

# actuarial REVIEW

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## THE TRIANGLE CHALLENGE



SEARCHING FOR DATA OF LOSS TRENDS | CELEBRATING 100 YEARS OF THE CAS

# actuarial REVIEW

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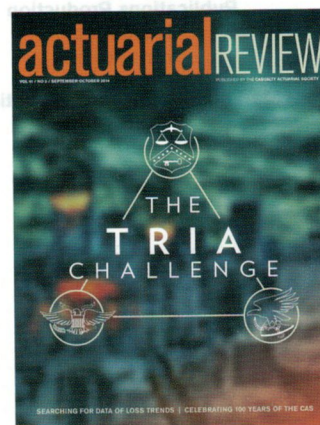


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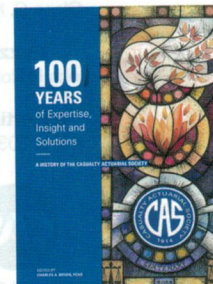
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**W**hile it is uncertain if or when another terrorist attack will occur on United States' soil or affect U.S. interests abroad, two things are clear. First, pricing terrorism insurance is extremely difficult. Second, the best way to ensure that terrorism coverage is affordable and accessible is to extend the Terrorism Risk Insurance Act of 2002 (TRIA).

Congress has until December 31, 2014, to continue TRIA. Since there is plenty of evidence that TRIA will be extended, the focus is centered on what the program will look like in the future.

"I don't want to predict success yet, but all the legislative vehicles that have been introduced are highly encouraging that something will get done," said J. Stephen ("Stef") Zielezienski, senior vice president and general counsel for the American Insurance Association.

TRIA was extended twice before through the Terrorism Risk Insurance Extension Act of 2005 and the Terrorism Risk Insurance Program Reauthorization Act of 2007. The latter is a seven-year extension that will sunset at the end of 2014. It applies to specific lines of commercial insurance, including commercial property, business interruption and workers' compensation. It covers both foreign and domestic acts of terror.

Understanding legislative initiatives requires some history and an explanation of how TRIA is designed to work.

### **TRIA History**

Congress passed TRIA a year after the terrorist attack of September 11, 2001. Insurance lines later eligible for TRIA absorbed \$32.5 billion in losses at the time, according to the Guy Carpenter report, "Uncertain Future: Evolving Terrorism Risk," released in June 2014. This amounts to \$42.9 billion, the second highest insurance loss in U.S. history, after Hurricane Katrina's \$48.7 billion in losses (all in 2013 dollars).

While insurers and reinsurers were able to cover 9/11 insured losses, they had not been pricing insurance with terrorism exposure in mind, according to Dennis Burke, vice president of state relations for the Reinsurance Association of America, who also heads up the organization's extreme events committee. "No one knowingly wrote large scale terrorism coverage prior to September 11 and no one was charging for it," he said. 9/11 was a "paradigm-shifting event," Burke said. In its aftermath, the insurance industry had to recognize the world and its risk were different than believed before, he added.

The need for terrorism insurance became clear. Given the magnitude of the threat and the nature of the risk, however, terrorism coverage became increasingly scarce in areas considered to be major targets and, when it was available, it was expensive. Congress responded by passing TRIA.

### **How TRIA Works**

For insurers to qualify for TRIA, three agencies—the U.S. Department of the Treasury (with the help of the Federal Insurance Office), the Department of State and the



Department of Justice have to agree that an attack is an act of terrorism, as defined by the law. Industry losses must be at least \$5 million to be eligible for certification.

The insurer must also pay as a “deductible” 20 percent of its prior year’s direct earned premium for TRIA-covered commercial insurance lines on insured losses following an attack that exceeds an industry loss “program trigger” of \$100 million. For large insurers, this TRIA deductible is estimated at \$1 billion to \$2 billion, according to “Terrorism Risk Insurance: Issue Analytics and Overview of Current Program,” published in June by the Congressional Research Service (CRS).

For insured losses that exceed an insurer’s TRIA deductible, the federal government reimburses the company for 85 percent of those losses and the insurer retains a 15 percent “co-share.”

Because the federal government serves as an industry backstop for catastrophic terrorism—rather than a reinsurance facility or active market participant—TRIA requires the industry to absorb at least \$27.5 billion in terrorism losses. It also requires the federal government to recoup through a post-event policyholder surcharge any federal taxpayer dollars paid after an event to cover part of the \$27.5 billion industry aggregate loss figure.

