

INSURING AGAINST NATURAL DISASTERS:

POSSIBILITIES FOR MARKET-BASED REFORM

Catherine England
&
Jeffrey R. Yousey

INTRODUCTION

In the last ten years, the United States has experienced an unprecedented number of destructive and costly natural disasters. The incidence of these destructive events has increased both in frequency and severity. During the last decade, there have been eight disasters with resulting damages of over a billion dollars and insured losses from catastrophic events between 1989 to 1995 totaled \$75 billion.¹ During the 1995 and 1996 hurricane seasons (June 1 to November 30), there were a total of thirty-two “named” storms² in the Atlantic and Gulf of Mexico, including twenty hurricanes, eleven of which were major hurricanes with sustained wind speeds of over 110 miles per hour.³ Despite the fact that two hurricanes (Erin and Opal) struck the U.S. mainland in 1995, insurers and property owners along the Atlantic and Gulf coasts considered themselves lucky. Things could have been much worse given the number and size of storms that occurred during that year. The 1996 storm season saw its own share of powerful storms. The most destructive of these was Hurricane Fran, which battered the Carolinas and brought flooding and torrential rain to a number of states.⁴ The 1997 season, by contrast, proved

The extremely high costs associated with recent disasters have naturally attracted the attention of policy-makers.

¹ Sara Borden and Asani Sarkar, “Securitizing Property Catastrophe Risk,” *Current Issues in Economics and Finance*. Federal Reserve Bank of New York, August 1996, Volume 2, Number 9, p. 1

² Tropical storms and hurricanes are named by the meteorologists that track them. Each year, the meteorologists begin again with the letter “A” and move through the alphabet. Thus, Hurricane Andrew in 1992 was the first storm that year. The second storm is given a name beginning with “B,” the third a name beginning with “C,” and so on. In 1995, the final storm of the season was Hurricane Roxanne.

³ Testimony of Professor William M. Gray before the Housing and Community Opportunity Subcommittee of the House Banking and Financial Services Committee, June 24, 1997.

⁴ “Catastrophes in 1996 Cost Insurance Firms Total of \$7.35 billion.” *The Wall Street Journal*. January 15, 1997 p. A4. According to this article, the \$7.35 billion loss figure was the third lowest since 1989.

to be a rather light one. Thanks to the mitigating effects of the El Niño phenomenon, only one hurricane struck the U.S. in 1997.⁵

The extremely high costs associated with recent disasters have naturally attracted the attention of policymakers at both the state and federal levels. Prior to the events of recent years, the overall risk posed by natural disasters had been seriously underestimated. Two events in particular, the Northridge earthquake in 1994 and Hurricane Andrew in 1992, invited a fundamental reevaluation of how to deal with catastrophic events. Consider, for example, that in the twenty-five years leading up to the 1994 Northridge, California earthquake, insurance companies collected about \$4 billion in premiums for earthquake coverage in California. As of August 1995, insurance claims associated with the Northridge quake had totaled more than \$12 billion.⁶

The unprecedented losses from these disasters have served as wake-up calls to the industry.

The Florida market was similarly jolted when Hurricane Andrew struck the southern part of that state in August 1992. Before Hurricane Andrew, experts had estimated that the worst windstorm damage would result in losses of no more than \$8 billion. Instead, losses from Hurricane Andrew cost nearly \$16 billion, twice the previous “worst-case” estimate.⁷ And as bad as that was, it could have been much worse. Had Hurricane Andrew tracked only twenty miles further north, it would have torn through downtown Miami. Losses in that case could have been as high as \$50 billion.⁸ One insurer, Allstate, paid out more in homeowners claims arising from Hurricane Andrew than it had earned in profits from the Florida homeowners market in more than fifty years of doing business there.⁹

The unprecedented losses from these disasters (and the fear of still higher losses from future catastrophes) have served as wake-up calls to the industry, and they have led many insurance companies to attempt to reduce their exposure to catastrophic events in states viewed as “disaster prone.” Consequently, it has become difficult for some property owners to purchase insurance in states such as California and Florida as insurers have limited the total number of policies they will write, and the supply of insurance has dwindled.

⁵ Ruth Gastel, ed., “Catastrophes.” *III Insurance Issues Update*. Insurance Information Institute, March, 1998.

⁶ Statement by Jack Weber before the Water Resources and Environment Subcommittee of the House Transportation and Infrastructure Committee, October 17, 1995.

⁷ Ruth Gastel ed., “Catastrophes: Insurance Issues.” *Insurance Information Institute Reports*. Insurance Information Institute, November, 1996.

⁸ Phillip R. O’Connor, Ph. D., John Domagalski, and JoAnn L. Walters, *Rate Regulation: The Eye of Florida’s Insurance Storm*. Coopers & Lybrand Consulting, February, 1996; p. 36 This is a frequently cited statistic which this study originally attributes to Florida Insurance Commissioner Bill Nelson at the NAIC national meeting in San Antonio, TX. December 13, 1995. Reported in *PRNewswire*, Tallahassee, FL. December 13, 1995.

⁹ Martin Giles, “Insurance,” *Economist Survey*, December 3, 1994, p. Survey 5.

The rising costs of natural disasters have also increased the cost of federal disaster relief efforts. Table 1 indicates the total expenditures arising from supplemental spending bills passed by Congress from 1988 to 1994 to provide disaster relief after earthquakes, floods, or hurricanes have occurred. These “emergency” expenditures are not accounted for as part of the normal budgeting process. Instead, these appropriations represent additional “off-budget” spending that is not counted when calculating the federal deficit or surplus. The impact of natural disasters on federal coffers has helped to reinforce the belief that the current public policy approach to dealing with disasters is in need of serious reform.

**TABLE 1
FEDERAL ASSISTANCE FOR NATURAL DISASTERS**

Year	Amount (\$ Billions)	Application
1988	\$3.90	Midwest farmers for wind, hail, tornado, and flood losses
1989	3.95	Hurricane Hugo & Loma Prieta earthquake victims
1990	—	No separate funds allocated
1991	2.74	Victims of several smaller disasters across the country
1992	8.00	Hurricanes Andrew and Iniki and Typhoon Omar victims
1993	5.70	Midwest floods and other disasters
1994	9.60	Northridge earthquake, Midwest floods, and Loma Prieta earthquake victims

Source: Insurance Services Office, *Catastrophes: Insurance Issues Surrounding the Northridge Earthquake and Other Natural Disasters*, December 1994, p. 9.

Given this serious state of affairs, what, if anything, should be done to reform the ways in which the industry and government address the risks and costs associated with natural disasters? With some insurers facing insolvency following serious recent disasters, and with other insurers limiting the coverage they offer in particularly high-risk regions, concern has grown that the private insurance industry may not be up to the task of dealing with the most destructive catastrophic events. How can the market meet the extraordinary financial demands incurred by these costly disasters? Proponents of recent federal legislation have argued that greater governmental involvement is a necessary response to addressing rising disaster-related expenditures and a tightening private insurance market. They argue that the scope of the problem and the sheer cost of these disasters demands the attention and intervention of the federal government in assisting those markets most at risk from natural disasters.

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strophic risks.*

Recent legislative proposals have had shortcomings, however, and they do not necessarily present the best answers to the challenge of dealing with natural disasters. The 105th Congress has seen two major proposals to deal with the issue of insurance for natural disasters; H.R. 219 and H.R. 230.¹⁰ Both of these proposals would create a significantly greater role for the federal government in reinsuring catastrophic risks.

H.R. 219, in its current form, would provide reinsurance to states through reinsuring state disaster programs. It would also allow for some direct auctioning of reinsurance coverage to private insurers and reinsurers as well as state disaster programs.¹¹ The basic coverage provision of H.R. 230, would provide for a federally-run auction of reinsurance contracts that could be purchased by both state programs and private insurers. Both pieces of legislation would, to some degree, transfer risk from policyholders in disaster-prone areas to the treasury and thus to taxpayers in other parts of the country. As a result, both bills, if enacted, would run the risk of creating cross-subsidies between different parts of the country.

A serious concern with H.R. 219 is that it would require the federal government to directly underwrite state insurance programs, and could as a result lead to the underpricing of reinsurance coverage. If the premiums paid by the states cannot fully pay for the reinsurance fund that would be created, federal taxpayers would be required to make up the difference. The House Banking and Financial Services Committee is currently considering a version of H.R. 219, and this legislation has received a good deal more attention during the 105th Congress.

H.R. 230 would create an auction process to sell federal reinsurance coverage. While this would probably be less-subject to deliberate underpricing of coverage, there is still some concern that the program proposed in this legislation could still impose significant costs on the federal government and

¹⁰ The primary sponsor of H.R. 219 is Rep. Rick Lazio (R-NY). The primary sponsor of H.R. 230 is Rep. Bill McCollum (R-FL). In the 105th Congress H.R. 219 has received the bulk of the attention at the subcommittee and committee level.

¹¹ This description of the provisions of H.R. 219 refers to a recent draft by the House Banking and Financial Services Committee dated May 20, 1998.

the taxpayer.¹² A more in-depth discussion of these pieces of legislation will have to be reserved for a subsequent study. This paper will describe a more market-based approach that would better serve the interests of taxpayers, property owners, and the insurance industry.

This Paper Will Address the Following Issues:

- o First, the paper will briefly evaluate the current state of the market for disaster insurance as well as the regulation of that market. Current problems will be clearly identified. Why are the costs associated with natural disasters rising? Why are insurers reducing the amount of coverage they are willing to sell? What factors contributed to the current shortages in the supply of insurance? And, what barriers currently prevent the private insurance market from expanding to address these problems?
- o Second, market-based policy reforms will be considered. The paper will identify several reforms that could improve the homeowners insurance markets in disaster prone states. These include the deregulation of premium rate-setting, amending of federal tax policy toward insurer reserves, and tying disaster relief to the ownership of insurance coverage. The analysis will focus on how these market-based solutions would respond directly to the problems and difficulties that exist within the current market for insurance for natural disasters.

IDENTIFYING THE PROBLEMS

Rising disaster costs and a contracting supply of insurance have caused understandable concern among property owners, policymakers, and insurance company executives. Understanding the factors behind these trends is the first step toward identifying a solution.

¹² In their cost estimate of H.R. 230, the Congressional Budget Office stated the following: “Although the impact of H.R. 230 on the federal budget cannot be quantified, we believe that enacting this bill would likely result in a net increase in direct spending by the government for the following reasons: (1) at least some payouts on the contracts are likely to occur, (2) the price of the XOL contracts is more likely to be too low than too high, and (3) other federal payments for disaster assistance would not be reduced significantly as a result of enacting H.R. 230.” See “H.R. 230: Natural Disaster Protection and Insurance Act of 1997: As Introduced on January 7, 1997.” *Congressional Budget Office Cost Estimate*. Congressional Budget Office. October 8, 1997. This cost estimate is available on the Congressional Budget Office web page, <http://www.cbo.gov>.

Rising Disaster Costs

The rising costs associated with natural disasters in recent years have led many to believe that the problem of insuring these disasters is becoming too much for the existing system of privately provided, state-regulated insurance to handle. To evaluate the validity of this assertion we must first understand how and why the costs associated with natural disasters have been growing, and why insurers have had difficulty in meeting these costs.

One reason behind the increasing costs of natural disasters is demographic change. Over the past 50 years, U.S. coastal areas have become much more densely populated. Today, more than 70 million people (more than one-quarter of the entire U.S. population) live within 50 miles of the U.S. coastline.¹³ As the population in coastal areas has increased, property values have risen as well, significantly increasing the total monetary value of property threatened by hurricanes and other severe storms. The market value of insured properties in these areas now exceeds \$2 trillion.¹⁴ The value of insured residential property along the Gulf and Atlantic coasts increased by 166 percent from 1988 to 1993 alone, while commercial property values in the region rose by 193 percent over the same period.¹⁵ When disaster does strike, the increased population density and higher property values in coastal regions inevitably mean higher repair and replacement costs as well. As noted in a study of the Florida market, “A hurricane in a small coastal area which may have caused \$100 million in damages a decade ago could cause many times that amount of damages today because of increased population density, development and cost inflation.”¹⁶

The fact that hurricanes and earthquakes appear to occur in waves also contributes to concerns about the ability of the private sector to deal with the costs of future natural disasters. Seismic activity along the West Coast has increased in frequency and intensity over the past twenty years.¹⁷ Experts fear that the 1989 and 1994 California earthquakes may be the forerunners of an even more powerful quake in the not-too-distant future. Estimates of total expected costs from a San Francisco area earthquake of 7.5 or more on the

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¹³ John F. Donahue, “Insurers Need Help with Catastrophic Losses,” *Best’s Review, Property/Casualty Edition*, January 1996, p. 58.

