

The Economic Effects of Federal Participation in Terrorism Risk

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Executive Summary

The catastrophic terrorist attack of September 11, 2001, fundamentally changed the way the world looks at risk—and changed the insurance industry—forever. The previously unimaginable losses sustained by insurers and reinsurers were more than one and a half times as large as the next largest insured catastrophe loss in history, and more than 30 times larger than the next largest insured terrorist loss. On a prospective basis, the United States' vulnerability to international terrorism took on new and troubling dimensions. The new economic reality is that terrorism losses are too unpredictable and potentially catastrophic to be fully covered by the private sector alone.

CHANGES POST-9/11

The 9/11 tragedy prompted both short- and longer-term changes in the insurance industry and the management of terrorism risk by the policyholder community.

- Reinsurers refused to provide or limited terrorism reinsurance coverage in new or renewed contracts. This limited the ability of primary insurers to spread their exposure to catastrophic terrorism risk.
- Without the ability to spread the risk of catastrophic losses, primary insurers sought to reduce their own exposures within the constraints of existing state regulatory requirements. For property insurance, for example, they obtained exclusions for terrorism coverage in all but five of the largest states. These exclusions did not, however, apply to workers' compensation insurance or, in most states, to the risk of "fire following" a terrorist attack. Absent exclusions for these coverages (which could leave the insurers substantially exposed to loss), many insurers tightened their underwriting standards to reflect the increased risk.
- Whether because of exclusions or the tighter underwriting environment, many commercial policyholders faced steep price increases or were wholly unable to obtain terrorism coverage. The lack of coverage, in turn, stalled real estate transactions and construction projects, disrupted product flows, and reduced employment.

In this environment, the Terrorism Risk Insurance Act (TRIA) was debated and signed into law in November 2002, approximately 14 months after the 9/11 attacks. The law provides a federal backstop for terrorism risk, and requires primary insurers to make terrorism coverage available to commercial policyholders on the same terms, conditions, and limitations as other covered types of loss. By limiting insurers' exposure to catastrophic terrorism losses, TRIA has improved the market for such coverage and has had a stabilizing influence on the economy.

This report reviews the economic impact of TRIA and provides an analysis of the likely impact on the U.S. economy were TRIA not to be extended beyond its currently scheduled December 2005 end date. The report includes analysis of data from a number of sources, including industry publications, academic research, and over 30 interviews with representatives of policyholders, lenders, insurers, reinsurers, and trade associations. Its principal authors are Professor Glenn Hubbard, Dean of the Graduate School of Business, Columbia University, and former Chairman of the Council of Economic Advisers; and Bruce Deal, Managing Principal of Analysis Group, Inc.

Based on extensive analysis, the authors conclude that there are fundamental issues specific to terrorism that make these risks very difficult for private insurers to fully absorb. Put simply, insurers' financial resources (known as capacity or surplus) to cover catastrophic terrorism events are limited, and estimating the likelihood and location of such extreme events is virtually impossible. In light of these realities, the authors do not believe that TRIA has prevented the development of additional private sector insurance or reinsurance coverage by "crowding out" such capacity. In fact, most participants in the system feel that without TRIA, insurers would be forced to reduce—rather than increase—their exposure to terrorism risk, thus leaving substantial and growing gaps in coverage.

Insurer Responses to TRIA's Expiration

Against this backdrop, the authors believe that allowing TRIA to expire would have the following effects on the insurance industry:

- Insurers will adopt terrorism exclusions or other coverage limitations wherever permitted by state regulators. It is important to note that such endorsements are currently prohibited by statute for workers' compensation insurance and limited in many states for property insurance covering the risk of "fire following" a terrorist attack.
- Where exclusions are not permitted, insurers will begin making strategic decisions to exit certain lines of business and certain geographic areas.
- Even where terrorism insurance is offered, insurers will more cautiously manage their total exposures within defined geographic areas, further reducing capacity.
- Prices for terrorism coverage that remains available may well increase, possibly significantly.

Policyholder Responses to TRIA's Expiration

These responses by the insurers will leave policyholders faced with very difficult choices between going without coverage or paying higher prices. These choices will generate the following economic effects:

- Fewer businesses and commercial properties will have terrorism coverage, particularly in urban areas, exposing more businesses of all kinds and sizes to bankruptcy in the event of a terrorist event.
- If terrorism insurance becomes more expensive or less available to commercial property owners, commercial property values will decrease and future investment in commercial property will decline.
- Reductions in the value of commercial real estate will reduce household net worth, as households are the ultimate owners of capital.
- Higher terrorism insurance costs for workers' compensation and other types of insurance may translate into job loss and job dislocation, as employers reduce or relocate their work force.

Broader Economic Effects of TRIA's Expiration

These responses by insurers and policyholders will result in lower economic performance and greater disruption to the U.S. economy in the event of a terrorist attack. The authors have estimated the impact of these changes as follows:

- Absent another major terrorist attack, GDP may be \$53 billion (0.4 percent) lower, household net worth may be \$512 billion (0.9 percent) lower, and roughly 326,000 (0.2 percent) fewer jobs may be created.
- Were another attack to occur of the size of 9/11, tens of thousands more jobs could be lost due to the lack of insurance coverage and thousands of additional bankruptcies could occur compared to the 9/11 event, which was covered by the insurance industry.

These actions and reactions would begin to be felt even before TRIA's scheduled December 31, 2005, expiration date, thus increasing the urgency of prompt Congressional action to extend TRIA.

It is the author's overall conclusion that renewal of TRIA for the near term will strengthen U.S. economic performance. Extending TRIA for two more years will allow time to evaluate possible alternative approaches to TRIA. While alternatives to TRIA (*e.g.*, capital infusions; catastrophic terrorism bonds; risk pooling) have been suggested, the authors do not believe that any of these are viable alternatives in the near term.

Section-by-Section Summary

1. Introduction

Section 1 provides a general overview of the insurance aspects of the 9/11 terrorist attack, describing how the insured losses (of approximately \$32.5 billion) dwarf insured losses from previous natural catastrophes and terrorist attacks. It also explains why Congress must focus on TRIA reauthorization immediately, even though the law itself is not scheduled to expire until December 31, 2005.

2. Insurance Market Response to 9/11

Section 2 provides a primer on terrorism risk insurance, explaining the role of both primary insurance and reinsurance. It also chronicles the insurance industry's immediate decision to cover 9/11 losses and the insurance/reinsurance market reactions that followed soon thereafter.

3. How TRIA Works

Section 3 explains the basic provisions of TRIA, including the mechanics of the federal backstop and the regulatory requirements imposed on insurers. It also provides a hypothetical example of how TRIA works. As illustrated by the example, TRIA does not provide any duplicate payments to insurers, but does serve to limit insurers' exposures in the event of a catastrophic terrorist attack.

4. Insurance Industry Health after TRIA

Section 4 looks at various insurance industry financial measures and concludes that TRIA has had the desired effect of stabilizing the commercial property-casualty insurance market at very limited cost to the federal government. Among the financial measures analyzed are underwriting performance, net income, surplus, capital inflows to the industry, and reinsurance capacity.

5. TRIA's Effect on Primary Insurance Markets

Section 5 examines prices and take-up rates for terrorism insurance following the enactment of TRIA. In the almost two years since the law was enacted, prices generally have stabilized or declined, and take-up rates generally have increased. Within these parameters, there has been a range of underwriting and pricing decisions by individual insurers, and significant differences in coverage choices among policyholders depending on the policyholders' industry, size, and location, the line of insurance, and other factors.

6. TRIA's Effect on Reinsurance Markets

Section 6 looks at efforts by primary insurers to obtain reinsurance to help reduce the terrorism loss risks they face pursuant to the retentions and loss-sharing provisions of TRIA. Although it appears that reinsurance prices have declined somewhat and availability has increased modestly, reinsurance is still not widely available and is expensive when it can be obtained. Moreover, it does not appear that significant additional reinsurance capacity will be available in the near future.

7. Can Catastrophic Terrorism Risk Ever Be Fully Privately Insured?

Section 7 asks and answers fundamental questions central to efficient private sector terrorism risk bearing. Can the size of terrorism losses be quantified and absorbed? Can the frequency and type of terrorism loss be predicted? Are there viable alternatives to insurance, such as catastrophe bonds or risk pooling? All three of these questions are answered in the negative. The conclusion is that the extreme and unpredictable losses associated with catastrophic terrorism cannot be borne by the private sector alone.

8. Has TRIA "Crowded Out" Private Sector Responses?

Section 8 reviews industry perspectives on the role of TRIA, as compared to private sector alternatives for managing terrorism risk. Absent TRIA, it is clear that even the most aggressive primary insurers and reinsurers have very little interest in expanding their role up into the catastrophic loss layer covered by TRIA. There is no evidence that TRIA has crowded out the private sector and ample evidence that it has facilitated participation in the terrorism insurance market by private insurers and reinsurers.

9. Insurance Industry Responses to TRIA's Expiration

Section 9 describes what may happen to the insurance system if TRIA is allowed to expire. In order to reduce their risk of insolvency, insurers can be expected to take a number of actions in the near-term, including implementing terrorism exclusions or other limitations, and managing capacity in ways that increasingly account for terrorism risk. In the longer-term, insurance companies may begin to make strategic decisions not to participate in certain lines of commercial insurance (*e.g.*, workers' compensation) or in certain geographic regions. If insurers exit entire regions and lines of business, even perceived low-risk businesses may be left without carriers willing and able to offer coverage. Some of these responses have begun already.

10. Policyholder Responses to TRIA's Expiration

Section 10 examines the difficult choices policyholders will face if TRIA is not extended. Businesses seeking terrorism insurance will have to decide whether to: 1) go without terrorism insurance coverage (and thus run the risk of financial ruin), 2) where permitted by the states, use tools such as higher deductibles or sublimits to obtain needed coverage, or 3) obtain coverage at higher rates (thus necessitating job cuts, other cost reductions, and/or decreasing profits). In any event, economic activity will be disrupted in the short run, and difficult longer-term strategic decisions about workforce composition and location will have to be made.

11. Macroeconomic Consequences of Allowing TRIA to Expire

Section 11 examines the consequences of not extending TRIA for overall U.S. economic performance. It presents macroeconomic modeling estimates of the impact of allowing TRIA to expire on the economy absent a terrorist attack. It also discusses additional economic dislocations that might occur in the event of a terrorist attack. In summary, absent TRIA, increased terrorism insurance premiums raise the cost of doing business, creating a drag on the economy. More specifically, we expect that within three years of the expiration of TRIA, but absent another major terrorist attack, GDP may be \$53 billion (0.4 percent) lower, household net worth may be \$512 billion (0.9 percent) lower, and roughly 326,000 (0.2 percent) fewer jobs may be created. In the event a terrorist attack occurs without TRIA in place, underinsured businesses will face the risk of ruin, the federal government will face significant pressure to hastily assemble financial assistance to underinsured victims, and tremendous financial stress will be put on the workers compensation insurance system (*i.e.*, voluntary insurers and their insureds as well as the residual market and the state resources that in many instances back them up). Lack of adequate insurance in an event the size of 9/11 could result in tens of thousands of additional lost jobs and thousands of additional business bankruptcies.

12. Conclusions

Section 12 summarizes the analysis in Sections 1 to 11 by concluding that extension of TRIA will enhance U.S. economic performance in the near term. Failing to extend TRIA will result in decreased economic performance in the absence of another major attack—lowering GDP by roughly \$53 billion, household net worth by roughly \$512 billion, and employment by roughly 326,000 jobs; it will also result in greater economic loss in the event of another such attack. The economic reality is that terrorism losses are simply too unpredictable and potentially catastrophic to be fully covered by the private sector alone. Extending TRIA for two years will allow time for a more complete discussion of alternatives, none of which are currently developed sufficiently to replace TRIA.

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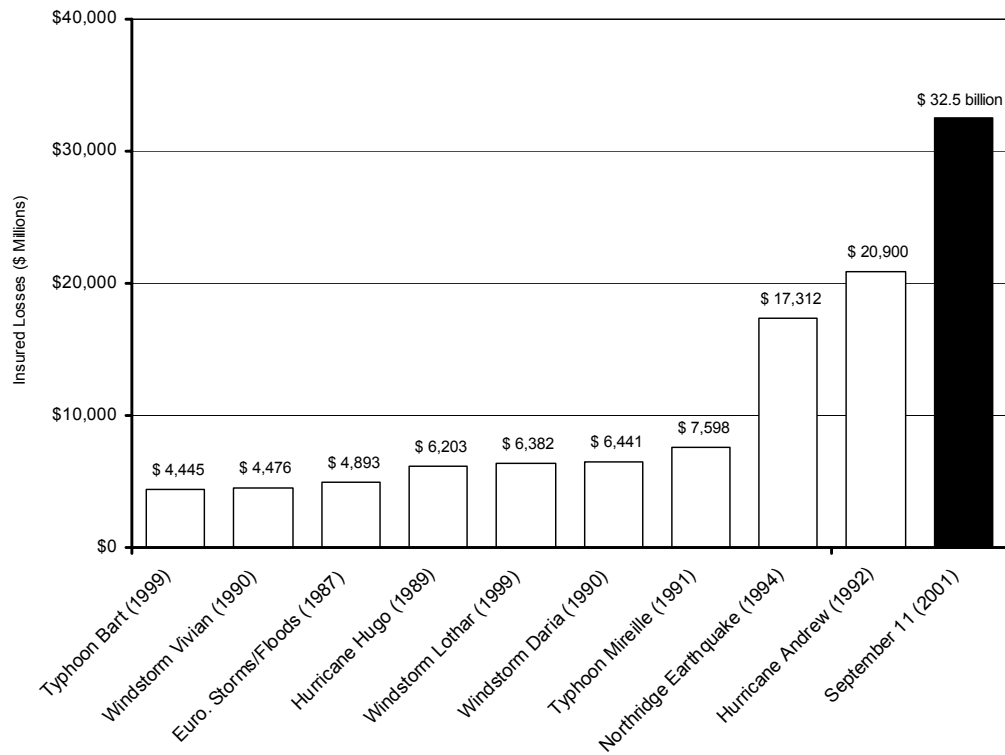
1. Introduction

The terrorist attacks of September 11, 2001 fundamentally altered the U.S. insurance industry's perception of terrorism risk. Before 9/11, most insurers implicitly or explicitly assumed the probability of a catastrophic terrorist attack on U.S. soil was essentially zero. Losses related to terrorism were typically not specifically analyzed by insurers and were not explicitly factored into premiums, nor was terrorism specifically mentioned in policy language.

The tragic events of 9/11 changed the world and the insurance industry forever. Suddenly, the U.S. had been proven vulnerable to international terrorism and the resulting insured loss of roughly \$32.5 billion was unprecedented.¹ Figure 1, on the next page, illustrates the significance of the 9/11 losses, which are more than one and a half times as large as the next largest-ever catastrophic insurance loss, Hurricane Andrew in 1992, which caused insured losses of roughly \$20 billion.

¹ Hartwig, Robert P., *2004 Mid-Year Property Casualty Insurance Update*, Insurance Information Institute, Presentation, July 1, 2004. Note: earlier estimates of 9/11 insured losses were roughly \$40 billion (Woodall, Jr., S. Roy, *Terrorism Insurance in the Post September 11 Marketplace*, Congressional Research Service, Report for Congress, December 7, 2001; Swiss Re, *Terrorism- Dealing with the New Spectre*, 2002; Willis Limited, *Terrorism Market Review*, August 2002; Hartwig, Robert P., "September 11, 2001: The First Year, One Hundred Minutes of Terror that Changed the Global Insurance Industry Forever," Insurance Information Institute, 2002a). Early estimates of total (insured plus uninsured losses) were \$80 to \$90 billion (Hartwig 2002a; Swiss Re, 2002). Insured losses are generally 62 percent of total losses in modern economies (Hartwig 2002a, citing Munich Re).

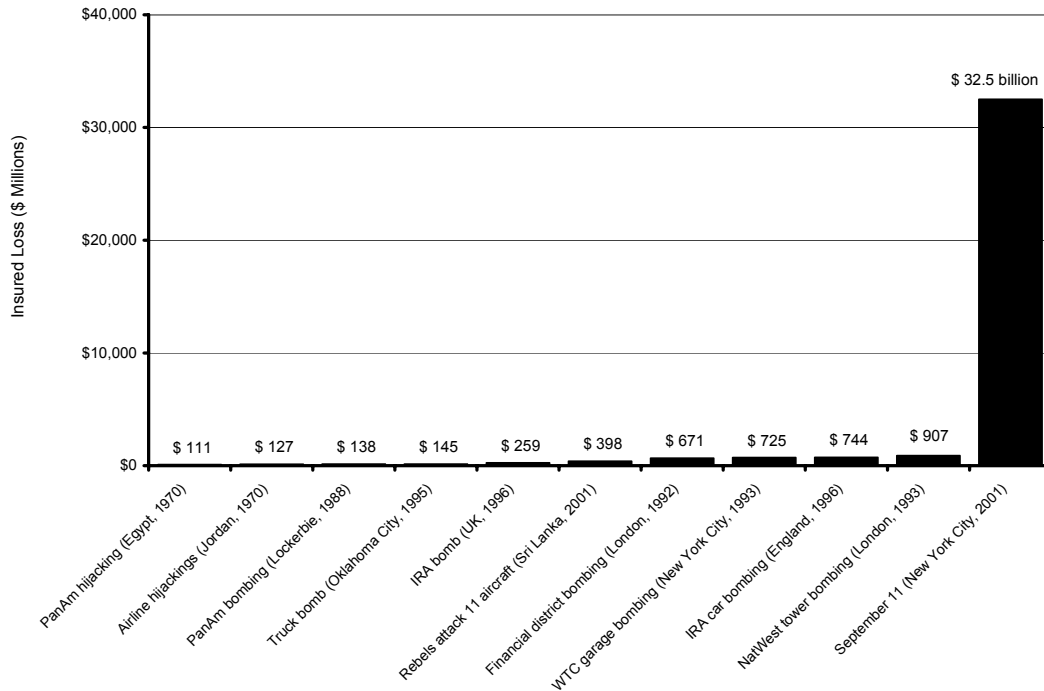
Figure 1: Largest Insured Loss Catastrophes (\$2003)²



² All data is from Swiss Re, “Natural catastrophes and man-made disasters in 2003,” *Sigma*, No. 1, 2004, and includes property and business interruption losses, excluding life and liability insurance losses, except for the \$32.5 billion September 11 figure which is from Hartwig, 2004. Swiss Re’s comparable estimate of September 11 property and business interruption losses only, in \$2003 as reported in “Natural catastrophes and man-made disasters in 2003,” is \$21 billion.

On the scale of terrorism losses, the September 11th loss was even more dramatic. Figure 2 illustrates that the next-largest terrorism loss in the United States was \$725 million, and even the next largest worldwide loss was less than \$1 billion. The 9/11 terrorist loss was more than 30 times larger than previous terrorist attacks. As terrible as the 9/11 event was, it is sobering to realize that the losses from that event could have been even worse and that even larger losses are possible.

Figure 2: Largest Insured Terrorist Losses (\$2001)³



Given the arguably warlike nature of the 9/11 attack and the magnitude of the losses suffered, it is not surprising that a big question in the wake of 9/11 was how the insurance industry would respond. The industry quickly assured the nation that it would cover the insured losses.⁴ This assurance was a stabilizing influence in a time of crisis, and insurance industry funds greatly facilitated recovery. “The \$40 billion in payments from insurance companies will be the single largest and most important element in New York City’s recovery from the September 11 attacks, offsetting roughly half of the economic void the attacks tore in the city.”⁵

³ All data is from Swiss Re, *Terrorism - Dealing with the New Spectre*, 2002, and represents insured property losses (including business interruption and aviation hull losses) only, except for the \$32.5 billion September 11 figure which is from Hartwig, 2004. Swiss Re’s comparable estimate of September 11 property losses only, in \$2001 as reported in *Terrorism - Dealing with the New Spectre*, is \$19 billion.

⁴ Woodall, Jr., S. Roy, *Terrorism Insurance in the Post September 11 Marketplace*, Congressional Research Service, Report for Congress, December 7, 2001.

⁵ Hartwig, 2002a, p. 6.

That the insurance industry did cover 9/11 losses is noteworthy, as the industry had not expected catastrophic terrorism losses. In fact, before 9/11 the threat of such an attack was essentially unforeseen, neither explicitly excluded nor included in insurance coverage language and generally not factored into pricing and risk assessment models. While the industry covered the terrorism losses at hand, it quickly began to manage its exposure to such losses in the future. Reinsurers began excluding terrorism coverage and primary insurers quickly followed suit where permitted.

The Terrorism Risk Insurance Act (“TRIA”) was passed and signed into law in this environment in November 2002, approximately 14 months after the 9/11 tragedy. TRIA was originally passed with a limited life span, and is scheduled to expire at the end of 2005. In anticipation of TRIA’s expiration, and to inform debate on its possible extension, this paper analyzes TRIA’s effectiveness and the economic impacts of not extending TRIA.

Our analysis draws on numerous sources in reaching conclusions. We reviewed a range of academic research, industry reports, and other written materials. We interviewed over 30 stakeholders from trade groups, primary insurance and reinsurance companies and brokerages, as well as companies that purchase insurance. We also conducted macroeconomic simulations of the economic impacts of allowing TRIA to expire. Finally, we drew on our professional judgment and experience working with government and private clients. Professor Hubbard had the privilege to serve as Chair of the White House’s Council of Economic Advisers during the difficult times following 9/11, and was actively involved in the debate leading to TRIA’s passage in 2002.

In testimony before Congress in the Fall of 2001, Professor Hubbard drew a distinction between relatively well-defined risks and genuine uncertainty about the frequency of future terrorist attacks, stressing that the latter makes efficient terrorism insurance pricing difficult, at least in the near term. He also indicated that inadequate terrorism insurance could raise the discount rates used in project evaluation, thus reducing the value of existing assets and slowing down future investment.⁶ At the time, Professor Hubbard estimated that the macroeconomic impact of inadequate terrorism insurance may be to lower GDP by three tenths of one percent in 2002 (or \$31.5 billion, given that GDP was roughly \$10.5 trillion in 2002).⁷

⁶ Hubbard, R. Glenn, Chairman, Council of Economic Advisers, Statement before the Committee on Banking, Housing, and Urban Affairs, United States Senate, October 24, 2001.

⁷ Hubbard, R. Glenn, Chairman, Council of Economic Advisers, Testimony before the Joint Economic Committee, U.S. Congress, November 28, 2001. Chairman Hubbard’s original estimate was expressed in percentage terms; his original estimate has been converted to dollar terms using data on 2002 GDP from the United States Bureau of Economic Analysis.

WHY FOCUS ON EXTENDING TRIA NOW?

The Department of Treasury recently extended TRIA's "make available" provision through 2005. That is, insurers are required to make terrorism coverage available on commercial insurance policies that begin anytime in 2005 to the same extent as other covered perils. TRIA's federal cost sharing provision, or "backstop," currently expires December 31, 2005.

