INSURANCE AND TERRORISM RISK 2

ROLE OF INSURANCE

> This chapter presents a discussion of terrorism risk. It is directed at all segments and components of the insurance industry so that they can begin to determine how to establish an actuarial basis for insuring against terrorism risk. The specific intent of this chapter is to help the insurance industry utilize its considerable influence on the building industry to encourage investments in terrorism risk mitigation.

Insurance plays a critical role in society in the management of risk. Insurance provides a mechanism for spreading risk, which allows individuals to accept risks that would otherwise be unacceptable. Insurance also provides the service of pricing risk. On the basis of actuarial data and analysis insurers attempt to quantify risks and to set rates for the financing of risks.

Property insurance has worked very well for a range of familiar hazards such as fire and windstorm. Not only has insurance served to transfer risks, it has also provided the database for identifying and reducing risks.

Loss data has contributed to general understanding of perils and has led to the development of effective mitigation measures. Recognition of the effectiveness of those mitigation or risk reduction measures has been reflected in differential premiums that provide a direct incentive for mitigation investment. Risk based access to insurance and risk based pricing of insurance make it a very effective change lever strongly influencing building design and management practices.

Terrorism Risk for Insurers

Terrorism risk is new to the United States. The threat is not well defined. There is very limited experience or actuarial data. There is even less experience of the effectiveness of protective measures in buildings. The insurance industry is now struggling to digest this new threat. Traditional means of analysis are so far ineffective in providing the basis for pricing the risk.

Lacking greater experience it is difficult to gauge the accuracy of terrorism risk perception on the part of key participants in the real estate industry. Potential buyers of terrorism risk coverage must have a reasonable basis for estimating their insurance needs. At the same time, those selling insurance must have a defensible basis for pricing terrorism risk coverage. In the absence of data or other means of determining premiums, and in light of the catastrophic loss potential of the risk, insurers left the market. In response to this crisis in the insurance market the federal government has taken extraordinary measures to provide temporary support for the insurance market. These measures are discussed later in this chapter.

Insurance pricing and availability are also driven by market capacity and competition. Even without actuarially based rates the pricing mechanism of the market will come into play. Demand for terrorism risk insurance is driven in part by building owners' perception of their risk and in part by the risk perception of their lenders. Both owners and lenders rely on the insurance industry to price such risks.

Evaluation of terrorism vulnerability in planned and existing commercial buildings can provide valuable input to the rating of relative risk for specific buildings. Criteria for the evaluation of relative terrorism risk in buildings can eventually contribute an important component of the ratemaking equation. Recognition by the insurance industry of effective risk reduction measures should provide guidance and incentive for investment in terrorism risk reduction.

Some aspects of terrorism risk may be approached through community rating systems, such as that used in the National Flood Insurance Program, which reflect the target priority and the state of security organization of a community. Because of the relationship of terrorism risk to national security policy it may prove reasonable that the federal government role be extended.

Building Insurance Industry

The insurance industry consists of three primary segments, each of which has a unique role in the assessment of terrorism risk, and therefore can benefit from familiarity with the information in this primer:

- Direct insurers
- Reinsurers
- Agents/brokers

Direct insurers are the front line of the insurance industry. The direct insurer writes the policy, collects the premium and pays the claim to the insured. Direct insurers are now required by state insurance regulators to offer terrorism risk insurance. It is the responsibility of the direct insurer to set premium rates based on an analysis of exposure and risk. This rate structure must be reviewed and ultimately approved by the various state insurance commissioners in most state jurisdictions.

Ideally, direct insurers need basic information on the frequency and severity of terrorist events and on the vulnerability of particular properties to terrorist attack in order to set specific premiums. They must also know the effectiveness of specific mitigation measures in order to modify premium rates appropriately.

Reinsurers provide insurance for direct insurers. That is, direct insurers are able to purchase reinsurance to cover some part of their exposure. Reinsurers are not regulated by state insurance commissioners and are not required to provide reinsurance for terrorism risk. Following the World Trade Center (WTC) attack most major reinsurers excluded terrorism risk from new treaties with direct insurers. This created a temporary crisis in insurance markets in that direct insurers were required to provide terrorism risk insurance but they were no longer able to transfer part of that risk to reinsurers.

Ideally, reinsurers need information on the frequency and severity of expected terrorist attacks on a global scale. They also need to be able to evaluate the effectiveness of the property risk assessment methodologies of their clients, the direct insurers.

