (1989) have used the theory of agency to develop hypotheses about the success of various organizational forms in insurance. They point out that mutuals are likely to be successful in lines where the owner-policyholder conflict is relatively important because the policyholder-owner functions are merged in a mutual. However, the owner-manager conflict is more significant in a mutual than in a stock company since mutual policyholders do not have the option of selling their ownership share or launching a proxy fight if management is not performing according to expectations.⁴ Mayers and Smith hypothesize that mutuals will be most successful in lines of business where the need for managerial discretion in pricing and underwriting is relatively low,

⁴ Actually, in principle, a proxy battle would be feasible in a mutual insurer. In practice, with the large number of policyholders in most modern mutuals, a successful proxy battle would be virtually impossible to sustain. The situation is different in organizations such as medical mutuals, particularly those operating in narrow geographical areas, because the fewer policyholders are already in contact through professional societies. This is one reason why the medical mutual has proved to be a successful organizational type.

for example, in lines with good actuarial tables and relatively high policyholder homogeneity. Mutuals should also do better in lines characterized by long-term policies, where the possibilities for stockholder expropriation through excessive risk-taking are highest. Finally, mutuals should be most successful if they limit their operations to a few lines of coverage and/or a relatively narrow geographical area. These restrictions limit management's ability to exploit policyholders.

Conversely, stock companies should do better in lines that require a higher degree of managerial discretion. In addition, stocks should have an advantage in dealing with high-risk lines of business because they can spread risk not only over the policyholder pool but also across the securities markets. The superior ability of stock firms to raise capital enables them to rebuild their capital position quickly following an adverse loss shock.

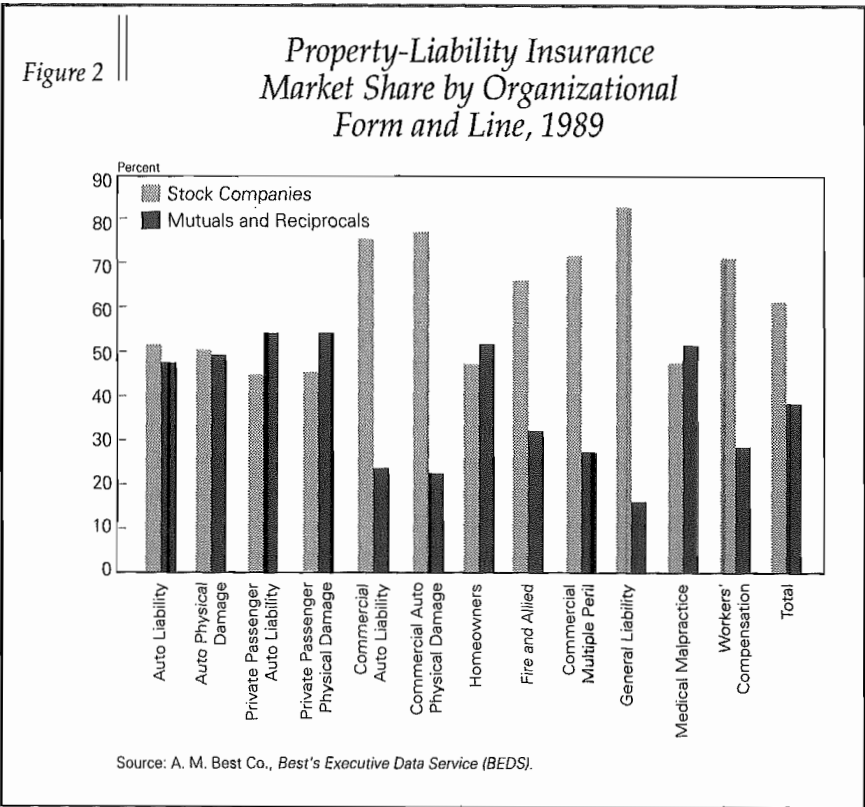
The market shares by organizational form are shown in Figure 2. The data are generally consistent with the organizational form hypotheses. Overall, stock companies account for 61.4 percent of the property-liability insurance market. However, mutuals and reciprocals account for more than half the market in private passenger auto, homeowners, and medical malpractice insurance. Private auto and homeowners are personal lines requiring relatively low managerial discretion in pricing and underwriting. Thus, owner-manager conflicts in these lines are likely to be low. Malpractice is a line characterized by long-term (that is, long-tail) policies as well as a relatively high degree of control over management on the part of the owner-policyholders.⁵ It is also noteworthy that stock insurers are dominant in general liability, a line requiring both a high degree of managerial discretion in setting rates and the ability to diversify risk and raise capital.

The findings on organizational form have implications for public policy towards insurance markets. For example, these findings indicate the types of insurance in which the formation of mutuals is likely to be a viable solution to limitations on insurance supply. They also reinforce the notion that access to capital markets is critical to maintaining the supply of insurance.

Distribution Channels

Marketing costs absorb a significant share of the insurance premium dollar. Industrywide, the ratio of marketing expenses to premiums written is 17.2 percent, expressed in percentage terms. The administra-

⁵ This control is maintained because the owners of most medical mutuals are already joined together in professional associations and because medical mutuals operate in relatively restricted geographical areas.



tive expense ratio, including marketing and other costs, is 26.0 percent. Thus, marketing costs account for about two-thirds of the total non-loss expenses of the property-liability insurance industry. It is not surprising that insurance reformers have focused a considerable amount of attention on insurance marketing expenses.

Of course, agents perform valuable services in return for these expenses. Agents advise policyholders on insurance coverages and provide assistance with claims settlement. For business clients, the agent's services are likely to be even more extensive. For insurers, agents provide an initial underwriting screen and gather critical underwriting data. The question is not whether agents provide services but whether the services could be provided at a lower total cost.

The four major types of marketing channels in property-liability insurance are independent agents; exclusive agents; direct writing, that is, mail or telemarketing; and brokers. Independent agents represent more than one company (about six on average). They are paid by

commission, ranging from 15 to 30 percent of the premium depending upon the line of business. Their most salient distinguishing feature is the ownership of renewals. Ownership of renewals means that the agent and not the company owns the client list. If a company terminates the independent agent, the agent retains control of the business and is free to switch it to another company.

In contrast, exclusive agents represent only one company. They are also paid by commission but the commission is usually less than the independent agent's. In the exclusive agency system, the company and not the agent owns the client list. Direct writers do not use agents but instead use company employees who sell insurance by telephone. Direct writing companies are fully vertically integrated, exclusive agency firms display a degree of vertical integration, and independent agency firms are not vertically integrated. Brokers differ from agents in the technical sense that the broker represents the buyer, while the agent represents the company. In the practical sense, the most successful brokers are relatively large firms, often with international interests, providing specialized services to business clients.

Direct writing and exclusive agency companies have lower expense ratios than independent agency companies (Cummins and VanDerhei 1979). The expense ratios for a sample of insurance companies using these distribution systems are presented in Table 2. The expense ratio differences are largest in the personal lines. Earlier studies contended that independent agency firms have higher expense ratios because they are less efficient than exclusive agency firms and suggested that the costs of insurance could be reduced if all insurers sold directly or used exclusive agents. Later researchers (for example, see Pauly, Kunreuther, and Kleindorfer 1986) have argued that the expense difference is not a deadweight loss but rather that independent agency firms are more service-intensive.

A more modern view uses the theory of agency to analyze insurance distribution (see Regan 1991). One version of this argument acknowledges that independent agents are less efficient than exclusive agents, at least for some types of coverage. The primary reason for this is that exclusive agency firms can install a single computerized pricing and rating system that links every agent directly with the company.⁶ Of course, independent agency firms also can put computer systems in their agencies, but in general these firms do only a fraction of the business in each agency. They are also powerless to prevent others from free-riding on their technology. The agency theory view argues that independent agents survive in spite of their cost disadvantage because

⁶ Under prior technologies, the exclusive agents also had an advantage, but on the basis of more document-intensive systems.

Table 2
Expense Ratios, by Distribution System, 1989
Percent of Premiums

Line of Insurance	Distribution System		
	Direct	Exclusive	Independent
Private Passenger Auto Liability	20.5	24.6	29.3
Private Passenger Auto Physical Damage	20.3	23.5	29.0
Commercial Auto Liability	17.8	22.8	29.9
Commercial Auto Physical Damage	22.5	26.8	31.3
Homeowners	26.1	28.6	36.0
Fire	33.4	33.1	37.9
Allied Lines	30.9	31.2	35.5
Commercial Multiple Peril	24.8	36.1	35.9
General Liability	24.4	25.1	28.6
Medical Malpractice	—	11.5	25.7
Workers' Compensation	15.1	21.1	22.1
Reinsurance	9.4	29.0	26.9

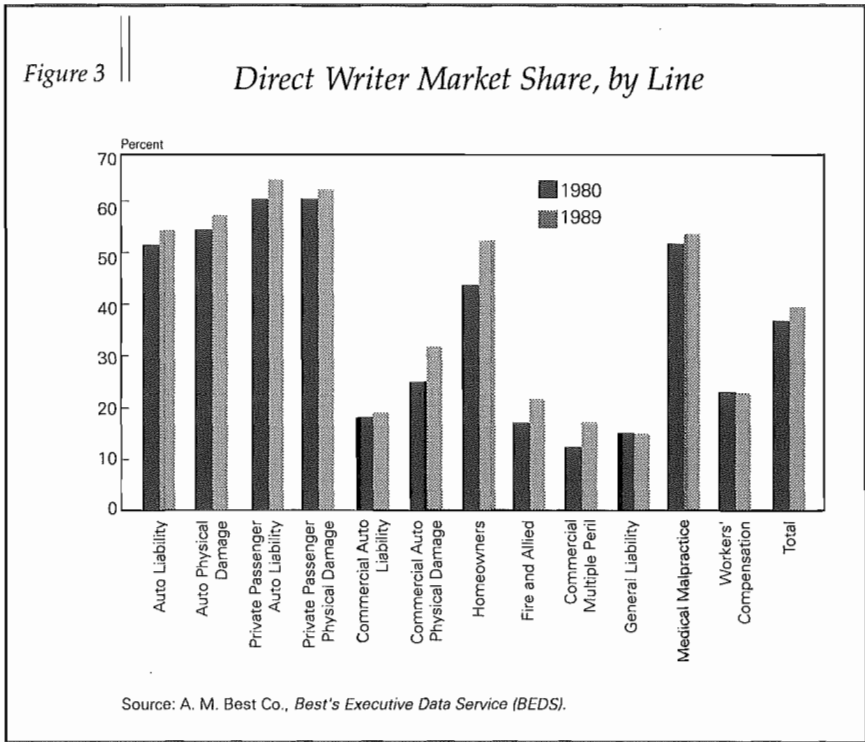
Source: A. M. Best Co. 1990. *Best's Aggregates and Averages*.

they are more effective than exclusive agents in dealing with certain types of "agency" conflicts. Thus, the higher cost of independent agencies represents rents paid to them to cope with these conflicts.

