The Terrorism Risk Insurance Act (TRIA): Unique Financing for a Unique Risk

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Key Points

- Disaster financing is a critical element of our national security. The Terrorism Risk Insurance Act (TRIA) of 2002 has played a critical role in stabilizing the terrorism insurance market, making coverage widely available and affordable.
- Yet this program, set to expire in 2020 unless renewed by Congress and the Trump administration, has not been tested for a truly devastating event on US soil.
- TRIA is a somewhat unique public-private partnership providing insurance companies with federal reinsurance that covers a portion of insurance industry losses up to $100 billion, should a terrorist attack occur in the country.
- There is no up-front reinsurance cost imposed on insurers for this protection, but all policyholders—covered against terrorism losses or not—could be assessed after an attack should federal reinsurance be triggered by a catastrophic loss.
- In return for this protection, the federal government requires all primary insurers in the United States to offer terrorism coverage to commercial clients.
- The US Treasury estimates that insurers collected $27 billion in TRIA premiums between 2003 and 2015.
- Under a wide rage of terrorist attack scenarios, insurers will generally pay more than any other stakeholder under TRIA. In fact, the federal government will not be responsible for any payments until the total losses from an attack exceed $60 billion.

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1. Introduction

Following the terrorist attacks of 9/11, which cost insurers and their reinsurers about $45 billion in paid claims, many reinsurers decided to stop providing primary insurers with such protection so that insurers began excluding terrorism coverage from commercial policies. This left US corporations largely uncovered against damage and losses should there be another attack.

Those concerns led Congress to adopt the Terrorism Risk Insurance Act (TRIA), a 2002 law signed by President Bush that established a public-private partnership among the US federal government, private insurers, and all commercial enterprises operating on US soil. The TRIA program requires insurers to offer terrorism insurance to their commercial clients. In exchange, the government provides insurers with financial protection that covers a portion of insurance industry losses up to $100 billion against terrorist attacks in the United States should losses exceed a predetermined level. Insurers do not pay an up-front premium for this protection, contrary to what is done in several other OECD countries such as the UK, France and Germany (see OECD 2010, 2014; GAO 2014).

Unlike other government disaster insurance programs in the United States, TRIA focuses only on commercial lines, not on homeowners. It mandates that insurers offer terrorism coverage to all commercial clients but does not put any restrictions on the pricing of policies. TRIA, which has been extended several times since first enacted, has effectively stabilized the terrorism insurance market, creating widespread availability of terrorism coverage at affordable prices. It is set to expire at the end of 2020.

2. Genesis of the TRIA Program

Two factors make terrorism a different hazard for the private insurance industry to cover: dynamic uncertainty about the risk, and the possibility of highly concentrated catastrophic losses across insurance lines. Terrorism risk is exceedingly difficult to quantify because terrorists are likely to design their strategy as a function of their resources and knowledge of the vulnerability of the entity they want to attack. Furthermore the nature of terrorist organizations, their modus operandi, and possible targets change over time. The dynamic uncertainty associated with the ever-changing nature of terrorism makes the likelihood of future terrorist events extremely difficult to estimate in a given year, the typical length of a commercial insurance contract (Michel-Kerjan 2003, 2014). Terrorism risk is also determined by classified government activities, about which insurance companies may not have detailed information.

Prior to 9/11, insurers had never suffered catastrophic terrorism losses in the US sufficiently high to trigger their attention in terms of pricing this risk or determining how much coverage they should offer (despite the first 1993 attack against the World Trade Center). For this reason, insurers did not determine a premium to charge for terrorism coverage nor exclude losses from terrorist attacks in their standard commercial policies (Kunreuther and Michel-Kerjan 2004). But following their $45 billion loss (2017 prices) from the 9/11 terrorist attacks, many global reinsurers refused to provide terrorism coverage (Cummins and Lewis 2003), concluding that the uncertainties surrounding the likelihood and consequences of another large-scale attack were too significant. The unavailability of affordable terrorism insurance was problematic for businesses that wanted this financial protection or were required to carry this coverage as a condition for their loans. Injuries in the workplace resulting from terrorist attacks are always covered in workers compensation insurance which is mandatory in all states except Oklahoma and Texas (Insurance Information Institute 2016). In the event of another large attack, only a small portion of the total losses would have been paid by insurers and their reinsurers, likely forcing taxpayers to fund the large majority of losses if the government came to the rescue. All stakeholders agreed some remedy was needed.