The federal government also has discretion to recoup any additional federal tax dollars expended under the program up to TRIA’s \$100 billion annual cap. However, neither the federal government nor insurers have any additional responsibilities to cover insured losses that exceed that annual cap.

To put this in perspective, the nation’s most recent terrorist event, the Boston Marathon bombing, is projected to have caused \$2.6 million in insured losses—well below \$5 million—and is therefore not eligible to be “certified” as a TRIA act of terrorism. Since 9/11 involved \$42.9 billion in insured losses, it would have met both the \$5 million certification threshold and the \$100 million program trigger.

The largest modeled single-mode conventional weapon loss (not a swarm attack similar to 9/11), which is a 10-ton truck bomb in midtown Manhattan,

would be estimated to cause a \$38.6 billion insured loss, according to the Guy Carpenter report. This would also meet TRIA’s certification and program trigger.

If a nuclear bomb detonated in midtown Manhattan, the modeled cost, according to the Guy Carpenter report, would be more than \$900 billion. This would “likely exceed the total amount of capital in the U.S. market,” the report said.

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While this amount would financially meet TRIA requirements, insurers would only be eligible if they were covering such attacks. TRIA, however, does not require insurers to offer terrorism coverage for nuclear, biological, chemical or radiological (NBCR) attacks unless the policy covers NBCR losses from perils other than terrorism. Generally, the only coverage line not exempted from NBCR attacks is workers' compensation. For this reason, TRIA is an outright necessity for workers' compensation (see sidebar on page 23).

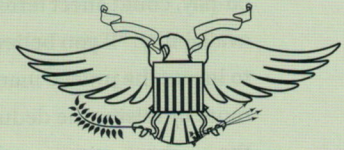
"I look at TRIA this way," Zielezienski said, "It is a program where the government is truly a backstop. It sets up government financial involvement at the post-event stage to allow the stability and certainty for a private market to function and to ensure orderly economic recovery, not for the government to be an ongoing active participant in the private market." The American Insurance Association and other insurance organizations and companies generally support renewal of TRIA on its current terms.

Since the primary purpose of TRIA is to assure that terrorism coverage is affordable and available, the program is still very much needed because the reinsurance community as a whole could not cover terrorism. "Some reinsurers have stated they have additional capacity to write terrorism coverage," Burke said. "The position is largely a reflection that primary insurers are subject to the program and its mandatory offer requirements. Reinsurers can help the primary insurers manage their 'net' exposure," he added. There is currently an estimated \$6 billion to \$8 billion in terrorism reinsurance capacity availability, according to a Guy Carpenter report cited by CRS.

The reinsurance industry is experiencing historically high surplus. This surplus also has to support exposures such as natural disasters, said Terry J. Alfuth, chairperson of the American Academy of Actuaries' Terrorism Risk Insurance Subcommittee and president of Actuarial Property & Casualty Consulting, LLC.

According to the President's Working Group on Financial Markets report, "The Long-Term Availability and Affordability of Insurance for Terrorism Risk," released in April, the insurance industry does not have the capital to provide reinsurance for terrorism "to the extent currently provided by TRIA." Further, it said, without TRIA, terrorism risk insurance would likely be less available, more costly and/or limited in scope.

**For insurers to qualify for TRIA, three agencies—the U.S. Department of the Treasury (with the help of the Federal Insurance Office), the Department of State and the Department of Justice have to agree that an attack is an act of terrorism, as defined by the law.**



The CRS report notes that President Obama's fiscal year 2015 budget proposes to extend TRIA but also to implement reforms to limit taxpayer exposure and achieve cost neutrality. The proposal does not detail these reforms.

Other nations have taken different approaches to covering terrorism risk. These vary from Canada, which offers no government backing, to Spain, whose government reinsurance for catastrophic losses has existed since the 1950s, according to the CRS report.

### **Legislative Changes**

Experts feel confident that TRIA will be re-authorized, but exactly what TRIA will look like remains uncertain. The past two TRIA extension acts passed in 2005 and 2007 made adjustments to the program. Legislation being considered at press time is no different.

"It's too late for any major structural changes to TRIA," Zielezienski said. Instead, changes "around the margins" are under consideration.

One change would be to alter the retention amount from \$27.5 billion to \$37.5 billion that would build up in \$2 billion annual increments, according to Michael Angelina, a CAS member who is also vice president-casualty of the Academy and the executive director of risk management and insurance at Saint Joseph's University. The current 15 percent co-share could also change to 20 percent, he said. This, of course, shifts more of the costs from the government to the insurance industry.

