Under Attack: Terrorism Risk Insurance Regulation

Alexia Brunet Marks
University of Colorado Law School

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Scholarly debates over the September 11th attacks focus predominantly on high-profile issues, such as torture, preventive detention, interrogation, privacy, and surveillance. These debates have overshadowed the equally important and far-reaching issue of terrorism risk insurance, which not only involves billions of dollars, but provides powerful incentives to keep us safe. Developing a sound understanding of the market for terrorism risk insurance is essential to guiding the difficult determination of the appropriate balance between private and public responsibility for preventing and (when necessary) compensating for terrorism.

The attacks of September 11th represented one of the costliest insurance events in American history. In the days that followed, insurers sought exclusions and limited coverage, making it difficult for commercial policyholders to purchase even basic terrorism coverage. Congress reacted by passing three successive pieces of legislation to make coverage available and affordable to property and casualty commercial policyholders and to stabilize insurance markets. Yet, current legislation is set to expire in 2014. What is next? Will the federal government withdraw from this market altogether? Should it?

This Article argues for continued—though modified—regulation. The threat of terrorism is real. The ten years since September 11th have been the most active period in terrorism history. Federal regulation has helped to decrease prices and widen coverage, but imperfections in the market for terrorism risk insurance necessitate continued federal assistance. Federal regulators must intervene...
carefully, however, because a regulation that interferes with pricing inevitably affects policyholder incentives to take precautions to avoid or limit loss—the familiar problem of moral hazard.

This Article presents a roadmap for continued regulation that solves the moral hazard dilemma and delineates the proper boundaries of federal regulation. The enormous challenges presented by the risk of terrorism can be addressed only through a coordinated, comprehensive system that melds ex ante preventive and mitigation measures, insurance mechanisms, and ex post compensation mechanisms into a national policy. In its innovative approach, this Article contributes to both the national security literature, which has paid scant attention to terrorism insurance, and to the insurance literature, which has paid insufficient attention to the problem of moral hazard in terrorism risk insurance.

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INTRODUCTION: THE ATTACKS OF SEPTEMBER 11TH

The terrorist attacks of September 11th ushered in an era of heated discussion and scholarship on national security topics, including torture and interrogation, preventive detention, military
commissions, privacy and surveillance, and tradeoffs between human rights and civil liberties. Admittedly less intriguing than these topics, there has been little discussion devoted to other important issues such as terrorism risk insurance. This seldom-discussed type of insurance coverage was typically sold as an unpriced component of commercial property and casualty insurance contracts. Yet since the tragic attacks, terrorism risk insurance has been the focus of three rounds of federal regulation and many hearings on the Hill. Why did this topic raise such a fuss? For one, the attacks of September 11th caused an insurance crisis, which in turn fueled debate on whether the federal government should regulate the market for terrorism risk insurance. Behind the scenes, however, regulation in this market raises profoundly delicate questions: who is ultimately responsible for financial losses related to terrorism—insurers, policyholders, and/or government actors (and implicitly taxpayers)—and how should this responsibility be balanced among the various stakeholders?

Prior to September 11th, the federal government was removed from this market. The tragic events of September 11th changed this. In terms of monetary loss, the terrorist attacks of September 11th resulted in one of the costliest insurance events in American history.\(^1\) Recovering from the extraordinary scale of insured losses from September 11th, reinsurers—companies that provide insurance for insurers “to which primary insurers turn to further diversify risk and which, by some estimates, bore two-thirds of the covered losses of the September 11th attacks”\(^2\)—were the first to reevaluate the financial

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risks of covering terrorism. Reinsurers stated that "they were no longer going to cover terrorism risk [and] that the cost of limited terrorism coverage would be very expensive." This in turn negatively impacted businesses' ability to finance economic activity, presenting a combination of higher insurance costs and higher financing costs associated with inadequate insurance coverage. The large claims that insurers paid in the aftermath created an industry-wide capital shortage and a crisis throughout the insurance industry. The insurance picture looked bleak. The serious shortage of capital against terrorism meant that for insurers to sell their clients equivalent coverage that they had offered pre-September 11th, they had to search for other sources of funding. Many insurers limited the coverage that they had previously sold by charging higher premiums, including cancellation clauses, omitting multi-year terms (offering only single-year policies), increasing deductibles and other policy limits, and, in the extreme case, ceasing coverage for terrorism altogether. Even still, having absorbed two-thirds of the covered losses of September 11th, reinsurers began reducing their exposure to terrorism "by selectively excluding terrorism coverage, reducing limits, increasing pricing, and raising collateral requirements" for insurers. This led to higher insurance prices and sizeable gaps in


4. See Joseph B. Treaster, Ratings of Building Loans Fall on Insurance Worries, N.Y. TIMES, Sept. 28, 2002, at C14 ("A leading credit rating agency said ... that it had downgraded the ratings on $4.5 billion in loans on some of the most prominent office buildings in New York City because the buildings were not adequately insured against terrorism. ... Among those downgraded in New York were loans on Rockefeller Center, the Condé Nast Building, ... the headquarters of Citigroup ... and the Marriott Marquis Hotel in Times Square."). See generally CHAPMAN & LENG, supra note 2, at 12 (noting deteriorating conditions in the commercial housing market). In August 2004, the Citigroup building was cited by the secretary of Homeland Security as a potential terror target. See Press Release, U.S. Dep't of Homeland Sec., Remarks by Sec'y of Homeland Sec. Tom Ridge, Regarding Recent Threat Reports (Aug. 1, 2004), available at http://www.dhs.gov/xnews/releases/press_release_0471.shtm. The Department of Justice would later indict three individuals in connection with an alleged terror plot that formed the basis of the August 2004 warnings. See David Johnston & Eric Lichtblau, 3 Indicted in Suspected Plot on East Coast Finance Sites, N.Y. TIMES, Apr. 13, 2005, at A12.

5. See Brown et al., supra note 1, at 1.

6. CHAPMAN & LENG, supra note 2, at 12.


8. CHAPMAN & LENG, supra note 2, at 12.
coverage for policyholders nationwide. Notably, in geographical locations where the risk of terrorism was high, such as New York, only a few providers offered terrorism coverage and those that did charged exceedingly high prices. Until the passage of the Terrorism Risk Insurance Act of 2002 in November 2002, terrorism exclusions were permitted in forty-five states, the District of Columbia, and Puerto Rico. Certain target types also found difficulty purchasing coverage. Due to their high profile and attractive large crowds, sports stadiums, arenas, and amusement parks were seen as prime targets for terrorist attacks. So much so that “[t]en major league baseball teams were only able to obtain affordable terrorism insurance by taking out a joint policy backed by Lloyd’s of London.”

The variability in pricing and lack of coverage in some markets indicated that the private sector did not have the capacity to insure against large-scale terrorism risk in the United States and that a public-private partnership was not only necessary but desirable to help stabilize commercial markets. The federal government stepped in to regulate the terrorism risk insurance market, passing three pieces of legislation over seven years to address the insurance crisis: the Terrorism Risk Insurance Act of 2002 (“TRIA”), the Terrorism

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9. Hartwig, supra note 1 (“In the wake of the attacks, insurers and reinsurers moved to exclude coverage. The few standalone policies that emerged offered only very limited coverage and were often prohibitively expensive.”); see also E.E. Mazier, Terrorism Cover Up In Air While Congress Battles Over Backstop, NAT’L UNDERWRITER, Nov. 4, 2002, at 10, 10 (“With no federal terrorism backstop officially in place, terrorism coverage continues to be offered by very few companies at very high prices.”); Gavin Souter & Paul Winston, Terrorism Reinsurance Available—for the Right Price, BUS. INS., Sept. 23, 2002, at 21, 21 (“Reinsurers are still unwilling to offer comprehensive coverage for terrorism exposures, but, for a price, several are offering limited capacity for such risks.”); Joseph B. Treaster, Insurers Are Taking Advantage of New York, City Officials Say, N.Y. TIMES, Nov. 14, 2002, at B10 (“[O]ne reason for the high cost of commercial insurance in New York was that special coverage for terrorism—which had been free before the World Trade Center attack and is now sold separately—has become expensive and hard to find.”).

10. See Treaster, supra note 9.


13. See Treaster, supra note 9.

Risk Insurance Extension Act ("TRIEA"), and the Terrorism Risk Insurance Program Reauthorization Act ("TRIPRA"). All three pieces of legislation sought to make coverage available and affordable to property and casualty commercial policyholders and to stabilize insurance markets. The regulations set in place after September 11th balance the financial responsibility for terrorist events between federal and state governments, insurers, and policyholders, thereby setting an example of how this nation strikes a balance between private and public responsibility for terrorism. States regulate insurer rate and filing mechanisms, policyholders are responsible for paying premiums and deductibles, and insurers are responsible for a certain level of loss after which the federal government steps in. The regulatory framework that is in place is far from perfect, however.

This Article tackles delicate questions largely ignored in the national security and insurance literature. With legislation set to expire in 2014, who should bear the cost of terrorist attacks? Will or should the provision of terrorism risk insurance continue to be a public-private partnership, or will the federal government withdraw from this market altogether?

To answer these questions, this Article argues for a continuation of the public-private partnership created post-September 11th, but with substantive changes to the current regulatory framework. To be
sure, the current market for terrorism risk insurance is largely improved from its dismal state immediately following September 11th. TRIA aided insurers by insuring their exposure, which in turn led to lower premiums for policyholders. However, while terrorism risk insurance regulation has lowered prices and improved access, coverage is not widespread and gaps still remain. Meanwhile, the threat of terrorism is real. Should an attack occur, gaps in insurance coverage are likely to become liabilities for taxpayers who would ultimately bear the cost of an attack. Even for policyholders who have been able to purchase insurance at reasonable rates, another problem arises. Once insurance becomes affordable and accessible, a concern for moral hazard emerges—now that policyholders are able to purchase insurance at subsidized rates, there is no incentive to mitigate risk on their own.

With legislation set to expire, a new regulatory model is needed. If the federal government withdraws from the market, prices could increase and gaps in coverage could widen—as was the case immediately following September 11th. To be sure, if policyholders are not purchasing insurance, the moral hazard problem disappears, but other problems may resurface—such as decreased economic development. This is due to the fact that commercial lenders often require policyholders, such as real estate developers, to purchase terrorism risk coverage. In lieu of government withdrawal from the market, I argue for a continued federal role in regulating terrorism risk insurance based on market failure (the insurance market contains imperfections; for instance, it still does not have the capacity to

18. See Hartwig, supra note 1 ("[T]he insurance brokerage firm Marsh, Inc.... report[ed] that the average price of terrorism insurance dropped 25 percent in 2005 as compared with the previous year.").
19. See id.
21. Brown et al., supra note 1, at 6 ("Perhaps the most serious cause for restraint with regard to government action in private markets is the potential for distortion of prices, which under normal circumstances provide important signals to firms and consumers about how to allocate resources in the most efficient manner. In the case of federally backed terrorism risk insurance, one concern is that distorted prices could lead firms to make suboptimal decisions about investment in risk mitigation."); see infra Part II.B.
absorb an event the magnitude of September 11th)23 and national security reasons, particularly in target-rich environments, like lower Manhattan, for example. Yet changes need to be made to address the moral hazard problem that regulation creates.

This Article is the first to present a realistic solution for how to overcome the moral hazard problem and to clearly identify barriers to implementation. This Article argues that financial incentives used in the issuance of terrorism risk insurance and tied to compliance with federal homeland security priorities can reduce our nation’s vulnerability to terrorism and reduce moral hazard.

My solution is for policyholders to contract with their insurers to adopt and implement certain mitigation measures (security and emergency management policies) as a condition of receiving discounts on coverage, a practice referred to as “contracting-on-care.” One frequent example of contracting-on-care is for insurance companies to contract with policyholders offering premium reductions conditional upon adoption of protective measures, a practice called “mitigation-based” pricing.24 This type of pricing already exists in other contexts. There are many examples of mitigation-based pricing in the context of personal automotive insurance and health insurance,25 and I argue for mitigation-based pricing in the terrorism risk insurance context, based on the adoption of protective measures from prescriptions outlined in national risk mitigation programs administered by the U.S. Department of Homeland Security’s (“DHS”) National Infrastructure Protection

23. See Hartwig, supra note 1 (“The commercial [property/casualty] insurance industry continues to lack the capacity and resources to cope with repeated acts of large-scale terrorism. . .”).

24. See John D. Pollner, Managing Catastrophic Disaster Risks Using Alternative Risk Financing and Pooled Insurance Structures 2 (World Bank, Technical Paper No. 495, 2001), available at http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2001/08/04/000094946_01072104010699/Rendered/PDF/multi0page.pdf. In addition to offering lower premiums, insurance companies could offer more favorable insurance policies, such as those that are longer term, have lower deductibles, or have less exclusion.

25. Patricia Grossi et al., An Introduction to Catastrophe Models and Insurance, in CATASTROPE MODELING: A NEW APPROACH TO MANAGING RISK 23, 36 (Patricia Grossi & Howard Kunreuther eds., 2005); see also id. at 35 (discussing the use of discounts and insurance); THE KAISER FAMILY FOUND. & HEALTH RESEARCH & EDUC. TRUST, EMPLOYER HEALTH BENEFITS: 2009 ANNUAL SURVEY 170 (2009), available at http://ehbs.kff.org/pdf/2009/7936.pdf (discussing an annual survey of employer-sponsored health insurance revealing that firms offer an array of “financial incentives to employees who participate” in wellness programs such as smoking cessation, and the incentives include gift cards, travel, merchandise, cash, a smaller share of the premium, and a lower deductible).
Program ("NIPP"). This plan has the added benefit of potentially reducing the federal role over time by increasing the purchase rate for terrorism coverage among businesses, reducing the costs the federal government would otherwise bear in the event of a catastrophic terrorist attack, and reducing our nation’s vulnerability to terrorism.

To be sure, the role of creating incentives for corporations to increase security and proactively plan for consequences of an attack—practicing risk mitigation—has been added to the list of future modifications to the original TRIA, yet surprisingly no specific plan outlines how to accomplish this. Why not? As noted, national security scholars have focused on other, more alluring topics such as detention and targeted killings, searches, profiling, surveillance, torture, balancing security and human rights.