¹⁴ *Ibid.*, p. 58.

¹⁵ Insurance Research Council study cited in Ruth Gastel ed., “Catastrophes: Insurance Issues.” *Insurance Information Institute Reports*. Insurance Information Institute, November, 1996.

¹⁶ Academic Task Force on Hurricane Catastrophe Insurance, “Restoring Florida’s Paradise: Final Report,” The Collins Center for Public Policy. Tallahassee, Florida. September 30, 1995, p. 34.

¹⁷ Insurance Services Office, *Catastrophes: Insurance Issues Surrounding the Northridge Earthquake and Other Natural Disasters*, (New York: ISO, Inc., December 1994), p. 25.

Richter scale range from \$15 billion to \$135 billion.¹⁸ For the Los Angeles area, a similar earthquake could potentially result in total costs of between \$50 billion and \$145 billion.¹⁹

A parallel increase in hurricane activity in recent years has led to similar worries about expected future costs associated with these storms. As is the case with earthquakes, hurricanes also appear to occur in waves of greater or lesser frequency.²⁰ Consider the following: Between 1947 and 1969, seventeen category 3 hurricanes hit the east coast of the U.S. Between 1970 and 1991, only ten such hurricanes made landfall along the coast. Many experts believe that the latter period was the relatively quiet period of the cycle. These experts warn that we may be entering a new phase of increasing incidence of hurricanes.²¹ Scientists have determined that these “waves” seem to be related to cyclical climactic conditions including factors such as rainfall in West Africa, the speed of prevailing Atlantic currents, ocean temperatures, and the El Niño phenomenon.²²

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Part of the increase in costs associated with natural disasters is less “real,” however. Inflation has also played a role in the rising costs of hurricanes and earthquakes. Proponents of federal reform have often noted that the first “billion dollar disaster” did not occur until 1989, and that there have been seven such disasters since then. However, these numbers do not tell the whole story. Table 2 lists, in 1994 dollars, the largest insured catastrophic losses in the United States between 1950 and 1994. The costs associated with earlier disasters such as Hurricane Betsy (1965), Hurricane Carol (1979), Hurricane Hazel (1974), the Northeast Winter Storm of 1950, and Hurricane Cecelia (1970) did not top the billion dollar mark at the time that they occurred, but taking inflation into account, the costs of each of these disasters easily exceeded the billion dollar mark. Just as inflation increases the cost of groceries and other goods, it likewise contributes to the rising cost of disasters.

¹⁸ Insured losses would range from \$5 billion to \$45 billion given current coverage levels. *Ibid.*, p. 28. “Insured losses” refer to policyholders’ losses that are covered by insurance. Total losses are generally much higher than insured losses because of deductibles and coinsurance.

¹⁹ Insured losses would account for \$20 billion to \$60 billion. Insurance Services Office, p. 28.

²⁰ Ruth Gastel ed., “Catastrophes: Insurance Issues.” *Insurance Information Institute Reports*. Insurance Information Institute, November, 1996.

²¹ *Ibid.*

²² *Ibid.*

TABLE 2
LARGEST INSURED NATURAL DISASTERS IN THE UNITED STATES
1950 - 1994

Rank	Year	Catastrophe	Insured Losses (\$ billions)*
1	1992	Hurricane Andrew	\$18.4
2	1994	Northridge Earthquake	12.5
3	1950	Northeast Winter Storm	11.8
4	1954	Hurricane Carol	6.8
5	1989	Hurricane Hugo	6.3
6	1954	Hurricane Hazel	5.2
7	1965	Hurricane Betsy	4.6
8	1970	Hurricane Cecelia	3.0
9	1960	Hurricane Donna	2.5
10	1991	California Fires	2.3

* In 1994 dollars, adjusted for Regional Residential House Price Inflation based on Property Claims Services data adjusted for the change in the value of urban and rural owner-occupied buildings in each state using the U.S. Census of Housing Series HC80-1-A

Chart presented by the Technical Advisors in a Report to the NAIC Catastrophe Reserve Subgroup on Resolution of Issues Regarding the Development of Reserve Design Characteristics.

Referenced Source: J. David Cummins, Christopher M. Lewis, and Richard Phillips, "Pricing Excess-of-Loss Reinsurance Contracts against Catastrophic Loss," in ed. Kenneth Froot, *The Financing of Property Casualty Risks*. National Bureau of Economic Research, in press.

While Table 2 demonstrates the effects of inflation and population change on our estimation of catastrophic losses, it also confirms the increased frequency of destructive catastrophic events in the last decade. The earliest disaster listed in this "top ten" is the Northeast Winter Storm in 1950. From 1950 until 1989, a "top ten disaster" occurred about once every five years. Four of the "top ten" disasters have taken place since 1989. Since 1989, however, we have experienced eight "billion dollar" events, counting Hurricane Fran in September 1996, the cost of which was approximately \$1.6 billion.²³

This recent increase in the frequency of very costly disasters is a consequence of the two trends discussed above. Increased population density and rising property values in exposed areas mean that any hurricane or earthquake that occurs will result in more costly damages. These developments, coupled with the recent increases in seismic and storm activity, have

²³ Ruth Gastel ed., "Catastrophes: Insurance Issues." *Insurance Information Institute Reports*. Insurance Information Institute, November, 1996.

made “billion dollar disasters” a more frequent occurrence. Indeed, if recent trends continue, it looks as if we might reasonably expect a billion-dollar disaster nearly every year.

The Contracting Supply of Disaster Insurance

By the mid-1990s, property owners, particularly homeowners, in many disaster-prone regions were finding it difficult to obtain insurance covering losses related to earthquakes and windstorms.²⁴ Reflecting their new appreciation of the real potential loss costs, insurers have been writing less insurance in these disaster-prone areas. This lack of primary or direct insurance echoed a similar shortage of reinsurance for such losses.²⁵ Developing effective policy responses requires that we understand the causes of such shortages in private insurance markets (both primary insurance and reinsurance).

By themselves, factors that have been discussed such as inflation, increased population density, and rising property values should not necessarily make it more difficult for private insurance companies to provide disaster coverage. Premiums that rise with inflation are no more or less burdensome than other prices that rise with inflation. Although increased population density and higher property values mean rising repair costs, they also mean that a greater number of policyholders should be paying higher premiums into the pool out of which claims will be paid. Why then do problems persist? Problems arise from both the nature of the insurance business and government policies that serve to inhibit the industry’s ability to expand coverage.

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The Nature of the Business - Capacity Constraints

There is a limit to the amount of insurance a company can have in force at any given time. This limit, known as an insurer’s “capacity,” is determined by the amount of owners’ equity or surplus retained by the insurance company. When an insurer must pay higher-than-expected claims, the excessive losses are paid from the equity (or surplus) that insurance company owners have invested and retained in the company. As a consequence, both prudent management practices and regulation base the number and size of policies that an insurance company can write on the amount of its owners’

²⁴ “Difficulty in obtaining insurance coverage” in this case describes situations in which premiums and/or deductibles have risen, as well as cases where there are fewer insurers writing less total insurance.

²⁵ “Reinsurance” is basically insurance for insurers. When an insurance company accepts certain liabilities by selling policies, it often seeks to buy its own insurance. That is, the insurer transfers a portion of its own risks in the reinsurance market, against the possibility that losses will be larger than anticipated.

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surplus retained by the company. Unexpectedly large losses often reduce an insurance company's underwriting capacity in the short term because paying these claims requires the insurer to pay out part of its surplus. If losses are large enough, insurers may find themselves unable to maintain existing coverage, much less offer new or expanded policies.²⁶ Unfortunately, this reduction in capacity often occurs just when policyholders are clamoring for more coverage.²⁷

The reinsurance industry faced just such a problem in 1993 and 1994. In 1992, the insurance industry paid out nearly \$23 billion in claims associated with catastrophic events.²⁸ Hurricane Andrew in Florida, Hurricane Iniki in Hawaii, and the Los Angeles riots, as well as floods in Chicago and across much of the Midwest, all took place in 1992. A significant portion of these catastrophic claims flowed through to reinsurers, incurring significant costs and consequent reductions in the surplus, and hence the capacity, of many reinsurance companies. Faced with substantial losses, some investors withdrew from the reinsurance market. Adding further to the reinsurance shortage was rising demand for reinsurance following the disasters in 1992.

Both primary insurance and reinsurance companies rebuild capacity, first, by retaining in the company a larger portion of their after-tax earnings. Insurers that are owned by stockholders (as opposed to mutual companies owned by their policyholders) may also issue new stock.²⁹ Newly formed insurance companies, unburdened by losses from past disasters, may also be a source of new industry capacity.

The reinsurance industry was particularly successful in rebuilding capacity after 1992's multiple catastrophes. In fact, by late 1995, observers were even talking about excess reinsurance capacity for many insurance

²⁶ This phenomenon may contribute to a phenomenon known as the "insurance cycle." A particularly costly event is followed by high premiums which eventually give way to lower premiums as the financial condition of the industry stabilizes. See O'Connor, Domagalski, and Walters, pp. 88-89. In that study the authors demonstrate that attempting to control the cycle through rate suppression will usually backfire and extend the period during which insurance is in short supply.

²⁷ For a more detailed discussion of insurer capacity, see Catherine England, "The Business and Regulation of Insurance: A Primer." Competitive Enterprise Institute, Insurance Reform Project. March, 1996, pp. 43-45.

²⁸ According to the Insurance Information Institute, the insurance industry considers an event (or series of related events) a "catastrophe" if it results in insured property losses in excess of \$5 million. See *The Insurance Information Institute's Handbook for Reporters*. Insurance Information Institute, 1993. p. 19. Figure of \$23 billion taken from *The Fact Book: 1997 Property/Casualty Insurance Facts*. The Insurance Information Institute, 1996. p. 83.

²⁹ Of course, insurance company stock may not command a particularly high price in the wake of a disaster imposing large insurer losses and leading to reduced dividend payments.

markets in many parts of the United States.³⁰ A significant factor in this development was the substantial growth of Bermuda as an important market for reinsurance. Eight new catastrophe reinsurers were formed there in 1994 alone, and Bermuda now supplies 32 percent of worldwide reinsurance capacity.³¹ Furthermore, other financial service providers, including investment banks, and commercial banks, are considering ways to contribute to reinsurance capacity.³²

Reinsurance capacity has risen so dramatically, that the cost of reinsurance is on a steady downward trend.³³ Reinsurers have even taken to promoting new coverage packages such as long-term reinsurance contracts in an effort to attract and maintain customers. Under such contracts, primary insurers would purchase coverage packages that would last up to five years, locking in that coverage at current rates.³⁴

There are two important lessons to be learned from the story of the reinsurance industry's unexpectedly quick rebound in terms of overall capacity. First, the insurance market is dynamic. Supply shortages do not last for long if insurers and potential insurers can charge premiums commensurate with the risk they are assuming. Consequently, policymakers interested in helping to reduce insurance shortfalls in the wake of future disasters should be creating a legal and regulatory environment today that is conducive to growth in insurance industry capacity. That brings us to a discussion of regulatory practices that limit the supply of insurance.

