ECONOMIC PERSPECTIVES ON TERRORISM INSURANCE

Chairman Jim Saxton (R-NJ)

Joint Economic Committee
United States Congress

May 2002

Executive Summary

This study examines the market for terrorism insurance in the United States, discusses the economic implications of the cost and availability of terrorism insurance and considers the proposed federal role in terrorism insurance. Among the study's principal findings:

The market for terrorism insurance remains limited.

- Only a small number of insurers are actively providing stand-alone terrorism insurance policies.
- When available, coverage for terrorism losses is expensive, terms of coverage are restrictive and policy limits are often insufficient.

The problems associated with terrorism insurance pose a significant threat to sustained economic growth.

- The lack of terrorism insurance is stopping some business deals, such as real estate and construction projects where terrorism insurance may be necessary to obtain financing.
- The high cost of terrorism insurance (when available) diverts resources from other more productive uses, negatively affecting investment and jobs.
- Low coverage limits in terrorism insurance policies mean that businesses are bearing a huge amount of risk themselves. In the event of another attack similar to that of September 11th, insurance payments will not be available to the same degree to rebuild.

Joint Economic Committee
1537 Longworth House Office Building
Washington, DC 20515
Phone: 202-226-3234
Fax: 202-226-3950

Internet Address:
http://www.house.gov/jec/

G-01 Dirksen Senate Office Building
Washington, DC 20510
Phone: 202-224-5171
Fax: 202-224-2040

ECONOMIC PERSPECTIVES ON TERRORISM INSURANCE

I. INTRODUCTION

The terrorist attacks of September 11, 2001 dramatically altered the economic, budgetary and security landscape of the United States. One effect of the attacks was to create an entirely new economic and public policy issue: terrorism insurance. Insured losses from 9/11 will likely total $40 billion to $50 billion. Prior to 9/11, the risk of losses due to terrorism was considered so low that they were automatically covered in most insurance policies.

Today, however, insurance companies are routinely excluding or limiting coverage for terrorist acts from the policies they issue. Where terrorism insurance is provided, it is expensive, hard to find at needed coverage levels and sometimes impossible to obtain. As a result, a significant barrier to economic activity has been created, as businesses are forced to bear higher costs of insurance or are unable to conduct business due to financing requirements to carry terrorism insurance. In addition, businesses are bearing significantly more risk exposure, which raises concerns about the potential economic impact of another catastrophic terrorist attack.

To address this incipient problem, federal legislation has been proposed to establish a limited and temporary federal role in assuring the availability of terrorism insurance. This study examines the market for terrorism insurance in the United States, discusses the economic implications of the cost and availability of terrorism insurance and considers the proposed federal role in terrorism insurance.

II. THE IMPACT OF 9/11 ON THE INSURANCE INDUSTRY

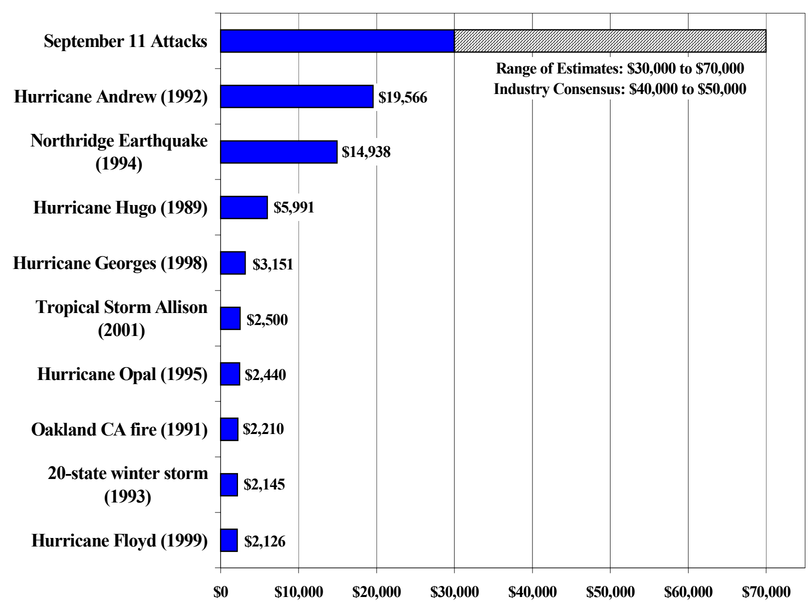
The economic losses from the terrorist attacks of September 11th were unprecedented. Estimates of the insured losses from the attacks range from $30 billion to $70 billion, with many analysts predicting the final amount to total around $40 billion to $50 billion.[1] These losses easily make the terrorist attacks the single largest economic loss in U.S. history (Figure 1). The next largest disaster was Hurricane Andrew in 1992, with insured U.S. losses of $19.6 billion (in inflation-adjusted dollars). In fact, the 9/11 terrorist attacks produced losses, which could well prove greater than the losses of the next five largest disasters combined.[2]

---

[1] Although initial claims and payouts total around $20 billion so far, the history of major catastrophes indicates that initial estimates greatly underestimate the final total. It will likely take several years for all the claims to be settled. The estimates do not include the cost of damage to the Pentagon, the property damage to which is expected to cost upwards of $775 million. Robert P. Hartwig, "The Terrorist Attacks of September 11, 2001: Impacts and Implications for the Insurance Industry," Presentation to the Innovations in Catastrophe Management Conference, Sanibel, FL, 3/5/2002; and U.S. General Accounting Office, Prepared Testimony of Richard J. Hillman to the U.S. House Committee on Financial Services, Subcommittee on Oversight and Investigation, 2/27/2002.

[2] Calculations based on loss data from Hartwig, "Impacts"; and inflation (CPI-U) data from Council of Economic Advisers, *Economic Report of the President* (Washington, DC: Government Printing Office, 2002), 389.

Figure 1. Insured Costs of U.S. Disasters (in millions of 2001 dollars).



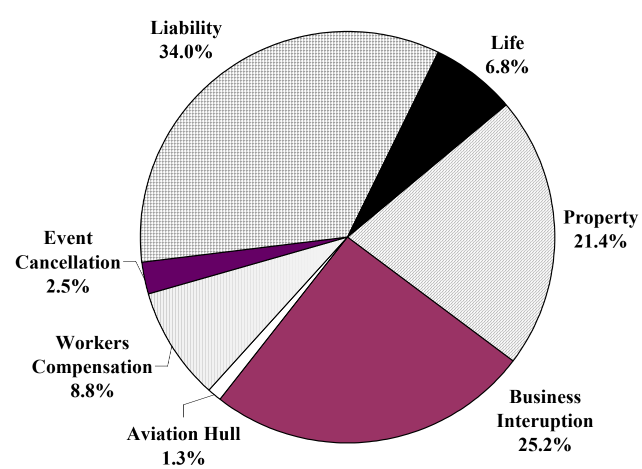
Source: Hartwig, "Impacts"; U.S. General Accounting Office; Insurance Information Institute; and Council of Economic Advisers.

