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Report to the Chairman, Committee on Financial Services, House of Representatives

September 2002

CATASTROPHE INSURANCE RISKS

The Role of Risk-Linked Securities and Factors Affecting Their Use

G A O

Accountability ★ Integrity ★ Reliability

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Abbreviations

BMA	Bond Market Association
CBOT	Chicago Board of Trade
CEA	California Earthquake Authority
CFTC	Commodity Futures Trading Commission
EITF	Emerging Issues Task Force
FASB	Financial Accounting Standards Board
FASIT	Financial Asset Securitization Investment Trust
FHCF	Florida Hurricane Catastrophe Fund
FWUA	Florida Windstorm Underwriting Association
GAAP	Generally Accepted Accounting Principles
JUA	Florida Residential Joint Underwriting Association
LIBOR	London Interbank Offered Rate
NAIC	National Association of Insurance Commissioners
PCS	Property Claim Services
RAA	Reinsurance Association of America
REMIC	Real Estate Mortgage Investment Conduit
SEC	Securities and Exchange Commission
SPE	special purpose entity
SPRV	special purpose reinsurance vehicles

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United States General Accounting Office
Washington, D.C. 20548

September 24, 2002

The Honorable Michael G. Oxley
Chairman, Committee on Financial Services
House of Representatives

Dear Mr. Chairman:

Because of population growth, resulting real estate development, and rising real estate values in hazard-prone areas, our nation is increasingly exposed to much higher property-casualty losses—both insured and uninsured—from natural catastrophes than in the past.[1] In the 1990s, a series of natural disasters, including Hurricane Andrew and the Northridge earthquake, (1) raised questions about the adequacy of the insurance industry's financial capacity to cover large catastrophes without limiting coverage or substantially raising premiums and (2) called attention to ways of raising additional sources of capital to help cover catastrophic risk. The nation's exposure to higher property-casualty losses increases pressure on federal, state, and local governments; businesses; and individuals to assume ever-larger liabilities for losses associated with natural catastrophes. Recognizing this greater exposure and responding to concerns about insurance market capacity, participants in the insurance industry and capital markets have developed new capital market instruments (hereafter called risk-linked securities)[2] as an alternative to traditional property-casualty reinsurance, or insurance for insurers.

Because of these concerns, you asked that we review the role of risk-linked securities in providing coverage for catastrophic risk and issues related to their expanded use. As agreed with your office, our objectives were to (1) describe catastrophe risk and how the insurance and capital markets provide for coverage against such risks; (2) describe how risk-linked securities, particularly catastrophe bonds, are structured; and (3) analyze how key regulatory, accounting, tax, and investor issues might affect the

[1]In this report, we use the term "catastrophe risk" to mean risk from natural catastrophes. For a discussion of insurance issues surrounding terrorism, see U.S. General Accounting Office, *Terrorism Insurance: Alternative Programs for Protecting Insurance Consumers*, GAO-02-175T (Washington, D.C.: Oct. 24, 2001).

[2]In this report, we refer to capital market instruments that cover insured catastrophe risks as "risk-linked securities," even though some of these instruments are not securities in the formal sense.

use of risk-linked securities. Our overall objective was to provide the Committee with information and perspectives to consider as the Committee and Congress move forward in this important and complex area.

Even though we did not have statutory audit or access to records authority with private-sector entities, we obtained extensive documentary and testimonial evidence from a large number of entities, including insurance and reinsurance companies, investment banks, institutional investors, rating agencies, firms that develop models to analyze catastrophe risks, regulators, and academic experts. We did not verify the accuracy of data provided by these entities. Some entities with whom we met voluntarily provided information they considered to be proprietary; therefore, we did not report details from such information. In other cases companies decided not to voluntarily provide proprietary information, and this limited our inquiry. For example, we did not obtain any reinsurance contracts representing either traditional reinsurance or reinsurance provided through the issuance of risk-linked securities.

Although we identified factors that industry and capital markets experts believe might cause the use of risk-linked securities to expand or contract, we make no prediction about the future use of these securities—either under current accounting, regulatory, and tax policies or under changed policies. Nor are we taking a position that increased use of risk-linked securities is beneficial or detrimental. Appendix I provides a detailed discussion of our scope and methodology.

We conducted our work between October 2001 and August 2002 in Washington, D.C.; Chicago, Ill.; New York, N.Y.; and various locations in California and Florida in accordance with generally accepted government auditing standards. Written comments on a draft of this report from the National Association of Insurance Commissioners (NAIC),[3] the Reinsurance Association of America (RAA),[4] and the Bond Market

[3]NAIC is a voluntary organization of the chief insurance regulatory officials of the 50 states, the District of Columbia, and four U.S. territories.

[4]RAA is a national trade association representing property and casualty organizations that specialize in reinsurance.

Association (BMA)[5] appear in appendixes V, VI, and VII, respectively. We also obtained technical comments from the Department of the Treasury (Treasury), the Securities and Exchange Commission (SEC), the Commodities Futures Trading Commission (CFTC), NAIC, RAA, and BMA that have been incorporated where appropriate.

Results in Brief

Catastrophe risk includes exposure to losses from natural disasters, such as hurricanes, earthquakes, and tornadoes, which are infrequent events that can cause substantial financial loss but are difficult to reliably predict. The characteristics of natural disasters prompt most insurers to limit the amount and type of catastrophe risk they hold. For example, property-casualty insurers that hold policies on their books that are overly concentrated in certain states, such as California and Florida, typically diversify and transfer risk through reinsurance.[6] Traditional reinsurance depends, in part, on well-developed contractual and business relationships between insurers and reinsurers. These relationships facilitate relatively low transaction costs and indemnity-based coverage, which compensates insurers for part or all of their losses from insured claims.[7] However, in the case of extremely large or multiple catastrophic events, insurers might not have purchased sufficient reinsurance, or traditional reinsurance providers might not have sufficient capital to meet their existing obligations. In any event, after a catastrophic loss, reinsurance capacity may be diminished and reinsurers might raise prices or limit availability of future catastrophic reinsurance coverage. In the 1990s, the combination of Hurricane Andrew and the Northridge earthquake along with reinsurance market conditions helped spur the development of capital market instruments and other alternatives to traditional reinsurance, such as state-run programs. Yet to date, risk-linked securities have represented a small share of the overall

[5]BMA represents securities firms and banks that underwrite, distribute, and trade fixed income securities, both domestically and internationally.

[6]Reinsurance is insurance for insurers that enables the insurer to transfer some of its risk to another insurer, called a reinsurer.

[7]Indemnity coverage specifies a simple relationship that is based on the insurer's actual incurred claims. For example, an insurer could contract with a reinsurer to cover half of all claims—up to $100 million in claims—from a hurricane over a specified time period in a specified geographic area. If a hurricane occurs where the insurer incurs $100 million or more in claims, the reinsurer would pay the insurer $50 million. In contrast, nonindemnity coverage specifies a specific event that triggers payment and payment formulas that are not directly related to the insurer's actual incurred claims.

property-casualty reinsurance market. According to the Swiss Reinsurance Company, in 2000, risk-linked securities represented less than 0.5 percent of the worldwide catastrophe insurance.

Risk-linked securities that can be used to cover risk from natural catastrophes employ many structures and include catastrophe bonds and catastrophe options. Currently, most risk-linked securities are catastrophe bonds. The cost of issuing catastrophe bonds includes the legal, accounting, and information costs necessary to issue securities and market them to investors who do not have contractual or business relationships with the insurance company receiving coverage. Although catastrophe bonds generally involve higher transaction costs than traditional reinsurance and most recently issued bonds have not been indemnity-based, they provide broader access to national and international capital markets. To provide catastrophe coverage via a catastrophe bond, an investment bank or insurance broker creates a special purpose reinsurance vehicle (SPRV) to issue bonds to the capital markets and to provide the sponsor organization—typically an insurance or reinsurance company—with reinsurance. The SPRVs are typically located offshore for tax, regulatory, and legal advantages. The SPRVs that issue catastrophe bonds receive payments in three forms (insurance premiums, interest payments, and principal payments); invest in Treasury securities and other highly rated securities; and pay investors in another form (interest). If the catastrophe occurs, principal that otherwise would be returned to the investors is used to fund the SPRV's payments to the insurer. The investor's reward for taking risk is a relatively high interest rate paid by the bonds. On the one hand, insurers prefer indemnity coverage, because the amount that the reinsurer pays will be directly linked to the insured claims actually incurred. However, that means the reinsurer has to pay more if the insurer underwrites (i.e., selects risks) poorly. On the other hand, investors cannot monitor the insurer's behavior as well as the traditional reinsurer can, thus investors have greater exposure to risk from poor underwriting. Therefore, catastrophe bond issuers have developed nonindemnity-based bonds. Recently issued catastrophe bonds have been structured to make payments to the sponsor upon the occurrence of specified catastrophic events that can be objectively verified, such as an earthquake reaching 7.2 or higher in moment magnitude.[8]

[8]Moment magnitude, a measure of earthquake intensity similar to the more commonly known Richter scale, has been used in catastrophe bonds securitizing earthquake risk.

We identified and analyzed regulatory, accounting, tax, and investor issues that might affect the use of risk-linked securities. First, NAIC and insurance industry representatives are considering revisions in the regulatory accounting treatment of risk transfer obtained from nonindemnity-based coverage that would allow credit to the insurer similar to that now afforded traditional (indemnity-based) reinsurance. Such a revision, if adopted, has the potential to facilitate the use of risk-linked securities. Nevertheless, it is important yet difficult for U.S. insurance regulators to develop an effective measure to account for risk reduction for nonindemnity-based coverage so that insurance company filings with respect to risk evaluation and capital treatment both properly reflect the risk retained. Second, the Financial Accounting Standards Board (FASB) is proposing a new U.S. Generally Accepted Accounting Principles (GAAP) interpretation, which would increase independent capital investment requirements that allow the sponsor to treat SPRVs and similar entities as independent entities and report SPRV assets and liabilities separately. While the proposed guidance is intended to improve financial transparency in capital markets, it also could increase the cost of issuing catastrophe bonds and make them less attractive to sponsors. If the proposed rule were implemented, sponsors might turn to risk-linked securities such as catastrophe options that do not require an SPRV.[9]

Third, "pass-through" tax treatment—which eliminates taxation at the SPRV level—with favorable implementing requirements could facilitate expanded use of catastrophe bonds, but such legislative actions may also create pressure from other industries for similar tax treatment. It is not clear if and when regulatory, accounting, and tax issues will be resolved. Fourth, catastrophe bonds, most of which are noninvestment-grade instruments, have not been sold to a wide range of investors beyond institutional investors. Investment fund managers whose portfolios include catastrophe bonds told us that these bonds comprise 3 percent or less of their portfolios. On the one hand, the managers appreciate the diversification aspects of catastrophe bonds because the risks are generally uncorrelated with the credit risks of other parts of the bond portfolio. On the other hand, the risks are difficult to assess and the bonds have a limited track record. If the ability of investors to evaluate the risks and rewards of risk-linked securities improves, or if catastrophe reinsurance price and availability becomes problematic, the risk-linked securities market has the potential to expand.

[9]See appendix II for a discussion of catastrophe options.

This report does not contain any recommendations. We obtained comments on a draft of this report which are discussed on pages 30 to 32.

Background

Natural catastrophes have a low probability of occurrence, but when they do occur the consequences can be of high severity. Insurance companies face catastrophe risk associated with their provision of property-casualty insurance. Major reinsurers are insurance companies with global insurance and reinsurance operations. Insurers and reinsurers are subject to "moral hazard," which is "the incentive created by insurance that induces those insured to undertake greater risk than if they were uninsured, because the negative consequences are passed through to the insurer." Therefore, reinsurers have incentives to limit the possibility that ceding insurers take actions that would create negative consequences for the reinsurer. Indemnity reinsurance contracts have the potential to increase a reinsurer's risk exposure to the extent that the reinsurer might be unaware of the underwriting and claims settlement practices of the ceding insurer.

Traditional reinsurance is generally indemnity-based and tailored to the needs of the ceding company because traditional reinsurance depends, in part, on well-developed contractual and business relationships between insurers and reinsurers. When reinsurance coverage is not indemnity-based, the ceding insurer is exposed to basis risk—the risk that there may be a difference between the payment received from the reinsurance coverage and the actual accrued claims of the ceding insurance company. Property-casualty reinsurance agreements are typically single-event, excess of loss contracts. A single-event contract means that the reinsurer's obligations are specific to an event, such as a hurricane in a contractually specified geographic area. Excess of loss means that the reinsurer makes payments that are based on a contractually specified share of claims in excess of a minimum amount, subject to a maximum claim payment.

The financial industry has developed instruments through which primary financial products, such as lending or insurance, can be funded in the capital markets. Lenders and insurers continue to provide the primary products to the customers, but these financial instruments allow the funding of the products to be "unbundled" from the lending and insurance business; instead, the funding comes from securities sold to capital market investors. This process, called securitization, can give insurers access to the large financial resources of the capital markets.[10] With respect to funding catastrophe risk in property-casualty insurance, the risk of investing is tied to the potential occurrence of a specified catastrophic event and to the quality of underwriting by insurers and reinsurers.

In evaluating risk, capital market investors face the issue of moral hazard because in the absence of well-developed contractual and business relationships with primary market insurers, capital market investors might be unable to monitor the primary insurance company's underwriting and claims settlement practices that can act to increase risk. Nonindemnity-based coverage is a means to limit moral hazard for the investor by tying payment to industry loss indexes, parametric measures, and models of claims payments rather than actual claims that could be affected by lax underwriting standards or lax settlement of claims by the ceding insurer. However, such coverage introduces basis risk for the sponsoring insurance company.[11]

Insurance companies are not regulated at the federal level but are to comply with the laws of the states in which they operate. The insurance regulators of the 50 states, the District of Columbia, and U.S. territories have created NAIC to coordinate regulation of multistate insurers. NAIC serves as a forum for the development of uniform policy, and its committees develop model laws and regulations governing the U.S. insurance industry. Although not required to do so, most states either adopt model laws or modify them to meet their specific needs and conditions.

[10]To illustrate the size of U.S. capital markets, we used Federal Reserve Board Flow of Funds data for the quarter ended March 31, 2002. Our calculation indicated that the size of the U.S. capital markets was about $31 trillion. We included outstanding levels of U.S. Treasury securities (excluding savings bonds), agency securities, municipal securities, corporate and foreign bonds, and corporate equities.

[11]Basis risk is the possibility that the value of a hedge will not move precisely with the value of the item being hedged. For catastrophe risk, basis risk is the risk that, for example, the value of a catastrophe option will not move precisely with the insurer's catastrophe loss experience.

