

TERRORISM RISK IN A POST-9/11 ECONOMY: The Convergence of Capital Markets, Insurance, and Government Action

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***ABSTRACT:** September 11th changed the American economy and the global insurance market. The insurance industry no longer covers terrorism risk for “free.” The traditional insurance mechanism alone cannot spread the risk of repeated catastrophic losses. Beyond the Terrorism Risk Insurance Act of 2002 lingers the questions of a longterm solution and government’s role therein. Government can assume different roles: reinsurer, wealth (re)distributor, regulator, or a combination thereof. This article suggests that the government should foster a regulatory and tax environment in which the private sector can develop a capital market solution for terrorism risk. Securitization is an alternative to reinsurance and can transfer risk to the deep pool of the global capital markets. Presently, this concept is just a theoretical possibility. Legal reforms must first reduce the cost of securitization and enhance the investment appeal, making terrorism bonds more price competitive with reinsurance. Even if such reforms are sown, a bond market will take many years to grow. Such a market, however, is impossible without the regulatory precursors, which are needed now.*

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I. INTRODUCTION

September 11th was a paradigm-shifting event. Terrorism can no longer be considered an isolated political or law enforcement problem.¹ The specter of terrorism now pervades every aspect of the global, political, economic, cultural, and legal institutions.² Terrorism has the power to not only change the course of political history,³ but also the economic order.⁴

1. I make this statement from an American perspective, which did not consider terrorism a systemic threat to homeland and economic security. See THE 9/11 COMMISSION REPORT: FINAL REPORT OF THE NATIONAL COMMISSION ON TERRORIST ATTACKS UPON THE UNITED STATES 71–107, 361 (2004) [hereinafter THE 9/11 COMMISSION REPORT] (noting the earlier treatment of terrorism as a discrete law enforcement problem and the new post-9/11 view that “terrorism has become, beyond any doubt, the top national security priority”). The Middle East and Western Europe have a long history of suffering from terrorism. See *infra* tbl.1 and noteS 447, 448.

2. The Latin term *terror* means “great fear, dread.” THE BARNHART DICTIONARY OF ETYMOLOGY 1127 (Robert K. Barnhart & Sol Steinnetz eds., 1988). Terrorism took on modern usage when *terroriste* was used to describe the Jacobins and the Reign of Terror (1793–1794) during the French Revolution. 17 THE OXFORD ENGLISH DICTIONARY 821 (2d ed. 1989). Terrorism now has many definitions. See *id.* (“A policy intended to strike with terror those against whom it is adopted; the employment of methods of intimidation”) (quoting the FBI); *infra* note 97 (stating the definition under the Terrorism Risk Insurance Act of 2002); NAT’L SEC. DIV., FBI COUNTERTERRORISM THREAT ASSESSMENT & WARNING UNIT, TERRORISM IN THE UNITED STATES 3 (1996), available at www.fbi.gov/publications/terror/terroris.pdf (last visited Mar. 21, 2005) (“[T]he unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.”) (quoting the FBI); AURIELA ZANETTI ET AL., SWISS RE, SIGMA NO. 1/2002, NATURAL CATASTROPHES AND MAN-MADE DISASTERS IN 2001: MAN-MADE LOSSES TAKE ON A NEW DIMENSION 16 (Thomas Hess ed., 2002) (“Terrorism means an act or threat of violence or an act harmful to human life, tangible or intangible property or infrastructure with the intention or effect of coercing any government or putting the public or any segment of the public in fear.”).

3. See, e.g., Marc Champion et al., *Political Fallout of Bombs Hits U.S. and Europe*, WALL ST. J., Mar. 15, 2004, at A1 (noting that the Madrid train bombing of March 11, 2004, “probably played a major role” in the electoral defeat of Prime Minister José María Aznar). Of course, 9/11 led to the invasions of Afghanistan and Iraq by the United States, and will define in a large measure the legacy of President George W. Bush.

4. See PATRICK LENAIN ET AL., THE ECONOMIC CONSEQUENCES OF TERRORISM (Org. for Econ. Co-operation & Dev., Working Paper No. 334, 2002) (discussing the substantial economic costs of terrorism). The impact of any act of terrorism on the economy cannot be underestimated. For instance, a terrorist attack in the Mall of America or a Walmart superstore would probably have a relatively small impact on the insurance losses, but it would have a significant short-term effect on retailers throughout the nation. See John Kimelman, *Wall Street Assesses Terrorism: Is the Overall Risk Reflected in Market?*, INT’L HERALD TRIB., Aug. 4, 2003, at 10, available at 2003 WL 59126437 (“Imagine a person going into a shopping mall or movie theater with a bomb. That could paralyze the economy.”) (quoting Kari Bayer Pinkernell of Merrill Lynch). The anthrax attacks of late 2001 showed that an attack with minimal

Its effect on the insurance industry is no less dramatic. In a single day, the attacks inflicted about \$30 billion in insurance loss,⁵ the single largest occurrence in insurance history.⁶ While the solvency of the industry was never in serious doubt after the attacks for the industry was well capitalized,⁷ market disruptions followed in the wake of 9/11. That terrorism can inflict such severe losses came as an information shock.⁸ The industry reacted by exiting the market for terrorism risk, resulting in capacity (supply) reduction and premium (price) increases. The costs of these market distortions trickled down to the economy, which saw increased costs of goods, increased financing costs, delayed or cancelled real estate projects, and lost jobs.⁹

In response, Congress enacted the Terrorism Risk Insurance Act of 2002, a three-year federal reinsurance program in which the government would bear a substantial portion of terrorism losses up to a \$100 billion cap.¹⁰ The statute sought to stabilize the insurance market in a time of great market turbulence.¹¹ Its effectiveness has been mixed, however. The market has since stabilized but there remains a question as to its cause and effect. Moreover, the industry is no closer to a longterm solution to the problem of catastrophic terrorism risk. Although the statute is in the final year of legislative life, the inertia of expectation has taken root and lobbying for the statute's extension has begun. The fear is that a temporary government stabilization measure has altered the political and market dynamics. The question is whether we have learned from 9/11, or whether an ex ante government program or ex post subsidies are inevitable conclusions.

Insurance weaves through the fabric of the global economy and society.¹² Risk-taking is a fundamental driver of a market economy.¹³ The process

casualties and virtually no direct economic losses can still deeply affect the nation and its economy.

5. See *infra* note 29 and accompanying text.

6. See *infra* tbl.3 (stating that Hurricane Andrew and the Northridge Earthquake resulted in insurance losses of \$20.9 billion and \$17.3 billion, respectively).

7. See David Pilla, *The Cost of Terror (Sept. 11 Terrorist Attacks Expected to Bring the Largest Insurance Claims Ever)*, 102 BEST'S REV. 6 (2001), available at 2001 WL 12285740 ("[W]e are not considering widespread insurer bankruptcies as a likely or even remotely possible outcome . . .") (quoting Alice Schroeder of Morgan Stanley). The 9/11 attacks resulted in only a few bankruptcies. See *infra* note 135 and accompanying text.

8. See *infra* Part II.A.

9. See *infra* Part II.B.

10. See *infra* Part II.C.

11. See *infra* Part II.B and accompanying text.

12. See generally KENNETH S. ABRAHAM, *DISTRIBUTING RISK: INSURANCE, LEGAL THEORY, AND PUBLIC POLICY* (Yale Univ. Press 1986) (1946) (proposing a theory of insurance in the context of law and public policy); Spencer L. Kimball, *The Purpose of Insurance*

of disaggregating, reconstituting, and transferring various forms of risk is a vital function.¹⁴ Insurance spreads fortuitous risk so that economic actors can undertake more enterprise and financial risks, and it is one of the key mechanisms to distribute compensation. If large enough, catastrophes, whether natural or manmade, can impart an exogenous shock to the insurance system.¹⁵ Such shocks present a systemic threat to the stability of the insurance market as currently configured, posing broad ranging economic ramifications in the United States and elsewhere.¹⁶

Regulation: A Preliminary Inquiry in the Theory of Insurance Law, 45 MINN. L. REV. 471 (1961) (proposing that insurance weaves through the fabric of our social, political, and economic institutions). In 2003, worldwide insurance premium volume was about \$3 trillion, constituting 8% of the aggregate global GDP or \$470 per capita. ULRIKE BIRKMAIER & CAMILLE CODONI, SWISS RE, SIGMA NO. 3/2004, *WORLD INSURANCE IN 2003: INSURANCE INDUSTRY ON THE ROAD TO RECOVERY*, 33 (Thomas Hess ed., 2004). Premium volumes for life and nonlife insurance were \$1.67 trillion and \$1.27 trillion, respectively. *Id.*

13. Keynes observed that “enterprise will fade and die” without the risk taking drive of “animal spirits.” JOHN MAYNARD KEYNES, *THE GENERAL THEORY OF EMPLOYMENT INTEREST AND MONEY* 162 (Harcourt Brace & Co. 1964) (1936).

14. ROBERT E. KEETON & ALAN I. WIDISS, *INSURANCE LAW: A GUIDE TO FUNDAMENTAL PRINCIPLES, LEGAL DOCTRINES, AND COMMERCIAL PRACTICES* § 1.1(a), at 2 (1988) (“Insurance may well be an essential system for risk distribution in any industrialized society . . .”). Both the capital markets and the insurance industry facilitate the sale and purchase of risk, though the methods of transfer differ.

15. Catastrophes vary in degrees. While billion dollar losses are significant events, they do not pose a systemic risk to the economy. This article uses the term *catastrophe* as insurance events that are in the order of 9/11, Hurricane Andrew, and the Northridge earthquake, a mega-catastrophe for lack of a more articulate term. *See infra* notes 447 & 449. Recently, mega-catastrophes have attracted the attention of legal scholars. *See* RICHARD A. POSNER, *CATASTROPHE: RISK AND RESPONSE* (2004). While there is no hard and fast rule on what constitutes a mega-catastrophe, the data suggests that single events inflicting losses of \$20 billion or more present unique challenges to the industry. *See* Harry Shuford, *Understanding Cycles and Shocks in the Property and Casualty Insurance Industry*, 39 BUS. ECON. 38, 39 (2004). This is an arbitrary sum, but is based off of previous catastrophes that injected exogenous shock to the industry. *See infra* note 449. Of course, the impact of a catastrophe depends not only on the loss, but also the frequency and the duration between events. With this said, I do not discount the true costs of *any* terrorist act on the economy. *See, e.g., supra* note 4.

16. *See* BIRKMAIER & CODONI, *supra* note 12, at 33 (noting that North America and Western Europe generated premium volume of \$2.17 trillion, constituting 72% of the world market). The insurance dimension of terrorism has primarily been a Western problem. American or Western European insurers and reinsurers suffered the brunt of the 9/11 losses. Western countries, and their institutions and allies, have suffered the most in terms of lives and property. *See infra* tbl.1 (noting that the U.S. and the U.K. suffered eight of the top ten attacks in terms of property losses). Nevertheless, the ramifications on the global economy are significant. *See, e.g., Insurance Cos Offering Terrorism Cover: Bankruptcy Feared*, PAKISTAN PRESS INT’L INFO. SERV., Jan. 19, 2002, available at 2004 WL 60796922 (stating that Pakistani insurers fear catastrophic losses from terrorism); *Non-Life Insurers Face Rough Time*, KOREA

September 11th exposed the vulnerability of the insurance system to catastrophic terrorist attacks. While the industry has fully recovered from the financial shock, it cannot withstand multiple blows on the scale of 9/11 under the current industry model. The problem is one of capacity at economically feasible levels. If terrorism is a longterm political problem and the world will continue to suffer from it, the private market or government (or both) must develop an alternative form of insurance capital to address extreme risk. As configured, the economy has only three sources of compensation: insurance proceeds, government subsidies, and tort recoveries. Litigation is the most inefficient mechanism to deliver compensation and therefore should be avoided;¹⁷ and the 9/11 fallout exposed the weakness in the insurance sector.¹⁸ These limitations would seem to suggest that only the government has sufficient capital to absorb large losses.

This article discusses the insurance dimension of terrorism risk as a longterm economic problem. It addresses two basic issues: Can the private sector increase economically feasible capacity? What should be the government's role? The regulatory policy toward these questions is still unsettled. This article suggests, as others have, that the government is not as competent as the private market in assessing catastrophic risk and that ex ante subsidies tend to undermine market efficiency.¹⁹ This is not to suggest that market solution and legislative action are mutually exclusive. In times of crisis, government can and should intervene with subsidies and other temporary measures to stabilize the market when appropriate.²⁰ But this form of government action is not the type of a structural change in the underlying economics of the insurance industry. There are two chief drawbacks of an ex post approach: it is unpredictable, often subject to a mix of political motivations, sympathy, and perceived (if not always correct) economic needs; and it often has the unintended consequence of distorting the ordinary workings of the market.

TIMES, Nov. 13, 2001, *available at* 2001 WL 25565952 (noting the trickle down effect of increased premium rates from overseas reinsurers on the Korean insurance market).

17. *See infra* note 130 and accompanying text.

18. The insurance industry is but a small component of the global capital market. *See infra* note 348 (noting that the global market capitalization is about \$34 trillion). The combined market capitalization of the global insurance industry is about \$1 trillion. OXFORD METRICA, A SHAREHOLDER VALUE ANALYSIS OF THE GLOBAL (RE)INSURANCE INDUSTRY 5 (2003) (data as of 2001).

19. *See infra* Part III.C.

20. *See infra* Part III.B.

The government should seek to reconfigure the insurance market. The goal would be to increase capacity and decrease prices. To this end, some of the risk should be transferred from the limited capital base of the insurance sector to the capital markets through the process of securitization (a structured financial transaction).²¹ For many years, securitizations have provided vast amounts of cheaper capital to financial institutions. Insurance securitization has been touted as an alternative form of capital, but it comprises only a tiny fraction of the capital that supports catastrophic risk. The insurance-linked bond market has not developed into a substantial alternative to traditional reinsurance.²² The securitization of terrorism risk, though theoretically promising, has been described as a “farfetched” possibility in the near future.²³ A bond market cannot exist without the necessary precursors: an efficient risk transfer structure, the development of generally accepted information and modeling techniques, a measure of price parity with traditional reinsurance, a reduction in the regulatory costs of securitization, a reduction of the tax burdens, and an appropriate “gestation” period during which investors and other market participants learn to analyze the investments and risks.²⁴

There is a disconnect between the promise of theory and the reality of greater costs and the way the markets value uncertainty.²⁵ The government should bridge the gap by promoting regulatory and tax policies that would better promote price efficiency, i.e., price that mirrors the actuarial risk.²⁶

21. *See infra* Part IV.

22. *See infra* Part IV.C. If reforms are made to foster a securities market in terrorism risk, the same changes could be made applicable to natural catastrophe securitizations. During the 1990s, natural catastrophes, which present a similar problem for the insurance industry, significantly increased in frequency and severity. *See infra* notes 314, 449 and accompanying text and tables. The longterm prospects of global warming and extreme climate events may tax the existing capital based of the insurance sector, necessitating alternative risk transfer outlets.

23. *See infra* note 370 and accompanying text.

24. *See infra* Part V.D.

25. “Yet some academic theorists still insist that the private market will create new capital supply for terrorism insurance, despite the fact that sophisticated capitalists who actually operate in the market have not come forward with capital.” *Ensuring Economic Security in the Face of Terrorism: A Public-Private Partnership*, AM. INS. ASS’N ADVOCATE (Am. Ins. Ass’n), Mar. 3, 2005, at 3 [hereinafter AM. INS. ASS’N ADVOCATE].

26. Because regulatory costs and tax burdens are so high, most natural catastrophe securitizations have been done offshore in tax havens such as Bermuda and the Cayman Islands. *See infra* Part IV.B. Securitization is only one method in a class of nontraditional insurance solutions called alternative risk transfer (“ART”). Other solutions include captives, finite risk, multi-integrated insurance products, contingent capital, and insurance derivatives. *See generally* MUNICH RE ART SOLUTIONS, *INSURANCE DERIVATIVES—CONVERGENCE OF CAPITAL MARKETS AND INSURANCE MARKETS* (1999); WERNER SHAAD, *SWISS RE, SIGMA NO. 2/1999, ALTERNATIVE RISK TRANSFER (ART) FOR CORPORATIONS: A PASSING FASHION OR RISK*

The primary regulation of catastrophe securitization should be federalized to reduce the regulatory uncertainties and costs. Tax incentives should also be provided to enhance investment appeal. Although the government is always free to provide ex post subsidies pursuant to economic necessity or political expediency, the private market is a more efficient means to spread risk. The government's role should be to facilitate a convergence of insurance and capital markets, thereby reconfiguring an insurance system that is increasingly vulnerable to natural and manmade catastrophic risk.²⁷

II. A "NEW" INSURANCE PROBLEM

A. Paradigm Shift

It is now almost trite to say that 9/11 was unprecedented. The terrorists strategically targeted the world's most important commercial and political centers. They killed 2,976 people, displaced 1,025 businesses employing more than 75,000 people, disrupted another 18,000 businesses employing 563,000 people,²⁸ inflicted over \$30 billion in insured losses,²⁹ and another

MANAGEMENT FOR THE 21ST CENTURY? (Esther Baur ed., 1999) (describing these ART products); Christopher M. Lewis & Peter O. Davis, *Capital Market Instruments for Financing Catastrophe Risk: New Directions?*, 17 J. INS. REG. 110 (1998). It is beyond the scope of this article to discuss this panoply of ART products or risk management other than catastrophe securitizations, which have emerged as one of the primary sources of alternative capital.

27. See *infra* tbls. 1–4.

28. LLOYD DIXON & RACHEL KAGANOFF STERN, RAND INSTITUTE FOR CIVIL JUSTICE, COMPENSATION FOR LOSSES FROM THE 9/11 ATTACKS 15, 103 (2004).

29. For convenience, the estimated loss is noted as \$30 billion throughout this article. The loss estimate is a moving target. Earlier estimates were higher with a larger spread. See HOWARD KUNREUTHER & ERWANN MICHAEL-KERJAN, THE WHARTON SCHOOL OF THE UNIVERSITY OF PENNSYLVANIA, DEALING WITH EXTREME EVENTS: NEW CHALLENGES FOR TERRORISM RISK COVERAGE IN THE U.S. 5 (2004) (estimating \$40 billion); ALICE SCHROEDER, MORGAN STANLEY, REBROADCAST: UPDATE ON WTC-RELATED ISSUES 34 (2001) (giving a midpoint average of \$45 billion); WERNER SHAAD, SWISS RE, TERRORISM—DEALING WITH THE NEW SPECTRE 3 (UC, Technical Communications, Chief Underwriting Office ed., 2002) (estimating \$30 billion to \$58 billion in losses); Mark A. Hoffmann & Meg Fletcher, *Loss Picture Still Unclear*, BUS. INS., Sept. 9, 2002, at 10 (estimating \$35 billion to \$75 billion); Alison R. Orlans, *Terrorism Insurance and Commercial Real Estate: The New Frontier*, 7 N.C. BANKING INST. 93, 100 & n.60 (2003) (estimating \$60 billion to \$100 billion). Recent estimates are lower with a tighter range. See AM. ACAD. OF ACTUARIES, PUBLIC POLICY MONOGRAPH, P/C TERRORISM INSURANCE COVERAGE: WHERE DO WE GO POST-TERRORISM RISK INSURANCE ACT? 12 (2004) (estimating \$25 billion to \$35 billion); DIXON & STERN, *supra* note 28, at xviii, 1 (estimating a high of \$32.5 billion with current payments of \$19.6 billion); R. GLENN HUBBARD & BRUCE DEAL, ANALYSIS GROUP, THE ECONOMIC EFFECTS OF FEDERAL PARTICIPATION IN

\$50 billion more in uninsured losses.³⁰ These figures do not include the indirect economic costs stemming from the attacks which, according to the OECD, were about \$500 billion dollars.³¹ September 11th stands as the largest insurance loss arising from a single event.³²

Before 9/11, the conventional wisdom in the insurance industry mirrored the broader society's assumption that terrorism posed a discrete risk of low intensity, high visibility violence, the paradigm cases being the killing of Israeli athletes during the 1972 Munich Olympics and the 1988 bombing of Pan Am 103 over Lockerbie.³³ Consistent with this assumption, the actuarial and pricing models did not consider terrorism as an extraordinary risk in the vein of nuclear contamination, war loss, or even earthquake loss for which

TERRORISM RISK 10 (2004) (estimating \$32.5 billion). The precise loss to the insurance industry will not be known for many years as claims are made and disputes resolved. *See generally infra* note 57 and accompanying text.

30. The direct economic loss has been calculated to be between \$80 billion to \$90 billion. *See* U.S. GEN. ACCOUNTING OFFICE, *CATASTROPHIC INSURANCE RISKS: STATUS OF EFFORTS TO SECURITIZE NATURAL CATASTROPHE AND TERRORISM RISK 1* (2003) (\$80 billion); *see also* SHAAD, *supra* note 29, at 3 (\$90 billion).