Two features of commercial insurance policies must be considered with respect to the timing of TRIA's scheduled end date of December 31, 2005. First, commercial insurance policies can take several months to negotiate given their complexity. Many policies with beginning dates in early 2005 are thus being negotiated now. Second, policies generally last a year or more, so policies written after January 1, 2005 will be in force beyond December 31, 2005. Such policies will thus straddle the sunset of TRIA—that is, they will be in force both when the TRIA mandated federal backstop is in place and when it will not be, unless TRIA is extended. As one industry executive explained:

Right now, it's [TRIA is] probably among the top 10 issues on carriers' minds ... However, the issue should rapidly move up on the list to be front and center by the fourth quarter of 2004 when carriers begin to write contracts for January 1 renewals, which will include coverage beyond the life of TRIA.⁸

Insurers are understandably concerned about the disconnect between TRIA's discrete end date and insurance policies' rolling renewals. Given insurers' concerns about covering terrorism risk without a federal backstop, the Insurance Services Office, Inc. (ISO), at the urging of its participating insurers, has drafted and filed endorsements to enable insurers to craft policies that exclude or limit terrorism coverage mid-term if TRIA is not extended, or is extended on materially different terms. The longer TRIA's fate remains uncertain, the more such arrangements will have to be negotiated, and the more complex and costly the insurance process becomes. A recent article in a leading insurance industry publication noted:

A big question for the industry right now—especially for primary insurers—is the fate of the U.S. Terrorism Risk Insurance Act ... TRIA's extension would have an impact on the risk-transfer plans of many U.S. primary insurers, said Paul Karon, Benfield's chief operating officer.

'It's a big issue,' he said. 'There are signs the market is jumping around' because of the uncertainty over TRIA, he said.⁹

⁸ Towers Perrin, *Insurance Industry Trends to Watch*, January 2004, quoting Steve Lowe, Practice Leader, Global P/C Insurance, Towers Perrin.

⁹ Pilla, David, "Peering Over the Precipice," *Best's Review*, August 2004, p. 33.

As will be discussed later, uncertainty about terrorism coverage also slows economic activity that requires such coverage, such as real estate development.

The Department of Treasury is itself studying the efficacy of TRIA. Unfortunately, its report is not due for almost another year, June 30, 2005—a date perceived by many as too late to inform TRIA extension debate, a gap this paper attempts to fill. Moreover, the report will not be able to examine data from 2005, when insurer deductibles under TRIA rise by 50 percent, from 10 percent of prior year direct earned premiums for covered lines to 15 percent of prior year direct earned premiums for such lines.

2. Insurance Market Responses to 9/11

A PRIMER ON RISK INSURANCE

Throughout our analysis, we will make reference to primary insurers and reinsurers. Primary insurers write the coverage directly with the company purchasing the policy. There may also be an insurance agent and/or broker involved in the transaction. Agents typically represent one or more insurance companies; brokers work with both the company seeking insurance and the insurance company underwriters (those who analyze the company seeking insurance to determine the relative risk and establish pricing) to obtain coverage. Primary insurers are regulated at the state, rather than federal level. Almost all state insurance departments regulate and approve insurance contract terms, conditions, and rates.

Reinsurers insure primary insurers. Primary insurers are typically not under any obligation to seek reinsurance; it is a business decision based on the amount and type of risk exposure they want to retain. There is currently an active worldwide reinsurance market, which covers a variety of different types of risks and provides the important economic role of allowing primary insurers to limit their risk exposure on an individual policy or group of policies, and thus underwrite more and larger individual risks than they might otherwise be willing to do. Reinsurers are subject to state solvency regulation, but are not subject to rate and form regulation. Because the primary insurer is obligated to pay the entirety of any legitimate claim, rarely does the insured know whether or not their policy is reinsured.

An Example of a Typical Insurance Transaction

As an example of a typical transaction, a building owner seeking property insurance for a downtown office building would work with a broker to obtain quotes from one or more primary insurers. The building owner would then evaluate the offers and choose the best combination of price and coverage terms for their needs. For illustration purposes, imagine the maximum loss value is \$100 million, the deductible is \$1 million, and the annual premium is \$250,000.

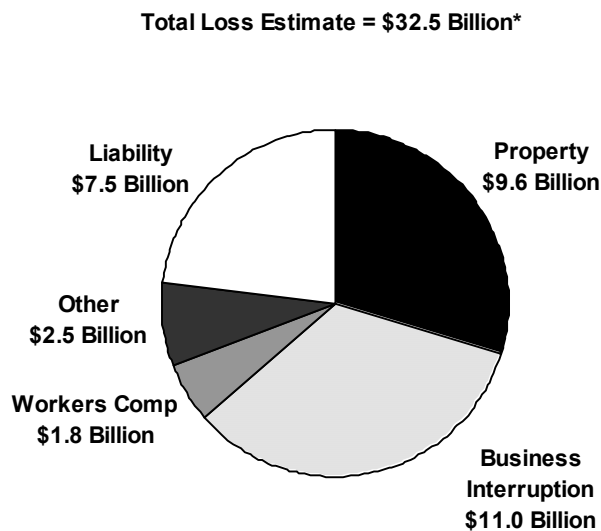
The primary insurer might evaluate the risk and determine that they do not want to retain the entire \$100 million maximum loss risk on this one building. In that case, they might seek reinsurance for a portion of the loss. This reinsurance can take many different forms. Again, for illustration purposes, imagine that the reinsurance company would take the risk of a loss starting at \$10 million up to \$100 million. In exchange, the reinsurer would receive a negotiated portion of the \$250,000 premium. In this situation, any losses up to \$1 million would be covered by the building owner as the deductible on the policy; losses from \$1 million to \$10 million would be paid by the primary insurer; losses from \$10 million to \$100 million would be paid initially by the primary insurer, but then the

primary insurer would be paid by the reinsurer, such that the primary insurer's retained exposure to the risk ends at \$9 million.

MARKET AND REGULATORS' RESPONSES

Both primary insurers and reinsurers were involved in the 9/11 losses. Losses suffered spanned a variety of types of coverage, including property, business interruption, workers' compensation, and other lines. Figure 3 provides estimates of 9/11 insured losses by line of insurance. It is estimated that roughly two-thirds of the catastrophic insurance loss resulting from 9/11 will ultimately be paid by reinsurers.¹⁰

Figure 3: 9/11 Insured Losses by Line of Insurance (\$Billions)¹¹



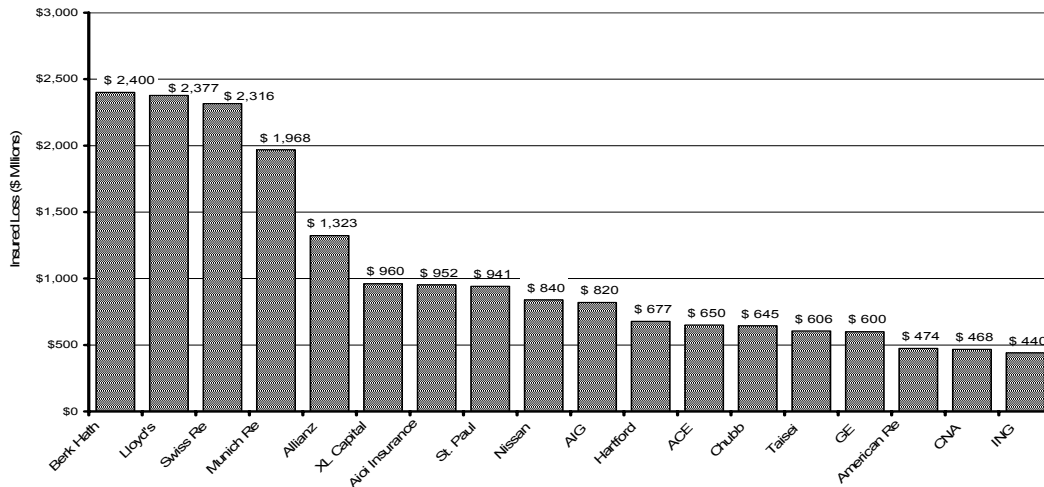
*Loss estimates by line do not sum to total loss estimate due to rounding.

¹⁰ United States General Accounting Office, *Terrorism Insurance, Rising Uninsured Exposure to Attacks Heightens Potential Economic Vulnerabilities*, Statement of Richard J. Hillman, Director, Financial Markets and Community Investment, before the Subcommittee on Oversight and Investigations, Committee on Financial Services, House of Representatives, February 27, 2002c. Hartwig, 2002a.

¹¹ Hartwig, 2004.

Figure 4 provides estimates of the individual insurers with the largest net losses from 9/11. The four firms with the largest losses, each with losses exceeding \$2 billion, function primarily as reinsurers rather than primary insurers. It is also noteworthy that three of these four firms are foreign, rather than U.S., firms.

Figure 4: 9/11 Loss Estimates by Insurance Group¹²



Following 9/11, many reinsurers promptly stopped covering terrorism risk in new or renewed contracts. They were able to do this because of the limited regulatory requirements imposed on reinsurance contracts. This, coupled with limited capital bases forced primary insurers to seek terrorism exclusions and aggressively manage their risk concentrations. The ISO¹³ requested that state regulators permit insurers to exclude terrorism coverage from new policies.¹⁴ When Congress failed to pass federal terrorism insurance legislation before adjourning in December 2001, the National Association of Insurance Commissioners (NAIC) encouraged its members to approve terrorism exclusions. By August 2002, 45 states, the District of Columbia, and Puerto Rico had done so for most types of commercial property and casualty coverage. These exclusions did not relieve insurers of the obligation to cover losses for fire following a terrorism event in 28 states that have standard fire policy laws, nor did these exclusions apply to workers' compensation, where such exclusions were typically not permitted.

¹² Morgan Stanley, *Insurance – Property and Casualty*, September 13, 2002.

¹³ Insurance Services Office Inc., an industry organization that manages information on behalf of its industry participants.

¹⁴ Joint Economic Committee, United States Congress, *Economic Perspectives on Terrorism Insurance*, May 2002, p. 4.

An Example of an Insurance Transaction With a Terrorism Exclusion

Referencing the earlier example, in those states permitting terrorism exclusions, the building owners would have had a deductible limiting their losses to \$1 million, but in the event of a terrorist-related catastrophic loss, there would be no insurance coverage at all and the building owners would effectively have to bear any losses up to, and including, the \$100 million loss associated with the destruction of the building. Obviously terrorism exclusions expose the insured policyholders to financial disaster and bankruptcy in the event of a catastrophic terrorist attack.

An Example of an Insurance Transaction Without Reinsurance

Given that the five states failing to approve exclusions—California, Florida, Georgia, New York, and Texas—account for roughly 36 percent of U.S. insurance premiums, many insurers still felt overexposed to terrorism risk.¹⁵ In those states, regulators did not allow primary insurers to exclude terrorist coverage, so it was effectively included in the coverage. As indicated above, even in states that did approve exclusions, the exclusions did not apply to workers compensation insurance or relieve insurers of the obligation to cover losses for fire following a terrorism event in 28 states with standard fire policy laws. This situation, coupled with the inability of primary insurers to obtain meaningful or affordable reinsurance for terrorism risk meant many primary insurers were directly exposed to terrorism losses in a much more substantial way than they were exposed for other types of losses for which reinsurance was more readily available.

Again referencing the earlier example, without exclusions and without reinsurance, the primary insurers would no longer be able to limit their terrorism risk exposure to \$10 million via reinsurance, but would instead be faced with a \$100 million terrorism risk exposure—an exposure likely much larger than the insurer’s exposure to other types of risk.

Insurance Market Conditions Post-9/11

In summary, in the aftermath of 9/11 there were two terrorism insurance market conditions that caused concern. In many states, businesses were unable to obtain coverage and were being forced by policy exclusions to bear 100 percent of the risk of catastrophic terrorism losses. In other states, primary insurers were involuntarily having to bear a much higher share of terrorism risk compared to non-terrorism risk due to the lack of available and affordable reinsurance for terrorism risk. It was in this context that President George W. Bush signed TRIA into law on November 26, 2002.

¹⁵ Hartwig, 2002a.

3. How Terrorism Risk Insurance Works Under TRIA

TRIA provides temporary risk abatement for commercial lines of property and casualty insurance, including excess insurance, workers' compensation insurance, and surety via a federal backstop.¹⁶ It does this by requiring primary insurers to offer terrorism insurance and requiring the federal government to pay 90 percent of insured losses net of insurer deductibles. The federal government recoups costs of the program by levying later surcharges on policy premiums if the aggregate cost to all insurance companies is less than a prescribed limit. The federal government has the discretion to impose surcharges where aggregated industry insured losses exceed the annual prescribed limit. Barring further Congressional action, neither insurers nor the federal government are liable for insured terrorism losses in excess of \$100 billion in any program year.

TRIA nullified all existing exclusions for acts of terrorism contained within policies in effect upon its signing, but allowed for reinstatement of those exclusions.¹⁷ Under the terms of the law, insurers are required to offer, or "make available," coverage for "certified" acts of foreign terrorism as defined by the federal government. Insurers must disclose the premiums they charge for terrorism coverage and inform clients of the existence of the federal backstop, but insured parties are not required to purchase terrorism coverage (unless required to by state laws, as in the case of workers' compensation insurance).

In the event of a catastrophic terrorist act, insurers with insured losses are responsible for paying deductibles that graduate from one to seven to 10 to 15 percent of the prior calendar year's direct earned premiums for certified events occurring in 2002, 2003, 2004, and 2005, respectively.¹⁸ They are also responsible for paying 10 percent of their insured losses net of their deductibles. The federal government pays the remaining 90 percent of insured losses net of deductibles.

The law caps total insured losses in any given year at \$100 billion and provides for recoupment as follows. If insurers' total cost, the sum of all insurers' deductibles and 10 percent loss share, is less than prescribed industry aggregate retentions of \$10 billion in 2002-2003, \$12.5 billion in 2004, or \$15 billion in 2005, the federal government must recoup the difference between insurers' total costs and the industry aggregate retention for the year in which the certified event occurred by levying a surcharge, never to exceed three percent of the premium paid on a policy in a given year, passed on to all insured

¹⁶ The program excludes life and health insurance.

¹⁷ As indicated previously, exclusions do not relieve insurers of the obligation to cover losses for fire following a terrorism event in 28 states that have standard fire policy laws, nor do they apply to workers' compensation, where such exclusions were typically not permitted.

¹⁸ Deductibles are calculated as a percentage of all direct earned premiums—not just terrorism premiums—on TRIA-covered lines.

parties by the insurers. If the sum of insurer deductibles and the 10 percent loss share equal or exceed the defined retention levels, the federal government may, at its discretion, recoup its costs via surcharges, but is not required to do so. Figure 5a illustrates how TRIA operates. Figure 5b, on the next page, provides a numerical example of how the program would work in the event a certified terrorist act was to occur in 2005.

Figure 5a: Overview of Major TRIA Provisions

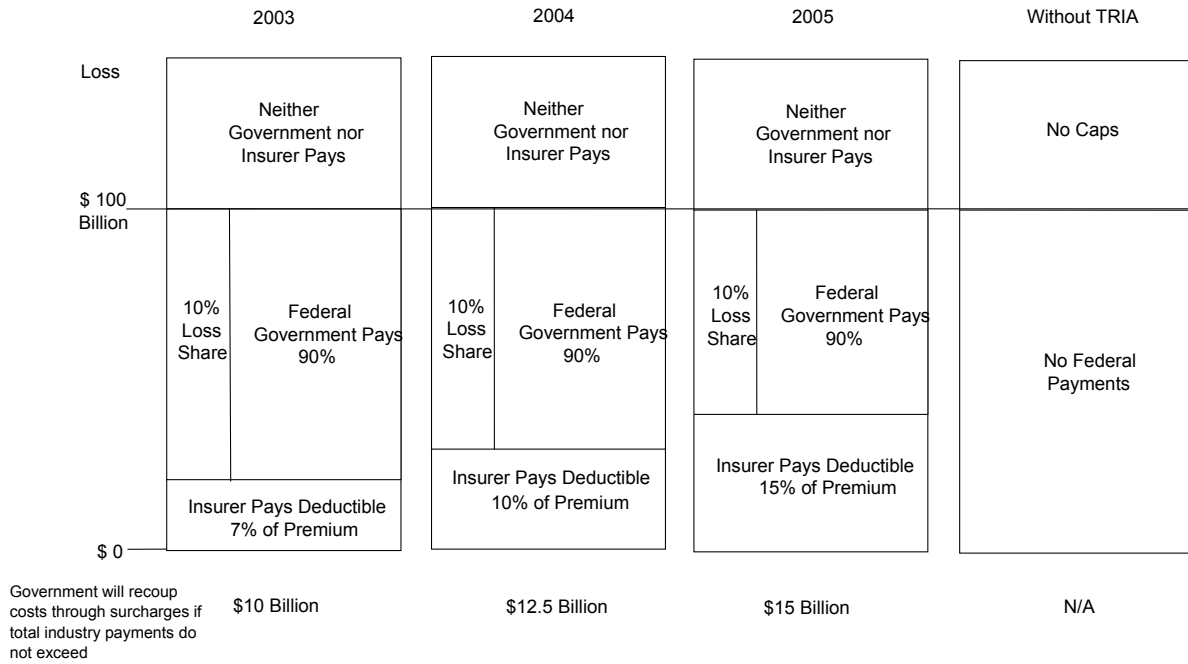


Figure 5b: Numerical Example of How TRIA Works

The following example illustrates how TRIA works. Imagine a terrorist event in 2005 that causes \$60 billion in total losses, \$10 billion of which are workers' compensation losses and \$50 billion of which are property, business interruption and other losses. Determining coverage and payment proceeds as follows:

Step 1: Determine the type of losses to see if there is any terrorism coverage.

For workers' compensation insurance, no terrorism exclusions are allowed, so the entire \$10 billion will be covered. For property or other lines of coverage where the policyholder had a choice to accept or reject terrorism coverage, a review of the policies and coverages will determine whether the losses are covered. For illustration purposes imagine that \$40 billion of the \$50 billion in non-workers' compensation losses were covered by terrorism insurance.

Step 2: Insurance companies process claims and pay all insured losses.

Each individual insurer who sustained losses processes their policyholders' claims and pays all insured losses, which in this example total \$50 billion (\$10 billion in workers' compensation and \$40 billion in other lines).

Step 3: Insurance companies calculate their share of insured losses.

First, each insurance company calculates its deductible based on the formula (15 percent of applicable 2004 premium). For purposes of illustration, imagine these deductibles aggregate to \$9 billion across all insurance companies.

Second, each insurance company calculates its 10 percent share of its policyholders' insured losses (up to the industry insured loss aggregate of \$100 billion) net of its deductible. In this case, in aggregate, the insurance companies are required to pay another \$4.1 billion (10 percent x [\$50 billion loss - \$9 billion deductible]).

Step 4: The federal government reimburses insurers for its share of insured losses.

The federal government reimburses insurers for insured loss not covered by the insurers' deductibles and loss-sharing. In this case, the federal government's share is \$36.9 billion (\$50 billion in losses - \$9 billion in insurers' deductible - \$4.1 in billion insurers' loss-sharing).

Step 5: Determine any recoupment by the federal government

Because the total insurance industry cost of \$13.1 billion does not exceed the 2005 industry aggregate retention of \$15 billion, the federal government is required to recoup \$1.9 billion of its TRIA outlays through premium surcharges. It may elect for further recoupment based on economic conditions.

To summarize, under this \$60 billion loss scenario, policyholders who made a conscious choice not to purchase terrorism coverage would end up paying \$10 billion. Insurers would be responsible for paying \$13.1 billion, policyholders would be surcharged for \$1.9 billion, and the federal government would pay \$35 billion, some of which may be recouped through later surcharges on policy premiums.

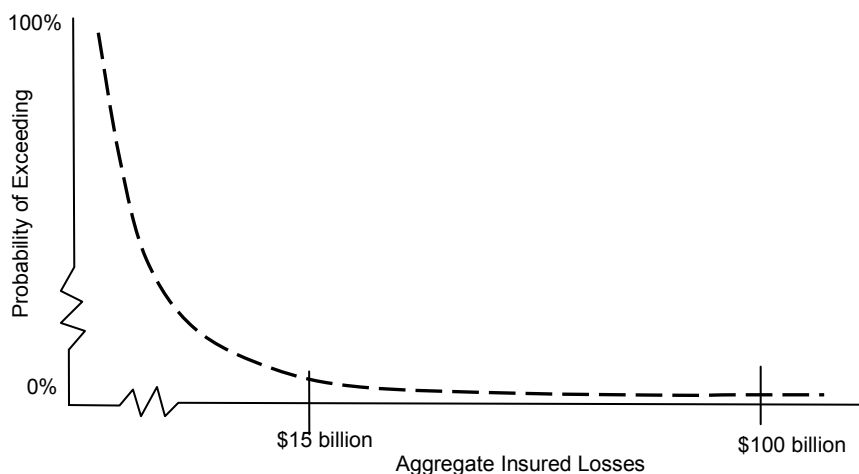
As this example illustrates, TRIA is not a subsidy transfer to primary insurers and no payments are duplicated under the program. Payments from both primary insurers (and their reinsurers) and the federal government go to pay losses sustained by policyholders. Insurance companies are always financially worse off when losses occur, even with TRIA. The difference is that their exposure is limited by TRIA. Primary insurers are free

to seek reinsurance to help cover their deductible and loss sharing, and in fact many insurers are currently doing this. For many large insurers, the deductibles and potential loss sharing are many hundreds of millions of dollars.

Whether TRIA's provisions will be triggered depends upon the size of the primary insurers covering the losses. For example, an insurer with total premium of \$100 million in the relevant lines reaches the TRIA threshold after its policyholders' insured losses aggregate to \$15 million in 2005, whereas a company with annual premiums of \$1 billion does not reach the TRIA threshold until its policyholders' insured losses exceed \$150 million. From the federal government's perspective, terrorism losses will be relatively less costly to the extent the losses are spread over more policyholders covered by a greater number of relatively larger insurance companies with correspondingly higher deductibles.

In the simplest terms, TRIA can be thought of as federally provided reinsurance that will only be triggered in the event of a catastrophic loss. This point is illustrated with the help of Figure 6, a loss exceedance curve, which depicts the relationship between the likelihood of events and their severity. That the curve generally slopes downward from left to right suggests that terrorist attacks generating relatively large losses are thought to be relatively less likely to occur. TRIA is designed such that the federal government only provides reinsurance for very expensive and (hopefully) very rare events, i.e., ones out in the right end, or "tail," of the loss exceedance curve.

Figure 6: Hypothetical Terrorism Loss Exceedance Curve¹⁹



¹⁹ The shape of the curve is meant to convey information about absolute probabilities of particular terrorism losses. The hash marks at \$15 billion aggregate insured losses is meant as reminders that TRIA provides for mandatory recoupment of federal expenditures until insurers total costs rise to the proscribed insurance industry aggregate retention level for the program year in which an event occurs (\$15 billion for 2005). The hash mark at \$100 billion is meant as a reminder that TRIA caps total insured losses at \$100 billion in any given year.