NAIC also has established statutory accounting standards, which are intended for use by insurance departments, insurers, and auditors when state statutes or regulations are silent. If not in conflict with state statutes and regulation, or in cases when the state statutes are silent, statutory accounting standards promulgated by NAIC are intended to apply. In addition to statutory accounting standards, insurers use GAAP, which are promulgated by FASB and are designed to meet the varying needs of both insurance and noninsurance companies. Although NAIC's statutory accounting standards use the framework established by GAAP, GAAP stresses the measurement of earnings from period to period, while NAIC's standards stress the measurement of ability to pay claims in the future. NAIC has also developed the Risk-Based Capital for Insurers Model Act, adopted in some form in all states, which imposes automatic requirements on insurers to file plans of action when their capital falls below minimum standards.

Insurance and Reinsurance Markets Provide Catastrophe Risk Coverage and Capital Markets Add to Industry Capacity

Natural catastrophes are infrequent events that can cause severe financial losses. Traditional reinsurance helps insurance companies respond to severe losses by limiting their individual liability on specific risks and thereby increases individual insurers' capacity. However, insurance companies have been faced with higher reinsurance premiums for certain coverage following significant past natural catastrophes. Higher costs of reinsurance helped spur the development of risk-linked securities as an alternative to traditional reinsurance.

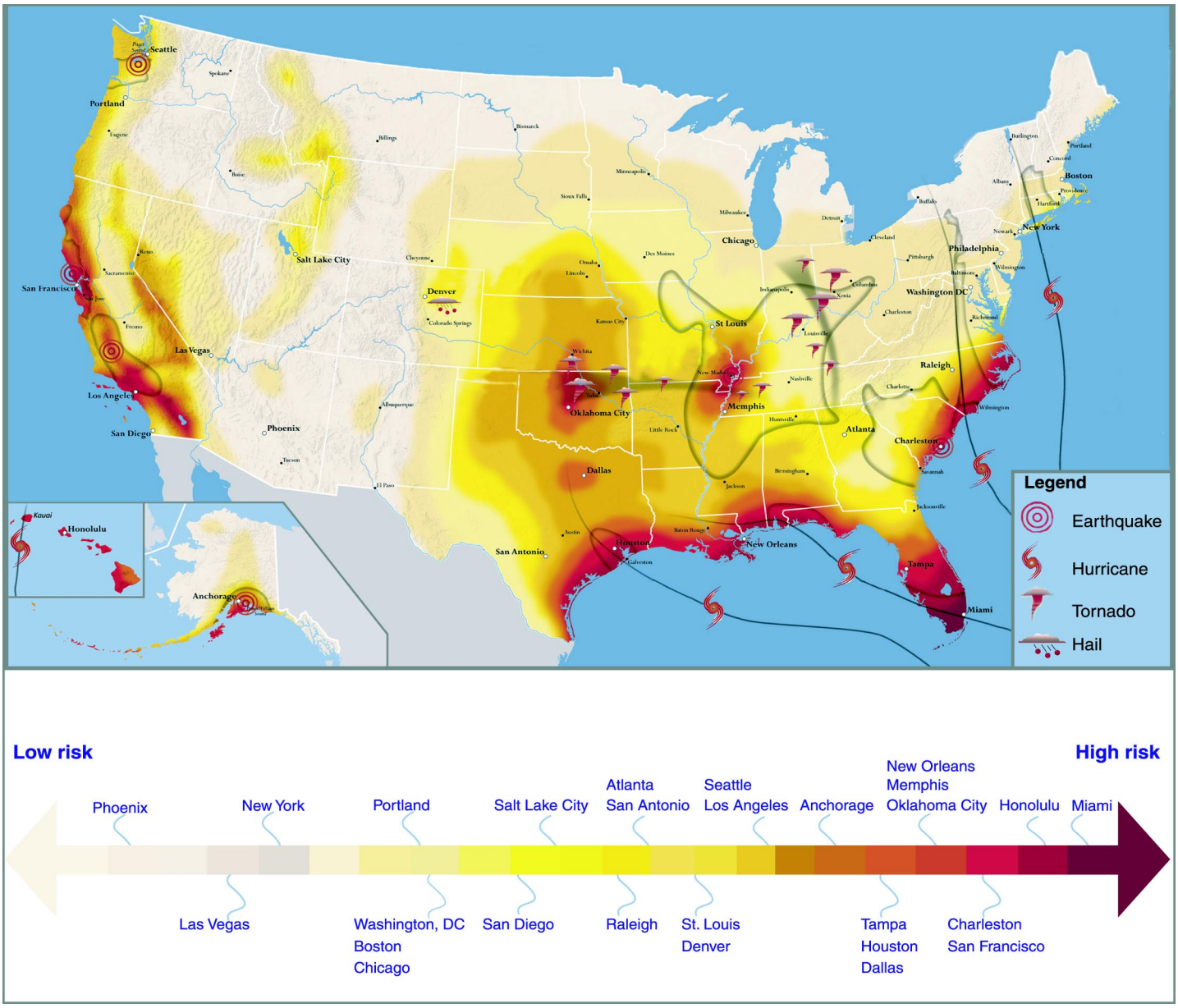
Natural Catastrophes Are Infrequent Events but Cause Severe Loss

Although natural catastrophes occur relatively infrequently compared with other insured events, they can affect large numbers of persons as well as their property. The U.S. property and casualty insurance[12] industry has paid, on average, $9.7 billion in catastrophe-related claims per year from 1989 through 2001, and the amount of claims paid can be highly variable. More than 68 million Americans now live in hurricane-vulnerable coastal areas. Eighty percent of Californians live near active faults. When natural disasters occur they cause damage and destruction, which may or may not

[12]Property-casualty insurance protects individuals and commercial businesses against the risks associated with the loss of property from fire and other hazards, or loss deriving from liability for personal injury and damage to the property of others. Property-casualty insurance includes damage to real estate, automobiles, glass, and other items.

be covered by insurance. The four most costly types of insured catastrophic perils in the United States are earthquakes, hurricanes, tornadoes, and hailstorms, although earthquakes and hurricanes pose the most significant catastrophe risk in insurance markets. Figure 1 shows the combined relative risk of these hazards across the United States.

Figure 1: Catastrophic Risk in the United States: Earthquake, Hurricane, Tornado, and Hail

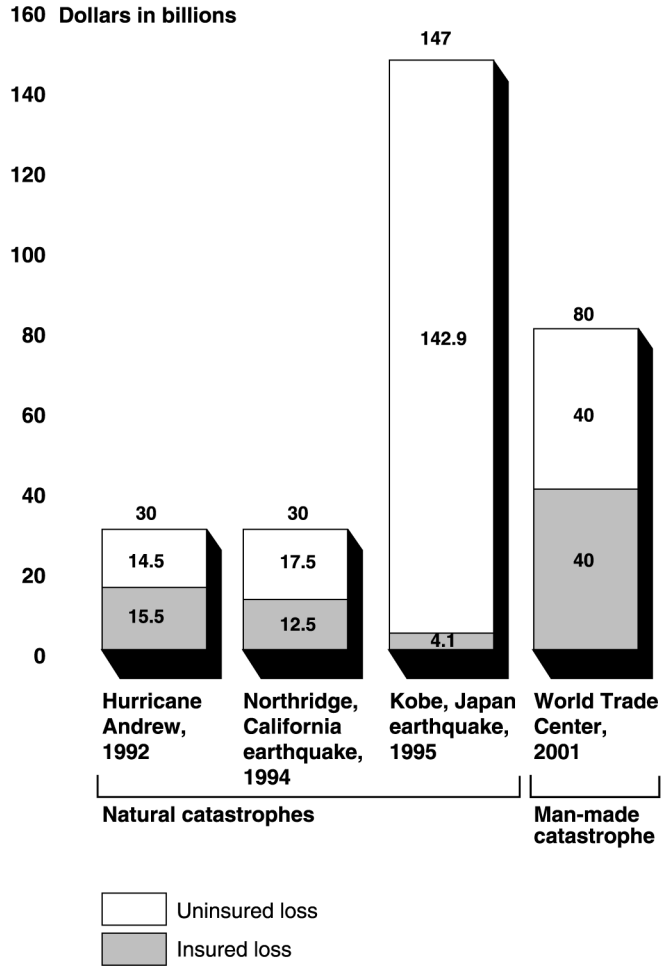


Note: Risk is depicted as average annual loss at a given location from a broad range of catastrophic events. Losses from fires following earthquakes are not included. Because flood-related losses are largely covered by the National Flood Insurance Program, flooding and coastal storm surges are not included.

Source: Risk Management Solutions.

In August 1992, Hurricane Andrew swept ashore in Florida south of Miami and at the time set a new record for insured losses. As shown in figure 2, estimated losses from Andrew were about $30 billion, of which $15.5 billion was insured. Payments of claims stemming from Andrew reduced the capital of affected insurance companies and sharply reduced their capacity to issue new policies. Some of Florida's largest homeowner insurance companies had to be rescued by their parent companies and others had to tap their surpluses to pay claims. Eleven property-casualty insurance companies went into bankruptcy. In January 1994, an earthquake occurred about 20 miles northwest of downtown Los Angeles in the Northridge area of the San Fernando Valley. Also shown in figure 2, estimated losses from the Northridge earthquake were about $30 billion, of which approximately $12.5 billion was insured. Earthquake insurance coverage availability declined precipitously after the Northridge earthquake. Losses from the Kobe, Japan, earthquake and the September 11, 2001, terrorist attack on the World Trade Center also are included in figure 2 to illustrate the global nature of the insurance capacity problem and to provide perspective on the size of losses.

Figure 2: Estimated Losses from Recent Large Catastrophes



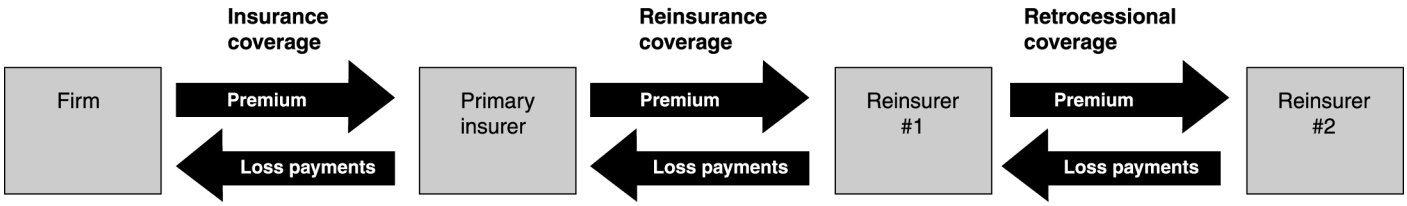
Note: Dollar figures are estimates of insured, uninsured, and total loss.

Sources: Insurance Information Institute and other insurance industry sources.

Catastrophe Risk Is Usually Covered through Insurance, Reinsurance, and Retrocession

For many individuals and organizations, insurance is the most practical and effective way of handling a major risk such as a natural catastrophe. By obtaining insurance, individuals and organizations spread risk so that no single entity receives a financial burden beyond its ability to pay. But catastrophic loss presents special problems for insurers in that large numbers of those insured incur losses at the same time. Reinsurance helps insurance companies underwrite large risks, limit liability on specific risks, increase capacity, and share liability when claims overwhelm the primary insurer's resources. In reinsurance transactions, one or more insurers agree, for a premium, to indemnify another insurer against all or part of the loss that an insurer may sustain under its policies. Figure 3 illustrates traditional insurance, reinsurance, and retrocessional transactions.[13]

Figure 3: Traditional Insurance, Reinsurance, and Retrocessional Transactions



Source: GAO.

Reinsurance is a global business. According to RAA, almost half of all U.S. reinsurance premiums were paid to foreign reinsurance companies.[14]

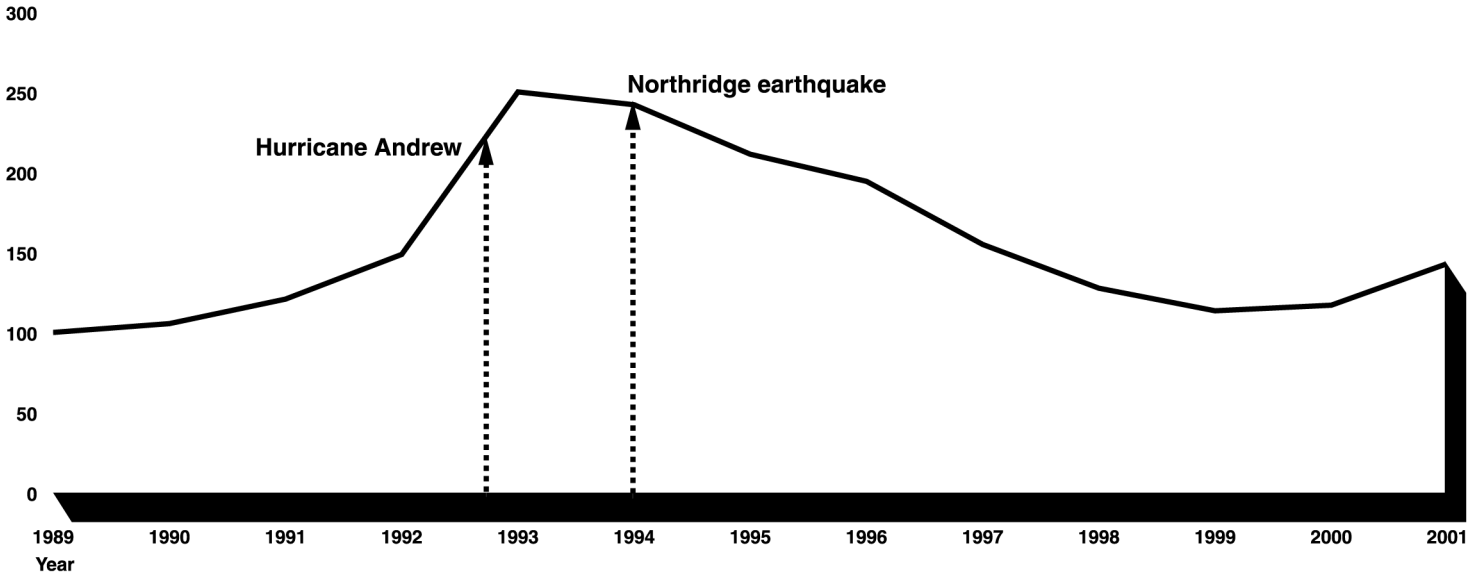
[13]Retrocessional coverage is reinsurance obtained by a reinsurance company when it transfers risk to another reinsurer.