Rate Regulation

A significant impediment to the industry's raising of additional capital has been the regulation of premium rates. Well-functioning markets require that buyers and sellers be able to respond to new information, and recent disasters have certainly provided additional information about the potential losses associated with earthquakes and hurricanes. When rates are allowed to adjust in light of new information about potential insurance costs, the supply of insurance will generally adjust relatively quickly as well. Unfortunately, in

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³⁰ See, e.g., Judy Greenwald, "Reinsurance Buyer's Market," *Business Insurance*, October 23, 1995, p. 3.

³¹ Reinsurance Association of America, *Reinsurance Market Responses to U.S. Natural Disaster Threats*, Washington: Reinsurance Association of America, 1995, tab 1, p. 2.

³² See Douglas McLeod, "Capital Market to Increase," *Business Insurance*, October 30, 1995, p. 3. Some of these alternative sources of insurance capital will be discussed below in the section on market solutions.

³³ Lisa S. Howard, "Even Cat Won't Hike Rates, Reinsurers Say," *National Underwriter, Property & Casualty/ Risk & Benefits Management Edition*. October 6, 1997. pp. 6, 18

³⁴ *Ibid.*, p. 18

many states the regulatory environment slows the insurance market's adjustments rather than facilitating them.

State insurance commissioners, who are either elected directly or appointed by an elected official, do not operate in a political vacuum. Indeed, the state insurance commissioner often faces a political balancing act. On the one hand, consumers would prefer to see the state regulator err on the side of lower premiums. Regardless of how well justified high disaster premiums are, insurance commissioners will find themselves hard-pressed to justify these high premiums during years when no disasters strike - especially when a political opponent offers to force down property insurance rates. If the insurance commissioner is beholden to the voters, what voter (consumer) will push for higher insurance rates, even if they might be appropriate? Premiums set, in effect, by public opinion, will always shade to the low side.

On the other hand, insurance company failures can impose significant costs on state governments.³⁵ When an insurance company does fail, it is the insurance commissioner who must answer to the governor and state legislators about his or her failure to ensure that the company was charging adequate premiums. Thus insurance commissioners are pressured on one side by consumers seeking lower, more affordable premiums, and on the other side by insurance company representatives arguing that their firms' financial stability depends on higher premiums.

When the public sector exercises control over insurance premiums, political give-and-take may have more to do with the premiums policyholders pay than the costs of offering insurance. At times in the past, both consumers and insurers have capitalized on their political power to the detriment of the other group.³⁶

Consumer groups hold sway when they are able to force premiums below costs, imposing chronic losses on insurance companies for certain lines

If the insurance commissioner is beholden to the voters, what voter (consumer) will push for higher insurance rates, even if they might be appropriate?

³⁵ In the event that a company is rendered insolvent, those insurance companies that remain in the market are required to cover insured losses to policyholders and creditors of the failed company through contributions to the state's guaranty fund. These contributions are frequently offset by deductions in the state premium taxes the insurers owe. For a more complete discussion of guaranty funds, see England. pp. 53-57.

³⁶ In one case, with California's Proposition 103, insurance rates were actually rolled back by the authority of a state ballot initiative. This measure, approved by California voters in 1988, required that insurers roll back rates by at least 20% from what they had been on November 8, 1987. The provisions of this measure applied to essentially all property/casualty lines, but particularly relevant to this paper, it applied to premium rates for fire and homeowners policies as well as earthquake insurance. The rollback provision was later softened by the California Supreme Court to allow for companies to obtain a "fair rate of return." Nevertheless Proposition 103 remains a vivid demonstration of the serious problems associated with the politicization of insurance premium rate setting. Information on Proposition 103 obtained from the California Department of Insurance Web site, (<http://www.insurance.ca.gov>).

of insurance. The costs of holding premiums below costs are most easily seen in the wake of a disaster. With inadequate premiums, insurers have less capital and surplus with which to cover catastrophic losses. This lack of capital and surplus can lead to failures. Eleven Florida insurance companies failed as a direct result of losses associated with Hurricane Andrew. These failures reduced the industry's capacity and, hence, the availability of homeowners insurance for Florida residents.

But eleven insurers do not have to fail for inadequate premiums to take their toll on the insurance industry. By making it more difficult for insurers to conduct business profitably, rate regulation can discourage expansion of the market. When new providers avoid a particular market, policyholders and potential policyholders are denied the benefits of increased competition, including both downward pressure on premiums and improved service. If rates are held low enough, insurers already in the market will begin to reduce the number and size of the policies they write in markets where costs exceed revenues.³⁷ In the more extreme cases, insurers will exit the market altogether. The exit process may take some time, but it does occur. Thus, regulatory restrictions on insurers' ability to raise premiums to reflect higher expected costs are an important contributing factor to the reduced availability of homeowners insurance in markets like California and Florida.

Consumers are not the only source of political pressure facing insurance commissioners. Insurance executives have, at times, lobbied for minimum rate regulation. Advocates of minimum rate regulation argue that, left to themselves, some insurance companies will price below costs. This below-cost pricing might be unintentional if the low-cost insurers fail to appreciate the full exposure facing their company. Or it might be intentional if the insurer is aggressively attempting to expand its market share and hopes to make up the difference between expected claims costs and premiums through investment earnings. If some insurers lower their premiums, for whatever reason, other providers may feel that they are forced to follow suit if they want to maintain their market share.³⁸

Some observers have thus argued that it was insurers' overeagerness to sell in the rapidly growing, but high-risk, homeowners markets in California and Florida that led to insufficient premiums and the financial losses that

By making it more difficult for insurers to conduct business profitably, rate regulation can discourage expansion of the market.

³⁷ Large multi-state insurers cannot simply make up for their Florida-based Hurricane Andrew losses by charging higher premiums in Iowa, for example, because they face competition in Iowa from insurers not involved in the Florida market. Policyholders in Iowa can be affected by below-market rates in Florida, however, if the financial strength of a multi-state insurer operating in both states is thereby undermined.

³⁸ Of course, in the absence of rate regulation, an insurer could refuse to follow a competitor's rate reduction if the insurer felt the risk represented by the proposed policy was too great to take at a lower premium.

Insurance companies should not be relieved of the consequences of their own risk management decisions.

occurred in recent years.³⁹ Indeed, it has been remarked that Florida and California became “dysfunctional markets” in part because a few insurers unwisely pursued increasing market shares which have proven to be “unsustainable.”⁴⁰ With some companies advocating greater federal involvement in the insurance markets, those companies are, in a sense, asking to be bailed out of a situation that they helped to create.⁴¹ Insurance companies should not, however, be relieved of the consequences of their own risk management decisions. If indeed they made unwise business decisions, then they should have to face the full ramifications of those decisions.

The insurance commissioner’s problems do not end with balancing the political pressures brought by consumer groups and insurance company executives, however. If the underestimation of risks prior to recent disasters demonstrates anything, it is that disaster costs are very difficult to estimate, even for the experts in the field. In those states that regulate premiums for homeowners insurance, the insurance commissioner assumes responsibility for disallowing rates that are either “excessive” or “inadequate.” But evaluating the adequacy of premiums can be a difficult task when the insured-against events are infrequent, unpredictable, but potentially very costly occurrences like natural disasters. Accurate information is the key to accurate risk assessment. The problem is, quite simply, that the most serious catastrophic events do not follow predictable and regular patterns. It is difficult to estimate future disaster costs in a reliable fashion for such rare events.⁴²

Scientists and actuaries who develop models of expected disaster losses must attempt to answer three separate questions: (1) How often on average will disasters strike a given area, and how serious will they be? (2) Given a disaster of a particular magnitude, what are total losses expected to be? This assessment will depend on things like the ages of the buildings, local building codes, population density, and the weather conditions before and after the disaster. (3) Finally, given insurance company policies regarding deductibles and coinsurance, what part of total losses will be “insured losses”?

³⁹ Joseph B. Treaster, “Study Faults Home Insurers for Big Losses from Disasters.” *The New York Times* November 29, 1996, p. D1

⁴⁰ John Covaleski. “Mitigating Catastrophe Losses.” *Best’s Review, Property/Casualty Edition*. December 1995, pp. 45-46.

⁴¹ Joseph B. Treaster, “Study Faults Home Insurers for Big Losses from Disasters.” *The New York Times* November 29, 1996, p. D14

⁴²The disasters of recent years are an important case in point. Prior to these disasters, some insurers failed to fully appreciate the potential liabilities they faced in hazardous regions, and underestimated potential loss costs. These insurers, and the regulators as well, may have been lulled into a false sense of security by relatively quiet periods of hurricane and earthquake activity in the 1970s and early 1980s. Not only were there fewer disasters during this period, there was also significant population growth in disaster-prone areas, increasing the concentration of risk. These factors all contributed to the tremendous losses experienced by many insurers following disasters such as Hurricane Andrew and the Northridge earthquake.

Other factors can further complicate insurers' efforts to estimate future disaster losses. The sheer extent of the damage following a disaster can markedly increase reconstruction costs. The cost of rebuilding a single house destroyed by fire is usually significantly lower than the cost of rebuilding the same house when it is one of many destroyed by an earthquake, for example. Increased demand causes prices of building materials and contractors' labor to rise sharply in the wake of widespread damage resulting from a major disaster.⁴³

In short, rate regulation can severely hamper expansion of the supply of disaster insurance if regulators keep rates below the levels necessary to cover expected loss costs. After all, insurers will not suffer losses on policies they do not write. Establishing floors under higher premium rates will encourage additional supply, on the other hand, but will do so while harming policyholders and potential policyholders. Again, the market may fail to develop to its optimal level. In this case, however, demand would be discouraged.⁴⁴ In a subsequent section, we will explain why we believe that open competition creates the environment most likely to provide the optimal level of disaster insurance at prices that covers expected costs without overcharging policyholders.

In short, rate regulation can severely hamper expansion of the supply of disaster insurance if regulators keep rates below the levels necessary to cover expected loss costs.

Barriers to Exit/ Barriers to Entry

In addition to rate regulation, other regulatory policies also contributed to the current shortage in the supply of insurance for natural disasters. The most widespread of these counterproductive regulations were attempts by various states to force insurance companies to offer coverage they would rather not provide.

Before recent reforms, for example, California required all insurers selling homeowners insurance to offer earthquake coverage to their policyholders as well.⁴⁵ This requirement meant that the only way for insurance

⁴³ Although policymakers might be tempted to try to "reduce" disaster costs by limiting the ability of materials suppliers and building contractors to raise their prices, such an effort would be counterproductive. In fact, rising prices are necessary to attract additional materials and skilled labor to the area, thus enabling a quicker rebuilding and recovery. See P. Michael Laub, "Insurance Companies, Banks, and Economic Recovery in South Florida in the Wake of Hurricane Andrew," a study prepared for the Federal Emergency Management Agency under contract to Development Technologies, Inc., Washington, DC, December 6, 1993, pp. 5, 6.

⁴⁴ Premium floors may also protect high-cost insurance providers. When low-cost producer are prevented from expanding their market share by reducing their prices, there is less competitive pressure to remain cost-efficient.
insurance.

⁴⁵ Unlike windstorm coverage that is usually included in standard homeowners policies, earthquake insurance must be purchased separately. As we will discuss below, not all homeowners in earthquake prone regions choose to purchase earthquake insurance.

For an insurance company to be willing to take on a part of large risks, the insurer must also be able to limit its overall exposure.

companies to control their exposure to earthquake-related losses was to limit the amount of homeowners insurance they offered. In the aftermath of the Northridge earthquake, this requirement led some insurers to quit writing homeowners insurance altogether, and California experienced a substantial reduction in the number of insurers providing homeowners coverage.

The policies an insurance company writes can be viewed as its “portfolio” of risks. Just as investors increase their risk of loss when they place all of their money in a single security, insurers incur greater risks, particularly with disaster insurance, when their policies become too concentrated in a specific geographic area. Ideally, the insurance industry provides protection for large risks through having many insurance companies accepting small parts of the overall risk. Unexpectedly large losses are then spread over many companies. Each company limits its own losses by limiting the amount of insurance it provides. For an insurance company to be willing to take on a part of large risks, the insurer must also be able to limit its overall exposure. If insurers cannot limit their exposure to catastrophic risks, and adjust their exposure as new information becomes available, the entire market for property insurance in disaster prone areas may be perceived as too risky.