The losses from 9/11 occurred under a variety of policies (Figure 2). Liability and business interruption lines will likely account for the bulk of losses (59 percent).[3] Property damage insurance is expected to amount to only about one-fifth of the loss total. This distribution makes the 9/11 attacks atypical, since in previous disasters the large majority of losses came from property damage. A substantial amount of uncertainty surrounds the estimates, particularly potential liability costs that could reach $20 billion alone.[4]

Overview of the Insurance Industry

The first reaction of the insurance industry following the 9/11 attacks was to reassure policyholders and investors that the industry had sufficient reserves from which to pay claims.[5] This reassurance injected a sense of economic security that the economic damage of the attacks would be repaired. The fact that businesses that had been destroyed would be reimbursed for their losses sent a signal that the long-term economic impact would be mitigated to a certain degree.

Figure 2. Distribution of Estimated 9/11 Insured Losses



Source: Hartwig, "Impacts."

Soon after the attacks, the insurance industry took another step with long-term implications: it began to withdraw coverage for future losses

---

[3] Hartwig, "Impacts."
[4] Tillinghast-Towers Perrin, "Why Do We Need Federal Reinsurance for Terrorism?" 10/8/2001.
[5] This declaration was deemed necessary not just to affirm the sufficiency of insurers' financial resources, but also that insurers would not attempt to invoke the "act of war" clauses in policies that might prevent payment of claims.

caused by terrorism. Prior to the 9/11 attacks, terrorism insurance was generally not a separate line of insurance. Typically, it was not even mentioned in insurance policies. The risk of significant terrorist attacks was considered so low that policies, for lack of a specific clause excluding them, automatically covered such losses. The 9/11 attacks, however, changed how insurance companies assess the risks of terrorism.

Following 9/11, insurers decided that they could no longer write policies that automatically covered losses caused by terrorist acts. The move to exclude terrorism losses was motivated out of financial and actuarial concerns. Financially, the 9/11 attacks forced insurers to draw down their surplus. At the time of the attacks, the industry surplus was approximately $300 billion, although one analyst estimates that the surplus associated with high-risk commercial targets was just $100 billion at the time of the attacks.[6] Thus, although the industry clearly has sufficient resources to pay 9/11 claims, the payment of claims significantly impairs insurers' ability to sustain another attack. Financially, insurers potentially risked insolvency unless they limited their exposure.

In addition to capacity considerations, insurers were beset with the problem of how to price terrorism risk. Generally speaking, insurers use sophisticated actuarial models to set premiums based on two key factors: the probability of occurrences and the size of losses. In their assessments following 9/11, insurers concluded that terrorism represented potentially unlimited losses with unpredictable frequency. Without an actuarial basis for setting premiums, insurers are simply unable to calculate how much to charge for terrorism coverage. The American Academy of Actuaries characterized the nature of the problem in an April 2002 report: "Extreme events such as the Sept. 11 terrorist attacks are infrequent, possibly unprecedented, unanticipatable and 'unthinkable' in their consequences."[7]

Table 1. Largest Insured Losses from Terrorism, 1970-2001 (losses in millions of 2001 dollars).

Event	Country	Victims	Insured Loss
Attack on World Trade Center and Pentagon (2001)*	U.S.A.	3,014	>$40,000
Bombing in London's City (1993)	U.K.	1	$907
Bombing in Manchester (1996)	U.K.	0	$744
First World Trade Center bombing (1993)	U.S.A.	6	$725
Bomb explodes in London's financial district (1992)	U.K.	3	$671
Suicide bombing at Colombo Airport (2001)	Sri Lanka	20	$398
Bombing at London's South Key Docklands (1996)	U.K.	2	$259
Oklahoma City bombing (1995)	U.S.A.	166	$145
PanAm Boeing 747 explosion at Lockerbie (1998)	U.K.	270	$138
Three hijacked airplanes dynamited in Zerga (1970)	Jordan	0	$127

* Estimates from Associated Press and Hartwig, "Impacts."

Source: Swiss Re.

6 Robert P. Hartwig, "11 September 2001: One Hundred Minutes of Terror that Changed the Global Insurance Industry Forever," *Études et Dossiers*, no. 241 (February 2002), 128.

7 American Academy of Actuaries, "Terrorism Insurance Coverage in the Aftermath of September 11th," 4/17/2002, 1.

Even natural disasters such as hurricanes and earthquakes have a recorded history of a century or more, allowing insurers to predict aggregate potential losses over time. By comparison, the history of terrorism losses provided no warning of the potential magnitude of losses. As can be seen in Table 1 above, the nine largest insured losses from terrorist attacks prior to 9/11 totaled just $4.1 billion combined, only about one-tenth the estimated losses of 9/11.

The first segment of the insurance industry to restrict coverage of terrorism losses was the reinsurers. The insurance industry consists of two tiers. The first tier is made up of primary insurers, which are the traditional insurance companies from whom businesses purchase insurance.[8] Companies in this category include Prudential, AIG, and Hartford Insurance. Primary insurers, in turn, sell some of their acquired risk to the second tier, the reinsurers. Reinsurers, in essence, provide insurance to insurance companies. Reinsurers deal solely with primary insurers and include such firms as Berkshire Hathaway, Lloyd's of London and Munich Re. Reinsurance is a mechanism for primary insurers to diversify globally their risk exposure. Without reinsurance, primary insurers would be forced to greatly reduce their exposure to losses (through lower limits or coverage restrictions), dramatically increase their premiums, or both.

The financial impact on reinsurers has been much greater than on the overall insurance industry. Industry experts expect that 60 percent to 80 percent of the insurance payments for the 9/11 attacks will ultimately come from reinsurers.[9] Depending on the ultimate size of the losses, 9/11 claims will exhaust upwards of one-quarter of the reinsurance industry's surplus.[10] Because of this financial impact and the inability to predict the frequency or size of losses from future terrorist attacks, reinsurers began to stop covering losses due to terrorism. Quite simply, reinsurers reasoned that "the peril of terrorism exposes their finite capital to risk of loss that they cannot determine or withstand."[11]

Once the reinsurers stopped covering terrorism losses, the primary insurers had little choice but to follow. However, unlike reinsurers, primary insurers must obtain approval from state regulatory agencies when implementing new coverage restrictions.[12] Thus, after the 9/11 attacks, the Insurance Services Organization, on behalf of insurance companies, filed requests for permission to include terrorism exclusion clauses in new policies. As of May 2002, 45 states, the District of Columbia and Puerto Rico had approved the insurance industry's applications for terrorism exclusion language.[13] The states that have not approved the new exclusion are California, Florida, Georgia, New York and Texas, accounting for about 35 percent of the commercial insurance market.[14]

[8] Terrorism insurance issues apply primarily to commercial lines of insurance.
[9] American Academy of Actuaries, 6.
[10] Franklin W. Nutter, "Rebuilding Commercial Insurance Markets with a Public/Private Partnership," Statement of the Reinsurance Association of America to the NAIC Reinsurance Task Force Hearing, 1/17/2002.
[11] American Academy of Actuaries, 7.
[12] Because reinsurers operate in the global marketplace with sophisticated buyers, they are not bound by the same laws and regulations that bind primary insurers.
[13] Insurance Services Organization, "Status of Terrorism Filings," 5/15/2002, online at www.iso.com/filings/cl.htm.
[14] U.S. General Accounting Office, 5.

