

## PERSPECTIVES

### THE LOSS OF THE CERTAINTY EFFECT

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#### ABSTRACT

Recent changes in the commercial property-liability insurance business have made it unlikely that large claims will be paid promptly and willingly. The situation is not limited to asbestos, pollution, and medical product liability, though certainly evident there. The authors examine the situation from three economic and psychological perspectives—option theory, asymmetric information theory, and prospect theory. All three indicate that if insurance were seen by customers as less than fully certain and reliable, the resulting discounting of its value—and hence buyers' willingness to pay for it—would be much deeper than one would expect. Although competitive and legal steps could be taken to head off such a disaster, none of them is likely.

#### INTRODUCTION

A defining characteristic of insurance is that the product is sold and paid for long before it is delivered. For a certain payment now, the buyer of insurance gets the insurance company's promise to deliver money and services in the future should an uncertain event occur.

From the insurance company's perspective, the separation of the point of sale from the point of claim is the greatest challenge and the greatest benefit. To set prices, the insurance company has to project costs, sometimes years into the future. But during the time between sale and claim, the company also gets to hold and invest the premium.

From the buyer's perspective too, the separation of sale and claim is a benefit and a problem. It is at the core of the value of insurance—the known premium now in return for a larger payment later if the loss occurs—but it also creates problems of quality or reliability. If in the interval between sale and claim the insurance company becomes

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unable or unwilling to pay claims, its promise becomes worth a lot less than when it was sold and paid for.

The buyer's assumption that claims will be paid is the key to the value of what insurers sell. Recent changes in the insurance business have placed a cloud over this assumption. Recent scholarly work in economics and psychology has illuminated the likely effect on insurance if the assumption about its reliability were to fade away.

This article examines the insurance changes, the applicable thinking in economics and psychology, the implications for insurers, some historical precedents, and finally, steps that might be taken to avoid what looks like a rather unattractive future.

### **RECENT CHANGES IN INSURANCE**

Property-liability insurance benefits greatly from people's belief that it can eliminate the financial consequences of specified risks. Recent research has shown that people give disproportionate weight to eliminating the smallest chance that the product or service being purchased will fail. The difference between eliminating a risk and only reducing it is called the "certainty effect" (Kahneman and Tversky, 1979). The certainty effect is discussed in the section of this article titled "Prospect Theory."

Insurance can become uncertain in two ways. One is by the insurance company's financial inability to pay claims. Preventing harmful insolvencies of insurance companies has long been considered the primary goal of insurance regulation (Patterson, 1927, p. 192). The other way for insurance to become uncertain is by the insurance company's decision not to pay claims willingly and to make policyholders fight for coverage after claims come in.

Over the past three decades, the commercial property-liability insurance business has undergone significant changes. Taken together, the changes make it more likely that an insurance company will deny coverage for a large claim today than, say, 30 years ago. The changes include the following nine.

First, price competition has come to insurance. For the half century ending in 1945, property-liability rates were, in most states, prescribed by a cartel reinforced by government (see Wandel, 1935, for a description of how the cartel worked). This practice was legal, because insurance was thought to be outside the antitrust laws. With judicial, congressional, and state regulatory action in the period from 1945 through 1975, all that changed (see National Association of Insurance Commissioners, 1974, for the story). The legal and regulatory framework for insurance switched to favoring competition.<sup>1</sup> It was sound public policy, and eventually it had the intended effect. With the price competition came an unaccustomed emphasis on controlling the costs that go into prices—expenses and claims.

Second, the risk management movement enabled corporate policyholders to save money by keeping against their own capital the smaller and more predictable risks. The natural focus of risk managers and brokers has been on the point of sale, where premiums are saved and commissions earned, and not on the point of claim.

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<sup>1</sup> One of the authors proposed, and helped secure enactment of, New York's change from cartelized to competitive rating, with antitrust prohibitions stronger than federal law (see New York Insurance Department, 1968, pp. 13-14, 133-336).

The risk management movement has had two other effects. First, the insurance market has changed from being based on relationships, in which each party was committed to taking care of the other in the long run, to being based on transactions, in which each deal stands on its own. Second, the overall books of business of insurance companies have been rendered less stable. The most stable parts—the numerous small losses that occur every year—have been retained by the policyholders.

Closely related to the risk management movement is the third factor—the increased power of brokers. Insurance agents and brokers have always been important in insurance as both a business and a public-policy matter. But recently, two changes have increased their market power greatly.

One of the changes traces to risk management, in which brokers have been major, perhaps dominant, participants. The other comes from the internal economics of brokers as intermediaries. As in other financial services, the competitive need to reduce costs and to offer national and international services has led to a rapid consolidation of brokerage firms. The few remaining giant firms have unprecedented influence over both insurance companies and policyholders. But they are still compensated by commissions and fees at the point of sale, not on performance with claims.

A fourth change in the insurance business has been from orientation toward policyholders to orientation toward stockholders. Traditionally, insurance companies declared their devotion to policyholders, and insurance regulators declared that they were the primary constituency. Starting in the 1980s, securities analysts and corporate managements emphasized “shareholder value” and, by stock options, the alignment of management’s interests with those of stockholders. Through dividends and appreciation, stockholders get the benefit of what is not paid out for claims.<sup>2</sup>

The shift from policyholders to stockholders has led to the fifth change—in the role of capital in an insurance company. Traditionally, an insurance company could not be too well capitalized. Regulators, agents, and rating agencies would jump on a company that wrote too much business in relation to its capital resources, while they would look past operating difficulties in another company that appeared rich in capital. Prudent managements naturally preferred having too much capital to having too little (see Ruebhausen et al. 1968, pp. 191-195).