Insurance agents and brokers are the key connection between insurance buyers and sellers. Agents typically represent the seller and brokers typically represent the buyers. Agents and brokers communicate directly with the policyholder or the building owner. It is necessary for agents and brokers to understand the specific exposure and insurance needs of the client as well and the policy conditions and exclusions of the insurer. In the case of terrorism risk this will require understanding of the physical and operational aspects of buildings that indicate vulnerability to terrorist attack.

Actuaries

Actuaries are the foundation of the insurance business, and they provide services for each of the primary segments of the industry. The actuary assesses the available loss data to quantify the risk as the basis for pricing risk and setting premiums. Actuarial data and analysis is the basis for the pricing of risk and evaluating the solvency of insurance companies. The key problem in the assessment of terrorism risk is the lack of actuarial data. There are very few examples of terrorist attack losses in the United States. It is very difficult to generalize or project expected losses on the basis of this documented experience. Terrorism is not a well-defined or stable phenomenon. Without actuarial data it is difficult to price the risk and it is difficult to defend proposed rates.

Insurance Industry Infrastructure

The industry is supported by a complex infrastructure, each component of which will be able to use this information:

- Overseers/regulators (historically, insurance is regulated at state level by insurance commissioners)
- Technical support: Insurance Services Office (ISO), National Workers Compensation Commission, Association for Cooperative Operations Research and Development (ACORD), and others
- Think tanks (risk modelers) and risk control consultants: EQECAT, Risk Management Solutions (RMS), Applied Insurance Research (AIR), and others
- Lobbying groups: American Insurance Association (AIA), National Association of Insurance Brokers (NAIB), Reinsurance Association of America (RAA), Risk and Insurance Management Society (RIMS), and others

State insurance commissioners have a primary responsibility to ensure the solvency of insurance companies and their ability to pay claims when required. This means they have a strong interest in the quality of actuarial data and analysis used in rate setting and they review both the forms and the pricing. They are also concerned with ensuring access to insurance at reasonable rates. For this reason insurance regulators need to know how to evaluate rates proposed by insurers for terrorism risk cover. They also need to know the value of risk reduction measures (risk modification factors) that might be considered to qualify for premium reductions.

Insurance regulation is concerned with the viability of insurance companies as a consumer protection issue. Regulators want to ensure that premiums are sufficient to pay insurance losses and that insurers remain in business. Insurers are required to project future risk and to show a plausible investment strategy.

For the most part, insurance regulators do not set rates-companies propose and regulators evaluate justification of rates. Insurance rating agencies are exempt from anti-trust so that data can be shared. The rating agencies analyze all available data. They are mathematicians and statisticians, not modelers.

Technical support organizations help to translate research into new tools for the insurance industry. This includes the development of standard procedures and forms and guidance on rate making. Technical support organizations have a very important role in providing analysis and technical support for many direct insurers. Such technical service organizations provide a valuable channel for the processing of information and the development of insurance services. They can provide a valuable link in the development of insurance products and practice to deal with terrorism risk.

Worthy of particular note are the services provided by the Insurance Services Office (ISO). Every year, ISO gathers information from insurance companies on hundreds of millions of policies including the premiums the companies collect and the losses they pay. ISO submits summaries of that information to insurance regulators, as required by law, to help the regulators evaluate the price of insurance in each state. ISO also uses the information in its database to prepare products and services that help insurers compete in the marketplace. They provide a wealth of related products and services, including standardized policy language, rating and underwriting rules, and site surveys of individual properties.

Think tanks are risk management organizations staffed by scientists and engineers as well as insurance specialists who carry out and apply research on perils and vulnerability of insured properties. Over the past twenty years much progress has been made in developing refined understanding of complex perils including natural and environmental hazards. Loss estimation models have been developed that help the insurance industry deal with low frequency, high consequence events, like earthquakes. These research-based think tanks are currently working on the modeling of terrorism risk to provide loss estimates for rate setting and mitigation actions.

Lobbying organizations that represent the insurance industry in public policy circles, and are also acutely interested in understanding the character of terrorism risk. As a highly regulated industry, insurance is very much subject to legislative and regulatory decisions. The Terrorism Risk Insurance Act of 2002 (discussed later in this chapter) is an example of a significant federal response to a crisis affecting the insurance industry. Future exposure to and management of terrorism risk is a major issue of public/private policy discussion.