Independent agents are adept at dealing with conflicts between the company and the policyholder. Companies have an incentive to minimize services and delay claim payments, a particular problem for small business buyers who do not have much leverage over the insurer. Furthermore, an insurer is unlikely to grant trade credit to a small business buyer on favorable terms. Unlike the buyer, the independent agent does have leverage with the company because of his or her ability to switch clients to another insurer. Thus, the agent can intervene to ensure better services. The agent can also provide trade credit to the buyer because independent agents bill commercial customers directly and then remit the premium balance to the insurer.⁷

The market advantages conveyed to the buyer by the independent agent are line-specific; for example, trade credit is more significant for business buyers than for personal buyers. The premium volume of the typical personal lines buyer is not sufficient to justify the use of much of the agent's time. Personal buyers are likely to be served more effectively

⁷ This is obviously not an efficient system because it leaves the insurer with non-interest-bearing receivables. Insurers have made some progress in converting independent agents to direct billing, especially for personal lines, but for commercial lines most business is still agency billed.



by more efficient firms which can control quality by standardizing services across their captive agency force. Thus, independent agents should be more successful in commercial lines and exclusive agents and direct writers in the personal lines. Figure 3 shows that these predictions are borne out. The largest market penetrations for exclusive and direct companies are in personal auto, where these firms have about 60 percent of the market, and in homeowners, where their share is over 50 percent. Exclusive agency firms have a much lower market share in commercial multiple peril, general liability, and other commercial lines.

Agents also have a type of market power that may be viewed as anticompetitive. Specifically, they are protected from price competition by anti-rebate laws in most states. These laws, which are a form of resale price maintenance, prohibit agents from discounting, that is, from "rebating" part of the commission to the buyer. Anti-rebate laws impede price competition and prevent the formation of wholesalers, who could provide insurance at a discount. The insurance market would be more efficient if these laws were repealed, as a few states have recently done.

Table 3
Concentration in Property-Liability Insurance, 1989
Percent

Line of Insurance	Top 4 Firms	Top 10 Firms	Top 50 Firms	Herfindahl Index
Private Passenger Auto Liability	43.2	56.6	85.6	.0650
Private Passenger Auto Physical Damage	41.8	53.9	80.4	.0676
Commercial Auto Liability	19.6	38.1	80.9	.0214
Commercial Auto Physical Damage	19.6	35.0	78.0	.0313
Homeowners	39.5	52.7	82.1	.0573
Fire and Allied	18.9	36.3	73.9	.0149
Commercial Multiple Peril	21.8	43.1	85.9	.0263
General Liability	32.6	51.9	84.5	.0450
Medical Malpractice	32.0	52.3	92.4	.0364
Workers' Compensation	26.7	49.2	88.4	.0364
Reinsurance	46.1	63.6	94.3	.0584
Total	24.2	40.4	75.3	.0257

Source: A. M. Best Co. 1990. *Best's Aggregates and Averages* and *Best's Executive Data Service (BEDS)*; authors' calculations.

Market Concentration

In the traditional theory of industrial organization, concentration was held to facilitate oligopolistic or collusive practices and thereby to lead to noncompetitive profits. The more modern view is that increasing concentration, at least within limits, may be a natural development in some markets and does not necessarily have adverse consequences. If efficient firms are gaining market share, prices may fall at the same time that concentration and possibly profits rise.

Such a scenario may be applicable to some lines of property-liability insurance. Four- and ten-firm concentration ratios and Herfindahl indices for the principal lines of insurance are presented in Table 3. Concentration is highest in the personal lines, particularly private passenger auto and homeowners, where the exclusive agency firms and direct writers have a significant efficiency advantage. Eight of the top ten firms in personal auto and six of the top ten in homeowners are exclusive or direct writing firms. The hypothesis advanced here is that these firms owe their market share primarily to their efficiency advantage in dealing with personal clients. Thus, gains in market share by these firms would be expected to be accompanied by lower prices.

Further concentration of these markets should not necessarily be viewed as adverse.

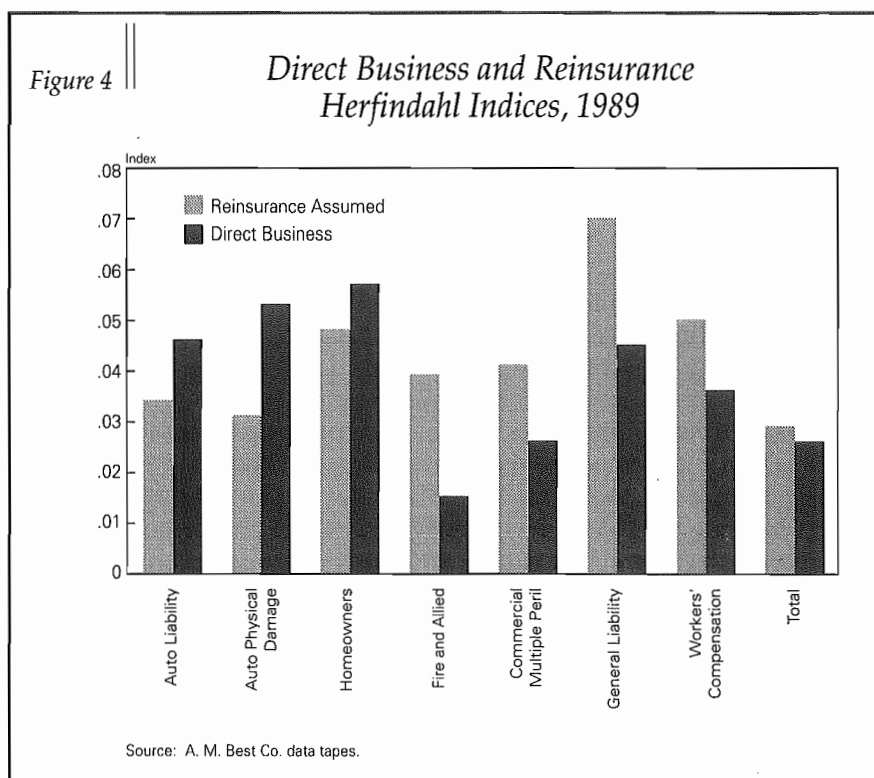
The expense ratio advantage of the exclusive and direct firms does not necessarily translate into a competitive advantage in commercial lines markets. Buyers in these markets may be willing to pay rents to independent agents to intervene with insurers. In addition, the mix of commercial lines business written by independent agency firms may be significantly different from that written by exclusive and direct writing firms. Independent agency firms may tend to write larger, more complicated exposures that require higher service intensity. If so, one would expect to see lower concentration levels in commercial lines because independent agency firms can compete more effectively and because they are more numerous than exclusive agency firms. This is exactly what the data in Table 3 show. In contrast to the 43 percent four-firm concentration ratio in personal auto, the ratio in commercial auto is only 20 percent. Commercial multiple peril, a package policy somewhat similar to homeowners, has a four-firm concentration ratio about one-half that of homeowners.

Further information on concentration is provided in Figure 4, which shows the Herfindahl indices for direct business and reinsurance assumed.⁸ Figure 4 supports the hypothesis that vertically integrated firms have an advantage in the personal lines. The Herfindahl indices for direct premiums written in the personal lines are higher than the corresponding indices for reinsurance assumed. Because of their efficiency, the vertically integrated firms hold a large share of the direct market. However, vertical integration conveys no particular advantage in the reinsurance market, so the independent agency firms retain a larger share of this market. The pattern is reversed in the commercial lines. Here, concentration is lower in direct markets than in reinsurance markets. Independent and exclusive agency firms compete on a more equal footing in the commercial lines direct markets. However, because of the riskiness of many commercial coverages, fewer firms have the risk-bearing capability to handle reinsurance in these lines, leading to a more concentrated reinsurance market.

Entry and Exit

Ease of entry and exit are essential to maintaining a competitive market. The threat of entry prevents existing firms in the industry from

⁸ Reinsurance is essentially insurance purchased by insurers from other insurers. Insurers purchase reinsurance in order to reduce risk through diversification and increase their policy-writing capacity without sustaining significantly higher probabilities of ruin.



overpricing. Freedom of exit is important because firms are reluctant to enter markets if they will incur substantial costs upon exiting.

The most important sources of entry in property-liability insurance are (1) the formation of new insurers, (2) entry by existing property-liability insurers into new lines and markets, (3) entry by other financial service firms such as life insurers and banks, and (4) self insurance, risk retention groups, and captives. The direct costs of entry as a new insurer appear to be low. The insurer must meet minimum capital and surplus requirements, but these do not appear to be sufficient to serve as a serious entry barrier. Obtaining state licenses can be a costly and time-consuming process, but methods are available for speeding up the process, such as purchasing an inactive insurer or "shell."⁹

⁹ A few states, such as New York, have seasoning requirements that prevent insurers from entering until they have been in business for some number of years (for example, three to five). Obviously, if every state had such a requirement, seasoning would serve as a "catch-22." Fortunately, this is not the case.