But the new focus on shareholder value has brought with it a focus on return on equity (ROE) and a focus on consistency of earnings growth. Both tend to increase management’s sensitivity to large losses. Leveraging one’s equity—in insurance, writing more business against it—is now the key to a higher and highly praised ROE.

Yet because of a 12-year price war and rising stock and bond markets, the key measure of capitalization—premiums to surplus—has gone down. The prevailing explanation for the price war has been “overcapitalization” (see “The Capital Trap,” 2000, for a discussion of the reasons for and responses to the industry’s overcapitalization).<sup>3</sup> That implies managements will try to get the ratio up, thereby thinning the cushion against large

<sup>2</sup> The policyholder-stockholder tension is apparent in a statement by a spokesman for the Chubb Group two days after the terrorist attack on the World Trade Center: “We’d be sued by our shareholders if we paid and no one else did” (Oster, 2001).

<sup>3</sup> The property-liability industry overall is currently writing one dollar of premium for every dollar of policyholders’ surplus (equity), whereas during the 1980s the industry was

losses. The new emphasis on consistency of earnings growth implies that managements have to be very sensitive to large losses already.

The sixth change includes insurance but extends throughout finance. It is the elimination of intermediaries between users of capital and the main capital markets. Insurance companies are intermediaries, just as agents and brokers are. But unlike agents and brokers, the companies have to have capital, because in effect they guarantee their own performance, and the capital backs it up. Capitalized intermediaries, such as banks and insurance companies, have a cost of capital that is not needed with direct access to the stock and bond markets. On a cost basis, those intermediaries cannot compete with direct-access vehicles of equal quality, such as money funds and securitized insurance risks.

But that is in theory and in the very long run. For now, the direct-access approach to property-liability insurance risks—securitization of property catastrophe reinsurance—appears to be loaded with such heavy risk premiums and other costs that conventional reinsurance remains highly competitive on a cost basis (Froot, 2001, p. 12). And the capitalized intermediaries, the familiar property-liability insurance and reinsurance companies, can also compete by doing something stringent about other costs—expenses and claims.

A seventh change was an explicit recognition of the earnings on funds reserved for claims as the most significant component of earnings for a property-liability insurance company. In banking, such funds are called “float.” Traditionally, this investment income was ignored by the insurance business (Investment Income Task Force, 1984, p. 42; New York Senate and Assembly, 1911, p. 55). Besides the interest rate, the benefits of float depend on two things. First, they depend on how long the float is—how long the premium funds are held before being paid as claims, for that is how long the money can be kept invested. Second, the benefits depend on the cost of the float—the losses and expenses incurred in obtaining it (Buffett, 1994, p. 13; Buffett, 2000, p. 9; Stewart, 1979, p. 111). Insurance managements are more than sufficiently intelligent to see that delaying the payment of claims increases the float period and denying claims decreases the cost.

The eighth change was unexpected liability catastrophes, the change that has received the most attention in the insurance press. The insurance industry’s rating bureaus had been broadening the standard comprehensive general liability policy for 25 years after its introduction in 1941. Then in the 1970s through the 1990s, three disasters hit—asbestos liability, pollution liability, and medical product liability.

Most people think of insurance catastrophes in terms of property insurance—hurricanes, floods, and earthquakes.<sup>4</sup> What makes catastrophes so bad for insurance is not their terrible physical manifestations but the fact that they are huge and hit all at once, and they cannot be predicted, priced, or spread through the insurance mechanism. That can happen in liability insurance as well as property insurance, and it did in asbestos, pollution, and medical product liability.

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writing about two dollars of premium for every dollar of policyholders’ surplus (A.M. Best Company, 2001, p. 262).

<sup>4</sup> The classic case is the San Francisco earthquake and fire of 1906, after which many companies refused to pay or discounted claims (see Alfred M. Best Company, 1907).

Whereas property catastrophes are limited to the value of the property, liability catastrophes threaten to be open-ended, even unending. The response of many insurance companies to these three liability catastrophes was to try to slow down, reduce, and spread out over time the payment of the claims—to make them a big loss but not a catastrophe.<sup>5</sup>

The ninth change, growing out of the preceding one, was the birth of a sophisticated, aggressive, and expensive coverage bar serving both insurers and policyholders, displacing in big cases the specialized bar that had exclusively represented insurers. It is one thing to have an average law firm representing the insurance company and the policyholder in an automobile-accident case, but it is quite another to pick a lawyer to handle a coverage case with \$1 billion at stake and a million documents to be studied.<sup>6</sup> As a result, now on each side a set of first-class lawyers is looking forward to the next fight.

All the changes point in the same direction. From an insurer's point of view, resisting large claims has become an effective, perhaps even necessary, competitive strategy. From a policyholder's point of view, the cost of collection has gone way up and reliability has gone way down.<sup>7</sup>

How far has the reliability problem progressed? The direct evidence is buried in insurance company claims and litigation records, and insurers guard that information fiercely. But the authors believe it pervades large claims in general liability and probably extends to large claims in directors' and officers' liability and all-risk property.<sup>8</sup>

Does the reliability problem exist with all insurers of big commercial risks or just some of them? At this point the authors do not know for sure. But the changes in insurance described above, together with the fact that not paying claims can lead to lower prices, suggest that the reliability problem will reach all insurers and all kinds of large claims sooner or later.