Exclusion clauses are typically written to exclude war and acts of terrorism. Definitions of terrorism can vary, but the standard definition specifies that a terrorist act is one that results in at least $25 million in property damage, or kills or seriously injures at least 50 people. In addition, any attack that employs nuclear, chemical or biological weapons is classified as a terrorist attack. Acts of cyberterrorism are also generally excluded.[15]

III. THE COST AND AVAILABILITY OF TERRORISM INSURANCE

Terrorism insurance policies are available on a limited basis today. Policies are more available and affordable today than in the weeks after 9/11. However, terrorism insurance is still very expensive, terms are restrictive and coverage limits are frequently too low, when it is available at all. Unfortunately, aggregate data on the cost, availability and terms of terrorism coverage are not available, since policies vary widely from business to business. In addition, it could take over a year for full implementation of terrorism exclusion provisions, since they must be written into each new policy as the old ones expire. Nonetheless, some evidence is available that illustrates the scope of the problem.

A recent Standard & Poor's analysis found that there is only a "very limited market that still exists for terrorism insurance."[16] Another report found that there are only seven insurers that are active in offering stand-alone terrorism insurance policies.[17] Independent analyses report that terrorism insurance can only be obtained with limits of just $75 million to $500 million, far short of the actual value of many properties, some worth more than $1 billion.[18] As Moody's reported in March 2002, "At this time, only a handful of carriers are writing terrorism coverage. … The policies that are being written simply do not patch the terrorism exclusion to bring it to equivalence of what was available pre-September 11th."[19]

For many businesses, terrorism coverage is prohibitively expensive. Terrorism risks generally carry a much higher price to insure than other (non-terrorist) risks. Fitch Ratings reports that the "cost of the premiums for these separate [terrorism] policies is many multiples of basic all-risk policies."[20] In a survey of insurance agents and brokers, 72 percent of respondents indicated that none of their customers purchased terrorism coverage, when it is available, due to the excessive cost.[21] A survey of large banks by the Federal Reserve Board found that close to

---

15 For additional detail on insurance exclusions, see Jeff Woodward, "The ISO Terrorism Exclusions: Background and Analysis," International Research Management Institute, *IRMI Insights* (February 2002), online at www.irmi.com/insights/articles/woodward006.asp.

16 Standard & Poor's, "Terrorism Coverage Remains in Doubt," 4/15/2002, online at www.standardandpoors.com/europe/francais/Fr_news/Terrorism-Coverage-Remains-in-Doubt_15-04-02.html.

17 Betterley Risk Consultants, "The Terrorism Coverage Market: Hope for Coverage in a Difficult Market," *The Betterley Report* (April 2002), 1.

18 Moody's Investors Service, "CMBS: Moody's Approach to Terrorism Insurance for U.S. Commercial Real Estate," 3/1/2002, 5; National Association of Insurance Commissioners, "An Update of State Insurance Regulatory Actions Taken in Response to the Terrorist Attacks of September 11, 2001," 2/27/2002; Hartwig, "One Hundred Minutes," 138; and Betterley Risk Consultants, 3.

19 Moody's Investors Service, *CMBS*, 5.

20 Fitch Ratings, "Terrorist Insurance: Two Steps Forward, One Step Backward," *Real Estate Update* (May 2002), 3.

21 Independent Insurance Agents of America and the Alliance of American Insurers, "Effects of Terrorism Exclusions on the Property/Casualty Market: A Survey by IIABA and AAII, Summary Report," 4/18/2002.

one-third (30 percent) have experienced weaker demand for high profile or heavy traffic commercial real estate projects due to the affordability of terrorism insurance.[22]

For the terrorism coverage that is available, the terms of coverage are frequently restrictive.[23] Many terrorism policies impose high retention levels, with deductibles as great as $25 million. Business interruption policies often require a 30-day waiting period before benefits become available. Terrorism coverage policies can also include a 30-day cancellation notice, which makes policyholders nervous that insurers might cancel their policies during a period of increased tension.

Although some categories of businesses are able to find terrorism insurance without great difficulty, for many others the options are extremely limited. Sometimes terrorism coverage is included in standard policies, but subject to lower sub-limits. For other businesses, terrorism insurance is excluded completely from their policies. In such cases, businesses must either go "bare" and assume all risk themselves, or they must obtain (if possible) a separate terrorism policy.

Properties for which terrorism insurance is particularly problematic include those located in central business districts of large cities, well-known businesses, and high profile or trophy[24] properties. In addition, businesses in sectors deemed to have greater risk include those in real estate, construction, transportation, energy and utilities. Any businesses located near high-risk targets (such as the White House and critical infrastructure) are also considered to be at higher risk of suffering collateral damage from a terrorist attack directed elsewhere.[25]

The following list provides some concrete examples of businesses and organizations that have had difficulty obtaining terrorism insurance. Although anecdotal, these examples highlight the nature and extent of the problem.

- The Federation of Jewish Philanthropies (FOJP), in New York City, runs several major non-profit hospitals and social service agencies. FOJP's old policy provided $8 billion in coverage, including terrorism coverage. In February, FOJP testified that its new policy excluded terrorism losses, and the organization was still looking for separate terrorism coverage. FOJP received one quote for terrorism insurance that offered just $50 million in coverage (on $8.5 billion in assets) for a staggering $4.24 million.[26]
- The insurer for the Cleveland Municipal School District has notified the district that its new policy will exclude losses due to terrorism.[27]

---

[22] Board of Governors of the Federal Reserve System, "The April 2002 Senior Loan Officer Opinion Survey on Bank Lending Practices," 5/10/2002, 14.
[23] See Betterley Risk Consultants.
[24] Trophy properties are high-profile properties with significant cultural, business, or historical value, such as the Empire State Building or Chicago's Sears Tower.
[25] For example, although the terrorists directly attacked the two World Trade Center towers, an additional 10 buildings surrounding the towers were either partially or completely destroyed.
[26] Lisa Kramer, Federation of Jewish Philanthropies, Prepared Testimony to the U.S. House Committee on Financial Services, Subcommittee on Oversight and Investigation, 2/27/2002.
[27] U.S. Department of the Treasury, Office of Public Affairs, "Examples of Terrorism Insurance Difficulties," 4/8/2002, online at www.treas.gov/press/releases/po2074.htm.