4. Insurance Industry Health After TRIA

One of the first questions to ask in assessing TRIA is whether it has had the desired effect of stabilizing the insurance market with limited cost to the federal government. We conclude the answer to this question is yes. The presence of TRIA, the absence of a major terrorist event, favorable overall loss experience, and disciplined underwriting have enabled the insurance industry to regain its footing since 9/11. Assuming its cost-sharing provision is not triggered by a terrorist event, TRIA's cost to the federal government is minimal—\$4 million in 2003 and roughly \$5 million per year in 2004 and 2005.²⁰

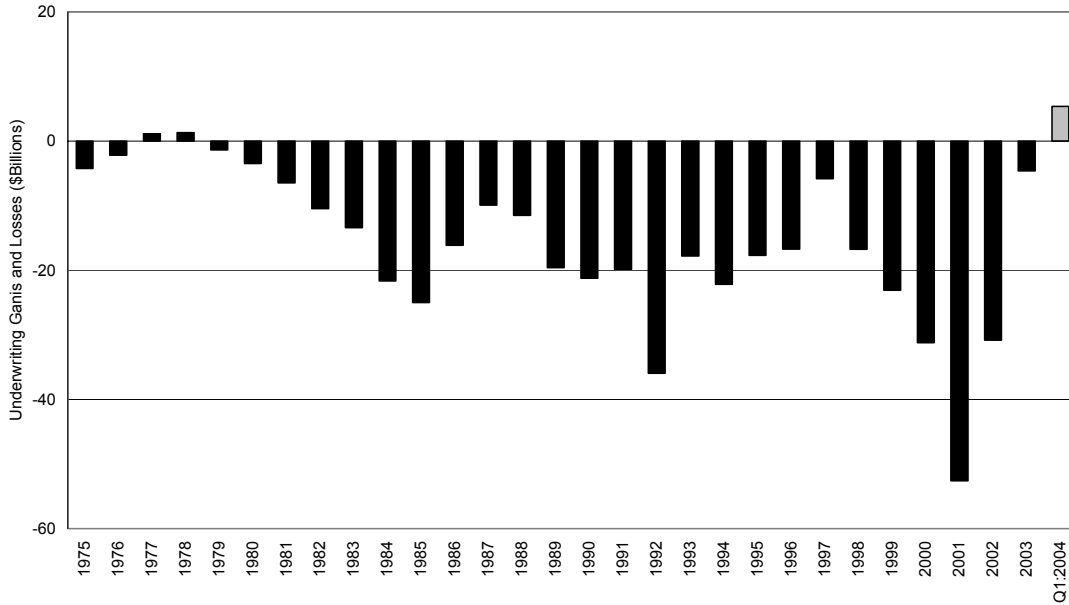
UNDERWRITING PERFORMANCE AND NET INCOME

Two common measures of insurance industry financial health, underwriting losses and net income, suggested difficulties in the aftermath of 9/11. Underwriting losses are the amount of losses sustained by an insurance company compared to the amount of premium it collects. Net income measures the total economic performance of insurance companies including investment gains and losses. The typical circumstance for property and casualty insurers is to sustain underwriting losses and rely on investment gains to generate positive net income.

²⁰ The \$5 million figure is a budget estimate excluding the operation of a claims-processing function designed for use in the aftermath of a terrorist event. United States General Accounting Office, *Terrorism Insurance: Implementation of the Terrorism Risk Insurance Act of 2002*, Report to the Chairman, Committee of Financial Services, House of Representatives, April 2004.

As shown in Figure 7, underwriting losses for the U.S. property and casualty insurance industry were a staggering \$52.6 billion in 2001. Since 9/11, losses have declined, and first quarter 2004 results indicate a slight gain year to date.

Figure 7: Total U.S. Property and Casualty Insurance Industry Underwriting Gains and Losses 1975-Q1:2004 (\$ Billions) ²¹

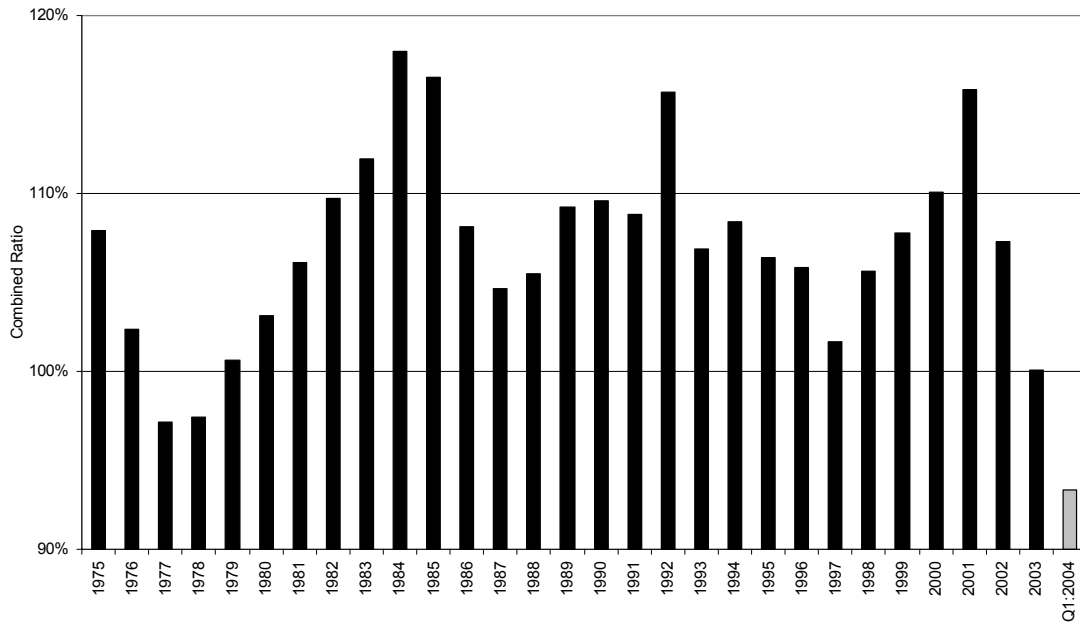


Another related measure of annual performance used in the industry is the combined ratio—that is, losses and expenses of the insurance company in a given year as a percentage of the premium collected. Combined ratios over 100 percent indicate that premium is not sufficient to cover losses and expenses. The typical circumstance for property and casualty insurers is to have combined ratios in excess of 100 percent, in some cases well in excess of 100 percent.

²¹ Source: Copyrighted material of Insurance Services Office, Inc., and A.M. Best Company, used by permission.

As shown in the Figure 8, the combined ratio exceeded 115 percent in 2001. Again, performance through the first quarter of 2004 has been strong, with a combined ratio below 100 percent.

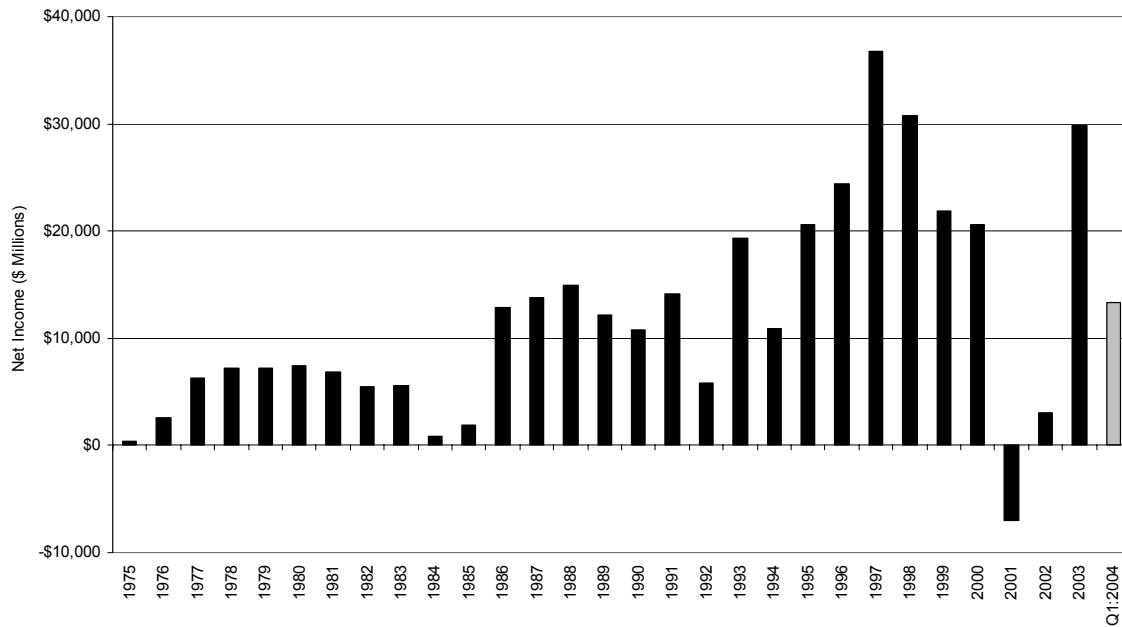
Figure 8: Total U.S. Property and Casualty Insurance Industry Combined Ratio (Losses and Expenses as a Percent of Premium) 1975-Q1:2004²²



²² Source: Copyrighted material of Insurance Services Office, Inc., and A.M. Best Company, used by permission.

Figure 9 shows that the 9/11 losses were associated with a *negative* net income of roughly \$7 billion in 2001—the first time in recorded history that net income for the entire U.S. property and casualty insurance industry was negative. Since then, the industry has recovered somewhat and 2004 net income was projected to be the strongest in many years. However, catastrophes such as Hurricane Charley, with estimated insured losses of five to eight billion dollars (net of losses paid by the Florida Hurricane Catastrophe Fund),²³ Hurricane Frances, other threatening natural disasters, and indeterminable terrorism events may adversely impact third and fourth quarter 2004 results. Figure 9 also illustrates how potentially vulnerable insurance industry profitability is. A terrorist attack with insured losses on the scale of 9/11 could eliminate all profits of the entire property and casualty industry in a year of above-average profits, and several years’ profits from more typical years.

Figure 9: Total U.S. Property and Casualty Net Income After Taxes 1975-Q1:2004 (\$ Millions)²⁴



²³ Estimate provided by the Property Casualty Insurers Association of America based on estimates from the Insurance Information Institute, AIR Worldwide Inc., Property Claims Service, National Underwriter, and knowledge that the Florida Hurricane Catastrophe Fund begins paying 90 percent of losses above \$4.5 billion.

²⁴ Source: Copyrighted material of Insurance Services Office, Inc., and A.M. Best Company, used by permission.

TOTAL INDUSTRY RESOURCES AVAILABLE TO PAY LOSSES

In addition to measuring financial performance on an annual basis using underwriting losses, the combined ratio, and net income, it is also useful to consider the total resources available to the industry to pay for losses. Even before 9/11, the insurance industry's capacity to cover catastrophic losses of various types was being examined.

Prior to 9/11, catastrophic events were generally thought of in terms of a large hurricane or earthquake. Research by one team in 1999 suggested that the industry could pay roughly 93 percent of a \$100 billion catastrophe, but noted that "even if most losses would be paid for an event of this magnitude, a significant number of insolvencies would occur, disrupting the normal functioning of the insurance market, not only for property insurance, but also for other coverages."²⁵ In subsequent work addressing terrorism risk, the same investigators estimated that a \$100 billion loss would cause about 60 insolvencies, and warned that "even a small terrorist event would lead to significant price increases and supply shortages in insurance and reinsurance markets."²⁶

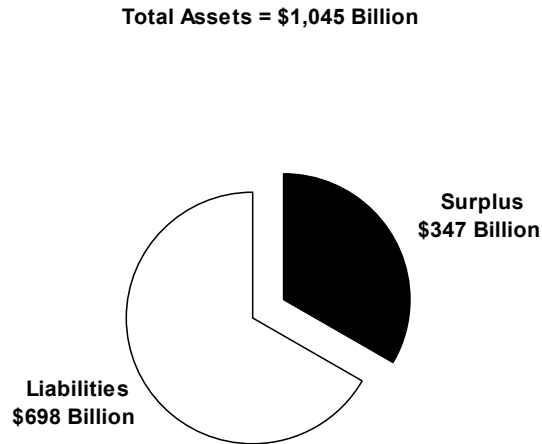
Whether insurers have sufficient capital to cover another catastrophic terrorist event depends on the relationship between potential terrorism related losses and capital available to cover those losses. The appropriate measure is surplus, which is the difference between the total assets and the total liabilities of insurers. The biggest portion of liabilities is the reserves set aside to pay known or anticipated claims. Surplus is the amount available to pay claims that are not specifically reserved. If surplus is low, this indicates a more limited ability to pay unanticipated claims, particularly for catastrophic losses. In general, insurance companies are considered insolvent when their claim costs and reserves for future payments exceed their assets, meaning that they have no more surplus remaining.

²⁵ Cummins, J. David, Neil Doherty, and Anita Lo, "Can Insurers Pay for the 'Big One'? Measuring the Capacity of the Insurance Market to Respond to Catastrophic Losses," Working Paper, Wharton, University of Pennsylvania, 1999, p. 1.

²⁶ Cummins, J. David, and Neil A. Doherty, "Federal Terrorism Reinsurance: An Analysis of Issues and Program Design Alternatives," Working Paper, Wharton, University of Pennsylvania, 2002, p. 2.

As Figure 10 below illustrates, the total surplus of property and casualty insurers was approximately \$347 billion in 2003.

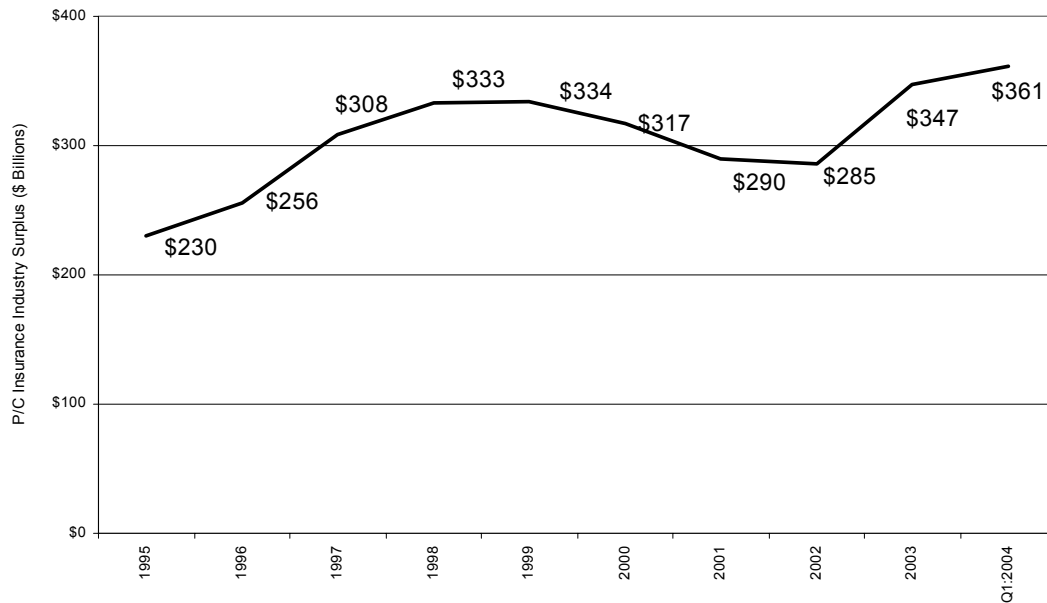
Figure 10: U.S. Property and Casualty Insurance Industry Assets, Liabilities, and Surplus, 2003 (\$ Billions)²⁷



²⁷ Surplus data from copyrighted material of Insurance Services Office, Inc., used by permission. Property and casualty insurance industry liabilities calculated as property and casualty insurance industry assets minus surplus, with asset data from the Insurance Information Institute, *Facts and Statistics, Industry Overview*, <http://www.iii.org/media/facts/statsbyissue/industry/>, visited 8/25/04.

As Figure 11 shows, property and casualty insurance industry surplus was already declining before 9/11. Obviously the losses of 9/11 worsened the situation, with surplus declining below \$300 billion in 2001 and 2002. In 2003, industry surplus increased again due to lower losses and favorable economic performance.

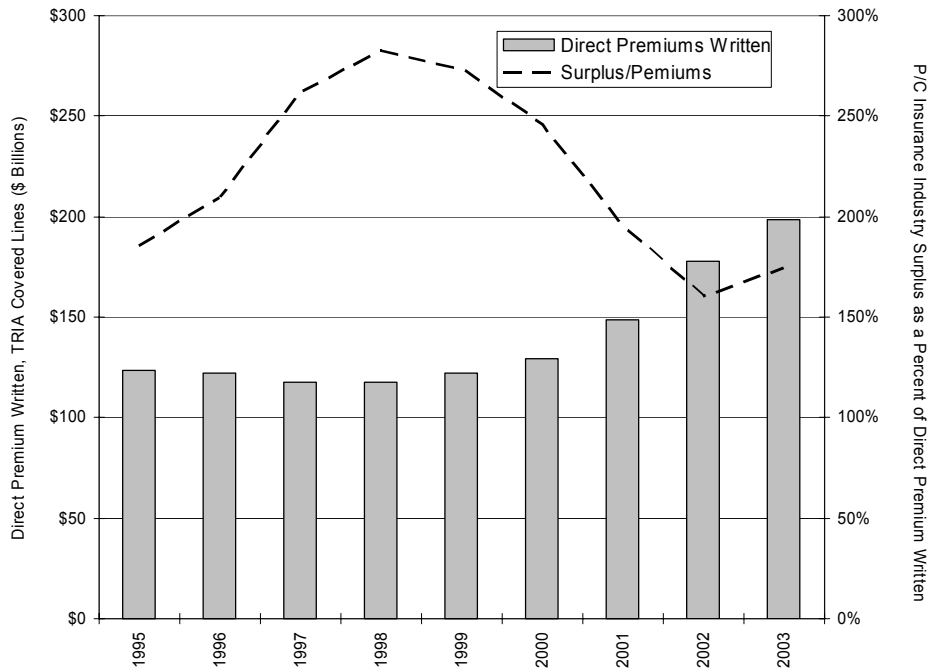
Figure 11: U.S. Property and Casualty Insurance Industry Surplus (\$ Billions)²⁸



²⁸ Source: Copyrighted material of Insurance Services Office, Inc., and A.M. Best Company, used by permission.

Figures 12 and 13 add perspective to the surplus data. Figure 12 shows that direct written premiums for TRIA covered lines have been rising since 1999. It also shows the relationship between these premiums and the surplus backing them. As one can see, surplus growth has not generally kept up with the increase in premiums written. To the extent that premiums written reflect risk exposure, industry surplus is still being stretched thin. This observation is especially true in the case of catastrophic terrorism insurance, where losses are generally funded out of surplus.

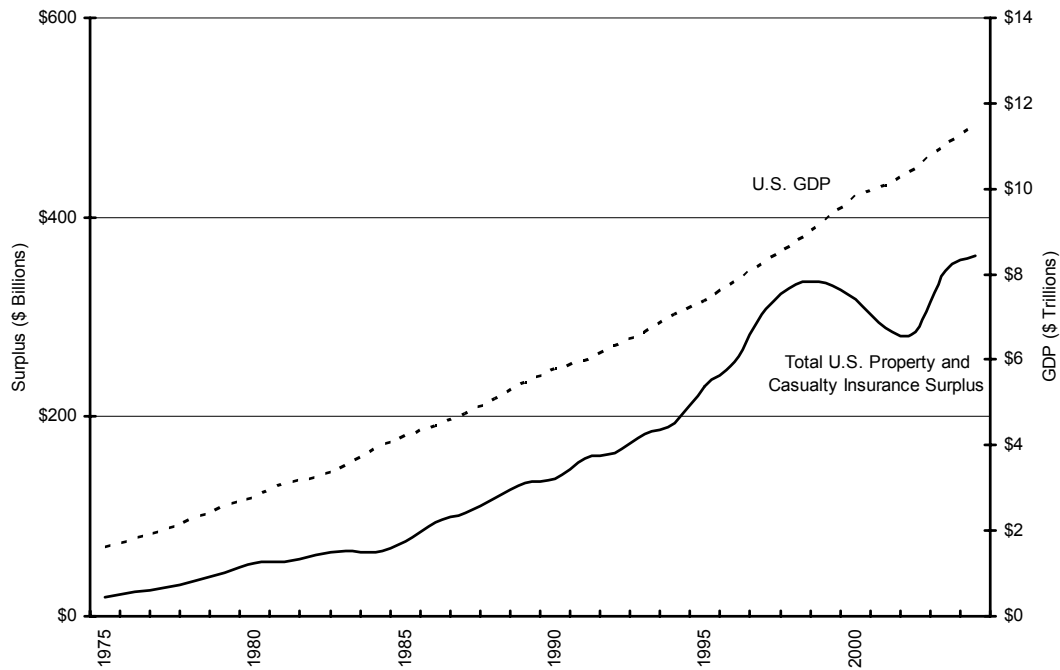
Figure 12: TRIA Lines Direct Written Premiums and Surplus/Premium²⁹



²⁹ Surplus data is copyrighted material of Insurance Services Office, Inc., and A.M. Best Company, used by permission. Premium data from the National Association of Insurance Commissioners via National Underwriter Insurance Data Service.

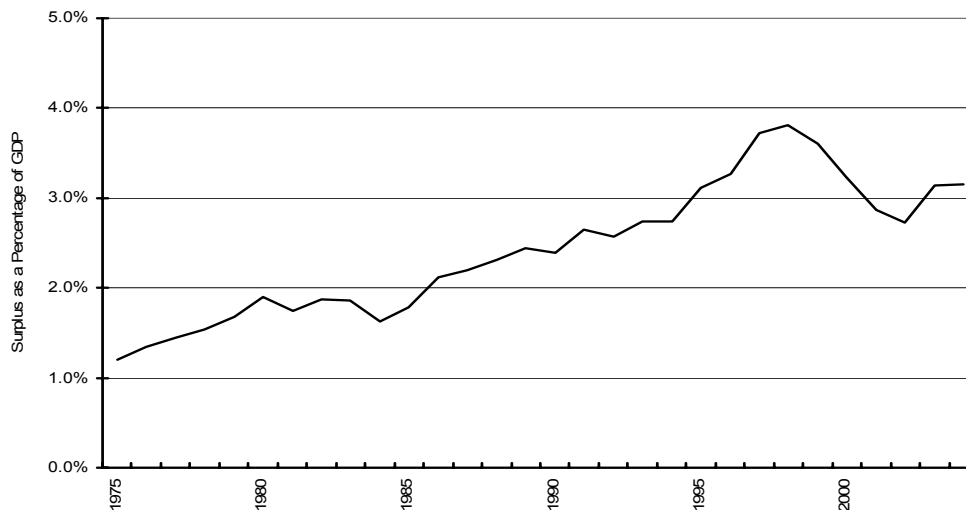
Figures 13 and 14 provide additional perspective. While surplus has recovered in recent years, surplus as a percentage of GDP remains below pre-9/11 levels—this in the face of increased terrorism risk.

Figure 13: U.S. Property and Casualty Insurance Industry Surplus and GDP, 1975-Q1:2004³⁰



³⁰ Surplus data is copyrighted material of Insurance Services Office, Inc., and A.M. Best Company, used by permission. GDP data from Bureau of Economic Analysis, Table 1.7.5, Relation of Gross Domestic Product, Gross National Product, Net National Product, National Income, and Personal Income, <http://www.bea.doc.gov/bea/dn/nipaweb/index.asp>, visited on 7/22/2004.