<sup>5</sup> A RAND Corporation study estimated that 88 percent of the money spent by insurers on pollution cleanup under the 1980 Superfund law has gone for transaction costs, that is, coverage disputes and policyholder defense (Dixon, 1992). For asbestos bodily injury, transaction costs took 63 percent of the total spent by both insurers and policyholders (Hensler et al., 2001, p. 37). The pattern was noted earlier in the context of pharmaceutical products liability. "With the growth of claims that have taken years to manifest themselves and the size of the class of potential claimants, many insurance companies faced with such claims have run for cover rather than coverage" (*Sandoz v. Employers Liability Assurance Corp.*, 1983, pp. 257-258).

<sup>6</sup> Although the authors do substantial work for insurance companies in non-coverage areas, they have served as expert witnesses for policyholders in over 100 very large coverage lawsuits. They have observed firsthand the high quality of the lawyers on both sides, the long duration and great expense of the proceedings, and the ingenuity of the arguments both for and against coverage.

<sup>7</sup> A leading insurance scholar has called it "a *de facto* 'big claim' exclusion" (Abraham, 2001a).

<sup>8</sup> Nobody—not even insurers and their trade and statistical organizations—has information about large claims handling for the entire property-liability insurance industry. No court, insurance department, policyholder, or member of the public has such information for even a single insurer. Hence the evidence for the problem is largely anecdotal or inferential. Occasionally a bit of it is revealed in trials, but always under seal. Occasionally a bit is reported in the press (see Scism, 1996). The RAND statistical studies (Dixon, 1992; Hensler et al., 2001) point the same way—in asbestos and pollution liability, disputes consume much more money than compensation does.

Normally one would expect the market to correct such a problem, as it corrects quality problems with other goods and services. Consumers see that a product is shoddy or that a service is sloppy or hostile, and they steer away from it. In insurance, the separation in time of the sale and claim impedes the market's ability to self-correct for quality. But correction does happen. In personal insurances such as automobile and homeowners, some companies have the reputation for paying fairly and some do not, their reputations based on people's collective experience with an extremely large number of claims. Insurance department examiners can look at thousands of claim files in a market conduct examination. *Consumer Reports* even ranks companies by customer satisfaction.

But the problem of delay and denial of very large commercial claims is ill suited to market correction for several reasons. By contrast to personal lines, very large commercial claims are rare in the experience of a single corporation. A risk manager may see only one or two in an entire career. Out-of-court settlements of large claims are usually secret. So a given buyer lacks the evidence from which he or she could pick up a pattern of harsh claims practices, and the buyer can easily believe the assertion that the particular claim at hand is being treated on its unique, fact-dependent merits. Even if a risk manager picked up a pattern of bad treatment, where else could he or she go? And most important, the market gives no participant an economic incentive to focus on performance at the point of claim.

To report the changes in insurance is not to condemn them. They are not defects or moral shortcomings. But to understand any business, it is good to know how it works and the incentives that surround it.

### **ECONOMIC AND PSYCHOLOGICAL PERSPECTIVES ON THE INSURANCE CHANGES**

In the last 30 years, three lines of scholarship in economics and psychology have developed that cast light on the subject of insurance reliability. The three are intellectually independent of one another. They all point the same way, though each sees the insurance situation from a different angle.

First, option theory observes that financial proxies for economic outcomes are effective only so long as they really correspond with the outcome and the other party is sure to perform.

Second, asymmetric information theory observes that when sellers are known to have more information about the quality of a traded item than buyers do, the buyers will pay only on worst-case assumptions.

Third, prospect theory observes that people place a higher-than-rational value on certainty and, conversely, react to the loss of certainty by reducing what they are willing to pay by more than they rationally should.

All three of these approaches lead to the same conclusion—that the loss of the certainty effect would be very expensive for insurers, perhaps disastrous.

#### **Option Theory**

The first perspective on the claims-reliability question is provided by option (or hedging) theory. Techniques for hedging risks have been used for centuries, chiefly against price fluctuations in farm products, but in recent years they have been at the cutting edge of the economics of finance. To determine the price of options, the new techniques rely on

computers running mathematical models. They have inspired new investment strategies and a host of new financial derivatives (for an overview of the development and uses of option-pricing theory, see Merton, 1998; Bernstein, 1992, 1996; Bodie and Merton, 2000, pp. 313-416; "Future Perfect," 1999). Although derivatives are useful and the financial ingenuity has been exciting, a few well-known episodes have provided sobering and expensive reminders of hedging fundamentals.<sup>9</sup>

The basic idea of option or hedging theory is that one financial instrument—a forward purchase or sale, or a call or put option—can represent another instrument or another economic reality. If so, the one can replace the other, and pretty soon the replacements can be traded and offset against the opposite realities. The hedging instrument is known as a "derivative," because its value is derived from the "underlying" instrument or economic situation.

Derivatives are valuable tools for managing risks of many kinds, and vast amounts of them are traded every day. But hedging turns on two questions. One is whether the derivative really squares with the underlying risk—whether it is indeed a perfect hedge. This is called basis risk.<sup>10</sup> The other is whether the other party can or will deliver. This is called counterparty risk (Smithson, Smith, and Wilford, 1995; Kolb, 1999).