31. LENAIN ET AL., *supra* note 4, at 3 (estimating a loss of 5% of annual GDP from 2001 to 2003).

32. The attacks wiped out about 25% of the capital supporting the commercial multiperil insurance sector, or about 11% of the US nonlife premiums. *See* PATRIZIA BAUR & RUDOLPH ENZ, SWISS RE, SIGMA NO. 5/2003, REINSURANCE—A SYSTEMIC RISK? 13 (Thomas Hess & Auriella Zanetti eds., 2003) (estimating that 25% of global reinsurance capital was destroyed by 9/11 and \$40 billion loss constituted about 11% of the US nonlife premiums); GARY EMBLETON & KELLEY BERNAL, GEN RE FACULTATIVE MATTERS, TERRORISM—TO TRIA . . . AND BEYOND, 2 (2004) (25% of capital); RONALD E. FERGUSON ET AL., GENERAL COLOGNE RE, TOPICS NO. 10, THE IMPACTS OF THE EVENTS OF SEPTEMBER 11TH ON RISK ASSESSMENT AND UNDERWRITING 8 (2002) (providing separate estimates of 15%, 20%, and 22% to 34% of capital). Aside from Hurricane Andrew and the Northridge earthquake, *see infra* note 449, the 1906 San Francisco earthquake, measuring 7.7 to 7.9 on the Richter scale, is the only other comparable event. The earthquake caused \$180 million in losses, constituting 35% of the U.S. primary insurance premiums at the time. BAUR & ENZ, *supra*, at 13. In terms of the amount of loss, only asbestos liability, estimated to be at \$117 billion to \$127 billion, exceeds 9/11 losses. TILLINGHAST-TOWERS PERRIN, SEPTEMBER 11, 2001: IMPLICATIONS FOR THE INSURANCE INDUSTRY 5 (2001); *see* OXFORD METRICA, *supra* note 18, at 26 (estimating \$41 billion paid thus far for asbestos claims and environmental liability, with another \$23 billion held in loss reserve, and another \$121 billion in future losses).

33. *See* SCHROEDER, *supra* note 29, at 4 (“conventional wisdom about terrorism prior to September 11th had been that terrorism was principally confined to small-scale events”). Even the US intelligence community held this conventional wisdom:

It would be a mistake to redefine counterterrorism as a task of dealing with “catastrophic,” “grand,” or “super” terrorism, when in fact these labels do not represent most of the terrorism that the United States is likely to face or most of the costs that terrorism imposes on U.S. interests.

THE 9/11 COMMISSION REPORT, *supra* note 1, at 343 (quoting Paul R. Pillar, *Terrorism and U.S. Foreign Policy* 23 (2001)).

either the risk is excluded or additional premiums are collected.³⁴ Insurers covered terrorism risk in most “all risk” policies.³⁵ Nor did reinsurers carve out the risk in their treaties.³⁶ In effect, the risk was perceived to be so de minimis that it was covered for “free.”³⁷

34. Certain risks are considered so high that, without an additional premium, insurers regularly exclude them; e.g., the war risk loss and nuclear hazard exclusions. Without an additional premium, most policies exclude risks of loss due to war and nuclear, biological or chemical contamination. *See, e.g.,* Int’l Dairy Eng’g Co. of Asia v. Am. Home Assurance Co., 352 F. Supp. 827, 828 (N.D. Cal. 1970); Zen Cont’l Co. v. Intercargo Ins. Co., 151 F. Supp. 2d 250, 253 (S.D.N.Y. 2001); AM. ACAD. OF ACTUARIES, PUBLIC POLICY MONOGRAPH, TERRORISM INSURANCE COVERAGE IN THE AFTERMATH OF SEPTEMBER 11TH 6 (2002).

35. An “all risk” policy covers all contingencies except those specifically excluded. *City of Burlington v. Indem. Ins. Co. of N. Am.*, 332 F.3d 38, 41 (2d Cir. 2003).

36. “Reinsurance is the shifting of part or all of the insurance” business written by a primary insurer to a reinsurer. *See* GEORGE E. REJDA, PRINCIPLES OF RISK MANAGEMENT AND INSURANCE 535 (Denise Clinton ed., 8th ed. 2003) (emphasis omitted). In its simplest form, reinsurance is insurance to insurers “whereby a reinsurer agrees to indemnify a ceding insurer based upon the cedant’s own loss experience.” Martin F. Grace et al., *Regulating Onshore Special Purpose Reinsurance Vehicles*, 19 J. INS. REG. 551, 557 (2001). Many catastrophe reinsurance programs are structured so that the cedant retains all losses up to an agreed aggregate amount and the reinsurer agrees to pay the excess of loss. *Id.* Among other things, reinsurance provides another layer of capital supporting the underwriting, and insurers seek reinsurance to protect against catastrophic risk. *Id.* Most reinsurers are large, well-capitalized, international companies that can assume and diversify large risks. The top ten reinsurers constitute two-thirds of the global market, and European based reinsurers led by Munich Re and Swiss Re command significant market share. Pat Murphy-O’Connor, *Recent Trends in the Catastrophic Risk Insurance and Reinsurance Market*, in THE OECD CONFERENCE ON CATASTROPHIC RISKS AND INSURANCE (Nov. 22, 2004) [hereinafter OECD CONFERENCE], at www.oecd.org/document/34/0,2340,fr_2649_37411_33753570_1_1_1_37411,00.html (last visited Mar. 14, 2005). In the case of 9/11, reinsurers will assume a large bulk of the ultimate insurance liability. *See infra* note 65 and accompanying text; *see also* HUBBARD & DEAL, *supra* note 29, at 18 (stating that European insurers and reinsurers will assume a bulk of the losses, including Lloyd’s of London (\$2.377 billion), Swiss Re (\$2.316 billion), Munich Re (\$1.968 billion), and Allianz (\$1.323 billion)).

37. U.S. GEN. ACCOUNTING OFFICE, TERRORISM INSURANCE: IMPLEMENTATION OF THE TERRORISM RISK INSURANCE ACT OF 2002, 5 (2004); *see also* DAN L. CRIPPEN, CONG. BUDGET OFFICE, A CBO STUDY: FEDERAL REINSURANCE FOR DISASTERS 11 (2002) (“Prior to September 11, terrorism insurance was provided only implicitly; that is, most existing policies did not explicitly include or exclude losses from terrorism.”); *Terrorism Insurance: Rising Uninsured Exposure to Attacks Heightens Potential Economic Vulnerabilities: Hearing Before the House Subcomm. On Capital Mkts., Ins. & Gov’t Sponsored Enters. & the Subcomm. On Oversight & Investigations, Comm. on Fin. Servs.*, 108th Cong. 3 (2002) [hereinafter *Rising Uninsured Exposure Hearing*] (statement of Richard J. Hillman, Dir., Fin. Mkts. & Cmty. Inv.) (“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.”); DAN MILLER, REPORT TO THE JOINT ECON. COMM. OF U.S. CONGRESS, ECONOMIC PERSPECTIVES ON TERRORISM INSURANCE 3 (2002) (most policies “automatically covered” from terrorism).

This pricing model continued as terrorism was slowly brewing into a major problem over the course of several decades.³⁸ The 1990s ushered in the era of catastrophic terrorism, with the phenomenon first taking root in Western Europe.³⁹ Arguably the first catastrophic terrorist act was when the Irish Republican Army bombed London on April 21, 1992, which caused \$671 million in insurance losses. The industry recognized then that terrorism posed a “catastrophic risk.”⁴⁰ In a prescient assessment, Swiss Re wrote in 1993: “A single bomb attack can kill thousands of people, cause several billion dollars of damage and paralyse[sic] entire branches of industry. . . . [and] lay entire cities to waste.”⁴¹ The industry recognized then that assessment of terrorism required the consideration of “every eventuality.”⁴² Thus, 9/11 did not beget a new awareness. Scholars and policymakers had warned of such risks before and industry leaders were aware of the potentially massive exposure to terrorism long before al Qaeda acquired its infamy.⁴³

In the years since then, the industry considered many eventualities. Insurers specifically considered as “possible” an airplane crashing into a building in a high density urban center but dismissed the risk as not “probable.”⁴⁴ Even to an industry whose business is to foresee the unfortunate and the tragic, it was inconceivable that an airliner, let alone two, would be used as guided missiles against an urban target.⁴⁵ Before 9/11,

38. See tbl.1 for a list of the ten largest terrorism related losses. Since at least 1972, in the wake of the Munich Olympics, the industry has been tracking major terrorism risks. CHRISTIAN BRAUNER & GEDRGES GALEY, SWISS RE, *TERRORISM RISKS IN PROPERTY INSURANCE AND THEIR INSURABILITY AFTER 11 SEPTEMBER 2001* 15 (2003).

39. In the 1990s, four of the top ten most costly terrorist attacks were against New York and London, resulting in total losses of over \$2.5 billion. *See infra* tbl.1. Additionally, six of the those top ten attacks were against U.S. or U.K. targets, resulting in losses of over \$3.4 billion. *Id.*

40. *See* SWISS RE, *TERRORISM AND INSURANCE* 3 (1993).

41. *Id.* *See infra* tbl.1.

42. SWISS RE, *supra* note 40, at 10, 27.

43. *See* AM. ACAD. OF ACTUARIES, *supra* note 34, at 7 (“extreme terrorist events have had a certain amount of theoretical attention in academia”); THE U.S. COMM. ON NAT’L SEC., 21ST CENTURY NAT’L SEC. STUDY GROUP, *NEW WORLD COMING: AMERICAN SECURITY IN THE 21ST CENTURY* 4 (1999), available at <http://www.fas.org/man/docs/nwc/nwc.htm> (last visited Mar. 22, 2005) (“Americans will likely die on American soil, possibly in large numbers.”). In a bit of homespun retrospective, Warren Buffett concluded that the insurance industry “violated the Noah rule: Predicting rain doesn’t count; building arks does.” Letter from Warren Buffett, Chairman, to Shareholders of Berkshire Hathaway, Inc. 9 (Feb. 28, 2002).

44. MUNICH RE, 11 SEPTEMBER 2001 11 (2001).

45. *See* Letter from Warren Buffett, Chairman, to Shareholders of Berkshire Hathaway, Inc. 8 (Feb. 21, 2003) (“A disaster of that scope was highly improbable, of course, but it is up to insurers to limit their risks in a manner that leaves their finances rock-solid if the ‘impossible’

losses from terrorism were measured in hundreds of lives and hundreds of millions of dollars.⁴⁶ It was a catastrophic loss, but not on the scale that would threaten a whole economy or pose a systemic danger to the insurance system.⁴⁷ But the industry also knew that liability could extend into the billions of dollars, and if it had critically analyzed the data, including the ominous swell of more frequent and severe incidents during the 1990s,⁴⁸ the inevitable conclusion would have been that catastrophic losses would continue and that both frequency and severity *could* substantially increase beyond the extrapolations of past data.⁴⁹

Despite the mounting evidence, the industry discounted the exposure to infrequent but potentially severe events.⁵⁰ Each year's miss heightened the

happens.”); BRAUNER & GALEY, *supra* note 38, at 20 (stating that insurers did not anticipate an airborne attack using several airliners).

46. See *infra* notes 447–448 and accompanying tables.

47. See *supra* note 15.

48. See *infra* tbl.1. The 1990s saw a trend towards more dramatic terrorist plots. In 1993, terrorists bombed the World Trade Center with the intention of collapsing the towers. In 1994, terrorists hijacked an Air France plane in Algiers with the intention of crashing it into the Eiffel Tower. In 1995, the Philippine government uncovered a plot to blow up 11 American airliners over the Pacific Ocean. In 1998, terrorists simultaneously bombed the American embassies in Kenya and Tanzania. In 2000, terrorists attacked the USS Cole, almost sinking the warship. See PUB. BROAD. SYS., AL QAEDA'S GLOBAL CONTEXT, at <http://www.pbs.org/wgbh/pages/frontline/shows/knew/etc/cron.html> (last visited Mar. 30, 2005) (providing a timeline of al Qaeda's rise in global terrorism). And in 1992, 1993, and 1996, terrorists bombed various targets in the United Kingdom with combined insurance losses over \$2.5 billion. See *infra* tbl.1.

49. See *supra* note 41 and accompanying text. Brauner and Galey state that:

Looking at the findings and priorities formulated in the 1980s and early 1990s, it becomes evident that the enormous loss potential of future terrorist attacks had been recognised[sic], and that large reinsurers and international direct insurers had the best of intentions to make expected future terrorist attacks manageable from an insurance point of view.

BRAUNER & GALEY, *supra* note 38, at 17. Indeed, the insurance industry's failure to recognize catastrophic terrorism risk is similar to the failures of the U.S. intelligence industry as detailed by the 9/11 commission. See THE 9/11 COMMISSION REPORT, *supra* note 1, at 339–60 (noting that intelligence suffered from failures in imagination, policy capabilities, and management).

50. See AM. ACAD. OF ACTUARIES, *supra* note 34, at 7 (stating that any terrorism risk was “not subject to systematic, close attention from an insurance viewpoint before Sept. 11”); ALICE SCHROEDER, MORGAN STANLEY, ASSESSING TERROR AND RELATED LEGISLATIVE RISKS, 6 (2002) (“Most important to recognize is that the 9/11 attack was not a fluke, nor was it entirely unforeseen.”); SWISS RE, SIGMA NO. 1/20032, NATURAL CATASTROPHES AND REINSURANCE 5 (2002) (“There is a tendency to underestimate risks relating to natural hazards when a catastrophic event has not occurred for a long time.”); Letter from Warren Buffett, Chairman, to Shareholders of Berkshire Hathaway, Inc., *supra* note 43, at 8 (“industry made a fundamental underwriting mistake by focusing on experience, rather than exposure, thereby assuming a huge terrorism risk for which we received no premium”). But see Kent Smetters, Brookings-Wharton Papers on Financial Services, *Insuring Against Terrorism: The Policy Challenge* 4 (2004) (“It is especially unimaginable that any insurer of the World Trade Center itself would have never

collective perception of inconceivability, reinforcing a cycle of denial based on a false assumption. The attacks also showed that the potential exposure could be equivalent to the “Big One”⁵¹ — the type of mega-catastrophe that could result in a systemic failure or incapacitation of the industry, particularly if nuclear, chemical, or biological weapons were deployed against a large urban target.⁵² In short, terrorism risk metastasized into a paradigm shifting problem for the industry, national economy, and government.

B. Post-9/11 Market Distortions

While Ground Zero smoldered, the public and politicians asked if the industry would honor claims or would try to evade coverage under the war loss exclusion.⁵³ The nation was attacked, massive losses were suffered, and

considered the possibility of *another* attack.”), available at <http://irm.wharton.upenn.edu/WP-Insuring-Smetters.pdf>. Cf. Georgette Chapman Poindexter, *Impossible, Impracticable, or Just Expensive? Allocation of Expense of Ancillary Risk in the CMBS Market*, 36 J. MARSHALL L. REV. 653, 662 (2003) (discussing how banks and lenders did not consider terrorism to be a systemic risk to credit and therefore did not require specific terrorism coverage before 9/11).

51. See, e.g., ROGER D. BORCHERDT ET AL., USGS, EARTHQUAKE GROUND-SHAKING AND ITS POTENTIAL EFFECTS IN THE SAN FRANCISCO BAY REGION FOR A REPEAT OF THE GREAT 1906 EARTHQUAKE, available at http://nsmf.wr.usgs.gov/Presentations/earthquake_ground_shaking.html (last visited Mar. 3, 2005) (“A repeat of the Great 1906 San Francisco Earthquake could cause 8,000 deaths and 225 billion dollars in property losses.”); U.S. GEN. ACCOUNTING OFFICE, *supra* note 30, at 8–9 (estimates of a mega-catastrophic hurricane in Florida or earthquake in California are up to \$110 billion in insurance losses with property losses as high as \$225 billion). In addition to Florida and California, the New Madrid fault running along the central Mississippi Valley has historically been the site of the most severe earthquakes in North America. *Id.* at 9 & n.18.

52. Both scholars and sophisticated insurers like Warren Buffett have warned of the possibility of a mega-catastrophe in the order of \$1 trillion, which is the approximate total capitalization of the entire global insurance market. Letter from Warren Buffett, Chairman, to Shareholders of Berkshire Hathaway, Inc., *supra* note 43, at 8. See DANIEL ADRIS ET AL., SWISS RE, NUCLEAR RISKS IN PROPERTY INSURANCE AND LIMITATIONS OF INSURABILITY (Technical Communications, Chief Underwriting Office ed., 2003) (estimating that a “close-to-worst case” scenario involving nuclear weapons could result in a trillion dollar loss); JEFFREY R. BROWN ET AL., THE WHARTON FIN. INSTS. CTR., AN EMPIRICAL ANALYSIS OF THE ECONOMIC IMPACT OF FEDERAL TERRORISM REINSURANCE 9 (2004) (“the detonation of a nuclear device in a major urban center such as New York could cause significantly higher losses, possibly running into trillions of dollars”). Cf. *generally* POSNER, *supra* note 15 (proposing that government enact economically efficient policies to prevent a variety of manmade and natural mega-catastrophes). Obviously, in the event of a nuclear detonation, no economic or government mechanism in place could absorb such a shock, and humankind would enter an era riskier than any seen since the dark days of World War II.

53. See *supra* note 34.

the public needed relief. An industry-wide denial of claims, even if colorable,⁵⁴ would have resulted in a backlash that ultimately would have extracted legal, political, and reputational costs far greater than the insurances losses.⁵⁵ Insurers quickly announced that it would not invoke the war loss exclusion,⁵⁶ with the caveat that they would be free to dispute ordinary coverage issues.⁵⁷ In the same breath, however, it indicated that it would exclude terrorism risk in the future.⁵⁸

Historically, the industry reacts to an event shock by withdrawing from the market. The last such shocks were Hurricane Andrew in 1992 and the Northridge earthquake in 1994, which precipitated a withdrawal from the market by reinsurers. This in turn led to dramatic price increases in the short

54. The casualty count of 9/11 is akin to levels seen in traditional wars rather than a single act of terrorism. There has been discussion of whether the conflict with Islamic terrorist groups like al Qaeda is a “war.” See, e.g., Robert F. Turner, *The War on Terrorism and the Modern Relevance of the Congressional Power to “Declare War”*, 25 HARV. J.L. & PUB. POL’Y 519 (2002); Doyle McManus & James Gerstenzang, *America Attacked: The Political Response*, L.A. TIMES, Sept. 13, 2001, at A1. Indeed, 9/11 is often compared to the Japanese surprise attack on December 7, 1941, but Pearl Harbor involved significant loss of military personnel and property associated with an act of war from a foreign sovereign whereas 9/11 involved mostly private losses inflicted by a terrorist organization. See Saul Levmore & Kyle D. Logue, *Insuring Against Terrorism—and Crime*, 102 MICH. L. REV. 268, 275 & n.25 (2003).

55. See, e.g., James G. Rizzo, *The Impact of 9/11 on the Insurance Industry*, <http://www.mwe.com/info/pubs/rizzoins.htm> (last visited Mar. 31, 2005) (reprinted from Volume 46, Number 1, Boston Bar Journal) (“Any attempt to evade coverage obligations by either primary insurers or reinsurers based on such legal maneuvering would not only be unsupported and unpatriotic – it would tear at the faith of the American people in the insurance industry.”) (quoting Letter from the House Committee on Financial Services, to National Association of Insurance Commissioners 1 (Sept. 17, 2001)).

56. See, e.g., *After the Attack: “Act of War” Exclusion Doesn’t Apply to Attacks*, *Insurers Say*, L.A. TIMES, Sept. 17, 2001, at C3; Tom Hamburger & Christopher Oster, *Insurance Industry Backs U.S. Terrorism Fund*, WALL ST. J., Oct. 9, 2001, at A3. Indeed, the industry associated a certain degree of patriotism with its coverage decision. See, e.g., BRAUNER & GALEY, *supra* note 38, at 15 (stating that excluding coverage “could be interpreted as terrorists’ victory over society and hence of the free democratic system”); Richard Allyn & Heather McNeff, *The Fall and Rise of Terrorism Insurance Coverage Since September 11, 2001*, 29 WM. MITCHELL L. REV. 821, 828 n.41 (2003) (noting the testimony of Ronald E. Ferguson, Chairman, General Re, that he was “proud of the way [the insurance industry] stepped up to the losses of September 11th without complaint”). Whether this is genuine patriotism or the best possible spin on an impossible political situation is neither here nor there, given the end result.

57. See, e.g., *World Trade Ctr. Props., LLC v. Hartford Fire Ins. Co.*, 345 F.3d 154, 158 (2d Cir. 2003) (involving litigation concerning whether two attacks on the World Trade Center towers were one or two occurrences for which insurance provides \$3.5 billion “per occurrence”).

58. See, e.g., BRAUNER & GALEY, *supra* note 38, at 24 (stating that insurers proposed new exclusions, sought significantly more premium for significantly less risk, and generally sought to limit liability exposure); AURIELA ZANETTI ET AL., *supra* note 2, at 18 (“In view of such difficulties, a quick answer—and an understandable instant response by insurers to the shock of 11 September—is to exclude terrorism from insurance policies altogether.”).

term,⁵⁹ but as the industry recapitalized the market eventually went into a soft price cycle for much of the 1990s.⁶⁰ While there are microeconomic and corporate finance theories that explain why insurers withdraw from markets after event shock,⁶¹ in the case of 9/11 the reason is fairly obvious. Secretary Paul O’Neill best summarized the situation: “Because insurance companies do not know the upper bound of terrorism risk exposure, they will protect themselves by charging enormous premiums, dramatically curtailing coverage or—as we have already seen with terrorism risk exclusions—simply refusing to offer the coverage.”⁶² Given that the industry relies on accurate information to forecast losses, insurers are averse to informational ambiguities.