30. Jack M. Balkin, The Constitution in the National Surveillance State, 93 MINN. L. REV. 1, 2 n.12 (2008) ("Since 2003, the Department has handed out some $23 billion in federal grants to local governments for equipment and training to help combat terrorism . . . [including] millions on surveillance cameras, transforming city streets and parks into places under constant observation.").

separation of powers, cyber terrorists, and military detention. Meanwhile, terrorism risk insurance scholars have written on discrete topics such as TRIA as it relates to group life insurance, other threats such as nuclear, chemical, biological and radioactive ("NCBR") attacks, and workers' compensation. Surprisingly, the papers that focus on the future of federal regulation of terrorism risk insurance support a range of future options while omitting the deeper questions regarding who should ultimately pay for terrorist events, who has a comparative advantage in one area or another, or who should solve the problem of moral hazard. Two articles briefly discuss how insurance and financial incentives can actively play a role constitutionally barred by the Fourth, Fifth, and Eighth Amendments); David Luban, *Liberalism, Torture, and the Ticking Bomb*, 91 VA. L. REV. 1425, 1425-26 (2005) (citing a poll which indicated that "[b]y mid-November 2001, thirty-two percent of surveyed Americans favored torturing terror suspects"); John T. Parry, *What is Torture, Are We Doing It, and What If We Are?*, 64 U. PITT. L. REV. 237, 237-38 (2003).


37. See MARSH INC., *TERRORISM INSURANCE MARKET SOLUTIONS FOR NBCR EXPOSURES* 1 (2008); see also Examining a Legislative Solution to Extend and Revise the Terrorism Risk Insurance Act (TRIA): Hearing Before the Subcomm. on Capital Mkts., Ins. and Govt. Sponsored Enters. of the H. Fin. Servs. Comm., 110th Cong. 83 (2007) [hereinafter Jill Dalton Statement], ("For our clients, we strongly support the proposal for a mandatory offering of coverage for NBCR terrorism events.")

38. See PRESIDENT'S WORKING GROUP, supra note 36, at 52.

in mitigating risk, but these articles focus on natural disasters and only briefly mention solutions.  

To advance the argument, the Article proceeds in four parts. Part I describes the market for terrorism risk insurance both before and after September 11th, highlighting the roles of state and federal regulation in each case. Part II assesses federal regulation by presenting a cost/benefit analysis of current federal regulation. It introduces the problem of hidden cost that regulation created. Parts III and IV outline my solution and discuss barriers to implementation.

I. THE MARKET FOR TERRORISM RISK INSURANCE

The attacks of September 11th left the insurance industry in crisis. The federal government stepped in to regulate a market that had been previously only regulated at the state level. Today, the provision of terrorism risk insurance by property and casualty insurers functions as a public-private partnership with regulation at the federal and state levels. This Part discusses regulation at each level with the goal of uncovering the optimal regulatory balance for this market.

Let us begin by assuming that terrorism risk insurance—and insurance in general—is a commodity with positive economic value. Insurance is a form of risk management used to hedge against the risk of a contingent loss. Insurance transfers risk of a loss from one entity to another, in exchange for a premium.  

40. HOWARD KUNREUTHER & RICHARD J. ROTHS, PAYING THE PRICE: THE STATUS AND ROLE OF INSURANCE AGAINST NATURAL DISASTERS IN THE UNITED STATES 3-4 (1998) ("Our position is that the economic costs of natural disasters to the nation are too high and are likely to soar in the future unless some steps are taken to change recent trends. Insurers can address these problems in a constructive manner only through joint efforts with other stakeholders, and through the use of strategies that combine insurance with monetary incentives, fines, tax credits, well-enforced building codes, and land use regulations. For example, one way to reduce future losses is to utilize insurance with well-enforced building codes and land-use regulations to successfully reduce losses.") (emphasis omitted). See generally Howard Kunreuther, Has the Time Come for Comprehensive Natural Disaster Insurance?, in ON RISK AND DISASTER: LESSONS FROM HURRICANE KATRINA 175, 176–77 (Ronald J. Daniels et al. eds., 2006) (proposing the use of long-term mitigation loans to encourage adoption of mitigation measures in the context of insuring against natural disasters).

41. Insurance is defined as "a contract whereby one undertakes to indemnify another or pay a specified amount upon determinable contingencies." TOM BAKER, INSURANCE LAW AND POLICY: CASES, MATERIALS, AND PROBLEMS 129 (2003) (citing W. VA. CODE § 33-1-1 (2010)).
to provide this commodity? Further, does it need to be regulated and if so, by whom?

This Part begins with the market for terrorism risk insurance pre-September 11th, when states regulated commercial property and casualty insurers, thereby regulating the sale of “all risk” coverage and terrorism risk insurance. It continues by outlining the market for terrorism risk insurance post-September 11th when the federal government stepped in as another layer regulating the market. This Part ends with a discussion of other institutional design options, such as why the federal government may not have opted for a purely “public” solution.

A. Pre-September 11th: State Regulation Only

It is fair to say that prior to September 11th, insurers did not calculate the price of terrorism risk—there was no need to. Insurance companies considered the risk so low that they did not identify or price potential losses from terrorist activity separately from the general property and liability coverage provided to businesses. In order to place this in context, one needs to understand where terrorism risk insurance fits within a business insurance package.

When a business owner purchases property insurance, she buys an “all risk” or “all perils” commercial policy. This type of policy protects loss to insured property from all causes other than those expressly excluded. Prior to September 11th, most commercial property and casualty policies excluded losses from acts of war but did not exclude losses from terrorism. This meant that terrorism risk insurance was covered within the policy. General liability policies

42. See Terrorism Risk and Insurance, INS. INFO. INST., http://www.iii.org/media/hottopics/insurance/terrorism (last visited Jan. 3, 2011) (noting that prior to September 11th, insurers provided terrorism coverage essentially for free because the chance of a terrorist event causing property damage was deemed to be remote, but insurers reassessed the risk after September 11th and coverage became scarce); U.S. GOV'T ACCOUNTABILITY OFFICE, supra note 22, at 3; infra note 61 and accompanying text.

43. PRESIDENT'S WORKING GROUP, supra note 36, at 7.

44. Id.

45. Id.

46. Id. at 7–8 (“Policies covered terrorism despite the fact that foreign-sponsored terrorist attacks had occurred or were attempted against U.S. properties prior to September 11, most notably the February 26, 1993 bombing of the World Trade Center ($510 million in insured losses) and the December 1999 attempted bombing of the Los Angeles Airport by Ahmed Ressam (often referred to as the ‘millennium bomber’). Domestic terrorist attacks occurred as well, including the April 19, 1995 bombing of the Alfred P. Murrah Federal Building in Oklahoma City ($125 million in insured losses). From the perspective of insurance companies, September 11 was a realization of risks that
which protect businesses from third-party claims against the insured work in a similar way.\textsuperscript{47}

Terrorism coverage before September 11th was included in the cost of insurance which was almost exclusively regulated at the state level—and had been since the mid-nineteenth century.\textsuperscript{48} The McCarran-Ferguson Act of 1945 provides that regulation of the insurance industry is generally a matter for the states.\textsuperscript{49} Each state has its own insurance code and insurance commissioners. As a result, state level regulation creates fifty different regulatory systems applicable to insurers. In an effort to unify state regulation, the National Association of Insurance Commissioners ("NAIC") prepares and recommends model legislation and administrative rules, serving to unify state regulation. Although the federal government has the authority to regulate insurance if it wanted to, it has stayed out since the 1940s. TRIA is a federal statute and preempts or overrides state regulations that are inconsistent, but the way it was written, it allows state regulation to continue.\textsuperscript{50}

State laws and regulations govern various aspects of the insurance marketplace, including taxation, access and availability, licensing (of insurance companies and intermediaries), the approval of rates and forms, the imposition of financial solvency standards, and, in some cases, the mandatory provision of certain types of coverage.\textsuperscript{51} "The provision of terrorism risk insurance in commercial lines of insurance"\textsuperscript{52}—specifically "[p]rimary and excess commercial property and casualty insurers (including admitted, surplus lines, and captive insurers) who receive premiums for commercial property and casualty policies covering U.S. risks"\textsuperscript{53}—as required by TRIA and

\textsuperscript{47} Id.
\textsuperscript{48} See BAKER, supra note 41, at 137–40.
\textsuperscript{50} See PRESIDENT'S WORKING GROUP, supra note 36, at 3 ("[W]hile state regulations have the potential to significantly interfere with the operation of the insurance markets, it does not appear that such restrictions have had a significant impact in the market for terrorism risk insurance in the post-TRIA environment."). For another discussion along similar lines, see id. at 52.
\textsuperscript{51} See BAKER, supra note 41, at 123.
\textsuperscript{52} PRESIDENT'S WORKING GROUP, supra note 36, at 49.
\textsuperscript{53} Id. at 9.
subsequent legislation, "falls within this general state regulatory structure."^{54}

States also oversee pricing but do not formulate their own rates, nor do they require their licensed insurers to use those rates.^{55} Instead, insurers determine the rates they will charge either by using their own loss data and projections or by using rates developed by national insurance advisory organizations such as the Insurance Services Office, Ltd. ("ISO"), the American Association of Insurance Services ("AAIS"), or the National Council on Compensation Insurance ("NCCI").^{56}

As to rate regulation, there are various approaches, including prior approval (rates must be filed and approved before they can be used), file and use (rates must be filed before they are used), use and file (rates can be used without pre-filing, but must be subsequently filed), flex rating (automatic approval of rate changes within a specified band), or information only (rates are filed for informational purposes only). For property and casualty insurance . . . 5 states have no rate filing requirements (i.e., no rate regulation), 15 states require that rates are filed before they are used (i.e., in general the most restrictive form of rate regulation), with the other states falling somewhere in between.^{57}

Laws in different states stipulate that the rates charged by insurers may not be excessive, inadequate, or unfairly discriminatory.^{58}

States justify intervention on several grounds, with the most prominent being informational problems (moral hazard and adverse selection), externalities, the potential for opportunism, and egalitarian or distributional objectives.^{59} While state regulatory authorities have had the power to adjust insurance premiums since

54. Id. at 49.
55. See id.
56. See id.
57. Id.; see also id. at 49 n.143 ("Five states have no filing requirements and are said to have a deregulated open market for commercial lines (No File); 1 state requires informational rate filings only (Information Only); 2 states provide for the automatic approval of rate changes within a specified band (Flex Rating); 9 states allow rates to the used without pre-filing, but they must be subsequently filed (Use & File); 15 states (plus D.C.) require rates to be filed before they are used (File & Use); and 18 states require rates to be filed and approved before they can be used, and generally allow rates to be 'deemed' approved 30 days after they are filed, if the state has not taken any action during that time (Prior Approval with Express Deemer).").
58. See, e.g., CAL. INS. CODE § 10100.2(a)(1) (West 2005).
59. See BAKER, supra note 41, at 126.
prior to September 11th, they did not address terrorism risk insurance directly. As a result, commercial property/casualty policies, which help cover for risks to property such as fire, theft, weather damage, etc., and general casualties like third-party accidents, did not contain specific terrorism exclusions, and so terrorism coverage was provided without separate charge.\textsuperscript{61}

\textbf{B. The Impact of September 11th and the “Insurance Crisis”}

In terms of monetary loss, the terrorist attacks of September 11th resulted in one of the costliest insurance events in American history.\textsuperscript{62} Recovering from the extraordinary scale of insured losses resulting from September 11th, insurance companies were the first to reevaluate the financial risks of covering terrorism. The large claims that insurers paid in the aftermath created an industry-wide capital shortage and a crisis throughout the insurance industry.\textsuperscript{63} The insurance picture looked bleak. For insurers to sell their clients the same level of coverage they offered pre-September 11th, they had to make some changes. One approach was to limit the coverage they sold by charging higher premiums,\textsuperscript{64} increasing deductibles and other policy limits, and, in the extreme case, some ceased covering terrorism altogether.\textsuperscript{65} Not surprisingly, insurance companies lobbied state governments, their primary regulators, to exclude terrorism from their policies. State regulators generally “must approve policy form changes,” and they “agreed to insurer requests to exclude terrorism risks from their commercial policies, just as they had long

\textsuperscript{60} See OFFICE OF HEALTH POLICY, U.S. DEP’T OF HEALTH & HUMAN SERVS., THE REGULATION OF THE INDIVIDUAL HEALTH INSURANCE MARKET 3 (2008), available at http://aspe.hhs.gov/health/reports/08/regsinsure/report.pdf (discussing one example of state regulation of insurance premiums/rates in the health insurance context). And while states have had the power to regulate insurance markets since the McCarran-Ferguson Act of 1945, states have used this power in varying ways. See id. at 3, 10.

\textsuperscript{61} For example, Berkshire Hathaway, owner of two reinsurance companies, suffered an approximate \$2.28 billion charge for pre-tax insurance losses due to September 11th. Letter from Warren E. Buffett, CEO, Berkshire Hathaway, Inc., to Shareholders of Berkshire Hathaway, Inc. (Nov. 9, 2001), available at http://www.berkshirehathaway.com/qtrly/web1101.html (“[W]e, and the rest of the industry, included coverage for terrorist acts in policies covering other risks, and received no additional premium for doing so.”).

\textsuperscript{62} Dhooge, supra note 1, at 688.

\textsuperscript{63} See PRESIDENT’S WORKING GROUP, supra note 36, at 1–6 (discussing factors limiting the capacity in the terrorism risk insurance market such as the availability of reinsurance).

\textsuperscript{64} Warren W. Heck Statement, supra note 7, at 2.

\textsuperscript{65} See CHAPMAN & LENG, supra note 2, at 29.
excluded war risks." The result was terrorism exclusions in forty-five states, the District of Columbia, Puerto Rico, and Guam. The following sections focus on the impact of the insurance industry crisis on insurers, reinsurers, and policyholders.