Insurance Product Lines

The insurance industry segments itself by product lines, some of which have a direct relationship to building safety features, and others of which may have an indirect relationship:

- Property, liability, and business interruption
- Workers' compensation
- Health (and health maintenance organizations)
- Life

Table 2-1: Relationship of Terrorist Threats to Particular Lines of Insurance

Threat/Hazard	Property/ Liability	Business Interruption	Workers' Compensation	Health	Life
Armed attack	●	❍	❍		●
Arson/incendiary	●	●	❍		●
Biological agent	❍	●	●	❍	●
Chemical agent	❍	●	●	❍	●
Conventional bomb	●	●	●	❍	●
Cyber-terrorism		●			
HAZMAT release	❍	●	●	❍	❍
Nuclear device	●	●	●	❍	●
Radiological agent	❍	●	●	●	●
Surveillance		●			
Unauthorized entry		●			

LEGEND: ● = Probable relationship
❍ = Potential relationship

Various terrorist threats may cause losses that are covered by different insurance product lines. Some terrorist threats may cause losses that are not covered by any insurance. Table 2-1 suggests the relevance of recognized terrorist threats to the various lines of insurance. It is important to note that aside from bomb blast and arson most of the threats do not necessarily imply physical damage to buildings.

World Trade Center Insurance Experience

The strongest image of terrorist attack is the collapsing towers of the World Trade Center. Clearly, terrorism risk is a major concern for property and liability insurers. However, significant claims have resulted for many other lines of insurance as a result of terrorist attacks. September 11, 2001 is the costliest day in insurance history. Total losses are estimated to be three times the largest previous insurance loss in Hurricane Andrew ($18 billion in 1992).

Insurance losses resulting from the World Trade Center attack fall into various categories:

- Property losses to the WTC and surrounding buildings, incurred by building owners.
- Business income and rent loss due to the inability to use the destroyed facilities, incurred by building owners and tenants.
- Workers compensation, life and health insurance losses resulting from the death and injury of victims, incurred by tenants.
- Liability losses for claims due to inadequate fire prevention and evacuation procedures, incurred by building owners.
- Financial losses associated with the mortgage notes of various lenders and investors in mortgage-backed securities.

Terrorism risk insurance before the WTC attacks was included in "all-risk" policies at no added cost. Most policies include a standard "war exclusion" clause. Such exclusion clauses often refer to "declared" war by a "nation" or "sovereign state" but not to "terrorist action" or "terrorism." Reference to the attacks as an "act of war" was inadvertently threatening to commercial property owners and lenders as it may have activated the war exclusion and released insurers from damage claims.

Property and Liability

In the case of property and liability insurance coverage for the buildings damaged in the attack, the principal claimant is the building owner. The extent of the claim is dependent on several factors including the future rebuilding plans and the characterization of the incident. First, if the buildings are not rebuilt or repaired the insurer applies actual cash value rather than replacement cost. Actual cash value is defined as replacement cost minus physical depreciation. For older buildings like the WTC towers the loss recovery would be considerably less if they were not rebuilt.

Most property policies are written on an "occurrence" basis. That is, the full limit applies for each occurrence with no maximum aggregate. In the case of the WTC there were two airplanes that struck two buildings at different times, but they were all part of one terrorist attack. The difference between one event and two is about $3.5 billion for the owner and the insurer. The specific definition of the terrorist event is of critical importance in terms of what is covered and what is excluded. Because terrorism risk is a new concern in the United States many of these definitions remain to be established and interpreted by the courts.

Business Interruption

Aside from physical damage or fire insurance there are other insurance questions that are closely associated with building performance and are of direct interest to building owners and tenants. Business interruption insurance, which covers lost business income and rental income, presents special problems for insurers, owners and lenders in the case of terrorist attack. Loss of income policies (generally included within a standard fire policy) are written by insurers either for a specified time period or on the basis of "actual loss sustained," which requires insurers and owners or tenants to agree on actual losses. The scale of destruction at the WTC was probably considerably greater than anything anticipated by insurers or insured. It is very unlikely that reconstruction will be completed within the coverage period of most business interruption policies.

Problems also arise in the case of adjacent buildings. Usually, business loss is insurable if the building is first damaged by an insurable peril. Without such damage there is no coverage. In the case of the WTC many adjacent, undamaged buildings were evacuated by order of civil authorities. Evacuation in response to civil authority can be an excluded peril or covered for a limited time period. Denial of access without physical building damage, as in the case of bio-terrorist attack or radiological attack, is currently excluded from insurance coverage.