After an industry shock, the first to exit are reinsurers. Reinsurance provides additional capital to insurers and thus increases underwriting capacity.⁶³ Because reinsurers are unregulated, they can enter and exit

59. See COMMERCIAL MORTGAGE SEC. ASS’N, TERRORISM INSURANCE ROUNDTABLE 2002, at 39, 42 (2002) (quoting Bernard Brown, President, Insurance Advisors LLC, “The history of the insurance industry is that if they perceive a risk to be very dangerous then they’re going to run away from it.”); CRIPPEN, *supra* note 37, at 3 (“[R]einsurance rates rose 75% between January 1992 and July 1994.”); Anne Gron & Alan O. Sykes, *Terrorism and Insurance Markets: A Role for the Government as Insurer?*, 36 IND. L. REV. 447, 451 (2003) (stating that reinsurers withdrew from the market).

60. Like other industries, insurance follows the general law of supply and demand. The amount of underwriting is a function of capital held. If there is excess capital, insurers will seek to underwrite more business. This leads to price competition, and inadequate returns on capital as an over supply of capital is vying for limited business opportunities, leading to a “soft” price cycle. *Cf.* Shuford, *supra* note 15, at 47 (suggesting that inadequate returns on capital cause insurance cycles).

61. See Gron & Sykes, *supra* note 59, at 451–55 (explaining the various technical finance and insurance theories).

62. *Terrorism Risk Insurance, Hearing Before the Senate Comm. on Banking, Hous., & Urban Affairs*, 107th Cong. (2001) [hereinafter *Hearing*] (testimony of Paul H. O’Neill, Sec’y of the Treasury); see also *infra* notes 270, 271 (explaining that insurers have a short-term aversion to information ambiguity). Anne Gron concurs with Secretary O’Neill’s assessment:

And what happens is that when the new information comes and when you have less capital after the event, you reevaluate your risk portfolio. And a lot of insurers will realize that they have more risk than they would have preferred, given the level of capital, given the new information about the risk.

THE CATO INST., POLICY FORUM, INSURING AGAINST TERROR: IS THERE A ROLE FOR GOVERNMENT REINSURANCE? 14 (2002) (quoting Anne Gron).

63. The amount insurers can underwrite is regulated in accordance with capital ratios set by the states. See, e.g., KAN. STAT. ANN. § 40-2c01 to § 40-2c28 (2003). Primary insurers can, however, underwrite more if they can obtain reinsurance, which cedes some of the premium to reinsurers in consideration for the assumption of a layer of risk. See BAUR & ENZ, *supra* note 32, at 11 (noting that, in 2001, less than 14% of premiums in nonlife policies were ceded to reinsurers).

markets at will.⁶⁴ In the case of 9/11, reinsurers bore the brunt of the losses, about 70%.⁶⁵ As expected, when a majority of the reinsurance treaties came up for renewal in January 2002, they were not renewed as to terrorism coverage.⁶⁶

Without reinsurance, insurers could not limit the exposure to severe liability and had no choice but to exclude coverage.⁶⁷ Their exit, however, was slower due to regulatory constraints.⁶⁸ Insurers had to file their new exclusions with the individual state regulators.⁶⁹ The new exclusion broadly

64. *Rising Uninsured Exposure Hearing*, *supra* note 37, at 3–4 (stating the reinsurance market is not regulated because it involves transactions between sophisticated commercial parties).

65. BRAUNER & GALEY, *supra* note 38, at 15. *See* MILLER, *supra* note 37, at 4 (noting that about 25% of the global reinsurance capital was wiped out in assuming a burden of 60% to 80% of the insurance losses); GEN RE INTERMEDIARIES, CATASTROPHE MARKET UPDATE 4 (Fall 2003) (estimating World Trade Center losses of \$40 billion of which the reinsurance share is \$27 billion). Reinsurers are typically large, international institutions that are well capitalized. *See id.* (stating that, in 2001, over 60% of the cessions went to eighteen large reinsurance groups). In the case of 9/11, European and Bermuda based reinsurers took the brunt of the losses: Munich Re (\$1,959 million), Swiss Re (\$1,777 million), Allianz (\$1,335 million), ACE (\$559 million). OXFORD METRICA, *supra* note 18, at 22; *see also* HUBBARD & DEAL, *supra* note 29, at 18 (providing similar loss figures). *Cf.* Howard Kunreuther & Erwann Michael-Kerjan, *Insurability of (Mega-) Terrorism Risk: Challenges and Perspectives*, in OECD CONFERENCE, *supra* note 36, at 5 (noting that 9/11 losses covered by 150 insurers and reinsurers, with reinsurers being responsible for about 67% of the losses).

66. *See Rising Uninsured Exposure Hearing*, *supra* note 37, at 2 (“This withdrawal is happening fastest among reinsurers.”). Unlike primary insurance policies which are renewed throughout the year, reinsurance treaties are typically renewed on a January-July insurance cycle. As much as 70% of reinsurance treaties came up for renewal during the January 2002 reinsurance cycle, most of which were not renewed. *Id.* at 4 & n.2. *See* MILLER, *supra* note 37, at 4 (stating that reinsurance treaties were not renewed in January 2002); *Congress Needs to Act Fast to Avert Insurance Crisis*, NEWSDAY, Dec. 5, 2001, at A40 (“About 70 percent of reinsurance contracts expire at [month’s end], and reinsurers are threatening not to renew them.”).

67. *See* COMMERCIAL MORTGAGE SEC. ASS’N, *supra* note 59, at 42 (“[T]he reinsurers are driving the availability of primary coverage.”) (quoting Bernard Brown); MILLER, *supra* note 37, at 4 (“[T]he primary insurers had little choice but to follow.”). This is the explanation of the market dynamics and is not to suggest that primary insurers wanted to cover the risk but could not for lack of reinsurance. *See* MILLER, *supra* note 37, at 1 (“[I]nsurance companies are routinely excluding or limiting coverage for terrorist acts from the policies they issue.”); Barbara De Lollis, *Insurers Asking States to Let Them Opt Out of Terrorism Coverage*, GANNETT NEWS SERV., Dec. 5, 2001, available at 2001 WL 5114767.

68. *Rising Uninsured Exposure Hearing*, *supra* note 37, at 2. Primary insurers are regulated by the individual states. *See infra* Part V.B.

69. Every state approved the new terrorism exclusion language, except for California, Florida, Georgia, New York, and Texas, which collectively accounted for about 35% of the commercial market. *See* Jeffrey E. Thomas, *Exclusion of Terrorist-Related Harms from Insurance Coverage: Do the Costs Justify the Benefits?*, 36 IND. L. REV. 397 (2003) (discussing

defines terrorism as the use of force that has the effect or intent to coerce a government or civilian population; and terrorism coverage is limited to losses that are \$25 million or less and coverage is excluded if losses exceed this amount.⁷⁰ The exclusion places terrorism risk squarely on the shoulders of policyholders and their financiers.⁷¹

In addition to reduced capacity, 9/11 accelerated a price hardening cycle.⁷² Evidence suggests that post-9/11 prices increased in the range of 10% to 50%.⁷³ These increases were “just shy of a 12-year peak,”⁷⁴ and some insurers cherry picked underwriting risks at greatly increased prices.⁷⁵ Although certain high-risk cities and trophy properties carried the greatest

the new terrorism exclusion); *see generally* Jane Kendall, *The Incalculable Risk: How the World Trade Center Disaster Accelerated the Evolution of Insurance Terrorism Exclusions*, 36 U. RICH. L. REV. 569 (2002).

70. *See* AM. ACAD. OF ACTUARIES, *supra* note 34, at 14–15 (quoting the new war and terrorism risk exclusions filed by ISO on behalf of the insurance industry).

71. The designations “insureds,” “policyholders,” and “businesses” are used synonymously throughout this article as purchasers or potential purchasers of commercial property and casualty insurance. This group is most at risk in terms of absolute value of potential losses.

72. *See* MILLER, *supra* note 37, at 5 (“[T]errorism insurance is still very expensive, terms are restrictive and coverage limits are frequently too low, when it is available at all.”). Anecdotal evidence suggested high premiums and unavailability of coverage. *See id.* at 6–7; *Rising Uninsured Exposure Hearing*, *supra* note 37, at 10–13. The commercial insurance business is cyclical. *See* AM. ACAD. OF ACTUARIES, *supra* note 29, at 4 (“P/C insurance is often considered an inherently cyclical industry”); U.S. GEN. ACCOUNTING OFFICE, *supra* note 30, at 10 (charting the softening of the reinsurance market after the recapitalization of the industry after Hurricane Andrew and the Northridge earthquake). Even before 9/11 commercial insurance prices had been hardening after nearly a decade of soft cyclical prices. *See* AM. ACAD. OF ACTUARIES, *supra* note 34, at 2 (“Prior to Sept. 11, the P/C insurance market was in the price-firming phase of its market cycle. After Sept. 11, the P/C market is exhibiting accelerated price firming and has started to incorporate some coverage limitations.”); *Rising Uninsured Exposure Hearing*, *supra* note 37, at 2 n.1 (“Prices were already increasing for commercial coverage prior to September 11th.”); MILLER, *supra* note 37, at 10 (noting price hardening before 9/11 and that “premiums for most commercial insurance policies increased 10 to 30 percent in the first quarter of 2002”).

73. *See* AM. ACAD. OF ACTUARIES, *supra* note 29, at 1.

74. *Weathering Well—Catastrophe Insurance*, THE ECONOMIST, Aug. 21, 2004, at 62.

75. *See* Letter from Warren Buffett, Chairman, to Shareholders of Berkshire Hathaway, Inc., *supra* note 43, at 9 (stating that Berkshire Hathaway’s General Re would underwrite terrorism risk, but only selectively); Gron & Sykes, *supra* note 59, at 448 (noting that “a little more than six months after” 9/11, some insurers were willing to insure the airlines with an appropriate premium hike); Orland, *supra* note 29, at 100 & n.60 (indicating that only six insurers were willing to offer insurance at an estimated rate of \$0.20 for every \$100 of replacement value, those six insurers being AIG, Lloyd’s of London, Berkshire Hathaway, the Chubb Corp., Travelers Insurance, and Liberty Mutual).

risk and saw the largest premium hikes, increases were seen across the board.

Reduced capacity and increased prices led to an inability to transfer risk. Unless required by financial covenants in debentures, few policyholders bought terrorism coverage. The new pricing of terrorism coverage and cost-benefit perceptions of policyholders led to adverse selection.⁷⁶ Those perceived to be most at risk (e.g., policyholders and financiers of trophy properties) were the most likely to purchase terrorism coverage, if such coverage was available, while lower risk policyholders chose to forego it.⁷⁷ The greatest risk of terrorism was transferred, albeit selectively, to the industry, which could not sufficiently diversify this risk due to the low “take up” by lower risk insureds who may have been priced out of the market. Adverse selection and price distortions concentrated risk.⁷⁸ This is not to suggest that before 9/11 the risk was widely spread via insurance.⁷⁹ Even the World Trade Center—an iconic symbol of American economic power—was underinsured from the perspective of total loss.⁸⁰ A large portion of fortuitous risk, including terrorism risk, was always shouldered by policyholders and their financiers.⁸¹

76. See AM. ACAD. OF ACTUARIES, *supra* note 29, at 5 (“A continuous build-up of terrorism exposure of those that think they are high-risk on an insurer’s portfolio could become problematic. This type of adverse selection may also have affected the pricing.”).

77. See *Rising Uninsured Exposure Hearing*, *supra* note 37, at 3. The highest risk incurred the greatest price increases while coverage was significantly reduced.

78. See AM. ACAD. OF ACTUARIES, *supra* note 34, at 4 (“higher rates with less coverage seem likely to be more pronounced for larger rather than for smaller risks and for major city risks”).

79. For “every dollar of commercial-structure replacement value,” insurers maintained capital of approximately “two-tenths of a penny of premium.” SCHROEDER, *supra* note 50, at 4. Insurers collected premiums approximately the equivalent amount of capital. *Id.* As of 2000, the industry had collected \$19.8 billion of premium for US commercial multiperil coverage, as compared to the “\$5.5 trillion replacement value of all US commercial structures.” *Id.* Including real estate, the total asset value is \$12.2 trillion, which is supported by \$8.2 trillion in debt and \$4 trillion in equity (approximately). *Id.* At the end of 2001, the aggregate U.S. property and casualty insurer capital was about \$282 billion. *Id.* In addition to the real structure, Morgan Stanley estimates “\$5.1 trillion in inventory, equipment and software.” *Id.*

80. The World Trade Centers were insured for \$3.55 billion per occurrence. See STEVEN BRILL, *AFTER: HOW AMERICA CONFRONTED THE SEPTEMBER 12 ERA* 156, 389 (2003) (replacement value estimated at \$5 to \$6 billion); DIXON & STERN, *supra* note 28, at 103 (stating the replacement value estimated at \$4.5 billion, and contents at \$5.2 billion). *Cf.* Mark Hamblett, *Industry Lawyers Argue WTC Was Underinsured*, N.Y. L.J., Apr. 16, 2004, at 1 (noting that lawyers for insurers argued the World Trade Center was underinsured).

81. See SCHROEDER, *supra* note 50, at 3. Not surprisingly, 67% to 75% of retail establishments in Lower Manhattan carried insurance that covered some of the losses from 9/11. DIXON & STERN, *supra* note 28, at 107. When the Morgan Stanley data is viewed in comparison,

That policyholders bear some risk through deductibles, retentions and policy limits is an essential part of risk management. Risk management techniques are categorized into “*avoidance, reduction, control, transfer and retention*,”⁸² all of which require significant policyholder participation. The problem was not that 9/11 left owners and financiers retaining their risk.⁸³ It was that the insurance mechanism was unavailable when they sought to transfer some of the risk in the ordinary course of corporate risk management. There was either no coverage or exorbitant prices.⁸⁴ Because there was a temporary dislocation of supply and demand, the economy began to suffer. In addition to the direct losses caused by the attacks and the immediate consequences on the airline, hotel and tourism industries, high premiums had a trickle down effect on the rest of the economy. Increases in financing costs led to higher cost of goods and services, resulting in higher prices and reduced profits.⁸⁵ The real estate and financing industries were hit the hardest. The lack of coverage and higher premiums increased the cost of capital and restricted capital flow to the real estate and construction sectors.⁸⁶ Commercial mortgage backed securities (“CMBS”) saw a decline

the data suggests that, even before 9/11, there was some degree of adverse selection involved as businesses in high risk urban areas tended to get insurance while other businesses may not.

82. See Christopher D. Stone, *Beyond Rio: “Insuring” Against Global Warming*, 86 AM. J. INT’L L. 445, 474–75 (1992).

83. Policyholders and owners always retain a significant portion of the risk in catastrophes. Hurricane Andrew and the Northridge earthquake inflicted about \$34 billion and \$43 billion of losses, respectively, but insurance only covered a portion of the losses. See CRIPPEN, *supra* note 37, at 10 (providing figures on economic losses); *infra* tbl.1 and note 449 (providing estimates of insurance losses). September 11th resulted in a similar retention of some of the losses by policyholders and owners. See *supra* note 29.

84. See THE CATO INST., *supra* note 62, at 23 (containing Debra Ballen, American Insurance Association, comments that two-thirds of major corporations have no terrorism coverage and that “eighty percent believe their coverage is inadequate” based on data from Risk and Insurance Management Society).

85. See *Hearing*, *supra* note 62 (“[I]ncreased premiums and/or increased risk exposure for businesses . . . will be passed on to consumers in the form of higher product prices, transportation costs, energy costs and reduced production.”).

86. See *Rising Uninsured Exposure Hearing*, *supra* note 37, at 2 (“[S]ome sectors of the economy—notably real estate and commercial lending—are beginning to experience difficulties because some properties and businesses are unable to find sufficient terrorism coverage, at any price.”); MILLER, *supra* note 37, at 1 (“As a result, a significant barrier to economic activity has been created, as businesses are forced to bear higher costs of insurance or are unable to conduct business due to financing requirements to carry terrorism insurance.”). Approximately \$15 to \$17 billion worth of commercial real estate loans, “representing about 10% of the CMBS market,” were suspended or cancelled due to terrorism risk and the inability of businesses to transfer the risk. See *id.* at 14 & n.70 (\$17 billion); THE CATO INST., *supra* note 62, at 24 (citing \$15 billion in seventeen states); President George W. Bush, Address on the Signing of the

in overall credit rating and prices,⁸⁷ and borrowers faced the possibility of default and loan recalls due to covenants requiring insurance coverage.⁸⁸ Lenders refused to finance billions of dollars of construction projects without terrorism coverage, resulting in significant job losses in the construction and real estate industries in an economy that was already sliding into a recession.⁸⁹

In short, 9/11 caused substantial short-term economic damage on a national level. The insurance market was perceived to be “unstable” in the short-term,⁹⁰ causing price and capacity dislocation, adverse selection of risk, concentrated risk, economic slowdown, and significant job losses. In the midst of this perceived temporary economic turbulence, the government enacted the Terrorism Risk Insurance Act of 2002 (“TRIA”).⁹¹

C. Terrorism Risk Insurance Act of 2002

On November 26, 2002, TRIA was signed into law.⁹² TRIA is a temporary market stabilization measure with a sunset date of December 31,

Terrorism Insurance Act (Nov. 26, 2002), at <http://www.whitehouse.gov/news/releases/2002/11/20021126-1.html> (last visited Mar. 9, 2005) (citing \$15 billion).

87. See DANIEL B. RUBOCK, *CMBS WORLD*, MOODY'S UPDATE ON TERRORISM INSURANCE, 48 (2003) (downgrading eleven deals); AM. ACAD. OF ACTUARIES, *supra* note 34, at 6 (lenders reluctant “to finance projects of \$100 million or more” and to invest in single asset CMBS bonds); Poindexter, *supra* note 50, at 660–61 (noting that rating agencies downgraded billions of dollars of single asset CMBS and that lenders threatened to “force place” expensive coverage on borrowers). CMBS are commercial real estate loans that have been securitized into bonds collateralized by the income streams from the mortgage. See *infra* Part IV.A.

88. See *Rising Uninsured Exposure Hearing*, *supra* note 37, at 11. But see Orleans, *supra* note 29, at 101 (“Lenders have generally avoided placing loans into default for insufficient terrorism insurance.”).

89. See EMBLETON & BERNAL, *supra* note 32, at 2 (stating lenders held up approximately \$17 billion of construction projects for lack of terrorism coverage); see also *Rising Uninsured Exposure Hearing*, *supra* note 37, at 9 (“Some examples of large projects canceling or experiencing delays have surfaced, with the lack of terrorism coverage being cited as a principal contributing factor.”); Orleans, *supra* note 29, at 94 (noting that more than \$11.7 billion of real estate projects were delayed or cancelled).

90. AM. ACAD. OF ACTUARIES, *supra* note 29, at 4.

91. See Bush, *supra* note 86 (“[T]he Terrorism Risk Insurance Act will permit many construction projects to move forward and to help this economy grow.”).

92. Terrorism Risk Insurance Act of 2002, Pub. L. No. 107-297, § 101(a)-(b), 116 Stat. 2322, 2322–23 (2002) [hereinafter TRIA]. TRIA is loosely based on Pool Re, the British scheme to provide reinsurance coverage for terrorism risk. Levmore & Logue, *supra* note 54, at 301. See generally William B. Bice, *British Government Reinsurance and Acts of Terrorism: The Problems of Pool Re*, 15 U. PA. J. INT'L BUS. 441 (1994) (discussing Pool Re). TRIA was the product of extensive negotiations among the various interest groups, which accounted for the fact that it was signed into law over a year after 9/11. See Mark Boran, *To Insure or Not to*

2005.⁹³ It implements a federal reinsurance program. Coverage begins when the Secretary of Treasury certifies a loss caused by an “act of terrorism,” defined as “an act that is dangerous to human life, property, or infrastructure [committed] . . . to coerce the civilian population of the United States or to influence the policy or affect the conduct of the United States Government by coercion.”⁹⁴

TRIA is mandatory for insurers but optional for policyholders. Insurers must offer terrorism coverage that “does not differ materially from the terms, amounts, and other coverage limitations applicable to losses arising from events other than acts of terrorism.”⁹⁵ This nullifies the new terrorism risk exclusions that were approved by most states.⁹⁶ In exchange, the government provides a cost sharing program. In the event of a certified act of terrorism, insurers retain a loss deductible of 7%, 10%, and 15% of their direct earned premiums in 2003, 2004, and 2005, respectively.⁹⁷ Above this deductible, the government bears 90% of the loss up to a maximum loss of \$100 billion per year while insurers bear the remaining 10% and any excess losses above the \$100 billion per year cap.⁹⁸ By way of example, if TRIA

Insure, That is the Question: Congress' Attempt to Bolster the Insurance Industry After the Attacks on September 11, 2001, 17 ST. JOHN'S J. LEGAL COMMENT., 523, 561–82 (2003) (describing the TRIA negotiation process).

93. TRIA § 108(a). TRIA was set to expire on December 31, 2004 unless the Secretary of Treasury extended the “make available” provision to 2005 by September 1, 2004. *Id.* § 103(c)(2). Subsequently, the Treasury Department extended TRIA for 2005. Treasury Department Press Release (June 24, 2004). Lobbying by the industry may have influenced this decision. *See, e.g.*, Letter from Coalition to Insure Against Terrorism to President George W. Bush (Apr. 21, 2004) (urging extension of the “make available” provision).