The need for a marketing force can serve as a barrier to entry in property-liability insurance. Independent agents partially fulfill this role because they can easily add new insurers to their portfolio. However, agents tend to place a high proportion of their business with their lead carriers.¹⁰ This means that new entrants are not likely to receive the independent agent's most desirable business; and they may have to pay higher commissions to attract agents, increasing their expenses. Entry as a de novo exclusive agency firm is also difficult because of the high initial investment required to hire and train an exclusive agency force. Entry as a direct writer is somewhat easier because the marketing staff is smaller and requires less training and experience.

The lack of an existing policyholder base is a formidable entry barrier, because of a phenomenon known as the aging effect. Aging means that policyholders who have been insured with the company for several years have lower loss ratios than policyholders with similar underwriting characteristics who have been insured only for a short time. The aging effect arises as a result of information asymmetries. The insurer learns a great deal about a policyholder by insuring him or her over a period of years. This is inherently private information that is not transferred to subsequent insurers if the policyholder switches companies. Newly underwritten policies inevitably include a higher proportion of "bad" risks than the company's existing base. Thus, a new entrant, with no existing book of business, will face higher loss costs than insurers currently in the market.

If they have the determination and the cash to overcome the aging problem, financial service firms provide a significant source of potential entry into property-liability insurance. Several large life insurance companies have successfully entered the market. At present banks are not permitted by federal banking law to offer insurance, but this situation is likely to change in the near future.

Existing property-liability insurers provide another important source of entry. These are likely to be firms that have specialized in particular lines of business or geographical areas but decide to expand into new markets. They are likely to have underwriting expertise, capitalization, and licenses and thus can enter relatively quickly. State Farm's entry in the 1970s into commercial multiple peril provides a case in point.

It is noteworthy that the existence of rating bureaus facilitates entry into property-liability insurance by providing cost and underwriting information as well as policy forms to new entrants. If the pooling of data were not permitted, the costs of entry would be higher.

¹⁰ A recent survey by *Independent Agent* magazine showed that agents place from 50 to 60 percent of their business with the lead company.

Even though entry barriers and costs are reasonably low in property-liability insurance, the costs of exit may be relatively high, particularly in certain markets. In a politicized rate-making environment, firms may be unable to earn a fair rate of return. If this continues over a sufficient period of time, the insurer is likely to try to withdraw from the market. However, a number of jurisdictions have been successful in forcing insurers to continue to write particular lines of business in order to retain their licenses to write other lines. Even if the company is successful in exiting, it may be required to continue to participate in funding deficits in the state's residual market. Thus, exit is neither unrestricted nor costless. Potential solutions to this problem include more rational regulation, deregulation, and/or fewer restrictions on exit.

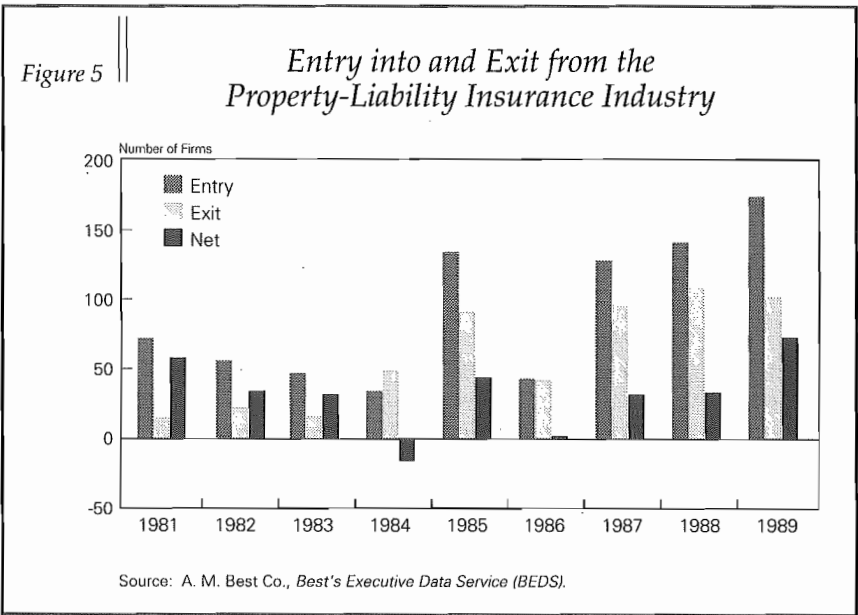
The number of firms entering and exiting the property-liability insurance industry from 1981 through 1989 is shown in Figure 5.¹¹ The figure shows that entries exceeded exits in every year except 1984, the low point of the liability crisis. Cumulative net entry over the period amounted to about 260 firms. The 1989 market share of firms entering the industry in the period 1981-89 is shown in Figure 6. New entrants account for 5 to 10 percent of premium volume in most lines of insurance. The exception is malpractice, where new entrants accounted for 22 percent of total writings. It seems reasonable to conclude that entry into insurance is relatively unrestricted and that threat of entry is likely to deter any significant departures from competitive pricing.

Prices, Profits, and Financial Condition

The typical property-liability insurance policy agrees to reimburse the insured for losses covered under the terms of the policy. The loss payment is triggered by a contingent event such as a fire, an accident, or a potential liability suit. In return for the insurer's promises, the policyholder pays a premium. Because a time lag nearly always occurs between the premium payment and loss payment dates, the competitive insurance premium is the present value of the losses, expenses, and taxes arising out of the insurance transaction.

The insurance company provides a mechanism whereby buyers of insurance can pool risk. Risk pooling permits buyers to transfer an uncertain and potentially large loss amount to the insurance pool in return for a certain, smaller payment, the premium. However, even for

¹¹ Entry is defined here as an instance where a firm writing no business in a given line of insurance (that is, premiums written = 0) begins to write business in a given year. Exit is defined as a firm going from positive writings to zero writings. These entries could be new firms, existing insurers, or other financial service firms.



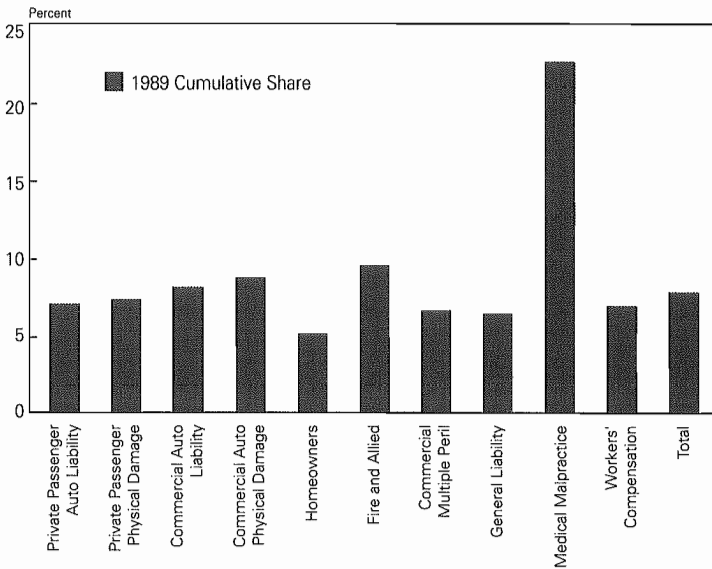
large risk pools, losses will never exactly equal the expected value but are always greater or less than this amount. Because of the possibility that losses will be greater than expected, insurance companies must maintain equity, often referred to in insurance as policyholders' surplus. Equity provides a financial cushion so that losses can be paid even if larger than expected. Of course, even for well-capitalized insurers, equity does not provide complete protection from ruin. In a well-functioning insurance market, equity levels are sufficient to maintain ruin probabilities at "acceptable" levels. Ultimately, the level of equity and the probability of ruin are endogenous to the market: "safer" insurance costs more and buyers receive the level of safety they are willing to purchase.

The Supply of Insurance

Insurance companies will be present to provide insurance as long as equity capital is available. And capital will be available in efficient capital markets if it earns a fair rate of return, that is, a rate of return commensurate with the risk of writing insurance. Equity capital in insurance has several sources: new capital issues in securities markets, contributions of capital by stockholders, contributions by policyholders, and retained earnings.

Figure 6

1989 Market Share of Entrants
between 1981 and 1989



Source: A. M. Best Co., *Best's Executive Data Service (BEDS)*.

Direct issuance of new capital in securities markets is used infrequently by insurers. One reason for this is that few insurers are publicly traded. Of the more than 600 stock insurance companies and groups, only about 40 are publicly traded. A few stock insurers are closely held or owned by management. Most, however, are owned by other publicly traded firms, either diversified financial services firms or nonfinancial corporations.

Although the lack of direct access to capital markets would seem to limit the ability of most stock insurers to raise capital, this is actually not the case. Ownership of stock insurers by other firms may facilitate capital issue. One problem that a publicly traded stock insurer faces when issuing capital is that of asymmetric information. Insurer accounting statements are difficult to evaluate, and even highly trained evaluators cannot determine the accuracy of loss reserves and other accounts, let alone the firm's business prospects, without additional information that generally is not circulated outside the company itself. Thus, the market is likely to require an additional risk premium when issuing

capital to publicly traded insurers, raising the cost of capital above its true value. The insurer's management is much more likely to reveal confidential information to a parent corporation than to the securities market. One reason is that adverse information released to the market also becomes available to regulators, who may impose additional regulatory costs on the firm. The parent is likely to incur a smaller "information tax" than the insurer would directly because the parent faces the risk that the cost of capital will increase for its other operations if it attempts to deceive the market about the financial prospects of its insurance subsidiary. Thus, ownership of insurers by conglomerates or holding companies rather than directly by the public internalizes information asymmetries and reduces the cost of capital. More equity enters the industry through contributions by parent corporations than by direct public equity issues.