[14]According to RAA, in 2000 U.S. insurance companies paid 53.4 percent of their premiums to U.S. reinsurance companies and alien reinsurers received 46.6 percent of reinsurance premiums. Premiums paid by U.S. insurance companies to offshore companies were most likely to go to reinsurance companies domiciled in Bermuda, the Cayman Islands, the United Kingdom, Germany, and Switzerland.

Insurers Are Subject to Reinsurance Price Swings

Catastrophe reinsurance has experienced cycles in prices, both nationally and in specific geographic areas. Figure 4 presents a national reinsurance price index since 1989, which shows that, overall, reinsurance prices increased both before and after Hurricane Andrew and decreased after the Northridge earthquake.[15]

Figure 4: U.S. Reinsurance Prices, 1989-2001



Note: This figure creates a price index set equal to 100 in 1989 normalized prices. We could not obtain information to assess the reliability of the price data.

Source: Guy Carpenter & Company, Inc., a subsidiary of Marsh & McLennan Companies.

[15]RAA commented that property catastrophe events have led to the creation of the Bermuda property reinsurance market that has played a major role in introducing new capacity into the marketplace after a major event.

The price trend presented in figure 4 does not reflect the situations specific to Florida and California, where insurers refused to continue writing catastrophe coverage. In 1993, the Florida state legislature responded by establishing the Florida Hurricane Catastrophe Fund to provide reinsurance for insurance companies operating in Florida.[16] Also, the Northridge earthquake raised serious questions about whether insurers could pay earthquake claims for any major earthquake. In 1994, insurers representing about 93 percent of the homeowners insurance market in California severely restricted or refused to write new homeowners policies. In 1996, the California state legislature responded by establishing the California Earthquake Authority (CEA) to sell earthquake insurance to homeowners and renters. Appendix III more fully discusses the mechanisms established by Florida and California to deal with the risks posed by such catastrophes.

In one comprehensive study analyzing the pricing of U.S. catastrophe reinsurance,[17] the authors concluded that a catastrophic event, such as a hurricane, reduced capital available to cover nonhurricane catastrophe reinsurance, thereby affecting reinsurance prices. This finding is consistent with the "bundled" nature of capital investment in traditional reinsurance (i.e., capital investors face both the risks associated with company management and the various perils covered by the insurance company). Therefore, the finding suggests that price and availability swings for catastrophe reinsurance covering one peril are affected by catastrophes involving all other perils.[18]

Given the cyclic nature of the reinsurance market, investors have incentives to look for alternative capital sources. Hurricane Andrew and the Northridge earthquake provided an impetus for insurance companies and others to find different ways of raising capital to help cover

[16]RAA commented that the private reinsurance market provides reinsurance to many primary companies in Florida.

[17]Froot, Kenneth A. and Paul G.J. O'Connell, "The Pricing of U.S. Catastrophe Reinsurance," in Kenneth A. Froot, ed., *The Financing of Catastrophe Risk*, National Bureau of Economic Research Project Report, (Chicago: Univ. of Chicago Press, 1999). We did not verify the reliability of the data used nor the authors' methodology. The authors relied on Guy Carpenter & Company pricing data for the years 1970 through 1994.

[18]BMA commented that reinsurance prices in the United States are influenced by events in other parts of the world.

catastrophic risk and helped spur the development of risk-linked securities and other alternatives to traditional reinsurance.

Catastrophe Risk Can Be Transferred to Capital Markets

Catastrophe risk securitization began in 1992 with the introduction of index-linked catastrophe loss futures and options contracts by the Chicago Board of Trade (CBOT). For more information on catastrophe options, see Appendix II. Other risk-linked securities, especially catastrophe bonds, were created and used in the mid-1990s in the aftermath of Hurricane Andrew and the Northridge earthquake. During this time, traditional reinsurance prices were relatively high compared with other time periods. While the most direct means for insurance companies to raise capital in the capital market is issuing company stock, an investor in an insurance company's stock is subject to the risks of the entire company. Therefore, an investor's decision to purchase stock will depend on an assessment of the insurance company's management, quality of operations, and overall risk exposures from all perils. In contrast, an investor in an indemnity-based, risk-linked security can face risk associated with the insurance company's underwriting standards but does not take on the risk of the overall insurance (or reinsurance) company's operations. The cost of issuing risk-linked securities, such as catastrophe bonds, includes the legal, accounting, and information costs that are necessary to issue securities and market them to investors who do not have contractual and/or business relationships with the insurance company receiving coverage. The market test for a securitized financial instrument, such as a catastrophe bond, depends, in part, on how well investors can evaluate the probability and severity of loss that may affect returns from the investment.

However, the willingness of capital market investors to purchase instruments that securitize catastrophe risk, such as catastrophe bonds, and therefore the yields they will require, depends on a number of factors, including the investors' capacity to evaluate risk and the degree to which the investment can facilitate diversification of overall investment portfolios.[19] Demand for risk-linked securities by insurance and reinsurance company sponsors will depend, in part, on the basis risk faced and the ability of sponsors to hedge[20] this basis risk.

Although issuance of risk-linked securities has been limited, many of the catastrophe bonds issued to date have provided reinsurance coverage for catastrophe risk with the lowest probability and highest financial severity. Insurance industry officials we interviewed told us that their use of risk-linked securities has lowered the cost of some catastrophe protection. In addition, one official told us that the presence of risk-linked securities as a potential funding option has helped lower the cost of obtaining catastrophe protection covering low-probability, high-severity catastrophes from traditional reinsurers.

According to the Swiss Reinsurance Company, in 2000, risk-linked securities represented less than 0.5 percent of worldwide catastrophe insurance and, according to estimates provided by Swiss Re and Goldman Sachs, between 1996 and August 2002, about $11 to $13 billion in risk-linked securities had been issued worldwide.[21] As of August 2002, over 70 risk-linked securitizations had been done, according to Goldman Sachs. Risk-linked securities have covered perils that include earthquakes,

[19]BMA commented that there are often compelling reasons for sponsors of risk-linked securities to use nonindemnity-based structures, including that they (1) more effectively shield the confidentiality of the sponsor's underwriting criteria, (2) may provide for more streamlined deal structuring and deal execution, and (3) may facilitate a more rapid payout in response to triggering events.

[20]A hedge is a strategy used to offset risk. For example, investors can hedge against inflation by purchasing assets that they believe will rise in value faster than inflation.

[21]Estimates of the number and dollar amount of risk-linked securities vary. These estimates are published by various industry sources, such as investment banks, insurance brokers, and rating agencies. The estimates differ because some of these data, such as those for privately placed catastrophe bonds, are not generally available and because the sources differ in how they define the instruments and transactions included as risk-linked securities. For example, an instrument called contingent equity may be included by some sources and not by other sources. BMA commented that about $6 to $7 billion in catastrophe-related, risk-linked securities were issued during this time period.

hurricanes, and windstorms in the United States, France, Germany, and Japan.

Risk-Linked Securities Have Complex Structures

Catastrophe options offered by CBOT beginning in 1995 were among the first attempts to market risk-linked securities. The contracts covered exposures on the basis of a number of broad regional indexes that exposed insurers to basis risk, and trading in CBOT catastrophe options ceased in 1999 due to lower-than-expected demand (see app. II).[22] Insurance companies and investment banks developed catastrophe bonds, and the bonds are offered through the SPRVs. Recent catastrophe bonds have been nonindemnity-based to limit moral hazard; therefore, they expose the sponsor to basis risk. The SPRVs are usually established offshore to take advantage of lower minimum required levels of capital, favorable tax treatment, and a generally reduced level of regulatory scrutiny.

Currently most risk-linked securities are catastrophe bonds. Most catastrophe bonds issued to date have been noninvestment-grade bonds.[23] Catastrophe bonds achieved recognition in the mid-1990s. They offered several advantages that catastrophe options did not, among them customizable offerings and multiyear pricing. Catastrophe bonds, to date, have been offered as private placements only to qualified institutional buyers.[24] A catastrophe bond offering is made through an SPRV that is sponsored by an entity that may be an insurance or reinsurance company.[25] The SPRV provides reinsurance to a sponsoring insurance or reinsurance company and is backed by securities issued to investors. The SPRVs are similar in purpose to the special purpose entities (SPE) that banks and

[22]For a description of other capital market instruments used to manage catastrophe risk, see U.S. General Accounting Office, *Insurers' Ability to Pay Catastrophe Claims*, GAO/GGD-00-57R (Washington, D.C.: Feb. 8, 2000).

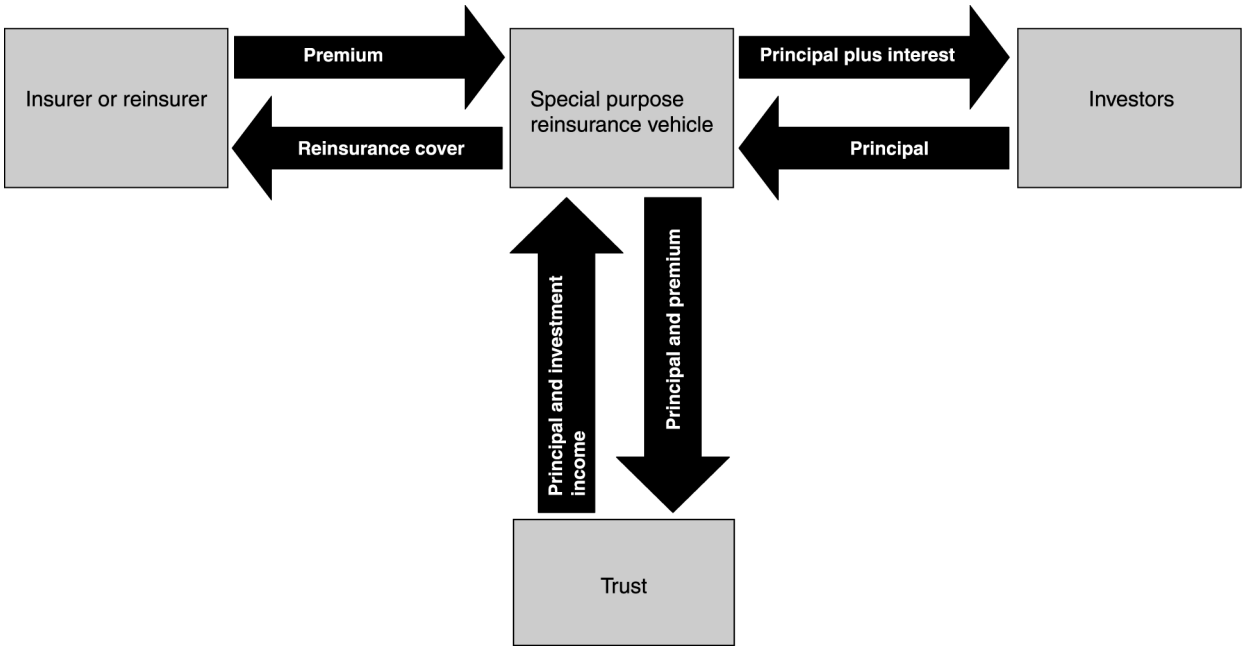
[23]Some catastrophe bonds contain tranches that have received investment grade ratings. BMA commented that a small but growing percentage of newly issued, risk-linked securities have been investment grade.

[24]A private placement is a sale of a security to an institutional investor that does not have to be registered with SEC. Here, an institutional investor is defined by Rule 144A. This SEC rule provides an exemption for limited secondary market trading of privately placed securities.

[25]A noninsurance business that has catastrophe exposure can also sponsor catastrophe bonds through a similar entity, a special purpose vehicle.

other entities have used for years to obtain funding for their loans.[26] These SPEs pay investors from principal and interest payments made by borrowers to the SPE. In contrast, the SPRVs that issue catastrophe bonds receive payments in three forms (premiums, principal, and interest); invest in securities; and pay investors in another form (interest). The SPRV returns the principal to the investor if the specified catastrophe does not occur. Figure 5 illustrates cash flows among the participants in a catastrophe bond.

Figure 5: Special Purpose Reinsurance Vehicle



Source: GAO.

As shown in figure 5, the sponsoring insurance company enters into a reinsurance contract and pays reinsurance premiums to the SPRV to cover

[26]According to Federal Reserve Board Flow of Funds data, at the end of 2001, over $1.8 trillion of loans outstanding were financed by asset-backed securities issued by such SPEs. The underlying loans were made to consumers, students, businesses, and homeowners exclusive of mortgage-backed securities guaranteed by government agencies, government corporations, and government-sponsored enterprises.

specified claims. The SPRV issues bonds or debt securities for purchase by investors. The catastrophe bond offering defines a catastrophe that would trigger a loss of investor principal and, if triggered, a formula to specify the compensation level from the investor to the SPRV. The SPRV is to hold the funds raised from the catastrophe bond offering in a trust in the form of Treasury securities and other highly rated assets.[27] To avoid consolidation on the sponsor's balance sheet, the trust also is to contain a minimum independent equity-capital investment of at least 3 percent of the SPRV's assets, per GAAP. According to a rating agency official, the 3 percent equity capital is usually obtained from capital markets in the form of preferred stock. Typically, investors earn a return of the London Interbank Offered Rate (LIBOR)[28] plus an agreed spread. The SPRV deposits the payment from the investor as well as the premium from the company into a trust account. The premium paid by the insurance or reinsurance company and the investment income on the trust account provide the funding for the interest payments to investors and the costs of running the SPRV.

Under the terms of nonindemnity-based catastrophe bonds, for the sponsoring insurance company to collect part or all of the investors' principal when the catastrophe occurs, an independent third party must confirm that the objective catastrophic conditions were met, such as an earthquake reaching 7.2 in moment magnitude as reported by the U.S. Geological Survey. Such nonindemnity bonds also allow the sponsor to continue to write new business without impacting the risk level of the bond and provide for faster reimbursement to the sponsor in the event of a catastrophe. The sponsor is exposed to basis risk because the claims on the investors' principal might not fully hedge the sponsor's actual catastrophe exposure. However, the sponsor has minimal credit risk—the risk of nonpayment in the event of the covered catastrophe—because the bond is fully collateralized. The SPRVs are usually established offshore—typically in Bermuda or the Cayman Islands—to take advantage of lower minimum

[27]The fixed-rate interest payments are swapped for floating-rate interest payments from a highly rated swap counterparty.