94. *Id.* § 102(1). The statutory definition of “terrorism” excludes acts of domestic terrorism, acts of war, acts not on American soil (with a few exceptions), and acts that do not exceed \$5 million of damage in the aggregate. *Id.* Also, it applies to commercial property and casualty insurance, but does not apply to other insurance lines, such as life and health, personal lines, federal crop, private mortgage, financial guaranty, medical malpractice, flood, and reinsurance and retrocession. *Id.* § 102(12).

95. *Id.* § 103(c)(1)(B).

96. *See supra* note 69.

97. TRIA § 102(7). The deductible levels are high for most large commercial insurers. A recent survey estimates that the 2004 deductibles for AIG, Travelers, ACE, Chubb and Berkshire Hathaway would be \$2.7 billion: “\$928 million, \$743 million, \$600 million and \$200 million, respectively.” KUNREUTHER & MICHAEL-KERJAN, *supra* note 29, at 16 n.23.

98. TRIA § 103(e). The statute requires a mandatory government recoupment of the federal share of the losses if the aggregate deductible and 10% share is less than the “insurance marketplace aggregate retention amount,” set at \$10 billion, \$12.5 billion, and \$15 billion in years 2003, 2004, and 2005. *Id.* § 103(e)(6). The government would then recoup the difference between these amounts through a policyholder surcharge of not more than 3% of the policy premium per year. *Id.* § 103(7)–(8); *see also* Jeffrey Manns, *Insuring Against Terror?*, 112 YALE L.J. 2509, 2534 (2003).

had been in place on 9/11 and insurance losses are finally determined to be \$35 billion, the government would have paid anywhere from about \$4 billion to \$21 billion of the \$35 billion loss, depending on the loss deductible percentage applicable for that year.⁹⁹ In the event of another attack on the scale of 9/11 or greater, TRIA would provide a substantial government subsidy to the insurance industry at the expense of taxpayers.¹⁰⁰ By capping the liability of extreme catastrophe, the federal government acts as the reinsurer to insurers and policyholders. This is a form of federal subsidy in that the government receives no compensation for assuming this extreme risk, which would have otherwise privately apportioned between insurer and policyholder in an economically rational manner.¹⁰¹ There is a risk transfer from the industry to the government wherein the former can now earn a profitable premium—profitable because it can be actuarially assessed without consideration of extreme risk.

The government enacted TRIA for two purposes: (1) to address “market disruptions and ensure the continued widespread availability and affordability” of insurance and (2) to “allow for a transitional period for the private markets to stabilize, resume pricing of such insurance, and build capacity to absorb any future losses.”¹⁰² The mandatory offer feature of TRIA is presumed to have partially achieved the first objective. Terrorism risk generally has been available to businesses, including owners of trophy properties, and credit ratings of CMBS bonds have improved.¹⁰³ The

99. BRAUNER & GALEY, *supra* note 38, at 31. This assumes direct earned premiums of \$170 billion. *Id.* The calculation works as follows: the deductible rates of 7%, 10%, and 15% premium income in program years one, two, and three would result in deductibles of about \$12 billion, \$17 billion, and \$26 billion; the insurers would retain 10% in excess of the premium deductible, or \$2.3 billion, \$1.8 billion, or \$0.9 billion, depending on the program year; the insurance industry would have assumed \$14.3 billion, \$18.8 billion, or \$26.9 billion of losses, depending on the program year; the government’s share would then be \$20.7 billion, \$16.2 billion, or \$8.1 billion, depending on the program year in which the attack occurred.

100. To put the \$8 to \$21 billion subsidy in context, the September 11th Victim Compensation Fund has paid out over \$5 billion in compensation to 9/11 victims. *See infra* note 235.

101. If the insurer does not assume the catastrophe risk, it is questionable whether policyholders would purchase coverage in the first place. Hubbard and Deal argue that “TRIA is not a subsidy transfer to primary insurers and no payments are duplicated under the program.” HUBBARD & DEAL, *supra* note 29, at 22. While this is technically true, they gloss over the larger point that there is now free federal reinsurance.

102. TRIA § 101(b).

103. U.S. GEN. ACCOUNTING OFFICE, TERRORISM INSURANCE: IMPLEMENTATION OF THE TERRORISM RISK INSURANCE ACT OF 2002 4 (2004). Effective July 7, 2004, the GAO changed its legal name from the Government Accounting Office to the Government Accountability Office. GAO Human Capital Reform Act of 2004, Pub. L. 108-271, 118 Stat. 811 (2004).

government found that there is “widespread availability of terrorism insurance.”¹⁰⁴ But questions concerning the cause and effect remain open to debate. Evidence suggests that premium prices were coming down from the initial price spikes during the fourteen month period between 9/11 and the enactment of TRIA.¹⁰⁵ Lenders were beginning to adjust to the reality that terrorism insurance was limited, and according to the Federal Reserve, as of July 2002, the CMBS market “suggests that concerns about terrorism insurance have not been widespread.”¹⁰⁶ These effects are consistent with the experiences of Hurricane Andrew and the Northridge earthquake, which saw a similar pattern of mass withdraw after an event shock followed by a gradual return to market stability after the industry recapitalized and reassessed the risk.¹⁰⁷ Furthermore, price stabilization did not have its desired effect.

104. U.S. GEN. ACCOUNTING OFFICE, *supra* note 103, at 5; *see also* Smetters, *supra* note 50, at 1 (“Overall, premiums are viewed as reasonable.”).

105. *See* BROWN ET AL., *supra* note 52, at 10 (noting how the market was stabilizing into a new equilibrium even before TRIA was enacted); THE CATO INST., *supra* note 62, at 30 (containing the comments of Scott Harrington, University of South Carolina, that “prices are high, but the brokerage community estimates that the prices have dropped substantially since the beginning of this year [2002]”); Lisa S. Howard, *Capacity Issues Creep Into Special Terror Market*, NAT’L UNDERWRITER, May 6, 2002, at 20 (“[T]he market has stabilized, more capacity has become available, and prices have dropped”); Smetters, *supra* note 50, at 13 (stating that, “[b]y September 2002, premiums dropped as much as 75 percent per unit of coverage,” and limits as high as \$1 billion were once again available). *Cf.* REPUBLICAN POL’Y COMM., U.S. SENATE, FEDERAL TERRORISM REINSURANCE: A SOLUTION OR A PROBLEM?, 6 (2004) (noting that terrorism risk price averaged about 8% to 10% of the total all risk premium).

106. Smetters, *supra* note 50, at 27–28; *see also* CRIPPEN, *supra* note 37, at 30 (noting that CMBS data “do[es] not suggest a major disruption in the supply of commercial mortgage money at this time [September 2002]” and that “investors are not demanding much of a premium for bearing terrorism risk, in part because CMBSs are geographically diversified”). “[L]enders began to adapt to more limited access to terrorism insurance by waiving coverage covenants in exchange for higher loan rates.” Manns, *supra* note 98, at 2524; *see also* CRIPPEN, *supra* note 37, at 29 (noting little impact of the lack of terrorism coverage on the real estate lending industry and attributing any decline in commercial construction to the recession started in March 2001). There is evidence that terrorism risk did not hurt the CMBS market as much as some believed. *See supra* note 87. In July 2002, the Federal Reserve noted in its Monetary Policy Report to Congress: “Investment appetite for CMBS has apparently been strong, as yield spreads have narrowed this year . . . the low level of risk spreads for CMBS suggests that concerns about terrorism insurance have not been widespread in the market for commercial mortgages.” REPUBLICAN POL’Y COMM., *supra* note 105, at 10 (quoting THE FED. RESERVE BD. OF GOVERNORS, MONETARY POLICY REPORT TO THE CONGRESS § 2 (2002)).

107. BROWN ET AL., *supra* note 52, at 34; CRIPPEN, *supra* note 37, at 14–15. Although premiums rose immediately after Hurricane Andrew and the Northridge earthquake, significant new equity capital flowed into the industry and reinsurance prices eventually declined. BROWN ET AL., *supra* note 52, at 8; *see also* Grace et al., *supra* note 36, at 566 (“Yet, historical experience suggests that the flow of capital to replenish funds expended to cover catastrophe

By the end of 2003, premium rates were stabilized to single digit increases across all firm sizes,¹⁰⁸ and terrorism premiums averaged 4.4% of total property premiums.¹⁰⁹ While TRIA may have increased capacity, the “take up” rate has been low even with a federal backstop. About 10% to 30% of policyholders bought terrorism coverage.¹¹⁰ The low take up is consistent with other government run insurance programs.¹¹¹ While the take up among larger firms and policyholders in high risk areas have been higher, smaller firms have not followed.¹¹² Several factors may explain this. In spite of the perception that terrorism can strike at random, few attacks of catastrophic severity occurred outside of prominent cities such as London, New York, and Washington, and high economic value targets such as commercial airliners, London’s financial district and the World Trade Center. It is easy to see how a business on Main Street could opt for no

losses is somewhat balky and can lead to short-term dislocations in insurance and reinsurance markets.”). In view of this phenomenon, the government that predicted that “in a few years, the industry is likely to recover fully.” CRIPPEN, *supra* note 37, at 1.

108. AM. ACAD. OF ACTUARIES, *supra* note 29, at 4 (noting that small, medium, and large accounts increased by 5%, 6%, and 4%, respectively).

109. HUBBARD & DEAL, *supra* note 29, at 45.

110. U.S. GEN. ACCOUNTING OFFICE, *supra* note 103, at 4 (estimating 10% to 30%). See DIXON & STERN, *supra* note 28, at 140 n.2 (stating that Marsh & McLennan found that the take up rates in 2003 were 25% to 30% for firms with a total insured value between \$5 to \$500 million, 40% with value between \$500 million to \$1 billion, and 27% with value over \$1 billion); EMBLETON & BERNAL, *supra* note 32, at 5 (estimating 10% to 25% a year after the passage of TRIA); GEN RE INTERMEDIARIES, CATASTROPHE MARKET UPDATE, 5 (2003) (noting market capacity is “limited with pricing levels that can range above 30% rate on line”); REPUBLICAN POL’Y COMM., *supra* note 105, at 6–7 (citing Treasury Department figures at 25% to 30%)

111. HUBBARD & DEAL, *supra* note 29, at 52 (noting that the California Earthquake Authority has a take up of 14% to 17%, and that the National Flood Insurance Program has a participation of 41%).

112. See *infra* note 447. The take up rates are substantially higher in “Tier One” cities of New York, Washington, Chicago, Los Angeles, and San Francisco. AM. ACAD. OF ACTUARIES, *supra* note 29, at 14. For example, in New York, the take up rate is 50% for properties over \$50 million, 40% to 50% for \$15 to \$50 million, and 15% for less than \$15 million. *Id.* The evidence also suggests that smaller firms bought less terrorism coverage than larger firms. Compare *id.* at 13–14 (estimating a take up rate of 10% of small businesses and 20% of midsize companies with a national average of 15%), and BROWN ET AL., *supra* note 52, at 34 (estimating a take up rate of 19% of small customers, 22% of medium size firms, and 29% of large firms as of March 2003 according to the Council of Insurance Agents and Brokers), with HUBBARD & DEAL, *supra* note 29, at 35 (“Survey data suggests that roughly 44% of larger property insurance policyholders elect (or ‘take up’) terrorism coverage . . .”). For small businesses with de minimis potential for catastrophic exposure, insurers apparently have gone back to the pre-9/11 practice of including the risk as a part of the package, suggesting that insurers have become more sophisticated about assessing terrorism risk since the panic stricken days of 9/11. DIXON & STERN, *supra* note 28, at 140 n.2.

coverage when premium costs cut into profit in an already weakened economy. Unlike a large firm, smaller firms may not have the same bargaining power to negotiate premium discounts, and the marginal costs may be significantly greater. The cost-benefit analysis may not have been a single determinant process either. Prices could have been too expensive in relation to the actuarial risk (the probability and severity of attack based on the available information.)¹¹³ Or prices could have been too expensive based on an assumption of ex post relief (the probability of loss reduced by the consideration of ex post subsidy). The optional purchase feature of TRIA resulted in low participation and adverse selection. The “take up” rate has been low, particularly among smaller firms, because policyholders considered terrorism coverage a bad purchase given the prices and the perceived risks.¹¹⁴

If there is some question as to whether TRIA achieved the first objective of market stabilization, there is none as to the second objective of promoting a longterm solution. The government found “little development or movement among insurers or reinsurers toward developing a private-sector mechanism that could provide capacity, without government involvement, to absorb losses from terrorist events.”¹¹⁵ The industry’s effort to find a longterm solution appears to have consisted of lobbying for an extension of TRIA or a “a long-term, public-private partnership” in the form of federal cost sharing program.¹¹⁶

113. See AM. ACAD. OF ACTUARIES, *supra* note 29, at 5 (“One reason for the low take-up rate for terrorism coverage may be that the price of coverage is too high for the amount of perceived risk being transferred.”); GEN RE INTERMEDIARIES, *supra* note 65, at 2 (“Small to mid-market companies have not expressed much interest in purchasing stand-alone terrorism products as these clients conclude that the protection is too costly relative to what they perceive to be a low likelihood of loss.”).

114. U.S. GEN. ACCOUNTING OFFICE, *supra* note 103, at 4; see GEN RE INTERMEDIARIES, *supra* note 110, at 5 (noting market capacity is “limited with pricing levels that can range above 30% rate on line”).

115. U.S. GEN. ACCOUNTING OFFICE, *supra* note 103, at 28.

116. AM. INS. ASS’N ADVOCATE, *supra* note 25, at 3; see also HUBBARD & DEAL, *supra* note 29, at 55 (“Government partnership in risk bearing may be warranted when the private sector is unable to effectively underwrite and price catastrophic risks that are difficult to predict, potentially realized by large numbers of insured entities simultaneously, and difficult to spread.”); *infra* note 225.

D. Longterm Economic Uncertainty

If we assume that another catastrophic attack is not a matter of *if* but rather *when, where, how and how much*, then the prospects are troubling.¹¹⁷ The economic question is: Who should bear the cost? The cost of future catastrophic terrorism has been estimated to be in the range of \$50 billion to \$100 billion, with outlier estimates as high as \$1 trillion.¹¹⁸ Sound risk management principles dictate that policyholders must always internalize some of these costs to mitigate moral hazards.¹¹⁹ Cost internalization also reflects the reality that total loss coverage is not always an efficient use of capital, and cheaper premiums can be negotiated with higher deductibles or lower policy limits. In the case of 9/11, the industry and policyholders jointly shouldered a substantial portion of the losses, and the government subsidized a significant portion of the latter's uninsured loss.¹²⁰ Without insurance, the economic disruptions would have been far more severe.¹²¹ "If insurance is not widely held in areas affected by future terrorist attacks, the demand for benefits from government programs, charities, and the tort system would be much greater after such attacks."¹²²

If another attack occurs in the near future and the industry again faces massive losses without adequate buildup of reserves, the market will lose confidence in the industry. An investment in insurance—whether the investment is made by an insurer on an underwritten policy, a reinsurer on a reinsurance treaty, or a market investor in stocks or bonds of (re)insurers—will be deemed speculative. The domino effect is easy to foresee: (1) the industry will not be able to recapitalize so quickly as the opportunity for gain will be offset by the reality that the industry will have been burned twice without adequate returns; (2) there will be a capital flight away from

117. On May 19, 2002, Vice President Dick Cheney commented on NBC's Meet the Press: "In my opinion, the prospects of a future attack against the United States are almost certain." Roger Simon et al., *One Year After 9/11—A Nation Changed: Introduction*, U.S. NEWS & WORLD REP., Nov. 11, 2002, at 4. The next day, on May 20, FBI Director Robert Mueller told a meeting of the National Association of District Attorneys: "There will be another terrorist attack. We will not be able to stop it. It's something we all live with." *Id.*

118. See AM. ACAD. OF ACTUARIES, *supra* note 29, at 17 ("cost to commercial lines of a future extreme terrorist attack ranges from \$50 billion to \$100 billion"); see also *supra* note 52.

119. A moral hazard is created when one party can transfer risk to another without an appropriate counterbalancing compensation structure, thereby incentivizing the negative consequences of that risk taking.

120. See DIXON & STERN, *supra* note 28, at xviii fig.S.1, 1–2 (stating that the government has paid \$15.8 billion of \$38.1 billion in 9/11 compensation, not including the \$20 billion promised to New York City and the \$5 billion in federal aid to the airlines).

121. *Id.* at 126.

122. *Id.*

insurers as the markets assess the impact of another catastrophic attack; (3) without access to capital, the industry will refuse to cover terrorism risk; (4) capacity will be reduced and premiums will be prohibitively expensive; (5) businesses and their financiers will bear more risk; (6) increased risk will raise the cost of capital and expenses, and projects will be cancelled or delayed as funding dries up; (7) these costs will trickle down to the rest of economy in the form of higher prices, lower profits, layoffs, and slower spending; and (8) the inevitable result will be a damaged economy. This procession of events is the inevitable butterfly effect of a market system based on self-interest. Under these circumstances, the only available options will be to do nothing and allow time for the market to recover or to provide an ex post bailout from public funds if the threat seems systemic.

Of course, the above scenario assumes that the industry will have assumed a substantial portion of the risk as it did before 9/11. In this regard, we must distinguish between short-term and longterm consequences of catastrophic terrorism. As seen, exogenous shocks create short-term “psychological” distortions in the industry as perceptions of the risk are changed by new information.¹²³ The old supply and demand curves no longer hold. Eventually, however, market forces work themselves into a new equilibrium. The dire warnings of the industry that terrorism coverage will dissipate upon the expiration of TRIA is attributable more to lobbying strategy than market reality.¹²⁴ Since 9/11, the industry recapitalized its losses and now holds more capital than it did before 9/11.¹²⁵ In the months after 9/11, insurance stock prices increased as investors sought to capitalize on anticipated hardening prices and higher returns on capital.¹²⁶ In the

123. See Shuford, *supra* note 15, at 49 (“Shocks actually have been more psychological than financial due to the benefits of diversification.”); *supra* Part II.B.

124. See *infra* note 259.

125. From September to July 2002, “66 firms had raised \$28 billion and another 47 deals worth \$47 billion were” in the pipeline. HUBBARD & DEAL, *supra* note 29, at 37. At the end of 2000, the U.S. property and casualty sector held \$290 billion in surplus, and at the end of the first quarter 2004 it held capital of \$361 billion. *Id.* at 30. Moreover, the capital of US reinsurers more than doubled since 9/11. *Id.* at 39 fig.17.

126. Immediately after 9/11, insurance stock prices dropped sharply because of the anticipated losses and speculation about insolvency. The price, however, bounced back and subsequently outperformed broader indices in the immediate months following 9/11 as investors realized that 9/11 would result in increased premiums and higher returns on the reduced equity capital. This phenomenon can be confirmed by checking the stock prices of AIG (NYSE Ticker: AIG), Chubb (NYSE Ticker: CB), Hartford Financial (NYSE Ticker: HIG), and Berkshire Hathaway (NYSE Ticker: BRKa). See, e.g., <http://finance.yahoo.com> (last visited Mar. 5, 2005); see also OXFORD METRICA, *supra* note 18, at 23–24 & tbl.6 (finding that, in the one year after 9/11, the stocks of the top twenty-five global insurance companies fell 0.73% as compared to a loss of 16.8% for the S&P 500 Composite and a loss of 16.9% for the Dow Jones Euro Stoxx);

several years following 9/11, industry return on equity has exceeded that of all US industry composite.¹²⁷ The implication of this recapitalization, complete financial recovery, and opportunistic gain is that even without TRIA insurers would have been forced to underwrite more coverage, lest the capital not generate sufficient returns to shareholders. As the pressure to deploy the new capital builds, the market forces of price, supply and demand take over, and a gradual decrease in premium pricing is inevitable as the bargaining power between supplier and purchaser shifts. Extrapolations of data suggests that terrorism insurance premiums are roughly \$3.6 billion, or about 12% of 9/11 loss.¹²⁸ Four years have already passed without a major act of terrorism on American soil, and in another four years the industry will have fully recaptured its 9/11 losses. From this perspective, it is difficult to see how the industry would wholly shun potentially profitable premiums.

This is not to suggest that catastrophic terrorism should be treated as an ordinary risk. September 11th shattered the old paradigm. The question remains whether the current structure of the insurance industry efficiently disperses this risk.

Presently, the sources of compensation are insurance, government, and tort law.¹²⁹ Tort litigation is the most costly mechanism to distribute compensation.¹³⁰ Because it is ponderous and adversarial, it is not the best scheme to provide relief following a national disaster. The cost involved in delivering compensation indicates that one of the primary beneficiaries of

SCHROEDER, *supra* note 29, at 2 (noting that property and casualty insurance stocks were up 11.1% since September 10, 2001).

127. HUBBARD & DEAL, *supra* note 29, at 36.

128. *Id.* at 35.

129. To a lesser extent, charity also is a source of compensation. DIXON & STERN, *supra* note 28, at xviii (\$2.7 billion or 7% of 9/11 disbursements). In times of great, identifiable human tragedy, whether localized or broad, charity can provide substantial relief as was demonstrated in both the 9/11 attacks and the South Asia tsunami of December 2004. See Alan Cooperman & Jacqueline Salmon, *Charities Report Record Donations*, WASH. POST.COM, Jan. 8, 2005, at <http://www.msnbc.msn.com/id/6081385> (last visited Jan. 8, 2005) (noting that US charities raised \$337 million and that it “could soon dwarf the \$350 million in aid committed by the U.S. government”).