3. Loss-Sharing Design under TRIA

TRIA requires all US primary insurance companies to offer coverage against terrorism risk on the same terms and conditions as other perils provided by their commercial insurance policies. In exchange, the US Treasury provides financial protection for insurance companies against severe losses. Insurers are not restricted in their pricing of coverage; firms are not required to purchase it unless mandated by state law. The expectation, and indeed the result, was that federal reinsurance led insurers to include terrorism coverage in their commercial policies at affordable prices.

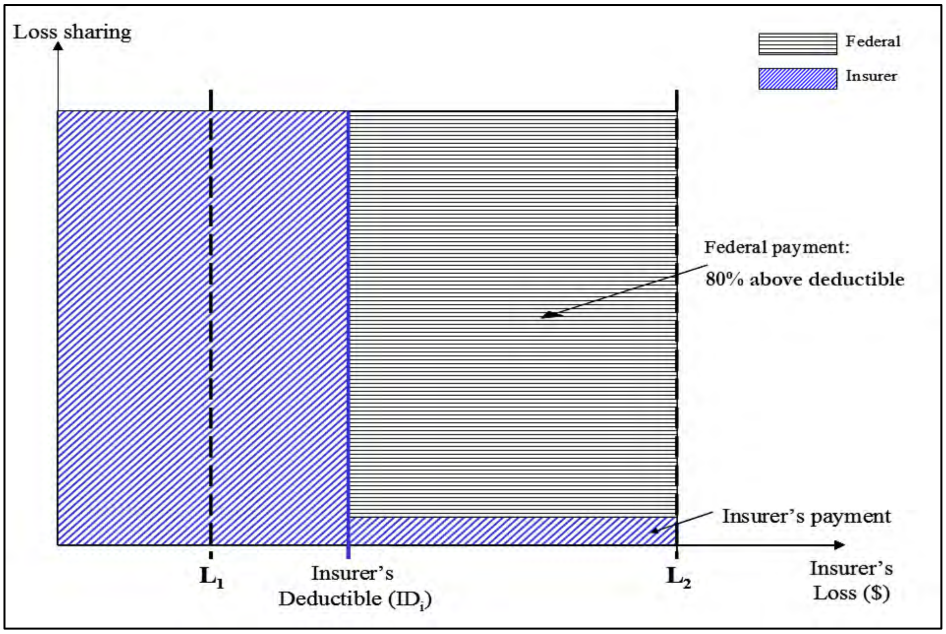
TRIA was recently modified and extended from January 2015 through 2020. Under the renewed program, the portion of the risk assumed by the insurance industry has continuously increased over time. Figure 1 depicts the public-private loss sharing for a representative insurer under the current TRIA arrangement when total insured losses are less than $100 billion. If a terrorism loss incurred by an insurance company (i) is less than its TRIA deductible amount (ID_i), the insurer does not receive any reimbursement from the federal government. This situation is illustrated by an insured loss of L_1, where the insurer's payment is represented by the oblique lines on the left side of Figure 1.

When an insured loss is above the insurer's deductible, as depicted by L_2, the insurer pays the entire claim and the federal government reimburses the insurer for its cost-share amount. We consider the 80 percent loss-sharing scenario in Figure 1 as an illustrative example. The horizontal lines on the right side of the figure represent the federal payment. Insurer's deductible plays an important role in determining loss sharing between insurers and the federal government and can amount to very large sums for many insurers.

As of 2017, TRIA mandates that the federal government recoup 140 percent of the difference between the amount it has paid and the required industry retention level.[1] This amount is recouped by levying surcharges on all commercial policyholders regardless of whether they have purchased terrorism insurance. Should uncompensated insurer outlays across the insurance industry exceed the industry retention level, the US Treasury has the option to collect some or all federal payments over time through a discretionary recoupment mechanism.

[1] The aggregate industry retention level was $27.5 billion in 2015; it increases by $2 billion per year starting in 2016 so it eventually becomes $37.5 billion.

FIGURE 1. LOSS SHARING UNDER TRIA BETWEEN FEDERAL GOVERNMENT AND INSURER



Note: Losses above the deductible are shared between the federal government and an insurer as follows: 85-15 in 2015, 84-16 in 2016, 83-17 in 2017, 82-18 in 2018, 81-19 in 2019, and 80-20 starting in 2020.