- Numerous professional sports teams and facilities are struggling to obtain terrorism insurance:
    - The Seattle Mariners are reported to have secured just $1 million in terrorism insurance coverage for their $517 million stadium.[28]
    - Last year, the insurance policy for the Milwaukee Brewers stadium facility cost just $255,000 and included terrorism coverage. This year, a policy with terrorism coverage costs $2.25 million. Taxpayers in the Milwaukee area will have to bear 70 percent of that cost.[29]
    - The San Francisco Giants saw their liability premiums alone jump roughly 200 percent, and even then the team has "very, very little" terrorism insurance.[30]
    - An "unspecified number" of National Football League teams currently have no terrorism insurance. Teams that have been reported to not have terrorism insurance include the New York Giants, Dallas Cowboys, Chicago Bears, Washington Redskins, and Baltimore Ravens.[31]
- The International Economic Development Council, which is a block from the White House, has had its insurance policy dropped altogether due to the organization's proximity to the White House. Other businesses and organizations located near the White House are also expecting large price increases and/or terrorism exclusions.[32]
- The St. Louis Art Museum's insurer informed the museum that it would no longer cover terrorism losses. The result will be higher costs for the museum, and could very well prevent touring shows, such as the Vincent van Gogh show the museum hosted prior to 9/11.[33]
- A real estate firm that owns trophy properties in several U.S. cities has been unable to find terrorism insurance to cover the value of its properties. Prior to 9/11 the firm had $1 billion in coverage (including terrorism losses). After 9/11, the firm reported that it had received only one quote from an insurer willing to offer terrorism insurance, but for just $25 million in coverage.[34]
- A collection of Midwestern airports reported that the aviation liability premium jumped 280 percent following 9/11, and the policy excluded terrorism losses. A separate policy covering war risk and terrorism was offered by the group's insurer: a $1 million premium for $50 million in coverage.[35]

Businesses have responded in several ways. Some have chosen to simply go without terrorism insurance. Other businesses have turned to alternative insurance mechanisms, such as forming captive insurance companies or pooling together with similar firms. Another option is to secure "layered" insurance, in which businesses purchase multiple "stacked" policies from

---

[28] Frank Vinluan and Bill Kossen, "Terrorism Insurance Dries up for Owners of High-Profile Sites," *The Seattle Times*, 5/19/2002.
[29] Don Walker, "Insurance Increase Hit Sports Teams Hard," *Milwaukee Journal Sentinel*, 5/3/2002.
[30] "Area Stadiums Pay to Play," *San Francisco Business Times*, 3/15/2002.
[31] Charles Elmore, "Ticket Price Increase Likely to Cover Cost of Terrorism Insurance," *Cox News Service*, 4/17/2002.
[32] Tom Ramstack, "D.C. Insurance Policies Reflect Terrorism Threat," *The Washington Times*, 4/3/2002.
[33] Diane Toroian, "Museums Struggle with Rising Costs of Terrorism Insurance," *St. Louis Post-Dispatch*, 4/29/2002.
[34] U.S. General Accounting Office, 10.
[35] U.S. General Accounting Office, 11.

several insurance companies. For example, a firm could buy $100 million each from five different insurance companies, with a prearranged order in which the policies pay out. Although layered insurance deals are becoming more common, they are still inadequate for some policyholders and in any instance are difficult to arrange. For instance, insurance broker Aon estimates layered deals can provide property insurance coverage up to a maximum of $500 million to $1 billion, an amount that nonetheless falls far short of the market value of many properties.[36]

IV. ECONOMIC IMPORTANCE OF TERRORISM INSURANCE

Diversification of risk through insurance is an indispensable ingredient of economic growth. Any economic activity – from purchasing a product or service to loaning capital to a business start-up – entails some amount of risk. Private sector growth is predicated on businesses and entrepreneurs taking calculated risks. Insurance is a mechanism by which businesses can shed some of that risk and engage in activities that they would not otherwise perform. Without insurance, economic activity would be severely shackled.

There is a growing amount of evidence that the difficulty and cost of obtaining terrorism insurance pose a very real threat to sustained economic growth. This threat manifests in at least three chief respects. First, the lack of terrorism insurance prevents some business deals and projects from going forward. Second, the high cost of terrorism insurance for firms and projects can result in the misallocation of scarce resources, which is harmful to economic growth. Finally, the coverage limits on terrorism insurance available today are very low relative to the value of the insured properties, leaving a large amount of exposure in the event of another catastrophic terrorist attack.

Economic Threat 1: Lack of Terrorism Insurance as a Drag on Business Activity

The inability of some businesses to obtain suitable terrorism insurance can result in the cessation of business activity. Especially since 9/11, many financing arrangements require that the borrower carry terrorism insurance. If the borrower is unable to secure sufficient coverage, then banks and lenders may be unwilling to make loans available. Even for some existing loans, there has been discussion about whether lack of terrorism coverage puts the borrowers in technical default of loan covenants.

The impact of the scarcity of terrorism insurance is particularly apparent in lending for properties perceived to be at high risk for attack, such as trophy buildings. Two national lenders have stopped making key loans related to trophy properties. The GMAC Commercial Holding Corp (which produced $20 billion in loans in 2001) announced in February that it had stopped making loans for "trophy-type" projects that lacked terrorism insurance.[37] Similarly, Mutual of Omaha stopped making loans for trophy properties as well as for properties located near trophy properties.[38]

---

[36] American Academy of Actuaries, 16.
[37] "Lack of Terror Coverage Killing Real Estate Deals," *Philadelphia Business Journal*, 2/22/2002.
[38] Karen Sibayan, "CMBS Players Continue to See Opportunity in the Sector," *Asset Securitization Report*, 4/15/2002.

The lack of a federal backstop to the insurance industry is having tangible effects on commercial real estate financing. In the continued absence of a federal backstop, Moody's Investor Service is preparing to downgrade the ratings on numerous large loan transactions.[39] *The Wall Street Journal* reports that the market is already demanding higher interest rates on debt for trophy-type properties, such as Rockefeller Center.[40]

The following anecdotes provide some specific examples of business activity that has been suspended or cancelled due to the lack of terrorism insurance.[41]

- In New York City, a plan to build a 30-story residential building would have employed approximately 500 workers. The bank financing the project required the project to obtain terrorism coverage. The project was put on hold because the backer was unable to find terrorism insurance.[42]
- A real estate deal to purchase a property that generates $75 million each year in rent was cancelled. The lenders required $300 million in insurance coverage. The prospective buyer had originally budgeted $750,000 for all its insurance needs, but after 9/11 the terrorism coverage alone would have cost $6 million.[43]
- Prior to 9/11, the prospective buyer of a New York City trophy property was close to securing $200 million in financing. After the attacks, the lenders refused to approve the loan unless the buyer could find terrorism insurance to cover the replacement value of the property. The deal was halted because the prospective buyer was unable to find the required terrorism insurance.[44]
- The Hyatt Corporation paid $400 million for a site in downtown Chicago for a new office building. However, prospective financial backers will not make the loans unless Hyatt obtains sufficient terrorism coverage. Since the necessary coverage has been unavailable, construction on the project – estimated to create 2,500 jobs – is on hold.[45]
- A $2 billion project in Las Vegas has been halted because the developer has been unable to secure the terrorism insurance coverage that his lenders require. The project was expected to generate an estimated 16,000 jobs.[46]
- Fleet Bank put two large loans on hold due to lack of terrorism insurance. The loans would have gone to a $300 million real estate purchase and a $100 million construction project, both in New York.[47]

---

[39] Peter Grant, "Property Downgrades," *The Wall Street Journal*, 5/15/2002.
[40] *Ibid*.
[41] Anecdotes, by their very nature, provide incomplete information. The examples given here portray only part of the picture, and may not necessarily support broad generalizations. In particular, these examples attribute business problems to terrorism insurance, when there may be other issues contributing to the problem.
[42] U.S. General Accounting Office, 13.
[43] U.S. General Accounting Office, 13-14.
[44] U.S. General Accounting Office, 14.
[45] U.S. Department of the Treasury.
[46] Daniel Aronowitz, "Special to the National Law Journal," *National Law Journal*, 4/29/2002; and U.S. Department of the Treasury.
[47] Jackie Spinner, "Insuring Against Terror Costly," *The Washington Post*, 2/26/2002.