Workers' Compensation, Health, and Life

Workers' compensation insurance as well as group and private life and health insurance cover injured and deceased workers. Building owners and tenants must provide statutorily required workers' compensation cover for employees. Lenders must, in accordance with standard loan documents, verify that building owners and management companies carry workers' compensation insurance.

Most lenders and owners set up a single-purpose entity that holds the asset when a loan is made on a particular property. These entities typically do not have employees per se. Employees are usually legally employed in the owner's management company. Failure to carry sufficient workers' compensation coverage could affect all operations of the owner including the single purpose borrowing entity. Death and injury due to building failure resulting from terrorist attack can be a major financial concern for building owners, lenders and insurers, aside from the human cost.

Life insurance claims have been a significant source of insurance loss due to terrorist attack. Group benefits are typically a multiple of salary and most people carry individual insurance as well. These losses are directly associated with building failure in either structural or mechanical systems. Large group insurers are now careful to avoid concentration of exposure by restricting coverage at any one site or building.

Insurance Losses

Liability Losses. Based on past litigation it is likely that building owners can be held liable for contributing to the loss of life by failure to provide appropriate protective measures or direction in the case of evacuation. Facilities management is on the front line in managing terrorism risk and response in commercial buildings. Standards of acceptable practice are not yet available.

Financial Losses. Mortgage holders and investors are the subject of losses in the case of defaults caused by business failure resulting from terrorist attack. The WTC complex was controlled under a 99-year leasehold. A CMBS (commercial mortgage backed security) securitization was completed for part of the leasehold consideration paid to the owners of the WTC. Default insurance was not in place for the securitization. This means that investors in those securities could only indirectly depend on the traditional property and liability insurance to be collected by the leaseholder. Mortgage holders and investors in mortgage backed securities must be concerned with the vulnerability of the underlying asset. This vulnerability now includes terrorism risk. Terrorism risk evaluation and management is of particular importance for so-called 'trophy buildings' or buildings in close proximity to likely terrorist targets.

CURRENT INSURANCE SITUATION

Following the WTC attack the major burden of the property and liability loss was passed on to the major international reinsurers. In response to this unprecedented loss the major reinsurers excluded terrorism risk from their renewal treaties. This action in turn led direct insurers to file for exclusions for terrorism risk. The unavailability of terrorism risk insurance at feasible prices led to an insurance 'crisis' that particularly affected large-scale real estate and lending investment in what were perceived to be target cities.

Terrorism Risk Insurance Act of 2002

On November 26, 2002 the president signed into law a federal program that requires property and liability insurers in the United States to offer coverage for incidents of international terrorism, and reinsures a large percentage of that insured risk. PUBLIC LAW 107-297, the Terrorism Risk Insurance Act of 2002 (TRIA), produced some immediate effects on commercial insurance coverage and will continue as a significant feature of the domestic insurance market through 2005. See Appendix A for the full text of TRIA.

The Act addresses only a defined category of terrorism losses. An act of terrorism must be certified as such by the Secretary of the Treasury and must have the following characteristics:

- It must be a violent act or an act that is dangerous to human life, property, or infrastructure.
- It must have resulted in damage within the United States, or on the premises of any U.S. Mission abroad.
- It must have been committed by someone acting on behalf of a “foreign person or foreign interest, as part of an effort to coerce the civilian population of the United States or to influence the policy or affect the conduct of the U.S. Government by coercion.”
- It must produce property and casualty insurance losses in excess of $5 million.

It is also important to note that chemical, biological, and radiological perils are excluded from terrorism risk cover.

Acts that might otherwise meet these criteria but that occur in the course of a declared war cannot be certified as acts of terrorism under the Act, except with respect to workers' compensation claims.

Participation and Reimbursements

Participation in the program is mandatory for all insurers covering commercial lines property and casualty insurance, including excess insurance, workers' compensation and surety.

Under TRIA, the federal government reimburses insurers for losses caused by terrorism, paying 90% of covered terrorism losses exceeding a deductible paid by the insurance companies. The deductible is prescribed by statute and phases in over several years based on an insurance company's earned premiums in the prior calendar year. The Act establishes a cap on annual liability of $100 billion for both the government and insurance industry.

Coverage of claims is triggered when the Secretary of the Treasury, in concurrence with the Secretary of State and the Attorney General, certifies an event to be an "act of terrorism." A key element of terrorism is the involvement of a foreign interest, thus excluding acts of domestic terrorism, such as the Oklahoma City bombing. Also excluded from the definition of terrorism are acts committed in the course of war and losses under $5 million.