4. Market Penetration

In 2015, about 61 percent of large companies had terrorism coverage under TRIA, a rate that has remained stable in recent years (Marsh 2016). Coverage varies across geographies and industry sectors. In 2015, the percentage of companies that purchased property terrorism insurance was higher in the Northeast (72 percent) than in any other region, likely because of the concentration of firms in large metropolitan areas like Washington, DC, and New York. The Midwest and South had the lowest take-up rates, at 57 and 54 percent, respectively (Marsh 2016). In a report released in June 2016, the US Treasury estimated that overall, terrorism risk insurance penetration is around 80 percent across the country (based on the number of policies issued).

5. Terrorism Insurance Cost

The passage of TRIA quickly stabilized the commercial property and casualty insurance market, making terrorism coverage more affordable. By 2005, the median national cost for larger firms was $42 per $1 million of total insured value, and overall, costs have continued to decrease.

Expressed as a percentage of what firms pay for their property insurance, terrorism insurance has been another 2 to 6 percent in recent years, with the most significant increase recently for financial institutions (from 4 percent in 2012 to 9 percent in 2015). Notably, about 23 percent of insurance policies (generally those covering smaller firms) include terrorism coverage at no disclosed additional cost (US Treasury 2016). Terrorism insurance under TRIA today can thus be considered affordable. Moreover, demand for this coverage is fairly price inelastic. A recent study shows that a 10 percent increase in terrorism insurance premiums will decrease demand by only 1 or 2 percent (Michel-Kerjan et al. 2015).

In its analysis, the Treasury Department estimates that insurers collected about $27.3 billion in terrorism insurance premiums between 2003 and 2015 (2016 prices). The longer the country goes without a devastating attack, the more premiums insurers will have collected and the better prepared they should be to cover any future losses.

6. Risk Reduction

The TRIA program does not provide incentives for reducing risk because the legislation focused on the risk-sharing arrangement between insurers and the federal government. Whereas flood risk can be reduced through land-use regulations and codes (e.g. avoiding new construction in flood prone areas or requiring certain minimum elevation) and economic incentives for property owners to invest in elevation or flood proofing, comparable measures to reduce terrorism risk are less apparent. Moreover, terrorism is a dynamic threat: a terrorist organization can react to certain security measures at one facility by changing its mode of attack or targeting a less secure facility. Outside of the action taken by any insured firm, government actions can also impact the level of risk through effective counter measure and good intelligence (or lack of) as well as through its foreign policy choices (Michel-Kerjan 2003).

7. Terrorism Risk Costs in the Four Largest US Cities[2]

This section quantifies expected losses from damage to property and the costs associated with business interruption and workers compensation from a scenario in which a 10-ton truck bomb is detonated in each of the country's four largest cities—Chicago, Houston, Los Angeles, and New York City.[3] Using market data from AM Best on 764 insurers that represent nearly 100 percent of the market, we provide empirical estimates of terrorism loss sharing under the renewed 2015–2020 TRIA legislation.

10-Ton Truck Bomb Scenario

The scenario assumes that a 10-ton truck bomb made from ammonium nitrate and fuel oil is detonated at street level in front of the target structure, producing a pressure wave sufficient to cause structural and architectural damage as well as injuries and fatalities.[4] Overall, we find that a 10-ton truck bomb attack would cost $26.6 billion in Los Angeles, $28.3 billion in Houston, $32.1 billion in New York City, and $36.6 billion in Chicago. The analysis reveals that property loss and business interruption range from $19 billion in Houston to $26.4 billion in Chicago. Workers compensation losses range from $6.7 billion in Los Angeles to $12.7 billion in New York City (the difference being due primarily to different worker densities in these cities).

[2] This section is based on Kunreuther et al. (2014).

[3] See Kunreuther et al. (2014) for analysis of two additional attack scenarios: a 1-ton sarin chemical agent release and a 1-kiloton nuclear weapon attack.

[4] For detailed modeling assumptions, see ibid.

Loss Sharing under TRIA

We assume a 50 percent take-up rate for terrorism insurance for the property lines, recognizing that the actual percentage may vary from one city to another as well as by the type of firm. Since terrorism cannot be excluded from workers compensation insurance and must be purchased by commercial enterprises, we assume a 100 percent take-up rate for workers compensation losses.