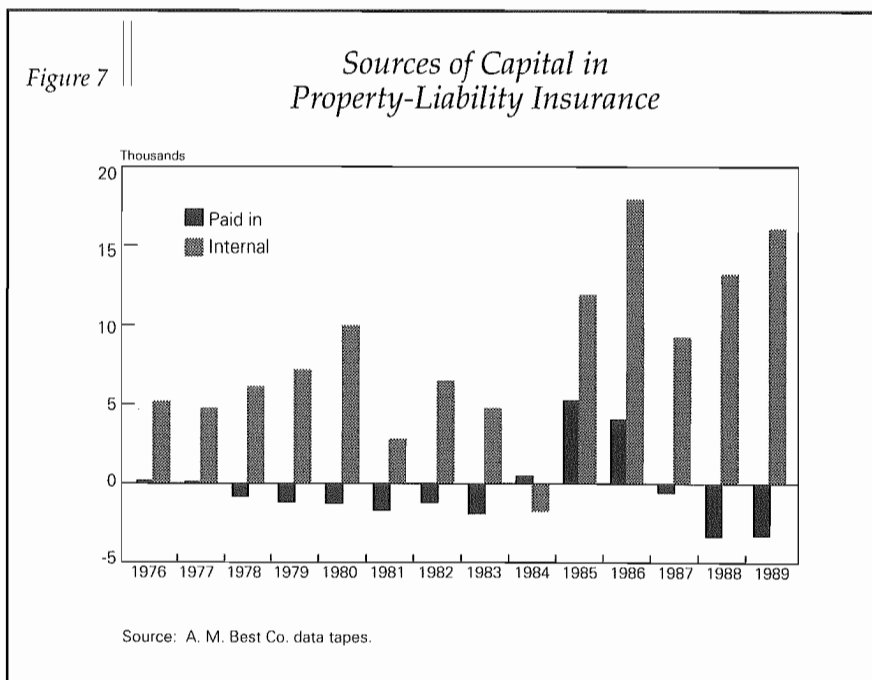
Mutual insurers do not have the option of issuing capital directly in securities markets.¹² The policyholders provide the primary source of new outside equity for most mutuals. However, because of the lack of control over management in the typical mutual and the inability to cash in the ownership right by selling shares, policyholders are not a viable source of new capital in most instances. Medical mutuals, where policyholders maintain more control over management, are an exception; but in general mutuals are disadvantaged in their ability to raise capital.

The sources of new equity in property-liability insurance are shown in Figure 7. The primary source of capital is retained earnings. In nearly all years from 1976 to 1989, a net addition was made to capital from retained earnings and an outflow of capital occurred as dividends to the capital providers. Only between 1984 and 1986, when the industry was attempting to recover from the insurance crisis, did a net inflow of external capital occur.¹³ This indicates that the insurance and equity markets were functioning appropriately during this period; that is, insurers were able to recover from the crisis relatively quickly by obtaining funds from shareholders.¹⁴ It also implies that shareholders believed that fair returns on writing insurance were possible, at least for some coverages.

¹² There are some exceptions to this. A few mutuals have formed downstream stock companies that make public equity issues. During the 1980s, regulators permitted some mutuals to issue Eurobonds and count them as equity rather than debt. These are rather unusual circumstances and do not provide a consistent source of new capital.

¹³ External capital equals capital and surplus paid in, less stockholder dividends.

¹⁴ Although Figure 7 includes mutuals as well as stock companies, nearly all of the net inflow of external capital during the period 1984 to 1986 was attributable to stock insurers.



Insurance Prices

Insurance economists are plagued by the general unavailability of accurate data on insurance prices. Insurer financial statements contain no information on the number of exposures. Some data on price per exposure unit are available on auto and homeowners insurance, but these data do not provide information on particular rating territories within states.

Faced with these obstacles, economists have developed two primary measures of price: the inverse loss ratio, and the economic premium ratio. The inverse loss ratio is simply the ratio of premiums earned to losses incurred. The rationale is that the objective of insurance is to redistribute losses, and the price for this service is the premium. Hence, the price relative to value received is the ratio of premiums to losses. While this is a useful measure in cross-sectional studies, it is less useful for time series analyses because premiums reflect the present value of policy cash flows whereas reported losses are undiscounted. Thus, if interest rates rise, the inverse loss ratio declines but this does not necessarily mean that prices have declined.

Because of the limitations of the inverse loss ratio, economists have

recently developed the economic premium ratio (Harrington 1988; Winter 1990; and Cummins and Danzon 1990).¹⁵ This is the ratio of premiums to the discounted value of losses. To obtain the discounted value, one needs to know the payout pattern and the discount rate. Research on these variables is ongoing, but the best current approach is to use the Taylor method (Lemaire 1985) to compute the payout pattern and the U.S. treasury yield curve as the discount rate. Most analysts agree that it is appropriate to use accident year losses, representing losses for accidents occurring during a particular calendar year, rather than calendar year losses, which include the effects of revaluations of loss reserves for prior claims. Some controversy exists about the appropriate numerator. Harrington (1988) recommends premiums earned, while Cummins and Danzon (1990) use premiums written. The objection to premiums earned is that it represents an average price over a two-year period, which is then inappropriately compared to losses from the current period. On the other hand, using premiums written introduces a potential error due to growth of the exposure base. Ideally, this problem would be solved if the National Association of Insurance Commissioners (NAIC) required insurers to report more useful data. A variant of the economic premium ratio is the Myers-Cohn price, which is the present value of losses plus the present value of federal income taxes incurred by the insurer as a result of writing a given block of policies.¹⁶

Analysis of insurance prices using the economic premium ratio shows that nearly all of the increase in liability insurance prices during the 1984–85 crisis can be explained in terms of underlying cost factors. In particular, accident year losses increased substantially over this period and interest rates fell.¹⁷ In 1985, when the largest increase in general liability prices took place, nearly all of the increase was due to loss and interest rate changes.

Pricing formulas such as the economic premium ratio can be used to analyze the controversial issue of cash flow underwriting, which occurs when insurers slash prices to obtain funds to invest during periods of high interest rates. This practice is alleged to destabilize markets and cause insurance crises. In fact, price reductions (increases) in response to rising (falling) interest rates are the expected outcome in a competitive insurance market. The price of insurance is the present value of losses, expenses, and taxes. Although most expenses are paid early in the

¹⁵ Some economists use the economic loss ratio, which is the inverse of the premium ratio.

¹⁶ The original formula appears in Myers and Cohn (1987). Cummins (1990) presents a version of the Myers-Cohn formula that is more convenient computationally.

¹⁷ Subsequent loss analysis reveals that insurers did not overestimate losses for 1984 and 1985 but did overestimate 1986 accident year losses by about 12 percent.

policy period, loss and tax flows cover a considerable period of time in some lines of insurance; and the present value of the policy cash flows may be significantly less than their nominal undiscounted value. "Cash flow underwriting" is a problem only if price competition becomes excessive.

Two indices of the responsiveness of premiums to interest rates are the pricing factor and the duration. The pricing factor is simply the present value of the loss-payout-tail proportions. It is multiplied by losses incurred to obtain the present value of losses for use in the economic premium ratio. The pricing factors in several key insurance lines are shown in the top panel of Table 4. For example, the pricing factor for general liability in 1980 was 0.603: This means that the present value of losses incurred is 0.603 times their nominal value. The pricing factors for long-tail lines such as malpractice, general liability, and workers' compensation are much lower than for shorter-tailed lines like homeowners. Prices in the former lines can be expected to be more responsive to interest rates. The general liability pricing factor increased by 12 percent in 1985 and by 11 percent in 1986. Thus, premiums would have risen by those amounts even if nominal losses had remained constant.

The duration is a measure of the interest rate elasticity of the present value of losses. Specifically, it is equal to -1 times the elasticity of the pricing factor with respect to the discount factor $(1 + r)$, where r = the discount rate. An increase in interest rates from 7 percent to 9.14 percent represents a 2 percentage point increase in the discount factor, $(1 + r)$. Such a change would lead to an 8 percent drop in the pricing factor in a line with a duration of 4. The highest interest rate durations are in liability lines such as general liability and malpractice. General liability durations are in the neighborhood of 4 and malpractice durations often exceed 4.5. Private passenger auto liability has a duration of 2.5, whereas the homeowners duration is around 1. It is normal for competitive insurance prices to respond to changes in interest rates, and the proportionate response varies significantly among lines.

Although "cash flow underwriting" is normal in competitive markets, it is still possible that insurers underpriced during the early 1980s, precipitating the crisis of 1984-85. This issue has been investigated by Danzon and Harrington (1990), who find weak evidence of underpricing in the general liability insurance market in the early 1980s. They attribute this to the "winner's curse" phenomenon, whereby the winners in markets consisting of unbiased bidders will be the firms that bid too low in any particular situation. Excessive risk-taking by naïve or go-for-broke firms also may have contributed to underpricing during this period. Their strongest finding, however, is that the general liability price increases of the mid 1980s primarily reflected underlying cost factors.

Table 4
Pricing Factors and Durations, Selected Lines of Property–Liability Insurance

Pricing Factors

Year	Private Pass. Auto Liabil.	Commercial Auto Liabil.	Home- owners	Commercial Multiple Peril	General Liability	Medical Malpractice	Workers' Comp.
1980	.823	.754	.893	.790	.603	.524	.710
1981	.787	.708	.868	.751	.550	.473	.669
1982	.801	.722	.881	.764	.559	.481	.681
1983	.837	.767	.904	.802	.614	.534	.722
1984	.813	.735	.890	.776	.572	.493	.693
1985	.858	.792	.919	.823	.642	.561	.744
1986	.886	.834	.935	.858	.710	.629	.784
1987	.877	.821	.930	.847	.687	.605	.771
1988	.869	.811	.924	.838	.676	.595	.762
1989	.866	.810	.921	.838	.682	.602	.762

Durations

Year	Private Pass. Auto Liabil.	Commercial Auto Liabil.	Home- owners	Commercial Multiple Peril	General Liability	Medical Malpractice	Workers' Comp.
1980	1.607	2.325	.939	1.865	4.005	4.553	2.276
1981	1.565	2.260	.917	1.793	3.874	4.419	2.185
1982	1.567	2.259	.919	1.793	3.858	4.398	2.180
1983	1.611	2.328	.942	1.870	3.997	4.541	2.277
1984	1.577	2.272	.924	1.807	3.871	4.408	2.194
1985	1.631	2.358	.954	1.903	4.049	4.591	2.315
1986	1.684	2.449	.982	2.010	4.292	4.853	2.471
1987	1.666	2.419	.972	1.974	4.209	4.763	2.417
1988	1.660	2.409	.968	1.962	4.186	4.739	2.401
1989	1.666	2.424	.971	1.981	4.254	4.817	2.438
Mean	1.623	2.350	.949	1.896	4.059	4.608	2.315

Source: A. M. Best Co. 1990. *Best's Aggregates and Averages*; authors' calculations.