Economic Threat 2: Cost of Insurance as a Drag on Business Activity

The second threat to the economy comes in the form of the higher cost of doing business for those firms that are able to find terrorism insurance.[48] Even prior to 9/11, the commercial insurance market had already begun to impose large price hikes after a decade of soft pricing. The Commercial Insurance Market Index, prepared by the Council of Insurance Agents and Brokers, indicates that premiums for most commercial insurance policies increased 10 to 30 percent in the first quarter of 2002. For property and umbrella insurance, most price increases were in excess of 30 percent.[49]

The events of 9/11 only served to exacerbate the already hardening markets. Now, coinciding with across-the-board price hikes, firms must also deal with additional terrorism insurance costs. The combination of an already hardening market for insurance with the altogether new cost of terrorism insurance creates a one-two punch for businesses. The examples listed in the preceding and following sections illustrate the extent of high insurance costs.

The price increases are not limited to terrorism coverage. Property, liability, umbrella and workers compensation policies all are experiencing price hikes. For example, prior to 9/11 an office building in Jersey City, New Jersey had an $80 million insurance policy that included terrorism losses, at a cost of $60,000. The current policy has a premium of $400,000 for property-casualty damage insurance and another $400,000 for terrorism insurance.[50]

A survey of trucking companies found that such firms are experiencing dramatic increases in the cost of insurance. Since 9/11, companies reported that premiums for general liability policies were increasing an average of 37 percent, compared to an average of 30 percent prior to 9/11. For umbrella insurance policies, the average price hike jumped from 74 percent prior to 9/11, to 120 percent after 9/11. In other words, the 9/11 attacks have caused an already hardening market to increase prices even further.[51]

Economic Threat 3: Low Coverage Limits Leave Large Exposure

The third, and perhaps most pernicious, threat is the impact on the economy that another catastrophic terrorist attack would have given the limited insurance coverage currently in place. As insurers have dramatically scaled back their coverage of terrorism losses, either through refusal to provide coverage or tight policy limits, businesses are forced to bear a much larger amount of risk themselves. The following examples illustrate problems typical for many businesses and organizations.

[48] For more information on the economic costs of terrorism generally, see Robert Keleher, *The Economic Costs of Terrorism*, Joint Economic Committee of the U.S. Congress (May 2002.).
[49] Council of Insurance Agents and Brokers, "Commercial Insurance Market Index Indicates Need for Federal Terrorism Backstop," Press Release, 4/16/2002.
[50] U.S. General Accounting Office, 13; U.S. Department of the Treasury.
[51] American Trucking Associations, *Truck Insurance Survey* (January 2002), 4-5.

- Baylor University in Waco, Texas had a policy that provided $1 billion in coverage (including terrorism insurance) at a cost of $500,000. Today, Baylor has just $600 million in non-terrorism coverage, and only $60 million in terrorism coverage, for a cost of $1 million.[52]
- The large real-estate investment trust Equity Office Properties (EOP) owns 670 office buildings with 128 million square feet of space. Although EOP obtained $200 million in insurance coverage that includes terrorism losses, the portfolio contains numerous properties worth more than the $200 million limit.[53]
- Prior to 9/11, the owner of a portfolio of 100+ non-trophy commercial and residential properties on the East Coast paid $1 million for $300 million in insurance (including terrorism coverage). After the attacks, the same coverage cost $5 million, with no terrorism coverage. A separate policy for terrorism provides a meager $75 million in coverage, at a cost of $1.125 million.[54]
- Last year, New York City's Metropolitan Transportation Authority, which runs the city's subways, tunnels and bridges, paid $6 million for a $1.5 billion policy. Today, MTA pays $18 million for a $500 million policy that excludes terrorism losses. A separate terrorism policy was obtained, but it provides just $70 million in coverage at a cost of $7.5 million.[55]
- Gwinnett County, Georgia (a suburb of Atlanta) had $300 million in terrorism insurance to cover its facilities and property. That terrorism coverage was part of a $1.8 billion insurance policy that cost $349,000. Since 9/11, Gwinnett's policy limits dropped to $500 million in property-casualty coverage and $1 million in terrorism coverage; the cost, however, increased to $502,000. The county purchased a separate terrorism insurance policy: $50 million in coverage at a cost of $390,000.[56]
- The City of Houston, Texas has $4.6 billion worth of property. Last year, the city paid $2.4 million for a $300 million policy. The new policy has a price tag of $3.5 million for just $25 million in property coverage with no terrorism coverage. A separate terrorism policy was under consideration; it would cost $2 million for $100 million in coverage.[57]
- The Golden Gate Bridge, with a $2.1 billion replacement value, currently has no coverage for damage due to terrorism.[58]

Although heavy, the direct economic costs of the 9/11 attacks were largely covered by insurance payments. The economic impact of 9/11 was mitigated, to a certain degree, by the fact that insurers uniformly stepped forward and said that they had the resources and intentions to cover losses from the attacks. Now that insurers have stepped back and introduced strict coverage limits for losses due to terrorism, it seems clear that insurers will bear a much smaller share of the losses if there is another attack. Instead, it will be the businesses and consumers who bear the cost of the attack. As noted by the U.S. General Accounting Office,

---

[52] U.S. Department of the Treasury.
[53] "Equity Office Buys Terror Coverage," *Commercial Mortgage Alert*, 3/22/2002.
[54] U.S. General Accounting Office, 11-12
[55] William Sherman, "Putting a Premium on Disaster," *Daily News (New York)*, 4/28/2002.
[56] U.S. Department of the Treasury.
[57] The jump in Houston's insurance costs are partly due to Tropical Storm Allison, which hit Houston in June 2001 and caused $2.5 billion in losses. "Property Insurance Costs Strain Municipal Budgets," *BestWire*, 4/29/2002.
[58] Abraham McLaughlin, "Insurance Rates Spiral up in Wake of Sept. 11," *The Christian Science Monitor*, 4/8/2002.

> If another terrorist event of similar magnitude [to the 9/11 attacks] were to take place, all those losses would still be incurred. However, depending on the timing of the event, the effect would be very different, because even today the reinsurers would be responsible for a much smaller share of the losses. As the event moves farther into the future and primary insurers successfully exclude terrorism from insurance coverage, **the losses will increasingly be left to the affected businesses and their employees, lenders, suppliers, and customers.** Because these entities lack the ability to spread such risks among themselves the way insurers do, **another terrorist attack similar to that experienced on September 11th could have significant economic effects on the marketplace and the public at large. These effects could include bankruptcies, layoffs, and loan defaults.**[59] *(Emphasis added.)*

To illustrate, consider a hypothetical situation in which there is another catastrophic terrorist attack, with economic losses of approximately $50 billion. This time, however, assume that insurers have *a priori* limited their exposure to just one-half (or less) of that loss. The remaining $25 billion would be left to businesses to bear. After 9/11, most affected businesses were able to reopen and rebuild because they had insurance. Following a similar event today, the same businesses would have much fewer resources with which to rebuild. A $100 million office building may only have $50 million of terrorism insurance coverage; it certainly would not be able to rebuild completely. Even worse, businesses that lack coverage might not be able to rebuild at all. The secondary economic devastation could be far worse than the direct economic cost of losses, since businesses would lack the resources to rebuild unless the government intervened with a massive bailout.