Florida serves as a case in point. Losses from hurricanes in Florida in the early-to-mid 1990s indicated to many insurers that they were overexposed to the risks represented by the Florida market. Attempts to alter their risk exposure, coupled with capacity constraints arising from unexpectedly high loss costs, caused many insurers to take action to reduce the number of homeowners policies they were writing in Florida, particularly in the coastal counties of the state. Specifically, many insurance companies failed to renew homeowners policies as they expired in 1993.

Homeowners were, needless to say, unhappy, and the state of Florida imposed a “moratorium” on non-renewals of existing policies. Insurers could not deny renewal to more than five percent of their policies statewide or more than ten percent in any single county. Such policies may help to maintain the short-term supply of insurance. But as a Coopers & Lybrand study noted, exit restrictions in the long run will ultimately reduce the amount of insurance available to residents of Florida. Barriers to exit like the Florida moratorium discourage both new entry into the market and expansion by existing insurers.⁴⁶ Insurers will naturally hesitate before entering a market if they cannot reduce their exposures as new information becomes available or the financial status of the company changes. By limiting exit and reducing insurers’ controls over their loss exposures, moratoria like Florida’s increase the risk associated with insurers’ decisions to offer insurance in the state.

⁴⁶ See O’Connor, Domagalski, and Walters, pp. 26, 49

Insurers can be expected to react to an increase in risk by offering less insurance, all else being equal.⁴⁷

There is, in fact, evidence that Florida's exit restrictions and rate regulations have taken their toll. Nationwide Insurance, the country's fifth largest insurer of homes, significantly reduced its exposure all along the eastern seaboard and Gulf of Mexico.⁴⁸ In addition, Allstate took steps to isolate its Florida homeowners business in a separate subsidiary. Normally, one would expect insurers to avoid concentrating their geographic risks. But, in this case, Allstate seems to be primarily interested in protecting the rest of the company from the potential liabilities arising from the homeowners policies the company is writing in Florida.⁴⁹

A 1997 legislative proposal in Florida, supported by Bill Nelson the state's insurance commissioner, would have required insurers offering other lines of coverage in Florida to also offer homeowners insurance. This proposal fortunately met with little success. Although the purpose of such a law would be to increase the availability of homeowners insurance, it would more likely have the opposite effect. By further reducing insurers' ability to manage the risks they accept, such a measure would not only fail to improve the homeowners insurance market, it might also have a negative impact on the auto and health insurance markets, extending the barriers to entry into those markets as well.

Another barrier to entry is the use of residual market mechanisms. In the case of the Florida market, two such programs were established, the Florida Residential Property and Casualty Joint Underwriting Association (JUA), and the Windstorm JUA. These programs are "residual market" insurance providers established by the state and designed to provide coverage for homeowners that were unable to secure coverage from any other private insurer.⁵⁰ The JUA is essentially a huge state-run insurer that was supposed to pick up the slack caused by private insurers cutting back on the amount of coverage they were willing to write. Although the JUA was required by law to offer coverage at a higher price than could be obtained from other insurers,

Barriers to exit like the Florida moratorium discourage both new entry into the market and expansion by existing insurers.

⁴⁷ Ibid., pp. 54-55. One of the things that may or may not remain equal are the premiums charged by insurance companies. At a high enough premium, insurers will undertake just about any risk, but in many cases, exit restrictions have been accompanied by limits on insurers' ability to raise premiums to offset the increased risk.

⁴⁸ Joseph B. Treaster, "Insurer Plans to Curb Sales Along Coasts." *The New York Times*. October 10, 1996, p. D1. In this retrenchment plan, Nationwide is heavily curtailing sales all along the coasts, and will essentially halt new sales in Florida.

⁴⁹ Stephanie Strom, "Allstate Seeks Shelter from Florida's Disasters." *The New York Times*. June 5, 1996, p. D4.

⁵⁰ As the name implies, a "residual market mechanism" is a program designed to provide insurance to individuals who might otherwise be considered uninsurable due to their risk profile and thus cannot be accommodated in the private market. Collectively, these risks thus represent a "residual market."

In the end, attempts to coerce insurers into remaining overexposed in markets where they cannot operate profitably will only cause continued reductions in the supply of insurance.

this mandate was apparently ignored. As a matter of fact, coverage through the JUA was an attractive option, because such coverage was often more comprehensive and available at a lower price than private market coverage. Private insurers were thus crowded out of the market, and new entry into the market was likewise discouraged. The JUA became so popular that, by October of 1996, it had become the second-largest insurer in the state of Florida with a portfolio of 936,000 policies.⁵¹ The Windstorm JUA had an additional 200,000 policies in force.⁵² The JUA's obligations grew to such an extent it would not have been able to cover all of its losses if a major hurricane had struck.

A major study of the Florida Disaster insurance market recommended that the Residential JUA be phased out entirely by the end of 1997, and the Windstorm JUA be reduced to half its size by the end of 1998.⁵³ To head off impending disaster if a hurricane did strike, and perhaps realizing that the pricing and design of the JUA had indeed proven to be a disincentive to market entry, the state of Florida has taken steps to divest the JUA of its current policies and minimize the JUA's role in the homeowners insurance market.

While the Residential JUA will likely survive through 1998, Florida has taken steps to decrease the size and impact of this residual market insurer. The Residential JUA is slowly being phased out, with current policies being transferred to private insurers, some of whom have been enticed into entering the market for the first time. In addition, the JUA's premium rates have been adjusted so that currently they are now higher than rates found in the private market.⁵⁴

The Florida moratorium, and the distortions in the market created by the JUA, coupled with its onerous rate regulation, has created a situation in which homeowners insurance is made into a kind of public utility in Florida but without the predictable costs typically enjoyed by utility companies. In the end, attempts to coerce insurers into remaining overexposed in markets where they cannot operate profitably will only cause continued reductions in the supply of insurance. In the long run, insurers compete not only with one another, but also with all the other types of companies in which people invest their money. Industries that cannot provide competitive returns to their

⁵¹ Information on the Joint Underwriting Association was obtained from the "Insurance News Network," <http://www.insure.com/states/fl/juaback.html>

⁵² Academic Task Force on Hurricane Catastrophe Insurance, "Restoring Florida's Paradise: Final Report," The Collins Center for Public Policy. Tallahassee, Florida. September 30, 1995, p. ii.

⁵³ *Ibid.*, p. ii

⁵⁴ "Insurance News Network," <http://www.insure.com/states/fl/juaback.html>.

stockholders will find their capital base and capacity shrinking as funds flow to more profitable industries.

Tax Treatment of Reserves

Another factor contributing to the overall costs of providing disaster insurance is the way in which taxes are assessed on insurance companies. Like all corporations, insurance companies must pay federal income taxes. An insurance company writing homeowners coverage receives that income largely in the form of premiums paid by policyholders. Against these premiums are set expenses in the form of claims paid. Net income before taxes is then (very roughly speaking) premiums collected minus claims and other expenses.⁵⁵ The insurance companies' federal income tax liability is calculated on the basis of this net income.

This tax treatment of premium income works fairly well when it is applied to insurance policies with claims that are relatively predictable and (for the most part) appear and are paid out during the year covered by the insurance premiums. For example, the annual premiums collected on auto insurance policies are fairly closely related to what those insurance companies expect to pay out in claims on auto insurance policies during the year. Actuarially speaking, the expenses are fairly predictable from year to year, and can be adequately covered by annual premiums. Within the realm of auto insurance, any excess of premiums collected over claims paid might then appropriately be viewed as a profit to the firm.⁵⁶ However, this approach to determining and taxing insurance company profits is not nearly so attractive when it is applied to those companies that provide insurance for natural disasters.

Natural disasters are events with massive financial consequences that occur infrequently and unpredictably. Federal tax code determination of insurance companies' "income" on disaster-related policies implicitly assumes that insurance companies are collecting the entire expected cost of providing, for example, earthquake insurance in a given year. If an earthquake does not occur within that year, the premiums collected in excess of that year's liabilities are all considered to be "profits," taxes are due, and the insurer can collect more money next year to cover next year's risks.

That is not the approach that insurance companies can or should take in charging for, or paying for, disaster-related insurance. For the insurers, it makes much more sense to pay for natural disasters by accumulating reserves over (hopefully) long periods of time. For example, if meteorologists predict

Another factor contributing to the overall costs of providing disaster insurance is the way in which taxes are assessed on insurance companies.

⁵⁵ Premium revenue is also invested until claims are paid. The resulting income from these investments also represents a significant source of taxable income for insurers.

⁵⁶ To be a bit more precise, we would include as expenses claims incurred but not yet paid.

The current approach to taxing disaster-related premiums thus has the effect of reducing the potential number of firms providing disaster insurance.

that a major hurricane will hit South Florida approximately once every 10 years, then a property insurer might want to add 1/10 of the expected cost of the hurricane to the annual premiums charged for homeowners' insurance. Property owners benefit from such an approach because it allows them to spread the cost of the relatively expensive disaster insurance over a longer period of time. Such an approach also means that if no hurricanes strike Florida this year, the premiums collected by insurers against hurricane-related claims should not, properly, be viewed as profits.

What often happens instead is that the regulators fail to take a long-term view of the problem. If there are no major disasters in a given year, revenue to insurers is up, and the "excessive profits" may be decried by consumer advocates and regulators alike. These "profits" are then not only taxed, they may also serve as a rationale for regulators to order decreases in homeowners' premium rates.

Treating disaster-related premiums as profits every year during which no major natural disaster occurs increases the cost to private insurers of providing disaster insurance because it makes it much more difficult for an insurance company to build up reserves of capital adequate to pay for the cost of a major hurricane or earthquake. This tax and accounting treatment also increases the financial solvency risk associated with providing disaster insurance. When insurers find it difficult to build adequate reserves, they are more likely to have to use owners' surplus (or equity) to pay claims costs in the wake of a disaster. This can be a particular problem for smaller companies because an especially costly hit can wipe out the insurer's surplus and cause the company to fail.

The current approach to taxing disaster-related premiums thus has the effect of reducing the potential number of firms providing disaster insurance. As a result, there is less insurance available, and fewer insurers competing for property owners' business. If insurers cannot properly reserve for catastrophic events, providing disaster insurance becomes far more risky and unpredictable. The tax treatment of disaster insurance premiums serves to further concentrate the risks associated with earthquakes and hurricanes among fewer insurance companies, and reduces the overall ability of the industry to absorb the costs of disasters.

The Demand for Disaster Insurance

The private insurance market not only suffers from a limited supply of disaster-related insurance, but from a limited demand for such insurance as well. Not all homeowners purchase such coverage, even when it is available. According to the Insurance Services Office, only 25 percent of California residents had earthquake insurance in 1994, with levels of coverage somewhat higher in those parts of the state most at risk from an earthquake. In the

San Fernando Valley, the area most heavily damaged by the Northridge earthquake, about 40 percent of homeowners had earthquake coverage. In affected areas in Los Angeles, Ventura, and Orange Counties, however, only about one in three homeowners had such coverage.⁵⁷

Why do so many homeowners forgo disaster coverage when it is available? Clearly, uninsured homeowners do not believe that the additional coverage is worth the cost of obtaining it. Insurance industry experts often argue that this cost/benefit calculus of consumers must be flawed. They claim that homeowners are too shortsighted in their evaluation of the need for such insurance. This evaluation of the homeowners' decision-making has been used as a rationale for requiring that homeowners purchase insurance. Naturally, the "shortsightedness" of property owners seems much more pronounced in the wake of a disaster when one is presented with the plight of uninsured homeowners whose properties were, in fact, damaged.