Standard economic theory strongly suggests that firms should not be able to engage in retroactive loss loading. That is, prices for any given block of policies should reflect the cost factors for those policies; insurers should not be able to charge off prior pricing errors to future policyholders. New entrants or rival firms could be expected to undercut a retroactive price while earning a fair rate of return on the incoming policy cohort.

Although the arguments against retroactive loss loading are fairly strong, Cummins and Danzon (1990) suggest that retroactivity may be feasible in some insurance markets and, in fact, may be necessary if firms are to participate in the markets on a long-term basis. They use an option pricing model of the insurance firm to analyze the following scenario: (1) An adverse loss or investment shock occurs that moves the

insurer significantly away from its target safety level. The target safety level is hypothesized to exist because buyer clienteles demand specific levels of safety from their insurers. Buyers wishing to deal with an A+ insurer are likely to go elsewhere if the company becomes a B+ insurer. (2) The insurer would like to raise new capital to return to its target safety level. However, it cannot do so by charging competitively fair premiums to the incoming cohort because any improvement in the safety level increases the value of the outstanding reserves to prior policyholders. Prior policyholders receive this improvement for free because they cannot be charged additional premiums. Thus, incoming equity will be penalized, and capital providers will be reluctant to supply new equity. (3) The insurer raises prices above competitive levels to the incoming policyholder cohort, raises new equity, which is not penalized because of the higher insurance prices, and returns to the target safety level. Prices then return to competitive levels. The insurer can charge noncompetitive premiums because it holds private information on its policyholders, implying that they face non-trivial costs of switching to another insurer. It does not exploit this information during normal market periods because demand elasticity would lead to suboptimal sales volume.

The Cummins-Danzon hypothesis implies that retroactive loss loading may be necessary in an otherwise competitive insurance market to maintain insurer safety at the level demanded by buyers. Cummins and Danzon provide some empirical evidence supporting the hypothesis. However, given the contrast between this hypothesis and conventional economic theory, more evidence will be needed before any firm conclusions can be drawn. The hypothesis does not necessarily imply that insurers have weak incentives to settle claims efficiently. Insurers that control their losses and expenses still should be more successful than those that do not. One of the factors that impedes switching following a loss shock is that losses are highly correlated across the industry, so that the firm and its rivals experience the need for additional capital at about the same time. A firm that consistently raises prices to cover loss or expense inefficiencies is likely to lose out during normal markets and will have to raise prices more than its rivals following a shock.

Profitability

Public policy discussions of insurance are often based on misinformation about profitability in the industry. The points of view range from that of the insurers, who have been successful in convincing many business analysts that they consistently lose large sums of money, to that of extremist public interest groups who claim that insurers are

financially viable as long as cash inflows are greater than cash outflows. The truth, not surprisingly, lies somewhere in between.

Various rule-of-thumb profit measures are used in property-liability insurance. Most of these convey some useful information about insurance markets. The problem is that their limitations are often overlooked, resulting in incorrect conclusions about profitability. Two important "trade ratios" are the combined ratio and the overall operating ratio. The combined ratio is the sum of the loss ratio, the ratio of losses incurred to premiums earned, and the expense ratio, the ratio of expenses to premiums written. It is widely used as a measure of underwriting profitability: if the combined ratio is above 1.0, the implication is that losses and expenses exceed premiums. This obviously provides a misleading indication of profitability because it does not take investment income into account. The overall operating ratio was introduced as a way to correct the combined ratio for investment income. The operating ratio is the combined ratio minus the ratio of investment income attributable to a particular line of business to premiums earned.¹⁸ It is analogous to the return on sales measure used in other industries.

During the 1980s, the overall industry combined ratio ranged from 1.03 in 1980 to 1.18 in 1984. Of course, because the denominators of the two components of the ratio reflect market discounting, while the numerators do not, the ratio varies with interest rates. It is not correct to conclude that relatively high combined ratios necessarily mean that returns in insurance are too low. The operating ratio ranged from 0.956 in 1987 to 1.074 in 1984. This ratio is more reliable, but an operating ratio above 1.0 does not necessarily reveal unprofitable operations, because the ratio is a rather crude approximation to the more appropriate discounted cash flow calculation.

A better measure of the rate of return in a line of insurance is the internal rate of return, the rate of return that sets the discounted cash flows from a project equal to zero. It is compared with the target rate of return, or cost of capital, to determine whether the rate of return on the project is acceptable. Usually, the project is acceptable if the internal rate of return exceeds the cost of capital.¹⁹ One difficulty in applying this rate to measure insurance profits is that publicly available sources do not contain information on the timing of premium flows in various lines of insurance. Another problem is knowing how much of the company's equity should be allocated to each line. These are solvable problems; for example, the NAIC could require insurers to release information on

¹⁸ Investment income is usually allocated by line on the basis of reserves.

¹⁹ For some cash flow streams the decision criterion is reversed, that is, one accepts the project if the internal rate of return is less than the cost of capital. See Brealey and Myers (1988). Such cash flow patterns are not typical.

premium flow patterns, and researchers will develop theoretically correct techniques to allocate surplus. The analysis of insurance markets would be substantially improved if the internal rate of return were eventually adopted as a standard profit measure. It is already being used by several jurisdictions in rate regulation.²⁰

As part of the study reported in this paper, the authors calculated industrywide internal rates of return for six major lines of insurance for the period 1980 to 1989. Surplus was allocated by line on the basis of reserves using the ratio of industrywide reserves to surplus in each year. The accident year loss ratio and the expense ratio appropriate for each line in each year were used as inputs into the model. Investment returns were based on current market rates, and a weighted average was obtained using the industrywide asset portfolio proportions for each year. Tax rates specific to each asset were used to compute an after-tax investment return. Underwriting profits taxes (tax credits) were obtained using the appropriate IRS discount factor for years subsequent to 1986 and the prior tax rules for the years 1980 to 1986. Loss flows were extracted from the industrywide Schedule P using the Taylor method. The insurance internal rate of return model is explained in Cummins (1990).²¹

The results are presented in Table 5. The table generally reveals high rates of return in the early 1980s, attributable to high interest rates and relatively favorable underwriting ratios. The internal rates of return exceeded 20 percent for two or more of these years in general liability, personal auto liability, and workers' compensation. The returns then decline approaching the crisis years of 1984 and 1985. Following the crisis, the returns in general liability and commercial multiple peril recover to more normal levels. However, returns in workers' compensation remain relatively low, while returns in private passenger auto continue to decline. The auto and workers' compensation results in the late 1980s are not surprising, because these lines have been subjected to intense regulatory scrutiny and increasingly restrictive rate regulation. Less heavily regulated lines such as general liability bounced back more quickly to more normal profit levels. The auto and workers' compensation findings suggest that supply problems in these markets may be on the horizon.

²⁰ The internal rate of return has been introduced, usually by insurers, in several states including Maine, Pennsylvania, and Virginia. A similar technique, the Myers-Cohn model, is used in Massachusetts.

²¹ Premium flows were assumed by the authors. Changing these flows generally would affect the levels of the internal rates of return but not the patterns across years. Nevertheless, the results should be viewed as a first attempt at calculating marketwide internal rates of return profitability in insurance. Suggestions for refining the calculations would be appreciated.

Table 5
Internal Rates of Return in Selected Lines of Property–Liability Insurance
Percent

Year	Private Pass. Auto Liabil.	Commercial Auto Liabil.	Home- owners	Commercial Multiple Peril	General Liability	Workers' Comp.	CAPM Costs of Capital
1980	29.1	18.9	10.8	23.0	23.3	23.6	19.8
1981	30.2	19.1	20.6	19.0	25.2	27.8	23.4
1982	26.5	13.9	16.2	11.3	19.8	25.6	18.8
1983	19.5	7.0	12.7	4.5	13.4	15.7	17.1
1984	18.7	4.6	9.2	.7	12.2	13.0	18.2
1985	13.6	7.3	−4	4.2	10.7	11.7	15.9
1986	10.3	10.8	8.2	20.7	13.4	7.8	14.6
1987	10.1	13.2	25.1	38.8	14.1	13.5	13.9
1988	9.5	12.5	15.6	26.8	14.4	13.3	14.7
1989	8.4	9.7	−7.1	10.3	14.3	13.1	16.7
Mean	17.6	11.7	11.1	15.9	16.1	16.5	17.3
Standard Deviation	8.1	4.6	9.0	11.3	4.7	6.4	2.7

Source: A. M. Best Co. (various years); Ibbotson Associates (1990); authors' calculations.

To determine whether the internal rates of return are reasonable, a cost of capital or "hurdle rate" is needed. Although estimation of costs of capital by line is impeded by data limitations (see Cummins and Harrington 1987), it is relatively easy to estimate overall company costs of capital. Since the beta of the insurance industry tends to average around 1.0, an approximate cost of capital can be obtained using the capital asset pricing model (CAPM) with Treasury bill rates and market risk premia obtained from Ibbotson Associates (1990). The results are shown in the last column of Table 5. The internal rates of return for personal auto, workers' compensation, and general liability are close to the CAPM costs of capital from 1980 to 1982 and generally fall below the CAPM in 1983 to 1986. Thereafter, general liability returns recover to the CAPM level, while personal auto and workers' compensation returns do not. Commercial multiple peril follows a pattern similar to general liability, while homeowners and commercial auto have generally lower returns. Because risk varies by line, it is not necessarily true that returns close to the CAPM are adequate or that returns below the CAPM are inadequate. Nevertheless, the results suggest that most of the unregulated commercial lines are earning adequate returns, while more tightly regulated lines are under-earning.