Figure 14: U.S. Property and Casualty Insurance Industry Surplus as a Percentage of GDP³¹



One industry expert explained recent developments as follows:

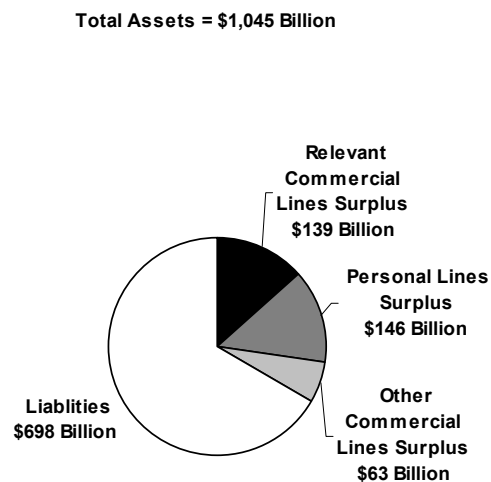
While the policyholder surplus figure for year-end 2003 increased substantially, it stands just 2.3 percent higher than in mid-1999. Over the same period, the US economy expanded by 23 percent and the demand for insurance along with it. The industry's capital base is therefore stretched more thinly than it was in the late 1990s. In addition, a wide variety of new risks have emerged, all relying on this same, limited pool of capital; these include: terrorism, toxic mold, the medical malpractice crisis and the crisis in corporate governance—none of which were major issues in 1999. The combination of economic growth and greater demand for insurance along with new and emerging risks illustrates the fact that the industry's policyholder surplus is fully committed. Increasing the size of that pool is necessary in order to finance the insurance needs of a growing US economy as well as claims arising from a virtually unlimited array of new and existing risks.³²

³¹ Surplus data is copyrighted material of Insurance Services Office, Inc., and A.M. Best Company, used by permission. GDP data from Bureau of Economic Analysis, Table 1.7.5, Relation of Gross Domestic Product, Gross National Product, Net National Product, National Income, and Personal Income, <http://www.bea.doc.gov/bea/dn/nipaweb/index.asp>, visited on 7/22/2004.

³² Hartwig, Robert P, *2003 Year End Results*, Insurance Information Institute, <http://www.iii.org/media/industry/financials/2003yearend/>, visited 8/3/04.

Even these measures of total property and casualty surplus are not complete reflections of the ability of the industry to handle terrorism risk. For example, personal lines of insurance—primarily homeowners and automobile insurance—account for more than half of property and casualty insurance assets. Terrorism risk as it relates to TRIA is disproportionately born by certain lines of business. These “relevant commercial lines” include commercial property, liability, and workers’ compensation. As Figure 15 shows, measured in this way, relevant lines surplus in 2003 was \$139 billion. The surplus of this segment of the industry fell as low as \$80 billion after 9/11,³³ And even this “relevant commercial lines” surplus must cover all unanticipated insured losses in commercial property, liability, and workers’ compensation insurance, not just terrorism related losses.

Figure 15: U.S. Property and Casualty Insurance Industry Assets, Liabilities, and Surplus, 2003 (\$ Billions)³⁴



³³ Hartwig, 2002a, p.17.

³⁴ Property and casualty insurance industry surplus data from copyrighted material of Insurance Services Office, Inc. Breakdown of aggregate surplus from Hartwig, Robert P., *2004 Mid-Year Property Casualty Insurance Update*, Insurance Information Institute, Presentation, July 1, 2004. Property and casualty insurance industry liabilities calculated as property and casualty insurance industry assets minus surplus, with asset data from the Insurance Information Institute, *Facts and Statistics, Industry Overview*, <http://www.iii.org/media/facts/statsbyissue/industry/>, visited 8/25/04. Note: Relevant commercial surplus of \$139 billion, as cited by Hartwig, is 40 percent of total property and casualty insurance industry surplus of \$347 billion. As independent corroboration, direct written premiums for TRIA covered lines as a percentage of total property and casualty insurance industry direct written premiums was 44 percent in 2003 and averaged 43 percent from 1992 through 2003 (calculations based on data from National Association of Insurance Commissioners via National Underwriter Insurance Data Service).

While current terrorism insurance premiums are also available to fund terrorism losses, these premiums are small compared to potentially catastrophic terrorism losses. Direct written premiums for TRIA covered lines were approximately \$198.4 billion in 2003; roughly \$39.4 billion of these premiums were for workers' compensation insurance.³⁵ Survey data suggests that roughly 44 percent of larger property insurance policyholders elect (or "take-up") terrorism coverage, and that terrorism premium averages roughly four percent of total property insurance premium.³⁶ As stated earlier, terrorism coverage is a mandatory component of workers' compensations insurance. Evidence we have reviewed suggests that terrorism premiums are one to three percent of total workers' compensation insurance premiums.³⁷ Taken together, this information suggests that current annual terrorism insurance premiums are roughly \$3.6 billion; \$2.8 billion for TRIA covered lines other than workers' compensation, and \$788 million for workers' compensation.³⁸ For perspective, estimates of the 9/11 insured loss range from \$30 to \$70 billion.³⁹ Estimates of the workers' compensation insurance component of that loss alone range from two to four billion dollars.⁴⁰ Put differently, it would take eight or more years worth of terrorism premiums to pay for one event the size of 9/11, much less a larger event.

INSURANCE INDUSTRY ECONOMIC PERFORMANCE, 2002 - 2004

Despite the new exposure to terrorism risk, recent industry performance has been strong for several reasons. First, the absence of another major terrorist attack, and until mid-2004 (*e.g.*, Hurricanes Charley and Frances), limited overall catastrophic losses have allowed some financial recovery. Second, TRIA has brought some stability to the industry and defined insurer exposures to terrorism risk. Third, more disciplined underwriting has meant somewhat higher premiums, and thus stronger performance, by insurance companies. Fourth, overall favorable loss experience in a number of lines of business has improved financial results.

³⁵ National Association of Insurance Commissioners via National Underwriter Insurance Data Service.

³⁶ Marsh Inc., *Marketwatch: Property Terrorism Insurance 2004*, April 2004, p. 21 and Marsh Inc., *Marketwatch: Property Terrorism Insurance Update – 1st Quarter 2004*, 2004, p. 3. Note: The sample size of the original report covering Q2-Q4:2003 was over 2,400 organizations incepting property insurance placements in the second, third, and fourth quarter of 2003; the sample size for Q1:2004 is presumably roughly 800.

³⁷ National Council on Compensation Insurance, *Terrorism Rate Filing – Item B – 1383*, 2002 and stakeholder interviews.

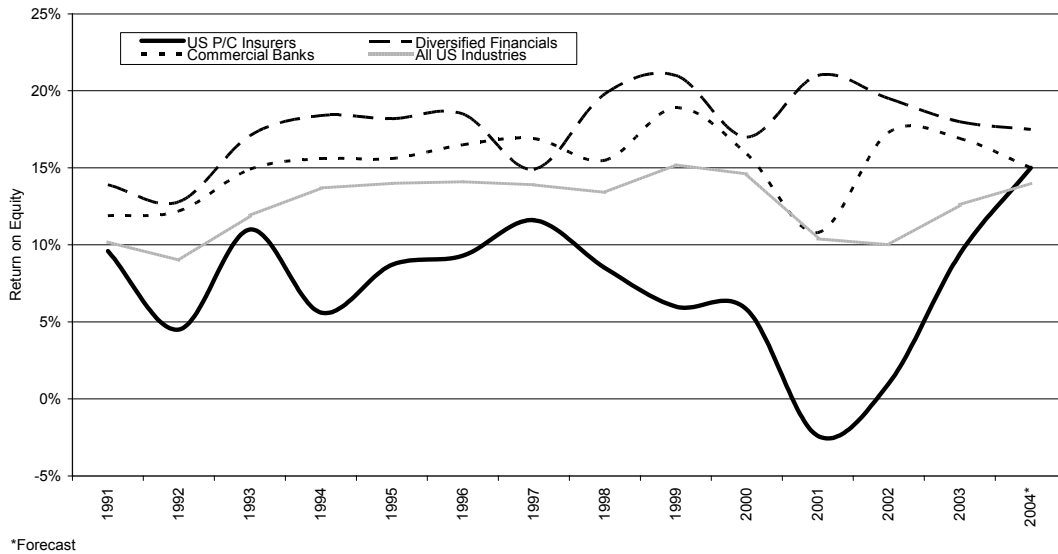
³⁸ Note: In the non-workers' compensation (WC) calculation that follows, we assume all non-workers' compensation lines have terrorism coverage take-up rates and premiums comparable to the property insurance take-up rate and premium cited. Terrorism premiums on non-WC policies = (\$159 billion in non-WC premiums) x (44% take-up rate) x (4% terrorism share of total non-WC premiums) = \$2.8 billion. Terrorism premiums on WC policies = (\$39.4 billion total WC premiums) x (2% terrorism share of total WC premium) = \$788 million in WC terrorism premium. Total terrorism premiums = \$2.8 billion + \$788 million = \$3.59 billion.

³⁹ See references cited in footnote 1.

⁴⁰ Tillinghast and Reinsurance Businesses of Towers Perrin, *Workers' Compensation Terrorism Reinsurance Pool Feasibility Study*, April 2004, p. 24.

Even with this recent stronger performance, the industry is still earning relatively modest overall financial returns. Figure 16 illustrates the return on equity (ROE), which measures profit as a percentage of the equity in the company. In the property and casualty insurance industry, ROE has been lower than returns in other industries for several years. For example, property and casualty insurance and “all-industry composite” ten-year return on equity averages (1993-2002) are seven percent and 13 percent, respectively.⁴¹

Figure 16: U.S. Property and Casualty Insurance Industry Return on Equity Compared to Other U.S. Industries, 1991-2004⁴²



⁴¹ Property Casualty Insurers Association of America, *An Analysis of Property/Casualty Insurance Profitability and Its Relationship to Rates*, Public Affairs Bulletin No. 04-004, May 17, 2004.

⁴² Hartwig, 2004.

As for the immediate impact of TRIA on the industry and the economy, one study found that stock prices in industries most likely to be affected by TRIA—banking, construction, insurance, real estate investment trusts, transportation, and public utilities—primarily reacted negatively to events culminating in the passage of TRIA.⁴³ The authors’ summary explanation of these results is as follows:

The Act [TRIA] was at best value-neutral for property-casualty insurers because it eliminated the option not to offer terrorism insurance. The negative response of the other industries may be attributable to the Act’s impeding more efficient private market solutions, failing to address nuclear, chemical, and biological hazards, and reducing market expectations of federal assistance following future terrorist attacks.⁴⁴

Studies inferring reactions of capital markets to events can defy simple interpretation; so many events affect industry market valuations over time that correlating particular price movements with particular actions can be difficult. However, it does seem to be the case that prices of publicly traded insurance companies and others affected by TRIA did not experience a significant short-term gain with TRIA’s passage, casting doubt on the “windfall subsidy” criticisms of TRIA.

CAPITAL INFLOWS TO THE INDUSTRY AFTER 9/11

There was also concern following 9/11 that the insurance industry as a whole would not be able to attract new investment and capital. This has not been the case, as capital has continued to flow into the industry as a whole since 9/11. However, this capital has not necessarily been applied to the underwriting of terrorism risk.⁴⁵ Between 9/11 and the end of 2000, 40 insurers raised \$20.5 billion in new capital. From 9/11 through mid-July 2002, 66 firms had raised \$28 billion and another 47 deals worth \$47 billion were pending.⁴⁶ However, “most of these funds will be used to support specialty lines insurance and reinsurance operations in market segments suffering from acute capacity shortages, rather than in the underwriting of terrorism risk directly.”⁴⁷

⁴³ Brown, Jeffrey R., J. David Cummins, Christopher M. Lewis, and Ran Wei, “An Empirical Analysis of the Economic Impact of Federal Terrorism Reinsurance,” Paper Submitted for the Carnegie-Rochester Conference on Public Policy, Macroeconomics of Terrorism, Draft dated March 2, 2004.

⁴⁴ Brown, Cummins, Lewis, and Wei, 2004, Abstract.

⁴⁵ Hartwig, 2002a, p. 23. Kunreuther, Howard, “The Role of Insurance in Managing Extreme Events: Implications for Terrorism Coverage,” *Business Economics*, April 2002, pp. 6-16 (based on an article in *Risk Analysis*, Vol. 22, No. 3, June 2002), p. 11.

⁴⁶ Hartwig, 2002a, p. 23. Other sources cite different figures. One source says insurers raised \$21 billion three months after 9/11 (Smetters, 2004, p. 14, citing Morgan Stanley, 2001). Another source says that \$26 billion in reinsurance capital was raised in 2001 and another \$18.6 billion was raised or pending in 2002 (Benfield Group Limited, *WTC Update*, 4th Edition, November 2002, p. 15).

⁴⁷ Hartwig, 2002a, p. 23.

Following the terrorist strike, it was not unusual for investors to demand significantly higher returns on investment in terrorism coverage, thus driving up the cost of its provision.⁴⁸ Academic research on the performance of insurance company stock prices suggests that there has been a post-9/11 shakeout in the industry indicative of a “flight to quality.” That is, “the stock prices of insurers with strong financial ratings rebounded while those of weaker insurers did not...,” but “[i]t is too early to say whether the terrorism coverage market will follow the traditional pattern of rebound and recovery that has characterized earlier market disequilibria.”⁴⁹

REINSURANCE CAPACITY AFTER 9/11

While TRIA effectively makes the federal government the universal reinsurer for a large portion of terrorism risks, primary insurers still face significant terrorism exposure and limited availability of private reinsurance. As some industry observers have noted, “U.S. insurers are required to offer terrorism coverage, but they are unable in most cases to purchase private reinsurance to cover the deductible and co-payment losses.”⁵⁰

Efficient private sector provision of terrorism insurance depends on adequate reinsurance. Shortly after 9/11, even Munich Re, the world’s largest reinsurer and one of the few leading reinsurers to offer terrorism reinsurance, did not offer it in the U.S.⁵¹ More recently, “[r]einsurers have been providing some limited coverage in conjunction with TRIA and might continue to provide some small-scale coverage post-TRIA,” but in a recent article, AIG’s chief underwriting officer, Richard Thomas, noted, “[i]t’s unlikely that the private reinsurance market will fill the gap.”⁵²

Some of the lack of availability and high pricing of reinsurance is simply a matter of overall reinsurance industry capacity. Comparing the reinsurance data in Figure 17, on the next page, with the primary insurance data presented earlier indicates that while the reinsurance market is certainly large by any objective measure, it is considerably smaller than the primary insurance market. Further, because of the various risks reinsurers cover, they must allocate their capital and surplus across a number of different types of risks and geographic locations to maintain their own target risk profiles.

⁴⁸ Kunreuther, 2002, p. 11.

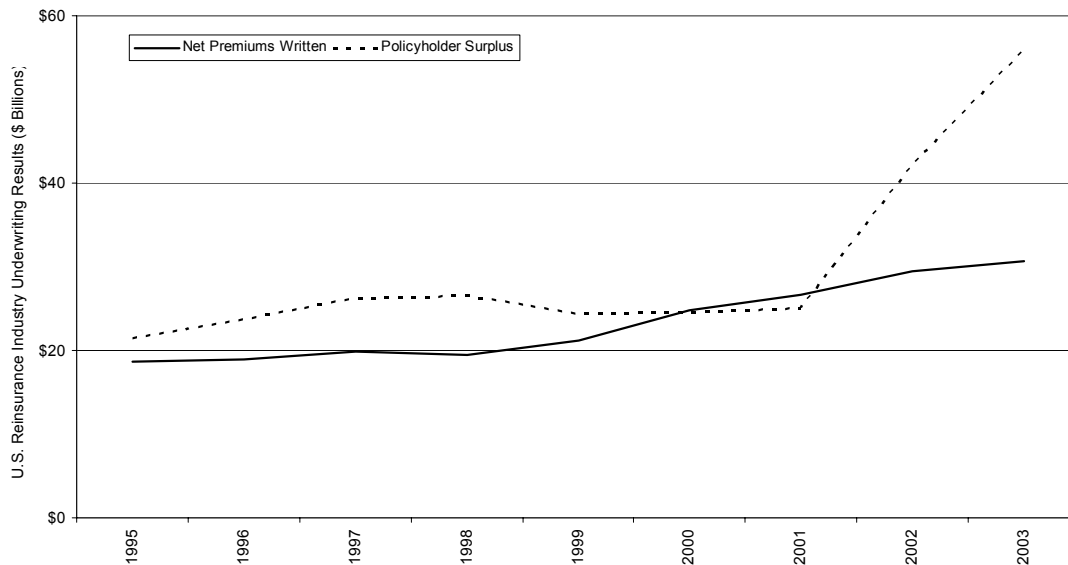
⁴⁹ Cummins, J. David, and Christopher M. Lewis, “Catastrophic Events, Parameter Uncertainty and the Breakdown of Implicit Long-Term Contracting: the Case of Terrorism Insurance,” *The Journal of Risk and Uncertainty*, 26: 2/3; 157-178, 2003, pp. 172, 173.

⁵⁰ Brown, Jeffrey R., J. David Cummins, Christopher M. Lewis, and Ran Wei, 2004, p. 17.

⁵¹ Conference Newsletters – Baden Baden 2001, “Munich Re Prepared to Reinsure European Terror Attack Risks,” *Reactions*, www.reactionsnet.com visited 4/21/04.

⁵² Vowinkel, Patricia, “After TRIA, what price terror,” *Risk and Insurance*, April 1, 2004.

Figure 17: Reinsurance Net Premiums Written and Policyholder Surplus for U.S. Reinsurers (\$ Billions)⁵³



Put more simply, reinsurers are willing to allocate a modest portion of their capital to the U.S. terrorism reinsurance market, but not an amount that threatens their solvency. As one industry commentator recently wrote, “[m]any reinsurers are more selective about the business they accept, even with hot markets, and diversification has become a key component of strategy.”⁵⁴ This same commentator went on to explain that for a reinsurance executive, “managing a global reinsurer is similar to an investment portfolio manager’s job—you weigh the likelihood of profiting in several different areas, and allocate your resources accordingly.”⁵⁵ He also noted that, “[t]he so-called class of 2001 [Bermuda-based reinsurers formed following September 11, 2001] has taken this concept of diversification to heart—hitting the ground running in a number of lines.”⁵⁶

The data from Figure 17 frames the implications of this rational diversification strategy by reinsurers. The total amount of property and casualty premium written and surplus of U.S. reinsurance companies was less than \$90 billion as of 2003. Because only a portion

⁵³ Reinsurance Association of America, *Reinsurance Underwriting Report(s)*, 1995-2003.

⁵⁴ Padilla, 2004, p. 26.

⁵⁵ *Ibid.*, p. 27.

⁵⁶ Padilla, 2004, p. 28. Note: Total net reinsurance premiums written by Bermuda reinsurers were roughly \$6.5 billion and \$12.4 billion in 2001 and 2002 respectively. The exempt Bermuda insurance industry derived roughly 52 percent of its gross premium income from the U.S. in 2002, down from 65 percent in 2001. Assuming that these percentages hold for net reinsurance premiums written in the U.S. by Bermuda reinsurers, Bermuda reinsurers wrote roughly 16 and 22 percent of the U.S. reinsurance premiums that U.S. reinsurers did in 2001 and 2002. Only a fraction of such premiums, and the surplus backing them, are for terrorism coverage. (Standard and Poor’s, *Global Reinsurance Highlights, 2003 Edition*, 2003.)

of this surplus would ever be devoted to terrorism risk, the available capacity will never be so large as to approach anything like the capacity available from the federal government through TRIA.

We note that unlike U.S. primary insurers, U.S. reinsurers did not suffer an aggregate decline in surplus in 2001. This difference traces to the fact that while reinsurers covered a substantial part of the 9/11 loss, the largest reinsurance losses were sustained by non-U.S. based reinsurers. Non-U.S. reinsurers do offer some terrorism coverage in the U.S., but again are willing only to allocate a portion of their resource to terrorism and a portion of that to the U.S.

COMBINED INSURANCE AND REINSURANCE TERRORISM CAPACITY AFTER 9/11

Combining the capacity estimates of both primary insurers and reinsurers provides perspective on the insurance industry financial strength post-9/11. As noted, total U.S. surplus in relevant lines was approximately \$139 billion at the end of 2003. This surplus has to cover all unreserved and unanticipated losses, not just terrorism losses.

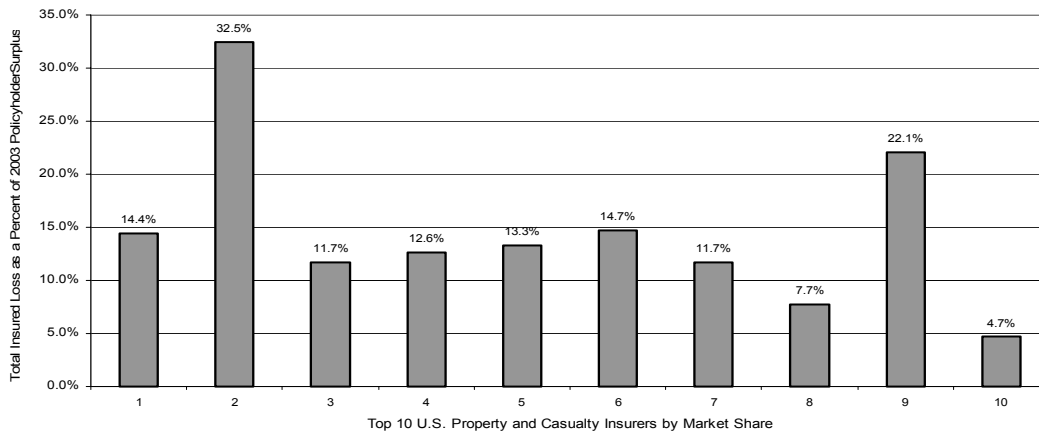
Given that insurance and reinsurance companies can never devote even close to 100 percent of their surplus to terrorism coverage, total ability of the industry to cover terrorism losses for primary insurance and reinsurance combined is well under \$100 billion. As an illustration, 10 percent of primary insurers' relevant line surplus would be approximately \$14 billion, and reinsurers' capacity currently provided for terrorism coverage has recently been estimated at \$4-6 billion, for a combined total of \$20 billion.⁵⁷ Given loss estimates equal to or exceeding 9/11 losses of \$32.5 billion, it becomes clear that industry capacity is not sufficient to fund catastrophic losses without significant financial disruptions.

This limited financial ability of insurers and reinsurers to absorb catastrophic losses was repeated consistently in our interviews with industry participants. Both insurers and reinsurers expressed the opinion that for larger terrorism losses, there is not—and will likely never be—sufficient industry capacity to absorb losses while maintaining the financial strength necessary to cover all of their other lines of business.

⁵⁷ Estimated reinsurance surplus devoted to terrorism coverage provided by the Reinsurance Association of America, citing reinsurance market sources, July 2004.

Even with TRIA, many insurers currently feel their surplus is dangerously exposed to terrorism losses. Figure 18 illustrates how a \$25 billion terrorist event spread proportionally across insurers would impact the surplus of various primary insurers. As can be seen, declines in surplus in excess of 10 percent or even greater are possible even with TRIA.

Figure 18: Percent of Select Insurers' 2003 Surplus Eliminated by a \$25 Billion Terrorist Attack in 2004 with TRIA in Place⁵⁸



⁵⁸ Primary data from National Association of Insurance Commissioners via National Underwriter Insurance Data Service; calculations by Analysis Group.