1. Property and Casualty Insurers

After September 11th, insurers were compelled to set a separate "retail cost" or premium for terrorism risk insurance. At the same time, it is fair to mention that it is likely that a significant portion of commercial terrorism risk insurance for large commercial risks was (and continues to be) exempt from state price regulation. Furthermore, "[t]hese exemptions are either directly in place depending on the various measures of the size of the policyholder, or are indirectly permitted by allowing access to the surplus lines market"—"a market for insurance for risks that are hard to place and generally not insured by the licensed or admitted market." How large is the surplus market and how frequently do policyholders turn to this market? Many policyholders turned to this market immediately following September 11th. To illustrate, "in 2005 there were $33.3 billion in surplus lines premiums written on a nationwide basis, which accounted for 12.65 percent of total commercial lines insurance premiums," and "[t]his is a slight increase from $33 billion in surplus lines premiums written in 2004, although the overall market share was higher at 14.14 percent." The principle behind exempting large insurers from state price regulation is that large commercial


67. See President's Working Group, supra note 36, at 8–9.

68. Id. at 3. Furthermore, the President's Working Group found that [t]here is considerable variation in how states implement these large policyholder exemptions. For example, in the District of Columbia, a commercial property and casualty policy with an aggregate insurance premium of over $10,000 is exempt, while in Georgia, premium must be in excess of $50,000 ($250,000 for risks with multi-state locations) before exemptions are permitted, and the insured must also have 25 or more full-time employees, assets of over $1.5 million, and annual revenues of $2.5 million or more.

Id. at 50.

69. Id.

70. Id. at 50 n.145.

71. Id. at 48–51.

72. Id. at 51.

73. Id.
buyers have the economic clout and insurance buying expertise to negotiate with insurers in a largely unregulated market.

For those that had to come up with a premium, how did they do it and why did prices soar? The premium for catastrophe insurance is normally broken down into four components: (1) “loss cost” plus (2) “catastrophic loss cost,” (3) expenses, and (4) a profit margin. Prices soared mainly due to insurer inability to calculate (2), the losses related to terrorist events. The following paragraphs describe each component, focusing on the challenge faced in calculating the second component as it relates to terrorism.

In terms of the first component, loss costs are broken down to line (e.g., property or casualty) and can be considered a “wholesale price” of insurance. Typically, catastrophic modeling firms provide information on the wholesale price for the second component of catastrophic losses, providing the insurance industry with “advisory loss costs” or loss cost estimates for catastrophic events. After September 11th, modeling firms had not yet developed a methodology to model terrorism risk as an independent peril, leaving insurers with limited information on the “catastrophic loss cost” associated with terrorism. This was a key factor contributing to soaring insurance prices following September 11th. In the wake of September 11th, three proprietary catastrophe modeling firms with expertise in natural catastrophe modeling developed terrorism risk models for insurers: the ISO subsidiary AIR Worldwide Corporation (“AIR”), Risk Management Solutions (“RMS”), and the ABSG Consulting subsidiary Equecat Inc. (“EQE”). Insurers were now able to turn to terrorism risk models—just as they had turned to hurricane and natural catastrophe models—to aid in the assessment of risk and to help them decide how much reinsurance to purchase and to develop loss costs to aid the rate-making process. Insurers, reinsurers, rating agencies, risk managers, and major insurance brokers license models from these firms while others develop their own models. How do the models derive these catastrophic loss costs?

75. Id.
76. Id.
77. Id.
78. See generally Claire Wilkinson, Catastrophe Modeling: A Vital Tool in the Risk Management Box, INS. INFO. INST., http://www.iii.org/media/research/catmodeling/ (last visited Jan. 3, 2011) (describing how catastrophe models have been used to evaluate risk to insurance companies).
While there are vast differences between estimating terrorism risk and natural disaster risk, both types of risks begin with the same formula. A basic risk equation combines frequency of the event and magnitude of loss. Terrorism risk is uniquely different from natural disasters in that for a terrorism act, adversary behavior needs to be considered. In the end, terrorism risk is a combination of possessing the intent and capability to exploit vulnerability in an asset (threat), identifying a weakness in an asset that can be exploited (vulnerability), and causing physical, mental, and societal losses resulting from an attack (consequence). Add to this the fact that risk can be national-, regional-, community-, and facility-based. Even with these terms defined, calculating risk is computationally challenging inasmuch as several risk scenarios can be imagined, each with varying degrees of probability and consequence. Modeling this complexity requires accurate exposure data at the zip-code level and address level, granulated to the individual building. Selecting scenarios and setting accumulation zones and limits to the capital allocated to cover the threat depends on an understanding of the likelihood of attack mode, city and geographical location, and feasible magnitudes of loss.

Modeling the complexity of terrorism risk requires sophisticated computer models. Computer modeling evolved in the late 1980s as companies became increasingly aware of their exposure to catastrophic risks, and escalated after Hurricane Andrew in 1992. The models simulate the physical characteristics of thousands of potential catastrophes and project their effects on both residential and commercial property using large databases that combine historical disaster information with current demographic, building, scientific, and financial data. Models also incorporate policy and financial data from insurers and reinsurers—such as coverage value, deductibles, and limits—to create a profile that depicts the probability that a certain level of loss from different event scenarios will be

81. See id. (noting the datasets that are used to calculate terrorism risk).
82. Id.
83. Grossi et al., supra note 25, at 23–26 (discussing the emergence of computer models and the waves of natural disasters that created the development of new models to address insurance risks).
84. Wilkinson, supra note 78.
exceeded on an annual basis. In this process, firms “can evaluate the correlation of expected losses from a single event or combination of events affecting” multiple territories.85 Yet models are not perfect.

Insurers will continue to face difficulty in pricing terrorism risk because of intrinsic difficulty in calculating the probability of an attack, the range of possible loss, and the interdependency of assets. The difficulty in estimating the likelihood of attack cannot be overemphasized and models vary in the way they approach this.86 The range of possible losses is also debatable in that different types of terrorist events would result in different estimates of loss, some of which would devastate the entire industry capacity.87 Take as a benchmark insured losses resulting from September 11th, estimated at $30–$90 billion.88 Simulations of conventional attacks can range in losses from $2 billion (one-ton truck bomb) to $66 billion (ten-ton truck bomb), while NCBR attacks are simulated to cost approximately $2 billion (chemical attack) to $1.9 trillion (nuclear attack).89 Given the range of possible losses, it is difficult to model a terrorist attack. To add to this complexity, interdependency among different asset types can grossly inflate losses. Take for example a bridge that not only carries vehicular traffic but also carries fiber-optic cables, and railroad lines. In this case, the bridge, fiber-optic cables and railway lines are “interdependent.” A terrorist attack on one of these assets is essentially an attack on all three, resulting in greater losses than an attack on a bridge that carries vehicular traffic alone.

Any risk calculation must also consider adverse selection, moral hazard, correlated risks, as well as uncertainty associated with the

85. Id.
86. For example, “RMS has proposed an expected annual frequency of between 0.45 and 0.65 macro terrorist attack in the United States each year.” Coburn & Woo, supra note 20, at 77. This is based on the fact that, “[s]ince 2001, between three and seven attempted plots have been reported in the United States annually, all of which have been thwarted.” Id. at 78.
87. Edmund F. Kelly, Chairman, President & CEO of Liberty Mut. Grp., Statement at the Public Hearing on Terrorism Insurance, NAIC Terrorism Insurance Implementation Working Group 4 (Mar. 29, 2006), http://www.naic.org/documents/topics_tria_testimony0603_liberty Mutual.pdf (stating that the insurance industry does not have the capacity to absorb a risk of terrorism). Specifically, he noted “[t]hey look at an aggregate of several $100 billions of capital and match it against a $100+ billion event and say ‘what’s the problem.’ They don’t understand: the capital is there for all our risks, including that of a $70+ billion hurricane season.” Id.
88. See supra note 1.
risk. Adverse selection occurs when the insurer cannot distinguish (or does not discriminate through price) between the expected losses for different categories of risk, while the insured, processing information unknown to the insurer, selects a price/coverage option more favorable to the insured. In this situation, the highest risks will purchase insurance while lesser risks will not, and the insurer will lose money on each policy sold. Terrorism contains adverse selection because those that face the highest risk will be the first to purchase terrorism risk insurance. In the context of terrorism, moral hazard also results in firms cutting back on necessary precautions to avoid/limit loss.

Correlated risk refers to the simultaneous occurrence of many losses from a single event. When risks are uncorrelated, insurers can pool risks and approximate their potential losses. In other words, the insurer no longer faces the individual clients' risk levels, but a relatively stable average of all of its clients' risks. Pooling is nearly impossible with terrorist events because of the high correlation of insured losses within a region. Similar to natural disasters, terrorist attacks produce highly correlated losses because they tend to be geographically focused events. For this reason, insurers are hesitant to offer many policies in an area facing the same hazard.

Finally, uncertainty is the degree to which the pricing of the risk can be modeled with some degree of accuracy. One study of underwriter pricing behavior "found that for the case where both the probability and losses were ambiguous, the premiums were between 1.43 and 1.77 times higher than if underwriters priced a non-ambiguous risk." The limited number of terrorist events from which to specify a probability leads to ambiguity in pricing which in turn presents an actuarial challenge in terrorism risk modeling. Actuaries must also consider the insurer's capacity to absorb large losses and the extent to which the insurer can offset its risk with reinsurance.

[I]f the capacity of the insurance industry is reduced due to large losses, as it was after Hurricane Andrew in 1992 and the Northridge

90. Grossi et al., supra note 25, at 36.
91. Id. (emphasis added).
92. Id. at 37.
93. See id.
94. Id. at 36.
95. CHAPMAN & LENG, supra note 2, at 14.
96. See Kelly, supra note 87, at 4.
earthquake in 1994," "then premiums will rise due to a shortage in supply."97

Once risk is estimated, insurers combine (1) "loss costs," and (2) "catastrophic loss costs," with (3) expenses, and (4) a profit margin, to form the "retail cost" of insurance that the policyholder faces.98 The insurer will then set a premium that yields a profit and avoids an unacceptable level of loss.99 In this equation is a calibration of how much reinsurance to purchase.100

In sum, insurers charged such high insurance prices immediately following September 11th largely because they were unable to accurately price the risk, specifically catastrophic losses, according to traditional actuarial practices. The market for terrorism risk insurance is unique in that the probability of a qualifying event (a terrorist attack) is relatively unpredictable, and the resulting damage could devastate the entire industry.

2. Reinsurers

Insurers were not the only ones to reevaluate the risks of covering terrorism after September 11th. The largely unregulated reinsurance industry that insures the insurance industry was doing the same.101 Having absorbed two-thirds of the covered losses of September 11th, it began reducing its exposure to terrorism "by selectively excluding terrorism coverage, reducing limits, increasing pricing, and raising collateral requirements" for insurers.102 Limited reinsurance capacity is another factor that contributed to soaring prices post-September 11th.

3. Commercial Policyholders

While insurers and reinsurers took steps to insulate themselves, the shrinking supply of terrorism risk insurance translated into higher insurance prices leading to sizeable gaps in coverage.103 The results of a survey of insurance agents and brokers serving businesses located

97. Grossi et al., supra note 25, at 36.
98. Telephone Interview with Eric Nordman, supra note 74.
99. Id.
100. Id.
101. See PRESIDENT'S WORKING GROUP, supra note 36, at 8 (noting that while "commercial property and casualty insurers began excluding terrorism from the coverage provided in new and renewing insurance policies," reinsurers were taking similar measures by "exclud[ing] coverage for terrorism upon the next annual contract renewal, with the majority of exclusions taking effect in January 2002").
102. CHAPMAN & LENC, supra note 2, at 12.
103. See WEBEL, supra note 66, at 2.
throughout New York City show that "[f]or large accounts (more than $1 million in premiums), the average premium increase jumped from 11.4 percent to 73.3 percent" after September 11th.104

Coverage terms also varied. After September 11th, many lenders and investors began to put requirements into lending agreements and contracts requiring that owners and contractors purchase terrorism insurance.105 The availability of only single-year policies was particularly a problem "for multi-year construction projects, many of which required three-year insurance policies for financing."106 Cancellation clauses that allowed the insurer to cancel a policy with thirty-day notice were also common, allowing insurers to cancel policies during periods of heightened terror alert and forcing business owners and operators to plan on a month-to-month basis.107 Customers desiring to purchase terrorism risk insurance faced severe consequences.

Normally, insurance is purchased as a form of risk management to hedge against the risk of a contingent loss. Any entity that demands insurance but is unable to secure it faces the prospect of suffering the entire loss. For some purchasers of terrorism risk insurance, such as commercial real estate owners, the consequences of not securing coverage can stifle investment as commercial lenders typically require commercial real estate borrowers to secure all-risk property insurance, including terrorism risk insurance, covering the property securing the financing.108 After September 11th, ratings agencies lowered debt ratings for projects that were unable to obtain terrorism insurance.109 In turn, many banks would not finance

105. See PRESIDENT'S WORKING GROUP, supra note 36, at 61.
106. See CHAPMAN & LENG, supra note 2, at 12.
107. Id.
108. Grossi et al., supra note 25, at 12 (noting that this practice is similar to lending to properties that are prone to natural disaster risk); see Clark et al., supra note 12 ("[M]any lenders require borrowers to have terrorism insurance . . . ."). For example, in 1996 after the Northridge earthquake, Freddie Mac retained a risk modeling firm to develop underwriting criteria that would identify high risk areas so that buyers of condominiums in these areas seeking a mortgage would then be required to buy earthquake insurance. Grossi et al., supra note 25, at 12.
109. SCHWABISH & CHANG, supra note 104, at 4 (noting that after September 11th, Moody's Investors Service, for example, cut the AAA-ratings on eleven separate issues of commercial mortgage-backed securities valued at $4.5 billion). The trigger for the downgrades was the inability of the owners of the underlying properties to obtain full terrorism insurance coverage. Id.
construction projects or real estate transactions in the absence of terrorism insurance.

Given all the factors that contribute to the pricing equation and the unique attributes which make an act of terrorism different than other insurable events such as hurricanes, one can begin to understand how terrorism risk insurance prices soared after September 11th, how policyholders struggled to address the issue, and the limited role that state regulation played.