[28]LIBOR is the rate that the most creditworthy international banks charge each other for large loans. The SPRVs enter into interest rate swaps to exchange fixed-rate interest payments earned by funds invested in conservative instruments, such as U.S. government Treasury securities, for floating-rate interest payments, such as LIBOR.

required levels of capital, favorable tax treatment, and a generally reduced level of regulatory scrutiny.[29]

Bond rating agencies, such as Fitch, Moody's, and Standard & Poors, provide bond ratings that are based on their assessment of loss probabilities and financial severity. Some SPRVs have issued catastrophe bonds in tranches having more than one risk structure.[30] The rating agencies rate the bonds according to expected loss.[31] Catastrophe bonds issued to date have generally received noninvestment-grade ratings because investors face a higher risk of loss of their principal.[32] The rating agencies rely, in part, on the risk assessments of three major catastrophe-modeling firms—the same firms are used by traditional reinsurers to help them understand catastrophe risk. These modeling firms rely on large computing capacity; sophisticated mathematical modeling techniques; and very large databases containing information on past catastrophes, population densities, construction techniques, and other relevant information to assess loss probabilities and financial severities. Catastrophe bond-offering statements to investors include rating information and the results from the catastrophe modeling.

One example of a catastrophe bond is Redwood Capital I, Ltd., which is linked to California earthquakes. Lehman Re, a reinsurance company, is the sponsor of the bond. Due to the catastrophe bond structure, investors are exposed to potential loss of principal of about $160 million. The contract provides insurance for 12 months beginning January 1, 2002, covering specified earthquake losses to property in California. The interest rates promised on the principal-at-risk variable rate notes and preference shares are LIBOR+5.5 percent and LIBOR+7 percent. Investor losses are tied to

[29]BMA commented that the principal reason risk-linked securities are organized offshore is to avoid entity-level taxation of those vehicles.

[30]Tranches are classes of a security that have different characteristics of risks and returns. The issuer of a security can split the security's scheduled cash flows into separate classes known as tranches. Often, one tranche of an issue has greater exposure to risk than another tranche, and the different rates that investors can earn on these different tranches reflect their different risks.

[31]There are some differences among rating agencies in their methodology for assigning ratings for some of the catastrophe risk structures. BMA commented that bonds are rated according to frequency of loss as well as expected loss.

[32]Some catastrophe bonds contain tranches that have received investment-grade ratings and tranches with a noninvestment-grade rating.

the Property Claim Services (PCS) index, an indicator of insured property losses for catastrophes. The issuer provides reinsurance coverage for the earthquake peril in California to Lehman Re, the sponsor, for triggering events causing industry losses that range from $22.5 billion to $31.5 billion as estimated by PCS. Proceeds from the issuance of the securities are to be deposited into a collateral account and invested in securities that are guaranteed or insured by the U.S. government and in highly rated commercial paper and other securities. The securities have been offered only to qualified institutional buyers as defined by SEC Rule 144A. Moody's rated the bond a Ba2 (i.e., a noninvestment-grade bond rating) on the basis of the determination that it is comparable to a Ba2-rated conventional bond of similar duration. The rating took into account the risk analysis of a catastrophe-modeling firm.

Regulatory, Accounting, Tax, and Investor Issues Might Affect Use of Risk-Linked Securities

We identified and analyzed regulatory, accounting, tax, and investor issues that might affect the use of risk-linked securities. Our analysis included (1) current accounting treatment of risk-linked securities and proposed changes to accounting treatment, (2) potential changes in equity requirements for the SPRVs, (3) a preliminary tax proposal by insurance industry representatives to encourage domestic issuance of catastrophe bonds by creating "pass-through" tax treatment, and (4) reasons for limited investor participation in risk-linked securities.

Regulators Are Reconsidering Accounting Treatment of Risk-Linked Securities

Under certain conditions, NAIC's Statutory Accounting Principles allow an insurance company that obtains reinsurance to reflect the transfer of risk (effected by the purchase of reinsurance) on the financial statement it files with state regulators. These regulatory requirements are designed to ensure that a true transfer of risk has occurred and the reinsurance company will be able to pay any claims.[33] In receiving "credit" for reinsurance, an insurance company may count the payments owed it from the reinsurance company on claims it has paid as an asset or as a deduction from liability. In doing so, a company can increase earnings reported on its

[33]While such requirements have been promulgated, many insurance regulators hold the view that it is not within their oversight responsibility to police individual reinsurance business transactions between insurance companies, as such transactions are between sophisticated parties. See U.S. General Accounting Office, *Summary of Reinsurance Activities and Rating Actions Tied to Selected Insurers Involved in the Failed "Unicover" Venture*, GAO-01-977R (Washington, D.C.: Aug. 24, 2002).

financial statement and lower the amount of capital it needs to meet risk-based capital requirements established by regulators. The ability to record an asset or to take a deduction from gross liability for reinsurance is consequent upon the transfer of risk and can strongly affect an insurance company's financial condition.

Traditional reinsurance pays off on an indemnity trigger—that is, payment is based on the actual claims incurred by the insurance company. Some risk-linked securities have also provided payments from principal on an indemnity basis, and, under insurance accounting principles, these risk-linked securities have enabled the SPRVs to provide reinsurance that has received what is called "underwriting accounting treatment," thereby allowing the SPRV sponsor to gain credit for reinsurance. In other cases, recovery under a catastrophe bond may not be indemnity based and may rely on a financial model of the insured claims of the insurance company rather than on the actual claims of the company. In these cases, there is a risk that the modeled claims will not equal the insurance company's actual claims. There are also risks that the financial model will produce a recovery less or greater than the companies' incurred claims. Current accounting guidance requires that the contract must indemnify the company against loss or liability associated with insurance risk in order to qualify for reinsurance accounting.

However, NAIC is currently reconsidering the appropriate statutory accounting treatment of nonindemnity-based insurance, which would include risk-linked securities.[34] Both exchange-traded instruments and over-the-counter instruments can be used to hedge underwriting results (i.e., to offset risk). The triggering event on a risk-linked contract must be closely related to the insurance risks being hedged so that the payoff is expected to be consistent with the expected claims, even though some basis risk may still exist. This correlation is known as "hedge effectiveness." NAIC is currently considering how hedge effectiveness should be measured. Should NAIC determine a hedge-effectiveness measure, statutory insurance accounting standards could be changed so that a fair value of the contract could be calculated and recognized as an offset to insurance losses, hence allowing a credit to the insurer similar to

[34]A white paper on the subject written by members of NAIC's securitization subcommittee specifically addressed treatment of nonindemnity-based insurance derivatives, such as catastrophe options. However, NAIC is addressing this issue as it relates more broadly to risk-linked securities.

that granted for reinsurance. If nonindemnity-based, risk-linked securities are accepted by insurance regulators as an effective hedge of underwriting results, they could help make such contracts more appealing to insurance companies by providing treatment similar to that afforded traditional reinsurance. Nevertheless, it is important yet difficult for U.S. insurance regulators to develop an effective measure to account for risk reduction for nonindemnity-based coverage so that insurance company reporting on both risk evaluation and capital treatment properly reflects the risk retained. Appendix IV contains a discussion of credit for reinsurance accounting treatment and the balance sheet implications of such treatment.

Proposed Rule on Equity Requirements Could Affect Catastrophe Bonds

An SPE is created solely to carry out an activity or series of transactions directly related to a specific purpose. The use of an SPE (or more specifically an SPRV) in a catastrophe bond securitization transaction involves a number of complex financial accounting issues in the United States. Current FASB guidance generally provides that the sponsor of an SPE report all assets and liabilities of the SPE in its financial statements, unless all of the following criteria are met:

1. Independent third-party owner's(s') investment in the SPE is at least 3 percent of the SPE's total debt and equity or total assets.

2. The independent third-party owner(s) has a controlling financial interest in the SPE (generally meaning that the owner holds more than 50 percent of the voting interest of the SPE).

3. Independent third-party owners must possess the substantive risk and rewards of its investment in the SPE (generally meaning that the owner's investment and potential return are "at risk" and not guaranteed by another party).[35]

In response to issues arising from Enron's use of SPEs, FASB is currently considering a new approach to accounting for SPEs. The new FASB interpretation would require the primary beneficiary of an SPE to consolidate (list assets and liabilities of) the SPE in its financial statements, unless the SPE has "economic substance" sufficient not to be consolidated; that is, the SPE would have to have the ability to fund or finance its

[35]See Emerging Issues Task Force (EITF), Topic Number D-14, *Transactions Involving Special Purpose Entities* and other related EITF issues.

operations without assistance from or reliance on any other party involved in the SPE. In turn, the SPE would have that ability if it had independent third-party owners who have substantive voting equity investment at risk, exposure to variable returns, and the ability to make decisions and manage the SPE's activities. A presumption is set that substantive equity investment in an SPE should be at least 10 percent of the SPE's total assets throughout the life of the SPE. Therefore, according to information provided by FASB, many existing SPEs would probably be consolidated on the sponsors' financial statements under the new requirement. The potential revision for equity requirements is intended to improve transparency in capital markets. According to rating agency officials, the current 3 percent independent equity requirements in recent catastrophe bond transactions have been met by issuing preferred stock. Our work did not determine the extent to which the 3 percent independent equity requirement is currently being met by the insurance industry.

Bond market representatives told us that the proposed FASB equity requirements also have the potential to create a substantial hurdle to structuring catastrophe bond SPEs because few investors would be willing to purchase preferred shares because of the difficulties in understanding the risks. These representatives argue that risk-linked securitizations are different from other securitizations using SPEs because the insurer does not control the funds held by the SPE, and therefore, should not be subject to the new 10 percent equity investment requirement.

The proposed new FASB interpretation also considers who bears the largest potential risks of the SPE when determining whether to consolidate with the primary beneficiary. Should the primary beneficiary bear the largest dollar loss if the SPE should fail, then consolidation would be required with the primary beneficiary. According to one FASB representative, one issue that needs to be considered is whether the insurer or the investors should be responsible for reporting or consolidating the assets and liabilities of the SPE in financial statements depending on who bears the largest potential risks of the SPE. If an insurer must consolidate the assets and liabilities of the SPE onto its own balance sheet, the insurer will also lose part of the benefit of the reinsurance contract that it enters into with the SPE.

While the proposed guidance is intended to improve financial transparency in capital markets, it could also increase the cost of issuing catastrophe bonds and make them less attractive to sponsors. If the proposed rule were

implemented, sponsors might turn to risk-linked securities that do not require an SPE, such as catastrophe options.

Insurance Industry Representatives Have Proposed Pass-Through Tax Treatment of Risk-Linked Securities

NAIC is concerned that offshore SPRVs reduce economic efficiency and limit the oversight ability of insurance regulators. To further encourage the use of onshore SPRVs, NAIC's working group on securitization has interacted with a group of insurance industry representatives that is considering how to structure a legislative proposal to make onshore SPRVs tax-exempt entities. The SPRVs have been established in offshore tax haven jurisdictions, where the SPRV itself is not subject to any income or other tax; the SPRVs also usually operate in a manner intended to help ensure that they avoid U.S. taxation by conducting most activities outside of the United States.[36] Taxation of the U.S. holders of SPRV-issued securities depends upon whether the securities are characterized as debt or equity. This characterization in turn depends upon a number of factors, including the likelihood of loss of principal, the relative degree of subordination of the instrument in the SPRV's capital structure, and the accounting treatment of the instrument.

Although almost all SPRVs have been established offshore, there has been interest in facilitating the creation of onshore transactions because it is argued that onshore SPRVs would lessen transactional costs and afford regulators greater scrutiny of the SPRVs' activities. NAIC has already approved a model state insurance law that allows for the creation of an onshore SPRV. Under the model law, an onshore SPRV would be a corporation domiciled in and organized under state law for a limited purpose. Insurance regulators' scope of authority would be limited for the SPRVs, which would be required to be minimally capitalized, and the domiciliary state's laws on insolvency would apply to the SPRV.

However, it is likely that the onshore SPRV would be subject to federal income taxation, making the transaction more expensive. To further

[36]The status of the SPRV for U.S. federal income tax purposes is dependent upon a number of factual issues. If the SPRV were determined to be engaged in a U.S. trade or business, it could be subject to U.S. income tax at a rate of up to 35 percent, and to a 30 percent branch profits tax on its income, resulting in an effective U.S. federal tax rate of up to 54.5 percent. This tax rate would substantially reduce the return to investors. The SPRVs are generally characterized as passive foreign investment companies and treat the bonds that they issue as equity for federal income tax purposes. See Bertil Lundqvist, *Securitization of Risk of Loss from Future Events*, 829 PLI/Comm 875, 2001.

encourage the use of onshore SPRVs, a group of industry attendees at the NAIC's insurance securitization working group is considering a legislative proposal to make the onshore SPRVs tax-exempt. Currently, the industry representatives are considering using a structure that would receive tax treatment similar to the treatment received by an issuer of asset- or mortgage-backed securities. Issuers of asset-backed securities are generally not subject to tax on the income from underlying assets as they pass through the issuer to the investors in the securities. It would not be economical for an SPE to issue an asset-backed security if the SPE incurred material tax costs on the payments collected and paid over to the investors as taxable income. Securitizations address the problem of taxes in one of two ways: First, if an asset-backed security is considered debt for tax purposes, deductions are allowed for the interest expense, and the tax burden is shifted to the investors. Second, if the securities are not classified as debt, tax is avoided by treating the SPE as a pass-through entity with income allocated and taxed to its owners.[37]

The current proposal by the industry representatives would create a structure similar to a Real Estate Mortgage Investment Conduit (REMIC)[38] or a Financial Asset Securitization Investment Trust (FASIT). REMICs and FASITs are pools of real property mortgages or debt instruments that issue multiple classes, or tranches, of financial payments among investors. The REMIC and FASIT legislation adopt two approaches to avoiding an issuer tax: They treat the issuer as a pass-through entity and classify regular interest as debt for purposes of allowing an interest deduction to the issuer. The proposal would mimic REMICs and FASITs by providing pass-through treatment for the onshore SPRV and ensuring that the regular payments in the SPRV are classified as debt. To the extent that domestic SPRVs gained business at the expense of taxable entities, the federal government could experience tax revenue losses. The statutory and regulatory requirements used to implement any such legislation would also affect tax revenue.

[37]The principal types of mortgage or other asset-backed securities currently available are pass-through certificates, pay-through bonds, equity interests in domestic issuers of pay-through bonds, pass-through debt certificates, and Real Estate Mortgage Investment Conduits and Financial Asset Securitization Investment Trusts interests. Offshore corporations also are used to issue some asset-backed securities. See David Nirenberg, *Tax Developments in Securitization*, 829 PLI/Comm 411, 2001.

[38]Several concerns with the use of pass-through certificates and pay-through bonds arose, including the inability of a grantor trust to issue pass-through certificates that are divided into multiple classes with staggered maturities. To address some of these concerns, the Tax Reform Act of 1986 enacted the REMIC rules.

Expanded use of catastrophe bonds might occur with favorable implementing requirements, but such legislative actions may also create pressure from other industry sectors for similar tax treatment.