For a long time, insurance has been considered a perfect hedge against the perils it addresses. Implicitly it is the perfect derivative, one with no basis risk and no counterparty risk. Of course, the chance of insolvency is not ignored in real life or insurance literature.<sup>11</sup> But the risk that a solvent insurer would deliberately refuse to pay appears not to have been raised at all.<sup>12</sup>

Perhaps the greatest advantage of insurance as a hedge has been its excellent fit with the exposure to loss being dealt with, its lack of basis risk. When changing conditions have made the fit less good, the insurance industry has amended the policy form. Just before the Second World War, the perceived general liability risks of business corporations got out of line with the standard named-peril or scheduled-hazard liability policies. So the insurance industry reduced the basis risk by adopting the comprehensive general liability form known today (Sawyer, 1943, pp. 11-33). Customers have been willing to accept a little counterparty risk based on insolvency in order to enjoy the benefits of insurance as a hedge with practically no basis risk.

The loss of the certainty effect would mean that insurance had come to be seen as no longer a perfect hedge or even a particularly good one. If the certainty effect were to be lost, insurance would look to potential buyers like a derivative with a great deal of

<sup>9</sup> Long-Term Capital Management, the hedge fund whose unraveling threatened the international financial system in 1998, had as its partners two originators of option-pricing theory, Robert Merton and Myron Scholes. Lowenstein (2000) describes the rise and fall of the firm.

<sup>10</sup> Basis risk is a recognized challenge in designing property catastrophe insurance derivatives (see Harrington and Niehaus, 1999; Cummins, Lalonde, and Phillips, 2000; Insurance Services Office, Inc., 1999; Thomas, 1997).

<sup>11</sup> In reinsurance, the presence of counterparty risk and the absence of basis risk are described in Doherty (1997, p. 867).

<sup>12</sup> The risk of a solvent counterparty's refusing to pay, however, is known in non-insurance contexts. It was illustrated several years ago when Procter & Gamble, Gibson Greetings, and Federal Paper Board took huge losses in derivatives, refused to pay, and then sued Bankers Trust, the counterparty (see Loomis, 1995).

counterparty risk. In the financial markets, a derivative with substantial counterparty risk is not considered worthwhile and does not trade.<sup>13</sup>

What does option theory say about insurance? It says that if insurance were to lose the certainty effect, it would become a derivative with substantial counterparty risk. Its privileged status in finance would disappear. That would change everything. But exactly how? Two other perspectives help answer this question.

#### Asymmetric Information Theory

In economics in recent years, another important development has been in the economics of information.<sup>14</sup> Particularly useful for this discussion is the part of it that deals with markets in which the seller and buyer do not have the same amount of information about the quality of the product or service being offered. The two parties have information that is not symmetric.

Asymmetric information has been modeled in a variety of theoretical and real-world settings (Rothschild and Stiglitz, 1976). One of the most famous is the market for used cars, in which the seller knows more about the condition of the vehicle than the buyer does. Being aware of this disparity of information, buyers offer less, and the prices of all used cars gravitate toward the price level for bad ones. The consequence of bad cars selling at the same price as good cars is that more bad cars than good ones get offered for sale. As a result, bad cars tend to drive good ones out of the market (see Akerlof, 1970).<sup>15</sup>

The scholarly writing about asymmetric information in an insurance setting addresses two problems—moral hazard and adverse selection (see Hillier, 1997, pp. 77-111; Macho-Stadler and Pérez-Castrillo, 1997, pp. 9-12). In both situations, the buyer has better information about his or her likelihood of causing a loss than the insurance company does. Moral hazard in insurance occurs when the policyholder uses insurance to increase the likelihood of loss, say, by taking less care of insured property. Adverse selection in insurance occurs when the policyholder uses superior knowledge of his or her risk characteristics to buy insurance when it is advantageous and to forgo insurance when it is safe or the insurance is too expensive. Insurers cope with these problems by using deductibles and coinsurance, by underwriting carefully, and by basing their rates on a pool of past loss data that includes losses due to moral hazard and adverse selection.

Asymmetries of information in insurance are not confined to situations in which the buyer knows more than the seller. Insurers have statistics and underwriting expertise that buyers do not. And for one kind of information, the insurer has an absolutely

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<sup>13</sup> A current example is Enron, the giant energy and derivatives trader that quickly collapsed after counterparties started to worry it might not perform (see Norris, 2001). Similar loss of confidence precipitated the failure of several large life insurers in the 1980s and early 1990s, such as Baldwin United, Executive, and Mutual Benefit. The extreme sensitivity of deposits to erosion of confidence is not a new discovery (see Bagehot, 1883, ch. 2). Deposits in banking and insurance may be more vulnerable than casualty insurance is, because customers can pull out faster and demand cash all at once. But Enron did not issue deposit products, and casualty policies have to be renewed every year.

<sup>14</sup> The significance of asymmetric information theory to economic thought was recently highlighted by the award of the 2001 Nobel Prize for economics to three of its pioneers: Joseph E. Stiglitz, George A. Akerlof, and A. Michael Spence.

<sup>15</sup> This is a theoretical example in which the market is greatly simplified, as in all economic models.

exclusive inside track—knowledge of what the insurer itself intends to do under certain circumstances.

How the insurer will handle large claims is one of those asymmetries. Only the seller knows for sure. The insurance company's management obviously knows what its current claims philosophy is. But buyers do not, because they are not privy to the insurer's thinking.

Buyers are also not privy to information every insurer protects, such as how many claims it resisted, what kind and size they were, how long they took to resolve, and for how much they were settled. Nor can buyers protect themselves against this asymmetry by using any of the techniques insurers use to deal with moral hazard and adverse selection.

What does asymmetric information theory say about insurance? It says that as buyers became aware of the tightened claims practices of insurers, insurance would move from being an item with assured quality to one whose quality was better known to the seller than to the buyer.

As with used cars, buyers would assume the worst, and prices would gravitate toward the price of the least reliable insurance. At that depressed price level, only unreliable insurance would be able to turn a profit. As with used cars, unreliable insurance would tend to drive reliable insurance out of the market.