C. Post-September 11th: Federal Regulation Takes Center Stage

The federal government intervened in November 2002, to stabilize insurance markets and to increase affordable coverage. The Senate passed TRIA by an overwhelming margin of eighty-six to eleven in November 2002\textsuperscript{110} to ensure access to affordable insurance. TRIA required all property/casualty insurers doing business in the United States to offer terrorism coverage for losses due to international terrorist activity within the United States on roughly the same terms as their non-terrorism coverage and did not prevent stand-alone coverage available outside of TRIA.\textsuperscript{111} Structured like a cost-sharing program, the federal government was responsible for paying a certain percentage of a commercial property and casualty insurer's primary losses during a given year above the applicable insurer deductible, up to a certain maximum.\textsuperscript{112} The hope was that widening coverage would lower premiums and increase risk spreading across more policyholders. Yet just as TRIA was about to expire, the American Academy of Actuaries raised concerns that a failure to pass another round of legislation would lead to higher prices, decreased availability, and lower purchase or “take-up rates” as witnessed post-September 11th.\textsuperscript{113} Not surprisingly, in December 2005 Congress


\textsuperscript{111} See Understanding Terrorism Insurance, INS. INFO. INST., http://www.iii.org/articles/understanding-terrorism-insurance.html (last visited Jan. 3, 2011); see also Hartwig, supra note 1 (“The primary intent of [TRIA] was to ensure the availability and affordability of terrorist risk insurance.”).

\textsuperscript{112} See Hartwig, supra note 1.

passed TRIEA, thereby extending TRIA for two additional years.\textsuperscript{114} Two years later, Congress approved TRIPRA.\textsuperscript{115}

This was certainly not the first federal intervention into private insurance markets. To be sure, insurance companies are generally required to follow all of the same laws and regulations as any other type of business—including zoning and land use, wage and hour laws, tax laws, and securities regulations. On occasion, the federal government has surpassed its minimal involvement in insurance regulation as seen historically with the National Flood Insurance Program ("NFIP"), a program created in the late 1960s to minimize the outlay of federal disaster relief funds following natural disasters;\textsuperscript{116} and more recently, the federal bailout of AIG and increase in the Federal Deposit Insurance Corporation ("FDIC") ceiling from $100,000 to $250,000.\textsuperscript{117} How federal intervention in the market for terrorism risk insurance translated into reduced prices requires a detailed description of the three pieces of legislation.

TRIA was the first piece of legislation to arrive, establishing a framework which required all property and casualty insurers in the United States to make terrorism coverage available to commercial lines of property and casualty insurance. Workers’ compensation was the exception in that it is a compulsory line of insurance for all businesses in all states and covers employees injured or killed on the job and therefore automatically includes coverage for acts of terrorism.\textsuperscript{118} Under the framework of TRIA, terrorism coverage is triggered for commercial policies when the secretary of the treasury declares that a terrorist attack is a "certified act."\textsuperscript{119} The insurer is


\textsuperscript{116} Other federal efforts include the development of the Federal Deposit Insurance Corporation, the Overseas Private Investment Corporation, the Crop Insurance Program, and the Safety Act.

\textsuperscript{117} For a discussion of the federal intervention as it relates to the AIG bailout, see David Goldman, CNNMoney.com’s Bailout Tracker, CNNMONEY.COM, http://money.cnn.com/news/storysupplement/economy/bailouttracker/#AIG (last visited Dec. 20, 2010). For information on new FDIC limits, see FDIC Insurance Coverage Basics, FED. DEPOSIT INS. CORP., http://www.fdic.gov/deposit/deposits/insured/basics.html (last visited Jan. 3, 2011) ("The standard deposit insurance amount is $250,000 per depositor, per insured bank, for each account ownership category.").

\textsuperscript{118} PRESIDENT’S WORKING GROUP, supra note 36, at 10 ("[A]n exception to the general exclusion framework is workers’ compensation insurance, which covers work-related injury or death however caused, even if by an act of war or terrorism.").

\textsuperscript{119} Terrorism and Insurance, INS. INFO. INST. (July 2004), http://www.iii.org/assets/docs/pdf/TRIA.pdf.
required to make coverage available and "[i]f the insured rejects an offer, the insurer may then reinstate a terrorism exclusion."120 Once an event reaches the $100 million trigger in aggregate industry loss, insurer exposure is limited to a deductible plus co-payment.121 Beginning in 2003, the insurer deductible was 7% of an insurer's directly earned premiums for the preceding year, rising to 10% in 2004 and 15% in 2005.122 The federal share of compensation was 90% of insured losses for a given year above the applicable insurer deductible, up to a maximum of $100 billion.123 If losses exceed the $100 billion cap, recoupment of the federal share occurs through policyholder surcharges.124 However, recoupment is not mandatory if uncompensated losses exceed the insurance marketplace aggregate retention amount.125

Under TRIA (and later under TRIEA and then TRIPRA) limits to coverage included war exclusions and restrictions for NCBR events in both personal and commercial insurance policies, reflecting the realization that damage from these events is fundamentally uninsurable. No formal declaration of war by Congress was required for the war-risk exclusion to apply.126 If some NCBR exclusions were permitted by a state, an insurer did not have to make available the excluded coverage.127 In some states a doctrine known as "fire-following" applied such that in the event of a terrorist-caused explosion followed by fire, insurers could be liable to pay out losses attributable to the fire (but not the explosion).128

120. Id.
121. PRESIDENT'S WORKING GROUP, supra note 36, at 34.
122. Id. at 34–35.
123. Id.
124. Id.
125. See id.
126. Id. at 10 ("There are a number of exclusions that have been adopted over the years, one common, long-standing one being the exclusion of losses from acts of war.").
127. Id. at 11.
128. See MARSH INC., THE MARSH REPORT: TERRORISM RISK INSURANCE 8 (2010) [hereinafter THE MARSH REPORT], available at http://www.insurancemarketreport.com/LinkClick.aspx?fileticket=6HBpiRJTGs%3d&tabid=7464. "The Standard Fire Policy (SFP) is mandated by statutes in 29 states to cover direct losses from fire and lightning." Id. The SFP law for property in these twenty-nine states may offer some protection for terrorism related losses; however in fourteen of these states, including Arizona, Connecticut, Idaho, Louisiana, Michigan, Minnesota, Nebraska, New Hampshire, New Jersey, North Dakota, Oklahoma, Pennsylvania, Rhode Island, and Virginia, legislation has been passed to exclude acts of terrorism. Id. at 9.
TRIEA was enacted in 2005 to extend TRIA and it preserved much of TRIA's limitations and language. However, TRIPRA then expanded coverage by changing the definition of an act of terrorism to eliminate the requirement that the individual(s) are acting on behalf of any foreign person or foreign interest. This makes coverage available for losses resulting from domestic terrorism. TRIPRA expanded and preserved other limitations on coverage. Insurer exposure continues to be limited to a deductible plus co-payment, thereby providing a finite limit and some degree of legal certainty that insurer liability is limited by the $100 billion cap. Only now, TRIPRA requires clear and conspicuous notice to policyholders of the existence of the cap. In the event that insured losses exceed the cap, the U.S. Treasury is required to promulgate "regulations for determining ... pro rata share[s] of insured losses under the program." Another change is that the federal government role is decreasing. The trigger amount doubled from 2006; once an event reaches $100 million in aggregate industry loss, insurer exposure is limited to a deductible plus co-payment. The insurer deductible increased to a fixed 20% of an insurer's direct earned premium, and the federal share of compensation dropped to 85% of insured losses that exceed insurer deductibles. Compare that to the 2006 rules, when 90% of the commercial terror loss for primary insurance was covered. Moves to add group life insurance as

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131. PRESIDENT'S WORKING GROUP, supra note 36, at 34.
133. § 4(e)(2)(ii).
134. PRESIDENT'S WORKING GROUP, supra note 36, at 12 (noting that TRIA now has a "Program Trigger" provision).
a covered line and to provide coverage for certain NCBR events were postponed.\footnote{136 See generally Jill Dalton Statement, supra note 37 (noting the areas that were shelved for future discussion).}

The three pieces of legislation indirectly affected the price of terrorism risk insurance because each of the three pieces of legislation provided a federal backstop for insured losses. Even while insurers had to pay the deductible (in increasing amounts since TRIA), TRIA and the successive legislation made reinsurance cost-free. The backstop allowed insurers to set prices knowing that a certain percentage of their risk would be reimbursed. This provides some insight as to how the three pieces influenced pricing.

So far I have discussed federal regulation as a public-private solution. One may ask why the federal government did not opt for pure public provision of terrorism risk insurance. To be sure, if the federal government were to act as the insurer, policyholders would have access to a different set of rights. In a private insurance market, the right to benefits is contractual, based on the insurance contract. The insurer generally does not have a unilateral right to change or terminate coverage before the end of the contract period (except in such rare cases as non-payment of premiums). In contrast, with social insurance programs, the right to benefits in a public program is statutory. The provisions of the program can be changed only if the statute is modified. Participation in private insurance programs is often voluntary, and where the purchase of insurance is mandatory, individuals usually have a choice of insurers. Meanwhile, participation in social insurance programs is generally mandatory, and where participation is voluntary, the cost is heavily enough subsidized to ensure essentially universal participation.\footnote{137 See generally Andrew Balls, Social Insurance Programs Have Large Labor Supply Effects, NAT'L BUREAU OF ECON. RESEARCH, http://www.nber.org/digest/dec02/w9014.html (last visited Jan. 3, 2011) (discussing an NBER Working Paper by Alan Krueger and Bruce Meyer entitled "In Labor Supply Effects of Social Insurance," noting labor supply effects of some prominent social insurance programs such as workers' compensation and unemployment insurance).} Finally, individually purchased private insurance generally must be fully funded. Full funding is a desirable goal for private pension plans as well, but is often not achieved. In the United States, programs that meet these definitions include Social Security, Medicare, the railroad retirement program, and state-sponsored unemployment insurance programs. These are legislated risk management (primarily reflected in government insurance programs). A purely public solution to the
terrorism risk insurance crisis was not presented perhaps in part because of public perception that these programs have had limited success. It may also be the case that the federal government included a “sunset provision” (an expiration date) in TRIA to see how much federal assistance would be necessary before committing to a long-term intervention. To be sure, a concern that federal regulation would trump state regulatory power over the insurance industry may have been a factor.

The days when terrorism risk insurance was included in all-risk commercial policies without cost are long-gone. Today, calculating terrorism risk, and corresponding terrorism risk insurance rates, is a lucrative and growing business. Any discussion of where the market for terrorism risk insurance will turn necessitates a discussion of the costs and benefits of regulation.

II. ASSESSING FEDERAL REGULATION

The attacks of September 11th proved that the market for terrorism risk insurance could not function as it had in the past. All three pieces of legislation were designed to expand coverage and reduce prices. Each required all property and casualty insurers in the United States to make terrorism coverage available to commercial lines of property and casualty insurance and then provided funding in the event of a qualifying attack. As this Part will demonstrate, the benefit of federal regulation has been measured in terms of lower prices and increased availability. At the same time, the costs—and by costs I do not mean the financial burden of the legislation that is in place but rather the hidden costs associated with moral hazard—have also been noted.

A. Benefit: Lower Prices and Increased Availability

Each round of insurance legislation made terrorism insurance more available at affordable prices. In terms of availability, after the attacks of September 11th and before TRIA was enacted, terrorism risk insurance was sold by only a fraction of insurers. Today, a policyholder can purchase terrorism risk coverage through several

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138. Some would argue that federal flood insurance encourages people to build in flood plains; government hurricane insurance pays people to build on the coast in the path of devastating periodic storms; government savings and loan insurance (and especially the quick raise of the per-account insurance level from $10,000 to $100,000) was the main factor in S&L over-lending and the resulting meltdown in the 1980s, which cost taxpayers scores of billions of dollars.
outlets—all supported by the legislative backstop. Coverage may be included in a policyholder's all-risk property insurance policy in which one or many insurers may participate, with each insurer providing a fraction of the coverage up to the full amount of the policy. Policyholders may also obtain terrorism coverage through a stand-alone insurance policy from a separate insurer that may cost more than the all-risk property coverage. Some policyholders may even self-insure for terrorism risk through a captive insurer, which insures the liabilities of its owner.

The purchase rate of terrorism coverage, otherwise known as the "take-up rate," has increased ever since TRIA was enacted. The proportion of U.S. businesses that purchased terrorism coverage rose from 49% in 2004 to 58% in 2005, 59% in 2006, 59% in 2007, 57% in 2008, and finally 61% in 2009. Take-up rates vary by industry and geography, however. The latest available information on take-up rates is found in a survey conducted by insurance broker Marsh Inc.; data from 2008 and 2009 is summarized in Table 1. In 2009, utility, real estate, and health care sectors had the highest take-up rates, with the highest reaching 80%; meanwhile, manufacturing, food and beverage, and energy sectors had the lowest take-up rates, with the lowest ranking 40%.

139. Hartwig, supra note 1.
141. THE MARSH REPORT, supra note 128, at 10. The Marsh Report includes information gathered in a survey by Marsh Inc., an insurance broker. The report explains the methodology of the 2009 data: "The study population does not include placements in the United States for foreign-based multinationals or for small-firm placements made through package policies. The 2009 study was based on a sample of 1,382 firms." Id. at 16.
142. Id. at 11 chart 3.
143. Id.; see also Steven Spinola, President, Real Estate Bd. of N.Y., Testimony Before the NAIC Terrorism Insurance Implementation Working Group (Mar. 29, 2006), http://www.naic.org/documents/topics_tria_testimony0603_rebny.pdf (advocating on behalf of the real estate sector for a permanent solution to terrorism risk insurance).
In terms of geographical location, the "Northeast still has the largest percent of companies purchasing property terrorism insurance,"\textsuperscript{145} although the Midwest is not far behind. In 2009, take-up rates by geographical region were 73\% (Northeast), 60\% (Midwest), 47\% (West), and 58\% (South), with most regions showing increases from the prior year.\textsuperscript{146} Even still, one Government Accountability Office ("GAO") study found that policyholders located "in urban areas that were viewed as being at higher risk of terrorist attack, such as Manhattan, and to a lesser extent in certain areas of other major cities such as Chicago and San Francisco," experienced difficulty obtaining desired levels of coverage at

\textsuperscript{144} THE MARSH REPORT, supra note 128, at 12.
\textsuperscript{145} Id.
\textsuperscript{146} Id. at 12 chart 4.
reasonable prices. This includes “[p]olicyholders who own large high-value properties (e.g., large office buildings and hotels) in areas where many large buildings are clustered, generally in downtown locations or financial districts, or policyholders with properties in proximity to high-risk properties.”