5. What Has Happened To Prices and Take-Up Rates for Primary Insurance Terrorism Coverage?

There is no single source with complete data on pricing for terrorism coverage. Our general conclusions based on our review of the data and interviews with industry participants is that prices for terrorism coverage have generally stabilized or declined since TRIA's passage and take-up rates (the percentage of those offered terrorism coverage who accept it) have increased.

There are several reasons for the stabilized or declining prices. First, state regulators have limited insurers' ability to obtain higher rates, even if insurers believe that terrorism risk justifies higher rates. Second, as additional time passes without another major loss, insurers may be getting somewhat more comfortable with reduced expectations of the frequency of additional catastrophic events, though virtually no observers believe the overall risk has significantly decreased given ongoing international tensions.

PRICING FOR WORKERS' COMPENSATION INSURANCE

In considering price and take-up rates, a distinction is necessary between workers' compensation and other lines of insurance. There is no possible exclusion of terrorism coverage from workers' compensation insurance, and thus no ability by the insured company to select or not select coverage. In other words, the take-up rate is 100 percent by state law. Significant work was done by NCCI (a sponsor of this study) and other organizations following 9/11 to determine a premium price increase to account for increased terrorism risk. While rates differ somewhat, in general, price increases of one to three percent have been included in workers' compensation pricing for terrorism coverage with TRIA in place.⁵⁹

While these pricing models are the result of significant efforts, substantial concern about terrorism risk remains, particularly for individual insurance companies. The primary concern is that even if a modest rate increase is the right estimate for the industry as a whole, for a catastrophic event, the losses are not likely to be spread evenly among a large number of insurers. Thus terrorism risk is a situation in which no firm will be the "average" company. Insurance companies may either suffer no losses or else they will suffer losses sufficient to threaten their very existence, as described earlier.

As a way of understanding the pricing assumptions in workers' compensation insurance, consider that the entire premium collected in the United States for workers' compensation insurance in 2003 was approximately \$39.4 billion.⁶⁰ If the terrorism portion of this averages two percent, that equates to an expected terrorism loss of \$788 million in a

⁵⁹ National Council on Compensation Insurance, *Terrorism Rate Filing – Item B – 1383*, 2002.

⁶⁰ National Association of Insurance Commissioners via National Underwriter Insurance Data Service.

given year. Obviously this is a small fraction of the losses possible from a major catastrophic attack impacting employers. 9/11 losses alone for workers' compensation are estimated at two to four billion dollars.⁶¹ For any individual insurance company, an additional one to two percent per year in premium will not accumulate sufficient capital to cover a catastrophic terrorism loss for that insurer.

PRICING FOR OTHER LINES OF INSURANCE

For lines other than workers' compensation, TRIA requires that primary insurers offer coverage to their insured policyholders, indicate the price, and describe the TRIA backstop. This requirement facilitates measurement of both prices and take-up rates for these other lines of coverage.

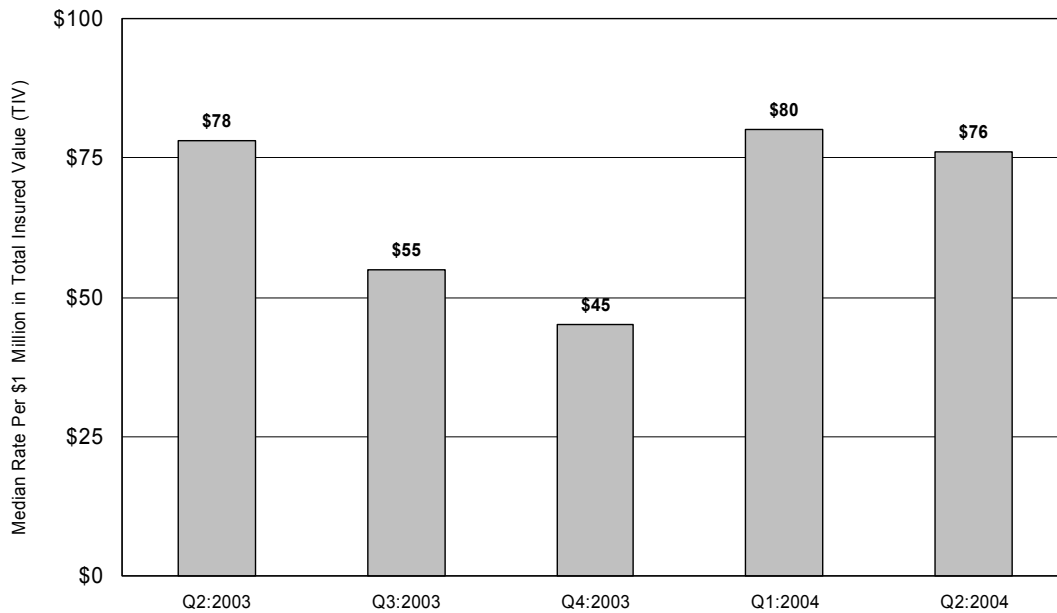
In our interviews and discussions, we discovered a range of pricing responses to these provisions. At one extreme, there are some insurers who essentially price the additional terrorism coverage at zero, having determined that the risk is low enough that it is not worth the administrative burden of tracking terrorism coverage separately. This lack of pricing appears to be a somewhat unusual circumstance. Much more common is the situation where the insurer makes an offer that entails additional cost to the insured policyholder.

There are two ways of measuring pricing for terrorism coverage. One way is to scale price to the amount of loss coverage, often expressed as the rate per million dollars of Total Insured Value ("TIV"). Such a measure is useful, but of course the base risk across different lines of insurance and different industries is different, making cross-industry comparisons difficult. An alternative price metric is the ratio of the terrorism coverage to the total premium rate, which includes coverage for all other risks.

⁶¹ Hartwig, 2002a; Tillinghast and Reinsurance Business of Towers Perrin, 2004.

Using the first measure, Figure 19 below clearly indicates a downward trend in terrorism insurance prices from the first quarter of 2003 through the third quarter of 2003. The apparent upturn in median rates in the first quarter of 2004 may be illusory, as “insureds are buying higher terrorism limits and filling gaps in their terrorism insurance” as overall softening for commercial property insurance frees up funds to purchase additional terrorism coverage.⁶²

Figure 19: Price Trend for Terrorism Insurance – Median Rate Per \$1 Million In Total Insured Value⁶³



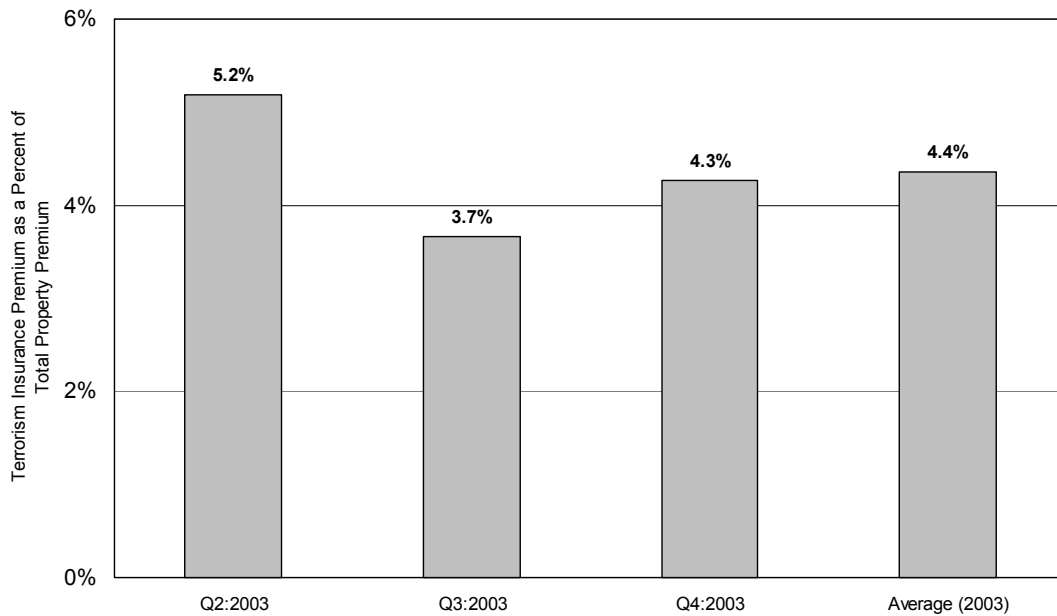
⁶² Marsh Inc., *Marketwatch: Property Terrorism Insurance Update – 1st Quarter 2004*, p. 3.

⁶³ Marsh Inc., *Marketwatch: Property Terrorism Insurance Update – 2nd Quarter 2004*, p. 5.

Measured as a percent of total premium, terrorism insurance prices appear to have remained fairly steady at between four and five percent over the 2003-2004 time period, as illustrated in Figure 20 below. Again, the apparent upturn in rates in the fourth quarter of 2003 is explained as follows by observers:

[T]errorism rates, though declining, were not declining as rapidly as overall property rates. It is worth noting that these rates are themselves a significant decrease from the immediate post-9/11 environment. As an example, in the first quarter of 2003, immediately after the passage of TRIA and during the period when rates had not yet been subject to significant scrutiny by regulators, the median terrorism premium as a percentage of overall property premium was 10.8 percent.⁶⁴

Figure 20: Price Trend for Terrorism Insurance – Terrorism Premium as a Percentage of Total Property Premium⁶⁵

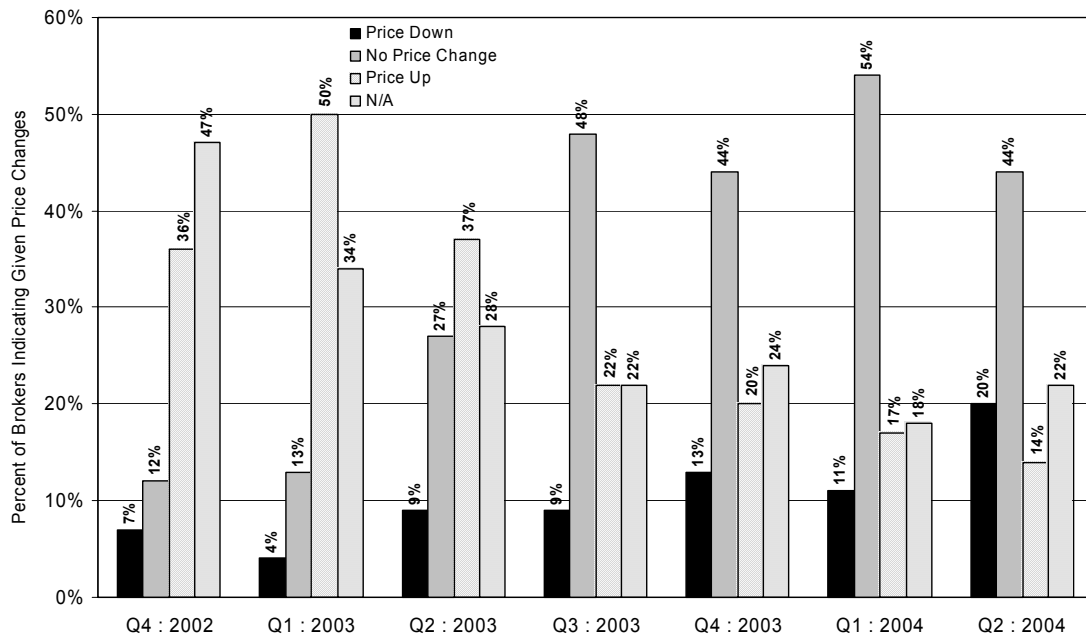


⁶⁴ Marsh Inc., *Marketwatch: Property Terrorism Insurance 2004*, p. 21.

⁶⁵ Marsh Inc., *Marketwatch: Property Terrorism Insurance 2004*, p. 21.

Figure 21 also shows the recent relative stability of terrorism coverage prices. In the most recent four quarters, roughly half of all survey respondents reported stable prices, with a moderate fraction each reporting increases and decreases.

Figure 21: Price Trend for Terrorism Insurance⁶⁶

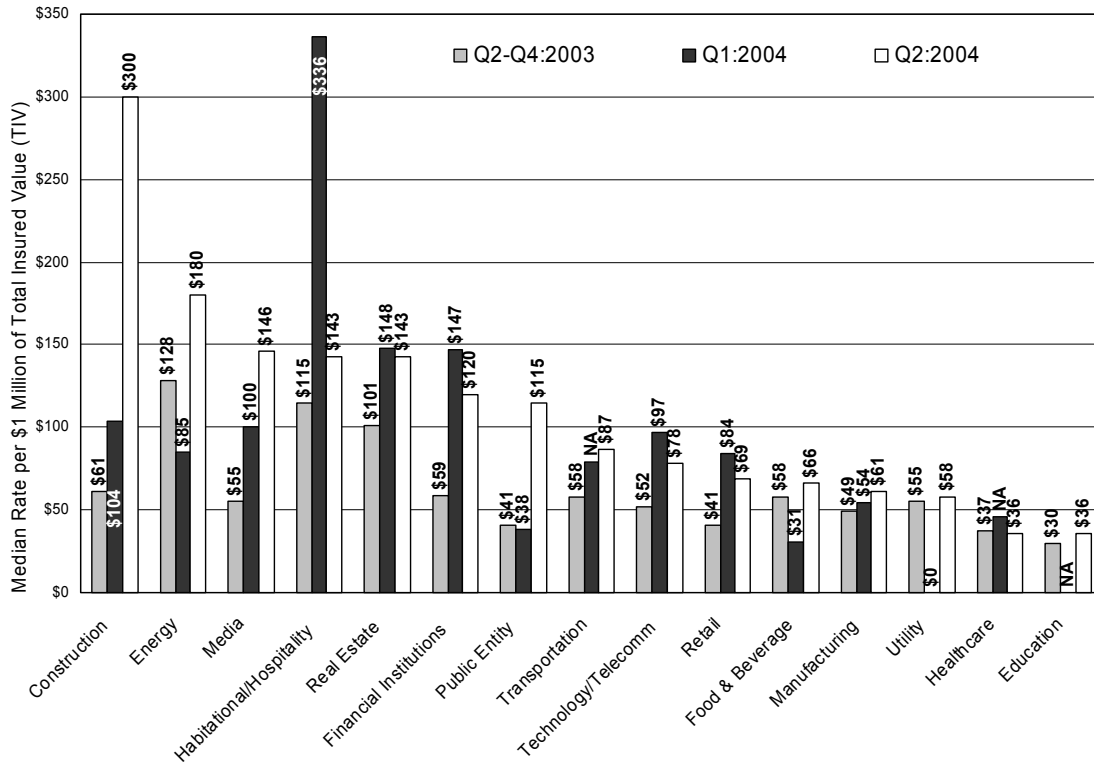


Note: Responses not summing to 100 percent likely due to rounding.

⁶⁶ Council of Insurance Agents and Brokers (CIAB), *Quarterly Market Survey(s)*, Q4:2002-Q2:2004.

As one would expect, there is variation in terrorism pricing by industry, and there have been some changes in pricing by industry over the past year. Figure 22 shows the relative pricing based on TIV by industry. Most recently, the construction industry has been the most costly industry measured in this way, with annual rates of over \$300 per million dollars of insured value.

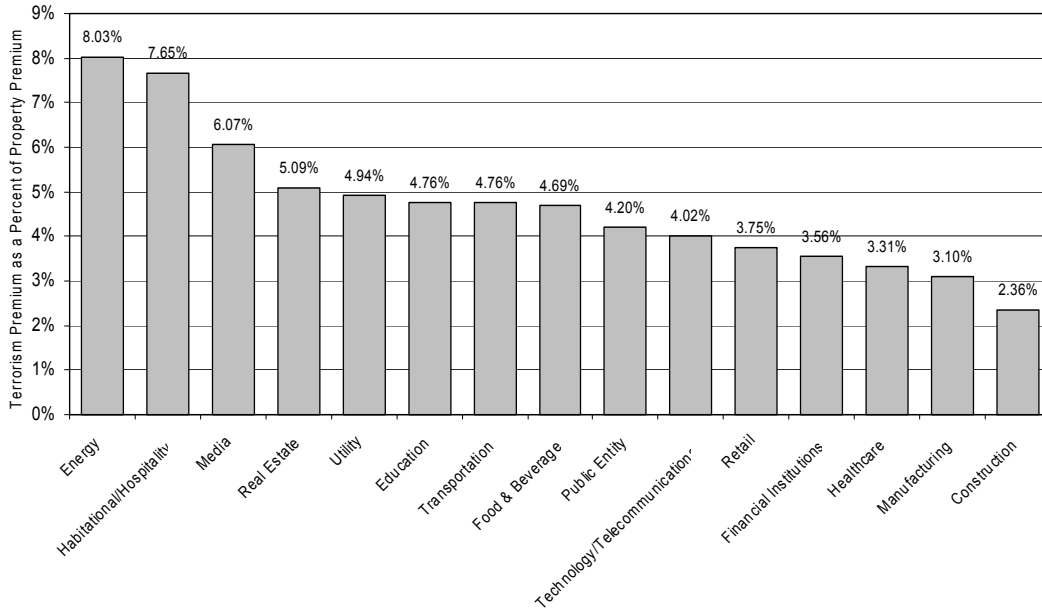
Figure 22: Pricing of Terrorism Insurance – Median Rates per \$1 Million In Total Insured Value By Industry⁶⁷



⁶⁷ Marsh Inc., *Marketwatch: Property Terrorism Insurance Update – 2nd Quarter 2004*, p. 5.

Interestingly, because the underlying insurance risks are different across industries, a somewhat different view emerges when scaling terrorism coverage to the total insurance rates, as Figure 23 illustrates. As an example, the energy industry, which has a relatively low rate when measured by TIV, has the highest rate as a portion of its overall rate, approximately eight percent.

Figure 23: Pricing of Terrorism Insurance - Terrorism Premium As a Percentage of Property Premium By Industry⁶⁸



⁶⁸ Marsh Inc., *Marketwatch: Property Terrorism Insurance 2004*, p. 24.

TAKE-UP RATES FOR OTHER LINES OF INSURANCE

As terrorism insurance rates have stabilized somewhat, overall take-up rates have also increased. Figure 24 on the following page illustrates the upward trend in the adoption of terrorism risk insurance. While Figure 24 and others that follow reflect the most comprehensive available data on take-up rates, discussion with industry experts suggests that this data likely understate market-wide take-up rates because they are based on a very small, unrepresentative sample of policies.⁶⁹ The data is from a survey of roughly 800 Marsh Inc. clients renewing property insurance policies each quarter. Marsh is the world's largest insurance broker; it services what might generally be considered the high end of middle market accounts, *e.g.*, Fortune 500 or Fortune 1000 company risks. As a point of reference, or its survey purposes, Marsh characterizes policies with Total Insured Values (TIV) of less than \$100 million as small.

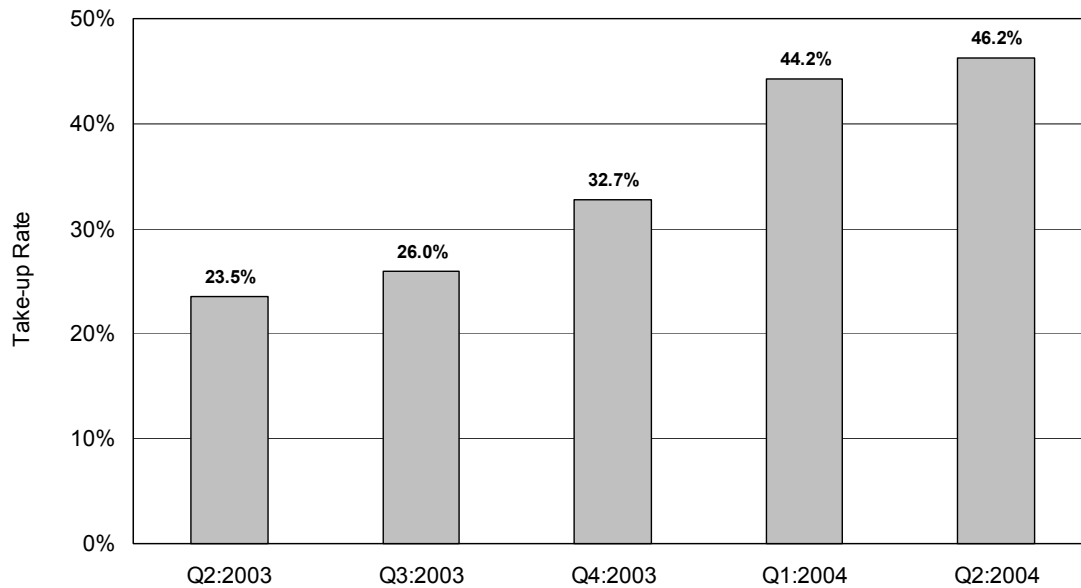
Some big insurers, in contrast, classify small business policies as those with all risk premiums in the tens of thousand of dollars. One big insurer we spoke with classifies small business policies as those with total premium of \$50,000 and under (under \$10,000 on average), writes hundreds of thousands of such policies, and indicated that the take-up rate for terrorism insurance on such policies is virtually one hundred percent. Another big insurer we spoke with, who classifies small business policies as those with all risk premiums up to \$25,000, and also writes hundreds of thousands of such policies, also indicated that their take-up rate for terrorism insurance on such policies was virtually one hundred percent. The fact that both these insurers charge roughly one to three percent of total premium for terrorism coverage suggests that they may be pursuing low price strategies to achieve maximum spread of risk.

Terrorism coverage take-up rates also vary by geography and line of insurance. Our interviews indicate that insurers with policy concentrations in perceived low risk areas tend to charge relatively little for terrorism risk coverage. One medium-large insurer with such a regional concentration of business has reported a terrorism coverage take-up rate of over 80 percent. Insurers also indicate variation in terrorism coverage take-up by line of insurance. A specialty insurer offering liability coverage for specific industry/risk group, for example, has reported a 100 percent take-up rate for terrorism coverage among its clients.

By enabling private insurers to charge lower rates to policyholders for terrorism coverage and by reinforcing the message to policyholders that they should responsibly manage their terrorism exposure within the TRIA framework, TRIA facilitates increased take-up of terrorism insurance and likely limits overall costs to the federal government in the event of a major terrorist attack.

⁶⁹ In the Marsh Inc. surveys, results of which are reported below, the smallest company size category was policies with a Total Insured Value (TIV) of less than \$100 million; this is a high threshold.