Also, some elements of the insurance industry believe that any consideration of changes to the tax treatment of domestic SPRVs would have to take into account the taxation of domestic reinsurance companies. Domestic reinsurance companies are taxed under the special rules of Subchapter L of the *Internal Revenue Code*. Under these rules, all insurance companies are taxed as corporations. Premiums earned by a domestic reinsurance company, after deducting premiums paid for retrocessional insurance coverage, are taxable. Investment income earned by the reinsurer is also taxable. A ceding commission paid by a reinsurer to an insurer to cover costs, including marketing and sale of the premium, is taxable to the ceding insurance company. However, many reinsurers are either incorporated offshore or are affiliated with companies created offshore to take advantage of reduced levels of taxation. Payments to an offshore reinsurer may be subject to an excise tax.[39] In addition, because of the potential for abuses, the Secretary of the Treasury has special statutory authority to reallocate deductions, assets, and income between unrelated parties when a reinsurance transaction has a significant tax avoidance effect.[40]

RAA officials expressed concerns about the impact of NAIC's model act creating an onshore SPRV. RAA objects to both the special regulatory treatment in the model act and the tax advantages proposed for the onshore SPRV. RAA argues that the NAIC model act creates a new class of reinsurer that will operate under regulatory and tax advantages not afforded to existing U.S. licensed and taxed reinsurance companies. RAA maintains that the SPRV will act as a reinsurer and yet not be subject to insurance regulation, thus endangering solvency regulation and creating an uneven playing field for reinsurers.

[39] 26 U.S.C. §4371.

[40] 26 U.S.C. §845.

Risk-Linked Securities Do Not Have Broad Investor Participation

Catastrophe bonds have not attracted a wide range of investors beyond institutional investors. Investor participation in risk-linked securities is limited in part because the risks of these securities are difficult to assess. Investment bank representatives and investment advisors we interviewed noted that catastrophe bonds have thus far been issued only to sophisticated institutional investors and a small number of large investment fund managers for inclusion in bond portfolios that include noninvestment-grade bonds. Most catastrophe bonds carry noninvestment-grade bond ratings from the rating agencies, but a low rating by itself has not been a barrier to active investor interest in other types of bonds, such as corporate bonds. The investment fund managers told us that catastrophe bonds comprise 3 percent or less of the portfolios in which they are included. On the one hand, the managers like the diversification aspects of catastrophe bonds because the risks are generally uncorrelated with the credit risks of other parts of the bond portfolio. On the other hand, managers stated that they have concerns about the limited liquidity and track record of catastrophe bonds as well as the lack of in-house expertise to understand the perils, indexes, and other features of the bonds.[41]

As requested, we explored the potential for individual investors to purchase shares in mutual funds that purchase catastrophe bonds for inclusion with other securities in a mixed asset fund. We analyzed the SEC rules governing catastrophe bond issuance and mutual fund composition and confirmed with SEC that these rules and regulations do not preclude mutual funds from purchasing catastrophe bonds. One of the investment advisors we interviewed told us that his firm included a small amount of catastrophe bonds in mutual funds sold to the public. However, a mutual fund industry association official told us that the mutual fund companies that the association surveyed—including three of the largest—have not included catastrophe bonds in funds available to individual investors because the companies lack the capacity to evaluate the risks. The mutual fund industry official also raised the issue of whether the risk associated with risk-linked securities would be appropriate or suitable for investments by a broad range of investors, including moderate-income investors.

[41]The September 9, 2002, comment letter from RAA notes that no catastrophe bond contracts have been triggered by catastrophic events.

Agency Comments and Our Evaluation

We received written comments on a draft of this report from NAIC, RAA, and BMA. We also obtained technical comments from Treasury, SEC, CFTC, NAIC, RAA, and BMA that have been incorporated where appropriate. NAIC commented that it supports developing alternative sources of reinsurance capacity, the securitizing of catastrophic risk within the United States, and subjecting SPRVs to U.S. insurance regulation. As stated in our report, a group of insurance industry representatives interacting with NAIC's working group on securitization is considering how to structure a legislative proposal to make the onshore SPRV a tax-exempt entity. Our report also indicates that such legislation also could result in tax revenue losses and other potential costs. NAIC stated that SPRVs, however, would be subject to onshore supervision by U.S. regulators, but it is not clear to us how risk-linked securities would actually be regulated once brought onshore.[42]

RAA commented that our report provides an excellent summary on the use of risk-linked securities in providing coverage for catastrophes. However, RAA took exception to (1) our characterization of reinsurance industry capacity and (2) our description of risk-linked securities as an alternative to reinsurance. RAA noted that in recent occurrences of major catastrophic events in the United States, insurers and reinsurers had sufficient capital to meet their obligations and added that most of the California and Florida market was underwritten by insurers that relied very little, if at all, on reinsurance capacity. First, we note that while the reinsurance industry has been able to meet its obligations from recent events with existing capacity, the industry's capacity must be considered along with issues related to (1) the price and availability of catastrophic reinsurance in high-risk areas and (2) its ability to handle multiple, sequential catastrophes. Some insurers who self-reinsure might do so partially because they believe that the price of reinsurance to cover their exposure to catastrophic events is not attractive. Second, RAA asked that we characterize risk-linked securities as a supplement to reinsurance rather than as an alternative because of the relatively small amount of reinsurance coverage currently provided through risk-linked securities. We agree, and our report states that risk-linked securities add to or supplement reinsurance capacity, but we also

[42]In one case, companies experienced an estimated $1 to $2 billion in losses in reinsuring the occupational accident portion of workers' compensation insurance policies. See GAO-01-977T.

note that sponsors of catastrophe bonds view these securities as alternatives to traditional reinsurance when they are more cost-effective.

BMA stated that our report was accurate and well-researched and commented on several policy issues raised in the report. Their letter raised several concerns with our discussion of tax treatment, accounting treatment, and investor interest in risk-linked securities. First, BMA disagreed with concerns cited in our report that pass-through tax treatment for risk-linked securities could result in (1) tax revenue losses and (2) regulatory and tax advantages that are not afforded to existing U.S.-licensed and taxed reinsurance companies. BMA commented that because a large percentage of entities that provide reinsurance coverage is based outside of the United States, including all reinsurance companies established since September 11, 2001, the tax impact would not be dramatic. In addition, BMA noted that any potential loss of U.S. tax revenue must be weighed against the policy benefits associated with creating additional private-sector capacity to absorb and distribute insurance risk. We agree that many reinsurance entities are not U.S.-based, but the potential tax revenue losses would depend on a number of factors, including business lost by taxable entities and the regulatory requirements used to implement such legislation. We also agree that many considerations must be weighed in the policy decision to grant special tax treatment for onshore SPRVs, including potential tax revenue losses and the extent to which an uneven playing field is created for domestic reinsurance companies.

Second, BMA commented that our description of FASB's SPE consolidation proposal was not based on the final exposure draft and that they interpret the proposal to allow SPRVs to apply only a variable interests approach and not satisfy a particular outside equity threshold. Our draft report discussion of the FASB proposal was based on the final exposure draft. While we did not evaluate BMA's interpretation of the FASB proposal, we included their position in our report. Finally, BMA commented that our discussion of reasons for the lack of broader investor participation in risk-linked securities was incomplete and somewhat inaccurate. They noted that several mutual funds have purchased risk-linked securities as part of their overall portfolios, that mutual fund managers are well-equipped to evaluate the risk associated with these securities, and that lack of broader investor participation may be due to limited issuance. We agree that some mutual funds have purchased risk-linked securities and that lack of broader participation may be attributed to some degree to limited issuance of risk-linked securities. However, information we obtained indicates that some of

the largest mutual fund companies did not include risk-linked securities in their mutual fund portfolios mainly because of their unusual and unfamiliar risk characteristics.

Unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of this letter. At that time, we will send copies of this report to the Ranking Minority Member of the House Committee on Financial Services and the Chairmen and Ranking Minority Members of the Senate Committee on Banking, Housing and Urban Affairs; and the House Committee on Ways and Means. We also will make copies available to others upon request. In addition, this report will be available for no charge on GAO's Internet home page at http://www.gao.gov.

Please contact Bill Shear, Assistant Director, or me at (202) 512-8678 if you or your staff have any questions concerning this report. Key contributors to this work were Rachel DeMarcus, Lynda Downing, Patrick Dynes, Christine Kuduk, and Barbara Roesmann.

Sincerely yours,

Davi M. D'Agostino
Director, Financial Markets and
Community Investment

Scope and Methodology

You asked us to report on the potential for risk-linked securities to cover catastrophic risks arising from natural events. As agreed with your office, our objectives were to (1) describe catastrophe risk and how insurance and capital markets provide for insurance against such risks; (2) describe how risk-linked securities, particularly catastrophe bonds, are structured; and (3) analyze how key regulatory, accounting, tax, and investor issues might affect the use of risk-linked securities.

Even though we did not have audit or access-to-records authority with the private-sector entities, we obtained extensive documentary and testimonial evidence from a large number of entities, including insurance and reinsurance companies, investment banks, institutional investors, rating agencies, firms that develop models to analyze catastrophic risks, regulators, and academic experts. However, we did not verify the accuracy of data provided by these entities. Some entities we met with voluntarily provided information they considered to be proprietary, and therefore we did not report details from such information. In other cases, companies decided not to provide proprietary information, and this limited our inquiry. For example, we did not obtain any reinsurance contracts representing either traditional reinsurance or reinsurance provided through issuance of risk-linked securities.

To describe catastrophe risk and how insurance and capital markets provide for insurance against such risks, we examined a variety of documents, including books on insurance and reinsurance; academic articles and essays; and analyses done by the Insurance Information Institute, the Insurance Services Office, modeling firms, and the Congressional Budget Office. We also interviewed officials from insurance companies, reinsurance companies, the California Earthquake Authority (CEA), the Florida Hurricane Catastrophe Fund (FHCF), modeling firms, and university finance departments and schools.

To describe how risk-linked securities, particularly catastrophe bonds, are structured, we examined catastrophe bond-offering circulars, investment bank documents, reinsurance company analyses, rating agency reports, academic studies, futures exchange documents, and analyses prepared by the American Academy of Actuaries. We also met with officials of investment banks, insurance companies, reinsurance companies, rating agencies, modeling firms, a futures exchange, investment advisors, and the American Academy of Actuaries.

To analyze how key regulatory, accounting, tax, and investor issues might affect the use of risk-linked securities, we examined a variety of documents, including books on insurance accounting and taxation, the Financial Accounting Standards Board's (FASB) proposed consolidation principles for special-purpose entities, accounting firm publications, the National Association of Insurance Commissioners' (NAIC) Statutory Accounting Principles, and the proceedings of NAIC's Working Group on Securitization. We met with officials from many organizations, including NAIC's Working Group on Securitization, the Bond Market Association (BMA), the Reinsurance Association of America, the Investment Company Institute—a mutual fund company association, and FASB. We also met with officials from the Securities and Exchange Commission (SEC), the Commodity Futures Trading Commission (CFTC), and the Department of the Treasury (Treasury).

We faced a number of limitations in our work. We did not verify the accuracy of data provided by the various entities we contacted. While we obtained publicly available data on U.S. reinsurance prices, we could not obtain information to assess the reliability of the price data nor the methodology used to construct the reported price index. We obtained offering statements for some catastrophe bond offers. However, we could not determine whether the offering statements were representative of the universe of catastrophe bond offers, and we relied on summary information on the various offers provided to us by bond rating agencies. We also faced limitations in identifying the specific financing arrangements made to provide independent capital investments to special purpose reinsurance vehicles (SPRV) used to avoid consolidation with the sponsor's balance sheet. In addition, without access to reinsurance contracts, we could not determine the extent to which insurance and reinsurance companies received credit for reinsurance, including those companies that relied, in part, on risk-linked securities to transfer catastrophe risk.

Although we identified factors that industry and capital markets experts believe might cause the use of risk-linked securities to expand or contract, it was not within the scope of our work to forecast increased or reduced future use of these securities—either under current accounting, regulatory, and tax policies or under changed policies. It also was not within the scope of our work to take a position on whether the increased use of risk-linked securities is beneficial or detrimental.

We conducted our work between October 2001 and August 2002 in Washington, D.C.; Chicago, Ill.; New York, N.Y.; and various locations in

California and Florida, in accordance with generally accepted government auditing standards.

Catastrophe Options

Catastrophe options were offered by the Chicago Board of Trade (CBOT) in 1995. These options contracts were among the first attempts to market natural disaster-related securities. Catastrophe options offered the advantage of standardized contracts with low transaction costs traded over an exchange. Specifically, the purchaser of a catastrophe option paid the seller a premium, and the seller provided the purchaser with a cash payment if an index measuring insurance industry catastrophe losses exceeded a certain level. If the catastrophe loss index remained below a specified level for the prescribed time period, the option expired worthless, and the seller kept the premium. The option might have been purchased by an insurance company that wanted to hedge its catastrophe risk and might have been sold by firms that would do well in the event of a catastrophe—for example, homebuilders—or by investors looking for a chance to diversify outside of traditional securities markets.

Catastrophe option contracts were revised several times and covered exposures on national, regional, and state bases. On the one hand, because the payouts on the contracts were based on an index of insurance industry catastrophe losses,[43] the transactions did not expose the investor to moral hazard or adverse selection[44] risk. The indexes used were the Property Claim Services[45] (PCS) catastrophe loss indexes.[46] On the other hand, the contracts created basis risk for purchasers—the differences in the claim patterns between an individual insurer's portfolio and the industry index. The options were to have offered minimal credit risk because the CBOT clearinghouse guaranteed the transactions. However, low trading volumes on options also raised questions about liquidity risk. Trading in CBOT catastrophe options ceased in 1999 due to lower-than-expected demand; CBOT delisted catastrophe options in 2000.

[43]The payouts varied with industry catastrophe losses, limited to certain maximums.

[44]Adverse selection is the tendency of persons with a higher-than-average chance of loss to seek reinsurance at average rates, which, if not controlled by underwriting, results in higher-than-expected loss levels.

[45]PCS, a unit of the Insurance Services Office, provides estimates of insured losses related to catastrophes incurred by the insurance industry.

[46]The indexes track PCS's estimates of the insurance industry's aggregate direct property losses as a result of catastrophes.

California and Florida Approaches to Catastrophe Risk

The insurance markets in California and Florida illustrate the difficulties that the catastrophe insurance industry has faced nationally. Because California and Florida are markets with high catastrophe risk, these states have developed programs to increase insurer capacity in these markets. The Northridge earthquake raised serious questions about whether insurers could pay earthquake claims for any major earthquake. In 1994, insurers representing about 93 percent of the homeowners insurance market in California severely restricted or refused to write new homeowner policies because the insurers grew concerned that another earthquake would exhaust their resources. Florida experienced a similar insurance crisis after Hurricane Andrew in 1992. In response, the state created two organizations to provide primary insurance coverage and additional reinsurance capacity.