Consider the factors an individual must take into account when he decides whether or not to buy earthquake coverage. Suppose a homeowner assumes, or is informed, that there is a 60 percent probability that an earthquake capable of destroying his house will occur in the area in which he lives sometime in the next 30 years.⁵⁸ If the homeowner plans to occupy the house for 20 years, he might assume that he faces a roughly 40 percent chance that he will sustain earthquake-related damage during the time he lives in this house. With that in mind, the informed homeowner would also know that some houses destroyed during an earthquake are destroyed by fire (as a result of ruptured gas lines). Standard homeowners policies cover damages caused by all unintentional fires, even fires that result from earthquakes. Thus, for a home destroyed by fire, earthquake insurance is superfluous. Furthermore, under the current system there is a good chance that an uninsured homeowner will obtain financial assistance from the federal government if an earthquake does occur. After considering all these factors, the homeowner must finally attach a personal discount rate to the stream of premiums that he will have to pay if he chooses to purchase earthquake coverage. In other words, the homeowner must make a personal judgment about the value of earthquake coverage relative to the value of whatever else his family could purchase with the money. And all of these factors assume that he plans to live in his home for many years. If the homeowner assumes that he will only live in an earthquake-prone region for say, five years, the probability that he would face a serious catastrophic event at all is considerably lower. Considering all of these factors, a decision to go without earthquake protection may not be an irrational one.

Why do so many homeowners forgo disaster coverage when it is available? Clearly, uninsured homeowners do not believe that the additional coverage is worth the cost of obtaining it.

⁵⁷ Insurance Services Office, p. 14.

⁵⁸ This is the risk quoted for areas along the San Andreas and related faults and for the San Francisco area. Ibid., p. 28.

Yet, it remains a widely accepted position that individuals who do not purchase coverage for natural disasters, when it is easily available, are underestimating the risk that their property will be damaged by a catastrophic event.⁵⁹ However, it does not follow that homeowners necessarily “underestimated” the risk of disaster damage because they chose to face the risk without insurance and then “lost” in the sense of suffering damage. We all make decisions every day about what risks we will “insure” and what risks we will face without “insurance.”⁶⁰ The fact that, in hindsight, some of those decisions turn out to have been “wrong” does not mean they were improper decisions when they were made.

The possibility that someone else will step in and pay for all or part of the damage resulting from an earthquake also plays into a property owner’s risk assessment. If we could be certain that the government would always protect us against uninsured damages, few of us would buy insurance.

It is also worth noting that scientifically produced models that estimate the probability of earthquakes of particular magnitudes for specific geographic areas are often less than completely reliable. In 1994, a publication by the Insurance Services Office put the risk of a Los Angeles area earthquake of 7.0 or greater on the Richter Scale at forty-seven percent within the next five years.⁶¹ However, in a footnote the authors of the study admitted that experts’ estimates of the chance of a 7.0 or greater earthquake in Los Angeles varied in probability from a low of thirty percent over the next thirty years, to a high of more than eighty percent before the end of 1997. It is this type of uncertainty and imperfect information that challenges the insurance industry, regulators, and federal policymakers in their ongoing efforts to plan for natural disasters. And, it is this type of uncertainty that makes it difficult to evaluate a homeowner’s decision to go without disaster coverage. We may grant that the “experts” have a more accurate technical understanding of the existing risk than the average citizen, but it is less clear before the fact that homeowners making insurance purchasing decisions, given the information available to them, are systematically underestimating or overestimating the likelihood of potential earthquake damage.

The possibility that someone else will step in and pay for all or part of the damage resulting from an earthquake also plays into a property owner’s risk assessment. If we could be certain that the government would always protect us against uninsured damages, few of us would buy insurance. Given a choice between using our own money to purchase earthquake insurance in anticipation of an event that might never take place, and having someone else pick up the bill after the damage has occurred, most homeowners would

⁵⁹ Ibid., p. 16.

⁶⁰ Consider the decision to carry an umbrella, for example. On any given morning, thousands of individuals in a city receive similar information about the probability of rain during the day. When they walk out the door, these similarly informed individuals will make many different decisions about whether to take insurance (rain gear) against the probability of rain. Each individual’s decision will depend not just on his access to information about the weather forecast, but also on a myriad of personal variables including age, how much time he expects to spend outside, and the consequences of getting caught in a rain shower.

⁶¹ Insurance Services Office, p. 28.

choose to conserve their resources and let others pay for the damages. Homeowners' expectations regarding the likelihood that the government will repair or rebuild their houses through disaster assistance will consequently play a role in their decisions to purchase or not purchase insurance.⁶² All else being equal, the greater the expectation of government aid (both in probability and amount), the lower the demand will be for private disaster insurance.⁶³

Ultimately, each homeowner must make his own decision about the best use of his funds in the short run and the best way to protect his family's wealth in the long run. Government officials, and industry experts are not in a position to determine for others the most highly valued use of their funds. While the government should not compel homeowners to purchase insurance, neither should the government or the insurance industry bail out those individuals who choose not to purchase such insurance.

In brief, a homeowner's decision to purchase disaster-related insurance is affected by 1) the homeowner's assessment of the probability that his house will be damaged by a natural disaster while he owns the property; 2) the homeowner's assessment that someone else (through federal or state government) may pay for damages to his house if he cannot (or will not); and 3) the homeowner's judgment that he has better things to do with his money than buy disaster insurance. Policymakers considering how to encourage more private demand for disaster insurance must keep all of these variables in mind.

CREATING A MARKET FOR DISASTER INSURANCE

In their report on the problems facing the Florida insurance market, the Academic Task Force on Hurricane Catastrophe Insurance concluded that:

More private companies need to write larger market shares in these [high risk] regions. This will allow the potentially higher

While the government should not compel homeowners to purchase insurance, neither should the government or the insurance industry bail out those individuals who choose not to purchase such insurance.

⁶² Despite the lavish FEMA expenditures in recent years, homeowners may be overly optimistic about the resources available from the federal government in the wake of a disaster. Much federal disaster relief goes to state and local governments, not to individual business owners and property owners. In addition, continued budget pressures may also serve to discourage extravagant aid policies in the future.

⁶³ This has been a problem with other government programs, such as the federal flood insurance program. For years, the federal government has told property owners that if they wanted assistance after a flood, they had to purchase flood insurance. The government has then either allowed individuals to purchase flood insurance as the flood waters were rising or provided disaster relief to uninsured property owners anyway if they would just promise to purchase flood insurance the next time. Needless to say, the federal flood insurance program has paid out substantially more in benefits than it has collected in premiums from individuals who choose to live on flood plains. Taxpayers have been forced to make up the difference.

costs of a major strike to be spread over far greater and more resilient assets of a larger number of private companies.⁶⁴

In short, fostering a legal and regulatory environment in which more companies are encouraged to offer more coverage would address both the supply and the demand problems facing the market today. The insurance industry and other financial market participants are already taking steps to expand the capacity of private insurers by increasing their ability to absorb losses. The section that follows describes some of the new financial instruments that may play a role in helping spread the risk of natural disasters.

In order to draw funds from the broader capital markets into the insurance markets, insurers have sought ways to “securitize” disaster risks.

It is also important that policymakers take steps to encourage additional insurance industry interest in catastrophic risks by clearing away the considerable roadblocks thrown up by existing regulations. Three initiatives are discussed below: increased freedom to set prices and policy terms, creation of tax-free disaster reserves, and linking disaster relief to insurance. If adopted, these initiatives would help create a regulatory climate that would attract additional insurance company participants. The resulting increase in competition would offer consumers the best protection against the inevitable ravages of natural disasters.

New Financial Instruments

In addition to the traditional practices of reserving, and risk transfer through reinsurance, insurers are looking for new ways to maintain or expand overall capacity, and are beginning to cast a wider net to obtain from sources outside the insurance industry some of the capital needed to pay for disaster-related risks. New financial instruments are expected to play an increasing role in helping to spread the financial risk of natural disasters. With an estimated \$15 trillion available in US capital markets, the ability of these broader markets to sustain significant financial impacts is obviously of interest to insurers.⁶⁵

In order to draw funds from the broader capital markets into the insurance markets, insurers have sought ways to “securitize” disaster risks. Among the new financial instruments with which insurers are experimenting are risk (catastrophe) swaps, “contingent surplus” notes, “act-of-God” bonds, and derivatives products (including options) based on catastrophe

⁶⁴ Academic Task Force on Hurricane Catastrophe Insurance, “Restoring Florida’s Paradise: Final Report,” The Collins Center for Public Policy. Tallahassee, Florida. September 30, 1995, p. ii.

⁶⁵ David Koegel, “Securitizing Disaster Risk: A Technique for Spreading Catastrophe Exposure.” *Best’s Review, Property/Casualty Edition*. January, 1996, p. 45

losses.⁶⁶ These devices present new ways to transfer or capitalize catastrophe risk.

In December 1996, the New York-based Catastrophe Risk Exchange (or “Catex”) system began facilitating the trading of blocks of coverage, sometimes called catastrophe swaps. Under this system, insurers can exchange predefined quantities of risk, for example, two units of windstorm exposure in Texas, for one unit of earthquake exposure in California; depending on the going rates, and the relative risk of the units being exchanged.⁶⁷ As noted in a recent article in *Best’s Review*, this exchange could function as a reinsurance market and/or as a tool with which insurers can reconfigure their portfolios, allowing them to respond to changes in risk, pricing, or even changes in the regulatory environments in the states.⁶⁸ Though this system will no doubt prove useful to insurers in diversifying their risk holdings, it still represents a kind of reinsurance coverage transfer, and still maintains the overall risks more or less within the realm of the insurance market and among insurance companies.

Contingent surplus notes and catastrophe bonds are two examples of insurance-based securities specifically designed to attract capital from outside the insurance industry. Nationwide Mutual Insurance Company was the innovator in developing contingent surplus notes although dozens of companies are now offering similar notes.⁶⁹ Under the Nationwide agreement, the company established a trust as a guaranteed buyer of surplus notes. Investors purchased bonds issued by this trust. These bonds were backed by Treasury securities held by the trust, but in the event of a serious natural disaster, the trust would sell the Treasury bill it holds, using the proceeds to buy surplus notes from Nationwide. Nationwide would thus receive an additional cash infusion with which to meet the company’s obligations to its policyholders. Meanwhile, investors in the trust’s bonds would now have their bonds backed by Nationwide surplus notes rather than treasury securities, and the risk associated with the trust’s bonds would thereby increase. But, bond investors would have been aware of this possibility from the beginning.⁷⁰

Contingent surplus notes and catastrophe bonds are two examples of insurance-based securities specifically designed to attract capital from outside the insurance industry.

⁶⁶ Lee McDonald, “Gaining a Foothold,” *Best’s Review: Property/Casualty Edition*, April, 1997, p. 48.

⁶⁷ *Ibid.*, p. 48. The author of this article notes that units of risk are not equal, and he points out that, for example, “three units of Long Island wind damage might be comparable to one unit of Florida hurricane damage.”

⁶⁸ *Ibid.*, pp. 48-49.

⁶⁹ Tal Piccione, “Capital Markets Make In Roads with Catastrophic Risks.” *National Underwriter Property & Casualty Risk and Benefits Management*. July 15, 1996.

⁷⁰ Borden and Sarkar, p. 4. Nationwide’s contingent surplus notes represent one solution to a particular problem faced by mutually-owned insurers. Because mutual companies are owned by the policyholders rather than by stockholders, mutuals cannot raise additional capital by issuing new stock.

Derivatives instruments represent another attempt to attract money from investors outside the insurance industry.

Catastrophe bonds, or “act-of-God” bonds, are more directly tied to the incidence of catastrophic events. In this case, insurers issue a bond with a contingent rate of return. In the event of a disaster causing insured losses of more than some predetermined amount, the bond’s coupon payment would decline to a lower fixed rate.⁷¹ In other cases, repayment of the bonds would be wholly or partially forgiven. Investors in these bonds thus share with insurers the risk of catastrophic losses by placing interest, and in some cases even their principal, at risk.