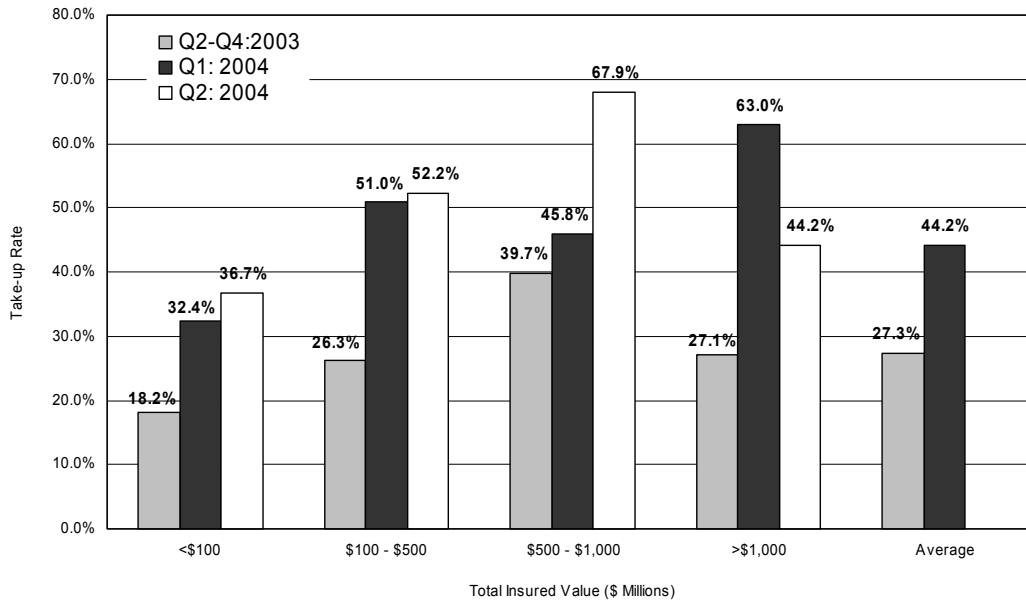
Figure 24: Take-up Rate for Terrorism Insurance⁷⁰



The take-up rate is not constant across size of account or industry. By size of account, the largest accounts appeared to have a slightly below average take-up rate in 2003, whereas in 2004 they appear to have much higher than average take-up rates. Increases in the take-up rates across all sizes of account have occurred from 2003 to 2004, as Figure 25 illustrates.

⁷⁰ Marsh Inc., *Marketwatch: Property Terrorism Insurance Update – 2nd Quarter 2004*, p. 1.

Figure 25: Take-up Rates for Terrorism Insurance By Total Insured Value⁷¹



While some commentators have suggested that low take-up rates for terrorism insurance signal weak demand for such coverage, others interpret the data differently. New York Superintendent of Insurance, Gregory V. Serio, testified before Congress as follows:

[A]s expected, participation in TRIA has been directly proportionate to the perceived need for the coverage. TRIA has operated exactly as Congress intended; those who needed the coverage purchased it; those who did not need the coverage declined it. Those who did take it up represent a significant segment of the economy of each major city in the country.⁷²

⁷¹ Marsh Inc., *Marketwatch: Property Terrorism Insurance Update – 1st Quarter 2004*, p. 2, and Marsh Inc., *Marketwatch: Property Terrorism Insurance Update – 2nd Quarter 2004*, p. 2.

⁷² Serio, Gregory V. Serio, Superintendent, New York State Insurance Department, U.S. House of Representatives, Subcommittee on Capital Markets, Insurance, and Government Sponsored Enterprises and the Subcommittee on Oversight and Investigations, April 28, 2004.

In a related hearing, Christopher Nassetta, Chief Executive of Host Marriot, compared the take-up rate of terrorism insurance to other government-backed insurance programs:

In assessing the success of TRIA, Congress should keep in mind that it is early in the TRIA experience. Consider the comparative experience for other government-backed insurance programs dealing with specific-perils. Two examples are instructive. First, the California Earthquake Authority, which is a publicly-managed entity established by the California Legislature to ensure that earthquake coverage is offered to all residential policyholders, reports that just 14%-17% of eligible California homeowners have earthquake insurance.⁷³

Second, according to a recent GAO report, the Federal Emergency Management Agency, a unit of the Homeland Security Department, estimates that one-half to two-thirds of property owners in eligible flood-prone areas do not have flood insurance coverage under the National Flood Insurance Program (NFIP), even though NFIP coverage is mandated for all FHA or GSE-backed loans for homes in special flood hazard areas.⁷⁴ This participation rate for the NFIP, which has been in operation since 1968, would be roughly comparable to the recent take-up rate reported by Marsh for the new TRIA-backed commercial terrorism insurance. Moreover, the NFIP flood insurance is not evenly distributed across the country. As of March 2001, Florida accounted for roughly 41% of total NFIP policies in effect nationwide.⁷⁵

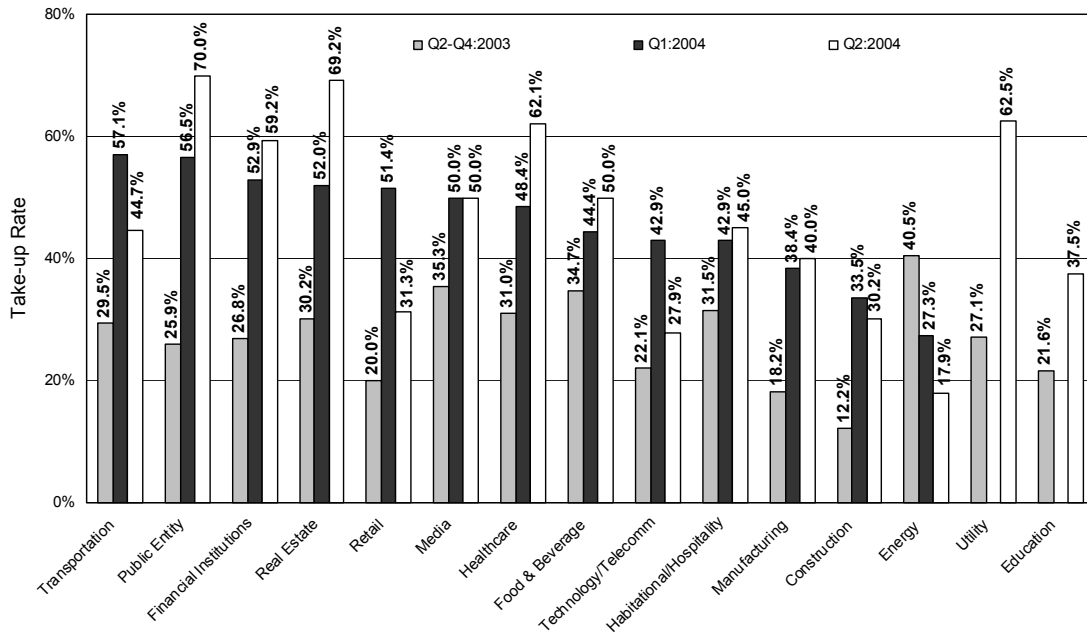
⁷³ *Summary Report to the CEA Governing Board: Stakeholder Comments at Roundtable Summit Meetings*, June 6, 2003, p. 5. Available: <www.earthquakeauthority.com/pdfs/FinalRndtblRept6-19-03.pdf>

⁷⁴ U.S. General Accounting Office, *Flood Insurance: Challenges Facing the National Flood Insurance Program*, GAO-03-606T (Washington, D.C.: April 1, 2003). GAO did not attribute the low NFIP participation rate to a lack of need for Federal flood insurance, but rather lack of awareness or information on the part of policyholders and complexity of the NFIP Program. Similarly the early participation rates under TRIA, in part, may reflect the newness of the program and inexperience or informational deficiencies for both insurers and customers. The increases in participation rates during 2003 reported by Marsh suggest this may be the case rather than lack of ultimate demand for the coverage.

⁷⁵ Nassetta, Christopher V., Chief Executive Officer of Host Marriot Corporation, Testimony before the Senate Committee on Banking, Housing, and Urban Affairs, on behalf of the Coalition to Insure Against Terrorism, May 18, 2004.

Figure 26 below illustrates how take-up rates vary by industry. With the exception of energy, every industry showed an increase from 2003 to 2004, with many industries now having take-up rates exceeding 50 percent.

Figure 26: Take-up Rates for Terrorism Insurance by Industry⁷⁶



⁷⁶ Marsh Inc., *Marketwatch: Property Terrorism Insurance Update - 1st Quarter 2004*, p. 2, and Marsh Inc., *Marketwatch: Property Terrorism Insurance Update - 2nd Quarter 2004*, p. 3.

6. What Has Happened To Prices and Take-Up Rates for Terrorism Reinsurance Coverage?

PRICES FOR TRIA COVERAGE

TRIA effectively makes the federal government the universal reinsurer for the catastrophic tail coverage of terrorism risks. Unlike most insurance, this coverage is not priced explicitly upfront. However, it is recognized by all participants that this coverage is valuable. In economic terms, this coverage is retrospectively priced based on actual experience. In other words, the insurance payments will be made by the government first, then based on actual experience, the government will charge for the coverage. The first place the government will look to recover its cost is through the TRIA provisions that allow the government to directly surcharge certain insurance policyholders to recover its costs. If the federal government is unable to recover its costs through that mechanism, then lawmakers use general revenues or impose new taxes to recover the funds spent.

In effect, TRIA's pricing will be determined after any event. Insurance coverage in which benefits and policy limits are determined up front and premiums are determined after the policy period based on actual experience is a common phenomenon. This is particularly true for risks that are more difficult to quantify and where there is great uncertainty as to the range of possible outcomes, such as nuclear power plant disasters.

PRICES FOR PRIVATE REINSURANCE

Primary insurers are also actively seeking reinsurance to help reduce the terrorism loss risks they face from the retentions and loss-sharing provisions of TRIA. Obtaining information on the prices and availability of this "middle-level" reinsurance is more difficult than obtaining information on primary insurance prices. Based on our review of the data and our discussions with insurers and reinsurers, it appears that generally prices have declined somewhat and availability has increased among reinsurers over the past two years. However, all participants noted that reinsurance is still relatively expensive and not widely available, as reinsurers are being very careful in exposing their surplus. In addition, industry participants do not believe that significant additional capacity will become available in the near future. Participants believe that reinsurers have generally determined the amount and type of reinsurance they are willing to write, and are not likely to increase this amount significantly in the future.

7. Is Catastrophic Terrorism Risk One That Can Ever Be Fully Privately Insured?

Fundamental to the discussion surrounding the extension of TRIA is the consideration of the type of risk covered by TRIA. Within the insurance industry, there are certain types of events that are considered uninsurable. The most obvious example of this is war-related damage, in particular, nuclear war. In these circumstances, explicit or implicit financial responsibility for losses resides with the government.

Even in less dramatic circumstances than nuclear war, there are situations felt to require government involvement. In a recent report, the General Accounting Office has documented precedents of U.S. and foreign government involvement in insurance markets.⁷⁷ In the United States, these include provisions for the insurance of catastrophic nuclear accidents under the Price Anderson Act of 1957, overseas political risk through the Overseas Private Investment Corporation (OPIC), urban riots and civil disorder under the National Insurance Development Program (discontinued in 1984), the National Flood Insurance Program, federal crop insurance, aviation war risk insurance, and federal deposit insurance.⁷⁸ Internationally, Japan has a public/private earthquake insurance program and the governments of United Kingdom, Israel, France, Germany, and Spain have set up permanent terrorism risk insurance programs.⁷⁹

Government partnership in risk bearing may be warranted when the private sector is unable to effectively underwrite and price catastrophic risks that are difficult to predict, potentially realized by large numbers of insured entities simultaneously, and difficult to spread.⁸⁰ For a risk to be profitably insurable, there must also be sufficient demand to insure against it at rates that cover all the economic costs of provision.⁸¹

CAN THE SIZE OF TERRORISM LOSSES BE QUANTIFIED AND ABSORBED?

Immediately following 9/11, one of the concerns of insurers was that the size of the potential losses was not well understood. Many terrorist events that might occur would impose relatively modest costs on private insurance companies. These costs could easily be absorbed by the industry. For example, the destruction of a \$10 million unoccupied commercial building would be dramatic and noteworthy, but not catastrophic. The much more significant concern was with catastrophic terrorism losses.

⁷⁷ GAO, *Terrorism Insurance: Alternative Programs for Protecting Insurance Consumers*, Statement of Thomas J. McCool, Managing Director, Financial Markets and Community Investment, before the Senate Committee on Banking, Housing and Urban Affairs, United States Senate, October 24, 2001.

⁷⁸ GAO, 2001.

⁷⁹ GAO, 2001. Morgan Stanley, *Assessing Insurers' Terrorism Risk*, March 19, 2004. Swiss Re, 2002.

⁸⁰ GAO, 2001.

⁸¹ Kunreuther, 2002, p. 7.

The insurance industry has extensive experience quantifying catastrophic risks such as hurricanes and earthquakes. The losses from various types of natural disaster scenarios are modeled using sophisticated computer simulation techniques that incorporate a wide variety of scientific and statistical inputs. Terrorism risk modeling, which evolved out of natural catastrophe modeling in the wake of 9/11, has made great strides in modeling the costs resulting from various types of attacks in various locations. These modeling exercises, and the 9/11 event itself, have made the magnitude of the risk more understandable. However, these modeling exercises have also shown that losses much larger than 9/11 are certainly possible, including scenarios with losses of hundreds of billions of dollars.⁸² As discussed previously, there is no way the private insurance industry can itself handle a \$100 billion catastrophic terrorist event without major failures and disruptions.

CAN THE FREQUENCY AND TYPE OF TERRORISM LOSS BE PREDICTED?

The biggest – perhaps insurmountable – problem with terrorism risk is that very limited historical data are available on terrorist attacks, and because the terrorist threat is dynamic, even the available historical data are less relevant in predicting future incidents in the case of terrorism than natural catastrophes. Terrorism involves strategic human behavior and represents a dynamic threat that is intentional, responsive to countermeasures, and purposefully unpredictable. As such, it is nearly impossible to quantify. Terrorists employ what analysts call “target substitution,” to maximize their likelihood of success. One manifestation of this is that “as security is increased around government and military facilities, terrorists are seeking out softer targets that provide opportunities for mass casualties.”⁸³ Another is that “[t]he terrorism threat is constantly

⁸²(i) Risk Management Solutions’ major anthrax attack scenario generates insured losses of \$54 billion for workers’ compensation, individual life, group life, accidental death and dismemberment (AD&D), and health insurance alone – Risk Management Solutions, *Catastrophe, Injury, and Insurance: The Impact of Catastrophes on Workers Compensation, Life, and Health Insurance*, 2004. While this RMS study addresses how individual insurers can manage their risk exposure to catastrophic events across select lines of business, its conclusions should not be interpreted to mean that a terrorist event large enough to adversely affect a major portion of the entire property and casualty insurance industry’s surplus is similarly manageable. (ii) “Terrorism experts have developed plausible scenarios in which the estimated total insured losses from a single event could exceed \$250 billion.” – Tillinghast and Reinsurance Business of Towers Perrin, 2004, p. v. (iii) “Terrorism and insurance experts conceive of plausible catastrophic terrorist events that generate workers’ compensation losses of \$90 billion or more.” And, “[a]s a point of reference, workers’ compensation losses from the 9/11 terrorist attacks are estimated at \$2-4 billion, or roughly 5-10 percent of the total insured loss.” – Tillinghast and Reinsurance Business of Towers Perrin, 2004, p. 42 and p. 24, respectively. These figures imply scenarios with total losses of \$900 billion to \$1.8 trillion. iv) “We have performed detailed estimates of the aggregate economic cost of larger terrorism events. This easily could reach hundreds of billions or even trillions of dollars, excluding indirect impacts on the economy.” – Schroeder, Alice D., Senior U.S. Equity Nonlife Insurance Analyst, Morgan Stanley, Statement before the Subcommittee on Oversight and Investigations of the House Financial Services Committee, February 27, 2002.

⁸³ Tillinghast and Reinsurance Business of Towers Perrin, 2004, p. 56, quoting George Tenet, Director of the CIA, February 2001.

changing as the U.S. fights the war on terror”⁸⁴ Recent reports suggest that possible targets are ubiquitous.⁸⁵ Another phenomenon contemplated by terrorism experts is that of interdependent security, *i.e.*, to the extent that we all participate in networks, we are all as vulnerable to terrorist attacks as the weakest link in networks we participate in.⁸⁶

While great strides have been made in modeling costs for various types of events in various locations, estimating the frequency, or probability distribution, of such attacks is still largely guesswork informed by expert opinion. Evidence of this can be found in reviewing the mainstream terrorism risk models, which are still based on very different assumptions. For instance, the EQECAT model reflects the theory that terrorists may be inclined to attack lower profile targets to instill fear, while the RMS model reflects a theory of more concentrated urban targeting.⁸⁷ Given the range of possible scenarios, including nuclear, biological, and chemical (NBC) attacks, the variance of terror losses is much greater than that for natural catastrophes.

Our recent discussions with over 20 insurance industry participants revealed a widely held belief that terrorism risk is not really an insurable event. This view was held by executives of both large and small insurers and reinsurers. In addition, this view was held by both U.S. and foreign-based insurers. Virtually all of the insurance industry participants cited as fundamental concerns the combination of very large losses in the tail of the distribution and the inability to predict the frequency and type of losses. Most observers see these as permanent aspects of terrorism risk and thus conclude that it is not a risk that the private sector can bear, at least the extreme loss portions of the risk.

WILL ALTERNATIVE TERRORISM RISK MECHANISMS BE DEVELOPED IN THE ABSENCE OF TRIA?

Another of the key economic questions is whether, in the absence of TRIA, alternative mechanisms will develop to allow for efficient provision of catastrophic terrorism losses.

⁸⁴ Such adaptive behavior has led to the use of game theory in terrorism modeling (Risk Management Solutions, Inc., *Managing Terrorism Risk in 2004*, 2003, p. 12).

⁸⁵ Federal authorities have obtained videotapes of “Qaeda operatives casing Las Vegas casinos,” suspicious footage of the Bank of America and Wachovia buildings in Charlotte, North Carolina, “buildings and transit systems in Atlanta, New Orleans, Dallas, Houston and Austin Texas, as well as what appeared to be Manifest Dam in Austin.” (Madigan, Nick, “Las Vegas Officials Say They Did Not Play Down a Qaeda Threat,” *The New York Times*, August 11, 2004, <http://www.nytimes.com/2004/08/11/national/11vegas.html>, visited 8/16/04; and Lichtblau, Eric, “Man Is Held After Police Seize Tapes of Buildings and a Dam,” *The New York Times*, August 11, 2004, <http://www.nytimes.com/2004/08/11/politics/11terror.html> visited 8/16/04.) Counterterrorism efforts have also recently turned up detailed surveillance of heliports in and around New York City, the New York Stock Exchange, the Citigroup Center in New York, the Prudential Plaza Building in Newark, New Jersey, the World Bank and International Monetary Fund headquarters in Washington DC. (Powell, Bill, “Al-Qaeda in America: The Terror Plot,” *Time*, August 16, 2004.

⁸⁶ Kunreuther, Howard, and Geoffrey Heal, “Interdependent Security,” December 2002, *Journal of Risk and Uncertainty* (forthcoming)

⁸⁷ Tillinghast and Reinsurance Business of Towers Perrin, 2004.

To date, no effective alternative methods of dealing with terrorism risk have been developed. To explore why, we review the major types of alternative possible economic responses that would absorb terrorism risk.

Additional Capital

One criticism of TRIA, discussed in greater detail below, is the proposition that it has crowded out the development of private insurance and reinsurance capital that would otherwise be formed to deal with the financial opportunities associated with terrorism risk. According to this view, were TRIA not in place, new primary insurers and reinsurers would be formed or investors would be willing to make additional investments in existing insurance companies specifically to provide surplus against which terrorism coverage could be written.

We believe that absent TRIA, the increased rates for primary coverage and reinsurance may attract limited new capital—particularly reinsurance—into the market, assuming another catastrophic event does not occur. The increase in reinsurance will likely be measured and may include strict terms that effectively leave the primary insurers—particularly in lines such as workers’ compensation—with virtually unbounded exposure above the reinsurance limits. As noted earlier, the net effects of capital available for terrorism risk are unknown since we believe that many existing carriers will reduce their exposure rather than increase it.

If another catastrophic event were to occur, the uncertainty over losses would be perceived to be even larger than it currently is, and the probability assessment of catastrophic losses would likely increase. In that scenario, we believe that investors would be even less willing to risk surplus, and net capital flows would likely be out of terrorism coverage. Overall, there is certainly not likely to be sufficient capital to replace the government’s capacity available through TRIA.

Catastrophic Terrorism Bonds

Catastrophe bonds are a known mechanism for using financial markets to absorb and spread risk. Hurricane and other natural disaster bonds are currently in limited use. As of early 2002, approximately \$15 billion of property and casualty insurance risks had been securitized worldwide since 1994—this is only 0.05 percent of the roughly \$30 trillion in property risk.⁸⁸ According to research cited by the GAO, from 1997 through 2002, 46 catastrophe bonds were issued and there were nearly \$3 billion in catastrophe bonds outstanding for 2002, representing 2.5 to 3.0 percent of the worldwide catastrophe

⁸⁸ Carayannopoulos, Peter, Paul Kovacs, and Darrell Leadbetter, “Insurance Securitization: Catastrophic event exposure and the role of insurance linked securities in addressing risk,” ICLR Research Paper Series – No. 27, January 2003.

reinsurance market.⁸⁹ According to another source, the catastrophe bond issuances grew 42 percent in 2003 and included \$260 million issued against cancellation of the 2006 World Cup in Germany, including coverage for terrorism risk.⁹⁰

While the specifics may vary, the basic concept in catastrophe bonds is that investors will purchase bonds offering higher interest rates in exchange for putting all or a portion of their principal at risk should a disaster occur. For example, if an investor owns a hurricane bond, if no hurricanes occur, the investor will get back the principal when the bond matures plus the higher interest rate. If a hurricane does occur, the investor will lose all or some of the principal. Investors will purchase the bonds if they perceive that the returns are high enough to offset the small probability of losing their money. By using catastrophe and financial models, investors attempt to objectively evaluate the risks and returns.

Because of the previously discussed unique circumstances of terrorism risk, we do not believe that terrorism bonds are likely to be a significant provider of terrorism coverage in the next few years. The lack of credible mathematical models of terrorism risk will not allow the same type of objective modeling that can occur with natural disaster models. This assessment was repeated throughout our interviews, where industry participants simply do not believe that financial investors are likely to want to deal with terrorism risk at rates that are any more affordable to purchasers than those provided by insurers and reinsurers.

Insurance Pooling

Another widely cited alternative mechanism is insurance pooling. In an insurance pool, insurance companies essentially combine their risk among the pool participants in a way that a loss is shared among the entire pool. This pooling can occur either voluntarily or involuntarily. In many states, private companies must contribute to pools to insure risks that are not able to obtain coverage through normal channels.

There are numerous examples of mandatory and voluntary insurance pools. In the United Kingdom, for instance, an insurance pool is used for terrorism coverage. In the United States, the feasibility of an insurance pooling mechanism for workers' compensation terrorism coverage was recently investigated. After a major effort, it was determined that the concept was simply not workable.⁹¹

⁸⁹ United States General Accounting Office, *Catastrophe Insurance Risks, Status of Efforts to Securitize Natural Catastrophe and Terrorism Risk*, GAO, September 2003.

⁹⁰ Bowers, Barbara, "Old Cat – New Tricks," *Best's Review*, June 2004.

⁹¹ Tillinghast and Reinsurance Business of Towers Perrin, 2004.

While some form of insurance pooling may develop in the absence of TRIA, it is unlikely to be a true substitute for TRIA. Foremost among the problems is the fact that total industry assets and surplus are still very limited relative to the catastrophic tail losses that could occur. Because companies will not be willing to put their entire surplus at risk for the pool, the total available resources are likely to be much less than the total cost of catastrophic tail events.

An additional complication with pool coverage is the concern about the government's role in the pool. A government-run pool that collects funds from pool members and invests in advance of a terrorist event creates a major new government organization that may be difficult to modify or dismantle at a later point in time. By contrast, TRIA does not create a large organization and neither invests nor manages a permanent financial portfolio.