As option theory indicated the loss of the certainty effect would utterly change the position of insurance in the world of finance, asymmetric information theory begins to quantify the change. All insurance prices would decline toward the price of unreliable insurance. The counterparty risk posed by some insurers would push down the prices for all, because buyers would not know how to tell them apart. Would it be by an amount proportionate to the loss of reliability? A third perspective addresses this question.

#### Prospect Theory

Since the Second World War, nearly all economists have used a rationalist model of how people make choices in the market. The idea is that each actor has a "utility function" that sums up in a single number his or her total value system, and that the person makes choices that will maximize that "expected utility."

For example, in deciding on buying a car, the buyer would factor in the alternative uses of the money for next year's vacation and for college tuition for the baby. The theory also assumes that decisions about such matters as preferences and prices will be totally rational and solely devoted to maximizing utility.<sup>16</sup>

The advantage of expected-utility theory is that it is amenable to mathematical techniques and quantitative analysis, and it has played a key role in the rise of those disciplines in economic studies. As applied to insurance, expected-utility theory says that if a fully reliable insurance policy is worth \$100 in the market, then a 90 percent reliable one will bring \$90. Put differently, the theory says that in insurance, as elsewhere, the value function is linear.

<sup>16</sup> Although there were precursors of expected-utility theory as early as the eighteenth century, in recent times chapter two of John von Neumann and Oskar Morgenstern's book is probably the most famous of many sources for the description in this paragraph (von Neumann and Morgenstern, 1944).

The disadvantage of expected-utility theory is that it does not describe how many decisions are made in real life.<sup>17</sup> But if expected-utility theory does not explain much actual decision making, what does? Are humankind's deviations from the rational ideal random, or are they systematic, moving in consistent directions?

A small but growing scholarly literature in psychology and economics says the deviations are systematic, that the departures from expected-utility maximization can be figured out, measured, and explained.<sup>18</sup> Expected-utility theory is still the mainstream of economics, but behavioral decision theory (or prospect theory) is making headway at the juncture of economics and psychology.<sup>19</sup>

Prospect theory contains many ideas (see Bernstein, 1996, pp. 269-283, for a description of prospect theory). One idea is of particular interest here: When expected-utility theory says that differences in buyers' confidence in product quality are reflected in commensurate differences in the price buyers are willing to pay, the theory is not describing what happens in real life. Instead, buyers attach more than proportional weight and value to the last, highest reaches of confidence. Put another way, the value function is not linear, and people overweight low probabilities of loss or failure. That behavior is called the "certainty effect" (Kahneman and Tversky, 1979, p. 269; Kahneman and Tversky, 1992, pp. 297-298).

The certainty effect may explain why such great value is attached to eliminating the slightest chance of default on bonds and guaranties, reflected in the emphasis given to having a AAA rating rather than "only" a AA (Wakker, Thaler, and Tversky, 1997, p. 20). It may explain the purchase of insurance at prices far above the actuarial value of losses (Plous, 1993, p. 99), as well as the remarkable financial success of "dread disease" insurance.<sup>20</sup> Finally, it may explain the flight to quality by commercial insurance buyers and the absorption of weak insurers by those with stronger balance sheets ("Catalysts of Change," 2001).

<sup>17</sup> Herbert A. Simon's book *Administrative Behavior* (1947) is probably the earliest and most famous of many sources for this critique. His *Reason in Human Affairs* (1983) is a short explanation of expected-utility theory and its shortcomings. About insurance, Professor Simon (1986) observed: "Utility maximization is neither a necessary nor a sufficient condition for deducing who will buy insurance" (p. 32).

<sup>18</sup> Daniel Kahneman and Amos Tversky's article "Prospect Theory: An Analysis of Decision Under Risk" (1979) is probably the earliest and most famous of many sources, and the one that coined "prospect theory" and "certainty effect." This article and others by scholars of prospect theory have recently been republished in *Choices, Values, and Frames*, edited by Kahneman and Tversky (2000).

<sup>19</sup> Although prospect theory tends to portray the rules of thumb and shortcuts that depart from expected utility as failures of rationality, it is not necessary to do so. To some scholars of decision theory who also reject expected utility as unrealistic, such "fast and frugal heuristics" are not failures of rationality but just the rules that enable us to make reasonable and satisfactory decisions (see Gigerenzer and Todd, 1999). For purposes of this discussion, it does not matter whether the certainty effect is seen as a shortcoming compared to a rational ideal or as a practical shortcut that works in real life.

<sup>20</sup> For many years, AFLAC, Inc.—whose main subsidiary is American Family Life Assurance Company of Columbus, the world's largest cancer insurer—has been at or near the top of the insurance business in such key financial measures as earnings growth, stock performance, and return on equity (see the company's annual reports at <http://www.aflac.com>).

A simple way to test the theory is to imagine yourself in a familiar setting—independent business, corporate life, government, politics. Then ask yourself two questions in that setting. What is the value to you of a deal with someone whose handshake is 100 percent solid and dependable? Now, what is the value of the same handshake from someone who performs most of the time, but not always?

Much of the scholarly empirical work on prospect theory in general and the certainty effect in particular has been in laboratory experiments, such as testing a sample group's aversion to risk. Laboratory experiments have the advantage of control but the disadvantage of not coming from real economic life.

Some examples of the certainty effect have been drawn from such areas of life as overbetting longshots at the track and betting on lotteries (Camerer, 1998, pp. 6-8).<sup>21</sup> But those examples are not from mainstream economic activities. By any measure, insurance is a mainstream economic activity.