In order to maintain insurance supply, insurers must be able to earn returns commensurate with their risk. If regulation prevents insurers

from earning a fair return, market availability problems will develop. Another way to determine whether returns are adequate is to calculate the return on equity for firms in the industry. Unfortunately, significant confusion exists about the measurement of returns in insurance. Ideally, a market return measure would be used, but only a few companies have traded securities. Consequently, for most firms, book return measures must be used. But book return measures are likely to be poor indicators of the true return on equity because of insurance accounting practices. For example, reserves are reported at undiscounted values while bonds are reported at amortized cost. An accurate book return measure would correct for these and other accounting anomalies. Facilitating the computation of more meaningful book return estimates should be a regulatory priority. Another problem with accounting return analyses in insurance is that the insurance industry insists on ignoring unrealized capital gains. In reality, however, both realized and unrealized capital gains are legitimate components of the return on equity and should not be omitted.

Three book and two market rate of return measures are presented in Table 6. The book return measures are the statutory return on equity and two GAAP (generally accepted accounting principles) measures. The statutory return is based on regulatory accounting procedures. It consists of statutory net income, which includes realized but not unrealized capital gains, divided by average statutory surplus. This is the return measure used most often by insurers and regulators. On the average, the statutory return on equity was 12.6 percent from 1976 to 1989. The statutory return has been used by California and other states in establishing target rates of return for regulatory purposes. This is unfortunate, because this return measure does not correct for statutory accounting anomalies and is biased downward due to the omission of unrealized capital gains.

Two GAAP rates of return are presented, including and excluding capital gains. When capital gains are excluded, the average GAAP return is the same as the average statutory return, 12.6 percent. When capital gains are included, however, the average return is 14.3 percent, which is closer to the expected CAPM return for a stock with a beta of 1. It is clearly inappropriate for regulators to omit realized capital gains when computing regulatory hurdle rates.

The two market rates of return are based on the A.M. Best Company's insurance stock price indices. Although these indices are not ideal for various technical reasons, they do provide an indication of the market returns on property-liability insurance stocks. According to the market measures, property-liability insurance stocks registered an average rate of return of 17 percent, while multiple line stocks earned 12.1 percent from 1976 to 1989. The average of these two returns, 14.5 percent, is close to the GAAP return including unrealized capital gains.

Table 6
Rate of Return on Equity in the Property–Liability Insurance Industry
Percent

Year	Statutory	GAAP No RCGs	GAAP With RCGs	Market Property– Liability	Market Multi-Line
1976	11.4	11.4	19.3	25.5	42.1
1977	23.0	21.3	18.6	–4.1	–5.0
1978	21.9	20.2	21.0	5.1	8.9
1979	18.2	16.7	20.9	29.3	21.7
1980	15.5	14.3	20.1	11.1	9.4
1981	12.9	12.0	8.8	21.0	13.2
1982	9.5	9.1	12.4	26.6	–3.2
1983	8.8	8.5	10.0	10.1	10.1
1984	1.3	1.9	–1.0	4.8	11.8
1985	2.6	4.3	9.2	50.0	45.9
1986	15.0	15.1	16.7	9.7	–4.6
1987	13.8	16.7	14.8	–7.1	–15.4
1988	13.4	14.5	16.0	11.5	2.9
1989	9.7	10.2	14.0	43.9	31.5
Mean	12.6	12.6	14.3	17.0	12.1
Standard Deviation	6.0	5.3	5.9	16.1	17.3

Note: ROE = return on equity, GAAP = generally accepted accounting principles, RCGs = realized capital gains.

Source: GAAP ROE = Insurance Services Office. Statutory ROE = A. M. Best Co. Market returns = A. M. Best stock indices.

The conclusion is that great care must be taken in estimating prices and rates of return in insurance. The imperfections of rule-of-thumb measures such as the combined ratio and operating ratio should be recognized, and analysts should strive to compute more accurate estimates based on models that appropriately recognize the timing of policy cash flows. Regulators should abandon statutory accounting for rate of return purposes and should not ignore unrealized capital gains.

Financial Condition

Recent failures of both life and property–liability insurers have focused attention on the financial condition of the insurance industry. This section presents some key solvency data on property–liability insurance.

The financial condition of property–liability insurance companies is evaluated annually by the NAIC using a series of 11 audit ratios comprising its Insurance Regulatory Information System (IRIS). Insurers failing four or more of the ratio tests are singled out for special

regulatory scrutiny. Although the audit ratios are reasonably good predictors of failure, they are far from perfect. The ratios have not been updated over time, and weak insurers have become adept at concealing their financial condition. Nonetheless, the NAIC ratios remain an important solvency indicator.

Table 7 summarizes the results of the NAIC audit ratio tests for 1989. The NAIC evaluates companies and major groups separately. The companies that are members of the groups are included in the company tests so some overlap occurs between the two samples. Both the company and group results are shown in Table 7.

The table reveals that 6.4 percent of the companies and 7 percent of the groups failed four or more tests. On some tests, such as the two-year operating ratio, the change in surplus, and two-year reserve development, the failure rate was considerably higher. For example, the surplus test shows that 13.5 percent of companies experienced a decline in surplus of more than 10 percent or an increase of more than 50 percent. Both are considered adverse indicators because they reveal deteriorating capitalization and/or balance sheet manipulation. Because test results are not readily available for prior years, it is difficult to say whether the industry's financial condition has deteriorated. However, the failure rate on several of the tests suggests that further investigation is in order.

Leverage ratios are important indicators of an industry's financial condition. Five leverage ratios for property-liability insurance are presented in Table 8. The premiums to surplus ratio, the most widely used leverage ratio in insurance, has been shown to be a good predictor of insolvency. Although companies pass the IRIS test if this ratio is less than 3.0, most companies strive for a ratio of 2.0 or less. The premiums to surplus ratio for the industry as a whole declined during the late 1980s, reaching its lowest level in more than 15 years in 1989. The loss reserve to surplus ratio is slightly higher now than during the late 1970s and early 1980s but does not appear to be excessive. The ratios of total reserves to surplus and liabilities to surplus also are in the normal ranges.

The last ratio in Table 8 is the ratio of reinsurance receivables to surplus. These receivables are premium or loss payments owed by reinsurance partners. Receivables may not be collectible in a financial crisis if the reinsurer fails. Some insurers tend to use overly optimistic assessments of reinsurance receivables to bolster their balance sheets. This ratio poses some cause for concern because it has been higher during the 1980s than during the late 1970s. Since many reinsurers are virtually unregulated, regulators have shown substantial concern that reinsurance may prove to be the Achilles heel of the property-liability industry. The receivables ratio suggests that further research on this topic might be of value in monitoring industry financial condition.

Junk bonds have recently played a major role in the failure of large

Table 7
Insurance Regulatory Information System (IRIS) Test Results for 1989
Percentage of Insurers Failing to Meet a Ratio Test

Ratio Test	Property–Liability Insurance Companies (N = 2377)	Property–Liability Insurance Groups (N = 157)
Premium to Surplus Fail if Result >300%	5.2	7.1
Change in Writings Fail if Result >33% Or if Result <–33%	20.9	8.3
Surplus Aid to Surplus Fail if Result >25%	3.0	3.8
Two-Year Operating Ratio Fail if Result >100%	13.2	11.5
Investment Yield Fail if Result <5%	6.6	1.3
Change in Surplus Fail if Result <–10% Or if Result >50%	13.5	8.9
Liabilities to Liquid Assets Fail if Result >105%	9.6	7.0
Agents' Balance to Surplus Fail if Result >40%	7.6	7.0
One-Year Reserve Development Fail if Result >25%	6.5	3.8
Two-Year Reserve Development Fail if Result >25%	10.4	14.0
Estimated Reserve Deficiency to Policyholder Surplus Fail if Result >25%	6.9	8.9
Percentage of Insurers Failing 4 or More Ratio Tests	6.4	7.0

Notes: 100% minus Operating Ratio is the Profit Percentage. Reserve Development Tests indicate reserve inadequacy as a percentage of estimated reserves from a prior period (e.g., one year, two years).
Source: National Association of Insurance Commissioners.

life insurance companies. If the statutory accounting statements can be believed, junk bonds are not a serious problem for the property–liability insurance industry as a whole, although they may be a problem for some individual insurers. Industrywide, the regulatory statements show that property–liability insurers held only \$4.6 billion in non-investment-grade bonds or bonds at or near default in 1989. This

Table 8
Leverage Ratios for Property-Liability Insurance Industry

Year	Premiums To Surplus	Loss Reserve To Surplus	Total Reserves To Surplus	Liabilities To Surplus	Reinsurance Receivables To Surplus
1976	2.41	1.87	2.86	3.21	.05
1977	2.44	1.91	2.87	3.27	.05
1978	2.28	1.92	2.79	3.19	.06
1979	2.10	1.89	2.70	3.07	.06
1980	1.82	1.77	2.46	2.79	.06
1981	1.83	1.90	2.60	2.95	.07
1982	1.71	1.85	2.51	2.85	.08
1983	1.66	1.86	2.51	2.81	.08
1984	1.86	2.11	2.83	3.15	.11
1985	1.92	2.05	2.81	3.13	.11
1986	1.88	1.96	2.67	2.97	.11
1987	1.86	2.09	2.79	3.10	.11
1988	1.71	2.04	2.69	3.04	.10
1989	1.56	2.01	2.61	2.93	.10
Mean	1.93	1.95	2.69	3.03	.08

Source: A. M. Best Co. (Various years). *Best's Aggregates and Averages*.

represents 1.5 percent of the total bond portfolio or 3.4 percent of industry equity. The potential problem, of course, is that some companies' classifications of bonds as investment grade may be overly optimistic and/or that their investment grade bonds are at the lower end of the quality range. Thus, the regulatory statements may mask significant bond default risk.