Under TRIA, insurers are required to provide "clear and conspicuous" disclosure to policyholders of the premium charged for terrorism insurance. Existing terrorism exclusions are voided to the extent they would deny coverage for acts of terrorism as defined by the Act, unless the policyholder affirmatively declines terrorism coverage within 30 days of receiving the insurer's notice, or the policyholder fails to pay any additional premium required by the insurer.

Limitations

TRIA is an interim solution to the management of terrorism risk.

The act establishes a temporary federal program that provides for a transparent system of shared public and private compensation for insured losses resulting from acts of terrorism in order to:

1. Protect consumers by addressing market disruptions and ensure the continued widespread availability of property and casualty insurance for terrorism risk; and

2. Allow for a transitional period for the private markets to stabilize, resume pricing of such insurance, and build capacity to absorb any future losses, while preserving state insurance regulation consumer protections.

This law gives emphasis to the impact of terrorism risk on insurance and finance as well as on commercial building owners, and suggests the critical role that insurance, finance, and regulation will play in the adjustment to terrorism risk in the U.S.

The law assumes that the private insurance market for terrorism risk coverage will stabilize over the next three years and that property and casualty insurers will develop reliable models for pricing such insurance. While there have been signs of market pricing mechanisms developing, it is not clear that a period of three years will provide adequate time to resolve the issues associated with such a complex phenomenon. So far, the anecdotal evidence is that many property owners are not buying terrorism insurance post-TRIA.

INSURANCE RISK MANAGEMENT MODELS

The major loss modeling organizations have been quick to develop probabilistic terrorism insurance models. These models have typically begun with the general format of the loss estimation models developed for natural hazards such as earthquakes and hurricanes. The most significant challenge in terrorism modeling is the characterization of the hazard. Unlike the case of earthquakes or hurricanes, we do not have clear definitions of the phenomenon and we do not have hundreds of years of frequency/severity data.

Currently available terrorism insurance models cover the major recognized risk sources, including bomb blast, aircraft impact, and chemical, biological, nuclear, and radiological threats. Most models set priorities for targets in all major cities and states and then simulate attacks with various types of weapons. The models include modeling of impact on adjacent buildings based on comprehensive national building inventories.

These models are intended to enable insurers and reinsurers to price and manage accumulated exposures to terrorism losses from multiple perils. The models claim to provide industry or portfolio-specific loss probability distributions, expected annual loss and scenario losses for workers' compensation and property exposures.

The models are very good at estimating loss from defined scenario events such as a given size blast at a given location. The critical weakness of all models to date has been the credibility of the hazard characterization. Typically the modelers have assembled teams of experts with backgrounds in national defense and domestic security. The ability to properly portray all of the potential terrorist events and their impact is central to the efficacy of a terrorism model. So far, this ability has not been convincing for the insurance industry or the real estate industry.

DATA NEEDS FOR INSURANCE

TRIA requires insurers to include terrorism risk cover, and then disclose the cost of the added coverage as a percentage of the total premium. So far the reported costs for terrorism risk as a percentage of the total premium range from 0% to 80% with many averaging 9% to 11%.

Most insurers charge 0% to 10% in order to avoid returning premiums to insureds at a later date when better information is available (and terrorism risk may be discounted). Some insurers are reportedly setting the level high, 20% to 50%, depending on how much terrorism risk coverage they want to write and the characteristics of the property (e.g., location, prominence, significance).

Lack of Actuarial Information

Actuaries are the key for insurance rate setting. Actuarial prediction of future losses is highly specialized and very influential. In the absence of data temporary solutions like TRIA will be necessary.

Without actuarial data it is not possible to set actuarially sound rates for insurance cover. It is equally not possible for insurance regulators to evaluate rates proposed by insurers. However, for terrorism risk to be an insurable risk there must be data. Models may be helpful in the interim but real data will take time to collect and will unfortunately result from more terrorist attacks.

FUTURE DEVELOPMENTS

Actions such as improved building standards and operational mitigation could result in reduced terrorism risk exposure for the public, building owners, and the insurance industry. Tools for the evaluation of building vulnerability to known terrorist threats, such as those discussed in Chapter 5, will allow for the determination of relative risk between buildings and for development of a risk hierarchy based on the physical and operational characteristics of individual properties. Development of standards of practice will also provide a useful baseline for determination of liability related to terrorist attack.