What does prospect theory say about insurance? It says that buyers attach great importance to closing off the smallest chance of nonperformance. One leading study found that "people demand about a 30% reduction in the premium to compensate them for a 1% chance that their claim will not be paid" (Wakker, Thaler, and Tversky, 1997, p. 9).

If this finding is true, then if insurance were ever perceived as less than reliable and certain—for reasons of insolvency or claims practices—the willingness of buyers to pay for it would drop by an amount far greater than expected-utility theory would predict and insurance professionals would expect.

#### **IMPLICATIONS FOR THE INSURANCE INDUSTRY**

All three of these lines of economic reasoning suggest that if property-liability insurance changed from being a certain way to cope with risk of loss to being a less certain way, buyers' willingness to pay what it costs and to forswear alternatives would go down by a surprisingly large amount.

Option theory—wherein the derivative is assumed to be exact and reliable—implies that when these qualities are lost, the instrument becomes much less valuable, perhaps nearly worthless, and certainly impossible to price.

Asymmetric information theory—wherein sellers know more about the quality of the traded item than buyers do, and buyers then assume the worst—implies price declines for all insurers toward the level of prices for the unreliable ones.

Prospect theory—wherein buyers give disproportionate weight to closing off the last bits of risk—implies that the loss of the certainty effect would cost insurers a great deal more than an amount proportional to the reduction in reliability.

This process of disproportionately devaluing commercial insurance as it is seen to lose its certainty also has the potential to become a spiral in which insurers can profit at the

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<sup>21</sup> The two examples are of unlikely gains, not unlikely losses. But another observation of prospect theory is for "losses to loom larger than gains" (Kahneman and Tversky, 1979, p. 288). So the certainty effect should be even more intense with respect to unlikely losses, such as the failure of insurance to perform.

reduced price levels only by getting even tougher on claims. That would further alienate buyers, who would pay even less, and so on (Abraham, 2001b).

As the loss of the certainty effect could spiral, so also its manifestations could broaden beyond price. At some point, risk managers and brokers could conclude that commercial insurance companies were so unreliable that they were irrelevant to the needs of large and sophisticated corporations.

The industry may have experienced symptoms of both a spiral problem and an irrelevance problem in the recent, exceptionally long price war and, during the same period, in expansions of the risk management movement, expansions that one would not expect in a soft market.<sup>22</sup> If so, spiral and irrelevance problems are likely to show up in continued pressure on insurer profit margins even as prices increase.

How rapidly could really dire consequences occur? It is natural to picture the process as gradual or proportionate to the loss of reliability. But this may be another area where the rationalist model does not accurately describe the way things work. In many areas of natural and social science, pressure builds up with little or no visible effect on the existing structure. And then, at some point, the structure changes rapidly or even breaks.<sup>23</sup>

For purposes of this discussion, the structure is the social capital of the insurance business—the belief that it will perform—and the mounting pressure is from the changes in the insurance business discussed earlier in this article.

If this analysis is correct, then the situation is not just serious for the commercial property-liability insurance business. It is worse.

### **SIMILAR THREATS IN THE PAST**

Although the economic analyses—option theory, information theory, and prospect theory—are comparatively new, the problem of the loss of the certainty effect is not. On four occasions in the past, insurers' responses to unexpectedly heavy claims have led to major changes in the law and practice of insurance in the United States. One could see all four as examples of what was done to head off the loss of the certainty effect, although naturally the problem was not seen that way at the time.

The first episode was after the Civil War, when life insurance became the leading way for families to provide for the early death of the breadwinner. When death claims came

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<sup>22</sup> Price competition has been a main theme of recent communications of such leaders as American International Group, Chubb, Hartford, and St. Paul. In risk management, a notable expansion is the many new insurers formed (1) offshore and (2) to write finite risks rather than the familiar, broad commercial coverages. One can even see the growing use of finite risk and captive insurers not so much as efforts to hold cash, reduce taxes, and save premiums—the usual explanations—but as efforts to increase reliability. The founder and CEO of the W. R. Berkley insurance group recently said, "Most of our captives are formed because enterprises want more control over the insurance process" (McDonald, 2001, p. 56).

<sup>23</sup> This phenomenon is called an "inflection point" in business strategy, as seen with the introduction of electric motors or integrated circuits. It is called a "paradigm shift" in natural science, as seen with Galileo's view of the cosmos or quantum physics; a "tipping point" in social policy, such as integration of schools and neighborhoods; a "breaking point" in physical activities such as bending a stick; and "crush depth" in submarines.

in, some insurers looked for ways to avoid paying (see Villaronga, 1976; Amrhein, 1933, pp. 146-165; McGill, 1959, pp. 817-829).

A favorite way out was to assert that the deceased insured had not made full disclosure when applying for coverage many years before (see *Connecticut Mutual Life Insurance Co. v. Union Trust Co. of New York*, 1884, for a sample of the questions in a life insurance application in the late nineteenth century). Since the cause of death was usually known once the claim came in, the insurer could often quite truthfully say that the fatal disease, or a predisposition to it, was not disclosed in the application. This was particularly true where the applicant did not know about it either.

Popular resentment grew so harmful to life insurance marketing that, in 1879, the largest life insurance company introduced the “incontestable clause,” in which the company gave up all defenses, except nonpayment of premium, once a policy had been in force for a few years (Buley, 1967, p. 251). After New York’s 1906 Armstrong Committee investigation into life insurance abuses, the law of that state and many others required an incontestable clause in all life policies (Villaronga, 1976).