Table 1 shows how the losses associated with the 10-ton truck bomb would be shared among insurers, commercial policyholders, and the federal government in the four cities.[5] For each city we determined the market share of the 764 insurers, their individual TRIA deductibles, and the proportion of their insured losses covered by the federal government. We see that in all four cities, the insured losses will be covered entirely by the insurers or their commercial policyholders, with the federal government not responsible for any of the losses.

TABLE 1. LOSS SHARING IN 10-TON TRUCK BOMB SCENARIO ($ BILLION)

Location	*Loss*	*Property*	*Workers comp*	*Non-insured*	*Total insured*	*Insurers*	*Commercial policyholders*	*Federal taxpayers*
Chicago	$36.59	$26.39	$10.21	$13.19	$23.40	$21.25	$3.01	$0.00
Houston	$28.29	$19.02	$9.27	$9.51	$18.78	$15.22	$4.98	$0.00
Los Angeles	$26.51	$19.86	$6.65	$9.93	$16.58	$14.77	$2.53	$0.00
New York	$32.07	$19.38	$12.69	$9.69	$22.38	$16.74	$7.90	$0.00

Assumptions: 50% take-up rate on property lines, 100% on workers compensation lines, federal recoupment that applies only to the mandatory recoupment portion, 80-20% cost-share, 20% deductible, $37.5 billion retention, 140% recoupment rate against commercial policyholders.

Table 2 assumes that the total loss was determined to be $25 billion in each city, with $15 billion in property damage and $10 billion in workers compensation. Of the $25 billion total loss, $17.5 billion was insured. Insurers in New York tend to be larger than those in Chicago and as a result have higher deductibles under TRIA. Therefore, they will absorb a larger portion of the loss before assessing their commercial policyholders. For this $25 billion loss scenario, the federal government bears no costs because losses are below the $37.5 billion industry retention level.

Using this scenario, we can analyze the entire spectrum of possible losses from zero to $100 billion using the same assumptions regarding terrorism insurance coverage with respect to property damage and workers compensation losses. The amounts paid by the relevant stakeholders as a function of losses to New York City from terrorist attacks are depicted in Figure 2.

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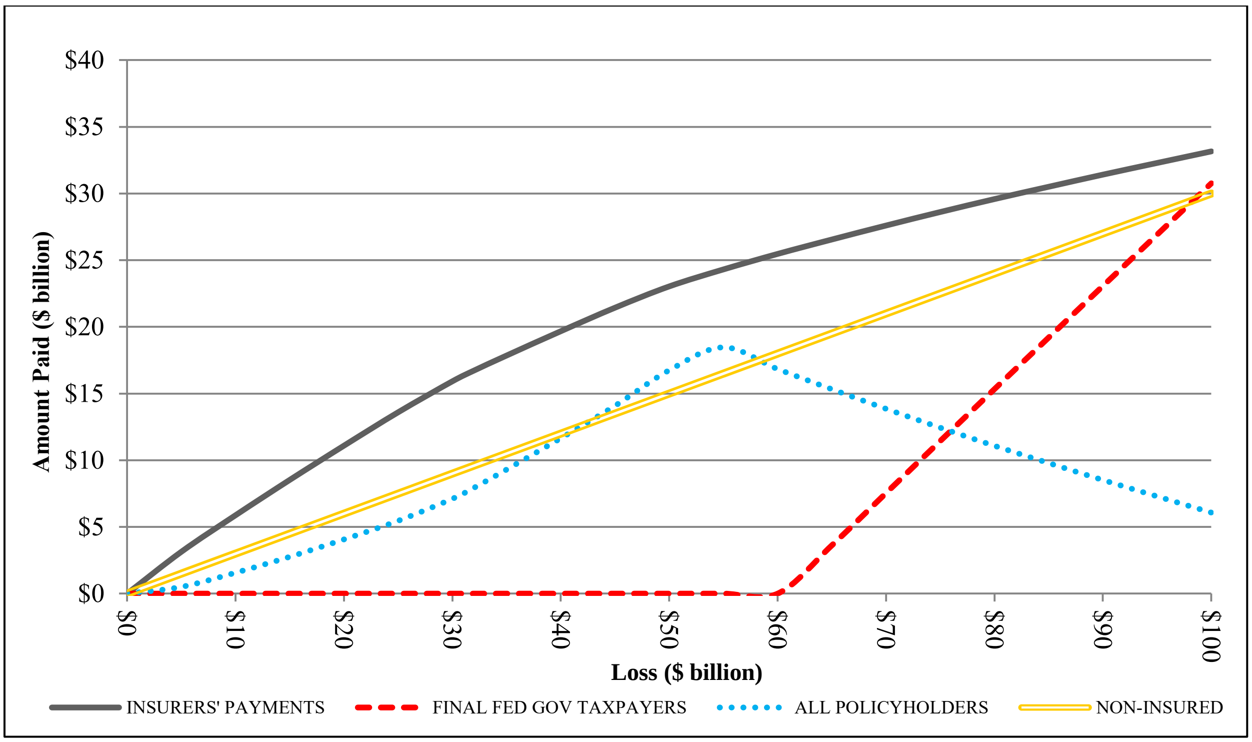
[5] We assume that the federal government collects only the mandatory recoupment portion of the insured losses it pays up front, and not the discretionary amount.