In terms of pricing, since 2003, terrorism risk insurance has declined. There are several reasons that account for the price decreases and increased price stability. First, TRIA does not provide coverage pricing guidelines, and while states can invalidate any rates determined to be “excessive, inadequate, or unfairly discriminatory,” they have been reluctant to do so. Second, after TRIA passed, insurers tried to control prices and manage their “risk by creating and managing accumulation zones [to] diversify their risk,” by “monitoring aggregations against probable maximum loss scenarios,” adding new business to their portfolio, and “maximizing the use of reinsurance where pricing was acceptable.” These efforts served to insulate policyholder premiums. Finally, the TRIA-mandated coverage requirement plus the “backstop” may have also indirectly affected price in that the federal backstop provided insurers with free reinsurance and added capacity. In this way, regulation served to improve pricing by artificially encouraging competition and providing added capacity.

To provide a sense for the range of prices, companies track the cost of terrorism risk insurance in two ways—as a premium rate (premium per million of total insured value (“TIV”)) and “as a

148. Id. at 20.
149. Compare THE MARSH REPORT, supra note 128, at 12 (noting that the “median premium rate for terrorism [risk] insurance was down from $37 per million” terrorism insured values “in 2008 to $25 per million ... in 2009”), with MARSH INC., MARKETWATCH: TERRORISM INSURANCE 2005, at 9 (2005) [hereinafter MARKETWATCH] (noting that the median rate of terrorism risk insurance for 2004 was $57 per million, “essentially unchanged from 2003”).
151. There have been no state invalidations of terrorism risk insurance rates to my knowledge.
152. Coburn & Woo, supra note 20, at 77 (noting that “[t]he seven years since Sept. 11, 2001, have been the most active period in terrorism history,” registering “1,450 macro terrorist attacks (a car bomb or worse) in 43 countries worldwide[,]” killing 25,000 people and injuring over 45,000, and “[i]n the past three years, more than 60 percent of these have been in Iraq and Afghanistan”).
percentage of a company's overall property premium." The first method, premium rate, "allows companies to track what they paid in absolute terms"; the second "shows how terrorism coverage affected a company's overall property insurance budget."

Again, premiums vary geographically and by industry. For large companies in high-risk sectors and geographical areas, the premium remains high, but still lower than immediately following September 11th. The 2009 reported median rate was the highest in the South ($38 per million TIV) followed by the Northeast ($36 per million TIV), the West ($30 per million TIV), and the Midwest ($21 per million TIV). In 2009, terrorism take-up rates were largest in the Northeast (73%) compared to the Midwest (60%), South (58%), and West (47%). "[P]remiums in New York City can be twice as high as prices for similar buildings in other cities considered to be at high-risk of a terrorist attack, and over five times higher than prices in lower-risk cities." According to the latest survey of pricing conducted by Marsh Inc., the median terrorism rate for 2009 was $27 for one million in terrorism insured values (to place this in context, in 2006 it was $47 per million of TIV, up from $43 per million of TIV in 2005). Reported in dollars per million in terrorism insured values, in 2009, median rates were lowest in education ($16) and health care ($19), and highest in construction ($65), hospitality ($55), and utility ($51). "When looking at terrorism insurance pricing as a percentage of overall property premiums, financial institutions and transportation companies paid the largest share, allocating 24% and 17% of their total property [premiums], respectively." The mean

153. See THE MARSH REPORT, supra note 128, at 12; MARKETWATCH, supra note 149, at 9.
154. THE MARSH REPORT, supra note 128, at 15.
155. See id
156. Id. at 14.
157. Id. at 12.
158. AVAILABILITY OF TERRORISM INSURANCE, supra note 147, at 14; see also THE MARSH REPORT, supra note 128, at 15 (noting that "companies in major metropolitan areas" such as New York, Washington, D.C, and Boston "are likely to pay a higher premium for their terrorism coverage," as a result of "terrorism exposures faced by companies in these regions").
160. THE MARSH REPORT, supra note 128, at 13 chart 7; see infra Table 2.
was 7.6% and the median was 5%. In comparison, pre-TRIA premiums for high-risk commercial property in New York City were “as high as 10% of the insured value.”

**Table 2: Terrorism Risk Insurance Pricing—Median Rates by Industry (Rates per Million)**

![Table 2: Terrorism Risk Insurance Pricing—Median Rates by Industry (Rates per Million)](chart)

Surprisingly, there does not appear to be a direct relationship between take-up rate and price, signaling that differences in take-up rates may be due to their differing obligations to purchase terrorism coverage. For some sectors, lower-than-average median prices translate into higher-than-average take-up rates (see, for example, the health care sector); for others, this is not the case (see, for example, the manufacturing sector).

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162. *Id.* (providing the data from which the mean and median were calculated).
163. CHAPMAN & LENG, supra note 2, at 12.
164. THE MARSH REPORT, supra note 128, at 13 chart 7.
165. A comparison of Table 1 and Table 2 reveals the following: In 2009, health care had the second-lowest median price ($19) and the second-highest take-up rate (76%) tied with real estate. Meanwhile, the manufacturing sector had the third-lowest median price ($23) and the third-lowest take-up rate (47%).
Just like the variations in coverage and pricing based upon geography and different sectors of business, the size of the company also plays a role. For example, Marsh Inc. found that “terrorism insurance represents a larger [proportion] of the overall property [insurance] budget for smaller companies.”166 This can be explained in part because terrorism rates “do not ... have as wide a range as property rates and are less subject to credits for higher retentions and loss-control efforts” (i.e., large companies do not benefit from discounts or credits for terrorism-specific loss control measures).167 In 2009, the largest firms (those with TIV in excess of $1 billion) had a property terrorism insurance premium representing 11% of their total property premium; the smallest firms (those with TIV less than $100 million) had a property terrorism insurance premium representing 22% of their total property premium.168

Table 3: Terrorism Pricing as Percentage Property Premium by TIV ($ in Millions)169

<table>
<thead>
<tr>
<th>TIV</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>$&gt;1000 TIV</td>
<td>0.0%</td>
<td>5.0%</td>
</tr>
<tr>
<td>$500-$1000 TIV</td>
<td>5.0%</td>
<td>10.0%</td>
</tr>
<tr>
<td>$100-$500 TIV</td>
<td>10.0%</td>
<td>15.0%</td>
</tr>
<tr>
<td>&lt;$100 TIV</td>
<td>15.0%</td>
<td>20.0%</td>
</tr>
</tbody>
</table>

In sum, the available data on take-up rates and prices shows that in 2009, nearly six out of ten companies decided that property terrorism insurance was a coverage worth purchasing, compared to three out of ten in 2003.170 This provides evidence that the federal

166. THE MARSH REPORT, supra note 128, at 13.
167. Id.
168. Id. at 13 chart 6; see infra Table 3.
169. THE MARSH REPORT, supra note 128, at 13 chart 6.
170. See id. at 10.
legislation met its dual goals of stabilizing prices and increasing coverage.

B. (Hidden) Cost: Moral Hazard

Legislation has helped to lower and stabilize pricing. But artificially low premiums do not come without consequence, and just as there is evidence of lower prices and greater coverage, there is evidence that policyholders have not made efforts to mitigate loss, suggesting the presence of moral hazard.

Policyholders purchase insurance and spend the same (or less) on mitigation measures. After all, there are no financial incentives for mitigating terrorism risk (at least through insurance premiums). As mentioned earlier, terrorism insurance rates do not tend to range as widely as property rates and are less subject to credits for higher retentions and loss control efforts.171 This section begins by defining the familiar term “moral hazard” and then presents the greater, national problem that moral hazard creates. The problem is that when firms spend less on mitigation measures, their behavior—while optimal in their view—is not optimal according to what the federal government envisions as achieving optimal protection and “resilience.”172 This “gap” in levels of protection and resilience introduces a vulnerability that has not been studied to date in either the national security or the terrorism risk insurance literature and which threatens our national safety.

Moral hazard has an interesting history. “In the economics literature and in the law and policy debate that draws upon this literature, ‘moral hazard’ refers to the tendency for insurance . . . to reduce incentives to prevent or minimize the cost of loss.”173 Moral hazard developed in the nineteenth century from insurance law, when fire insurers were concerned that policyholders would “get more money from the insurance company upon the destruction of insured property than through continued operation or sale of the property.”174 One who responded to this type of temptation was deemed a “moral

171. See supra note 167 and accompanying text.
174. Id. at 271.
hazard” and insurers could control for moral hazards by either “refus[ing] to insure ‘moral hazards’” or by “structur[ing a] contract so that it did not create a ‘moral hazard’—that is, so that insurance did not encourage the . . . [temptation] for people to do wrong.”

Today, economists no longer view moral hazard as a character flaw, but instead as “a rational response to subsidized price” and a component of an insurance relationship. Economist Kenneth Arrow described the phenomenon in his 1960s groundbreaking work on the economics of the growing health care sector in the United States as a rational response that involves a cost-benefit analysis. As insurance scholar Tim Baker notes, for the economist, “[a]bsent some countervailing incentive, insurance of any sort, in any amount, will change behavior.” While insurers stated that moral hazards could be eliminated from the contract, economists argued that “insurance inevitably increases the occurrence, magnitude, or cost of that which is insured against.” How does this occur?

Briefly, moral hazard exists when insurance makes an insured individual take fewer precautions. With respect to car insurance, moral hazard applies when an individual who purchases car insurance is prone to take more risks. To counter this, insurance firms offer different deductibles and lower premiums for good grades, clean driving records, etc. With respect to terrorism, now that policyholders are able to purchase insurance at subsidized rates, there will be no incentive to mitigate risk on their own. Artificially low premiums do not come without consequence and any subsidy hides the real cost of protection and resilience, making the cost of insurance comparatively low next to the cost of investments in durable protection, or mitigation measures such as physical investments (fences, guards, metal protectors) and security procedures (background checks). As evidence of this, prior to TRIEA’s reauthorization, a Congressional Budget Office report noted that “commercial policyholders as a group are not taking significant steps to avoid or mitigate terrorism risks associated with their existing properties.” Moreover, “[w]hen insurance and self-protection are substitutes from the perspective of

175. Id. at 240–41.
176. Id. at 268.
177. Id. at 263.
180. Id. at 241.
181. CONG. BUDGET OFFICE, supra note 140, at 20.
the individual, a policy aimed at encouraging the purchase of insurance simultaneously discourages self-protection, and vice versa."¹⁸² Unlike the car insurance example, where one driver's risk creation does not necessarily impact all drivers, when firms fail to take measures to reduce risk-taking behavior they actually increase our nation's overall vulnerability to terrorist attack.

This occurs in the following way. Consider two comparable utility plants in similar geographical locations; when one utility plant fails to take risk mitigation measures compared to the other, the one that has not improved its risk mitigation profile becomes potentially a more attractive target for the terrorist. This "risk diversion" makes one target more attractive compared to another and increases our nation's vulnerability to terrorist attack.¹⁸³ Likewise, given the interconnectedness of some of our nation's critical infrastructure, a local attack could have nationwide effects. Consider, for example, our nation's electrical grid or rail systems—an attack to one portion of the grid or rail complex could hinder the transport of electricity or rail traffic to other areas, thereby impeding commercial activity throughout the country. This is particularly worrisome given that the threat of terrorism is not a transitory phenomenon and that the years since September 11th "have been the most active period in terrorism history," with over thirty attempted attack plots in the United States, ranging from elaborate "plans to blow up five buildings in the financial centers of New York and Washington, to cyanide attacks on the New York subway."¹⁸⁴ Because of moral hazard and the corresponding reduction in expenditures on mitigation and precautions, terrorism insurance has the capacity to increase the occurrence, magnitude, and cost of terrorism.

It may initially seem unimaginable that firms would avoid mitigating losses as part of their business strategy. For a measure to be "cost-effective, the discounted expected benefits over the life of the property must exceed the upfront investment expense."¹⁸⁵ "In theory, all . . . parties concerned with . . . disaster losses should view

¹⁸³. Id. at 1899–1900 ("Security investments that yield positive deterrence externalities among a group of targets may involve negative externalities for other targets.").
¹⁸⁴. Coburn & Woo, supra note 20, at 77.
¹⁸⁵. Paul R. Kleindorfer & Howard Kunreuther, The Complementary Roles of Mitigation and Insurance in Managing Catastrophe Risks, 19 RISK ANALYSIS 727, 727 (1999); see also Brown et al., supra note 1, at 6 ("A profit-maximizing firm will invest in risk mitigation up to the point where the marginal cost of additional mitigation is equal to the marginal cost of insureing against that risk.").
[this] measure favorably." 186 After all, failing to mitigate losses would expose businesses to legal liability such as business interruption losses should an event occur, civil and criminal liability for violation of state and local laws protecting health and safety of employees, and CEO liability to shareholders for failure to protect assets. Yet "few property owners voluntarily adopt mitigation measures," 187 and not all companies are regulated to encourage adoption and use of risk mitigation strategies. 188 Heterogeneity among policyholders, both in their purchase of terrorism insurance and in their degree of regulation, introduces a moral hazard concern.

Moral hazard causes a gap in levels of protection and resilience desired at the firm level and at the federal level. The reasoning is found in public economics theory. According to this theory, the federal government is a public economic actor who seeks to implement policies that "maximize social welfare." Applying this to terrorism risk insurance, the goal is to achieve a certain level of protection and resilience that maximizes social welfare—a level that is essentially available and affordable for all who demand it. Meanwhile, private economic actors (policyholders) aim to maximize profits. They will purchase insurance only if the benefits outweigh the costs of coverage. In the market immediately following September 11th, policyholders were unable to purchase insurance because it was either unavailable or unaffordable. Conceivably, these policyholders would have taken more steps on their own to mitigate terrorism risk. However, when the federal government decided to subsidize the market, 189 policyholders purchased terrorism risk insurance at a lower price than would normally occur in the marketplace. When the price of insurance is lower than mitigation measures, policyholders (who seek to maximize profits) fall prey to moral hazard by purchasing insurance rather than investing in mitigation measures.

Typically, one way to counteract moral hazard is to encourage insurers to "contract-on-care" with policyholders, by modifying insurance premiums to reflect investment in mitigation measures, a practice known as mitigation-based pricing.