The insolvency problem among property-liability insurers seems to have improved somewhat since its peak in 1985. The number of insolvencies rose from four in 1980 to 25 in 1985 and the total assessments for companies going insolvent in each year rose from \$38 million in 1980 to a high of \$909 million in 1985. However, both the number of insolvencies and the level of assessments have tapered off somewhat in 1988 and 1989. Fourteen insurers became insolvent in 1989, leading to assessments of \$246 million. The total assessments for companies becoming insolvent in 1989 amounted to only two-tenths of 1 percent of industry equity.

Based on the readily available data, it seems difficult to argue that the property-liability insurance industry faces an unmanageable insolvency problem. However, the publicly available data may mask some serious problems. Extensive additional research would be needed to determine whether insurers actually pose a solvency threat of savings-and-loan-industry magnitude.

Summary and Conclusions

The property-liability insurance industry is under attack by regulators, legislators, consumer groups, and the public. Insurers are held largely responsible for premium inflation in automobile insurance and other lines. They are said to have caused the liability crisis of 1984–85 through irrational pricing and to have increased premiums to unreasonable levels once the crisis developed. Insurers are accused of conspiracy and collusion, and are alleged to be grossly inefficient in marketing, administration, and loss control. Perhaps their worst offense is that they are about to become insolvent in large numbers and thereby engulf the nation in a serious financial crisis.

The analysis presented in this paper reveals little support for these allegations. The property-liability insurance industry is competitively structured, with numerous firms competing for business in most lines. Entry barriers appear to be low and the number of firms in the industry continues to increase. Internal rates of return and returns on equity appear to be reasonable. During most recent years, insurance prices appear to have responded appropriately to changes in interest rates and to increased loss and tax payments. Publicly available data offer no clear indication of an impending insolvency crisis.

These comments notwithstanding, serious problems need to be addressed. Among them are the following: (1) Availability and affordability of auto insurance. To a significant extent, this problem is beyond the control of the insurance industry. The real problem is the increasing frequency and severity of bodily injury claims and the rising severity of property damage claim costs. A partial solution is to provide insurers more incentives to control claim costs, for example, by mandating the creation of industrywide fraud bureaus. However, the auto insurance problem cannot be solved until the liability system is brought under control. Elective no-fault insurance provides one way to do this. (2) The underwriting cycle and the causes of insurance crises are still not fully understood, impeding effective public policy measures. More research is needed to identify the sources of these problems, but this will require better data, which should become a regulatory priority. (3) The use of inappropriate profitability measures has led to widespread confusion and irrational actions by regulators. Appropriate measures are available and should be used. (4) Rate regulation is unlikely to solve the problems of insurance availability and affordability. More likely, restrictive regulation will exacerbate these problems. Regulators should focus on more effective monitoring of prices and profits. (5) The present system of solvency surveillance and monitoring is inadequate. The regulators are not able to tell us the extent of the industry's junk bond problem and persist in using antiquated accounting rules and regulatory techniques. More intelligently designed items of information in the regulatory

statement would add immeasurably to our understanding of the industry. It is not apparent that federal regulation is the answer, but clearly something should be done to improve the solvency system.

Considering the combined effects of cost inflation, crises, and regulatory ineptitude, the property-liability insurance industry remains remarkably healthy. History has shown that intrusive regulation is more likely to create problems than to solve them. Regulation should be improved and focused on those areas, such as solvency surveillance, where it can do the most good. The primary role of the regulator should be to provide information to the market rather than to attempt to exercise control.

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Discussion

*Roger S. Joslin**

J. David Cummins and Mary A. Weiss have written an interesting and enlightening essay. The paper for the most part accurately describes what we see today in the marketplace of the property-liability insurance industry.

To paraphrase and to provide the framework for my response: (1) insurance is an intensely competitive business; (2) the rhetoric of affordability, availability, insurance cycles, and profit measurement could stand some light along with the heat; (3) insurance rate regulation should observe the provision of the Hippocratic oath that says "Do no harm"; and (4) while a solvency crisis does not exist for property and liability insurers, the mechanisms for measurement and assurance of solvency should be strengthened.

Competition—Guess Who Suppresses It?

Competition in property and liability insurance is intense. Competition, like democracy, does not always yield ideal results. New problems emerge, however, each time either system is modified in an attempt to improve the results.

As the authors point out, the number of insurers is large, minimum capital required for entry is low, and technology is not a major factor in the business. Of course, easy entry is meaningless if exit is nearly

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impossible. Who holds insurers hostage and imposes multi-million-dollar exit taxes?

In some markets price ceilings are imposed. How many cars would Mercedes-Benz try to sell at Volkswagen prices? Even Volkswagen might hesitate to expand its market if every car sold carried with it a burden of selling a Mercedes at half price. Is it any wonder the most regulated states and lines of insurance are witnessing withdrawal of companies? Future generations will read with dismay about the current attempts in North America to replace a market-based economy with state planning at the same time Eastern Europe is moving toward a market-based economy.

While some allege the McCarran-Ferguson Act allows insurers to conspire to perform all sorts of vile acts, the antitrust exemption conferred is limited, not all-inclusive. Price fixing is allowed only to the extent sanctioned or imposed by state regulation. The independent ratemakers broke the state-sanctioned insurance cartel by the early 1960s. Our concern now turns to the emergence of prices fixed, directly or indirectly, by state regulation.

State Farm endorses modification of McCarran-Ferguson so long as the avowed purpose of enhancing competition is advanced. To that end, we believe any amendment should prevent states from regulating independently developed rates in competitive lines of insurance.

Rhetoric—Let There Be Light

Affordability and availability are two distinct problems, although they are mentioned together so often one might believe the words are synonyms. Without doubt auto insurance has become unaffordable for many, not all of whom live in the inner city. Complicating the issue—intensely—is the middle-class taxpayers' revolt.

Affordability

Can costs, including insurer profits, be reduced significantly? The answer is no. Allegations of gross inefficiencies really are attacks on agents and the cost of their services. The other significant insurer expenses are the costs of settling claims, including providing litigation defense, and state premium taxes. The difference between average profits and clearly substandard profits is two to three cents per premium dollar.

Will anyone voluntarily provide subsidies for long? Absolutely not. Consumers will not pay. Government will not tax. The leading commercial writers are announcing with their feet the limits of cross-subsidization.

Are there any other solutions? Yes, the solution is to change the system. Something is drastically wrong when the ratio of bodily injury claims to property damage claims is five times higher in Philadelphia (75 percent) than in Pittsburgh (15 percent). Something is drastically wrong when one-half of bodily injury claimants in Los Angeles are represented before a claim is even asserted and three-fourths are represented before the claim is settled. While these are metropolitan examples, the lottery fever is spreading.

Monetary incentives for fraud and for litigation must be eliminated. If economic losses were paid only once rather than two, three, or four times, plus multipliers, the economic losses would decrease. If losing litigants, including insurers, paid both parties' costs of litigation, litigation would also decrease. Fraud bureaus, however commendable, cannot do the job unassisted. The criminal justice system, already overloaded in our metropolitan areas, was not designed to cope with people running to get on the bus after the accident occurs.

Availability

Auto insurance is generally available, even in the worst of markets. But brand-name insurance becomes harder to find when assigned risk or joint underwriting plans are priced drastically below cost. When the price of so-called high-risk plan insurance is held below voluntary market prices, consumers make rational economic decisions by choosing the lower-priced coverage. Statistical analysis then confirms the prevailing prejudice: voluntary market insurance is not available.

Other lines of insurance become unavailable at any price when it is no longer possible to estimate future exposure based on past experience. For example, the market for day care center liability insurance virtually disappeared when the courts signaled multiples of policy limits might be available for intentional acts of a single person. The quest for deep pockets to pay for the cleanup of intentional acts of pollution dried up the market for insurance against negligent and accidental pollution. What other creative retroactive liability lies on the horizon?

Insurance cycles occur because insurer decision-makers fare no better than economists in predicting or recognizing changes in trends. Cycles are aggravated by competitors attempting to build or maintain market share. Cycles persist because corrections for past errors, whether underpricing or sloppy underwriting, take so long to bring down to the bottom line. Those who seek to understand cycles need look no further. Those who seek to modify or prevent cycles may yearn for a return to the stability and uniformity of cartels.

Profitability

The measurement of property and casualty insurance company profit could stand improvement. Removal from the emotion-charged field of rate regulation would help. Perhaps a disinterested third party could do the job. As you may recall, the General Accounting Office (1989) said property and casualty profits were below average and auto insurance profits were below the property and casualty average. This did not, however, prevent at least one politician running for office at the time from claiming that the report showed that auto insurers in his state were "making big money," as he had "known all along."

I marvel at the theoreticians' fascination with the capital asset pricing model (CAPM). Much of the literature suggests CAPM only arguably measures what it purports to measure. Applicability to insurance company profits appears totally dependent on bootstraps.

If insurer profits must be studied and measured, internal rate of return appears promising as a methodology. Of course, any model is dependent upon its assumptions. Allocation of surplus to line and jurisdiction is a critical assumption. It does not make sense to me to allocate surplus according to loss reserves, a past imbedded event, when the risk of writing or renewing insurance policies relates to future events.

Rate Regulation—Good or Bad?

Good rate regulation may be an oxymoron. Power over rates gives the appearance and perception that the regulator can do more than a little about the cost of insurance. The temptation to reallocate prices for political advantage without regard to underlying costs is hard to resist. Aggressive rate regulation tends to suppress symptoms until disease is rampant.

The politician whose regulatory efforts increase the cost of insurance or retard competition is nearly immune from accountability. The public that views insurance as an unfair tax will accept price suppression with gratitude. The complexity of the business makes it difficult to isolate, let alone explain, the impact of various regulatory measures. Given the time lag between cause and effect, the perpetrator will have moved on to new endeavors before the seeds sown are recognized as weeds. For many years one state's elected insurance commissioner would not grant a rate increase in an election year. He said, "This is the policyholders' year. Next year belongs to the companies." The year after the election, companies received two years' worth of adjustments. The commissioner was not selling out consumers, only playing the game for personal advantage.