**“The models are only as good as the assumptions used to create them,” Alfuth said. “If those assumptions are flawed, not well thought-out or unsupported by statistics, the output may not make sense.”**

Zielezienski warns that tinkering with the current individual insurer retentions, whether the deductible or co-pay, could affect terrorism coverage availability. “If you believe you are going to incent the private market to write more by raising the deductible and the co-share, at some point you reach a tipping point where you are going to lose the entire purpose of the backstop and cause an insurer to consider the financial stress due to its current terrorism loss exposure,” he added. “One logical conclusion would be to reduce that exposure by providing less terrorism insurance capacity.”

Also under consideration is language that would require insurers to submit terrorism insurance data, Angelina said. The reporting requirements could include line of business exposure, earned premium, geographical location of risk exposure, pricing, participation rate, the amount of private reinsurance proposed by insurer and other data deemed appropriate. Angelina anticipates that so-called appropriate data could include loss data.

Introduced proposals also carry extensions ranging from five to ten years, according to the CRS report. Another potential change could make the Department of Homeland Security the lead authority for certifying an act of terrorism.

### **Pricing the Risk**

For a terrorist attack to occur, the perpetrators need both the motivation and capability to act, according to the RAND Corporation study, “National Security Perspectives on Terrorism Risk Insurance in the United States,” released in June.

Al Qaeda and other affiliated or inspired groups are believed to represent the greatest terror risk because they are most likely to inflict high human casualties and massive economic damage, according to RAND. The good news is that so far, most of the nation’s experience with attacks from these groups were foiled, according to a Heritage Foundation study cited in the RAND report. Some of these foiled plots, which include the intention to use explosives and assault weapons, involved the Taliban in Pakistan and al Qaeda in Yemen. Some

plots also showed the potential threat of homegrown radicalization of Muslim converts, according to RAND.

“Over the past decade, we have been fortunate to have not experienced unconventional terrorist attacks in the United States,” the report said. “However, these events are possible. Trends in emerging technologies and nonproliferation and the writings of terrorist groups warrant concern about cyber, chemical, biological, radiological, and possibly nuclear attacks.”

Understanding the challenge of modeling terrorism coverage begins with considering what Angelina calls the six features of ideally insurable loss. Since terrorism coverage does not meet these requirements, it is nearly impos-

sible to truly price it.

The first feature is the necessity for a large number of experience losses for pooling. Marsh Inc. estimates that the average participation is about 60 percent of companies. Angelina points out that companies buying coverage are in places where terrorism is perceived as most likely, such as New York City and Washington, D.C. Since the pool is not large enough, that makes terrorism coverage difficult to price.

The ideal scenario also includes the ability of the insurance industry to calculate the loss amount after the event. Three of the ten most costly terrorism events in the world since 1990 occurred in the United States, according to the Guy Carpenter report. Therefore, the frequency points are the following: the 9/11 attacks in Manhattan and at the Pentagon in 2001 at \$24.721 billion, the World Trade Center bombing in 1993 at \$822 million, and the Oklahoma City bombing in 1995 at \$192 million in losses—all in 2013 dollars, according to the report.

The third feature of an ideally insurable loss is that its nature is not catastrophic, which of course, is not characteristic of terrorism loss. The fourth is that the loss has to be fortuitous, but terrorism, unlike natural disaster loss, is not accidental but intentional. The fifth feature is that the premium must be economically feasible. This is nearly impossible, Angelina said, without the TRIA backstop. Finally, the sixth characteristic is that the chance of loss should be calculable, which is extremely difficult because, unlike personal automobile and

homeowners' coverages, there is so little frequency.

Regardless of these limitations, actuaries must still develop pricing approaches as reasonably as possible. There are two basic ways to model risk, Alfuth said. One way is stochastic, which is based on randomness, he said. Of course, terrorism is not random, but planned.

The other is deterministic, in which a specific hypothetical event takes place and the potential damage is estimated for this single event, he said. Dispersion modeling attempts to measure the effects of biological attacks. Contagious disease modeling simulates the effect of a smallpox attack on the U.S. Casualty modeling simulates injuries to building occupants and population in the streets. "All of these modeling techniques are based on assumptions and lack supporting data from U.S. terrorist events," Alfuth added.