TABLE 2. LOSS SHARING IN $25 BILLION LOSS SCENARIO ($ BILLION)

Location	*Loss*	*Property*	*Workers comp*	*Non-insured*	*Total insured*	*Insurers*	*Commercial policyholders*	*Federal taxpayers*
Chicago	$25.00	$15.00	$10.00	$7.50	$17.50	$16.28	$1.71	$0.00
Houston	$25.00	$15.00	$10.00	$7.50	$17.50	$13.92	$5.01	$0.00
Los Angeles	$25.00	$15.00	$10.00	$7.50	$17.50	$14.85	$3.71	$0.00
New York	$25.00	$15.00	$10.00	$7.50	$17.50	$13.60	$5.46	$0.00

Assumptions: 50% take-up rate on property lines, 100% on workers compensation line, federal recoupment that applies only to the mandatory recoupment portion, 80-20% cost-share, 20% deductible, $37.5 billion retention, 140% recoupment rate against commercial policyholders.

FIGURE 2. STAKEHOLDERS' LIABILITY FOR TERRORISM LOSSES IN NEW YORK CITY UNDER TRIA[6]



The following key findings emerge from the scenario analysis:

- Insurers will always pay more than other stakeholders for terrorism losses.
- The federal government will ultimately not be responsible for any payments under TRIA 2015 until the total insured and uninsured losses from a terrorist attack exceed $60 billion. At this level of loss, insurers would pay $25.5 billion,

[6] For comparable analyses of Chicago, Houston, and Los Angeles, see Kunreuther et al. (2014).

and commercial policyholders $16.85 billion; the remaining $18 billion would be uninsured.

- When total insured and noninsured losses reach $100 billion, insurers will ultimately be responsible for approximately $33.15 billion in payments, taxpayers almost $30.75 billion, and the commercial policyholders more than $6.1 billion; the remaining $30 billion would be uninsured.
- Commercial policyholders will almost always pay some post disaster governmental recoupment in New York City. The maximum they would pay, $18.5 billion, is reached when losses are $55 billion.

8. Conclusion

As the threat of terrorism continues to evolve and our country reconsiders its national security strategy, organizing a loss-sharing solution *before* another shock hits is critical. TRIA is a successful model for public-private disaster risk financing that has received bipartisan political support. It stabilized a disrupted market in the aftermath of 2001, making terrorism insurance widely available and affordable. Take-up rates among enterprises, small and large, is high, and premiums are only a few percentage points of what firms pay for their property insurance, even though costs and take-up rates vary widely by size, industry, geography, and line of business.

TRIA remains untested for large losses though, as it is unclear how the market and policymakers will react to a future large-scale insured loss. Will government provide substantial aid? Will insurance capacity be significantly reduced and prices rise significantly, and if so, for how long? The answers to these questions depend on the nature of the attack, its size, and the market conditions when it occurs.

Finally, TRIA focuses on commercial insureds, raising questions about the indemnification of individual victims of a terrorist attack (beyond workers compensation). Moreover, chemical, biological, radiological, and nuclear incidents and cyber terrorist attacks are covered by TRIA only if included by insurers for TRIA-eligible lines, which is often not the case (except for workers compensation). However, these risks are not uninsurable, since either or both are included in terrorism insurance programs in other OECD countries.[7]

[7] For example, GAREAT in France and PoolRe in the United Kingdom.

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