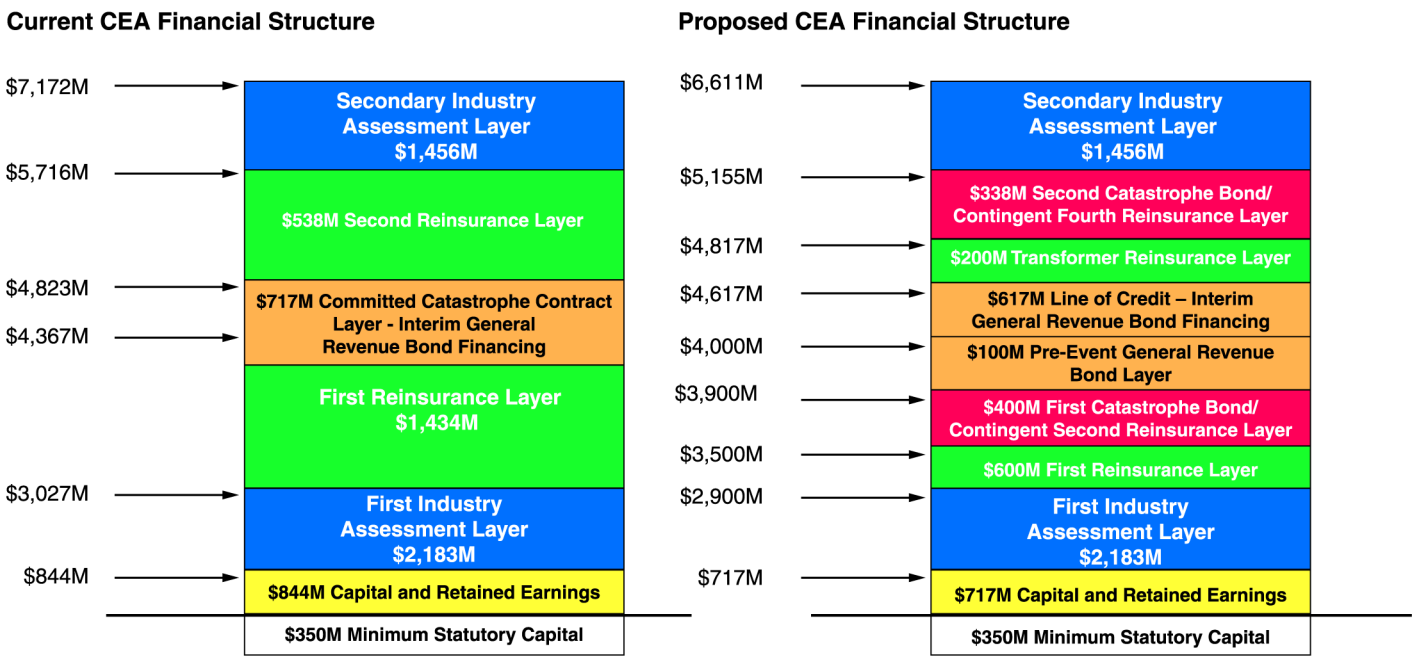
California Earthquake Authority Provides Insurance

In 1996, the California legislature established CEA as a privately funded and publicly managed entity to help residents protect themselves against earthquake loss. CEA sells earthquake insurance to homeowners, including condominium owners and renters. Insurers doing business in California must offer earthquake insurance in their homeowners insurance policies, whether a CEA policy or their own. The basic CEA policy carries a deductible of 15 percent on the home's insured value, provides up to $5,000 to replace contents and personal possessions, and up to $1,500 for emergency living expenses. In 2001, the average policy for a house cost $560, but costs were several times higher in areas with high seismic risk. While companies must offer earthquake insurance, there is no state requirement that consumers purchase earthquake insurance or that mortgage lenders require it. About 16 percent of California residences had earthquake insurance at the end of 2001, and CEA insured 65 percent of those with earthquake insurance.

As of January 2002, CEA had more than 814,000 policies and a claims paying capacity of more than $7 billion against an exposure from all policies of about $175 billion. Their claims paying capacity consisted of layers of capital, insurance company assessments, and reinsurance and a line of credit. Recent external and internal reviews—conducted by the California State Auditor, CEA staff, and others—of CEA's finances have focused on its claims paying capacity. The common concern of these reviews has been the heavy dependence on the reinsurance market—some 40 percent of CEA's $7.2 billion claims paying capacity. Reviewers recommend that some of CEA's claims paying capacity be converted to catastrophe bonds. Such a conversion would make CEA the largest

catastrophe bond issuer in the world. As shown in figure 6, CEA is currently exploring catastrophe bond placements on two layers for $400 million and $338 million. Recently the CEA's Governing Board decided not to support CEA issuance of catastrophe bonds because catastrophe bonds are done in offshore tax havens. A CEA official told us that the Governing Board would revisit the issue when catastrophe bonds can be done onshore.

Figure 6: Current and Proposed California Earthquake Authority Financial Structure



Source: California Earthquake Authority.

Florida Provides Residential Coverage for Windstorms and Supplements Insurance Capacity

Following Hurricane Andrew in 1992, there was a property insurance crisis, and the Florida state legislature created two organizations to provide coverage and additional capacity—the Florida Residential Joint Underwriting Association (JUA) and the FHCF. JUA provides residential coverage in specifically designated areas that are most vulnerable to windstorm damage. Qualified recipients are property owners who could not obtain coverage from private insurers after Hurricane Andrew. The JUA

had 68,000 policyholders and an $11 billion exposure as of January 2001. Rates charged by the JUA in each county must be at least as high as the highest rate charged by the 20 largest private insurance companies in Florida. The JUA's capacity to pay claims was $1.9 billion as of January 2001; claims would be paid by drawing down its surplus, private reinsurance, assessments of members, pre-event notes, a line of credit, and reimbursements from the state's catastrophe fund. In March 2002, the Florida legislature approved a plan to merge JUA with the Florida Windstorm Underwriting Association (FWUA), thereby forming an organization called the Citizen's Property Insurance Corporation.[47]

The FHCF was created as a source of reinsurance capacity to supplement what was available from private sources. The FHCF is run by Florida and was set up to encourage insurers to stay in the Florida marketplace in the aftermath of Hurricane Andrew, when reinsurance became more difficult to obtain. The FHCF reimburses insurers for a portion of their claims from future severe hurricanes. Unlike California, where catastrophe coverage is voluntary, Florida homeowners' policies must include hurricane coverage. The FHCF is the world's largest hurricane reinsurer, and Florida's two residential pools (JUA and FWUA) and private insurers depend on it. Participation by the state's insurers is mandatory, but insurers may choose different levels of coverage (45 percent, 75 percent, or 90 percent) above a high-retention or deductible level for the participating insurers. The fund is financed by (1) about 260 property insurers doing business in the state on the basis of their exposure to hurricane loss and (2) bonding secured by emergency assessments on other insurers. If the FHCF cash balance is not sufficient to reimburse covered losses, it can issue tax-exempt revenue bonds, which are financed by an emergency assessment of all property-casualty insurers excluding workers' compensation writers. Premiums paid relative to coverage purchased are significantly below those in the private-sector. The FHCF's capacity is currently $11 billion against an exposure of over $1 trillion. The $11 billion capacity comprises approximately $4.9 billion in cash and $6.1 billion in borrowing capacity. FHCF is also exempt from federal income tax. Although no major claims have occurred since Hurricane Andrew, the FHCF is designed to handle a $16.3 billion ground up residential property loss, which would include its $11 billion

[47]The FWUA was created in the 1970s to provide wind coverage to property owners who cannot obtain hurricane and windstorm coverage from private insurance companies. It has 430,000 policies with an exposure exceeding $90 billion.

current capacity limit along with an aggregate insurance industry retention of $3.8 billion and an aggregate copayment by insurers of about $1.5 billion.

Florida has not announced plans to use risk-linked securities to address capacity issues.

Statutory Accounting Balance Sheet Implications of Reinsurance Contracts

Over the term of insurance policies, premiums that an insurance company collects are expected to pay for any insured claims and operational expenses of the insurer while providing the insurance company with a profit. The amount of projected claims that a single insurance policy may incur is estimated on the basis of the law of averages. An insurance company can obtain indemnification against claims associated with the insurance policies it has issued by entering into a reinsurance contract with another insurance company, referred to as the reinsurer. The original insurer, referred to as the ceding company, pays an amount to the reinsurer, and the reinsurer agrees to reimburse the ceding company for a specified portion of the claims paid under the reinsured policy.

Reinsurance contracts can be structured in many different ways. Reinsurance transactions over the years have increased in complexity and sophistication. Reinsurance accounting practices are influenced not only by state insurance departments through NAIC, but also by SEC and FASB. If an insurer or reinsurer engages in international insurance, both government regulatory requirements and accounting techniques will vary widely among countries.

Statutory Accounting Principles promulgated by NAIC allow an insurance company that obtains reinsurance to reflect the transfer of risk for reinsurance on the financial statements that it files with state regulators under certain conditions. The regulatory requirements for allowing credit for reinsurance are designed to ensure that a true transfer of risk has occurred and any recoveries from reinsurance are collectible. By obtaining reinsurance, ceding companies are able to write more policies and obtain premium income while transferring a portion of the liability risk to the reinsurer. Under many reinsurance contracts, a commission is paid by the reinsurer to the ceding company to offset the ceding company's initial acquisition cost, premium taxes and fees, assessments, and general overhead. For example, if an insurer would like to receive reinsurance for $10 million and negotiates a 20 percent ceding commission, then the insurer will be required to pay the reinsurer $8 million ($10 million premiums ceded, less $2 million ceding commission income). The effect of this transaction is to reduce the ceding company's assets by the $8 million paid for reinsurance, while reducing the company's liability for unearned premiums by the $10 million in liabilities transferred to the reinsurer. The $2 million is recorded by the ceding company as commission income. This type of transaction results in an economic benefit for the ceding company because the ceding commission increases equity. The reinsurer has assumed a $10 million liability and would basically report a mirror entry

that would have the opposite effects on its financial statements. Figure 7 shows the effects of the reinsurance transaction on both the ceding insurance company and reinsurance company's balance sheets and is intended to show how one transaction increases and decreases assets and liabilities.[48]

Figure 7: Effect on Ceding and Reinsurance Companies' Balance Sheets before and after a Reinsurance Transaction

Ceding company

	Before		After	
	Assets	Liabilities/ Equity	Assets	Liabilities/ Equity
Cash	$25,000,000		$17,000,000	
Unearned premium reserve		$20,000,000		$10,000,000
Policyholders' surplus		5,000,000		7,000,000
Total	**$25,000,000**	**$25,000,000**	**$17,000,000**	**$17,000,000**

Reinsurance company

	Before		After	
	Assets	Liabilities/ Equity	Assets	Liabilities/ Equity
Cash	$30,000,000		$38,000,000	
Unearned premium reserve		$25,000,000		$35,000,000
Policyholders' surplus		5,000,000		3,000,000
Total	**$30,000,000**	**$30,000,000**	**$38,000,000**	**$38,000,000**

Source: Insurance Accounting Systems Association.

[48]Whereas it appears that the ceding company increases its policyholders' surplus, this transaction does not include the effects of other normal business transactions that will cause the surplus to decrease.

Reinsurance contracts do not relieve the ceding insurer from its obligation to policyholders. Failure of reinsurers to honor their obligations could result in losses to the ceding insurer.

An insurer may also obtain risk reduction from an SPRV that issues an indemnity-based, risk-linked security; the recovery by the insurer would be similar to a traditional reinsurance transaction. However, if an insurer chooses to obtain risk reduction from sponsoring a nonindemnity-based, risk-linked security issued through an SPRV, the recovery could differ from the recovery provided by traditional reinsurance. Even though the insurer is reducing its risk, the accounting treatment would not allow a reduction of liability for the premiums.

Comments from the National Association of Insurance Commissioners

NAIC

NATIONAL ASSOCIATION OF INSURANCE COMMISSIONERS

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Ms. Davi M. D'Agostino
Director, Financial Institutions and Community Investment
United States General Accounting Office
Washington, DC 20548

September 9, 2002

Dear Ms. D'Agostino:

Thank you for giving the NAIC the opportunity to comment on the report "Catastrophe Insurance Risks: the Role of Risk-Linked Securities and Factors Affecting Their Use".

The National Association of Insurance Commissioners (NAIC) is a voluntary organization of the chief insurance regulatory officials of the 50 states, the District of Columbia and four U.S. territories. The association's overriding objective is to assist state insurance regulators in protecting consumers and helping maintain the financial stability of the insurance industry by offering financial, actuarial, legal, computer, research, market conduct and economic expertise.

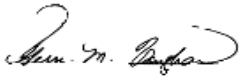
The NAIC formed a working group on Insurance Securitization in 1998 to "investigate whether there needs to be a regulatory response to continuing developments in insurance securitization, including the use of non-U.S. special purpose vehicles and to prepare educational material for regulators." As a result of its deliberations, the NAIC has taken the position that U.S. insurance regulators should encourage the development of alternative sources of capacity such as insurance securitizations and risk linked securities as long as such developments are commensurate with the overriding goal of the NAIC membership of consumer protection. As such, the NAIC believes that one goal should be to encourage and facilitate securitizations within the United States. If transactions that are currently performed offshore were brought back to the United States, they would be subject to on-shore supervision by U.S. regulators. Both the NAIC's Special Purpose Reinsurance Vehicle Model Act and the Protected Cell Company Model Act would require that at least one U.S. insurance commissioner would review each transaction in depth and set the appropriate standards. In addition, an NAIC member chairs the International Association of Insurance Supervisors' Subgroup on Insurance Securitization and fully agrees with these views.

At present, off-shore insurance securitizations are not subject to U.S. regulation, and the NAIC members are concerned about the appropriate use of Special

Purpose Vehicles. The recent events at Enron have demonstrated how inappropriate use of special purpose vehicles can endanger solvency. The NAIC membership believes that, properly used and structured, Special Purpose Reinsurance Vehicles may provide extra capacity, more competition, and may reduce the overall costs of insurance for the public. The NAIC membership therefore believes that on-shore SPRVs, regulated by U.S. insurance regulators, would be preferable to the current situation where most securitizations are conducted off-shore.

Again, we thank you for the opportunity to review and comment on the report.