130. The cost ratio for the tort system, defined as costs over total payment, was 54%, meaning that costs consume more than payouts to tort victims. RUDOLF ENZ & THOMAS HOLZHEU, SWISS RE, SIGMA NO. 6/2004, THE ECONOMICS OF LIABILITY LOSSES – INSURING A MOVING TARGET 5 (Kurt Karl & Aurelia Zanetti eds., 2004). This compares unfavorably to life and health insurance (23%), HMO/Blue Cross Blue Shield (20%), workers compensation (17%), and Social Security (3%). *Id.* at 5 fig.1. Interestingly, tort claims have not accounted for any of the compensation for 9/11 losses thus far. DIXON & STERN, *supra* note 28, at 133 tbl.8.1. The September 11th Victim’s Compensation Fund preempted tort claims. See *infra* note 235.

the tort system is the legal profession.¹³¹ Some would agree, including the author, that government subsidies should not be the longterm solution.¹³² This leaves insurance. Without TRIA, however, it is doubtful that insurance can substantially cover future catastrophic terrorism losses.¹³³ The problem is not the prospect of another massive blow to the industry's capital.¹³⁴ It is the prospect of a lack of *capital flow*. In 9/11, the industry showed that it can readily absorb a loss of \$30 billion without a threat to solvency,¹³⁵ and financial analysis of the industry has shown that it can absorb as much as a \$100 billion loss.¹³⁶ But the economic fallout from another catastrophic attack will be severe if the risks remain concentrated and so the prospects of broad compensation is diminished.¹³⁷

The nature of the insurance business requires a long institutional memory. The lessons of 9/11 will not fade from actuarial databanks, and 9/11 will be the frame of reference by which terrorism risk is priced and assessed. Without TRIA, premiums will probably rise with reduced coverage, the net

131. See *supra* note 130. I make no suggestions of whether the legal professional is primarily responsible for the high cost ratio or whether the problem is more intrinsic to the structure of the legal system.

132. See *infra* Part III.C.

133. See AM. ACAD. OF ACTUARIES, *supra* note 29, at 17 (“[T]he insurance industry is not in the position of being able to play its usual risk management role in the economy.”); MILLER, *supra* note 37, at 13 (“Although the insurance industry had the resources necessary to cover the costs of the claims from the 9/11 attacks, another attack of similar magnitude could seriously destabilize the entire industry.”); Letter from Warren Buffett, Chairman, to Shareholders of Berkshire Hathaway, Inc., *supra* note 45, at 8 (speculating that 9/11 would have threatened the existence of General Re if it was not owned by Berkshire Hathaway).

134. As of 2001, the U.S. property and casualty sector was supported by about \$290 million surplus of capital. CRIPPEN, *supra* note 37, at 5 tbl.1.

135. The 9/11 attacks triggered the liquidation or bankruptcy of only a few troubled insurers. See Bill Bergstrom, *Insurance Co. in 9-11 Claims to Liquidate*, A.P., July 1, 2003, available at 2003 WL 58609197 (discussing Legion Insurance Co., which owed \$140 million of insurance claims to American Airlines as its part of the 9/11 insurance claims); Shingo Ito, *Japanese Insurers Warn of Big Costs from US Terror Attacks*, AGENCE FRANCE-PRESSE, Nov. 27, 2001, available at 2001 WL 25072331 (stating that Taisei Fire & Marine Insurance Co. Ltd, a Japanese insurer, filed for bankruptcy after ¥ 74.4 billion in losses related to 9/11).

136. There will be some hardships associated with such a loss but not a systemic failure. See *Insurance and Terrorism: Hearing Before the Subcommittee on Capital Markets, Insurance, and Government Sponsored Activities* (Oct. 24, 2001) [hereinafter *Insurance and Terrorism Hearing*], available at 2001 WL 26187518 (statement of J. David Cummins, Harry J. Loman Professor of Insurance and Risk Management, The Wharton School, University of Pennsylvania: “A study I recently conducted indicates that the insurance industry could survive an event of that magnitude [\$100 billion loss] but that markets would be disrupted by numerous insurer insolvencies as well as market price and availability problems.”).

137. The real problem of terrorism risk “stems from the threat to the economy rather than from the insurance industry.” CRIPPEN, *supra* note 37, at 1.

result being that the market may find a new equilibrium similar to the conditions found after 9/11, though not as extreme and tempered by a more rational assessment of the risks:¹³⁸ i.e., capacity remains reduced due to market exit by some (re)insurers and coverage limitations; premium prices vary depending on the unique risks associated with each policy; the overall take up rate is low, particularly among smaller firms;¹³⁹ the risks are still concentrated at the policyholder level; the risk is not evenly distributed, but instead adversely selected; and smaller firms, who are most susceptible to a catastrophic event, are more likely to forego insurance. There will also be more concentrated insurance risk as many insurers will choose not to cede premiums to reinsurers because the take up rate and policy limits lowered their aggregate exposure and reinsurance prices may be too high. These effects will magnify future economic disruptions from another terrorism related catastrophe.

E. Problems of Insuring Terrorism Risk

September 11th presented an information shock on two levels. First, the industry learned that diversification of business lines does not necessarily reduce the risk. The attacks affected twenty-three different product lines, e.g., property and casualty, life and health, liability, aviation, business interruption, workers compensation, etc.¹⁴⁰ Second, and more profoundly, the severity of the loss exceeded any expectations or extrapolations from previous data and losses from catastrophic terrorism could exceed those of extreme natural catastrophes.¹⁴¹ Without a mechanism to assess the risks and reserve against anticipated losses, terrorism risk could become a black hole of liability. These considerations pose the question of whether the risk is quantified in an actuarial sense and so can be priced. Because the keystone concept in insurance is the law of large numbers,¹⁴² insurance

138. In TRIA's absence, the intermediate strategic decision of some insurers may be to restrict capacity in certain high risk geographic areas, making coverage more difficult to obtain for some. HUBBARD & DEAL, *supra* note 29, at 69.

139. See Kunreuther & Michael-Kerjan, *supra* note 65, at 15 (citing the take up rate at 43% as of 3rd Q04 based on a Marsh Inc. survey); *supra* note 110 and accompanying text. The main affected lines were business interruption, property, liability, and workers compensation. HUBBARD & DEAL, *supra* note 29, at 17.

140. FERGUSON ET AL., *supra* note 32, at 7.

141. See BRAUNER & GALEY, *supra* note 38, at 20 ("Even if we had extrapolated our statistical experience from previous years along more than just a linear path into the future, we would not have arrived at an event with such implications.")

142. The law of large numbers, or the Central Limit Theorem, states that the mathematical distribution in a finite set of data will approach the normal distribution as the sample size

works best when the frequency is high and severity is relatively low, e.g., auto and home insurance.¹⁴³ When the frequency is low and severity is high, as is the case in both manmade and natural catastrophes, there is always the problem of assessing the risk. Insurability is tested at the extremities.

Insurance has been defined as the “mutual cover of a fortuitous, assessable need of a large number of similarly exposed businesses.”¹⁴⁴ A risk must satisfy four key criteria: randomness, mutuality, assessability and economic feasibility.¹⁴⁵

Randomness considers whether the loss event is unpredictable and beyond the control of the policyholder.¹⁴⁶ Contrary to intuition, a high degree of predictability means that a risk pool is economically infeasible as no insurer would provide coverage knowing that a certain event would likely occur.¹⁴⁷ Terrorism is not a fortuitous event in the sense of an accident. It is an intentional act that is planned to appear random. That an occurrence is intentionally initiated, perhaps even criminally, does not preclude coverage. An event is considered fortuitous if it is unpredictable.¹⁴⁸ Because the policyholder cannot influence the event or predict it,¹⁴⁹ terrorism does not pose a significant moral hazard and so can be considered fortuitous for the purpose of insurability.¹⁵⁰

increases. REJDA, *supra* note 36, at 34. The application in insurance is that the actual loss experience will better correspond with actuarial loss predictions as the number of policyholders increase. *Id.* at 3–4.

143. See BROWN ET AL., *supra* note 52, at 6 (“Insurance works best for smaller, more frequent events, where it is possible to gather sufficient statistical data to support actuarial pricing estimates and provide for risk diversification.”); see also AM. ACAD. OF ACTUARIES, *supra* note 29, at 13 (insurance works best when adequate actuarial data exists; insurers can “earn an adequate return on capital invested; [r]isks are spread across homogenous classifications;” and adverse selection is minimal); Ross J. Davidson, Jr., *Working Toward a Comprehensive National Strategy for Funding Catastrophe Exposures*, 17 J. INS. REG. 134, 145 (1998) (“However, reinsurers usually are more comfortable in dealing with lower level more frequent and predictable catastrophes.”).

144. BRAUNER & GALEY, *supra* note 38, at 19 (quoting Alfred Manes).

145. ZANETTI ET AL., *supra* note 2, at 18; see also REJDA, *supra* note 36, at 20–22 (stating that insurability depends on a large number of policyholders, accidental loss, measurability of loss, calculability of risk and loss, and economic feasibility of premiums); see generally BUAER & ENZ, *supra* note 32, at 14 (citing BARUCH BERLINER, LIMITS OF INSURABILITY OF RISKS 16 (Englewood Cliffs 1982)) (stating the criteria for insurable risks).

146. ZANETTI ET AL., *supra* note 2, at 18.

147. “The non-predictability, or randomness, of natural hazards is a fundamental prerequisite of insurability for these risk types.” SWISS RE, *supra* note 50, at 15.

148. BRAUNER & GALEY, *supra* note 38, at 19.

149. This does not mean that policyholders cannot control the risk through mitigation or avoidance. See *infra* note 274.

150. BRAUNER & GALEY, *supra* note 38, at 19.

Mutuality considers whether numerous persons who are exposed to the same hazard can form a risk pool whereby the risk is shared and diversified.¹⁵¹ Terrorism risk is not smoothly distributed. Terrorism disproportionately strikes marquee targets and cities.¹⁵² Certain landmark structures, for example the Sears Tower or Rockefeller Plaza, are subject to greater risk than an otherwise nondescript office tower in Phoenix. Yet major attacks have been launched against relatively ordinary targets.¹⁵³ Terrorism is different from other criminal acts in that it is done for a political or religious motive, and terror is achieved through the unpredictability of shocking violence. We should not be surprised to see strikes against Main Street targets.¹⁵⁴ These targets are more vulnerable now,¹⁵⁵ and so they are subject to increased probability of attack (though the severity may be lower). This uneven distribution of risk does not pose a problem of mutuality; however. It is a matter of pricing, and not insurability. For example, smokers and nonsmokers can equally get health insurance, though the pricing will be unequal. While certain assets and geographic areas are more susceptible to terrorism, and the price must reflect the greater risks, any valuable asset is subject to attack.¹⁵⁶ Thus, there is sufficient mutuality.

Assessibility considers whether the risk, both frequency and severity, can be quantified, and this factor is perceived by many to be the most significant problem, “perhaps insurmountable” according to some.¹⁵⁷ The

151. ZANETTI ET AL., *supra* note 2, at 18.

152. The World Trade Centers were attacked twice within eight years. Five of the top ten catastrophic attacks have occurred in New York (two) and London (three). *See infra* note 447 & accompanying table.

153. *See id.* Past targets include the Alfred Murrah Federal Building in Oklahoma City and the NatWest Towers in London, and cities like Oklahoma City and Manchester, U.K., have been bombed in the past. *See id.*

154. Consider that in the United States there are 177 buildings over 50 stories, with New York, Chicago and Los Angeles accounting for 116 of those buildings. MILLER, *supra* note 37, at 12 tbl.2; *see also infra* note 448 & accompanying table.

155. Vulnerability is a relative concept. As security measures around previously high risk assets increase, the rational strategic choice of terrorist would be to look for other targets of opportunity. There is a certain amount of “dynamic uncertainty” involved in this process. *See infra* note 179 and accompanying text.

156. Hubbard and Deal show that terrorism premiums vary depending on the business sector with energy and construction being the highest and lowest, respectively. HUBBARD & DEAL, *supra* note 29, at 48 fig.23.

157. It has been suggested that the “biggest—perhaps insurmountable—problem with terrorism risk is that very limited historical data are available on terrorist attacks, and because terrorism threat is dynamic, even the available historical data are less relevant in predicting future incidents in the case of terrorism than natural catastrophes.” *Id.* at 56; *see also* ZANETTI ET AL., *supra* note 2, at 18.

pricing of premium presupposes the sufficient quantification of risk.¹⁵⁸ Insurers could approach terrorism like natural catastrophes,¹⁵⁹ the risks of which are assessed “over a long time span.”¹⁶⁰ Based on these extrapolations, the industry seeks to collect sufficient premium to reserve against the eventuality of a loss. Natural catastrophes too present a problem of forecasting frequency and severity. While certain catastrophic events are subject to reasonably accurate actuarial modeling, the recent tragedy of the South Asia tsunami reminds us that the risks from natural catastrophes are never fully managed or assessed.¹⁶¹ Because the victim nations were economically underdeveloped, the property and insurance losses were relatively small compared to the scale of the catastrophe;¹⁶² but had a comparable catastrophe hit a highly developed area like Tokyo or Honolulu, the economic losses could have dwarfed those of 9/11. The greatest risk of exogenous shock to the industry is from a natural mega-catastrophe.¹⁶³ This fact puts into perspective catastrophic terrorism risk, for no one would suggest that the insurance industry exit coverages in heavily industrial or populated centers, though there may be a remote potential for a natural mega-catastrophe. The matter is a question of risk management, a task that is within the expertise of two industries: insurance and financial markets.

Terrorism is similar to natural catastrophes in that it is random and involves low frequency, *potentially* high severity.¹⁶⁴ The key difference is

158. ZANETTI ET AL., *supra* note 2, at 18 (noting premium pricing methods must be feasible).

159. *Id.* at 16; *see also* GEN RE INTERMEDIARIES, *supra* note 110, at 6.

160. SWISS RE, *supra* note 50, at 15. For example, earthquakes cannot be predicted, though over a long period of time the frequency can be extrapolated to some degree. *Id.* at 17.

161. *See infra* Appendix & note 450.

162. CHRISTIAN BRAUNER, SWISS RE, TSUNAMI IN SOUTH ASIA: BUILDING FINANCIAL PROTECTION 7 (2005) (“[D]ue to the very low insurance density, the insured losses will be relatively low compared to the overall scale of the losses suffered.”); *see also* Jim Boulden, *Tsunami Not an Insurance Disaster*, CNN, Jan. 3, 2005, available at <http://edition.cnn.com/2005/WORLD/asiapcf/01/03/asia.quake.insurance/> (last visited Mar. 3, 2005) (citing Munich Re as estimating the economic loss at around \$10 billion, of which insurance losses would presumably be a small fraction).

163. Shuford, *supra* note 15, at 39. Indeed, sophisticated insurers recognize the potential exposure to mega-catastrophes hitting large population centers and the opportunities for the insurance industry to both profit from these risks and provide a service to society. *See* MUNICH RE, MEGACITIES—MEGARISKS: TRENDS AND CHALLENGES FOR INSURANCE AND RISK MANAGEMENT 4–5 (2004); *infra* note 313.

164. Like the “Big One” awaiting California, “the scale of the intended harm has so far been ‘only’ a fraction of the technical and logistical damage that could have been caused.” BRAUNER & GALEY, *supra* note 38, at 11. Swiss Re characterizes attacks thus far as using “the most simple methods possible,” and large magnitude attacks are possible, including the use of radioactive waste. *Id.*

that longterm historical data exists for some kinds of repeating natural catastrophes, and their catastrophic patterns are generally localized to specific geographic areas, e.g., hurricanes in Florida and earthquakes in California.¹⁶⁵ In contrast, the industry has just started to process the raw data on terrorism,¹⁶⁶ and to develop models of terrorism assessment. Despite this difference, natural catastrophes and terrorism share a key trait: frequencies and severities are quite similar.¹⁶⁷ It is worth noting that virtually all terrorist acts in the past have been low severity events. September 11th was an outlier event, and the possibility of such events recurring in the future, while tangible, has become more remote with the awareness it brought and the countermeasures begotten.¹⁶⁸ Only a few spectacular acts will cause widespread losses. In this regard, terrorism is very much akin to natural catastrophes in frequency and severity. In the context of the twentieth century, 9/11 was a 1/100 year event. Natural catastrophes on par with 9/11 are equally rare,¹⁶⁹ and in some cases equally inassessible as evinced by the recent South Asia tsunami.¹⁷⁰ Yet no one has suggested that the insurance industry should not cover natural catastrophes or that they are uninsurable.¹⁷¹ The self-serving protestation by the industry and its lobbyists—that terrorism risk is so fundamentally different and thus uninsurable—rings hollow.¹⁷² “Terrorism coverage may be quantitatively different, but it is not qualitatively different.”¹⁷³

165. See THE CATO INST., *supra* note 62, at 22 (quoting Debra Ballen, American Insurance Association, in distinguishing natural and terrorism catastrophes on the basis that there are “no meaningful historical patterns”).

166. Even before 9/11, the insurance industry had large volume of data on both the frequency and severity of attacks. See, e.g., *infra* notes 447–448 and accompanying tables.

167. See *infra* notes 447, 449 & accompanying tables.

168. See *infra* note 274.

169. In recent history, only Hurricane Andrew (a Category 5 hurricane) and the Northridge earthquake (a 6.7 Richter scale earthquake) were comparable to 9/11 in terms of insurance losses. See CRIPPEN, *supra* note 37, at 9. “In the past century, only three” Category 5 hurricanes and “four earthquakes exceeding 8.0 on the Richter scale” have been recorded in the United States, and only some of these events struck developed areas. *Id.* at 2; see also <http://www.nationalatlas.gov/articles/climate/a-hurricane.html#five> (last visited Mar. 3, 2005) (explaining the Saffir-Simpson scale for hurricanes and the Richter scale for earthquakes).

170. From the perspective of the industry, it was only a matter of chance that the tsunami did not hit a heavily insured area.

171. Indeed, some leading reinsurers believe that the terrorism risk is assessable. See, e.g., BRAUNER & GALEY, *supra* note 38, at 20. In spite of the difficulties, some insurers underwrote terrorism risk after 9/11 and without the benefit of TRIA. See, e.g., Stefen Theil, *The Last Word: Calculus for Catastrophe*, Gordon Woo, NEWSWEEK INT’L, July 12, 2004, at 60 (stating that the International Olympic Committee purchased \$170 million worth of cover for terrorism risk, the first time in the history of the Olympic Games).

172. Hubbard and Deal noted that:

Information is vital to the business of insurance. Enhanced information leads to more efficient pricing. Without it, premiums must incorporate a substantial markup to ensure proper reserving for losses. The informational challenges are being addressed now, and the approach has been distinctly interdisciplinary. The industry needs to collect, analyze and schematize data into a working model of the frequency and severity, methods of terrorism, weaknesses in the national security system, geographic location, political risk, and international developments as well as the individual risks and vulnerability of the policyholders.¹⁷⁴

The study of terrorism and collection of data have become top priorities of government, thinktanks, and sophisticated members of the industry.¹⁷⁵

At the simplest level, terrorism risk is not a risk the industry fundamentally believes it can model, price, and sell profitably while limiting its insolvency risks to an acceptable level. In short, TRIA is not perceived to be crowding out an opportunity the private market is able and willing to cover.

HUBBARD & DEAL, *supra* note 29, at 63; *see also* AM. INS. ASS'N ADVOCATE, *supra* note 25, at 2 (“Like war, catastrophic terrorism has unique actuarial properties that defy traditional underwriting and rating principles, thus making it uninsurable.”); *supra* note 157.

173. THE CATO INST., *supra* note 62, at 34 (comment of Scott Harrington, University of South Carolina).

174. Natural catastrophes are analyzed based on four criteria: (1) hazard (geographic location, frequency and severity), (2) vulnerability (the function of damages to severity), (3) value distribution (concentrations of insured risk), and (4) insurance conditions (proportion of loss insured). SWISS RE, *supra* note 50, 16–28.

175. *See* JOHN A. MAJOR, GUY CARPENTER, *ADVANCED TECHNIQUES FOR MODELING TERRORISM RISK* (2002), available at http://www.guycarp.com/portal/extranet/pdf/major_terrorism.pdf?vid=1 (last visited Mar. 18, 2005); MIPT, *TERRORISM KNOWLEDGE BASE: A COMPREHENSIVE DATABANK OF GLOBAL TERRORIST INCIDENTS AND ORGANIZATIONS*, at <http://www.tkb.org/home.jsp> (last visited Mar. 3, 2005) (containing a database on global terrorism maintained by MITP); U.S. DEP'T OF STATE, *PATTERNS OF GLOBAL TERRORISM*, at www.state.gov/s/ct/rls/pgtrpt (containing the U.S. Department of State's Patterns of Global Terrorism database) (last visited Mar. 3, 2005); DR. GORDON WOO, *RISK MGMT. SOLUTIONS, UNDERSTANDING TERRORISM RISK* available at http://www.rms.com/Publications/UnderstandTerRisk_Woo_RiskReport04.pdf (last visited Mar. 3, 2005); *see also* BROWN ET AL., *supra* note 52, at 8 (stating that several insurance service firms have begun the study of terrorism modeling). The government should partake in the collection and dissemination of information on terrorism so that the market can better assess the risk. *See Insurance and Terrorism Hearing*, *supra* note 136, at 4 (statement of J. David Cummins, Harry J. Loman Professor of Insurance and Risk Management, The Wharton School, University of Pennsylvania: “The government should also explore serving as a facilitator of securitization by providing data that could be used by private firms in developing better loss indices to serve as the basis for the trading and settlement of CAT risk securities, on both natural and man-made (e.g., terrorism) catastrophes.”). Some can argue that government's access to superior information on terrorism is a reason why government can better price terrorism risk. But it seems rather unlikely that government military or intelligence agencies would share highly classified information with whatever bureaucracy that would be in charge of running the government's insurance program.