Derivatives instruments represent another attempt to attract money from investors outside the insurance industry to help back catastrophic policies.⁷² A derivative is a financial instrument that “derives” its value from another underlying asset, interest rate or index level.⁷³ One type of derivative is an option contract, wherein the buyer acquires the right (but not the obligation) to buy or sell the underlying asset. A “call” (or purchase) option for a particular stock, for example, will specify its expiration date and its “strike price,” or the price at which the underlying asset may be purchased.⁷⁴ Suppose an investor buys a call option of ABC stock with a strike price of \$50. If the market price of ABC stock is less than \$50, the option buyer will allow the option to expire (because he can buy the stock more cheaply in the open market), and the issuer pockets the price paid for the option. But if the stock’s price rises above \$50, the option owner can use his ABC call option to purchase ABC stock at a bargain price. The issuer of the option is obligated to sell ABC stock to the option owner at \$50 per share, regardless of the stock’s market value.

Catastrophic options work similarly. The most significant example currently in use is PCS Options developed by the Chicago Board of Trade, and based on loss assessments by the Property Claims Services.⁷⁵ In this case, the

⁷¹ Ibid., p. 4.

⁷² For an excellent and highly detailed discussion of the potential uses of derivatives contracts in insurance, see Christopher L. Culp, “Relations between Insurance and Derivatives: Applications from Catastrophic Loss Insurance.” This paper can be found in Ysabel Burns McAleer & Tom Miller ed. *Rethinking Insurance Regulation: Volume I, Catastrophic Risks*. The Competitive Enterprise Institute. The paper was presented at “Rethinking Insurance Regulation,” a conference sponsored by the Competitive Enterprise Institute. March 8, 1996. For a more basic introduction to derivatives, see Christopher L. Culp, “A Primer on Derivatives: Their Mechanics, Uses, Risks and Regulation.” The Competitive Enterprise Institute, Financial Innovation Project. September, 1995. Both papers are available from the Competitive Enterprise Institute.

⁷³ Christopher L. Culp, “Relations between Insurance and Derivatives: Applications from Catastrophic Loss Insurance.” Ysabel Burns McAleer & Tom Miller ed. *Rethinking Insurance Regulation: Volume I, Catastrophic Risks*. Competitive Enterprise Institute. p. 30.

⁷⁴ There are also “put” options that guarantee the price at which the option owner can sell a particular asset, such as a stock.

⁷⁵ Property Claims Services tracks and evaluates catastrophic losses for the property/casualty insurance industry, and is a recognized authority for property damage estimates.

option's strike price is stated in terms of total insured losses within a particular region of the country. If total insured losses as measured by PCS for a specified period of time in a given region are greater than the "strike price," the owner of the option is entitled to a payment from the option's issuer dependent on the difference. If total insured losses are less than the "strike price," the option expires, and the option issuer keeps the price paid for the option. Investors trading these options speculate on potential catastrophe claims during a given period of time in a particular geographic region. Insurers can use these options to transfer some of their liquidity risk to other investors. Anyone can purchase or issue these options, of course, and the hope is that parties outside the insurance industry will participate in this market.

To date the adoption and use of these new securities by the wider investment community has been slow, and it remains to be seen how widely accepted they will be and which of them will prove most successful. Financial markets are always seeking new investment opportunities, and one aspect of these securities that appeals to investors is that they are tied to the occurrence of natural disasters, and so fluctuate independently of the stock and bond markets. As such, they represent an independent risk useful for increasing the diversification of an investment portfolio.⁷⁶

This kind of innovation is critical for the industry. As risks expand, and liabilities grow, the market must try to keep pace. It is this kind of innovation that is one of the great strengths of the private market. Regulators should allow and even encourage these kinds of developments. Anything that enhances the financial strength of the industry will ultimately prove a boon for consumers as well. If these financial instruments should prove useful to insurers, they may help to stabilize the supply of insurance, and in the long run these innovations may help to reduce the cost of premiums for homeowners in hazardous regions of the country.

Increased Freedom to Set Prices and Policy Terms

The Academic Task Force on Hurricane Catastrophe Insurance, a group established by the state of Florida to review the state's property insurance market, identified more flexible rates and more flexible insurance products as two of the keys to reviving Florida's collapsing homeowners insurance market.⁷⁷ A private market for disaster insurance will not function properly if insurance companies are not allowed to charge premiums commensurate with the considerable risk of underwriting such insurance.

As noted, before Hurricane Andrew and the Northridge Earthquake, rapid changes in population density and distribution and insufficient data

If these financial instruments should prove useful to insurers, they may help to stabilize the supply of insurance, and in the long run these innovations may help to reduce the cost of premiums for homeowners in hazardous regions of the country.

⁷⁶ McDonald, p. 48. Some of the information on PCS options is also from this article.

⁷⁷ Academic Task Force on Hurricane Catastrophe Insurance, pp. 13-14.

To attract new insurers to disaster-prone states, and to encourage existing companies to increase the supply of insurance provided, open competition rate setting systems should be established.

helped foster a situation in which loss costs were severely underestimated. In the wake of the disasters of the early 1990s, a debate has arisen concerning how best to estimate future natural disaster costs. New technological tools such as computer-based modeling of natural disasters have received considerable attention. At the same time, many insurers have argued that historical loss cost data is an insufficient base on which to project future losses given population shifts and increased information on weather and seismic patterns. In those states that have highly regulated rate-setting environments, the use of computer models, including the choice of computer models, has become a hotly debated issue. In a deregulated ratemaking environment such decisions would become matters of business practice rather than public policy. In a competitive environment, insurers could use whatever method they thought most appropriate in assessing potential loss costs. But they would have to compete for customers on the basis of the premiums they charged. Indeed, the great strength of competition is that it would involve a number of different insurers each pursuing their own approaches to risk assessment.

To attract new insurers to disaster-prone states, and to encourage existing companies to increase the supply of insurance provided, open competition rate setting systems should be established. Individual insurance companies should be allowed to determine for themselves what are adequate premiums.⁷⁸ As more insurers are attracted to the market for disaster insurance, increased competition among providers will help assure that the premiums charged reflect expected claims costs. In the words of the Academic Task Force, “Eventually greater diversification of geographic risk and larger numbers of financially healthy insurance companies in Florida will increase competition and decrease rates.”⁷⁹

That said, switching to an open competition rate setting system could impose considerable hardship on many homeowners. Insurers might well increase premiums by substantial amounts, especially in states where premiums have traditionally been suppressed. Indeed, in advocating more flexible rate-setting, the task force warned that Florida homeowners might see premiums increase by more than the 65 percent hikes they had already experienced between 1992 and 1995.⁸⁰

In states such as California, where the disasters that most concern property owners are earthquakes, homeowners can (and do) choose not to purchase earthquake insurance that they view to be too expensive.⁸¹ But where hurricanes are the greatest concern, coverage for windstorm damage

⁷⁸ For a discussion of why this is so, see the earlier section on rate regulation.

⁷⁹ Academic Task Force on Hurricane Catastrophe Insurance, p. ii.

⁸⁰ *Ibid.*, p. ii.

⁸¹ Property owners may also choose to forgo flood insurance, sold by the federal government.

is part of the basic homeowners policy. Therefore, property owners seeking any insurance must currently pay for coverage against windstorm damage.⁸²

Higher disaster insurance rates may mean that some people will decide they cannot afford to live in areas threatened by hurricanes or earthquakes. But one of the roles of insurance is to help identify those activities that embody higher risks and to force policyholders to internalize the costs associated with their decisions. In that sense, it is quite appropriate if higher property insurance premiums lead to a slower rate of growth in, or even reduced population density, along the Atlantic and Gulf coasts. At present, taxpayers around the country are subsidizing individuals who choose to live in these areas whenever the federal government steps forward to provide disaster relief. It is not unreasonable to expect individuals who live in these locales to internalize more of the costs of their decisions through higher premiums.

These higher premiums can be mitigated in part by allowing insurance companies more flexibility in writing a wider variety of homeowners policies. Giving homeowners a choice of deductibles or coinsurance levels would be one mechanism for giving homeowners some control over their insurance costs. Different size deductibles and coinsurance may also be used to give property owners added incentives to undertake measures that will help reduce their losses in the event of a disaster.

Mitigation measures that are implemented before a disaster can significantly reduce the damage to a structure and the resulting financial impact on insurers and homeowners alike. Mitigation measures can include such things as securing a home to its foundations, using particular building materials, or even purchasing and installing storm shutters to prevent windstorm damage. The upfront costs of such home improvements can be considerable, however, and that may discourage some homeowners from making such improvements. By applying higher levels of deductibles or coinsurance and/or charging lower premiums to homeowners who undertake mitigation measures, however, insurance companies can provide property owners with an incentive to take steps to reduce catastrophe losses. The investment in mitigation may seem less expensive if it leads to lower insurance premiums and/or lower out-of-pocket expenses in the wake of a disaster. In addition, as George Priest has pointed out, deductibles and coinsurance have an advantage over specific mitigation requirements because they leave property owners free to undertake higher levels of mitigation and to develop and make use of new (possibly better) methods for protecting their property in the event of a disaster.⁸³ In fact, insurers are not only trying to persuade

At present, taxpayers around the country are subsidizing individuals who choose to live in these areas whenever the federal government steps forward to provide disaster relief.

⁸² Insurance is generally not optional where there is a mortgage outstanding against the property.

⁸³ George L. Priest, "The Government as an Insurer in the Context of Catastrophic Loss," May 10, 1994, p. 20. A copy of the paper is available from the author.

homeowners to use existing mitigation technologies, they are also researching new approaches to mitigation.⁸⁴

There are, however, insurers who resist offering premium discounts, lower coinsurance rates, and/or lower deductibles to homeowners who undertake mitigation measures. These insurers argue that the premiums they charge are already below expected claims costs and the insurers do not believe their interests are served by cutting premiums further.⁸⁵ Several of these insurers have also expressed concern that regulators, seeing discounted premiums for some policyholders, might eventually force insurers to provide similar reductions to property owners who do not undertake similar mitigation measures.

Homeowners should also be made aware of other, more basic choices that can affect their insurance costs. For example, homeowners may purchase either a “replacement cost” policy or a “market-value” policy. If a house is destroyed, replacement cost insurance will pay to rebuild the same house, using the original design and materials. Market value insurance, by contrast, will pay the homeowner the value of the house in the event that it is destroyed. Replacement cost insurance is often more expensive than market value policies, especially for older houses that may include outdated construction materials or decorative or architectural features that are uncommon in modern home construction. The cost of replacing such houses can easily exceed the market value of the house. In the wake of a natural disaster, these additional costs are multiplied when widespread destruction tests the capacity of the local construction industry. Consumers might be made more generally

⁸⁴ John Covaleski, “Mitigating Catastrophe Losses.” *Best’s Review, Property/Casualty Edition*. December, 1995, pp. 44-45. Both Chubb Group of Insurance Companies and ITT Hartford offer premium discounts for windstorm coverage to Florida policyholders who install safety features such as storm shutters. Meanwhile, State Farm is seeking to evaluate different building materials so that they can set rates according to the quality and resiliency of various construction materials used in constructing a house. The Insurance Services Office also sponsors a program that evaluates and “grades” building codes throughout the country.

⁸⁵ Even if current disaster insurance premiums are below expected loss costs, discounts might be a useful strategy if they help to reduce total losses. Suppose, for example, that an insurer charging a premium of \$100 has an expected loss cost of \$150, so that the insurer expects to lose \$50 on the policy. If mitigation measures will reduce expected losses to \$130, the insurer could encourage policyholders to undertake these measures by offering a \$10 discount so that premium income falls to \$90. The insurer is still not covering total expected costs, but now the policy has an expected loss of \$40 rather than \$50. In the real world, of course, the \$10 saving would also have to cover the additional administrative expenses that come with verifying who has undertaken mitigation measures and who has not. Furthermore, because premiums are collected over many years for disasters that occur infrequently, premium savings in any one year would be less than the expected savings after a disaster.

aware of market value insurance as an alternative to the traditional replacement value policy. Perhaps policy terms could be developed that would reduce a homeowner's premiums if her normal replacement cost insurance policy converted to a market value policy in the wake of a disaster.⁸⁶

Ideally, the states should take steps to liberalize their own rate setting regimes, and indeed some states have established open competition rate setting for their insurance markets. It is also true, however, that those states that are most disaster-prone also are the states where insurers with greater pricing freedom are likely to charge some of the highest premium rates. It is not surprising then, that these are some of the states that are most resistant to moving to an open competition regime. There is a case to be made for federal preemption of state rate regulation applied to disaster insurance, thereby imposing an open competition regime for these policies.⁸⁷ Because of current federal disaster policies, state rate-setting practices affect not only insurers and insurance consumers, but also taxpayers around the country.⁸⁸

Tax-Deductible Reserves

Current tax treatment of insurance company income calculates insurers' profits by adding together premiums collected and investment income and subtracting claims paid and other expenses. Whatever is left is deemed profit and subject to taxation. That approach makes sense for many types of insurance policies. Annual auto insurance premiums, for example, are driven primarily by expected claims during the coming year. As a result, the amount by which auto insurance premiums (plus any interest earned) exceed auto insurance claims (plus any related expenses) during a given year is legitimately counted as profit.