Sincerely,



Therese M. Vaughan
President, NAIC
Iowa Insurance Commissioner

Comments from the Reinsurance Association of America

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

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September 9, 2002

Ms. Davi M. D'Agostino
Director of Financial Markets and
Community Investment
United States General Accounting Office
441 G Street, NW
Washington, DC 20508

Dear Ms. D'Agostino:

Thank you for providing the RAA an opportunity to comment on the GAO's preliminary report entitled "CATASTROPHE INSURANCE RISKS: The Role of Risk Linked Securities and Factors Affecting Their Use." We greatly appreciate this opportunity.

The Reinsurance Association of America (RAA) is a national trade association representing property and casualty organizations that specialize in reinsurance. The RAA membership is diverse, including large and small, broker and direct, U.S. companies and subsidiaries of foreign companies. Together, RAA members write more than 75% of the reinsurance written by U.S. property casualty reinsurers.

In general, we believe that the report provides an excellent summary of this complex and technical topic and should be a valuable primer for Congress relative to the roles of reinsurance and risk-linked securities in managing catastrophic risks. We would like to thank you for addressing our comments raised previously regarding the abundant capacity of the insurance and reinsurance industry to underwrite catastrophe risk exposure. We continue to have concerns in this area and have addressed them below. We also have differences regarding the GAO's characterization of risk-linked securities as "an alternative to reinsurance," which we have addressed below as well. Finally we have listed some more technical suggestions we believe should be incorporated in the report.

Capacity:

On page 5 the Report states, "in the case of extremely large or multiple catastrophic events, traditional reinsurance providers might not have sufficient capital to meet their existing obligations." In recent occurrences of major catastrophic events in the U.S., insurers and reinsurers have had sufficient capital to meet their obligations. For instance, after Hurricane Andrew (1992) $19.6 billion and the Northridge (1994) earthquake $14.9 billion in 2001 additional dollars, the two largest natural disasters on record in the U.S., not one reinsurer went insolvent and not one reinsurer failed to pay a claim as a result of insolvency or financial distress. Most recently, the reinsurance industry faced the largest insured loss event ever as a result of the September 11, 2001 terrorist attacks. The insured losses are expected to total approximately $60 billion, with the reinsurance industry paying for about 65% of that total. To date,

reinsurers' track record is excellent. We know of only one insolvency of a Japanese insurer regarding aviation liability.

Clearly there may be an event so large that it may threaten the ability of insurers and reinsurers to pay. However, since that has not been the case thus far we ask the GAO to add either a sentence or footnote explaining that traditional reinsurers have had the capital to meet their obligations in recent major catastrophic events. To not do so may draw an inference that the reinsurance industry does not meet is capital obligations.

Similarly, page 16 of the report states that in "Florida and California insurers refused to continue writing catastrophe coverage because of the lack of availability of reinsurance." We believe that the lack of reinsurance was not a key reason insurance companies refused to write. We ask that that sentence be modified to include the following additional factors that played a major role in the decision of insurers to write coverage.

Most of the California and Florida market was underwritten by insurers (State Farm, Allstate, and Farmers) that relied very little, if at all, on reinsurance capacity. In fact we note reinsurance capacity rebounded very quickly and the heightened market demand following Hurricane Andrew and Northridge Earthquake led to the creation of a new class of specialized property catastrophe reinsurers. The problem of insurance capacity in Florida and California was over concentration in the market among 3-4 primary companies, not the lack of reinsurance. The insured losses resulting from Andrew led many of these companies to reevaluate their market share.

Pricing problems also led to insurers refusing to write policies. Regulators did not permit the insurance market to charge adequate rates corresponding with the risks of those insurance policies. Inadequate insurance rates can make a risk that is insurable, uninsurable. Inadequate rates used by insurers threaten the viability of the underwriting entity. Those that wanted to write were restricted from doing so because the freeze on pricing restricted their ability to fully recoup their costs. Lastly, inadequate coverage flexibility affected insurers willingness to write new business, as did competition from subsidized residual market pools. All of these factors had a major impact on insurers' decision not to write after Andrew and Northridge, and we ask that this be noted in the report.

Use of Risk-Linked Securities:

There are numerous references in the report that "risk–linked securities are an alternative to reinsurance." We disagree with the characterization that securitized products are an alternative to reinsurance. Because of the significant differences between indemnity based reinsurance and risk-linked securities as well as the relative depth of the reinsurance market and the minimal actual use of securitization as an alternative market, it is an overstatement to characterize these instruments as a viable alternative to reinsurance. We ask that when such a reference is made that the reports state that they are a supplement to reinsurance. They supplement reinsurance capacity mainly for: (1) high layer coverage, for very rare events where they provide some experimental capacity on the fringe of the traditional market capacity and (2) where direct indemnity for losses is less important to the ceding companies. The relatively few securitizations actually put in effect in the last 5 years makes clear that insurers view securitization as supplemental to reinsurance and not a replacement.

Other comments:

Several technical suggestions follow:

See comment 1.

- Modify sentence on page 16 as follows: "In 1992 the Florida state legislature responded by establishing the Florida Hurricane Catastrophe fund to provide a layer of reinsurance for insurance companies operating in Florida." The CAT fund is not the sole provider of reinsurance in Florida, for the private reinsurance market provides reinsurance to many primary companies. Private reinsurance remains an integral part of insurers catastrophe risk management. We ask that this fact be recognized in the report.

See comment 2.

- We believe it is important to note that not one catastrophe bond contract has ever been triggered by an actual event. Therefore, not one securitization has yet to go through the process of paying out claims. Due to the very untested nature of these products we believe it is important to disclose this in the reports discussion of the regulatory, accounting, tax and investor issues that affect the use of risk-linked securities.

See comment 3.

- Throughout the report there are statements that risk-linked securities developed after significant catastrophe events. While this is true, we believe that in order to be more thorough there must be a footnote or discussion that property catastrophe events have also led to the creation of the Bermuda property reinsurance market. The Bermuda market has played a major role in introducing new capacity into the marketplace after a major event. This is not only evidenced in the market development after Hurricane Andrew, but most recently after the terrorist attacks of September 11.

Now on p. 5.
See comment 4.

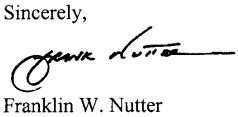
- On page 7 in the discussion on the regulatory, accounting, tax and investor issues for risk-linked securities we believe it should be noted that the Financial Accounting Standards Board is developing new more stringent standards requiring consolidation of special purpose entities.

Now on p. 18.
See comment 5.

- On page 19 in the discussion as to why risk-linked securities are conducted offshore it should be noted that another reason is due to bankruptcy remoteness.

Thank your for the opportunity to provide comments on the preliminary report on risk-linked securities. If you have any questions please contact me at 202-638-3690.

Sincerely,



Franklin W. Nutter
President

The following are GAO's comments on the Reinsurance Association of America's letter dated September 9, 2002.

GAO Comments

1. In appendix III of the draft report we had already noted that the Florida Hurricane Catastrophe Fund provides reinsurance to supplement that available from private sources. We added a footnote on page 15 to note that reinsurance is also available from private sources for property and casualty insurance companies doing business in Florida.

2. We agree and have added a footnote on page 29 to state that no catastrophe bond contracts have been triggered by an actual event.

3. We agree and have added a footnote on page 14 on the creation of the Bermuda reinsurance market and its role in introducing new capacity into the marketplace after a major event.

4. This issue is covered on pages 24 through 26.

5. Bankruptcy remoteness is among the reasons that the special purpose entities are established, whether domestically or offshore.

Comments from the Bond Market Association

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

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September 10, 2002

Ms. Davi M. D'Agostino
Director, Financial Markets and Community Investment
United States General Accounting Office
Washington, D.C. 20548

Re: **Comments on Draft GAO Report, "Catastrophe Insurance Risks: The Role of Risk-Linked Securities and Factors Affecting Their Use" (GAO-02-941)**

Dear Ms. D'Agostino:

The Bond Market Association (the "Association")[1] is pleased to respond to GAO's request for comments on the above-referenced draft report (the "Report").[2]

Overall, we believe that the Report is an accurate, well-researched and well-written document. As such, we think it will be helpful in facilitating a broader understanding of the purposes and benefits of risk-linked securities ("RLS"), and certain key business, economic, regulatory and other factors that may affect the viability of this innovative tool for the management and transfer of catastrophic insurance risk.

We have divided our comments on the Report into two principal sections. The first section of this letter offers broader, general comments and observations that relate to several important policy issues raised in the Report. The second section provides input on a number of specific, technical issues throughout the document. Our general and specific comments follow.

I. Broader/General Comments

A. The Role of RLS as a Private Capital Market Alternative to Potential Governmental Assumption of Insurance Risk

The Report correctly notes that the nation's exposure to higher property and casualty losses increases pressure within the private and public sector alike to assume ever-larger liabilities for losses associated with natural catastrophes. This observation is

[1] The Association represents securities firms and banks that underwrite, distribute and trade fixed income securities, both domestically and internationally. Our members are actively involved in the primary issuance and secondary trading markets for risk-linked securities. This letter was prepared based upon input provided by members of the Association's Risk-Linked Securities Committee, which includes senior business and legal professionals from Association member firms. Additional information about the Association, its members and activities may be obtained via the Internet at www.bondmarkets.com.

[2] GAO's request for comments was made via letter dated August 26, 2002 from Davi M. D'Agostino, Director, Financial Markets and Community Investment of GAO, to Micah Green, President of the Association.

particularly relevant for state and federal governments, who are sometimes viewed as "insurers of last resort."[3] RLS constitute an important, supplemental tool for risk management and risk transfer. The emergence of RLS has created additional capacity, and new mechanisms, for the private sector assumption and distribution of catastrophic risk beyond that which has historically been available via the traditional insurance and reinsurance markets. The fully collateralized structure of RLS provides a mechanism to significantly mitigate the risk of uncollectible reinsurance following a major catastrophic event. As such, the expanded usage and application of RLS can relieve pressures that governments may otherwise face to bear these risks directly. We believe that this potential "replacement" effect is significant in its own right. It is especially relevant, however when considering various policy issues and potential trade-offs associated with efforts to facilitate growth of the RLS market

B. Motivations for Off-Shore RLS Issuance and the Facilitation of On-Shore Issuance Vehicles

See comment 1.

The Report states in several places that RLS issuance vehicles are usually established offshore to take advantage of lower minimum required levels of capital, favorable tax treatment, and a generally reduced level of regulatory scrutiny. We believe that the Report should clarify this statement in several respects, as well as the related motivation to establish on-shore RLS issuance vehicles.

The principal reason that RLS vehicles are organized offshore is to avoid entity-level taxation of those vehicles—not, as the Report appears to suggest, to avoid regulatory scrutiny by U.S. authorities. The Report correctly notes that in certain respects the status of RLS issuance vehicles for U.S. federal income tax purposes is uncertain, and that this uncertainty risks the vehicle being subjected to entity-level taxation. This outcome would substantially impair the economic rationale for most, if not all RLS issuance, and is the principal reason that such vehicles are organized and conduct most of their activities outside of the U.S. It is true that in other respects, the laws and regulations of the principal offshore jurisdictions may offer a more favorable regulatory environment for RLS issuance than is the case in the U.S. Again, however, neither regulatory "arbitrage" nor the avoidance of scrutiny by U.S. regulatory authorities is a primary factor underlying the prevalence of offshore RLS issuance vehicles.

The Report notes that pass-through treatment of RLS has been proposed. Although the details require further development and refinement, the Association believes that such an initiative represents a desirable policy action and should be pursued. As suggested above, establishing pass-through tax treatment (ideally, by establishing special tax rules governing the structure and permitted activities of RLS issuance vehicles, along the lines of the REMIC and FASIT legislative initiatives described in the Report) would facilitate the creation of onshore RLS vehicles. This would, also as noted in the Report, lessen

[3] Appendix II of the Report provides data that are illustrative in this context. For example, only 17% of California residences carried earthquake insurance at the end of 2001, and as of January 2002, the California Earthquake Authority had a claims-paying capacity of approximately $7 billion against the possibility of substantially larger earthquake losses.

transaction costs associated exclusively with current requirements to conduct most activities relating to the creation and operation of the issuing vehicle in a non-U.S. jurisdiction. Reducing these transaction costs would render the execution of RLS transactions even more efficient.

The primary concerns cited in the report in connection with the allowance of pass-through tax treatment—potential tax revenue losses to the U.S. Treasury, and unfair regulatory and tax advantages that are not afforded to existing U.S.-licensed and taxed reinsurance companies—are not relevant to RLS structures, in the Association's view.

With respect to possible tax revenue losses, the Report notes that such losses could result to the extent that domestic issuance vehicles gained business at the expense of taxable entities, such as reinsurers. The fact that a large percentage of entities that currently provide reinsurance coverage are based outside of the U.S.—including all new reinsurance companies established in the wake of September 11, 2001—suggests that any such tax impact would not be dramatic. In addition, the issuance vehicles for RLS are themselves tax neutral in the sense that they generate no economic gain or loss. All premium received and investment income generated by these vehicles are paid out to investors, after expenses of administration of the vehicles, in the form of coupon on the RLS issued by the vehicles.[4] Moreover, any potential loss of U.S. tax revenue must be weighed against the policy benefits associated with creating additional private sector capacity to absorb and distribute insurance risk.[5] As noted in the Report and in our comments, this outcome would be facilitated by establishing pass-through tax treatment for RLS, and with it, the use of on-shore RLS issuance vehicles.

With respect to possible unfair regulatory advantages, the Report notes opposition from the Reinsurance Association of America to the creation of onshore RLS vehicles. This opposition includes the concern that such vehicles act as reinsurers without being subject to insurance regulation, thus endangering solvency regulation. We believe that any such solvency-related concerns are misplaced, given that RLS are fully collateralized and entail no credit risk for their insurance company sponsors.

C. Proposed Accounting Treatment Affecting RLS

In the section of the Report beginning on page 28 entitled, "A Proposed Rule on Equity Requirements Could Affect Catastrophe Bonds," prospective changes to U.S. generally accepted accounting principles ("GAAP") are discussed. Specifically, this section of the Report describes proposals under consideration by the Financial Accounting Standards Board ("FASB") relating to consolidation of special-purpose entities, or SPEs (which

[4] The investors that receive the coupon payments on RLS are largely U.S. taxpayers either directly or indirectly, in contrast to the bulk of the recently created reinsurance capacity for catastrophe risk, which as noted above has been located offshore.

[5] If RLS on-shore issuance vehicles were permitted, we believe that U.S. tax revenues would result from the taxation of related activities that are now conducted outside of the United States, such as the administrative, legal, accounting and other services provided to and paid for by RLS SPEs.

would generally encompass RLS issuance vehicles), and related third-party equity requirements to avoid consolidation of the RLS vehicle by its primary beneficiary.