(Re)insurers are developing risk factor models and methodologies to better assess terrorism risk,¹⁷⁶ and “great strides” have been made already in developing terrorism models and actuarial methods.¹⁷⁷ Human motivations and planning of attacks, which are intended to be unpredictable, are difficult to model with actuarial rigor,¹⁷⁸ and the decisional element of terrorism creates “dynamic uncertainty.”¹⁷⁹ While the challenge is daunting, it is not insurmountable.¹⁸⁰ Patterns of terrorism already are evident in the data. Consider, for example, the commonly asserted claim that terrorism risk is different from natural catastrophes because it can strike anywhere as opposed to the geographic limitation of some natural catastrophes.¹⁸¹ While this may be true, it is an unpersuasive argument in terms of the economic consequences of terrorism. Even the most cursory review of the unrefined

176. Several models have been developed by insurance services firms. Applied Insurance Research uses the Delphi Method, which factors in the opinions of terrorism experts. *GEN RE INTERMEDIARIES*, *supra* note 110, at 6. Eqecat is a probabilistic model that combines Delphi Method and game theory. *Id.* Risk Management Solution’s model relies more heavily on game theory. *Id.* *Cf.* EMBLETON & BERNAL, *supra* note 32, at 5 (noting “that it is difficult . . . to predict with any actuarial credibility the probability of loss at any given location”). The insurance industry has “refined” terrorism modeling since 9/11, and now incorporates engineering sciences, statistical analysis, political analysis, and judgment. *AM. ACAD. OF ACTUARIES*, *supra* note 29, at 7–9. Reinsurers like Swiss Re have begun to develop their own theories of terrorism modeling. BRAUNER & GALEY, *supra* note 38, at 8 (“Assessments are facilitated using a risk factor model developed by Swiss Re, which groups together the many different effects into three main factors: the terrorists’ intentions, the terrorists’ potential, the vulnerability of the society under attack.”) (alteration in original omitted). As expected, there are skeptics. *See* *GEN RE INTERMEDIARIES*, *supra* note 110, at 6 (stating that effectiveness of modeling terrorism has been criticized as “wildly exaggerated” and modeling is a “blunt instrument that could nevertheless lull insurers into a false sense of security”) (quoting Standard & Poor’s).

177. HUBBARD & DEAL, *supra* note 29, at 57. The recognition that significant advances have already been made in methodologies to assess terrorism risk undercut one of Hubbard and Deal’s central premises that “terrorism risk is not a risk the industry fundamentally believes it can model,” thus requiring government intervention in the form of extending TRIA. *Id.* at 63.

178. *See* SCHROEDER, *supra* note 29, at 3–4; *see also* BRAUNER & GALEY, *supra* note 38, at 13 (“Even so, terrorism is by no means random, but follows its own, albeit twisted logic. Being able to understand this logic is the first step towards managing terrorism risks better, even if they cannot be eradicated entirely.”).

179. KUNREUTHER & MICHAEL-KERJAN, *supra* note 29, at 7; *see also* CRIPPEN, *supra* note 37, at 2 (“Moreover, the underlying probabilities of catastrophic events can change as a result of variations in climate, geology, and the global political environment.”).

180. *But see supra* note 157.

181. *See, e.g.,* THE CATO INST., *supra* note 62, at 21 (“[T]errorism is not an accidental risk, it is not a quantifiable risk . . . it is not predictable.”) (comment of Debra Ballen, American Insurance Association); *see also* EMBLETON & BERNAL, *supra* note 32, at 2 (“Terrorists have an almost infinite variety of potential targets and weapons, and have the flexibility to choose the time and place of the act.”).

data shows that 8 of the top 10 costliest catastrophes struck London, New York, and the airline industry.¹⁸²

Terrorism and counterterrorism can be understood in part from a game theory perspective.¹⁸³ The penultimate goal of terrorists is to strike fear or shock, and such dread is achieved by substantial loss of lives, high visibility symbolism, exceedingly cruel or shocking acts, substantial property or economic damage, or a combination thereof.¹⁸⁴ Terrorism seeks maximum impact with limited available weaponry.¹⁸⁵ From the economic perspective of the insurance business, the chief concern is loss of high value economic assets.¹⁸⁶ Just like natural catastrophes, which are limited to large swaths of geographic areas like Florida and California, high value economic targets tend to be concentrated in geographic areas, whether they be cities, industrial zones, certain industries, or specific assets. An attack in downtown Topeka, while possibly devastating, will have a markedly different impact on the economy than an attack of the same scale in Midtown Manhattan; and the same would apply for an attack on an Amtrak train as opposed to an American Airline 747 jet.¹⁸⁷ The tragedy of 9/11 has many dimensions of course, but one striking aspect is that high value economic targets such as New York and the World Trade Center were considered “soft” targets prior to 9/11.¹⁸⁸ With the realization that terrorists

182. See *infra* note 447 and accompanying table. If the U.K. is considered one geographic zone for insurance purposes, similar to the way Florida is for hurricane risk, then nine of the top ten catastrophes would fit this specified insurance parameter.

183. Game theory is a discipline of mathematics that seeks to model human decisionmaking. See generally AVINASH K. DIXIT & BARRY J. NALEBUFF, *THINKING STRATEGICALLY: THE COMPETITIVE EDGE IN BUSINESS, POLITICS, AND EVERYDAY LIFE* (1991) (providing a nontechnical treatment of the subject); R. DUNCAN LUCE & HOWARD RAIFFA, *GAMES AND DECISIONS: INTRODUCTION AND CRITICAL SURVEY* (7th prtg. 1957) (providing a technical treatment of the subject).

184. See, e.g., *infra* note 448 and accompanying table (giving examples of these kinds of attacks, such as the killing of hundreds of school children in Beslan, Russia; the bombing of the U.S. Embassies in Africa; and the 9/11 attacks in New York). The ultimate goal of terrorists is to initiate political changes or further a religious agenda.

185. Of course, this assumes that terrorist do not acquire nuclear, biological or chemical (NBC) weapons, often categorized as weapons of mass destruction (WMD). See *supra* note 34.

186. See, e.g., DIXON & STERN, *supra* note 28, at 103 (noting that the damage to just the communication and power infrastructure, owned mostly by Con Edison and Verizon, in the World Trade Center was \$2.3 billion). The combined “property damage to businesses in Lower Manhattan total[ed] nearly \$16 billion.” *Id.*

187. The Madrid train bombing resulted in insurance losses of about €35 million. See *infra* note 256.

188. On February 7, 2001, Central Intelligence Agency Director, George Tenet, warned: “As we have increased security around government military facilities, terrorists are seeking out

have targeted high value economic assets, security around those assets has increased significantly. Many of these properties are no longer “soft” targets.¹⁸⁹ Major cities, ports of entry, and economic assets like factories, dams, and skyscrapers have increased their security.¹⁹⁰ These assets are less risky now than before 9/11. In response to these changes, terrorists have recently shifted their strategy toward other soft target opportunities, a process that confirms the dynamic uncertainty of containing terrorism. Recent soft target attacks have included the bombings in Bali, Indonesia, and the Madrid train system, and the killing of school children in Beslan, Russia.¹⁹¹ These attacks combine random killings and shocking inhumanity. Albeit horrific, they do not pose a catastrophic *economic* problem. To the extent that soft targets are attacked, insurance as a risk management technique can adequately handle the economics of human loss.¹⁹²

There will never be a day in which terrorism risk can be calculated to an actuarial certainty like auto or life insurance. Significant uncertainty will always surround terrorism risk. But it is a mistake to believe that uncertainty equates to inaccessibility. An analogy can be drawn from the corporate finance context.¹⁹³ Consider how venture capitalists invest in highly risky, illiquid startups. Although financial modeling may provide some indication of risk versus return, it is ultimately an exercise that provides only incremental information on the nature of the risk. Much of the assessment turns on qualitative factors, such as strategic analysis and assessments of management capabilities, that cannot be synthesized down to a simple number. There is great uncertainty involved in a private equity investment, and a failed investment can result in spectacular losses.¹⁹⁴ An

‘softer’ targets that provide opportunities for mass casualties.” KUNREUTHER & MICHAEL-KERJAN, *supra* note 29, at 8.

189. *See infra* note 274.

190. *See, e.g.*, Paul Magnusson et al., *Welcome to Security Nation*, BUS. WK., June 14, 2004, at 32 (discussing government spending to secure economic assets, cities, and ports of entry); *infra* note 274 (noting that the private sector has increased spending on security related matters).

191. *See infra* note 448 and accompanying table. By citing these instances of terrorism, I do not suggest that the terrorists involved in each attack are coordinating their actions. Rather, the global terrorism phenomenon is morphing as security is heightened in major Western cities, ports of entry, and high value economic assets.

192. *See supra* note 188.

193. The business of insurance is guided by the same fundamental principle governing investments: diversification of risk and the law of large numbers.

194. Consider the hundreds of failed companies and the billions of dollars lost in venture capital investments during the technology bubble of the late 1990s, Kosmo.com being the poster child of spectacular venture capital flops. *See* Tom Palmer, *Dot-Coms Can Avoid the Venture Capital Shakeout with Planning*, BUS. J., Feb. 2, 2001, available at <http://www.bizjournals.com/>

investment in venture capital involves great risk, but the undertaking of that risk is compensated by an expectation of significantly higher returns and the risk is mitigated by holding a portfolio of investments that provides some measure of diversification.¹⁹⁵ Practices in corporate finance show that for any given unknown there is a risk premium. Similar to the venture capital industry, the insurance industry previously has taken big risks with imperfect data.¹⁹⁶ Natural catastrophes potentially inflicting incalculable losses loom in various parts of the world.¹⁹⁷ In addressing the insurability of mega-catastrophes like the South Asia tsunami of December 26, 2004, Swiss Re took the following position:

Even tsunamis or yet more extreme events such as meteorite impacts are insurable, subject to certain reservations. They cannot yet be modeled in such detail as other natural hazards, for instance earthquakes or tropical cyclones, but it is possible to quantify the risks with sufficient accuracy to design expedient insurance cover, and to spread the risk worldwide via the established reinsurance system.¹⁹⁸

If the devastation from a meteorite strike is insurable,¹⁹⁹ what elevates earthly terrorism to that rarified level of uninsurability? Insurance is fundamentally “a risk-taking industry,”²⁰⁰ and there is nothing so uniquely compelling about terrorism risk that it is categorically uninsurable.

account/sign_in?uri=/kansascity/stories/2001/02/05/focus8.html (last visited Mar. 2, 2005) (stating that kosmo.com raised \$330 million).

195. Venture capitalist typically seek internal rates of return in excess of 25% in startups or other high-risk ventures. JACK S. LEVIN, *STRUCTURING VENTURE CAPITAL, PRIVATE EQUITY, AND ENTREPRENEURIAL TRANSACTIONS* ¶ 201.5 at 2–9 (Martin D. Ginsburg & Donald E. Rocap eds., 2004) (suggesting that venture capitalists want 40% of the portfolio company’s stock to achieve higher IRRs).

196. See THE CATO INST., *supra* note 62, at 34; Smetters, *supra* note 50, at 30–31 (stating that insurance is available for highly risky activities such as satellites, environmental liability, and product liability).

197. RICO CZERWINSKI & RES STREHLE, *SWISS RE, A DANGEROUS WORLD?* (2005) (containing an interview with Serge Troeber, which identifies dormant volcanoes in various parts of the world as potentially causing mass catastrophes).

198. BRAUNER, *supra* note 162, at 8.

199. POSNER, *supra* note 15, at 24–25 (“A collision between one of these [potentially hazardous near-earth objects] and the earth is expected to occur every 500 to 1,000 years.”). Posner notes that the Tunguska meteor that exploded over Siberia, which could destroy an area the size of a major city occur in frequencies of 1,000 years. *Id.* at 26–27.

200. THE CATO INST., *supra* note 62, at 34 (comment of Scott Harrington, University of South Carolina). The risk taking is no doubt different in scale. The risk taken by venture capitalists is measured by millions of dollars whereas the risks of insurers could be in the

Rather than any perceived notion of inaccessibility, the greatest longterm hurdle to insuring terrorism risk is economic feasibility of premiums. Catastrophe risks, natural or manmade, pose higher capital costs than other insurance events. Insurers must hold sufficient capital to cover their anticipated losses. Although catastrophic terrorism is a low frequency event, insurers must hold sufficient capital to protect against the potential for high severity. In this way insolvency risk is minimized. Because an insurer's cost of capital is more than the investment yield on that capital, the current regulatory and tax schemes impose a cost of capital that must be compensated through high premiums.²⁰¹ These dead costs—"dead" in the sense that they do nothing but support the inefficient holding of capital—must then be passed to the insureds in the form of higher premiums.²⁰² Therein lies the problem of catastrophic insurance risk.

A simple stylized example illustrates the problem.²⁰³ Consider two types of insurable interests: high frequency, low severity losses (e.g., auto accidents or home fires), and low frequency, high severity losses (e.g., earthquakes and catastrophic terrorism). We make the following global assumptions: overhead expense of operation is \$100, which must be passed through in the premium; risk based capital holding requirements equal the full value of the expected actuarial loss; post-tax cost of capital is 10%;²⁰⁴

billions. *See supra* note 65. But then again venture capital firms typically do not have billions of dollars of capital.

201. CRIPPEN, *supra* note 37, at 3. Risk based capital is the amount of equity capital insurers must hold for the level of risk underwritten and is generally subject to individual state regulation. *See, e.g., supra* note 63.

202. *See* Dwight M. Jaffee & Thomas Russell, *Catastrophe Insurance, Capital Markets, and Uninsurable Risks*, 64 J. RISK & INS. 205, 215 (1997); Smetters, *supra* note 50, at 2 (stating that the failure of insurance market to develop a solution to terrorism risk is the result of failed government policies for tax, accounting and regulations that have "made it costly for insurers to hold surplus capital").

203. *See infra* note 451 & tbl.5. The figures I use are not meant to suggest current market pricing or practices, but are used for example purpose only. The example at the Appendix was derived from a similar example cited by Scott E. Harrington & Greg Niehaus, *Government Insurance, Tax Policy, and the Affordability and Availability of Catastrophe Insurance*, 19 J. INS. REG. 591, 598 (2001) (discussing a similar example problem of the effect of capital costs and tax policy on premium prices for catastrophe insurance). *See also* CRIPPEN, *supra* note 37, at 3 & n.10 (citing Harrington & Niehaus, *supra* at 591–612, and running through a similar example).

204. The cost of capital is the opportunity cost of equity capital, which is the expected return that must be provided to the equity investor in the insurer. *See* RICHARD BREALEY & STEWART MYERS, *PRINCIPLES OF CORPORATE FINANCE* 190–93 (Bonnie E. Lieberman et al. eds., 1981).

there is no underwriting profit so that the combined ratio is 100%;²⁰⁵ payouts on high frequency losses are spread evenly throughout the year; pretax investment yield on capital and premiums received is 8%;²⁰⁶ corporate tax rate is 25%;²⁰⁷ time value of money adjustments and loss carry forwards are ignored.

We first consider the case of a high frequency, low severity interest where losses are actuarially calculated at \$500 per year. The insurer must hold \$500 of capital. The premium must include: the \$500 anticipated loss and the \$100 of overhead expenses. Based on this consideration, the investment income is \$64.²⁰⁸ After taxes, the profit to the shareholders would be \$48, or \$2 short of a 10% return on capital. Accordingly, it must charge an additional \$2 in premium, which is the cost of capital delta. From an operating perspective, the \$500 of capital generated \$666 of revenue from premiums and investment income. The revenue is then split as follows: the policyholders \$500 in claim refunds (75%), operating costs of \$100 (15%), the insurer \$50 (7%), and the government (taxes) \$17 (3%). The net result is that the insurer must charge \$1.20 for every dollar of anticipated losses. The cost of delivering compensation is 25% of total revenue, which is an efficient method of delivering compensation.²⁰⁹

We now compare the above results with the case of a low frequency, high severity loss such as a natural or manmade catastrophe with a one in 100 year frequency with an expected cost of \$50,000.²¹⁰ The expected annual loss is still \$500, but risk based capital regulations require the insurer to hold \$50,000 of capital each year to cover the one time loss that

205. Insurers earn a profit in two ways: (1) underwriting profit, which is the positive difference between earned premiums and losses plus overhead expenses, and (2) investment income earned from unearned premiums and capital held by the insurer. Underwriting results are typically measured by a combined ratio, which is $[(\text{Underwriting Losses} + \text{Overhead Expenses}) \div (\text{Earned Premiums})]$. If the insurer has a 100% combined ratio, it is not making a profit or loss off the underwriting business, but it is making a profit while it holds premium monies it collected from its insureds. In this situation, the policyholders are in essence paying the insurer to hold their money for them.

206. Because the assets of insurers must be liquid with relatively low level of portfolio risk, most of the assets will be invested in investment grade bonds, which will over the longterm yield lower returns than equity investments.

207. This rate assumes that the insurer will be able to get deductions that reduce the overall effective corporate tax rate.

208. This is calculated by an 8% yield on \$500 capital, and \$300 premiums, which is the weighted average balance of the premiums held on the balance sheet.

209. See *supra* note 130 (showing cost data for various insurance). The figures in this example have been rounded up to whole numbers.

210. In the context of the twentieth century, 9/11 was a one hundred year man-made catastrophe.

could occur in any given year.²¹¹ Based on this consideration, the insurer must charge not only the \$600 in premium for expected losses and overhead expense, but also another \$1,965 in cost of capital charge. Investment income is \$4,201. From an operating perspective, the \$50,000 of capital generated \$6,766 of revenue from premiums and investments. The revenue is then split as follows: operating cost \$100 (1%), the insurer \$5,000 (74%), and the government (taxes) \$1,666 (25%). The net result is that the insurer must charge \$5.13 for every dollar of expected losses.²¹² The cost of delivering compensation is exorbitant as most of the premium collected funds the shareholder return on excess capital held and taxes payable on the investment income.

Because insurers cannot take a tax deduction on anticipated losses, it cannot build its reserves without a tax penalty.²¹³ Although the expected losses are the same for both typical and catastrophic risks, policyholders must pay multiples of the actuarial loss estimates.²¹⁴ This spread represents the dead capital costs stemming directly from capital holding requirements and tax policies. The costs increase on a nonlinear basis as the anticipated catastrophe becomes more infrequent.²¹⁵ Importantly, the tax revenue of

211. From the regulator's perspective, the insurer must hold this capital every year lest it become insolvent in the one year the catastrophe strikes and the state must pay claims through their guarantee fund programs. A typical program allocates the unpaid losses to the remaining insurers through assessments.

212. See *infra* note 451 & tbl.5 (providing a complete breakdown of the calculations).

213. Only reserves allocated to actual or highly likely losses can be deducted from income, thus reducing the corporate income tax. Davidson, *supra* note 143, at 149; see also HUBBARD & DEAL, *supra* note 29, at 60 ("U.S. accounting rules preclude 'ear-marking' retained profits or other capital funds as 'reserves' against future losses, if the actual events have not yet occurred.") (quoting Dwight Jaffee & Thomas Russell, *Markets Under Stress: The Case of Extreme Event Insurance*, ECONOMICS FOR AN IMPERFECT WORLD: ESSAYS IN HONOR OF JOSEPH E. STIGLITZ 10 (MIT Press 2003)).

214. See Harrington & Niehaus, *supra* note 203, at 598 fig.1 (providing a graph of the premium to the expected indemnity as a function of the probability of an event).

215. See *id.* at 598 fig. 1. It has been suggested that insurers should be permitted to take unincurred but actuarially expected losses as a deduction against earnings. *Id.* at 605-07. This would offset the tax penalty. In a variant of this concept, it has been suggested that insurers should be allowed to identify premiums allocated for terrorism risk and be permitted to build reserves on a tax-free basis with a tax adjustment if there is an eventual reserve surplus. Davidson, *supra* note 143, at 148-53. See also AM. ACAD. OF ACTUARIES, *supra* note 29, at 23-24 (proposing a prefunded, tax deferred reserve as provided in Letter of Property Casualty Insurers Association of America); CRIPPEN, *supra* note 37, at 31-32 (describing these proposals). Indeed, some European countries permit the tax deduction of expected catastrophe losses. See Jaffee & Russell, *supra* note 202, at 212.

There are two potential objections to these approaches. First, the government may object to the perceived loss of federal tax revenue. In considering a tax deferred reserving treatment, the government estimated a tax revenue reduction of \$12.4 billion over ten years. CONG. BUDGET

\$1,666 is not as much of a windfall for the government as the number would suggest. It assumes that policyholders would buy terrorism coverage at significantly increased premiums rates. The market data thus far suggests that this is not the case.²¹⁶ The assumption of a large revenue base is a chimera for insurers would not be able to sell coverage at economically infeasible prices. There is also a certain washing of the tax effects. While the government may collect revenue from insurers, that revenue would be offset by insurance expenses deductions taken by policyholders.²¹⁷ Given these effects, about the only thing one can safely conclude is that the current tax policies increase premium prices, which may reduce the demand for terrorism coverage.