Catastrophic risks represent a different challenge, however. As a rule, natural disasters occur infrequently, resulting in substantial costs when they

Because of current federal disaster policies, state rate-setting practices affect not only insurers and insurance consumers, but also taxpayers around the country.

⁸⁶ Obviously such a policy would need to clearly define the conditions under which the policy terms would change, and homeowners might still not be interested, especially in light of the rising construction costs that typically follow natural disasters.

⁸⁷ If such preemption were to take place, it might be necessary to separate windstorm insurance from the general homeowners policy, assuming affected states would want to continue regulating homeowners insurance rates. It should also be noted that such federal preemption, if it were to take place, should only be in a strictly deregulatory capacity. If the federal government were to try and involve itself in the setting or oversight of premium rates, it would face all of the difficulties the states face, and if it were to attempt to set premium levels, its efforts would no doubt be every bit as unsuccessful and counterproductive.

⁸⁸ There is a precedent for this type of federal preemption of state laws that hinder the ability of financial institutions to deliver financial services in a financially sound manner. The 1980 Depository Institutions Deregulation and Monetary Control Act preempted state usury laws (ceilings on the interest rates that could be charged on loans) in the pursuit of more fully integrated national loan markets.

Only Congress can alleviate the burden which the current tax code imposes on the formation of insurance company reserves.

do occur. Because of the nature of catastrophic risks, Congress should recognize insurers' building of "pre-funded" disaster reserve accounts as a legitimate business expense and an effective way to provide insurance for hurricanes, earthquakes, and perhaps even floods. In other words, insurance and reinsurance companies should be allowed to accumulate the funds they need to meet expected disaster-related claims costs over a period of years, without the decision to establish paying taxes on the premiums devoted to disaster-related reserves. The decision to establish such reserves should be voluntary and at the discretion of individual insurance and reinsurance companies.⁸⁹

This is one of the most important and productive steps Congress could take to enhance the private sector's ability to provide the disaster insurance that property owners want and need, at a price they can afford. Further, it is a reform that only Congress can undertake. While reform of current rate setting procedures can and should take place at the state level, only Congress can alleviate the burden which the current tax code imposes on the formation of insurance company reserves.

Approaching insurance for catastrophic risks as a multi-year rather than a single year problem is not without precedent. The government treats businesses' funding of pension plans as the multi-year process it is. Thus, all allowable pension plan contributions are viewed as legitimate business expenses, and investment income is allowed to accumulate tax-free. Businesses are not forced to treat as "profits" (and pay taxes on) any amount by which the pension plan contributions exceed pension plan payments during a given year.

Eliminating the taxes on premiums paid into a disaster reserve also has implications for insurers' risk management strategies. A company that writes disaster policies must also decide what portion of its potential liabilities it will retain on its books and what portion it will shift to another company by purchasing reinsurance. The decision to accumulate reserves to back risks the insurer retains is a form of self-insurance. But while purchasing reinsurance and accumulating reserves to pay claims are usefully viewed as substitute risk management strategies, they currently receive different tax treatment.

The cost of reinsurance is a tax-deductible expense for property insurers, while an insurance company must pay taxes on the premiums and interest income that it uses to build reserves with which it can pay future disaster claims. As a result, insurers writing disaster insurance are more dependent on reinsurance than they might otherwise be.

Allowing insurance companies to accumulate catastrophic reserves tax-free would thus likely encourage more self-insurance among insurers who

⁸⁹ We will discuss some of the problems presented by mandatory reserves subsequently.

write catastrophe coverage. Companies that rely more heavily on self-insurance are likely to be more disciplined and careful in their underwriting and risk management practices because these firms are risking more of their own funds, albeit funds earmarked for this purpose.⁹⁰

In addition to creating a more financially consistent tax policy, changing the tax treatment of disaster-related premiums would have three important effects. It would reduce the financial risk to insurers associated with providing disaster insurance, it would help make premiums more affordable, and it would help to mitigate the capacity shortfall that often occurs in the wake of a disaster. Creating tax-free disaster reserves would, thus, enhance the private sector's ability to deal with natural disasters without undue intervention by or burden on the federal government.

Less financial risk. Recognizing future disaster claims as a legitimate business expense for which insurance companies should plan in advance, and allowing insurers to establish necessary reserves tax-free would help to reduce the risk to insurance companies of offering disaster coverage. As noted earlier, insurance companies can fail in the wake of disasters when claims costs overwhelm the insurers' surplus. Smaller insurance companies are especially vulnerable because they have fewer resources upon which to draw. These smaller insurance companies would naturally be more reluctant to write disaster-related policies. Changing the tax law to allow insurers to build an untaxed disaster claims fund would enable smaller insurers to pre-fund their expected claims more quickly, thereby reducing the potential threat to the insurers' solvency. This could draw more small to mid-size insurers into the disaster market, creating greater competition and a more diversified set of providers. Tax-free reserves could also act as competition for traditional reinsurance, helping to encourage lower premiums for reinsurance coverage as well.

More affordable premiums. Affordability is a key issue for both federal and state policymakers, but as explained earlier, rate regulation is not the answer. In searching for ways to make disaster insurance more affordable, the House Bipartisan Task Force on Disasters recommended in December 1994 that property owners should receive a tax deduction for all-hazard insurance premiums as a means of "encourag[ing] the purchase of all-hazard insurance by helping individuals to be able to afford the cost of insurance."⁹¹ Tax deductibility of disaster insurance premiums would help, but homeowners with lower incomes would benefit least from such a plan.

Creating tax-free disaster reserves would, thus, enhance the private sector's ability to deal with natural disasters without undue intervention by or burden on the federal government.

⁹⁰ Of course, if insurers underestimate the costs of natural disasters or have not finished building their catastrophic reserves when a natural disaster strikes, the insurance companies' owners surplus is still at risk.

⁹¹ "Report of the Bipartisan Task Force on Disasters," U.S. House of Representatives, December 14, 1994, p. 10. The task force was co-chaired by Rep. Bill Emerson (R-MO) and Rep. Richard Durbin (D-IL).

Allowing insurers to build tax-free reserves over a span of years would help reduce the current volatility in insurers' capacity.

By contrast, allowing insurance companies to accumulate disaster reserves tax-free would reduce premiums paid by all property owners because insurance companies would be able to build their disaster claims reserves more quickly. Suppose, for example, that an insurance company determines that it needs to accumulate \$1,500 over ten years from each of its policyholders in a disaster-prone area to cover expected claims costs.⁹² Suppose further that premiums are invested in Treasury securities earning 6 percent per year until they are needed to pay claims. The insurance company could accumulate the needed funds by charging annual premiums of \$114 if the insurer owed no taxes on the premiums contributed to or interest accumulated in its disaster fund. By contrast, when insurance companies are required to pay taxes on premiums and investment income, insurers need to charge policyholders \$190 each year to accumulate \$1,500 over a 10-year period.⁹³ In this simple example, premiums that are dedicated to disaster reserves must increase by 67 percent when premium and interest income are taxed.

It is more difficult to quantify the impact of a tax exemption on disaster premiums in actual fact. Because current premiums do not cover expected costs in many cases, a tax exemption would first allow insurers to reduce their expected losses on disaster policies. But the incentives created by exempting disaster reserves from taxes are all in the direction of lower premiums. Not only would insurers need less premium income to generate disaster reserves from taxes of a given size, but the tax-exempt status of these funds would also attract more suppliers of disaster insurance, thus creating further downward pressure on disaster premiums.

Smoothing insurance availability. Insurance often becomes more difficult to obtain in the wake of a disaster. As noted, the reduction in insurance capacity is caused by insurers' being forced to spend down their surplus to pay for disaster claims. Less surplus means insurance companies are able to write less insurance.

Allowing insurers to build tax-free reserves over a span of years, or even decades, from which they can pay for disasters, would help reduce the current volatility in insurers' capacity. If designated funds exist from which disaster-related claims can be paid, insurers would be less likely to have to draw down general surplus to meet their obligations to policyholders. As a

⁹² The \$1,500 figure was chosen for illustrative purposes only. Whatever the actual dollar amount that insurers would seek to accumulate, the principles demonstrated remain valid regarding the savings in terms of reduced premiums arising from allowing disaster reserves to accumulate tax-free.

⁹³ This assumes that insurance premiums and investment income are paid once a year, and that the insurance company faces a marginal tax rate of 34 percent. State premium taxes are ignored.

result, property insurance would be available after the disaster on terms comparable to the terms available before the disaster.⁹⁴

Some skeptics question the desirability of pre-funding disaster claims by asking what would happen if a disaster occurs in the early years of insurers' efforts to build a disaster claim fund. A disaster could obviously strike tomorrow. No one knows when the next hurricane or earthquake will strike. Nevertheless, eliminating taxes on disaster premiums until they are paid out as reserve reductions or dividends could only increase the industry's ability to absorb disaster losses whenever they occur. The sooner insurers are allowed to begin building tax-free funds, the better.⁹⁵

Neither insurance company executives nor the federal government can know with certainty when the next disaster will strike, or how much it will cost. A decade during which no major earthquake occurs could be followed by a period during which several destructive earthquakes occur in a short span of time. It is impossible for federal or state regulators to micromanage the insurance market to the point where they can reasonably determine how much money insurers will need to plan for all contingencies. It is similarly difficult to determine (even for the insurer) whether an insurance company building a disaster claims fund is "hiding" profits or accumulating the resources necessary to protect policyholders. Insurers cannot know before the fact exactly how much reserve capital will be enough. Until (or unless) the money in disaster surplus accounts is paid out as dividends, these funds, used to back expected payments on natural disaster policies, should be viewed as a legitimate cost of doing business. As such, these funds should be considered expenses rather than profits, and hence not subject to taxation.

Under current law, insurers can write off some of their disaster-related losses against their future tax liability, that is, they can deduct current or past losses from future taxes. By granting tax deductibility, albeit after the fact, this policy implicitly acknowledges that these are legitimate business expenses. However, it is also akin to closing the barn door after the horse has already escaped. Rather than accumulating funds to pay for future disasters, and making use of investment opportunities to grow their reserves, insurers instead have to recoup their losses after the fact. Allowing insurers to deduct funds for current reserves would provide a much more efficient approach to funding the liabilities associated with natural disasters.

Rather than accumulating funds to pay for future disasters, and making use of investment opportunities to grow their reserves, insurers instead have to recoup their losses after the fact.

⁹⁴ This would be true as long as the most recent natural disaster tended to confirm insurers' assumptions about expected costs.

⁹⁵ For an excellent source of additional discussion of the benefits of tax-deductible reserves, see Ross J. Davidson, Jr., "Tax-Deductible, Pre-Event Catastrophe Reserves," *Journal of Insurance Regulation*. Winter 1996, National Association of Insurance Commissioners.