The second episode also occurred in the second half of the nineteenth century. Then, fire insurance was by far the largest property-liability coverage and was essential to the development of cities and factories. Competition among fire insurers was intense. One way to compete was to pay agents high commissions and not to restrain their sales efforts by underwriting.

After a large fire of the sort that destroyed entire cities in that era, some insurance companies looked for ways out. One popular way was to invoke obscure warranties, limitations, and exclusions in the fire insurance policy, the “fine print” of insurance song and story. The result could be to deny funds to rebuild cities or factories just when the money was needed most (see *DeLancey v. Rockingham Farmers’ Mutual Fire Insurance Co.*, 1873, for an entertaining description of the fire insurance claims problem).

As with life insurance, public resentment of abusive claims practices threatened to undermine the value, and the sales appeal, of this essential coverage. The principal reform was to take away from fire insurance companies the power to write their own policies. State legislatures either enacted the full text or delegated to the insurance commissioner the authority to do so. Either way, the laws required the enacted policy wording, and nothing else, to be used for all fire insurance on properties in the state. Eventually, the New York Standard Fire Insurance Policy became the national fire insurance form (Patterson, 1927; Deitch, 1905; Bissell, 1904).

In addition, nearly half the states passed “valued policy” laws. The laws required fire insurance companies to pay the face amount of a policy in the event of a total loss (Grant, 1979, pp. 71-74).<sup>24</sup> It was a measure of public antagonism toward fire insurers that states with good government traditions, led by Wisconsin, passed the laws, well aware of the temptations to overinsurance and arson they presented (Dean, 1901).

The third episode was in accident and health insurance, a line that was a principal insurance protection for workplace injuries before workers’ compensation. The policy con-

<sup>24</sup> Whereas the standard policy was the creation of urban states, with the conflagration hazard posed by cities, the valued policies came from agricultural states, where farm fires posed no conflagration hazard. The claims problem must have been across-the-board.

tained prohibitions against increasing the risk, such as changing occupation, without the consent of the insurance company. Once claims came in, insurers that were disposed to get out of paying could look closely at what the worker was doing at the time of the accident that might differ from what he or she did when the insurance was sold.

As with life and fire insurance, these claims practices led to resentment and loss of confidence in the coverage. They also led in 1911 to a major investigation by the National Convention of Insurance Commissioners. From the investigation came crackdowns on individual companies, a proposed standard policy form, and prohibition of such practices as profit sharing for loss adjusters (National Convention of Insurance Commissioners, 1911; Patterson, 1927, p. 464).

The fourth episode concerned cancellation and claims practices in automobile insurance. In the late 1940s, most companies cut back on their automobile writings, and those that stayed open got more business than they could handle. For a time, insurers coped by getting tougher on cancellations and claims. Responding to the public resentment, regulators and legislatures restricted cancellations and prohibited unfair claims practices. When both kinds of legislation were pending, the major insurers did not oppose them, and many supported them (New York Insurance Department, 1969, p. 37; National Association of Insurance Commissioners, 1997, pp. 900-901).

Two of the four remedies—for accident and automobile insurance—were moderate and in the regulatory tradition of general guidelines and specific enforcement. The other two were radical and self-enforcing. Life insurers lost even the defense of fraud. Fire insurers lost the power to write their own contracts. On the historical record, the two radical reforms worked better.<sup>25</sup>

Despite this difference, the four episodes have two features in common. One is that the problem was a decline in public confidence that insurance would pay—the loss of the certainty effect. The other feature is that insurers or the government or the two together responded by imposing a remedy that applied to all insurers, either legally or competitively or both. No one company could unfairly refuse to pay claims and thereby offer customers lower prices and increase its own profits.

### **POSSIBLE RESPONSES**

If today the prospects for inaction are all that dire, and the insurance business and its regulators have come to the rescue of the certainty effect in the past without even knowing the theory, then there really ought to be steps that can be taken to head off this new calamity.

Such steps do indeed exist. But first it is necessary to recognize one more economic characteristic of the present situation: It is a classic externality or harmful side effect, like industrial pollution (Coase, 1960).

Each insurance company with each large claim has an economic incentive to resist paying. The damage to the insurance institution—specifically to the certainty effect—affects the individual company only slightly and only in the indefinite future, whereas the benefit

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<sup>25</sup> One of the authors was an originator of the unfair claims practices laws and a sponsor of the non-cancellation laws, and both authors have studied the earlier episodes extensively.

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from lengthening the period of float and lowering the cost of float is immediate and inures entirely to the one company.

The power of the claims externality should not be underestimated. In the last 50 years, competition has become the norm in insurance. The race for survival and success has become vigorous, even ferocious. Many companies have not survived, and the survivors know it. In such a situation, the ability to save money for oneself while offloading the costs on the community at large is attractive, perhaps irresistible. Consider how hard it was to make progress in workplace safety, consumer protection, and control of industrial pollution—all involving externalities no stronger than those in insurance claims.

Any successful response to the threat of losing the certainty effect will have to deal with the fact of that externality in order to remove the competitive edge from resisting claims. Here are some possibilities.

One approach would be disclosure. As noted earlier in this article, insurers do not willingly open their claims files or disclose their overall claims practices, and they maintain that they handle each claim fairly and on its own merits. What else can they say? The anecdotal evidence, and such statistical studies as there are, point very much the other way.<sup>26</sup> As long as insurers will not disclose data on overall claims practices, individual stories and broad statistical generalizations will be all that are publicly available.