Tax Treatment of Reserves

Another possible long-term development that is cited as an alternative to TRIA is to modify tax laws regarding the accumulation of capital earmarked for terrorism risk. Under current law, companies cannot set aside reserves for terrorism risk in a general manner. Instead, the premiums they collect for terrorism risk net of expenses are recorded as profits, which add to the company's surplus account assuming they retain the earnings. These premiums are taxable as profits during those years of no losses, and the earnings on surplus are also taxable. In years with losses, those losses would have to be paid out of surplus. As some scholars put it, "U.S. accounting rules preclude 'ear-marking' retained profits or other capital funds as 'reserves' against future losses, if the actual events have not yet occurred."⁹² And, "U.S. tax rules require full taxation of profits that are retained as reserves against future losses. This makes retained earnings an expensive way to accumulate funds against possible future losses."⁹³

Directionally, allowing reserves for terrorism losses to accumulate tax-free would provide some incentive for insurance companies to more actively offer terrorism coverage. However, it is unlikely that changes such as these would have more than a modest overall effect on the accumulation of assets to fund terrorism risk, because while pre-funded catastrophe reserves affect the timing of the deduction of losses for tax purposes, they do not add capacity to underwrite terrorism risk, and there is no assurance that insurers would offer terrorism coverage unless required to do so by law

⁹² Jaffee, Dwight, and Thomas Russell, "Markets Under Stress: The Case of Extreme Event Insurance," *Economics for an Imperfect World: Essays in Honor of Joseph E. Stiglitz*, MIT Press, 2003, p. 10.

⁹³ *Ibid.*, p. 10.

Overall Assessment

It is our overall assessment that the absence of TRIA may stimulate some modest development of alternative risk mechanisms. However, we see no evidence that such mechanisms would develop to levels sufficient to replace even a significant fraction of the TRIA backstop. Industry observers concur in this assessment, and note that in the nearly three years since 9/11, we have seen very limited activity on these fronts, despite the high levels of awareness and potential for financial returns.

8. Has TRIA “Crowded Out” Private Sector Responses or Changed the Government’s Role in Covering Terrorism Losses?

TRIA defines federal participation in financial recovery from a major terrorist attack before the attack occurs. Absent an attack, TRIA requires only a very small staff with low administrative costs (\$4 million in 2003).⁹⁴ However, the question of whether private-sector participation is crowded out remains because the government has essentially assumed the role of universal reinsurer for terrorism risk.

As we explained previously, terrorism risk is unique in that it is difficult, if not impossible, to quantify reliably and it incorporates potentially catastrophic losses well beyond the ability of the private insurance market to bear. One need look no further than the insurance industry’s behavior in the wake of 9/11 for proof of this point. After covering what had been a devastating, unforeseen loss, the industry largely withdrew from covering the new terrorism risk because it could not do so without risking insolvency.

TRIA was enacted to force insurers back into the marketplace in return for the federal government’s partnership in bearing some of the terrorism risk. By capping potential losses and providing loss sharing, TRIA puts some structure around an ill-defined catastrophic risk. In doing so, TRIA facilitates private sector participation by making terrorism insurance less of a “bet the company” risk for an insurer.

The most meaningful evidence on the crowding out question for private insurance was obtained through interviews with industry participants. Private insurance companies (even mutual companies) are return-seeking enterprises. As such, they are motivated to offer whatever types of insurance they believe have opportunities to earn an economic return; and they generally argue for less—not more—government intervention. If insurers were confident there was money to be made in insuring against terrorism risk, they would offer such coverage. That insurers did not offer terrorism coverage in the immediate aftermath of 9/11, when the threat of terrorist attacks was fresh in customers’ minds, is telling. Similarly, it would be irrational for insurance companies to support federal participation in the market for terrorism risk bearing if they thought such participation crowded out rather than facilitated their own involvement in that market. Thus the relevant economic question is whether insurance companies indicate interest in expanding their role in terrorism coverage in the absence of TRIA.

In our discussions with over 30 insurers, reinsurers, policyholders, and insurance industry professionals, several themes were consistently echoed by all participants. First, TRIA is not generally perceived to have crowded out the private sector. In fact, the most common

⁹⁴ GAO, 2004.

perspective is that exactly the opposite is true. By providing more definitive loss parameters, TRIA has facilitated the participation of the private sector at current levels. A related theme from our interviews is that, without TRIA, there would be a terrorism insurance capacity crisis. With the TRIA framework removed, private insurers and reinsurers would not generally expand their coverage. Instead, the response is much more likely to be increased restrictions and less availability of coverage. At the simplest level, terrorism risk is not a risk the industry fundamentally believes it can model, price, and sell profitably while limiting its insolvency risks to an acceptable level. In short, TRIA is not perceived to be crowding out an opportunity the private market is able and willing to cover.

Finally, it is widely recognized that the response of the federal government in the wake of an attack even without TRIA is not likely to be complete inaction. In other words, the basic choice is not between the current, defined government involvement via TRIA and an alternative with no financial risk for the government. As perceived by those active in the insurance industry, what TRIA does is define the government's role in advance of a catastrophe, thus allowing all parties to efficiently plan.

In this way, both for insurers and insured companies, TRIA and the coverage decisions associated with TRIA act as an important motivation for contingency planning. It is widely felt that this proactive crisis management planning can save money. "In fact, for every dollar spent on developing crisis management plan ahead of time, \$7 is saved in losses when a disaster comes, according to a Marsh study. Another Marsh study shows that for [sic] every dollar spent preparing for humanitarian assistance as part of a crisis plan will save \$6 in losses."⁹⁵

More specifically, our interviews with over 30 industry participants generated the following observations:

Nature of the Risk

- Given the choice, most insurers strongly would prefer not to cover any terrorism risk. They would gladly trade reduced premium for the elimination of terrorism risk.
- Especially at the catastrophic tail of terrorism risk, they do not believe it is the type of risk that can ever be efficiently and profitably insured by private insurers.

⁹⁵ Myshko, Denise, and Lori Widmer, "Meetings: Risk Managements Higher Profile," *Risk and Insurance*, June 2002.

Impact of TRIA

- TRIA has essentially crowded in the private sector to help finance the lower and middle layer of terrorism coverage.
- By capping insurer losses at high, but largely manageable levels, TRIA allows insurers and reinsurers to participate in the middle and lower layer of terrorism risk without risking financial ruin.

Results, Without TRIA

- Absent TRIA, primary insurers and reinsurers have very little interest in expanding up into the catastrophic insurance layer largely covered by the federal government under TRIA. Even the most aggressive and profit-seeking insurers believe that the risks and uncertainties are simply too large in this layer for even the largest insurers.
- Absent TRIA, a reduction of terrorism coverage is likely.
- Alternative risk spreading mechanisms are not currently viable alternatives to federal participation in terrorism risk bearing, as they suffer the same problems—unquantifiable and potentially catastrophic losses.

9. Insurance Industry Responses To TRIA's Expiration

TRIA is currently scheduled to expire at the end of December 2005. Insurance policy renewal discussions are currently actively underway for policies beginning after January 1, 2005 and terminating after January 1, 2006. For these policies, absent extension of TRIA, TRIA will be in effect for the beginning of the coverage period, but not the latter part of the period. As a result, uncertainty over TRIA is already having a real effect in insurance policy renewal discussions.

One of the most important questions for policymakers is the economic impact of not extending TRIA. The economic effects of not extending TRIA will start with the responses by the insurance companies and reinsurers. In this section, we describe the likely responses by the insurance industry to the expiration of TRIA.

In order to understand how insurance companies may respond to the non-extension of TRIA, consider what catastrophic terrorism risk looks like to an insurer evaluating a company with 500 employees in a downtown office building worth \$100 million. The insurer may currently offer the company a combination of property, business interruption, and workers' compensation insurance. The total premium for such an account may be \$1-2 million. In the case of a catastrophic terrorist event, losses could be as follows:

- Building – up to \$100 million
- Business interruption – could vary, but easily \$10+ million
- Workers' compensation – maximum of 500 deaths multiplied by state specific death benefits (ranging from roughly \$68,000 to \$2 million depending upon state and scenario)⁹⁶ = \$34 million to \$1 billion, or a combination of death and injury, with some disabling injuries costing even more than death claims.
- Other lines – including liability in the event of tort suits.

⁹⁶ The \$68,000 figure is the death benefit a widow of a minimum wage (\$5.15/hour) worker who worked 20 hours a week can expect in Arkansas over 33 years. The \$2 million figure is the death benefit a widow receiving the maximum weekly benefit (\$1,173) can expect in Iowa over 33 years. Sources: Iowa Workforce Development, Division of Workers' Compensation, *2004 Iowa Workers' Compensation Manual*, <http://www.iowaworkforce.org/wc/04ratebook.pdf>, visited 8/5/04; United States Department of Labor, *State Workers' Compensation Laws*, <http://www.dol.gov/esa/regs/statutes/owcp/stwclaw/tables-pdf/table-12.pdf>, visited 8/9/04.

This example illustrates the problem facing insurance companies. While in expectation they may believe (and hope) that there is a low probability of a catastrophic terrorist event, if an event does impact one of their insureds, particularly if the insurance company provides insurance for multiple lines of coverage, the risks aggregate across lines of insurance and the costs very quickly become huge – potentially exceeding \$1 billion in this example.

With TRIA, an insurance company with \$500 million in subject premiums and \$500 million in surplus can evaluate the catastrophic terrorism risk and determine that their maximum exposure in 2005 to a \$1 billion terrorism loss is \$167.5 million.⁹⁷ While this would be a major blow to the financial strength of the example insurance company, it would not wipe the company out. Without TRIA, the insurance company is out of business – its surplus is clearly inadequate to pay \$1 billion in claims.

We again note that TRIA's provisions scale the government's role to the size of the insurance company. Because an insurance company with \$7 billion in subject premiums has a TRIA deductible of \$1.05 billion in 2005, that company would be responsible for the entirety of a \$1 billion loss even with TRIA. It would only be for larger losses that TRIA would provide financial assistance.

INITIAL RESPONSES BY INSURANCE COMPANIES

As illustrated above, if TRIA is not extended, insurance companies and reinsurers will face a highly uncertain—but non-zero—possibility of insolvency if they continue to offer terrorism coverage to large accounts and across multiple lines. With few exceptions, insurers will not be willing to continue to take this increased risk. We expect three actions to occur within the first year of non-extension:

- **Response 1: Outright Terrorism Exclusions**

The ISO has sought—and already received approvals in at least 48 of the 54 U.S. jurisdictions for—terrorism exclusions or limitations should TRIA not be extended. This is nearly identical to the situation post-9/11 and pre-TRIA. Once these exclusions are in place, some insurance companies may simply put them on all policies and not offer any stand-alone terrorism coverage. These exclusions do not affect workers' compensation coverage, nor do they apply to fire following coverage in standard fire policy states.

- **Response 2: Reduced Capacity and Availability**

⁹⁷ To see this, \$500 million premium x 15 percent = \$75 million. Adding 10 percent above retention = 1 billion – 75 million = 925 million x 10 percent = 92.5 million = producing a total of \$167.5 million

While the majority of jurisdictions have approved terrorism exclusions or limitations for use when TRIA expires at the end of December 2005, there are a few key states, with significant property exposures, that will not act on these exclusions or limitations before policyholders and insurers are faced with important business and financial decisions. Where insurers are unable to utilize terrorism exclusions or voluntarily continue to offer terrorism insurance, we expect them to exhibit a much reduced willingness to accept terrorism risk, and to carefully scrutinize the risk that they decide to write.

This reduced willingness will be felt by policyholders in three ways. First, insurers may limit their exposure to larger companies with concentrated employees in high risk areas. Second, insurers may be much less willing to cover multiple types of risk for the same company, because these losses will occur simultaneously with a terrorist event. Third, insurers may limit their aggregate risk within narrower geographic areas and refuse to provide additional coverage once these limits have been reached.

The magnitude of the possible catastrophic losses is such that the collective industry capacity may be very limited for certain types of companies and in certain geographic areas. Companies in these areas—such as concentrated downtown areas of perceived high-risk cities—may see refusals by their current insurers to renew coverage and may have a very difficult time finding a new carrier willing to provide coverage. Even with TRIA, many of these internally imposed exclusions and limits are in place. Absent TRIA, they will become even more restrictive as insurers face larger potential losses from the same terrorism exposures.

- Response 3: Increased Prices for Terrorism Coverage

Even if insurers do offer terrorism coverage, even on a limited basis, they may increase rates—in some cases very substantially. This outcome may occur because insurers will retain the risk and simply seek higher rates to compensate for the fact that they are taking an uncertain chance of suffering a catastrophic loss or because insurers are effectively passing on the higher rates they receive from reinsurance companies, assuming they are able to obtain reinsurance.

The nature of catastrophic terrorism loss may result in pricing by insurance companies that appears inconsistent with normal pricing practices, where insurance is priced by estimating the financial risk using mathematical techniques, plus estimated administrative expenses and profit. With terrorism risk, there are two factors that complicate this analysis. First, insurers face extreme uncertainty as to the underlying terrorism risk itself. Second, the insurance company may well be facing the possibility that catastrophic terrorism losses could result in insolvency.

While TRIA does not alleviate the problem of the uncertainty of the frequency of terrorism events, it does at least allow companies to estimate their losses with a much higher degree of certainty. As an example, with TRIA and the known maximum terrorism loss exposure it presents, an insurance company may be willing to price terrorism coverage at a few percentage points of the base policy, as is currently the situation for most risks.

Using the example earlier, when the insurer's maximum exposure to a \$1 billion loss by its policyholder is \$168 million, it might be willing to offer terrorism coverage for \$100,000 or less. Without TRIA, the maximum loss increases to \$1 billion, roughly a factor of six. In a normal insurance market, increasing the cost of the maximum loss by a factor of six should increase the overall premium by much *less* than a factor of six. This is because much of the risk priced into the policy is to cover the lower loss levels, which in this case would not be covered by TRIA anyway.

However, given that in this case increasing the catastrophe risk by a factor of six also introduces the possibility of a single loss wiping out the insurer, the insurer may set prices much higher. This is economically rational behavior by the insurer, since it must seek a sufficiently high return that incorporates both a return on capital and a return to account for the heightened risk of firm insolvency.

LONGER-TERM RESPONSES BY INSURANCE COMPANIES

Other economic effects may likely occur within one to five years if TRIA sunsets. These additional effects will have the combined impact of further reducing availability of coverage and increasing the price of coverage.

The first of these effects is that some insurance companies may begin to make strategic decisions to not participate in certain lines of business or in certain geographic regions. As an illustration, consider the example of a provider of workers' compensation insurance in New York State. Without TRIA, the carrier will likely take immediate steps that would result in their not writing certain types or concentrations of risks. For example, they may not be willing to take on any business with more than a given number of employees in a single location within the greater New York City area.

Continuing with the example of workers' compensation, inadequate availability would result in an increasing number of companies going into the residual market. In many states (*e.g.*, Massachusetts), the residual market is comprised of an assigned risk pool funded by the existing carriers in the state according to their share of premium revenue. In this case, insurance carriers will still end up with a significant amount of catastrophic terrorism risk via the mandatory pool.

The only way for the insurer to limit completely terrorism risk in this case would be to stop offering workers' compensation at all in a given state or, in the extreme, to exit the workers' compensation line of business altogether. We do not believe that these actions would occur immediately on a widespread basis. However, our interviews confirmed that insurance executives are already actively considering how the absence of TRIA would change their overall company strategy. As many companies have said, they are willing to put some amount of capital at risk when the loss limits are defined as with TRIA. However, without the catastrophic tail coverage provided by TRIA, they would have to take a renewed look at which lines of business were putting the company at risk of insolvency.

In TRIA's absence, the intermediate strategic decision of some insurers may be to restrict capacity in certain geographic areas, making coverage more difficult to obtain for some insureds. As more companies decide, for example, that offering workers' compensation coverage in New York, California, or other states simply carries too much financial exposure, those companies would need to decide which risks in those jurisdictions to write. With fewer choices available to businesses seeking terrorism insurance, prices would rise even further. Because of these strategic choices, even companies that may be in industries and locations that are perceived to be low risk could be affected.

Based on our interviews, it is noteworthy that some of these strategic considerations are being contemplated by very large, well established insurance companies. Particularly for reinsurers, their ability to move among lines of business and regions fairly quickly will likely result in quick and significant responses. Responses will be slower from primary insurers, because the regulatory realities are much more complicated for entry and exit from states and lines of business, as are the establishment of sales and distribution channels. As a consequence, these decisions could be made over time, and may depend heavily on whether or not another catastrophic terrorist event occurs. If another event occurs, we expect many carriers to make these strategic decisions, making not only terrorism coverage, but any coverage (in the case of workers' compensation) more difficult to obtain.

HOW QUICKLY MIGHT THESE RESPONSES OCCUR?

An important economic question is how fast prices would increase and how fast capacity could decrease due to more careful underwriting. Based on our interviews, we believe the response may be relatively quick. As noted, insurance policies in renewal discussions are already being impacted, and insurance companies will not wait until TRIA actually expires to take action.

One reason for this relatively rapid response is the changes that have occurred within the industry since 9/11. The increased awareness of catastrophic terrorist events within the insurance industry has meant that insurance companies and reinsurers have now had three years to analyze their own risk exposures and consider their alternative approaches to managing them. As a result, insurers stated in our discussions that they are generally much more prepared to act quickly today than they were after 9/11. An implication of this is that they will be able to respond relatively quickly should TRIA not be extended, and the near-term effects may be more significant and faster than some have predicted.

10. Policyholder Responses To TRIA's Expiration

The potential insurance industry responses of exclusions, restricted willingness to write coverage, and higher prices would result in difficult choices for companies seeking terrorism coverage. Because the basic risk of a terrorist attack on a business is not likely to be altered by coverage, policyholders will face two difficult choices:

- Choice 1: Go without terrorism coverage

This option is not possible for certain types of coverage, such as workers' compensation and fire in standard fire policy states that do not allow terrorism exclusions. For other lines of insurance, some companies are already choosing to go without coverage even with TRIA, determining that their perceived risk is lower than the additional terrorism coverage cost. Without TRIA, we expect that there will be more companies that will not purchase the coverage. However, there is still a cost—in the form of increased risk of bankruptcy or significant financial loss—associated with going without terrorism coverage.

- Choice 2: Purchase more expensive (and perhaps more limited) terrorism coverage

This option will result in higher costs for terrorism coverage for many businesses. These higher costs will decrease profitability, returns, and property values for owners of business and property.

Our interviews with policyholders confirmed that these were the choices they expected to have to make were TRIA not to be extended. Virtually all policyholders believed that coverage was going to be more difficult to obtain and more expensive without TRIA. Most of the interviewees had not determined exactly what course of action they would take when forced to make a decision. Certain businesses felt that going without coverage was not likely to be a viable option, and thus they anticipated having to pay much higher prices. Other businesses were waiting to see what happened to their own set of alternatives, with many being hopeful that prices would not increase to the point that they simply could not afford coverage.

NEAR-TERM EFFECTS ON BUSINESS DECISIONS

For some companies and municipalities, not obtaining affordable terrorism coverage will likely result in the decision to postpone or cancel various projects. As an illustration, consider the business decisions affected by insurance coverage issues following 9/11:

- The Real Estate Roundtable reported \$15.5 billion worth of construction projects were stalled due to a lack of coverage.⁹⁸
- President George W. Bush stated that 300,000 construction jobs were lost for the same reason.⁹⁹
- The Federation of Jewish Philanthropies, which runs several major non-profit hospitals and social service agencies in New York City, had terrorism insurance dropped from its policy.¹⁰⁰
- The Cleveland Municipal School district was notified that its new policy would exclude terrorism coverage.¹⁰¹
- Professional sports teams and facilities in Seattle, Milwaukee, San Francisco, New York, Chicago, Dallas, Washington DC, and Baltimore had difficulty obtaining terrorism insurance.¹⁰²
- The St. Louis Art Museum's was informed that its insurance would no longer cover terrorism losses.¹⁰³
- Midwestern airports had the premium for their aviation liability coverage, excluding terrorism coverage, jump nearly 300 percent, and have found terrorism insurance very expensive.¹⁰⁴
- The Hyatt Corporation's plans for a new office building in downtown Chicago, estimated to create 2,500 jobs, was derailed for lack of adequate terrorism insurance availability.¹⁰⁵

⁹⁸ Real Estate Roundtable, "Terror Insurance Drag on Real Estate Still Climbing: Over \$15.5 Billion of Projects in 17 State Now Affected," News release, September 19, 2002.

⁹⁹ The White House, Office of the Press Secretary, "President Reiterates Need for Terrorism Insurance Agreement," Press release of speech text, October 3, 2003.

¹⁰⁰ Joint Economic Committee, p. 6.

¹⁰¹ *Ibid.*, p. 7.

¹⁰² *Ibid.*, p. 7.

¹⁰³ *Ibid.*, p. 7.

¹⁰⁴ *Ibid.*, p. 7.

¹⁰⁵ *Ibid.*, p. 7.

- A \$2 billion project in Las Vegas, expected to generate 16,000 jobs, was halted when the developer was unable to secure adequate terrorism insurance.¹⁰⁶
- Gwinnett County, Georgia saw its terrorism coverage limits drop substantially and its premiums increase substantially.¹⁰⁷
- Insurance for the Golden Gate Bridge in San Francisco doubled and dropped terrorism coverage.¹⁰⁸

Because coverage is available today, it is not possible to determine precisely how many construction projects and associated jobs would be threatened by the lack of affordable coverage. However, we believe it could be significant as illustrated by the macroeconomic modeling we discuss in the next section.

LONGER-TERM EFFECTS ON BUSINESS DECISIONS

The decreased access to coverage and higher prices for coverage will also impact longer-term decisions made by companies. For example, just as occurred after 9/11, companies may be less willing (or able) to concentrate their employees in one location, and they may be less willing to locate in concentrated urban areas. If a company cannot obtain affordable insurance coverage with a single, downtown location, it may make strategic decisions to locate in multiple or more suburban locations.

¹⁰⁶ *Ibid.*, p. 9.

¹⁰⁷ *Ibid.*, p. 11.

¹⁰⁸ *Ibid.* p. 11; McLaughlin, “Insurance Rates Spiral up in Wake of Sept. 11,” *The Christian Science Monitor*, 4/28/02, visited 8/23/04.

Figure 27: Table of High-Rise Buildings in the U.S.¹⁰⁹

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

This outcome is likely a rational individual response to the actual or perceived long-term unavailability of insurance. However, taken together, these decisions impose certain economic and even environmental costs. Taking the previous example, if insurance were otherwise affordable, the company might determine that the most economically efficient and profitable thing would be to locate downtown in a single location. Changing this decision will by necessity be somewhat less efficient for the company, resulting in lower returns to investors and lower overall economic growth.

In some cases, these changes will likely have minimal impact. For example, back-office processing tasks may be nearly as efficient regardless of the location. However, other types of activities that are most efficiently done where large number of employees are able to interact directly with one another and with other closely-located firms may have more significant disruption. In addition, locating in more and more suburban locations may contribute to urban sprawl and other environmentally negative effects.

The threat of terrorist attacks on high rise office buildings is not limited to a few big cities. “Terrorists have already shown an affinity for high rise office buildings,” and such building are scattered across the country as indicated in Figure 27 above.¹¹⁰

¹⁰⁹ *Ibid.*, p. 12, citing Skyscrapers.com.