Changing the tax status of catastrophe reserves would, without a doubt, have an impact on federal revenues in the short term. However, the potential reduction in tax revenues should be balanced against projected reductions in the future stream of federal disaster relief payments. More extensive private disaster insurance coverage, which these reserves would make possible, would reduce the necessity for government action in the wake of a disaster.⁹⁶ In other words, while changing the tax status of catastrophe reserves would mean less government revenue in the short term, in the long run it should provide for more stable and healthy private insurance markets which should reduce the future costs of federal disaster relief efforts. Further, reserves would be more efficient. Ideally, insurers would accumulate the needed funds over time, augmenting disaster premiums by earning investment income. The federal government, on the other hand, must make its relief payments from current revenues, indeed often through emergency spending measures.

While there will certainly be some kind of limits placed on companies in establishing these reserves, Congress must resist the temptation to overly constrain or micromanage company reserve practices.

If it were to grant tax relief, Congress would almost certainly also establish guidelines and limitations on insurers building disaster reserves. There would be questions concerning contributions to the reserve, the length of time during which reserves should be allowed to accumulate, the overall size of the reserve, and the conditions under which insurers would be able to draw down these funds. As much as possible, these questions should be left to the discretion of the insurers who establish these reserves despite the considerable temptation to limit the ability of insurers to continue adding to such funds.⁹⁷

Limits necessarily involve tradeoffs. If Congress limited a company's annual contributions to its disaster reserve fund, for example, the adequacy and effectiveness of these reserves would be thereby limited, especially in the early years following their establishment. If there were limits placed on the overall size of the reserves, resources again might be found to be inadequate in the face of a true megacatastrophe. While there will certainly be some kind of limits placed on companies in establishing these reserves, Congress must resist the temptation to overly constrain or micromanage company reserve practices.

The National Association of Insurance Commissioners (NAIC) is currently examining the possibilities of tax-deductible reserves and develop-

⁹⁶ There is considerable speculation concerning the question of just how much impact a change in the tax status of reserves would have on the Treasury.

⁹⁷ In limiting the amount of time in which insurers could accumulate these reserves, one would be creating a "tax-deferred" rather than a tax-deductible reserve. Under a proposal that is being considered by the National Association of Insurance Commissioners, insurers would be required to accumulate funds for a set period of years. At the conclusion of that period of time, and assuming the funds do not go to pay for disaster costs, insurers would be subject to tax on the first year's contribution, and so on as time passes, creating a "rolling reserve."

ing model legislation for federal reform.⁹⁸ Rather than simply allowing insurers to adopt reserves voluntarily, the NAIC proposal would call for insurers to establish mandatory reserves to pay for catastrophic liabilities. Rather than being a financing tool, these reserves would become, in essence, solvency requirements.

Mandatory reserves, however, present a host of new problems and questions. How much capital should insurers be required to reserve? What portion of premium would insurers be required to dedicate to the reserve, and would that ratio vary from state to state or within states? Under what conditions could insurers release these funds? Will these funds be trapped if insurers are forced to maintain these reserves? Once tax-deductible reserves are mandated, questions like these become issues of public policy, rather than questions that individual insurance companies can address. Obviously, insurers are going to have different needs when it comes to reserves. With voluntary reserves and competition, market forces can address these questions. Insurers can determine for themselves whether it makes more sense to reserve the funds, to reinsure, or to seek capital in the financial markets. Rather than establishing another mandate for insurers, tax-deductible reserves should be an additional option for insurers seeking to meet the significant capital requirements of insuring catastrophic events.

Linking Relief to Insurance

Efficient and well-functioning financial and real estate markets require that individuals accept financial responsibility for all the costs that their location decisions entail. To the extent that the federal government has been willing to provide generous relief payments in the wake of natural disasters, the development of coastal and earthquake-prone areas has been subsidized by taxpayers in other parts of the country. The pace of development in these areas is no doubt greater than it would have been had individuals who considered a move to disaster-prone areas also faced the full costs associated with that choice. The government's willingness to act on the understandable desire to aid victims in the wake of a hurricane or an earthquake has, in the long run, increased the total economy-wide costs of such disasters by reducing the personal cost to individuals of locating in disaster-prone areas. If federal disaster policies are not changed, and this subsidy is not scaled back or discontinued, costs associated with earthquakes, hurricanes, and other natural disasters will most likely continue to increase.

To encourage homeowners to purchase disaster insurance, eligibility for federal disaster relief should be conditioned on evidence that the property

Insurers can determine for themselves whether it makes more sense to reserve the funds, to reinsure, or to seek capital in the financial markets.

⁹⁸ The National Association of Insurance Commissioners is an organization comprised of insurance regulators from all fifty states, the District of Columbia, and the territories. Among other activities, the NAIC frequently researches different public policy reform proposals and develops model laws which they recommend for adoption by the states.

Informed homeowners who decide to do without disaster insurance should not be compelled by state or federal government to purchase coverage that they do not want.

owner has purchased some minimum level of private disaster insurance coverage. Requiring that homeowners have insurance as a precondition for aid should encourage property owners to purchase insurance, and if properly enforced, it should prevent people from gaming the system for federal handouts. It is perfectly reasonable to expect homeowners to assume the primary responsibility for protecting their own properties. This requirement would help to encourage such responsibility and deter those who would pass their own costs along to their fellow taxpayers.

But what if homeowners are unaware of such a change in government policy? Mortgage lenders and property insurance companies would no doubt be interested in informing their clients of such a change. Some lenders would surely recognize the greater risk to their collateral and require disaster insurance as a condition of making a new mortgage loan, just as they require fire insurance today. To further protect against claims of ignorance by uninsured homeowners following a disaster, a property owner who forgoes disaster coverage could be required to sign a statement indicating that he had decided not to purchase the insurance and that he understood that he would consequently not be eligible for disaster relief. While this should serve as a significant incentive to purchase insurance, informed homeowners who decide to do without disaster insurance should not be compelled by state or federal government to purchase coverage that they do not want.

Many residents of disaster-prone regions would no doubt question many of the reforms discussed in this paper. Through artificially low premium rates or generous disaster relief payments, many of these residents have not had to absorb the full costs of living in the region they have chosen to call home. The resulting subsidies have no doubt encouraged development and settlement in hazardous regions that would not have taken place in their absence. In those regions in which premium rates have been held artificially low, it is almost a certainty that premium rates would increase under open competition. Further, some residents may resent a requirement that aid be coupled with their purchase of insurance. If given the opportunity most people would rather see someone else pick up the tab for their expenses.

Even if all of the reforms recommended in this paper were instituted, property insurance would remain more expensive in an earthquake zone or along a coastline subject to severe storms. But that is as it should be. An important function of insurance is its identification of riskier activities through higher premiums. Residents of disaster-prone areas should face higher insurance costs as part of the full price of their location decisions. Caring for one's property is fundamentally an individual affair. Government aid should not serve to bail out those who have failed to assume at least some responsibility for themselves.

CONCLUSIONS

There is little doubt that this country will eventually be confronted with a \$50 billion natural disaster, a true megacatastrophe. It is very likely that when that cataclysm strikes, some insurers will fail. But, several steps can be taken now to correct the distortions and problems in the current insurance market. If these steps are taken, the result would be a stronger insurance industry when the next disaster strikes.

The most direct and straightforward approach would be to remove the impediments that currently reduce the potential supply of, and the demand for, disaster coverage. First, open-competition rate setting should be established at the state level, or if necessary, through federal preemption of state rate regulation for disaster insurance policies. This would open up the disaster market to free competition in pricing and design of plans. Second, the federal government should allow insurance companies to establish and accumulate dedicated tax-deductible catastrophe reserves to fund disaster-related exposures. Finally, the federal government should link eligibility for disaster relief payments to the purchase of some minimum level of private disaster insurance coverage. But, neither Congress nor the states should require property owners to purchase disaster insurance coverage. Homeowners' ability to choose to go without insurance acts as an important incentive for insurers to restrain the cost of disaster insurance coverage. And, if property owners choose to go without insurance, and accept the accompanying risk, that should be their decision to make.

Allowing insurers the freedom to set their own rates would help to ease the supply problems currently facing some markets. After all, if insurers are allowed to charge risk-based premiums, this will encourage more insurers to write additional coverage in high-risk markets. More insurers would mean greater competition, which would help to keep down the cost of insurance policies.

Even with an increased supply of insurance and greater competition, disaster insurance will remain expensive in those regions most at risk for major disasters. Some parts of the country are simply more hazardous, and property in these areas is thus more expensive to insure. Congress can help alleviate this situation by allowing insurance companies to accumulate tax-exempt disaster insurance reserves. With greater reserves to draw on in an emergency, insurers will not have to rely as heavily on annual premium income and they will be able to charge lower premiums. Insurance company reserves should be regarded as a legitimate cost of doing business; capital that must be maintained to pay the extraordinarily high costs associated with earthquakes, hurricanes and other major disasters.

Allowing insurers the freedom to set their own rates would help to ease the supply problems currently facing some markets.

Linking disaster relief to the purchase of insurance would encourage more property owners to buy disaster-related coverage. Ultimately, the fundamental responsibility for protecting his property lies with the homeowner himself. Public policy should attempt to limit cross-subsidies from taxpayers in safer regions to residents of disaster-prone areas. Further, federal policy should not reward those who simply assume that they will be bailed out in the event of a catastrophe.

New securities products represent a significant innovation that could be of great use to insurers in raising the capital required to underwrite disaster risks. Insurers should be allowed greater opportunities to develop and use these financial instruments.

Some of the reforms presented in this paper may increase the cost of insurance to some homeowners in disaster-prone regions. If that is the case, it is because the true cost of providing property insurance in these areas has been hidden and distorted by rate regulations and aid policies. And, while it is easy to sympathize with homeowners in disaster-prone areas in their desire for lower premiums, rates that are made artificially low through government action come at a high cost to taxpayers in the rest of the country if and when the federal government must step in to assume the cost of disaster-related losses.

Without significant policy reform, consumers may eventually face a dysfunctional insurance market plagued by shortages in supply. Insurers were rattled by the losses associated with Hurricane Andrew and the Northridge earthquake. Many questioned whether major natural disasters were insurable risks at all. But if insurers are given the freedom to structure coverage more flexibly, rate risks appropriately, charge premiums that reflect that risk, and raise and build the capital funds required to pay for the substantial liabilities of disaster insurance, insuring catastrophic events becomes a more manageable task. It is in the interest of consumers and insurers alike that insurance markets be made more stable and the supply of insurance remain as consistent as possible.

Rather than compensating for poor regulation with yet more government intervention, lawmakers should free up the market for disaster insurance. By obfuscating the true costs of insuring property in disaster-prone regions and impeding the ability of insurers to raise the capital required to meet such liabilities, government policymakers have contributed significantly to creating the current crisis situation. Congress and the states should instead allow the private market to meet the challenges posed by the threat of these destructive events.

Rather than compensating for poor regulation with yet more government intervention, lawmakers should free up the market for disaster insurance.

ABOUT THE AUTHORS

Catherine England is a visiting assistant professor of finance in the School of Management at George Mason University. In the fall, Dr. England will be serving as visiting assistant professor in the School of Business at Marymount University. Dr. England served as the director of CEI's Insurance Reform Project from 1994 to 1996. She was at the Cato Institute from 1984 to 1991. There, she served as director of regulatory studies and senior editor of *Regulation* magazine. She served as a policy analyst at the Heritage Foundation from 1981 to 1984. Before joining the Heritage Foundation, she was a member of the American University Faculty. Dr. England is the editor of two books, *The Financial Services Revolution: Policy Directions for the Future* (co-edited with Thomas Huertas) and *Governing Banking's Future: Markets vs. Regulation*. She is the author of numerous articles in both popular and professional publications. Dr. England received her M.S. and Ph.D. in economics from Texas A&M University.

Jeffrey R. Yousey is a Research Associate with the Competitive Enterprise Institute. As an analyst with CEI's Insurance Reform Project, he has conducted research on many aspects of insurance regulation. Mr. Yousey is the author of the chapter, "Insurance Reform in the Commonwealth," from the Massachusetts-based Pioneer Institute for Public Policy Research book, *Agenda for Leadership 1998*. He received his B.A. magna cum laude from Brandeis University with High Honors from the History Department.