An insurance department in a market conduct examination or a court in a punitive damages trial could require an insurance company to disclose all of its handling of comparable claims over the years. Or an insurance company could voluntarily make the information available, in confidence, to an impartial panel.

The public policy embodied in the unfair claims practices laws was not to push the legislative and executive branches of government into individual disputes, but rather to detect and deter patterns of repeated, deliberate claims abuse. If there is a systematic collection problem with large claims, disclosure would expose it. If there is no such problem, disclosure would show that too. Disclosure and publicity have always been valuable tools of regulation, closely tied to the public's right to know (see McCraw, 1984, pp. 1-56, for Charles Francis Adams's use of information and disclosure to regulate railroads in Massachusetts in the late nineteenth century).

A second approach would be for some insurance company to figure out a way to make dependable, even liberal, claims practices in large commercial insurance a competitive advantage, a product differentiation in what is largely a commodity business. This possibility would be the classic competitive, free-market solution. A few companies have made claims handling a competitive edge in personal insurance, but the claims are much smaller and much more frequent there. Personal policyholders can experience the superior claims performance for themselves.

An insurer's concern for its reputation is not an effective countervailing factor in large commercial claims, for reasons discussed earlier in this article. But it could work the other way around. An insurer that had differentiated its response to large claims would

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<sup>26</sup> For RAND's statistical studies of pollution and asbestos liability, see Dixon, 1992 (88 percent of insurer payments went for transaction costs, i.e., coverage disputes); Hensler et al., 2001 (63 percent of the total spent by both insurers and policyholders went for transaction costs).

naturally want to use that superiority in its marketing. It might publish measures of its claims performance, implicitly daring its competitors to do likewise.

Sustainably differentiating claims practices might involve revising policy text. Revisions could resemble an incontestability clause or a change of warranties into representations.<sup>27</sup> But they would have to make commitments other insurers could not bear and would not copy. Differentiation might come from a new use of option theory.<sup>28</sup> It might come from large policyholders, drafting the text and inviting insurers, or other capital providers, to bid on it.

A third approach would also be a free-market solution: securitization. This approach—called a liability derivative—has been used with reinsurance of property catastrophes. The investor buys a bond that is wholly or partly forgiven if a designated proxy for catastrophes such as hurricanes does in fact occur. As with all derivatives, its worth depends on having as little basis risk and counterparty risk as possible.

Today's claims-reliability problem centers on general liability insurance, particularly at the excess levels, and getting a good fit and reliable collection for those risks would be much more difficult than with property catastrophes. Securitization would require a proxy for the risk, a quick and fair coverage-determination process, or a willingness to follow the settlements of the primary insurer.

A fourth approach would be to motivate insurance brokers and client corporations to pay more attention to performance at the point of claim. After the recent consolidations in the brokerage world, the dominant brokers are very large and sophisticated organizations. They have great market leverage and know a lot about insurer claims practices. At the moment, they lack an incentive to use that knowledge and power to improve these practices. One way to refocus the brokers' attention from the point of sale to the point of claim would be to tighten their liability for selecting an insurer that willfully refused to pay claims.

As for the client corporations, the main problem seems to be an unawareness of the claims-reliability situation high enough up in the corporation, that is, at the CEO and board of directors level. As long as insurance is handled exclusively by midlevel managers and is seen as a purchasing, legal, or financial matter, the corporations are just asking for trouble at the point of claim.

One way to get the attention of the senior management of policyholders would be for the Securities and Exchange Commission, the accounting profession, or an influential insurance department to look into and appropriately regulate situations in which the policyholder and the insurance company are taking inconsistent views of a large claim, with each taking the view that increases its earnings and worth. The clearest exam-

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<sup>27</sup> At English common law, the policyholder's breach of a warranty made the policy voidable by the insurer, even if the breach was not related to either the risk or the loss. It was a forfeiture. A representation, however, voided coverage only if the breach was material to the risk or the loss (Park, 1789, pp. 194-249). In the late nineteenth and early twentieth centuries, courts and legislatures laid down rules that converted many warranties into representations (Keeton, 1970). Some of today's defenses against coverage—fraud, concealment, late notice, failure to cooperate—operate as forfeitures.

<sup>28</sup> The authors are grateful to Peter L. Bernstein for this suggestion. One such application, in the credit area, is "default swaps" (see "Is There Money in Misfortune," 1998).

ple is when the policyholder sets up an insurance recoverable as an asset on its balance sheet, while the insurer sets up no reserve liability or only a nominal one on its books.

All four of these possibilities have in common raising the standard for all insurance companies, either directly by law or indirectly by competition. No one company could gain an advantage by being less reliable so as to have both lower prices and higher profits. Raising standards is a common competitive and public-policy response to quality problems and harmful externalities in important industries.<sup>29</sup> Many more approaches than the four suggested here may exist.

All four of the possibilities sound idealistic and unreal, unlikely to occur, and far from certain to succeed. But the biggest failing of any remedy now is the lack of desire of any participant in the insurance transaction—insurers, brokers, policyholders, regulators, lawyers, courts, or commentators—to consider it, to do anything about the certainty problem other than deal with individual claims. But if nothing prevents the loss of the certainty effect, it will indeed be lost, with unfortunate consequences for insurers and the corporate clients that stick with them.

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<sup>29</sup> Examples of more reliable products, services, and conduct being established by law are airline, highway, pharmaceutical, and food safety. Examples of its being done by competition are more numerous, but would include electric starters replacing hand cranks in cars, transistors replacing vacuum tubes in radios and TVs, and title insurance replacing legal opinions in land transfers.

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