Risk models based on historical events or theories of terrorist decision making can estimate terrorism risk, assuming the future events are like those of the past, according to the RAND study.

"The models are only as good as the assumptions used to create them," Alfuth said. "If those assumptions are flawed, not well thought-out or unsupported by statistics, the output may not make sense." Data from other countries is not helpful, he said, because each county has its own unique set of risk factors and high-potential target areas, along with different active terrorist groups. Assumptions can come from a wide range of sources, including intelligence reports, history, assumptions on curve models and media reports, Alfuth said.

Meanwhile, another significant pricing challenge is that, unlike other in-

## Workers' Compensation's Unique Challenge

BY ANNMARIE GEDDES BARIBEAU

When it comes to terrorism coverage, workers' compensation has unique challenges if the Terrorism Risk Insurance Act of 2002 (TRIA) is not reauthorized and a terrorist attack occurs.

For starters, other insurance lines in general can limit policies to avoid covering nuclear, biological, chemical or radiological (NBCR) attacks. Workers' compensation, however, is required by state statutes to cover all work-related risk, including all types of terrorism events.

"The unavoidable financial risk posed by NBCR attacks sharply distinguishes WC from other P&C lines," according to the RAND Corporation report, "The Impact on Workers' Compensation Insurance Markets of Allowing the Terrorism Risk Insurance Act to Expire." In an NBCR event, "a disproportionate share of insured losses (as opposed to damages, which may not be insured) may derive from WC losses," according to the June report.

Like all insurance lines, workers' compensation carriers have to achieve a balance of charging adequate premiums while ensuring their programs' financial accessibility. However, workers' compensation is also unique because when premium from expected losses is too high, as the workers' compensation industry has seen from previous cost crises unrelated to terrorism, it can harm a state's economy by deterring business development and affecting employee pay or even employment.

Therefore, for workers' compensation, TRIA is critical for maintaining coverage affordability and availability. In fact, just the uncertainty about TRIA's future during the first five months of 2014 provides a taste of what could happen, according to the Guy Carpenter study, "Uncertain Future: Evolving Terrorism Risk." "[S]everal workers' compensation renewals with sizeable employee concentrations in large U.S. cities changed carriers and in some cases moved into the residual market," according to the study, released in June.

The RAND report also points out that even if higher premiums could theoretically help primary insurers raise adequate capital over a number of years without a catastrophic loss, the nation's tax system and other corporate finance considerations would "strongly discourage" primary insurers from accumulating too many reserves against future losses. There are also pricing limitations, according to RAND. Further, since workers' compensation is generally not very profitable, loss of coverage availability is possible.

Workers' compensation is the largest property-casualty line covered by TRIA on the basis of net written premium. While the line is state-based, based on the RAND analysis, it needs a reinsurance backstop the most.

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insurance lines, there is very little, if anything, that insurers can do to mitigate risk. For hurricane risk, levies can be built to mitigate loss, Angelina cited as an example. Many cyber insurers generally require risk management initiatives before writing a policy. “A majority of risk mitigation is really in the hands of government,” Angelina said.

Therefore, the nation’s approach to foreign policy can be another factor for consideration. According to RAND, the reason why the past five years have seen a complete absence of large-scale coordinated attacks in Europe or the United States could be due to the destruction of al Qaeda’s capabilities, such as training facilities, over the past 10 years.

Recent events, however, could increase the price of terrorism coverage if the insurance industry believes that the nation is more vulnerable to terrorist attacks.

The United States pulling troops out of Iraq arguably gave way for the Islamic State in Iraq and Syria (ISIS), a terrorist splinter group of al Qaeda, to begin taking over the country. Releasing five known-to-be-dangerous Islamist terrorists from Guantánamo Bay in exchange for one U.S. soldier could also put the United States in a more vulnerable position after they finish their year in Qatar.

“If I feel the threat is more likely than prior belief, all else being equal, I am going to increase rates to account for this increase in frequency and additional uncertainty,” Angelina said. The insurance industry’s vulnerability to governmental decisions is another argument in favor of TRIA.

As the insurance industry awaits the final result of TRIA legislation, one thing is certain: the hope that the program will never be seen in action. ●

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*Annmarie Geddes Baribeau has been covering insurance and actuarial topics for nearly 25 years. To read her musings, check out her blog at [www.annmariecommunicatesinsurance.com](http://www.annmariecommunicatesinsurance.com).*