Thus, terrorism risk poses significant financial problems. The question of insurability must be separated from pricing. Terrorism risk *is* insurable.²¹⁸ But extreme catastrophic risks, albeit insurable, pose the question of whether traditional insurance is the most efficient means of transferring risk and delivering compensation. Financial and tax costs have priced out a significant portion of private market demand. These considerations raise the issue of government's role in the business of catastrophe insurance.²¹⁹

OFFICE, COST ESTIMATE FOR H.R. 3210, TERRORISM RISK PROTECTION ACT 9 (2001). There is a bit of a Catch-22 situation, however. The current tax scheme increases the cost of catastrophe insurance. If so, this may limit the "take up" of terrorism insurance, which reduces the revenue base for insurers. *See supra* Part II.D. Any calculation of loss of tax revenue will depend on the assumptions used to measure it. Second, and more to the point, there is a potential for abuse by insurers. Given the lack of data and common understanding of terrorism risk, it would be difficult to administer and enforce an insurer's allocation of reserves or unincurred losses, unless significant penalties come into play. But penalties only make sense if a clear standard exists to judge the taxpayer's decision. Given the significant unknowns involved in assessing terrorism risk, a clear standard may not exist. It would become a question of judgment. Ultimately, a scheme that relies on the taxpayer to self-allocate tax status would be highly susceptible to substantial gaming of the tax rules, particularly when insurers would have better information on the actuarial risk than the government. On the other hand, if the government allocates the amount of tax-sheltered reserves, one question whether it can properly assess the actuarial risks and levy taxes in a fair and efficient manner. It is again a bit of a Catch-22. This particularly tricky situation, one susceptible to abuse by either the taxpayers or the government, would suggest that a tax deferred scheme is not appropriate at this time. *But see* Davidson, *supra* note 143, at 148–54 (arguing the case for a tax free reserving for anticipated catastrophic losses).

216. *See supra* note 110 and accompanying text.

217. The net effect of this washing is beyond the capabilities of a single legal scholar to calculate.

218. This should be obvious from the fact that terrorism coverage is provided now, and was provided even after 9/11 and before the enactment of TRIA. *See supra* note 75.

219. *See* J. DAVID CUMMINS & NEIL A. DOHERTY, UNIV. OF PA, THE WHARTON SCH., CAN INSURERS PAY FOR THE "BIG ONE"? MEASURING THE CAPACITY OF AN INSURANCE MARKET TO RESPOND TO CATASTROPHIC LOSSES (1999), available at <http://knowledge.wharton.upenn.edu/>

III. THE QUESTION OF GOVERNMENT'S ROLE

A. *Current Legislative Dilemma*

The insurance, economic and legislative histories continue to unfold, and how the final chapter should be written remains open to debate. The economic blow of 9/11 was softened by unprecedented insurance coverage and massive ex post government welfare.²²⁰ Whether insurance or government funds (or both) will be available in the future is “highly uncertain.”²²¹ If TRIA is relegated to a footnote in history as a temporary economic stabilization measure in face of an unprecedented national tragedy, it would have little longterm impact.²²² As of the writing of this article, there are a number of uncertainties. Will TRIA be extended beyond the sunset date? Will future legislation establish a more permanent, government sponsored reinsurance program? Will the government throw the entire problem back to the private sector? Can the private sector formulate a solution to catastrophic terrorism risk?

Although TRIA has a sunset date, it instructs the Treasury Department to determine the “likely capacity of the property and casualty insurance industry to offer insurance for terrorism risk after termination of the Program, and the availability and affordability of such insurance.”²²³ This language suggests that if Treasury finds continued market disruption or a likely potential for one, Congress could extend the statute.²²⁴ It is hardly

papers/38.pdf (last visited April 3, 2005) (“Securitization would be the ideal solution to the catastrophic risk problem, in part because this approach accesses a much larger pool of capital than provided by the insurance/reinsurance industry.”).

220. Of the \$38.1 billion in quantified benefits paid for 9/11, the insurance industry and the government accounted for 51% and 42%, in addition to an unprecedented 7% accounted for by charity. DIXON & STERN, *supra* note 28, at xviii. In addition to the money, insurers provided an essential transactional service of claims evaluation and processing, which reduced the transactional costs of disbursing remedies and compensation. *Id.* at 135. Certainly, these transactional costs would be lower than those involved in litigation.

221. *Id.* at 140. In analyzing the data on 9/11 compensation, the RAND Corporation noted that insurance played a key role. *See id.* at xviii. It then asked the key policy question: “‘What if the insurers weren’t there the next time?’” Devlin Barrett, *9/11 Victims Received \$38.1 Billion*, PHILA. INQUIRER, Nov. 9, 2004, at A03 (quoting Lloyd Dixon, Rand Institute).

222. There is an argument that 9/11 permanently altered the expectations by providing such unprecedented government subsidies. Virtually all of the families of 9/11 victims received compensation through the Fund. *See infra* note 234 and accompanying text.

223. Terrorism Risk Insurance Act of 2002, Pub. L. No. 107-297, § 108(d), 116 Stat. 236.

224. At the time of TRIA’s enactment, some in Congress foretold the current legislative uncertainty. Then Senator Phil Gramm commented at the time: “Two years from now, if we don’t change this bill, we are going to be back here, and the same people who are saying today

surprising that there is now significant lobbying effort underway by various interest groups arguing for and against such an extension.²²⁵

There is no compelling reason to extend TRIA.²²⁶ The thought of providing the insurance industry, well capitalized and financially healthy, a

we have to have this bill are going to say: You have to extend this bill for another 2 years, another 10 years, forever.” REPUBLICAN POL’Y COMM., *supra* note 105, at 11; *see also* David Rogers, *Terrorism-Insurance Measure Gains Approval from Senate*, WALL ST. J., Nov. 20, 2002, at A6 (stating that Senator Gramm opposed TRIA because of the burdens on public funds).

225. The insurance and real estate industries have lobbied for an extension. *See, e.g.*, REPUBLICAN POL’Y COMM., *supra* note 105, at 6 (noting that both the Mortgage Bankers Association and the Coalition to Insure Against Terrorism have lobbied Congress to extend TRIA); TILLINGHAST BUS. OF TOWERS PERRIN, TRIA UPDATE, CAPTIVE INSURANCE COMPANY REPORT 1 (2004) (“There has been significant lobbying done by both the insurance industry and business groups.”); *Weathering Well*, *supra* note 74, at 62 (describing the insurance industry as a “begging lawmakers to extend” the TRIA); Letter from NAIC to Michael G. Oxley, Chairman of Financial Services 1 (Apr. 6, 2004), *available at* <http://www.ins.state.ny.us/acrobat/sp04oxsn.pdf> (last visited Apr. 5, 2005) (“We strongly urge Congressional action this year to avoid the market disruptions that will occur in the absence of a federal backstop program.”). A study commissioned by a consortium of the major insurance lobbies argues that the extension of TRIA would have overall net positive benefit to the economy. HUBBARD & DEAL, *supra* note 29; *see also* NCCI HOLDING INC., NCCI HELPS WITH STUDY ON BENEFITS OF EXTENDING TERRORISM RISK INSURANCE ACT (TRIA) (2004), *available at* https://www.ncci.com/ncci/web/news/statereg/NCCI_TRIA_Study.htm (last visited Mar. 5, 2005).

On the opposite side of the effort, an array of consumer groups, public think tanks, and scholars from the finance, economic, insurance and legal fields have argued against extension. *See, e.g.*, SCOTT E. HARRINGTON & RANDALL S. KROZNER, AM. ENTER. INST. FOR PUB. POL’Y RESEARCH, THE POSSIBLE EXTENSION OF THE TERRORISM RISK INSURANCE ACT, *available at* http://www.aei.org/include/pub_print.asp?pubID=20578 (last visited Apr. 5, 2005) (Am. Enter. Inst. For Pub. Pol’y Research, Statement No. 207, 2004) (“No convincing evidence indicates that extending the program is necessary to avoid serious disruptions in commercial real estate markets in major cities.”); J. ROBERT HUNTER, CONSUMER FED. OF AM., THE TERRORISM RISK INSURANCE ACT: SHOULD IT BE RENEWED? 2 (2004) (“CFA believes that there is no need to extend TRIA when it expires at the end of 2005”); SHADOW FIN. REGULATORY COMM., AM. ENTER. INST. FOR PUB. POLICY RESEARCH, STATEMENT NO. 182, A PROPOSED FEDERAL BACKSTOP FOR TERRORISM INSURANCE AND REINSURANCE (2002), *available at* http://www.aei.org/publications/pubID.14325/pub_detail.asp (last visited Mar. 5, 2005) (“Given those developments, the case for a federal backstop for terrorism insurance, which was not clear-cut late last year [2001], is certainly less compelling now.”); *infra* note 270.

Currently, Senators Robert Bennett and Christopher Dodd have introduced a bill, Senate Bill 2763, seeking to extend TRIA for another two years with a “run-off” third year to end on December 31, 2008. *See* NCCI HOLDING, INC., TRIA UPDATE—THREE EXTENSION BILLS IN CONGRESS & NEW TREASURY CLAIMS PROCESS (2004), *available at* https://www.ncci.com/ncci/web/news/statereg/tria_3_bills.htm (last visited Mar. 5, 2005). In the House, two bills, House Resolutions 4634 and 4772, also propose to extend TRIA through 2007 and 2008, respectively. Others in Congress, however, have expressed their belief that TRIA was an “example of bad law leaving policymakers with a hard case.” REPUBLICAN POL’Y COMM., *supra* note 105, at 12.

permanent government subsidy would not sit well with an informed public or prominent segments of the academic and policy communities.²²⁷ The insurance industry has noted that the Bush administration favors a capital market solution.²²⁸ This assessment is probably accurate in view of the administration's position, for example, on the partial privatization of Social Security,²²⁹ the most obvious example of a mandatory government sponsored program. It would seem philosophically incongruent to undertake a universal insurance program that has all the potential for politicization of funding and actuarial mismanagement. With that said, betting against a powerful insurance lobby is always a perilous venture.²³⁰

Beyond the immediate question of TRIA's future, however, is the broader issue of defining the proper role of government. In a sense, the extension of TRIA, unless made permanent, is irrelevant to the longterm problem. An extension simply tables the matter—until perhaps legislative inertia sets in and a temporary program is made permanent by attrition. In the longterm, the core issues would remain *who* should bear the cost of the loss and *how* should that risk be allocated. Given that the insurance “is an industry with finite capital,”²³¹ government policies can play a significant role in how the costs will be apportioned among the various interest groups. The government can redistribute wealth through an ex post distribution from general funds. It can provide catastrophic coverage through an ex ante reinsurance scheme. Or it can incentivize the development of a private market solution through the exercise of its regulatory and taxing powers.

226. Much of the question concerning the renewal of TRIA will hinge on the findings and recommendations of the Treasury Department, which is due by June 30, 2005. Terrorism Risk Insurance Act of 2002, Pub. L. No. 107-297, § 108(d)(2), 116 Stat. 236.

227. See *supra* note 225.

228. “We also understand that the administration is interested in this [capital markets] option as a possible solution for terrorism losses when TRIA sunsets.” AM. ACAD. OF ACTUARIES, *supra* note 29, at 23 (quoting PROP. CAS. INSURERS ASS'N OF AM., EXAMINATION OF ALTERNATIVES TO TRIA AND PROGRAMS IN OTHER COUNTRIES).

229. See Press Release, White House, Specifics on the President's Plan to Strengthen Retirement Security (Feb. 28, 2002), available at <http://www.whitehouse.gov/news/releases/2002/02/20020228-3.html> (last visited Apr. 5, 2005).

230. See Manns, *supra* note 98, at 2530 (noting that businesses formed the lobby group, Coalition to Insure Against Terrorism, and “during the first six months of 2002 alone, the insurance company spent \$33.6 million” to lobby for the enactment of TRIA). Cf. Gron & Sykes, *supra* note 59, at 450 (“Although this program is ostensibly ‘temporary,’ political pressures to leave this subsidy in place may prove irresistible.”).

231. Hamburger & Oster, *supra* note 56, at A3 (quoting Maurice Greenberg, CEO of American International Group).

B. Ex Post Government Subsidy

The government has a long history of providing subsidies to victims of disasters or great tragedies.²³² In view of the unprecedented national tragedy, it was not surprising that the government responded to 9/11 with subsidies on a massive scale.²³³ Within days of the attacks, the government created the September 11th Victim Compensation Fund.²³⁴ The Fund has been described as a “political compromise” that balanced the desire to provide generous compensation to a large number of 9/11 victims, many of whom had no or little life insurance, for the quid pro quo of limiting the liability of the airline industry.²³⁵ Political motivations and economic necessity were

232. See generally Lawrence M. Friedman & Joseph Thompson, *Total Disaster and Total Justice: Responses to Man-Made Tragedy*, 53 DEPAUL L. REV. 251 (2003) (discussing the role of private charity, tort law and government subsidy in disasters through various disasters in American history); Michele L. Landis, “*Let Me Next Time be ‘Tried by Fire’*”: *Disaster Relief and the Origins of the American Welfare State 1789–1874*, 92 NW. U. L. REV. 967 (1998) (discussing early role of government subsidy in the wake of disasters); Saul Levmore, *Coalitions and Quakes: Disaster Relief and Its Prevention*, 3 U. CHI. L. SCH. ROUNDTABLE 1 (1996) (discussing government relief after disasters); David A. Moss, *Courting Disaster? The Transformation of Federal Disaster Policy Since 1803*, in *THE FINANCING OF CATASTROPHIC RISK* 307 (Kenneth A. Froot ed., 1999) (discussing federal subsidy policy during disasters). A recent study of federal relief for victims of hurricane showed that the government provided about 20% of the total disaster compensation funds (including insurance proceeds). Shuford, *supra* note 15, at 48.

233. In addition to government subsidies, 9/11 sparked a wave of private charity. Two-thirds of all American households made charitable donations, which exceeded \$2.9 billion. DIXON & STERN, *supra* note 28, at 1. This charitable outreach was unprecedented in American history. *Id.*

234. Air Transportation Safety and System Stabilization Act (ATSSA), Pub. L. No. 107-42, 115 Stat. 230 (2001) (codified as amended at 49 U.S.C. § 40101 (2003)) (signed into law on September 22, 2001).

235. See DIXON & STERN, *supra* note 28, at 20–21; Levmore & Logue, *supra* note 54, at 286 (suggesting that the airline industry was the primary beneficiary of the fund’s provision that tort claims must be waived); George L. Priest, *The Problematic Structure of the September 11th Victim Compensation Fund*, 53 DEPAUL L. REV. 527, 529 (2003) (criticizing the fund on the basis that “it lacks any internal rationale of definition or constraint” found in the systems of compensation provided in society). The ATSSA capped the liability of airlines to the levels of their insurance coverage. 49 U.S.C. § 40101 (2003). The ATSSA required that a claimant under the September 11th Victim Compensation Fund must “waive the right to file a civil action (or be a party to an action) in any Federal or State court for damages sustained as a result of the terrorist-related aircraft crashes of September 11, 2001.” *Id.* An amendment to the statute enacted in November 2001 added other third-parties to the limitation of liability, including New York City, the Port Authority of New York, and New Jersey. DIXON & STERN, *supra* note 28, at 18 n.6. In the end, 2879 claims out of 2976 deaths (representing 97%) were filed. *Id.* at 24–25. The Fund paid out on average of \$2.08 million per claim, and a total payout of approximately \$5.13 billion. *Id.* at 25. Victims received on average \$3.1 million, with 69% coming from the Fund, “23[%] from insurance, and 8[%] from charity.” *Id.* at xxiii.

key factors as evident by the three primary recipients of public funds—New York, the airline industry, and 9/11 victims.²³⁶ The latter two parties not only received huge benefits, but were also shielded from potentially crippling tort liabilities. Sympathy and pragmatism in the form of hard dollars alleviated public suffering and yielded political capital (or at least prevented its erosion).

The precedent set by 9/11 raises the question of whether catastrophic terrorism risk should be dealt with on an ex post basis. Such relief comes with the benefit of holding an option: if the catastrophe threatens the socio-economic interests, the government can act; if not, the private market can be made to internalize its costs. There is an inherent uncertainty to this approach. Sophisticated commercial parties, who suffered a substantial portion of the losses, are less likely to receive economic relief. For insurers, the losses of 9/11 were simply a cost of business. There is no question that the cost was extraordinarily high, but then again the industry was never in danger of a systemic failure.²³⁷ It could be argued that the capital held by the industry before 9/11 served its purpose of paying losses arising from a fortuitous event. Insurance is a business of risk, and the industry is not guaranteed a profit.

Large businesses did not receive direct government welfare but their economic losses were somewhat alleviated by tax benefits and low interest loans, which were intended to stimulate economic recovery rather than to compensate for losses.²³⁸ The losses of policyholders were the product of choices made on the purchase and allocation of insurance coverage.²³⁹ Sophisticated commercial parties had deep pockets to absorb even large losses and could negotiate alternative financial solutions even after 9/11.²⁴⁰

236. The federal government promised New York City \$20 billion and “distributed \$5 billion to the airlines and offered loan guarantees.” DIXON & STERN, *supra* note 28, at 1–2.

237. *See supra* notes 7, 135.

238. *See* DIXON & STERN, *supra* note 28, at 118. Large business owners were eligible for the Liberty Zone tax benefit, which provides tax benefits over an 11-year period. *Id.* at 116. The Liberty Zone tax relief is the first such tax benefit provided to a specified geographic zone in response to a disaster. *Id.* (citing U.S. GEN. ACCOUNTING OFFICE, SEPTEMBER 11: OVERVIEW OF FEDERAL DISASTER ASSISTANCE TO THE NEW YORK CITY AREA 47, 89 (2003)).

239. *See supra* note 81; *infra* note 240.

240. For example, Deutsche Bank, one of the world’s largest banks, owned 130 Liberty Street, a forty story office tower across the street from the World Trade Center, which sustained heavy damages during the attacks. *See* Press Release, Lower Manhattan Development Corp., Deutsche Bank Settlement Reached (Feb. 27, 2004), available at <http://www.renewnyc.com/News/DisplayStory.asp-id-103.asp> (last visited Mar. 5, 2005). Subsequently, the Lower Manhattan Development Corp. agreed to buyout 130 Liberty Street as a part of its development of lower Manhattan. *Id.*

There is a limit to even the government's well of funds, and given the needs of New York and the thousands of 9/11 victims, the losses of the insurance industry and commercial policyholders, though unfortunate, were not the kind that engenders broad sympathy.²⁴¹

When losses lead to broader economic or societal disruptions, ex post government relief is more likely to occur.²⁴² The subsidies provided in response to 9/11 support this view. "One of the most striking findings is the large proportion of overall benefits that went to businesses."²⁴³ TRIA aside, few have criticized the general tenor of government subsidies.²⁴⁴ Indeed, if the government did not provide aid under these circumstances, when would it ever be appropriate to dispense government welfare? Notwithstanding the benefits of compensation and economic stabilization, the unprecedented government welfare had other effects. It may have created expectations, which are priced into the premium, and the market price is then perceived to be too high.²⁴⁵ This kind of a moral hazard, coined the "Samaritan's

241. See Levmore & Logue, *supra* note 54, at 280 (suggesting a link between substantial government relief and public sympathy). Broad based relief to commercial policyholders could have resulted in criticism of the government as some would have argued that the funds should have been used elsewhere.

242. It can be argued that the airline industry faced such a threat immediately after 9/11. Given that the airlines are heavily leveraged, a substantial slowdown in travel threatened the solvency of many carriers.

243. DIXON & STERN, *supra* note 28, at 133. Businesses received \$23.3 billion of the \$38.1 billion in disbursements so far, or 61%. *Id.* at xx, 133. "More than 85[%] of insurance payments went to businesses." *Id.* at xx.

244. See, e.g., Manns, *supra* note 98, at 2550 (stating that TRIA "serves as a political and economically viable solution that partly addresses the substantive economic challenges facing terrorism insurance"). Even scholars who are generally against the policy of government intervention in insurance have been rather tepid in their conclusions on the propriety of government insurance in times of crisis. See Gron & Sykes, *supra* note 59, at 460 ("[W]e stipulate that some sort of response was appropriate to avoid a regulatory shutdown of the airlines after September 11.").

245. "Given this relationship between uninsured losses and the likelihood of government relief, an incentive is created among individuals and businesses not to purchase insurance (or to purchase less-than-full insurance) against disaster losses." Levmore & Logue, *supra* note 54, at 281. Levmore and Logue argue that the September 11th Victim Compensation Fund establishes a clear "precedent" to provide compensation for future victims of terrorism (at least with respect to the loss of life). *Id.* at 278. This argument is unpersuasive as to purchasers of life insurance. It is difficult to see how purchasers of life insurance would substantially factor terrorism risk into their decision. The most likely buyers of life insurance, primary wage earners at the height of their earning power, have sufficient incentive to buy life insurance even without consideration of terrorism risk for they understand the risks to their family's income stream, and most consumers understand that terrorism is but a tiny portion of the causes of premature death. Similarly, those most unlikely to buy life insurance, young adults, would probably not expend their limited funds on life insurance for the world is still their oyster.