On the other hand, a large state west of the Alleghenies has no rate

regulation. And for 20 years the insurance commissioner, the courts, and insurance companies in Illinois have been spared the political dance about rates. The state's consumers have fared well, with premiums below the average of comparable markets. Coverage is available. Competition is hearty. Small companies have fared well. From time to time rates have even decreased, as companies have had enough confidence in the political environment to correct pricing errors downward as well as upward.

It is hard to identify the accomplishments of rate regulation beyond the opportunities for social engineering and political demagoguery.

Solvency—Courage, Not Crisis

Property and liability insurance does not face a solvency crisis. Most companies are much more strongly capitalized than are savings and loans, banks, and life insurers. Yet well-managed, responsible companies are continually embarrassed by and asked to pay for preventable, or containable, insolvencies.

Effective regulation for solvency must be fair, understandable by ordinary mortals, and automatic. Laws now on the books in many states arguably are adequate. Yet delay is the rule rather than the exception. Guaranty funds allow governors, insurance commissioners, and judges to rest comfortably. Insurance accounting and widely accepted industry practices are part of the problem. The politics of public image and clout are ever present. The necessity for judicial sanction of a drastic remedy provides untold opportunities for obfuscation.

Many insolvencies involve gross mismanagement. More than a few result from outright fraud. As was demonstrated by GEICO and CNA, honestly run, financially troubled property and casualty companies can recover, given time. The key in all instances is to prevent management from "making it up on volume."

Those concerned about property and liability insurer solvency should:

- (1) Eliminate the mirrors and shell games used to create the illusion of solvency. Give no credit for reinsurance unless the reinsurer and its contract meet stringent standards.
- (2) Prevent naïve or fraudulent optimism from funding growth. Permit the booking of underwriting profit only after the accident year has been closed for two or three years.
- (3) Require good assets to fund liabilities. Marketable, investment-grade, non-affiliated investments should exceed liabilities. Since some "good" companies cannot meet this standard, a tolerable compromise might require good assets to exceed discounted indemnity and loss adjustment expense liabilities.

- (4) Establish minimum capital standards that are realistic, easy to calculate, and risk-based. While some modern theorists recoil from the simplicity of premium-to-surplus ratios, in a competitive market premiums charged must bear a rational relationship to the discounted flow of future claim payments. Premiums are the leading edge of growth, which, particularly when rapid, is more hazardous than stability. A clear regulatory statement using ratios of premiums to surplus could read: 2:1 = strong; 3:1 = bears watching; 4:1 = hazardous; 5:1 = action required—no new business; and 10:1 = drastic action required—no renewals. The specific numbers are less important than the words “action required.”
- (5) Reduce the profit opportunities and increase the risk of loss to insider manipulators. Expand the definition and time period of voidable preferences to allow conservators and liquidators to recover compensation paid to owners, directors, officers, and managing general agents. Make it easier to reverse “bad deals” between troubled companies and financially interested parties.

This outline does not require federal intervention, although federally imposed minimum standards could speed the process. A few key states could lead the way by requiring all companies doing business in the state to meet these requirements. Regulators and the industry need a dose of courage to rise above the lowest common denominator.

Conclusion

To summarize, cost reduction, not merely price reduction, should be our goal. Overregulation may be good politics, but it is bad economics. Effective regulation should focus on the doable, namely assuring that promises made are promises paid.

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Discussion

*James M. Stone**

It is said that asking the right questions is 90 percent of wisdom. By that standard, J. David Cummins and Mary A. Weiss have written an extraordinary paper. In its first few pages, the paper lays out a list of queries that go right to the heart of the matter. This is a troubling period for industry leaders and for regulators, and anyone who wants to know why should begin to grapple with the catalog of Gordian knots these authors offer up.

To paraphrase a few questions from the list: How serious is the property and liability insolvency threat and what can anyone do about it? Can some form of regulation help stop personal lines insurance premiums from rising faster than general price and income indices, and thus temper consumer anger? Are periodic crises in commercial lines liability, accompanied by sudden price jumps and coverage reductions, the inevitable consequence of our current civil justice system or of some cyclical economic characteristic of this industry? Does the industry behave in a competitive manner or is it a cartel? When I saw what Cummins and Weiss were promising to clear up for me, I settled in for an especially careful reading.

With respect to competition, the authors' principal contribution is to point out that lines of business written predominantly through independent agents (including most commercial lines) tend to be less concentrated than lines written mostly by direct writers (especially personal auto, the industry's largest line by far). This is an important observation. The authors do not say it, but the implications of this observation may give some reformers a modest pause in their current

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quest to reduce the independent agent role in personal auto insurance. What lies behind the authors' observation is the finding that direct response insurance marketing, with its dependence on massive computer systems and expensive list acquisitions, has economy-of-scale characteristics so pervasive as to tend toward natural monopoly. Agency marketing, with service competition as its principal driver, tends to have few (or negative) economies of scale above some relatively low threshold. To establish regulatory schemes that favor simply the lower distribution costs, rather than a combination of low distribution costs and good service, is to wish for a highly concentrated industry.

With respect to the severity of cycles in commercial insurance lines, the authors dismiss the oversimplified notion of "cash flow underwriting" as the culprit. They correctly conclude that cash flow underwriting, which is the acceptance of foolishly low premiums in order to generate investable assets, can only be a problem if competition is somehow excessive. This is a condition that no one seriously alleges concerning the commercial property and liability insurance industry. Cummins and Weiss do not say what does cause the commercial insurance cycles. My own theory is that a part of the answer can be found in the literature of market signaling. Whereas personal lines coverage is priced by statistical inference and the law of large numbers, pricing in commercial lines is a function of scarce data, artistic interpretation, intuition, and a sprinkling of black magic. In other words, no one knows the right prices to charge, so when the underwriter has finished searching his data and his heart, he looks at what other artists (or magicians) at the competition are doing. When they cut prices, the underwriter not only faces competitive pressure, he feels he has received a valuable datum on the underlying reality. When he responds, the market takes this signal too as a source of data that prices should be lower. The same of course happens in the upward direction, as was the case during the so-called liability crisis of the 1980s. As long as underwriters must divine the future from far too little information, I would expect that accentuated cycles will continue to characterize the commercial lines.

With respect to solvency, the authors call for "extensive additional research . . . to determine whether insurers actually pose a solvency threat of savings-and-loan-industry magnitude." I am more optimistic than they are, but only if the standard is comparability with the S&L disaster. Property and liability companies have serious problems, and doubtless a number of insolvencies will occur in the coming years. The economics of this industry, however, were never as pernicious as those of the deregulated savings and loan industry, where the higher the short-horizon investment return (and consequently the higher the level of portfolio risk), the more deposits the institution could attract, with guarantees rendering scrutiny of solvency irrelevant to the customer. The long-tailed life insurance industry, were it not for a lack of

government guarantees, could have been an equal disaster. Even without the guarantees, it had more than enough of such behavior, and this has resulted in innocent victims aplenty with more to come. The property and liability industry, which does have government guarantees, has some offenders, but investment returns are a sufficiently small component of price, and market shares sufficiently price inelastic in the short run, to have kept this phenomenon from spinning totally out of control. Worries about property and liability solvency are justified, and the issues of obsolete accounting and weak reinsurance raised by the authors are valid, but the comparison with S&Ls does not lead toward the nub of the industry's woes. Lack of guarantees and inertia in market shares may have proved themselves a useful form of ballast.

Since I am the president of a highly regulated personal lines insurer, I was particularly interested in reading what the authors would say about the public policy issues in those lines. For that I had to wait for the concluding pages, which state that the availability and affordability of auto insurance are "beyond the control of the insurance industry . . . (and) the auto insurance problem cannot be solved until the liability system is brought under control. . . . Rate regulation is unlikely to solve the problems. . . . More likely, restrictive regulation will exacerbate these problems." This left me hungry, for this is the nub of the personal lines industry's woes.

My view is that auto insurance, a business the authors measure as providing 45 percent of total industry revenues, is uniquely cursed. It is compulsory in most states, and it is pronouncedly income regressive. The cost is largely a function of traffic density, and of the prevalence of theft and fraud. So it tends to cost more in crowded, poor, and crime-damaged neighborhoods. Insurance in many core city areas today costs the ordinary family upwards of \$2,500, where family income might average less than \$25,000. Auto insurance in a posh suburb often costs less than \$750 a year, where the average family might earn \$100,000. The percentage arithmetic will highlight the regressivity. Good public transportation is an alternative for all too few, and so it should be no wonder that the honest urban resident, who needs a car to get to work, views compulsory automobile insurance as a regressive tax. That the word "tax" has a narrower meaning to lawyers is irrelevant, as was amply proven by California's Proposition 103. That ballot question, with a lifetime of implications for industry economics, would not have passed without overwhelming majorities in Los Angeles County, where the regressivity is especially steep.

When the authors call this problem outside the control of insurers, they are technically correct, but to leave it unsolved will subject the industry to decades of torment. The industry must, if only to protect itself, work closely with public officials and find a cure. Lessened dependence on the tort mechanism and tighter fraud control, two tools

the authors favor, are worth pursuing, but they are politically elusive and insufficient at their best. It may be time to reexamine the notion of compulsory insurance, which I had long supported, if regressive income effects are so closely coupled with it. And rate flattening by regulatory design, however unseemly it looks to economic purists, is something we had all better get used to. In 1977 as Insurance Commissioner, I initiated a tempering of rate relativities across geographic territories in Massachusetts, which I viewed as a justifiable spreading of social costs over a broader social base. As an industry executive, I feel even more committed to that approach now. Simple solutions or benign neglect will not solve the regressive tax problem in auto insurance.

Cummins and Weiss raise all the right questions, and I am personally grateful for their complimentary reference to the "more sophisticated rate-making methodologies" developed by regulators in Massachusetts. But they only scratch the surface. I shall take their article as the introduction to a much longer book they may soon write and I, for one, will be certain to read.