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186. Kleindorfer & Kunreuther, supra note 185, at 727.
187. Id.
188. As it relates to homeland security, retail stores and food and beverage companies are not as regulated as utility or chemical plants, for example.
189. The term "subsidy" does not apply to a financial sum, it is a hidden cost. The federal government serves as a (free) reinsurer for insurers and therefore affects price inadvertently. The actual cost is unknown.
III. REINVENTING FEDERAL REGULATION

Given the benefits of terrorism risk insurance legislation, if legislation is to be renewed beyond the 2014 expiration date, what is the best way to tackle the hidden cost of moral hazard? The next two Parts introduce my solution and discuss barriers to implementation. The recommendation is to condition terrorism risk insurance legislation benefits upon adherence to other existing risk mitigation programs such as the NIPP. New legislation would urge insurers to provide incentives through tiered pricing and lower deductibles tied to adoption of mitigation measures. An alternative to modifying legislation would be to strengthen federal legislation on mitigation by mandating industry-wide adoption of mitigation measures, as proposed by the 2007 Chemical Regulations.

A. Direct Regulation

Any continuing federal regulation needs to address moral hazard. To be sure, one way to guarantee that policyholders adopt mitigation measures, without altering current terrorism risk insurance legislation, would be to pass industry-specific legislation requiring regulation of security practices. The Chemical Facility Anti-Terrorism Standards ("CFATS"), the new chemical security regulation adopted in conjunction with the 2007 Homeland Security Appropriations Act,\(^\text{190}\) exemplifies how a combination of data collection needs and uses places the federal government in the capacity to share the risk with the owner-operator outside of the way in which other, statutory risk-sharing mechanisms such as TRIA were designed. While it illustrates the use of legislation to motivate adoption of mitigation investments, it is a narrowly designed, single-industry program.

Yet, while still in its infancy, the CFATS have already improved information sharing which can be used to mitigate state-, regional-, and firm-level risk. The chemical regulations first require screening for companies that are determined to have high levels of security risk due to chemicals of interest.\(^\text{191}\) If a chemical facility is determined to be a high risk, the company is then required to complete a Security


Vulnerability Assessment and develop a Site Security Plan, both accessible only to federal regulatory authorities. At each step, federal authorities gain information that was previously unavailable to them and valuable to efforts to mitigate community- and regional-level risk. Whether or not the investments are co-funded by federal authorities, they nonetheless will qualify for insurance pricing discounts, thereby reducing their expected tort liability.

It may appear as if mandating adoption of mitigation measures at the industry level may be a simpler solution than modifying current terrorism risk insurance regulations; however, the CFATS only apply to one industry. Given that there are currently seventeen critical infrastructure and key resource sectors owned by private and public entities, direct regulation is not a viable solution.

B. Contracting-on-Care

According to moral hazard, insurance inevitably increases the cost of that which is insured against. In the context of terrorism, terrorism risk insurance increases the cost of a terrorist event. How is this possible? Terrorism risk insurance provides a subsidy-in-kind to insurance companies and policyholders by way of lower premiums. Artificially low premiums hide the real cost of protection, making the cost of insurance artificially low relative to the cost of mitigation measures. At an extreme, if forced to choose between the two, insurance may be the least-cost risk management option. In the end, a firm’s failure to mitigate inevitably results in more damages—for instance, losses related to business interruption when a terrorism event occurs because mitigation efforts would have reduced damages.

One may argue that TRIA currently provides incentives to counteract moral hazard. Co-payments and deductibles are two incentives that encourage mitigation. This is because once a terrorist

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192. Id.
196. See id.
loss occurs, commercial insurers are required by TRIA to pay out large deductibles and co-payments before the federal backstop is available. However, because TRIA’s reinsurance coverage is essentially cost-free for insurers regardless of the degree to which insurers require and enforce mitigation measures, it does not provide incentives for insurers and individual policyholders to model, develop, and implement quantifiable risk mitigation measures, as has been done in other insurance markets. By decreasing substantially the loss they must bear from an attack, terrorism risk insurance legislation provides a disincentive to mitigate post-event insurance losses by increasing moral hazard and risk-taking by businesses. A rational choice for insurers would be to mitigate risk in an effort to prevent any losses related to business interruption, to prevent criminal or civil liability as a result of violating state and local laws protecting health and safety of employees, and to prevent any liability to CEOs from failing to protect shareholder assets. However, as previously noted, policyholders are heterogeneous and not all face similar liabilities or regulation. Firms with higher total insured values face smaller terrorism risk insurance costs than firms with lower total insured values. In this scenario, larger firms would be more inclined to reduce spending on mitigation.

There are two prominent options for contracting-on-care. The first is to obligate a certain level of care. Insurance companies could eliminate moral hazard if they could determine what businesses would do to be careful in the absence of insurance and then require policyholders to take the same level of care once they have insurance. One could imagine an underwriter requiring the insured party to implement security and emergency management policies as a condition of coverage. Consistent with the recommendation of the 9/11 Commission, underwriters will be forced to look at recognized studies such as National Fire Protection Association 1600 “Standard...
on Disaster/Emergency Management and Business Continuity Programs" ("NFPA1600") to determine insurability. Studies on contracting-on-care are in their infancy, however.\textsuperscript{200}

Another way to contract-on-care is to provide a financial incentive for the policyholder to invest in some form of durable protection.\textsuperscript{201} Market-based incentives use rewards to encourage decision makers to select one choice over another in the marketplace.\textsuperscript{202} Incentives can be transmitted via private relationships and transactions among building owners and insurers, tenants, employees, potential buyers, and lenders.\textsuperscript{203} Since all of these "parties may ... benefit from a building's reduced vulnerability ... each ... relationship[ ] is a potential transmission mechanism of rewards for risk mitigation activities."\textsuperscript{204} Another strategy is having policyholders bear some of the risk through payment of a deductible (or even to use a lower deductible), which is currently available with TRIA.\textsuperscript{205} A third strategy for insurers to reduce moral hazard is to design contracts to exclude or cover fewer risks that pose a high degree of moral hazard.

A fourth strategy is to link premium reductions with long-term loans.\textsuperscript{206} Insurers currently do this by not writing policies for terrorism risk insurance in certain aggregated areas, or by charging higher prices.\textsuperscript{207}

The focus of this Article is on mitigation-based pricing. Here, the discussion focuses on contracting-on-care by providing a financial incentive. In the terrorism insurance framework, insurers can

\textsuperscript{200} See generally Seth J. Chandler, \textit{Visualizing Moral Hazard}, 1 CONN. INS. L.J. 97 (1995) (using game theory and computerized math modeling to demonstrate that if insurers can control the level of care their policyholders take, they lower the chances that extending insurance will result in increased loss); see also Seth J. Chandler, \textit{The Interaction of the Tort System and Liability Insurance Regulation: Understanding Moral Hazard}, 2 CONN. INS. L.J. 91, 93 (1996) (discussing how the control of moral hazard is essential to have a successful deterrent in the way of tort remedy). See \textit{generally} Ralph A. Winter, \textit{Moral Hazard and Insurance Contracts}, in \textit{CONTRIBUTIONS TO INSURANCE ECONOMICS} 61, 88 (Georges Dionne ed., 1992) (arguing that the economics of moral hazard under conditions in which the insurance company can contract-on-care are not yet developed even in the theoretical literature).

\textsuperscript{201} CHAPMAN \& LENG, supra note 2, at 16.

\textsuperscript{202} \textit{See id.}

\textsuperscript{203} \textit{Id.}

\textsuperscript{204} \textit{Id.}

\textsuperscript{205} \textit{See PRESIDENT'S WORKING GROUP, supra} note 36, at 12.

\textsuperscript{206} Kleindorfer \& Kunreuther, \textit{supra} note 185, at 736.

\textsuperscript{207} Grossi et al., \textit{supra} note 25, at 37 (explaining that insurance markets flourish when companies can issue a large number of policies whose losses are spatially and otherwise independent). See \textit{generally} SCHWABISH \& CHANG, supra note 104 (discussing high prices in New York City post September 11th).
contract-on-care by providing financial incentives—for adoption of mitigation measures. Another incentive would be to encourage investment in mitigation by decreased deductibles. Mitigation-based pricing would serve the added benefit of refining pricing. Premium reductions for undertaking loss prevention methods can be an important first step in encouraging property owners to adopt these measures. Without accurate pricing, policyholders are unable to consider the tradeoffs to making mitigation investments and purchasing insurance, and the benefits of adopting mitigation incentives—such as reducing post-event losses, decreasing risk levels, and increasing our nation's ability to protect critical infrastructure from a terrorist attack—disappear.

If insurers are supposed to contract-on-care, by offering financial incentives for adoption of mitigation measures, then what is meant by "care"? Taking "care" involves investing in mitigation—reducing the potential impact of an attack, natural disaster, or accident by introducing system redundancy and resiliency, reducing asset dependency, or isolating downstream assets.

Several mechanisms have been developed to encourage risk mitigation measures in several areas. Many involve a combination of engineering alternatives, management, and financial mechanisms and include: (1) geographic relocation, construction of new offices, plants, or other commercial buildings that are inherently more secure, and enhancing the structural security of already existing buildings; (2) local government enforcement of building codes, and banks and other financial institutions requiring inspections of buildings as a condition for mortgages; and (3) introducing other forms of security, such as screening or monitoring devices.

Many of the abovementioned strategies can be applied to terrorism. To the extent a business has flexibility in where it chooses to locate its base of operation and no significant economic effects result from a decision not to locate in an urban area, locating a business outside of high-profile, landmark buildings and in high-density areas such as New York City and Washington, D.C. will

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decrease risk exposure to terrorism.\textsuperscript{210} Evidence suggests that businesses adopted such a mitigation strategy after September 11th, insomuch as vacancy rates increased significantly for landmark buildings such as the former Sears Tower in Chicago, the tallest building in the United States, and for buildings in close proximity to these landmark buildings, while vacancy rates increased much less in other areas of the city.\textsuperscript{211}

This Article focuses primarily on mitigating risk with adoption of durable investments, recognizing the other forms of risk mitigation. For mitigation-based pricing to influence firm adoption of precautionary measures, mitigation measures (together with their costs and benefits) need to be identifiable. Mitigation measures range from baseline security measures such as investments to limit access (card type design, visitor policies, and security staffing), to durable investments in closed-circuit television, automated visitor management systems, walk-through magnetometers, small parcel x-rays, increased guard force, and limitations on building visitors. Risk mitigation can also be achieved by target hardening and by constructing more resilient structures or reinforcing existing structures. Examples of such strategies include adding terrorism-related safety improvements to both the interiors and exteriors of buildings, such as: creating better air-filtration systems, designing stairwells that facilitate evacuation, installing barricades around building perimeters, and installing metal detectors for screening visitors or security cameras to monitor activity both inside and outside a building.

C. Contracting on (Already Existing) Standards of Care

Shortly after September 11th and before passage of TRIA, mitigation measures were tied to underwriting acceptability, not to pricing.\textsuperscript{212} In other words, a policy would be more likely to be underwritten if a firm adopted mitigation measures; however,

\begin{thebibliography}{9}
\bibitem{211} Alberto Abadie \& Sofia Dermisi, \textit{Is Terrorism Eroding Agglomeration Economies in Central Business Districts? Lessons from the Office Real Estate Market in Downtown Chicago} 11–12 (Nat'l Bureau of Econ. Research, Working Paper No. 12678, 2006), available at http://www.nber.org/papers/w12678.pdf (citing vacancy rate increases for three Chicago landmark properties and the immediate surrounding area from 6% in 2001 to 17% in 2006, and contrasting that to vacancy rate increases in other areas of Chicago from 7% to 12%).
\bibitem{212} CHAPMAN \& LENG, \textit{supra} note 2, at 28–31.
\end{thebibliography}
mitigation measures had no direct effect on pricing. Future terrorism risk insurance legislation can be written to include a role for insurers to incentivize policyholders to take precautions based on adoption of already existing standards of care. This assumes collaboration between national security programs and priorities and the insurance industry.

This section describes conditioning insurance benefits upon adherence to a national risk mitigation program such as the NIPP. This suggestion introduces a continuing federal role in terrorism risk insurance beyond 2014 based on the unique national security role and responsibility of the federal government to prevent, protect, and respond to terrorist attacks. It also addresses advantages of federal involvement for policyholders and insurers. Before discussing the design of this future program, it is best to describe how mitigation-based pricing works and its applicability in the context of national security.

Today we know more about reducing post-event losses, and the belief that pricing can be used to motivate consumer behavior—specifically, to mitigate risk—is gaining appeal in terrorism risk insurance. Mitigation efforts can be improved by providing policyholders the option of “buying down” to different pricing levels based on mitigation investments, motivating insurers to “buy down” to various lower deductible levels, or setting premiums at different rates to increase mitigation (mitigation-based pricing or “tiered pricing”). Any of these approaches has the potential to reduce the government’s exposure to post-catastrophe payouts and accelerate the development of private terrorism insurance coverage, thereby reducing the need for extensive federal involvement over time. At the same time, identifying mitigation measures and linking them to pricing through discounts assumes the following: (1) that consumers are responsive to pricing discounts, (2) that mitigation measures are identifiable, and (3) that pricing terrorism insurance is possible and that state regulation allows for pricing modifications. Are any of the requirements missing? Each will be described in turn.