It is also important to realize that the threat of catastrophic terrorist attack is not limited to the obvious targets of New York City or Washington, D.C. Terrorists have already shown an affinity for high-rise office buildings, and such buildings are harder to insure. Buildings with 50 or more stories are found in 19 cities spread through 16 different states (Table 2). Even sites such as the St. Louis Art Museum and the Mall of America in Minneapolis, Minnesota have struggled to obtain terrorism insurance.[60]

Table 2. High-Rise Buildings in the U.S.

City	Number of Buildings with 50+ Floors
Atlanta	8
Boston	2
Charlotte	1
Chicago	39
Cleveland	2
Dallas	10
Denver	3
Detroit	1
Houston	11
Los Angeles	10
Miami	2
Minneapolis	4
New Orleans	2
New York	67
Philadelphia	5
Pittsburgh	2
San Francisco	1
Seattle	5
Tulsa	2
Total U.S.	**177**

Source: Skyscapers.com.

[59] U.S. General Accounting Office, 8.
[60] Toroian; and "Simon Yields to GMAC on Terror Insurance," *Commercial Mortgage Alert*, 3/22/2002.

Similarly, although New York features the densest concentration of real estate value in the U.S., other cities in the U.S. have similar value densities. A study by the Risk Management Society compared two areas of Manhattan (the financial district and midtown) to three other cities (Chicago, Los Angeles, and San Francisco). The study estimated that all five areas concentrated $50 billion within the area of a circle with a 1,000 meter radius.[61]

Insurance Industry

Although the insurance industry had the resources necessary to cover the costs of the claims from the 9/11 attacks, another attack of similar magnitude could seriously destabilize the entire industry. One indicator of the financial stability of the industry is the ratings of insurers by independent rating firms. In the aftermath of 9/11, Standard & Poor's lowered the financial ratings on 14 insurers, and Moody's downgraded 17 insurers.[62] Insurers that suffered lower ratings include such industry stalwarts as Lloyd's of London, Chubb, CNA Financial and St. Paul Companies.[63]

Although insurers are universally moving to limit their exposure to terrorism losses, there remain two critical areas that raise serious concerns: workers compensation insurance and laws covering losses due to fire. For workers compensation, the issue revolves around the prohibition in all 50 states against any sort of exclusion (even for "acts of war"). In addition, there are no policy limits; insurers are expected to cover all losses.

Historically, workers compensation has not been a source of extreme losses. But in the context of a major terrorist attack, the loss of life at even a small organization could have sizable costs. For example, a firm with 100 employees could generate $50 million in losses (assuming the industry standard of a $500,000 death benefit).[64] Prior to 9/11, such risks were made affordable through reinsurance, an option that is no longer universally available. Since insurers are unable to limit their exposure for workers compensation (either through reinsurance or terrorism exclusions), they are forced instead to demand dramatic price increases or to stop writing policies. The change in the way insurers view workers compensation was summarized by Tony Taylor, president and CEO of Montpelier Re Holdings: Six months ago, "Workers compensation on office block was the best business you could get. Today it's probably the worst you can get, and you might struggle to get it insured."[65]

The second problem for insurers comes from the Standard Fire Policy (SFP) requirements that are found in 29 states accounting for approximately 70 percent of the property insurance

[61] Risk Management Society, *Managing Risk in the Aftermath of the WTC Catastrophe* (2002), 6.
[62] Standard & Poor's; Moody's Investors Service, "Insurers Face the Challenges of a Post September 11th World," 1/2002.
[63] The 9/11 attacks resulted in one small insurer (Japan-based Taisei) to fail, and a second insurer (Copenhagen Re) to stop writing new policies.
[64] American Academy of Actuaries, 13.
[65] Office block refers to a group of workers in an office setting. Alliance of American Insurers, "Reinsurers Cite Need for Terrorism Backstop at Alliance Annual Meeting," Press Release, 5/1/2002.

coverage.[66] Although subject to interpretation, the SFP requirements are often assumed to mean that regardless of a terrorism (or any other) exclusion, property insurance policies must still cover any damage caused by fire, regardless of what started the fire. Thus, if a terrorist bomb goes off and causes a fire, any subsequent damage is covered.[67] In effect, the SFP requirements can expose an insurer to exactly the catastrophic losses, which it intended to limit via the terrorism exclusion clause. This sort of unpredictable loss, of potentially enormous magnitude, poses a real stability threat to the industry.

The ongoing risk of terrorism exposure to the insurance industry is reflected in independent assessments that another attack could have dire consequences for the industry. The American Academy of Actuaries warns that "[t]he enormous financial consequences of additional extreme terrorist events could overwhelm industry capacity."[68] Robert Hartwig of the Insurance Information Institute echoes that conclusion:

> Another terrorist attack of a magnitude similar to that of September 11 would seriously destabilize the global non-life insurance industry and could push a significant number of insurers into insolvency. Larger attacks could wipe out larger numbers of insurers all together.[69]

Commercial Real Estate

One sector that has been particularly impacted by the cost and scarcity of terrorism insurance is commercial real estate, as well as related construction projects. The debt financing for many real estate deals typically carries a stipulation that the project must carry sufficient insurance, including terrorism insurance, to protect the lenders. To the degree that real estate deals are unable to find or afford terrorism insurance, they may be unable to secure financing.

This effect has already manifested in the commercial mortgage-backed securities (CMBS) market. According to a survey by the Bond Market Association, $7 billion worth of commercial real-estate loan activity has been suspended or cancelled due to issues of terrorism insurance, representing about 10 percent of CMBS market.[70] The American Academy of Actuaries report found that "[t]here is reluctance to finance projects of $100 million or more, and some investors are reluctant to buy bonds tied to individual office towers, apartment buildings, and shopping malls."[71] In addition, overall CMBS activity in the first quarter of 2002 was down 26 percent from the same period last year.[72]

---

[66] Woodward; and Frank J. Coyn, "Trial by Fire: Terrorism and Nuclear Exclusions Are Limited in States that Adhere to the Standard Fire Policy," *Best's Review* (April 2002), online at www.bestreview.com/2002-04/is_trial.html.

[67] In the case of the World Trade Center, most of the damage (including the buildings' collapse) was caused by fire, not by the direct impact of the planes. Federal Emergency Management Agency, *World Trade Center Building Performance Study* (May 2002), 2.

[68] American Academy of Actuaries, 16.

[69] Hartwig, *Études*, 126.

[70] Bond Market Association, "Lack of Terrorism Insurance Hurts the CMBS Market," Policy Brief, 4/18/2002.

[71] American Academy of Actuaries, 8.

[72] Part of the decline may be due to the recession that began in March 2001. "GMAC, Morgan Stanley Lead CMBS Issuance," *Commercial Mortgage Alert*, 4/12/2002.