Throughout the spring and early summer of 2002, FASB engaged in extensive deliberations on the nature of proposed revisions to its existing SPE consolidation criteria. During these deliberations, a number of different conceptual models and specific consolidation criteria were discussed, amended and refined. This led to FASB's issuance on June 28, 2002, of a definitive exposure draft setting forth proposed changes to existing GAAP standards governing SPE consolidation.[6]

The description of FASB's SPE consolidation proposals contained in the Report appears to relate to criteria that had been under discussion by FASB at various times during the above deliberations, but which were amended in several important respects in the final exposure draft. In particular, the final exposure draft provides several alternative means of evaluating SPEs for consolidation. One such alternative does not require satisfaction of any specific outside equity threshold for transaction structures where the risks and rewards of SPE assets have been transferred to independent third parties (the "variable interests" approach, as further described in the exposure draft).

In general, the Association believes that it may be possible to apply FASB's proposed variable interests approach to SPEs used in RLS transactions in a manner that eliminates any requirement to satisfy a particular outside equity threshold. Under the variable interests analysis, the return to investors would appear to constitute the true variability in the economics of the transaction structure for RLS.

To the extent that any single investor holds a majority of these variable interests (i.e., the securities issued by the SPE), then consolidation by that investor would be appropriate, as it could be viewed as possessing a controlling financial interest in the SPE. Absent such a majority holding by any single entity or other demonstrable evidence of a *de facto* controlling financial interest in an SPE, the Association believes that it would be inappropriate for any entity to reflect the entirety of the SPE's assets and liabilities on its balance sheet, as it neither has access to those assets nor exposure to those liabilities. In these circumstances, consolidation would be inconsistent with the underlying economics of the transaction, and would produce misleading financial statements. Moreover, the risk of such consolidation would likely operate as a substantial disincentive to future RLS issuance, as transaction sponsors, investors and other entities would be unwilling to assume the risk of an inappropriate "ballooning" of their balance sheets.

Unfortunately, under FASB's proposal as drafted, no special circumstances or demonstrable *de facto* controlling financial interest is necessary to require consolidation without a majority of variable interests. The absolute rule (not even a rebuttable presumption) is that if no party holds a majority of an SPE's variable interests, then any party that has a significant variable interest that is significantly larger than any other

[6] *See* "Exposure Draft on Consolidation of Certain Special-Purpose Entities, a Proposed Interpretation of ARB No. 51," dated June 28, 2002 issued by the Financial Accounting Standards Board (available from FASB's Internet website at www.fasb.org).

party's is required to consolidate. We believe that this new paradigm will result in numerous false positives, requiring consolidation by enterprises that in fact do not exercise a controlling financial interest. We strongly oppose this result and, consequently, also oppose the new paradigm.

The comment period for FASB's exposure draft expired on August 30, 2002, with final guidance expected to be issued by year-end. The Association and its adjunct American Securitization Forum provided extensive comments to FASB in connection with these proposals.[7] These comments focused primarily on the impact that these proposals would have on various categories of "risk-dispersing" SPEs, such as those employed in RLS transactions, for which consolidation should generally not be required. A complete copy of those comments may be obtained from the Association's Internet website, at the address contained in footnote 1 of this letter.

D. Investor Participation in the RLS Market

The Report notes that RLS do not have broad investor participation, and that these instruments have not attracted a wide range of investors beyond larger institutions. Several reasons are provided to explain this phenomenon, including that "the risks of these securities are difficult to assess" as well as "concerns about the limited liquidity and track record of catastrophe bonds."

The above comments suggest that limited investor involvement to date in the RLS sector is due principally to the complexity and lack of a sufficient performance history of RLS, which has impaired their broader liquidity and marketability. We believe that this represents an incomplete and somewhat inaccurate portrayal of the dynamics of investor participation in the RLS sector.

Because of suitability concerns, RLS are not sold directly to individual investors. However, we believe that they are entirely appropriate for mutual funds in which individual investors hold shares. In fact, several major fixed income funds have purchased RLS as part of their overall portfolios. As institutional investors, mutual fund managers are well-equipped to perform the necessary analysis of relative value and risk associated with RLS. From the perspective of a mutual fund investor, the complexity and risk associated with RLS are no more pronounced than for other investment products that are widely held by mutual funds, and that require a comparable level of sophistication to comprehend basic investment risk (e.g., mortgage-backed securities, where valuation analysis depends largely upon assessing the optionality associated with principal prepayments by underlying borrowers). In addition, the low correlation of RLS with other asset classes can enhance a fund's overall risk-adjusted return.

See comment 2.

Moreover, it is not clear whether the lack of broader investor interest in RLS results from the absence of understanding of or demand for these instruments *per se*, or whether it is

[7] *See* letters dated August 22, 2002 and August 29, 2002 from the American Securitization Forum and the Association, respectively, to FASB in connection with the above-referenced exposure draft (both letters are available at www.bondmarkets.com)

more simply a function of relatively limited issuance (which in turn is driven principally by reinsurance pricing levels, as discussed below). The supply of RLS brought to market to date has been readily absorbed by investors. There is no compelling basis to conclude that additional supply would not be similarly absorbed, possibly by a wider range of investors as liquidity concerns diminish. In fact, the universe of RLS investors expanded after September 11, 2001. This universe now includes several additional funds created specifically to invest in RLS. The additional commitment of funds to this asset class has contributed to a decline in the level of spreads in both the new issuance and secondary markets. This level is now below the level of spreads prior to September 11.

E. Importance and Global Interdependence of Reinsurance Pricing for RLS Market

In several sections of the Report—principally, under the headings "Insurers are Subject to Reinsurance Price and Availability Swings" on page 16, and "Catastrophic Risk Can be Transferred to Capital Markets" on page 18, several references are made to the way in which reinsurance pricing affects the relative attractiveness of RLS to potential transaction sponsors. The Association agrees that reinsurance pricing is one of several important factors that drive RLS issuance. Traditional catastrophic reinsurance, RLS issuance and equity capital issuance are complements to each other, because they all address an insurer's need to maintain sufficient capital to meet claims made following a catastrophic event. If the cost of either traditional reinsurance or equity capital increases, RLS becomes more attractive. Perhaps more importantly for the growth of the RLS market, as the cost of RLS declines, issuance rises because RLS becomes a cheaper source of capital.[8]

See comment 3.

Figure 4 on page 17 of the Report, which sets forth an index for U.S reinsurance pricing between 1989 and 2001,[9] shows an uptick in the price index in 1999, after a long downward trend following the Northridge earthquake. The reason for this reversal is the near record worldwide-insured losses in 1999 of approximately $28 billion, slightly under 1992 losses of approximately $29 billion. The primary causes of 1999 insurance losses were two back-to-back winter storms in Europe, Lothar and Martin, that caused total insured losses of approximately $7 billion. While not as dramatic as the insured losses caused by Hurricane Andrew and the Northridge earthquake, these winter storm events, together with a number of smaller losses occasioned by other catastrophic events that year (including Hurricane Floyd), caused near-record insurance losses and were sufficient to reverse the downward price trend in the reinsurance market. The central conclusion to be drawn from these data, we believe, is the interdependence of reinsurance market pricing (and thus the relative attractiveness of RLS) and, more specifically, the effect that non-U.S. catastrophic events can have on U.S. reinsurance pricing.

[8] A decline in the cost of RLS may result from several factors. The most important factor would be a decline in spreads demanded by investors to clear RLS transactions. Another factor would be a decrease in the expenses associated with the execution and ongoing administration of RLS transactions.
[9] For clarity, we suggest that the title accompanying this graph specify that the index relates to pricing for *catastrophic event* reinsurance coverage.

Now on p.17.
See comment 4.

On page 19, the Report states that "Demand by insurance company sponsors [to issue RLS] will depend, in part, on basis risk faced and the ability of sponsors to hedge this basis risk." This statement is correct, but could imply that a sponsor's ability to hedge basis risk constitutes the principal motivation for RLS issuance. As suggested above, while the ability to hedge basis risk is a factor that insurance company sponsors need to consider when evaluating risk coverage options, reinsurance pricing is a critical driver of RLS issuance.[10]

II. Specific/Technical Comments

For ease of reference, the following technical comments are keyed to specific page numbers of the Report:

Now on p. 4.
See comment 5.

Page 6: The first full sentence of this page states that "…catastrophe bonds involve higher transaction costs than traditional reinsurance…" This is not always the case, as the efficiencies associated with larger volume, multi-year RLS transactions can render these costs comparable.

Now on pp. 5 and 18.
See comment 6.

Page 7, Page 21: These sections of the Report include statements to the effect that all catastrophe bonds (RLS) carry a non-investment grade credit rating. In fact, a small but growing percentage of newly-issued RLS has been investment grade.[11] The emergence of dedicated RLS mutual funds seeking investment grade products has contributed to this trend.

Now on p. 17.
See comment 7.

Page 19: Data is cited at the bottom of the page stating that between 1996 and August 2001, approximately $11-13 billion of RLS were issued worldwide. These data include life and synthetic credit securitizations; since the focus of the Report is on catastrophe bonds, it may be appropriate to state that approximately $6-7 billion in catastrophe-related RLS were issued during this time period.

Now on p. 17.
See comment 8.

Page 19: At the top of this page, a number of investor preferences for nonindemnity-based insurance coverage are noted. We believe that it would be useful to point out that there are often compelling reasons for RLS transaction sponsors to utilize nonindemnity-based structures. Among other reasons, such structures may more effectively shield the confidentiality of the sponsor's underwriting criteria; may provide for more streamlined deal structuring and execution; and facilitate a more rapid payout in response to triggering events.

Now on p. 18.
See comment 9.

Page 21: This section of the Report briefly discusses and contrasts catastrophe bonds with catastrophe options. Several relative advantages of catastrophe bonds are noted, including customizable offerings and multi-year pricing. We believe that the more important advantage that catastrophe bonds confer in comparison with catastrophe options is that the

[10] Professional reinsurers have, to a limited but increasing extent, supplemented RLS transactions by providing sponsors of RLS transactions with basis risk reinsurance coverage.
[11] Non-investment grade RLS, as a percentage of RLS outstanding, has decreased from 94.7% in 1999 to 83.1% at June 30, 2002, according to Cochran Caronia & Co.

former, unlike the latter, are fully collateralized and carry no credit risk on the part of the sponsor. We believe that this distinction is the principal reason underlying the relatively limited historical appeal of catastrophe options in distributing insurance risk via the capital markets.

Now on p. 21.

See comment 10.

Page 24: The carry-over paragraph on this page should clarify that both traditional reinsurers *and state insurance departments* rely on catastrophe modeling firms. The third sentence in this paragraph should state that rating agencies rate the bonds according to frequency *of loss* as well as expected loss.

Now on pp. 37 and 38.

See comment 11.

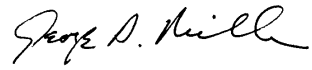
Page 43: The discussion of the California Earthquake Authority Financial Structure should be updated. We understand that this structure was not executed, based principally on concerns about the appearance created by the use of an offshore issuance vehicle.

III. Conclusion

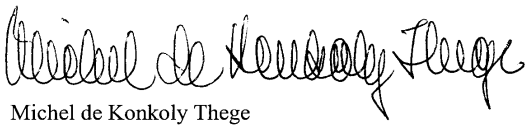
Again, the Association greatly appreciates the opportunity to comment on the Report. We commend the GAO for producing a useful and illuminating document, which should inform future legislative, regulatory and broader policy discussions concerning the innovative risk-linked securities market.

We would be pleased to assist you in any further research you may conduct in connection with this topic. Should you have questions or desire additional information concerning any of the matters addressed in the foregoing comments, please do not hesitate to contact either of the undersigned at (212) 440-9400.

Sincerely,



George Miller
Senior Vice President and Deputy General Counsel
The Bond Market Association



Michel de Konkoly Thege
Vice President and Associate General Counsel
The Bond Market Association

The following are GAO's comments on the Bond Market Association's letter dated September 10, 2002.

GAO Comments

1. Our report does not assign relative weights to the factors that lead to risk-linked securities being established offshore. We have added a footnote on page 21 to indicate that BMA believes that the principal reason risk-linked securities are organized offshore is to avoid taxation.

2. In contrast to BMA's view, we state that a primary reason for limited investor participation in risk-linked securities is that the risks of these securities are difficult to assess. Also, the risks of risk-linked securities and mortgage-backed securities are assessed differently. For example, the risk of loss from a natural catastrophic event, such as an earthquake in a specified geographic area over a specified time period, is often based on events that will only happen once over a long-time horizon and in some cases as long as an 100-year period. Therefore, investors must rely heavily on complex scientific analysis of the likelihood of the event, rather than statistical modeling. In contrast, the risk of loss from events such as defaults on home mortgage payments by borrowers occurs frequently, and extensive statistics are available to assess such risks.

3. We agree and our draft report discussed the relationship between reinsurance prices and interest in risk-linked securities as alternatives to traditional reinsurance. We also agree and have added a footnote on page 15 to indicate that U.S. reinsurance prices are influenced by catastrophic events outside of the United States.

4. We did not order by relative importance the reasons insurance companies stated for their interest in risk-linked securities.

5. We have changed the text on page 4 by inserting the word "generally."

6. In our analysis, we relied on information provided by rating agencies for our discussion of credit ratings. Our draft report indicated that some catastrophe bonds contain tranches that have received investment-grade ratings. We added language to a footnote on page 18 to note BMA's statement that some newly issued, risk-linked securities have been investment grade.

7. We have added language to a footnote on page 17 to note BMA's statement that about $6 to $7 billion in catastrophe related, risk-linked securities were issued during this time period.

8. We have added a footnote on page 17 that states BMA's view that there are often compelling reasons for sponsors of risk-linked securities to use nonindemnity-based structures.

9. On the basis of information we obtained from the CBOT and market participants, our draft report stated that the options were to have offered minimal credit risk because the Board of Trade Clearing Corporation guaranteed the transactions. There were several reasons why catastrophe options had limited appeal, including daily marking to market, difficulties in accounting for options trading in insurance company accounting, basis risk, the unfamiliarity of locals with the product, lack of insurance company membership at CBOT, lack of investment by CBOT, the structure of the contract, lack of liquidity, and other factors.

10. We have added language to a footnote on page 21 saying that bonds are rated according to frequency of loss as well as expected loss. As stated in our draft report, rating agencies provide bond ratings on the basis of their assessment of loss probabilities and financial severity. We use the term expected loss to mean the outcome from analyzing frequency of loss and expected loss when it occurs.

11. We added language in appendix III that the Governing Board of the California Earthquake Authority has not authorized use of catastrophe bonds because of concerns about the appearance of being involved in offshore transactions in tax havens.

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