First, evidence shows that policyholders respond to tiered pricing. The National Flood Insurance Program (“NFIP”) provides an

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213. Telephone Interview with Jack Seaquist, Manager of Terrorism Models, AIR Worldwide (Mar. 8, 2008).
example of how insurance premium discounts can promote mitigation by rewarding property owners for actions they take to reduce the
effects of natural catastrophes.215 Established by the National Flood
Insurance Act of 1968 and managed by the Federal Emergency
Management Administration ("FEMA"), the NFIP makes protection
against flood losses available to property owners in participating
communities.216 The NFIP Community Rating System ("CRS") is a
voluntary incentive program which encourages communities to
reduce their flood risks by providing discounts on flood insurance for
individuals in communities that establish floodplain management
programs that go beyond the minimum requirements of NFIP.217
Depending on the level of activities that communities undertake in
class one rating provides
four areas—public information, mapping and regulatory activities,
flood damage reduction, and flood preparedness—communities are
categorized into one of ten CRS classes.218 A class one rating provides
the largest flood insurance premium reduction (45%) to communities,
while a community with a class ten rating receives no insurance
premium reduction.219 Risk mitigation officials claim that CRS
insurance discounts are an effective means of encouraging
communities that participate in NFIP to undertake more aggressive
flood mitigation.220

While the CRS program presents evidence that tiered pricing can
be used to motivate policyholders to engage in risk mitigation,
industries could also benefit from a rating system such as that
presented in the CRS program. After all, fire insurance coverage is

215. FED. EMERGENCY MGMT. AGENCY, NATIONAL FLOOD INSURANCE PROGRAM
COMMUNITY RATING SYSTEM: A LOCAL OFFICIAL’S GUIDE TO SAVING LIVES,
PREVENTING PROPERTY DAMAGE, REDUCING THE COST OF FLOOD INSURANCE (2006),
217. FED. EMERGENCY MGMT. AGENCY, COMMUNITY RATING SYSTEM 1 (2008)
[hereinafter COMMUNITY RATING SYSTEM], available at http://www.fema.gov/pdf/nfip/
manual200910/19crs.pdf.
218. Id.
219. Id.; FED. EMERGENCY MGMT. AGENCY, UNIT 9: FLOOD INSURANCE AND
_unit_9.pdf.
220. COMMUNITY RATING SYSTEM, supra note 217, at 4, 9 (noting that Palm Beach
and Napa counties were able to achieve 10–20% reductions in their flood insurance
premiums through their CRS rating). But see Robert Rhee, Terrorism Insurance: Subsidy
papers.cfm?abstract_id=1079563 (noting that government-subsidized flood insurance
motivates people to continue to take risks such as continued habitation of high-risk areas).
already linked to an ISO fire-rating system for fire departments.\textsuperscript{221} This suggests that discounts could be provided at the community level by meeting certain mitigation requirements. At the same time, it is important to emphasize that terrorism risk is different from flood or hurricane risk. Some may claim that insurance is not an effective mechanism to encourage private mitigation of terrorism risk because the cost of increasing security is disproportionate to any incentives that insurers can offer. This may be the case. While there is evidence that consumers are responsive to price discounts and that they are using mitigation measures to leverage discounts in pricing where mitigation-based pricing is available,\textsuperscript{222} in some cases, however, the cost may very well outweigh the incentives. Without dramatic price discounts, consumers that would be responsive to price discounts may not be responsive to terrorism risk insurance. One potential example is for increasing site security. It may be possible to set a price discount on increases in fencing, but it may not be possible to set a price discount on random patrols or after-hour security measures.

Second, it is clear that knowing that consumers respond to pricing is not enough to persuade insurers to lower prices—insurers have to be able to identify and value terrorism-specific mitigation measures. There is evidence that current terrorism insurance premiums are already tiered to some extent, but this practice is rare.\textsuperscript{223} Some mitigation measures have been identified and researched by national labs which can be used by insurers to value mitigation measures. For instance, policyholders can choose to adopt terrorism risk mitigation strategies such as placing concrete barriers in front of trophy targets to discourage truck bombs and in some cases, the insurance industry takes this information into account when calculating loss costs for an area and for an individual account at the time the company negotiates its insurance premium.\textsuperscript{224} When AIR Worldwide calculates loss costs, for example, "there is a presumption of security in an area," and this presumption is based on the average risk "in territory based at the zip code level."\textsuperscript{225} The insurance industry rates communities according to aggregation of terrorism risk (zones 1–4), with zone 1 containing the highest risk (New York City,

\textsuperscript{221} See Alexia Brunet, Larry DeBoer & Kevin T. McNamara, Community Choice Between Volunteer and Professional Fire Departments, NONPROFIT & VOLUNTARY SECTOR Q., Mar. 2001, at 26, 30.
\textsuperscript{222} Telephone Interview with Jack Seaquist, supra note 213.
\textsuperscript{223} Id.
\textsuperscript{224} Id.
\textsuperscript{225} Id.
Washington D.C., and Chicago, for example). Costs are based on models and engineering studies performed on specific buildings or a group of buildings and how an attack on one building affects damage on an adjacent building. Firms use these reports to lower their insurance premiums. In the end, pricing will differ by type of structure, by surroundings, by industry, and by state due to regulatory differences.

Third, insurers must be able to set a price on mitigation measures, and state regulations need to facilitate this price setting. As discussed earlier, pricing is a function of geography, site-specific factors, industry standards, and state regulations. The mitigation measures that have been studied (placing concrete barriers in front of trophy targets) can be priced, as noted previously. Others, such as increasing the security presence at a site, are not as easy to value. For this reason, building owners and operators cannot fully rely on insurance markets to reduce terrorism risk. Terrorism is unique in that “terrorists can [alter] their behavior to defeat mitigation efforts in ways natural disasters cannot ([a] hurricane will not change course to avoid an area with homes built to code[]),” and “places prone to loss” may change at a moment’s notice. The nature of a terrorist threat makes it hard to provide strong mitigation incentives in locations other than urban centers (where take-up rates are the highest). For example, in rural areas the terrorist threat may “be perceived as low, meaning that the insurance system [may] not provide strong economic incentives for expensive investments in mitigation.” These factors make it difficult for the insurance system to encourage mitigation to the same extent it can for natural disasters, for instance. However, it is possible that “[i]n the long term [our

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226. Id.
227. Id.
228. Id.
230. Studies noting the economic impact of a bomb blast have been performed and the damage-reducing effects of concrete barriers have been measured; however, there are no studies to date calculating the damage-reducing effect of a security presence (scheduled patrols, random patrols, and after-hour security are some examples).
232. Id.
understanding of which mitigation efforts are effective will allow for more refined underwriting and pricing.”

If mitigation measures are to be linked to pricing discounts, there are distinct advantages to federal involvement. To be sure, the federal government can justify continued regulation based on responsibility to all taxpayers. After all, TRIA was a piece of “emergency legislation,” passed in reaction to the events of September 11th to help our nation respond and recover to acts of terrorism.

Considering TRIA as part of the national preparedness program or antiterrorism policy, the costs should be borne by taxpayers just as other national security expenses are borne by taxpayers. Similarly, scholars and commentators have argued that, to some degree, victims of terrorism are mostly surrogate targets for attacks mainly aimed at government, and the government is in a unique position to influence the likelihood of attack based upon foreign policy.

At the same time, conditioning terrorism risk legislation upon the adoption of mitigation measures that are directly tied to national plans and priorities (such as the NIPP) has multiple advantages—for the federal government, insurers, and policyholders. For the federal government, the primary (national security) benefit is that mitigation measures become more widespread, leading to decreased terrorism risk. Policyholders use pricing discounts to not only purchase insurance but also to invest in mitigation measures. Perhaps, as mitigation-based pricing becomes more widespread, terrorism risk will become more insurable, ultimately obviating the role of federal regulation. The benefit for insurers is that they use mitigation-based pricing to lure policyholders who currently do not own coverage to purchase it. In this way, tiered pricing may increase take-up rates (insurers can expand their scope of coverage for a pre-specified probability of insolvency) and risk spreading, thereby increasing market viability. Policyholders, meanwhile, benefit by using tiered pricing to pressure their insurers for discounts, thereby stimulating price competition. Moreover, other markets tied to terrorism risk

233. Id.
234. See generally Marks, supra note 79 (noting similarity with grant regulation passed to fund state and local programs to prevent, prepare, respond, and recover from acts of terrorism).
insurance—like the market for catastrophic modeling—will thrive as modelers are prompted to refine their techniques in order to provide mitigation-based pricing products for their insurer clients (or advisory loss costs that include mitigation measures).

The remainder of this Article describes a solution for introducing and furthering the use of mitigation-based pricing in the area of terrorism risk insurance. The next section addresses how the federal government can aid in identifying mitigation measures by using programs that are already in place, and the role that informational advantages play.

1. Using the National Infrastructure Protection Plan

The ability to contract on already existing standards of care is critical to my solution. One key advantage to linking terrorism risk insurance legislation with an existing, national program spanning several industry sectors is to be able to take advantage of synergies among programs. Such linkages would aid in information sharing and create public-private cooperation. In addition, linkages would support the federal programs themselves as the owners/operators of our nation's critical infrastructure adopt mitigation measures, thereby bolstering national resiliency and preparedness goals. Already noted, multiple public sector incentives such as well-enforced building codes and design standards, hazard mitigation planning, and hazard control structures (levees) encourage investments in mitigation. Levees "help protect existing at-risk areas," and "strong building codes and design standards" can protect structures from a catastrophe. This section introduces linking terrorism risk insurance with the NIPP, developed by DHS in 2005 to protect our nation's critical infrastructure and key resources ("CI/KR"). in an effort to strengthen the insurance industry, reduce federal government involvement in regulating the terrorism insurance industry over time, and improve national preparedness.

The NIPP was developed in response to September 11th, after realization that protection of critical assets requires: (1) knowledge of

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238. The Homeland Security Act of 2002 established the Information Analysis and Infrastructure Protection ("IAIP") Directorate to undertake a major outreach effort to engage all the stakeholders necessary to make the National Critical Infrastructure Protection program a success. 6 U.S.C. § 121 (2006). Currently, the Office of Infrastructure Protection operates under the National Programs and Protection Directorate. See NIPP, supra note 172, at 33.
terrorist tactics and targets, and (2) a comprehensive understanding of critical asset vulnerabilities and the protective measures that can effectively eliminate or mitigate those vulnerabilities.\textsuperscript{239} DHS quickly realized that the difficulty with the second component (a comprehensive understanding) was that nearly 85\% of the nation's critical infrastructure was privately held—and therefore had private motivations for adopting mitigation measures.\textsuperscript{240} DHS knew that ultimately, any program would require public-private collaboration and information sharing. In response, the Bush administration issued Homeland Security Presidential Directive 7: Critical Infrastructure Identification, Prioritization, and Protection ("HSPD7") on December 17, 2003, establishing "a national policy for federal departments and agencies to identify and prioritize United States critical infrastructure and key resources and to protect them from terrorist attack."\textsuperscript{241}

The NIPP defines the nation's "critical infrastructure" as those "systems and assets, whether physical or virtual, so vital to the United States that the incapacitation or destruction of such systems and assets would have a debilitating impact on security, national economic security, public health or safety, or any combination of those matters,"\textsuperscript{242} and the term "key resources" as "publicly or privately controlled resources essential to the minimal operations of the economy or government."\textsuperscript{243} The NIPP establishes government and private sector councils to identify their most critical assets, to assess the risks they face, and to identify protective measures in sector-specific plans that comply with the NIPP.\textsuperscript{244} While implementation of the NIPP is still in its infancy, the NIPP provides mitigation objectives for the seventeen CI/KR sectors listed in Table 4, which can be tied to insurance deductibles and premiums.

According to the NIPP, ensuring the resiliency and protection of our nation's critical assets includes "actions to mitigate the overall

\textsuperscript{239} NIPP, \textit{supra} note 172, at 33.
\textsuperscript{240} Id.
\textsuperscript{241} Homeland Security Presidential Directive 7: Critical Infrastructure Identification, Prioritization, and Protection, 39 Weekly Comp. Pres. Doc. 1816, 1816 (Dec. 17, 2003). This directive establishes a national policy for federal departments and agencies to identify and prioritize critical infrastructure and to protect them from terrorist attacks. In addition, the directive defines relevant terms and delivers thirty-one policy statements. Id. at 1816–22. These policy statements define what the directive covers and the roles various federal, state, and local agencies will play in carrying the policy out. Id.
\textsuperscript{242} See NIPP, \textit{supra} note 172, at 7.
\textsuperscript{243} Id. at 15 n.4.
\textsuperscript{244} Id. at i–ii.
risk to CI/KR assets, systems, networks, functions, or their interconnecting links resulting from exposure, injury, destruction, incapacitation, or exploitation.245 “In the context of the NIPP, this includes actions to deter the threat, mitigate vulnerabilities, or minimize consequences associated with a terrorist attack or other incident.” 246

Table 4: Critical Infrastructure and Key Resource Sectors, Homeland Security Presidential Directive 7247

<table>
<thead>
<tr>
<th>Critical Infrastructure Sectors</th>
<th>Key Resources</th>
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<tr>
<td>Agriculture, Food</td>
<td>Commercial Facilities</td>
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<tr>
<td>Public Health</td>
<td>Government Facilities</td>
</tr>
<tr>
<td>Drinking Water, Water Treatment</td>
<td>Dams</td>
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<tr>
<td>Defense Industrial Base</td>
<td>Commercial Nuclear Reactors, Materials &amp; Waste</td>
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<tr>
<td>Energy</td>
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<tr>
<td>Banking &amp; Finance</td>
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<td>National Monuments &amp; Icons</td>
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<tr>
<td>Transportation Systems</td>
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<td>Information Technology</td>
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<td>Telecommunications</td>
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<td>Chemical</td>
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<td>Emergency Services</td>
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<td>Postal &amp; Shipping</td>
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Ensuring the resiliency and protection of an asset can include such activities as “improving [business] protocols, hardening facilities, building resiliency and redundancy, incorporating hazard resistance into initial facility design, initiating active or passive countermeasures, installing security systems, leveraging ‘self-healing’ technologies, promoting workforce surety programs, or implementing cyber

245. Id. at 7.
246. Id. at 1.
247. See id. at 19.
security measures ... among ... others.” The NIPP and its complementary sector-specific plans provide a consistent, “unifying structure for integrat[ing] [both] existing and future” critical asset “protection efforts and resiliency strategies” (the NIPP is also tied to the chemical security legislation discussed earlier).

Under the NIPP, owners and operators generally represent the first line of defense for the CI/KR under their control. The CI/KR protection responsibilities of specific owner-operators vary widely within and across sectors. Some sectors have regulatory or statutory frameworks that govern private sector security operations within the sector; however, most are guided by voluntary regimes or adherence to industry-promoted best practices. In general, owner-operators are responsible for “tak[ing] action to support risk management planning and investments in security” and perform activities such as

reassessing and adjusting continuity-of-business and emergency management plans, building increased resiliency and redundancy into business processes and systems, protecting facilities against physical and cyber attacks and natural disasters, guarding against the insurer threat and increasing coordination with external organizations to avoid or minimize the impacts on surrounding communities or other industry partners.

While all seventeen critical infrastructure sectors have established their respective government councils, and nearly all sectors have initiated their voluntary private sector councils, council progress has varied due to their characteristics and level of maturity. The public health sector for example, “is quite diverse and collaboration has been difficult as a result; on the other hand, the nuclear sector is quite homogenous and has a long history of collaboration.”