Data on the broader category of all commercial mortgage lending echoes the CMBS trend. Despite the recession that began in early 2001, commercial mortgage lending was strong throughout all of last year. However, commitments for new commercial mortgages dropped 16 percent in the first quarter of 2002 from the same period last year. The impact was particularly pronounced for offices and hotels, the lending for which was off by 37 percent and 86 percent respectively.[73]

V. THE FEDERAL ROLE IN TERRORISM INSURANCE

Given the obvious disruption to economic activity and the potential threat of another major terrorist attack, there have been proposals for the federal government to assume some limited role in making terrorism insurance available. The U.S. House of Representatives passed a version of terrorism insurance legislation (H.R.3210) on November 29, 2001, and several proposals are pending before the U.S. Senate.[74]

There are credible arguments for a federal role in terrorism insurance. First, there is the current risk to the economy, in which the scarcity and cost of terrorism insurance could inhibit recovery from the recession that began in early 2001. Second, establishing a federal role now would alleviate the potentially devastating effect of another catastrophic terrorist attack. Finally, if substantial amounts of terrorism risk continue to be borne by businesses, political realities suggest that a federal bailout would be inevitable given another catastrophic terrorist attack. In such a circumstance, the federal intervention would likely by hastily constructed, involve larger amounts of aid, and would not have the same beneficial economic effects as would a program implemented today. In essence, federal involvement now would ensure that insurers remain engaged in covering terrorism losses, thus limiting potential future government (and hence taxpayer) liabilities.

There are also valid arguments against creating a federal role in terrorism insurance. One argument centers on concern about subsidizing insurance company profits, although proponents argue that a temporary federal role would mainly benefit the economy as a whole, not just a single industry. A second argument against a federal role stems from concern about creating a permanent federal bureaucracy that introduces inefficient distortions to the free market. For example, excessive government subsidies or regulations could result in market distortions that alter behavior in risky and inefficient ways. Long-standing government programs in areas such as flood insurance and banking have been criticized on such grounds.[75] Finally, some critics of federal legislation argue that the market will correct itself and thus no intervention is required.

The private market can and will respond to the relatively recent emergence of major domestic terrorist threats. There have already been infusions of capital into the insurance

[73] Mortgage Bankers Association of America, "Commercial Mortgage Lending Slows in Q1, 2002," Press Release, 5/14/2002.
[74] For additional detail on the different bills, see Rawle O. King, "Terrorism Risk Insurance: A Summary of Legislative Proposals," Congressional Research Service, Report RL31209, 12/7/2001.
[75] See, for example, Armen Hovakimian and Edward J. Kane, *Risk-Shifting by Federally Insured Commercial Banks*, National Bureau of Economic Research, working paper no. 5711 (August 1996).

industry.[76] In response to actuarial hurdles, some insurance researchers are exploring the use of game theory, which offers insights into how players respond to different situations, to predict the frequency and targets of terrorist attacks.[77] Moody's has already developed a preliminary framework for assessing terrorism risk in commercial market real estate.[78] Reinsurers will also respond, perhaps by forming international syndicates that allow them to increase the amount of terrorism risk they are able to assume.

It may also be worth considering the likely government response in the event of another major terrorist attack. With limited terrorism insurance in place, the business sector will be forced to bear directly the cost of such an attack. Faced with the prospect of major business bankruptcies, it does not seem realistic to expect the federal government to simply stand by and watch. A federal bailout would almost certainly be demanded, and that federal role, developed in haste and under intense political pressure, might lead to a much larger, more costly and poorly designed role. It would seem prudent, then, for the government to assume a temporary and limited role now that will allow markets to resolve the actuarial and financial barriers they currently face.

The arguments listed above suggest that the appropriate role for the federal government should be limited and temporary. A limited federal role is one that preserves the private markets as the primary means of insuring against terrorism losses. Federal aid would become available only on a temporary basis (such as a loan) or only for events with aggregate losses greater than a pre-determined threshold. A temporary program would include a provision that sunsets the federal program after a predetermined period of time. A program that does not meet these two criteria risks creating a program that potentially does more harm than good. All the versions of federal terrorism insurance legislation currently under consideration by the U.S. Congress contain a "sunset" provision that terminates the program in two to three years.

Whatever role the federal government ultimately assumes, there should also be recognition of the fact that existing laws and regulations may prevent a market-based response. Anti-trust regulation, for instance, prohibits certain collaborative ventures.[79] Insurers and reinsurers could, in theory, form a market-based and industry-run insurance pool from which to pay claims for losses due to terrorism. As such, some form of government action would seem appropriate to grant the markets additional flexibility to develop solutions to terrorism insurance problems.

The Liability Provision

An important aspect of crafting a federal role in terrorism insurance is the liability provisions. The House-passed version of terrorism insurance contains several incremental provisions curbing litigation. Injured parties could still sue for damages, but punitive damages

---

[76] However, Fitch Ratings predicts that industry surplus will be essentially flat in 2002 relative to 2001. Fitch Ratings, "Review & Outlook: 2001/2002 U.S. Property/Casualty Insurance," 1/17/2002, 9.

[77] John A. Major, "Advanced Techniques for Modeling Terrorism Risk," Guy Carpenter & Company, 2/2002; and Gordon Woo, "Quantifying Insurance Terrorism Risk," National Bureau of Economic Research Insurance Project Workshop, 2/1/2002.

[78] Moody's Investors Service, *CMBS*.

[79] See American Academy of Actuaries, 17.

against parties not involved in the terrorist act would be prohibited. Non-economic ("pain and suffering") damages would also be permitted, but the bill would limit a party's liability to their portion of responsibility for the terrorist act.[80] In addition, attorneys' fees would be capped at 20 percent of the award or settlement, and lawsuits would be consolidated in federal court. Similar provisions regarding punitive damages and consolidation in federal court are contained in some of the Senate versions of the bill. Litigation provisions would still allow lawsuits against the responsible terrorists and terrorist organizations.

The rationale behind liability provisions is relatively straightforward: if taxpayers are to help pay for losses caused by terrorist attacks, then they should not also have to bear the cost of lawsuits. Lawsuits are turning out to be a principal driver of the cost of the 9/11 attacks. With lawsuits stemming from 9/11 already estimated to cost as much as $20 billion, litigation reform would seem to be an obvious element to mitigating the economic cost of another catastrophic terrorist attack. As previously noted, liability costs are estimated to constitute the largest single cost of the 9/11 attacks, and could easily excede the property damage, life insurance, and workers compensation payments combined.

Since such lawsuits typically pay 33 percent to 40 percent of the award to the plaintiffs' lawyers, there are concerns that lawyers could use a catastrophe to enrich themselves at the taxpayers' expense. Moreover, given the incentive such a payment structure creates to file frivolous and numerous lawsuits, excessive litigation could prove a serious drag on the economy. Businesses could end up spending more on legal fees and settlements than on rebuilding.