¹¹⁰ Joint Economic Committee, p. 12.

11. Macroeconomic Consequences Of Allowing TRIA To Expire

Not extending TRIA will result in macroeconomic impacts that will decrease economic growth and employment in future years. These effects will occur even in the absence of a terrorist attack due to the higher business operating costs and decreased property values. On top of these impacts, if a terrorist event does occur, there will be more business disruption due to the decreased insurance coverage, which will slow any rebuilding efforts and cause more economic dislocation than would be the case with TRIA. We first describe the macroeconomic modeling we have done to estimate the impact on the economy absent a terrorist attack. We then discuss the additional economic dislocations that might occur in the event of a terrorist attack.

IMPACT ON U.S. ECONOMIC PERFORMANCE OF HIGHER PRICES AND DECREASED AVAILABILITY OF INSURANCE

In this section we use a widely accepted macroeconomic model developed by *Macroeconomic Advisers* to estimate the impact of not extending TRIA on the U.S. economy before, or in absence of, future terrorist attacks. In this model, we have included two primary effects without TRIA: increased operating cost (and resulting decreased property values); and higher labor costs.

Effect 1: Increased Operating Costs and Decreased Property Values

Increased prices for, and decreased availability of, terrorism insurance will increase operating costs and decrease returns for owners of businesses. For businesses that choose not to (or are unable to) purchase terrorism insurance and thus do not experience higher immediate insurance expenses, real returns to owners still decrease due to the increased risk that the uninsured business or property will be destroyed.

We modeled this risk based on an effective doubling of the current average premium for terrorism risk coverage. Direct written premiums for TRIA covered lines excluding workers' compensation insurance were approximately \$159 billion in 2003.¹¹¹ Based on survey data indicating that terrorism premiums averaged 4.4 percent of total premiums on property insurance policies with terrorism coverage in 2003,¹¹² we model non-workers' compensation insurance costs increasing by another 4.4 percent, or \$6.9 billion in 2003 in the absence of TRIA. Because TRIA is not set to expire until the end of 2005 and to account for the fact that direct written premiums for TRIA covered lines excluding workers' compensation have grown at an average rate of roughly seven percent from 1992 to 2003 and, we model non-workers' compensation insurance costs increasing by

¹¹¹ National Association of Insurance Commissioners via National Underwriter Insurance Data Service.

¹¹² Marsh Inc., *Marketwatch: Property Terrorism Insurance 2004*, p. 21.

\$8.2 billion in 2006, the first year after TRIA's currently scheduled expiration, and continuing to increase, but at a progressively slower rate, thereafter.¹¹³

Such a scenario is reasonable for two reasons. First, accounts of terrorism insurance pricing before the passage of TRIA indicated that the premium differential was much greater than 4.4 percent of total premium.¹¹⁴ Second, work by the NCCI suggests that, in some states, the indicated terrorism insurance component of workers' compensation premiums could be twice as high in the absence of TRIA.¹¹⁵ For modeling purposes, we translate the initial \$8.2 billion and subsequent increase in operating costs into two model inputs.

- Reduced Nonresidential Structures Property Values and Resulting Decrease in Household Net Wealth

The present discounted value of foregone after-tax earnings on nonresidential structure assets triggered by an initial \$8.2 billion and subsequent rises in terrorism insurance costs is roughly equivalent to the approximately \$107 billion reduction in the desired stock of such structures triggered by those insurance cost increases. As households are the ultimate recipients of all such earnings, we model this earnings reduction as an equivalent decline in household net worth. This decline in household net worth results in an approximately \$5.4 billion reduction in consumer demand, as the long-run marginal propensity to consume is roughly five cents on the dollar, *i.e.*, households generally spend an additional nickel for each additional dollar of wealth.

¹¹³ We model premium growth as declining by 0.5 percent annually for nine years, from seven percent in 2006 to 2.5 percent, the general inflation rate in the baseline simulation, in 2015.

¹¹⁴ Marsh reports that the median terrorism premium as a percentage of overall property premium was 10.8 percent in the first quarter of 2003, a period when rates were in the midst of being adjusted in response to the passage of TRIA. (Marsh Inc., *Marketwatch: Property Terrorism Insurance 2004*, p. 21). GAO cites an example of entire premium doubling (GAO 2002c, pp. 10-11.) The Risk Management Association cites terrorism rates at 5-25% of TIV. ("Terrorism Insurance Coverage for Commercial Real Estate Becomes Critical Issue for Financial Services Industry," rma, Press release, April 30, 2002, http://www.rmahq.org/News_PR/Apr30_02.html, visited 8/5/04.) A construction trade press source reports entire premiums rising by 25-60 percent. (Atkinson, William, "9/11 attacks hike insurance costs," *Contractormag.com*, <http://www.contractormag.com/articles/newsarticles.cfm?newsid=15>, visited 6/16/2004.)

¹¹⁵ National Council on Compensation Insurance, *Terrorism Rate Filing – Item B – 1383*, 2002.

- **Reduced Future Nonresidential Structures Investment**

Given that the nominal stock of nonresidential structures is roughly \$8.2 trillion at the beginning 2006 in Macroeconomic Advisers' baseline forecast,¹¹⁶ the aforementioned \$8.2 billion rise in terrorism insurance premiums can also be thought of as a ten-basis-point increase in the baseline 8.8 percent user cost of capital for investment in such structures. Because there is a proportional inverse relationship between the user cost of capital and the capital stock in the model we employ, a percentage increases in the user cost of capital trigger equivalent percentage decreases in the desired capital stock. We thus expect to see an eventual reduction of roughly \$107 billion in the nominal stock of nonresidential structures, or \$89 billion in the real stock. Judging that this adjustment occurs through a process that eliminates roughly 20 percent of any difference between the actual and desired capital stock each year, we expect real nonresidential structures investment to be roughly \$18 billion less than it would otherwise be the first year after TRIA's expiration, with such investment shortfalls declining in subsequent years.

Effect 2: Increased Labor Costs

Failure to extend TRIA would also likely lead to higher workers' compensation insurance premiums. Labor costs may also increase as a result of reduced productivity if businesses have to restructure workforce locations and compositions to obtain insurance coverage.

Modeling work by NCCI resulted in estimates of terrorism insurance costs of roughly four percent of current costs. TRIA reduced this risk by half, leaving approximately a two percent increase in premiums. Doubling the terrorism coverage component of workers' compensation premiums from two to four percent on a total premium base of roughly \$39.4 billion adds roughly \$788 million, or about three basis points, to aggregate labor costs, since workers' compensation costs account for roughly one and a half percent of labor costs.¹¹⁷ Such a modest cost increase has small, but real effects on employment.

¹¹⁶ The corresponding real stock of nonresidential structures is roughly \$6.9 trillion.

¹¹⁷ Workers' compensation premium information from National Council on Compensation Insurance, 2002; workers' compensation costs as a percentage of total labor costs from the United States Department of Labor, Bureau of Labor Statistics, employer costs for employee compensation, workers' compensation, <http://data.bls.gov/servlet/SurveyOutputServlet?jrnsessionid=1092080026130267789>, visited 8/9/04.

Impact on US Economic Performance

Implementing the static wealth, investment, and labor cost effects discussed above in the *Macroeconomic Advisers* model yields forecasts of the economy-wide implications of not extending TRIA. As shown in Figure 28, the model predicts Gross Domestic Product (GDP) being roughly \$53 billion lower, household net worth being roughly \$512 billion lower, and 326,000 fewer jobs being created over the next three years absent extension of TRIA.

Figure 28: Table of Macroeconomic Modeling Results

	2006	2007	2008
Real GDP (\$billion)			
Base with TRIA	\$11,659	\$12,101	\$12,533
Without TRIA	<u>\$11,622</u>	<u>\$12,048</u>	<u>\$12,481</u>
Difference	-\$37	-\$53	-\$53
Percent Difference	-0.3%	-0.4%	-0.4%
Household Net Worth (\$billion)			
Base with TRIA	\$49,542	\$52,464	\$55,871
Without TRIA	<u>\$49,299</u>	<u>\$52,056</u>	<u>\$55,359</u>
Difference	-\$243	-\$408	-\$512
Percent Difference	-0.5%	-0.8%	-0.9%
Employment (millions)			
Base with TRIA	135.8	137.9	140.2
Without TRIA	<u>135.6</u>	<u>137.6</u>	<u>139.9</u>
Difference (thousands)	-193	-358	-326
Percent Difference	-0.1%	-0.3%	-0.2%

These estimates are consistent with, but slightly larger than, Dr. Hubbard's prior estimates following 9/11 that inadequate terrorism insurance would reduce GDP by 0.3 percent.

We believe these estimates are reasonable based on the limitations of the ability to model economic impacts. On the one hand, the above forecast may underestimate short-term effects of letting TRIA expire, in that it does not explicitly allow for short-term market disruptions arising from the lack of available coverage, which stakeholders think are a very real possibility. On the other hand, it may overstate longer term effect by assuming no explicit monetary policy response. Nevertheless, the forecast represents our best estimate of the economic impacts of not extending TRIA.

ADDITIONAL ECONOMIC DISLOCATION IF A CATASTROPHIC TERRORIST EVENT DOES HAPPEN WITHOUT TRIA

The aforementioned impacts on the U.S. economy will occur whether or not an additional major terrorist event occurs. When considering whether or not to extend TRIA, policymakers must also contemplate the additional dislocations that will occur in the aftermath of another catastrophic terrorist event. We now describe these impacts and provide relevant data on the potential magnitude for certain of these dislocations.

Impact on the Federal Government's Exposure to Costly Responses

Not extending TRIA *decreases* the federal government's financial exposure to catastrophic terrorism risk through the TRIA program, but is also *increases* the likelihood of additional costly federal government responses following a disaster. On the one hand, TRIA defines the payment responsibilities of insurers, insured companies, and the federal government up front, and forces insured companies to make a conscious choice about how to bear terrorism risk. In the event of a disaster, policyholders who had the option of purchasing relatively affordable TRIA-based terrorism coverage, but refused it, will likely have limited influence on policymakers if they ask for additional government assistance. On the other hand, if no government program with defined benefits is in place, then it is much more difficult to limit the financial exposure of the government for those who were either unable or unwilling to purchase higher-cost terrorism coverage. As the Joint Economic Committee reported before the enactment of TRIA:

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. ... 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.

...[E]stablishing a federal role now would alleviate the potentially devastating effect of another catastrophic terrorist attack ... 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 be 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.¹¹⁸

Not extending TRIA may lead to more terrorism risk being borne by policyholders rather than being insured against. As the insured share of risk declines, pressure for federal relief funds in the aftermath of a catastrophe presumably increases. Figure 29 illustrates the shares of the worst hurricane losses born by property and casualty insurers and the Federal Emergency Management Agency (FEMA) from 1949 to 1999.

Figure 29: Claims Payments Help Finance Economic Recovery – The Worst Hurricanes 1949-1998¹¹⁹

Year	Hurricane	Property and Casualty Insurance Industry Payments (\$ Millions)	FEMA Relief Costs (\$ Millions)	Property and Casualty Insurance Payments as Percent of Total Payments
1992	Andrew	\$15,550	\$1,844	89%
1989	Hugo	\$4,195	\$1,334	76%
1998	George	\$2,995	\$2,403	55%
1995	Opal	\$2,100	\$192	92%
1992	Iniki	\$1,600	\$260	86%
1996	Fran	\$1,600	\$614	72%
1995	Marilyn	\$875	\$498	64%
1979	Frederic	\$753	\$226	77%
1983	Alicia	\$676	under \$99	
1991	Bob	\$620	under \$99	
TOTAL		\$30,925	<\$8,063	80%

On average, insurance payments accounted for 80 percent of post disaster recovery funds for the catastrophes listed in Figure 29. With less insurance and less formal government response mechanisms in place before catastrophes strike, more federal funds may well be spent in the wake of major catastrophes.

¹¹⁸ Joint Economic Committee, United States Congress, *Economic Perspectives on Terrorism Insurance*, May 2002, pp. 12 and 15.

¹¹⁹ Shuford, Harry, "Understanding Shocks and Cycles in the Property and Casualty Insurance Industry," *Business Economics*, Vol. 39, No. 3, July 2004.

Thus the economic implications of the TRIA extension decision, from the perspective of the federal budget, is the choice between TRIA, which imposes uncertain, but defined, financial risks on the federal government and an undefined, but significant, additional expected cost developed in chaos surrounding an event. It is our belief that it is more efficient to define the costs and response ahead of time rather than in the immediate aftermath of another terrorist event.

Impact on Workers' Compensation Market Participants and State Governments

There are two related impacts on workers' compensation insurance resulting from failing to extend TRIA. First, before a catastrophic loss, it is likely that there will be more businesses having to acquire insurance outside the voluntary market, because they will not be able to find carriers willing to provide coverage. Second, even those insureds still in the voluntary market face an increased risk that their insurance company may become insolvent given an attack. Both impacts will increase the residual market exposure to catastrophic loss, as more policies may be originated in this market even before an attack, and more claims may be diverted to this market for payment due to private carrier insolvencies in the event of an attack.

With regards to the impact on the residual (non-voluntary) market, one industry commentator noted recently:

While each state has its own plan, each takes one of two general approaches: a state fund or an assigned risk plan. Five states have monopolistic state funds ... and fourteen more have competitive state funds... The remaining 31 states use an assigned risk plan.

States using either monopolistic or competitive state funds face the same catastrophic risk as do commercial insurers in other states. With those that are state agencies, any deficit experience following a catastrophic loss will be borne by policyholders and taxpayers. While insureds in monopolist fund states will probably not incur the immediate market disruption that may be seen in other states, in the event of a catastrophic loss, there could be statewide fiscal crisis.

Significantly, three states deemed to have the highest exposure to terrorism loss—California, New York, and Texas—have competitive state funds. In the competitive state funds, a pullback by commercial insurers will result in an equal growth in the state fund. Of course, the need to change to the state fund will be disruptive for any insureds that must do so, and if the pullback is substantial the competitive funds may be challenged to respond in a timely manner. It will also further strain the

system in those states, such as California, that already have numerous employers covered by the funds.¹²⁰

In some states the competitive funds are public agencies [e.g., Washington] while in others they operate more like insurers, which involves participation in the state guarantee fund. In those states that are public agencies, the state's taxpayers become the reinsurers of last resort, just as with the monopolistic funds.¹²¹

Each state's residual market for workers compensation insurance, or "state fund," operates differently. For example:

- Ohio has a monopolistic state fund, the Ohio Bureau of Workers' Compensation, which provides workers compensation insurance to all employers except those that are self-insure. If self-insureds become insolvent, their liabilities fall to the Bureau. If the Bureau is threatened with insolvency, it can raise premiums ex-ante and/or impose premium surcharges ex-post. The Ohio Bureau of Workers' Compensation's surplus was roughly \$552 million in 2003.¹²²
- Missouri's residual market is run by a private insurance company which retains all losses until paid losses exceed collected premiums, in which case excess losses are spread among all workers compensation insurers in the state.
- Texas has a competitive state fund, the Texas Mutual Insurance Company. If Texas Mutual were to become insolvent, its claims would be covered by the state's property and casualty insurance guarantee association, which funds the liabilities of insolvent insurers with assessment on surviving insurers, who can write off these assessments as premium liabilities. The Texas Mutual Insurance Company's surplus was roughly \$954 million in 2003.¹²³

¹²⁰ California State Compensation Fund has become the largest workers compensation insurer in the nation with \$7.63 billion in written premium in 2003.

¹²¹ Gibson, Jack P., "TRIA's Sunset: The Dawn of a New Workers Compensation Crisis?" *IRMI Insights*, May 2004.

¹²² <http://www.ohiobwc.com/downloads/blankpdf/AnnualReport.pdf>, visited 9/2/04.

¹²³ <http://www.texasmutual.com/news/2003ar2.shtm/#financial>, visited 9/2/04.

- Maine’s state fund is Maine Employers’ Mutual Insurance Company (MEMIC). MEMIC is very similar to a private, for-profit mutual insurer which also serves as the insurer of last resort for employers in Maine. MEMIC has access to neither a guarantee fund nor state monies, but can assess policyholders. MEMIC’s surplus was roughly \$141 million in 2002.¹²⁴

Regardless of their differences, state funds are similar to each other and private insurers in that they do not have enough assets to cover catastrophic terrorism losses. Catastrophic losses may trigger insolvencies, which would trigger assessments on solvent insurers.¹²⁵ In many cases these assessments would likely be passed on to businesses in the state in the form of higher workers compensation insurance premiums and/or to state taxpayers in the form of offsets against premium taxes, both of which would have adverse statewide economic impacts.

Impact on Businesses Bearing Increased Risk

While disciplined underwriting without TRIA may prevent mass property insurer insolvencies, it also means that businesses will be reluctantly bearing more risk. The biggest impacts of another catastrophic terrorist attack will thus likely be experienced by businesses and property owners themselves, many of whom will have little or no terrorism coverage in the post-TRIA environment.

Business losses could be massive as a result of a catastrophic terrorist attack, causing significant economic disruption. Without insurance funds, the disruption will be much greater and recovery much slower. As an example, property, business interruption, liability, and various other coverages allowed businesses to recover, rebuild and keep operating following 9/11. Without this insurance coverage, there would be many more business failures and a slower recovery than that which occurred.

The impact of 9/11 gives some indication of how massive these losses can be.

- Analysts from the Federal Reserve Bank of New York have estimated the impacts of 9/11 on the New York City as: \$7.8 billion in lost lifetime earnings by the deceased, 49,000-71,000 jobs lost by February 2002, diminishing to 28,000-54,000 by June 2002, for an overall effect of \$3.6 to \$6.4 billion in net earnings

¹²⁴ http://www.memic.com/about_memic/annual_report.asp, visited 9/2/04.

¹²⁵ In many states, annual assessments are capped at one to two percent of net direct premiums written in the state (Sahakian, Suzanne, “The Gauranty Fund System: A Vital Safety Net,” *Insurance Journal*, July 22, 2004).

¹²⁶ Bram, Jason, Orr, James, and Rapaport Carol, “Measuring the Effects of the September 11 Attack on New York City,” *Federal Reserve Bank of New York Economic Policy Review*, November 2002.

losses between September 2001 and June 2002; and total capital losses due to damage, destruction, and cleanup costs for buildings, building contents, and public infrastructure at \$21.6 billion.¹²⁶

- “The vast majority of establishments affected by the September 11 attack were small businesses.” And “ it is estimated that 14,632 businesses were destroyed, damaged, or significantly disrupted by the attack ”¹²⁷
- Commercial real estate firm Grubb & Ellis estimated that 15.5 million square feet of office space (20 percent of the downtown Manhattan office market) was destroyed on 9/11, and another 12 million square feet of office space was damaged.¹²⁸

To put the figures above in context, consider the following. First, there were roughly four million people employed in New York City in 2001. This means that the 50,000 jobs lost from 9/11 by February 2002 (midpoint of FRBNY analysts’ estimates mentioned above) represented roughly 1.25 percent of citywide employment. Second, there were roughly 145,000 jobs lost in New York City between 2000 and 2002 due to changing economic conditions, roughly equal to Bureau of Labor Statistics analysts’ estimate that the equivalent of 143,000 jobs for three months were lost following 9/11.¹²⁹ The short term job loss in New York City from 9/11 was thus roughly equal in magnitude to the entire job loss experienced over two years spanning a major downturn in the citywide employment. Third, the estimated 14,632 businesses significantly impacted by 9/11 is more than the number of business bankruptcies filed in the city over nine years leading up to and including 9/11.¹³⁰ Fourth, business bankruptcies filed in the city jumped from 1,126 in 2000 to 1,620 in 2001, and 1,935 in 2002. Some of these bankruptcies are likely attributable to 9/11, and more would have been, had insurance funds not been available in timely fashion to speed businesses’ recovery in the wake of the terrorist attack.

¹²⁷ New York State Assembly Ways and Means Committee Staff, *New York State Economic Report*, March 2002, p. 48.

¹²⁸ Clapp, Donna, “After September 11, 2001: The Impact of Terrorism on Corporate America,” *Business Facilities*, October 2001.

¹²⁹ Dolfman, Michael L., and Solidelle F. Wasser, “9/11 and the New York City economy: A borough-by-borough analysis,” *Monthly Labor Review*, June 2004.

¹³⁰ There were 13584 business bankruptcies filed in the United States Bankruptcy Courts, Eastern District of New York and Southern District of New York. Source: United States Bankruptcy Courts, Table F-2, Business and Nonbusiness Bankruptcy Cases Commenced, By Chapter of the Bankruptcy Code During the Twelve Month Period Ending December 31, <http://www.uscourts.gov/bnkrpctstats/Bk2002-1990Calendar.pdf>, visited 8/24/04.

Using these data as a collective point of reference, the ultimate number of jobs lost in New York City could easily have been tens of thousands of jobs higher without the business interruption and property insurance that allowed impacted companies to rebuild, relocate, and quickly restart their operations. In addition, thousands of additional businesses might have gone bankrupt or had to significantly curtail their activities had they not had insurance coverage.

Absent undefined government assistance, many more businesses may face bankruptcy following a terrorist event in the absence of TRIA than would be the case with TRIA. Even if government assistance were provided, unless the assistance is timely (as would be the case with insurance coverage), many of these businesses may fail or lose key employees during the chaotic aftermath of a catastrophic terrorist event.

12. Conclusion

We conclude that a continuation of TRIA would enhance U.S. economic performance in the near term. Failing to extend TRIA would result in decreased economic performance without another major attack and greater instability, job loss, and bankruptcy in the economy in the event of an attack. More specifically, we expect that with the expiration of TRIA, but absent another major terrorist attack, GDP may be approximately \$53 billion (0.4 percent) lower, household net worth may be approximately \$512 billion (0.9 percent) lower, and roughly 326,000 (0.2 percent) fewer jobs may be created. Were another catastrophic terrorist attack the size of 9/11 to occur without TRIA in place, tens of thousands more jobs could be lost due to the lack of insurance coverage and thousands of additional bankruptcies could occur.

The economic reality is that terrorism losses are too unpredictable and potentially catastrophic to be fully covered by the private sector alone. Catastrophic terrorism risk is not likely ever to be something that can be adequately modeled in a way that allows it to be absorbed fully by risk-taking insurance and financial markets. The single biggest problem is estimating how frequent various types of losses will be. Terrorism risk does not allow for such modeling to be done in a scientifically reliable manner. As some interviewees noted, modeling the frequency of terrorism risk makes hurricanes look easy.

Losses from one or more extreme events are too large for any individual company or even the entire industry to absorb. As a consequence, this is not a risk that insurers are interested in taking on in any substantial way. It is noteworthy that this feeling is strongly held by profit-seeking insurers who have every economic incentive to expand terrorism coverage if it can be done profitably and prudently.

Rather than crowding out private involvement in terrorism risk, TRIA has facilitated the growth of private insurance and reinsurance markets in the coverage levels below government involvement. Absent TRIA, there would likely be much less participation by insurers rather than more participation.

Over time, it may be possible to develop alternative approaches to TRIA that are structured in a different manner. However, these alternatives are not in place today, and not extending TRIA may well result in negative economic consequences. Extending TRIA for two additional years should allow time for a more complete discussion regarding the longer-term alternatives, though we believe any alternative long-term mechanism may well still have a significant government role.

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