Despite the variance in industry practices, the NIPP is the only federal program that is directly aimed at promoting mitigation of terrorism risk and that can be linked with a future version of terrorism risk insurance regulation. By outlining mitigation measures and goals, the NIPP unifies national needs and priorities which can be

248. Id. at 1.
249. Id.
250. Id. at 11–12.
251. Id. at 24.
leveraged and combined with TRIPRA, for example, to provide
owner-operators with mitigation-based insurance pricing and
insurance deductibles. At the same time, other tools within DHS can
be leveraged for mitigation efforts. DHS, in collaboration with Sector
Specific Agencies and other security partners, undertakes a number
of protective programs, initiatives, activities, and reports that support
CI/KR protection such as the Buffer Zone Protection Program
(“BZPP”), Site Assistance Visits, Training Programs, and Control
System and Security. This menu of mitigation programs are all
linked to the NIPP in one form or another, uniquely positioning the
federal government to help inform critical security investment
decisions and operational planning.

Lastly, the federal government already has a program in place
that uses adoption of terrorism mitigating technologies to reduce
insurance liability. Under the Support Anti-Terrorism by Fostering
Effective Technologies Act of 2002 (“SAFETY Act”), “the seller is
afforded a complete defense in litigation related to the performance
of the technology in preventing, detecting, or deterring terrorist acts
or deployment to recover from one.” As to CI/KR facility owners
and operators, they
are encouraged to examine the SAFETY Act closely because:
(1) CIKR owners (if purchasers of qualified technologies) will
enjoy the liability protections that flow from using qualified
SAFETY Act technologies, and (2) CIKR owners will also have
a level of assurance that the qualified products and services that
they are utilizing have been vetted by DHS. Lower liability
insurance burdens for those using qualified technologies are
another potential outcome.

2. Informational Advantages

Aside from identifying mitigation measures using the NIPP, the
federal government has an additional tool to leverage against the
problem of moral hazard. The federal government is unique in its
ability to gather terrorism-related information. In many cases, state
government would be best suited to regulate state insurers; however,

253. NIPP, supra note 172, at 149–51; see also FY 2010 Buffer Zone Protection Program
(BZPP), FED. EMERGENCY MGMT. AGENCY, http://www.fema.gov/government/grant/
bzp/index.shtm (last modified Aug. 17, 2010) (providing general information on Buffer
Zone Protection Programs).
254. NIPP, supra note 172, at 89.
256. NIPP, supra note 172, at 89–90.
terrorism is different in that the federal government has an informational advantage. Difficulties also surround the acquisition of data—particularly classified as well as privately held data—that is required to price terrorism risk insurance and mitigation measures. While traditional insurance assumes that emerging issue information is available and shared, in the case of terrorism modeling, information sharing is "asymmetric" in that classified information cannot be shared. Owners and operators already look to the government as a source of security-related best practices and for attack indications, warnings, and threat assessments, and they rely on government entities to address risks outside of their property or in situations in which the current threat exceeds an enterprise's capability to protect itself or mitigate beyond a reasonable level of additional investment. This encourages public and private sector security partners at all levels to collaborate to address the protection of national-level CI/KR. These collaborations and sources of sector-specific mitigation information can be used to provide pricing discounts and lower deductibles for terrorism risk insurance coverage.

IV. BARRIERS TO IMPLEMENTATION

Contracting-on-care with policyholders for terrorism risk insurance discounts is in its infant stage. The benefit to mitigation-based pricing is that it encourages investments in durable protection. However, for it to become widespread, price rigidity sustained by state regulatory obstacles will need to be eased. What kind of rigidity exists from the perspective of the insurer and policyholder? Which states have a regulatory system that works best and why, and how can this rigidity be eased?

Insurers have little reason to encourage mitigation if they feel that the rates they are allowed to charge by state regulators are inadequate. Due to regulatory constraints on pricing, insurers will not voluntarily offer incentives unless they are forced to provide coverage in hazard-prone areas. If, on the other hand, rates in hazard-prone areas were based on risk, insurers would want to encourage mitigation by reducing premiums for those who adopt mitigation measures. Modifying building codes, encouraging premium reductions linked to long-term loans for mitigation, and offering lower deductibles for those investing in mitigation are some solutions.257 Another concern is to secure incentives (and to subsidize

257. Kleindorfer & Kunreuther, supra note 185, at 727.
initial pricing discounts) for insurance industry participants who may be reluctant to offer discounts. Even if insurers are able to offer discounts, they may resist based on the current competitive financial climate. One suggestion is for the federal government to initially subsidize mitigation measures. A long-term solution may be a matching grant program where a jurisdiction is required to “match” the funding that the federal government provides.

From a policyholder perspective, the benefit of adopting a mitigation measure to receive a pricing discount may be futile if state rate-setting rules limit pricing modifications. Evidence suggests that current price rigidity hinders mitigation.258 Easing state-level regulatory restraints—such as rules that curb the use of catastrophe modeling or rules preventing insurers from adjusting rates based on catastrophe model outputs,259 certain tax treatment, actuarial standards and statutory rules that limit the application of these models,260 and state requirements that certain coverage be provided as a condition to the provision of other insurance within the state261—are likely to increase pricing accuracy. Each will be discussed in turn.

The use of catastrophe modeling in developing the catastrophic loss cost part of rate filing is regulated by states.262 Computer modeling has become indispensable to insurers who are limited in their ability to accurately price their insurance products due to a lack of full understanding of the costs of terrorist events. Terrorist events are intentional and premeditated, and there is difficulty in identifying what losses may occur. When included as part of a rating plan by insurers, catastrophe models are subject to approval by state

258. See supra Part II.B.
259. See generally Am. Ins. Ass’n, Testimony for Public Hearing Regarding Catastrophe Modeling, NAT’T’L ASS’N OF INS. COMM’RS, 2 (Sept. 28, 2007), http://www.naic.org/documents/committees_c_070928_hearing_AIA.pdf (“If politically motivated restrictions are placed on the models, they will not be as accurate and reliable as they could be, which could lead to both solvency and market concerns.”).
261. See Boardman, supra note 39, at 788 (“State governments can, and often do, however, mandate that particular coverage be provided as a condition to the provision of other insurance within that state.”).
262. Id. at 836.
insurance regulators.\textsuperscript{263} The argument is that greater transparency is needed to understand how the models function.\textsuperscript{264}

As a result, different states take different approaches when it comes to the use of catastrophe models by insurers in the rate-making process.\textsuperscript{265} In 1995, the Florida legislature created the Florida Commission on Hurricane Loss Projection Methodology to "consider any actuarial methods, principles, standards, models, or output ranges that have the potential for improving the accuracy of or reliability of the hurricane loss projections used in residential property insurance rate filings."\textsuperscript{266} The Commission reviews models and "decides to accept, accept subject to modifications, or reject a particular model, model specifications or output ranges."\textsuperscript{267} Similarly, in Louisiana insurers are permitted to use catastrophe computer modeling in formulating rates.\textsuperscript{268} "In early 2007, Louisiana's Commissioner of Insurance announced that his staff looks, in part, to acceptance by the Florida Commission to determine whether a catastrophe model should be accepted when used in a Louisiana rate filing."\textsuperscript{269} To help regulators evaluate the use of the models in the rate-making process, the Catastrophe Insurance Working Group of the NAIC published the 

\begin{itemize}
\item \textit{Catastrophe Computer Modeling Handbook} in 2001 to "discuss issues that have arisen or can be expected to arise from" using catastrophe computer models.\textsuperscript{270}
\end{itemize}

The handbook provides advice to regulators on evaluating the appropriateness of catastrophe models in establishing rates.

Reforming tax treatment for insurers may also improve pricing accuracy. Some of these regulations force insurers to provide terrorist-related workers' compensation and property and casualty

\begin{footnotes}
\footnotetext{263} Id.
\footnotetext{264} Anika Myers Palm, \textit{Right on Target or Spinning out of Control?—Insurers' Hurricane-Risk Models Will be Reviewed by State Panel}, ORLANDO SENTINEL, Jan. 28, 2008, at CFB14 (quoting Robert Hunter, Director of Insurance for Consumer Federation of America, as stating "'What they need is a transparency to understand what's in these models . . .'").
\footnotetext{265} \textit{Acad. of Actuaries, supra} note 260, at 10–11.
\footnotetext{267} Wilkinson, \textit{supra} note 78.
\end{footnotes}
coverage at premiums well below actuarial costs. Rates are often restricted in other property and casualty lines as well.\textsuperscript{271} Tax laws impede efforts by insurance companies to raise enough capital to cover catastrophic risks. Insurers are required to pay taxes on income earned on their capital reserves even though it is also taxed as corporate income.\textsuperscript{272}

State rules that limit the ability of insurers to control their exposure to terrorism risk may also need to be examined. One example is the rule which requires that no exclusions for terrorism are permitted on workers’ compensation policies.\textsuperscript{273} This means that the extreme losses that are possible from NCBR attacks are part of the exposure faced by writers of workers’ compensation insurance. In addition, some states also limit the interpretation of exclusion clauses covering losses from a fire that might arise following a terrorist attack.\textsuperscript{274} This means that in some states, insurers providing fire insurance without terrorism coverage, and without the ability to collect additional premiums to compensate them for that risk, may still be liable for losses arising from a terrorist attack.

Consideration also needs to be given to the fact that delays in rate setting may prevent price competition between insurers. “While TRIA allows companies to file and use terrorism rates [without] wait[ing] for state approval” of those rates, there is evidence that “many companies are waiting for state approval because they” are reluctant “to use rates that [may] later be ruled invalid.”\textsuperscript{275} This delay limits insurers’ ability to advertise the price and allows companies to compete to keep the price well within what the market will bear.

Finally, state regulations need to facilitate price setting. It is important to note that even in the long-established industry for hurricane insurance, it took time for building codes to affect

\textsuperscript{271} Rhee, supra note 220 (discussing the problems of mispricing risk).

\textsuperscript{272} See Rhee, supra note 39, at 516.

\textsuperscript{273} Terrorism and Insurance, INS. INFO. INST., 3 (July 2004), http://server.iii.org/yy_obj_data/binary/737237_1_0/TRIA.pdf (“Workers compensation is also the only line of insurance that does not exclude coverage for acts of war. Coverage for terrorist acts cannot be excluded from workers compensation policies in any state.”).

\textsuperscript{274} Id. at 2 (“In some states a doctrine known as ‘fire following’ applies. . . . [I]n the event of a terrorist-caused explosion followed by fire, insurers could be liable to pay out losses attributable to the fire (but not the explosion) even if a commercial property owner had not purchased terrorism coverage. Insurers are seeking to limit fire coverage resulting from a terrorist attack, because commercial policyholders that choose to reject TRIA or other terrorism coverage are effectively paying no premium for the protection offered by fire-following coverage. So far, seven states have amended their standard fire policy laws to exclude acts of terrorism.”).

\textsuperscript{275} Meg Green, A Glass Half Full, BEST’S REV., Sept. 2003, at 50, 60.
insurance pricing.\textsuperscript{276} It is often unclear whether (and how) state rate restrictions on premiums that insurers are allowed to charge in hazard-prone areas impact the availability of coverage and their incentive to encourage mitigation. This is true even while insurance companies benefit from risk mitigation measures through fewer claims due to lower risk of an attack and lower loss claims should an attack occur.

To be sure, any government involvement may encounter internal resistance and will take time. After all, my solution involves collaboration between two distinct jurisdictions—DHS and the Treasury—and even in Congress there are different committees to address these issues—Homeland Security and Insurance/Finance.

CONCLUSION

Scholarly debate over the September 11th attacks continues to focus predominantly on high-profile issues such as torture, preventive detention, interrogation, privacy, and surveillance. These debates have overshadowed the equally important and far-reaching issue of terrorism risk insurance. That is a shame. Terrorism presents a unique challenge to the insurance industry. Even after three rounds of terrorism risk insurance legislation, capacity has not been restored, modeling continues to face obstacles, pricing accuracy has not been achieved, and moral hazard persists. Current terrorism risk insurance legislation provides a reinsurance backstop to primary insurers with no provisions that influence mitigation decisions. In fact, it provides a disincentive for adoption of precautionary measures. While continued federal regulation may be necessary due to insurability and/or capacity concerns, it will have to address the way in which federal legislation interferes with price-setting and normal incentives created by functioning insurance markets. This Article argues that a public-private partnership that exploits the strengths of both sides continues to be the best way forward. For both government and private markets have their own advantages and disadvantages in the task of providing insurance for terrorism.

This Article argues for a continued federal regulation in a manner that reduces moral hazard. Developing a sound understanding of the market for terrorism risk insurance is essential to guiding the difficult determination of the appropriate balance

\textsuperscript{276} Telephone Interview with Jack Seaquist, \textit{supra} note 213.
between private and public responsibility for preventing and (when necessary) compensating for terrorism.

This Article recommends conditioning terrorism risk insurance legislation benefits upon adherence to other existing risk mitigation programs such as the NIPP. New legislation should urge insurers to provide incentives through tiered pricing and lower deductibles tied to adoption of mitigation measures. An alternative to modifying legislation would be to strengthen federal legislation on mitigation by mandating industry-wide adoption of mitigation measures, as proposed by the 2007 Chemical Regulations. While encouraging mitigation through either plan will increase firm-level, community-level, and national preparedness, it also stands to reduce terrorism risk, thereby possibly increasing take-up rates and industry capacity. Yet, the fact that FEMA, other federal agencies, and nonfederal stakeholders have collaborated on natural disaster hazard mitigation, but there is still not a comprehensive national strategic framework for mitigation, shows that collaboration for the mitigation of terrorism risk will take time. Finally, this Article noted and discussed other recommendations. Government initiatives to reform the regulatory and tax treatment of the insurance industry (i.e., to remove current market impediments) would better prepare the private sector to provide terrorism coverage with decreasing government involvement.

In sum, terrorism risk insurance legislation can be used as a tool for driving risk mitigation and reduction measures by communities and individual high-risk facilities, while encouraging maturation of terrorism risk models. The solution presented in this Article contributes to the debate on reducing the federal role over time by increasing take-up rates for terrorism coverage among businesses and by reducing the costs the federal government would otherwise bear in the event of a catastrophic terrorist attack. By adopting the recommendations from this Article, the real benefit of national importance is the reduction of the nation’s vulnerability to terrorism.