Terrorism Insurance Abroad

Although the cost of the 9/11 terrorist attacks dwarfs that of any previous terrorist attack, other counties have had problems with terrorism for decades and have often responded with some form of government program. In the United Kingdom, a series of terrorist bombings in London and elsewhere prompted the government to create in 1993 a voluntary-participation reinsurance pool to pay for terrorism losses. Policyholders and insurers contribute to the resources of the pool, and the government is responsible for losses that exceed these contributions.[81] In Israel, the government runs a mandatory insurance program that pays for all terrorist losses, funded by tax revenue.[82] France has multiple state-run programs that provide coverage for terrorism losses.[83] Spain maintains a mandatory-participation, government-run program, financed by premiums based on property values.[84] In response to the 9/11 attacks, other countries, including Australia, Canada and Germany, are considering government-backed solutions to insure against terrorist acts.[85]

[80] In other words, if a business is found to be 20 percent responsible for a terrorist act, then that business would only be liable for 20 percent of the pain and suffering damages.
[81] Tillinghast-Towers Perrin, "*Pool Re and Terrorism Insurance in Great Britain,"* 10/2001.
[82] Robert C. Meder, "Global Terrorism Coverage," *Risk Management Magazine*, 5/2002.
[83] *Ibid*.
[84] *Ibid*.
[85] Dennis Shanahan, "Canberra Plans Terrorism Cover," *The Australian*, 5/16/2002; Lloyd Hackett, "2002 Legislative Forecast: Canada," *Risk Management Magazine*, 2/2002; and "Germany to Fund Terror Insurance," *AP Online*, 4/26/2002.

VI. CONCLUSION

The terrorist attacks of September 11, 2001 caused an unprecedented loss of life, property and economic activity. Total insurance payments for claims from the attacks will likely total $40 billion to $50 billion. Due to financial and actuarial concerns of insurers, it has become extremely difficult for many businesses to find terrorism insurance coverage equal to pre-9/11 levels. A growing body of evidence reveals that terrorism insurance has become a significant threat to the economy. The cost and scarcity of terrorism insurance is proving to be a drag on economic activity. In addition, a substantial amount of business value is not covered by terrorism insurance. Another catastrophic terrorist attack could have an even more destructive impact on the economy, since businesses would not have the resources to rebuild as they did following 9/11.

Dan Miller
Senior Economist

BIBLIOGRAPHY

Alliance of American Insurers. "Reinsurers Cite Need for Terrorism Backstop at Alliance Annual Meeting." Press Release, 5/1/2002.

American Academy of Actuaries. "Terrorism Insurance Coverage in the Aftermath of September 11th," 4/17/2002.

American Trucking Associations. *Truck Insurance Survey* (January 2002).

Associated Press. "Current Totals," 5/13/2002. Online at attacksvictims.ap.org/totals.asp.

Betterley Risk Consultants. "The Terrorism Coverage Market: Hope for Coverage in a Difficult Market." *The Betterley Report* (April 2002).

Board of Governors of the Federal Reserve System. "The April 2002 Senior Loan Officer Opinion Survey on Bank Lending Practices," 5/10/2002.

Bond Market Association. "Lack of Terrorism Insurance Hurts the CMBS Market." Policy Brief, 4/18/2002.

Council of Economic Advisers. *Economic Report of the President*. Washington, DC: Government Printing Office, 2002.

Council of Insurance Agents and Brokers. "Commercial Insurance Market Index Indicates Need for Federal Terrorism Backstop." Press Release, 4/16/2002.

Coyn, Frank J. "Trial by Fire: Terrorism and Nuclear Exclusions Are Limited in States that Adhere to the Standard Fire Policy." *Best's Review* (April 2002). Online at www.bestreview.com/2002-04/is_trial.html.

Federal Emergency Management Agency. *World Trade Center Building Performance Study* (May 2002).

Fitch Ratings. "Review & Outlook: 2001/2002 U.S. Property/Casualty Insurance," 1/17/2002.

---. "Terrorist Insurance: Two Steps Forward, One Step Backward." *Real Estate Update* (May 2002): 3.

Hartwig, Robert P. "11 September 2001: One Hundred Minutes of Terror that Changed the Global Insurance Industry Forever." *Études et Dossiers*, no. 241 (February 2002) : 113-143.

---. "The Terrorist Attacks of September 11, 2001: Impacts and Implications for the Insurance Industry." Presentation to the Innovations in Catastrophe Management Conference, Sanibel, FL, 3/5/2002.

Hovakimian, Armen and Edward J. Kane. *Risk-Shifting by Federally Insured Commercial Banks*. National Bureau of Economic Research. Working paper no. 5711 (August 1996).

Independent Insurance Agents of America and the Alliance of American Insurers. "Effects of Terrorism Exclusions on the Property/Casualty Market: A Survey by IIABA and AAII, Summary Report," 4/18/2002.

Insurance Information Institute. *Fact Book 2000*. New York, NY: Insurance Information Institute, 1999.

Insurance Services Organization. "Status of Terrorism Filings," 5/15/2002. Online at www.iso.com/filings/cl.htm.

Keleher, Robert. *The Economic Costs of Terrorism.* Joint Economic Committee of the U.S. Congress (May 2002.).

King, Rawle O. "Terrorism Risk Insurance: A Summary of Legislative Proposals," Congressional Research Service, Report RL31209, 12/7/2001.

Kramer, Lisa. Federation of Jewish Philanthropies. Prepared Testimony to the U.S. House Committee on Financial Services, Subcommittee on Oversight and Investigation, 2/27/2002.

Major, John A. "Advanced Techniques for Modeling Terrorism Risk." Guy Carpenter & Company, 2/2002.

Moody's Investors Service. "CMBS: Moody's Approach to Terrorism Insurance for U.S. Commercial Real Estate," 3/1/2002.

---. "Insurers Face the Challenges of a Post September 11th World," 1/2002.

Mortgage Bankers Association of America. "Commercial Mortgage Lending Slows in Q1, 2002." Press Release, 5/14/2002.

National Association of Insurance Commissioners. "An Update of State Insurance Regulatory Actions Taken in Response to the Terrorist Attacks of September 11, 2001," 2/27/2002.

Nutter, Franklin W. "Rebuilding Commercial Insurance Markets with a Public/Private Partnership." Statement of the Reinsurance Association of America to the NAIC Reinsurance Task Force Hearing, 1/17/2002.

Risk Management Society. *Managing Risk in the Aftermath of the WTC Catastrophe* (2002).

Standard & Poor's. "Terrorism Coverage Remains in Doubt." 4/15/2002. Online at www.standardandpoors.com/europe/francais/Fr_news/Terrorism-Coverage-Remains-in-Doubt_15-04-02.html.

Swiss Re. "Natural Catastrophes and Man-Made Disasters in 2001." *Sigma* (1/2002): 3-24.

Syscrapers.com. "Skyscapers" for various cities, 5/2002. Online at www.skyscrapers.com/english/worldmap/country/0.9/100185/index.html

Tillinghast-Towers Perrin. "Pool Re and Terrorism Insurance in Great Britain," 10/2001.

---. "Why Do We Need Federal Reinsurance for Terrorism?" 10/8/2001.

U.S. Department of the Treasury, Office of Public Affairs. "Examples of Terrorism Insurance Difficulties," 4/8/2002. Online at www.treas.gov/press/releases/po2074.htm.

U.S. General Accounting Office. Prepared Testimony of Richard J. Hillman to the U.S. House Committee on Financial Services, Subcommittee on Oversight and Investigation, 2/27/2002.

Woo, Gordon. "Quantifying Insurance Terrorism Risk." National Bureau of Economic Research Insurance Project Workshop, 2/1/2002.

Woodward, Jeff. "The ISO Terrorism Exclusions: Background and Analysis." International Research Management Institute, *IRMI Insights* (February 2002). Online at www.irmi.com/insights/articles/woodward006.asp.