Dilemma,²⁴⁶ presents a genuine issue of whether government action has done more harm than good. The stabilization benefits may have been offset by the incentivization to pursue economic rent,²⁴⁷ and the disincentivization of a private market solution.²⁴⁸ Judging by the intensity of the past and present lobbying efforts, we can see how the expectation of government welfare have already become entrenched in the insurance industry.²⁴⁹

Ex post government action can be good or bad or both. There can be no more of a definitive statement for there will (and should) always be a government option to intervene if the circumstances call for a transitional period of stabilization.²⁵⁰ Government action is often subject to a mix of political motivations, public sentiment, and the perceived need for economic stabilization, which may or may not be accurate. There is always the danger of unintended consequences,²⁵¹ and relief cannot always be relied on in times of crisis. In spite of these concerns, it is inappropriate to reject categorically ex post government action for it is a vital component of compensation in times of national crisis. To argue against this process is impractical and, one could argue, ignores the democratic process inherent in the distribution of wealth per public grace. Yet the uncertainties inherent in ex post government action suggests that it is not a structural solution to the

246. James M. Buchanan, *The Samaritan's Dilemma*, in ALTRUISM, MORALITY, AND ECONOMIC THEORY (Edmund S. Phelps ed., 1975); Stephen Coate, *Altruism, the Samaritan's Dilemma, and Government Transfer Policy*, 85 AM. ECON. REV. 46 (1995); see also, e.g., Levmore, *supra* note 232, at 20 ("As already suggested, individuals might purchase less insurance the more they expect widespread losses and then relief."); Bryant J. Spann, Note, *Going Down for the Third Time: Senator Kerry's Reform Bill Could Save the Drowning National Flood Insurance Program*, 28 GA. L. REV. 593, 601 (1994) ("Perhaps the largest disincentive to buying flood insurance is the availability of federal disaster relief.").

247. See *infra* note 260.

248. See *infra* note 276.

249. See *supra* notes 94, 225, 230.

250. See CRIPPEN, *supra* note 37, at 16 tbl.5 (noting \$4.4 billion in federal aid after Hurricane Andrew and \$9.5 billion after the Northridge earthquake); Gron & Sykes, *supra* note 59, at 461 ("Quite the contrary, the government should and does assist those who have suffered losses. It simply does so on the basis of an ex post assessment of priorities rather than ex ante contracts with some subset of the population that has elected to purchase insurance.").

251. For instance, the series of four hurricanes hitting the United States during the summer of 2004 was unprecedented. See *infra* note 449. The hardest hit state was Florida, and given the 2000 presidential election turmoil in Florida it was not surprising that federal relief was prompt and plentiful. If the premiums for hurricane coverage rise to a certain point, one can easily see a typical homeowner's thought process: "The last time my house was hit, the government stepped in. Florida is an important state for any president or presidential hopeful. In the event of a complete disaster, I will be covered. So why should I buy this expensive insurance coverage? Or perhaps I can buy a cheaper policy with limited coverage and the government will pick up the loss difference."

systemic problem of catastrophic terrorism risk.²⁵² Rather, such action is interstitial in nature.

C. Ex Ante Government Insurance

A government pool is the industry's favored solution.²⁵³ Many in the industry see the war against terrorism as a longterm problem in which the best outcome is a stalemate.²⁵⁴ The major market players are European based reinsurers who drive the capacity and pricing of catastrophe and terrorism risk.²⁵⁵ It bears noting that many European countries, including the United Kingdom, France, Germany, Austria and Spain, have adopted a government sponsored risk pool approach.²⁵⁶ These programs vary in their

252. It is difficult to determine whether government will provide subsidies and in what form and amount. Levmore, *supra* note 232, at 32 ("As it turns out, it is difficult to predict the scope of post-disaster relief because so much depends on the level of what I have called 'sympathy' for victims."). Levmore identifies a few factors: a well organized interest group, geographic concentration of victims, general public's ability to identify with the victims, moral hazard considerations, and the level of insurance coverage. *Id.* at 3–8, 18.

253. Hurricane Andrew and the Northridge earthquake were so severe that state governments were compelled to create government sponsored insurance schemes. *See generally* DAVI M. D'AGOSTINO, U.S. HOUSE OF REPRESENTATIVES, COMM. ON FIN. SERVS., U.S. GOV'T ACCOUNTING OFFICE REPORT TO THE CHAIRMAN, CATASTROPHE INSURANCE RISKS: THE ROLE OF RISK-LINKED SECURITIES AND FACTORS AFFECTING THEIR USE 37–40 (2002) (describing the Florida and California programs). Florida owns Citizens Property Insurance Corporation, which is the biggest insurer against hurricane damage, and also has a pool funded by premiums from insurers that provides reinsurance if claims exceed \$4.5 billion up to a cap of \$15 billion. *Weathering Well*, *supra* note 74, at 62. The California Earthquake Authority sells earthquake coverage and has a fund of over \$7 billion. *Id.*

254. *See, e.g.*, Letter from Warren Buffett, Chairman, to Shareholders of Berkshire Hathaway, Inc., *supra* note 43, at 7.

255. These reinsurers include Munich Re, Swiss Re, Hannover Re, General Cologne Re, SCOR, and Converium. BAUER & ENZ, *supra* note 32, at 21 fig.7. Aside from reinsurers, some of the world's largest insurers and financial institutions are also European-based, including Allianz, AXA, ING, Prudential (UK), UBS, Credit Suisse, and Deutsche Bank.

256. Even before 9/11, several governments had such programs in place because of persistent problems with terrorism. In response to the IRA bombings in 1992 and 1993, the UK government created Pool Re, a voluntary mutual risk pool. BRAUNER & GALEY, *supra* note 38, at 28 app.1.1. *See generally* www.hm-treasury.gov.uk (last visited Mar. 11, 2005); Bice, *supra* note 92, at 448–63 (discussing Pool Re). The UK government acts as the reinsurer of last resort, though there has yet been a draw on the government. Pool Re covers only certain geographic districts and "target risks." Premiums paid into Pool Re are determined by the participants themselves. Effective January 1, 2003, the maximum industry retention is set at £30 million per event and £60 million per annum, with individual insurer's retentions being based on individual market share. Over the next four years, the retention schedule provides a steady increase to £100 million per event and £200 million per annum in 2006. Spain, on the other hand, runs a mandatory program. Robert C. Meder, *Global Terrorism Coverage*, RISK MGMT. MAG., May 1, 2002, available at <http://www.rmmag.com/MGTtemplate.cfm?Section=MagArchive>

structures, the important differentiation being whether the program is mandatory (e.g., Spain and France) or voluntary (e.g., UK and Germany), but the common denominator is the provision of public funds and/or government management.²⁵⁷ Accordingly, many of the key players in the insurance market have experience with and have benefited from a “partnership between the private and public sectors,”²⁵⁸ a euphemism for a government cost-sharing program, and they seek the same in the United

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&ShowArticle=1 (last visited Apr. 5, 2005).

Spain established Consorcio de Compensación de Seguros (CCS), which guarantees “extraordinary risk” including terrorism. *See* BRAUNER & GALEY, *supra* note 38, at 28 app.1.1. After deregulation in 1990, insurers could get private insurance, in which case CCS provides subsidiary coverage as an indemnity. CCS is mandatory because all policyholders must pay CCS premium. *Id.* CCS was called upon when terrorist bombed the Madrid train system on March 11, 2004. The attacks resulted in 192 killed, and claims of about €35 million. Ignacio Machetti, *The Spanish Experience in the Management of Extraordinary Risks: Consorcio de Compensación de Seguros*, in OECD CONFERENCE, *supra* note 36, at www.oecd.org/document/34/0,2340,fr_2649_37411_33753570_1_1_1_37411,00.html (last visited Mar. 10, 2005).

In the wake of 9/11, other European and Western countries have moved to create such programs. Austria, France, Germany and Australia have recently enacted government sponsored risk pool and reinsurance programs. Effective January 1, 2003, Austria provides automatic coverage of risk up to €5 million, risk from “€5 to €25 million can be ceded to the pool with payment of additional premium, [and] risk exceeding €25 million must be covered on a facultative basis.” BRAUNER & GALEY, *supra* note 38, at 29 app.1.2. Effective January 1, 2002, France set up Gestion de l’Assurance et de la Réassurance des Risques Attentats det Actes de Terrorisme (GAREAT), a state controlled mandatory risk pool under which the primary insurer retains €400 million, the next two layers of risk € 1.1 billion and €250 million in excess of the €1.5 billion “are placed in the international reinsurance market,” and the government guarantees losses over the €1.75 billion through Caisse Centrale de Réassurance. *Id.* Effective November 1, 2002, Germany through Extremus Versicherungs-AG, a consortium of private insurers, provides voluntary coverage for losses in excess of €25 million per insured with an annual aggregate limit for any one insured is €1.5 billion. *Id.* Effective July 1, 2003, Australia adopted a mandatory program in which reinsurance coverage for loss of or damage to commercial property is provided through the Australian Reinsurance Pool Corporation with an aggregate cover up to Australian \$10.3 billion when the pool is fully funded. *See* THE AUSTL. GOV’T, THE AUSTL. REINSURANCE POOL CORP. WEBSITE, available at www.arpc.treasury.gov.au (last visited Mar. 9, 2005); *see generally* AM. ACAD. OF ACUTUARIES, *supra* 34, at 20–30 (describing the various programs by other governments); Boran, *supra* note 92, at 548–58 (describing the programs of the UK, Spain, and South Africa).

257. AM. ACAD. OF ACTUARIES, *supra* note 34, at 29 (“Note the principal dichotomy in approaches is whether individual insurer participation is voluntary or mandatory in each of these plans to get the benefit of the government backstop.”).

258. OECD CONFERENCE, *supra* note 36, at <http://www.oecd.org/dataoecd/41/56/33962469.pdf> (last visited Feb. 15, 2005). I do not suggest that the agenda of European insurers and reinsurers are different from American or Bermuda companies. In fact the opposite is probably true. I only suggest that European based companies have significant sway in setting the industry position by virtue of their market shares.

States which is the largest insurance market. In this vein, the industry has signaled its unwillingness to assume the majority of the risk over the long term without government participation.²⁵⁹

The reasons cited for a government program are the severity of the risk, the increase of overall capacity with the addition of government funds, and further spreading of risk to deeper pockets.²⁶⁰ Only the federal government, it is argued, has capital deep enough to absorb multiple shocks of catastrophic terrorism.²⁶¹ Given that the industry has failed to propose a permanent solution to terrorism risk and the market in terrorism risk continues to be uncertain, perhaps an extension of TRIA is the path of least resistance in that there would be less uncertainty in the short term with a federal backstop.²⁶² The immediate problem is that without an extension the previously seen market effects of constrained capacity and increased prices may return in some measure. An extension keeps the status quo. In the event of another catastrophe, the argument goes, it is better to have an organized reinsurance program in place, lest another disaster will have a disproportionate impact on those who were priced out of the market or did not purchase insurance due to a moral hazard.²⁶³ The appeal of *laissez faire*

259. See, e.g., BRAUNER & GALEY, *supra* note 38, at 24 (“Consequently, the state should be more than merely a supervisor and regulator. It should also take on the role of an insurer or reinsurer by assuming certain functions”); U.S. GEN. ACCOUNTING OFFICE, *supra* note 103, at 9 (indicating that insurers are unwilling to sell terrorism coverage without a cost-sharing program); ZANETTI ET AL., *supra* note 2, at 19 (“The state as the insurer of last resort is in a better position to deal with extreme loss potentials than are private insurance companies with their limited capital and capacity.”); Warren Buffett, *Use FDIC Model to Protect Insurers from Terrorism*, FORT WAYNE J. GAZETTE, Nov. 28, 2001, at 9A, available at 2001 WL 100792260 (suggesting that the government create an insurance scheme similar to the FDIC).

260. BRAUNER & GALEY, *supra* note 38, at 23. Some even argue that private market reactions have created externalities that conflict with the “public interest” and that are only correctable through market intervention and selective use of policy. See DARIUS LAKDAWALLA & GEORGE ZANJANI, INSURANCE, SELF-PROTECTION AND THE ECONOMICS OF TERRORISM 30–32 (RAND Inst. for Civil Justice, Working Paper, 2003).

261. Letter from Warren Buffett, Chairman, to Shareholders of Berkshire Hathaway, Inc., *supra* note 43, at 8 (“Only the U.S. Government has the resources to absorb such a blow.”)

262. This is essentially the argument made in a study that was sponsored by various interest groups of the industry. HUBBARD & DEAL, *supra* note 29. The study argues: “Over time, it may be possible to develop alternative approaches to TRIA that are structured in a different way. However, these alternatives are not in place today, and not extending TRIA may well result [sic] in negative economic consequences.” *Id.* at 86.

263. See AM. ACAD. OF ACTUARIES, *supra* note 34, at 7–8 (“Insurers may reduce their uncertainty by adopting a strategy of avoiding the risk through exclusions or through coverage limitations to the extent they are permitted by law. To the extent that the insurer mitigates its risk through coverage limitations, the policyholder assumes that risk by implication.”). See also *supra* note 262.

economic policy is offset by the risk to the government, the economy, and the public.²⁶⁴

The problem with the above argument is two-fold. First, it is a self-fulfilling prophecy. The existence of a government risk share program would surely disincentivize the development of an alternative solution. Indeed, there is an argument to be made that the insurance industry did not pursue a private market solution within the three-year window provided by TRIA in favor of pursuing a longterm strategy to extend TRIA and make it permanent.²⁶⁵ Second, the argument overstates the case for extending TRIA or enacting another government insurance scheme in its place. The evidence supporting the main argument for TRIA—market stabilization—is tepid at best.²⁶⁶ While terrorism coverage is available, there is still a divide between offered price and perceived risk, the net result being that the take up rate has been low and risks are still adversely concentrated.²⁶⁷ All things considered, the statute's expiration should not dramatically change the overall risk distribution. Policyholders largely assumed the risk before and after 9/11 and they will likely continue to do so upon the expiration of TRIA. Insurance will be available but with tighter coverage limits and at higher premium levels. The experience of Hurricane Andrew suggests that after the initial shock and market withdrawal, capacity eventually increases with recapitalization and prices eventually decrease without government intervention. Even before Congress enacted TRIA, the market was stabilizing into a new equilibrium.²⁶⁸ Of course, market stabilization does not mean a return to the old paradigm.²⁶⁹ A rational price correction, several years removed from the raw emotions and reflexive shock of 9/11, is not a bad thing. Before 9/11, the industry grossly underpriced the risk. Given the current understanding of terrorism risk, everyone understands that coverage is no longer “free.”

264. There are three general views of government intervention in the markets. Laissez faire economic policy posits that private markets, however imperfect, are more efficient than government intervention. BROWN ET AL., *supra* note 52, at 4–5. The public interest theory regulation posits that private markets can produce suboptimal allocation of economic resources and that government intervention can improve the market equilibrium. *Id.* at 5. The third view, market enhancement policy, takes the middle position and posits that regulations should facilitate the development of a private market solution to market inefficiencies or failures. *Id.* at 5–6.

265. See KUNREUTHER & MICHAEL-KERJAN, *supra* note 29, at 12 (“[N]othing is more permanent than the temporary.”).

266. See *supra* Part II.D.

267. See *supra* note 113.

268. See *supra* note 105.

269. See *supra* Part II.A.

A broad range of scholars, consumer groups, and thinktanks have argued against a permanent, government run program.²⁷⁰ Any federal reinsurance program “would be costly to taxpayers.”²⁷¹ While insurers may believe that government reinsurance is “free” capital, some have argued that they cannot profit from the subsidized capital. This explains why upon the passage of TRIA the market reacted negatively to insurance stocks.²⁷² Because the insurance market is generally competitive, scholars have reasoned, the economic rent would flow upstream to policyholders.²⁷³ Any expected value of federal funds would be priced into the premium, and thus such a program is really subsidized insurance. Accordingly, the availability of potentially underpriced terrorism insurance may provide a disincentive for

270. See generally Gron & Sykes, *supra* note 59; Levmore & Logue, *supra* note 54; Smetters, *supra* note 50; *supra* note 225 (discussing opposition of consumer groups and conservative thinktanks). In light of the ambivalent data, it is difficult to argue definitively that as a temporary stabilization measure TRIA was bad legislation, provided it remains temporary.

271. CRIPPEN, *supra* note 37, at 24. The Congressional Budget Office concludes that the uncertainty of the actuarial risk will create political pressure to subsidize terrorism risk premiums, ultimately costing the American taxpayers. *Id.* In estimating the cost of H.R. 3210, a predecessor of TRIA, the Congressional Budget Office estimated that the expected costs to the government would be \$9 billion for three years. CONG. BUDGET OFFICE, *supra* note 215, 4.

272. The financial market study concludes that “the net impact of [TRIA] may well have been negative,” given the negative correlation of stock prices on the industries that are most affected by the passage of the statute. BROWN ET AL., *supra* note 52, at 3, 37. These industries are real estate, construction, banking, transportation, and utilities. *Id.* at 19. The study provides several explanations for the counterintuitive phenomenon. One, TRIA did not benefit insurers because of the competitive nature of the market, and in fact may have had an adverse effect by terminating their option to not provide terrorism risk. *Id.* at 37; see also CRIPPEN, *supra* note 37, at 2 (“The market for P&C insurance appears to be competitive nationally . . .”). Second, TRIA may have reduced the market expectation of ex post government assistance. BROWN ET AL., *supra* note 52, at 37–38. Third, TRIA may have prevented or delayed the development of private market solution to terrorism risk, which would be more efficient than the government scheme. *Id.* at 38. The negative stock price reaction to TRIA is interesting when compared to the positive stock price reaction to the creation of the California Earthquake Authority. See David C. Marlett & Carl Pacini, *Insurer Stock Price Responses to the Creation of the California Earthquake Authority*, 18 J. INS. REG. 80, 99 (Fall 1999) (“[W]e found statistically significant positive insurer share price reaction at the time of release of new information favorable to the implementation of the CEA.”).

273. BROWN ET AL., *supra* note 52, at 21; see also KUNREUTHER & MICHAEL-KERJAN, *supra* note 29, at 18 (suggesting that the most likely explanation for the negative market reaction to TRIA is the statute’s requirement that insurers provide terrorism coverage when they would not have provided it otherwise). TRIA could be a detriment to insurers because TRIA makes coverage mandatory, thus terminating the insurers’ option to provide coverage or not provide coverage. BROWN ET AL., *supra* note 52, at 21. Economic rent is the redistribution of wealth through government action. See JAMES M. BUCHANAN ET AL., *TOWARD A THEORY OF THE RENT-SEEKING SOCIETY* ix (James M. Buchanan et al. eds., 1980).

policyholders to avoid or control risk,²⁷⁴ or otherwise not engender sufficient economic stake to avoid moral hazards.²⁷⁵ In the longterm, there is a potential downside for both the government and the industry.

Also, subsidized insurance programs have historically “crowded out” the private sector with cheaper than economically feasible pricing.²⁷⁶ While the short term effect is reduced prices, the lack of a competitive market leads to reduced capacity and increased prices in the longterm.²⁷⁷ There is more to the crowding out effect than simply price distortions. A government monopoly or centralization tends to anesthetize the market.²⁷⁸ Any federal cost sharing reinsurance program would likely create an economic disincentive for the reinsurance market to develop a private market solution. The perception of free capital would effectively extinguish any incentive to

274. Since 9/11, policyholders and businesses have taken significant risk avoidance or mitigation measures, and have invested significant resources to private security measures. *See, e.g.*, C. Michael Armstrong, *United We Stand*, WALL ST. J., March 9, 2004, at B2, available at 2004 WL-WST 56922302 (“Virtually every company has strengthened physical and cyber security and updated their emergency response plan. On average, they have increased security spending by 10% since 9/11.”); Peter Grant & Motoko Rich, *Lower Manhattan is Fighting for its Future as Jobs Disappear and Companies Move Elsewhere*, WALL ST. J., Sept. 11, 2002, at B1, available at 2002 WL-WSK 3405757 (discussing the effects of 9/11 on commercial activity in downtown New York); Randall Smith & Kate Kelly, *Financial Community’s Migrations Since 9/11 Accelerate a Trend*, WALL ST. J., Sept. 11, 2002, at C1, available at 2002 WL 3405786 (noting Wall Street securities firms have moved out of downtown New York); *see also* Elise M. Bloom et al., *Competing Interests in the Post 9/11 Workplace: The New Line Between Privacy and Safety*, 29 WM. MITCHELL L. REV. 897, 915–20 (2003) (describing security measures taken by companies). Although these measures constitute a cost to the economy, they are voluntarily born by policyholders and businesses, and they contribute to the reduction of terrorism risk.

275. *See* CRIPPEN, *supra* note 37, at 31 (“By subsidizing flood insurance, for instance, the federal government has encouraged building in hazardous areas, putting more real estate at risk and raising the cost of post-disaster assistance.”).

276. *See* THE CATO INST., *supra* note 62, at 7 (quoting Glen Hubbard, who noted the problem of government programs crowding out private markets); CRIPPEN, *supra* note 37, at 28 (noting that “it might crowd out private insurance suppliers”); KUNREUTHER & MICHAEL-KERJAN, *supra* note 29, at 12 (noting that subsidized government coverage for the airline industry in the wake of 9/11 had the effect of “crowding out the emergence of private solutions,” in this case a proposal for a risk retention group by the airline industry). *But see* HUBBARD & DEAL, *supra* note 29, at 62 (“First, TRIA is not generally perceived to have crowded out the private sector. In fact, the most common perspective is that exactly the opposite is true. By providing more definitive loss parameters, TRIA has facilitated the participation of the private sector at current levels.”).

277. This assumes that the government does not monopolize the entire sector of terrorism coverage and underprices the risk with subsidized premiums.

278. *See* Christopher M. Lewis & Kevin C. Murdock, *The Role of Government Contracts in Discretionary Reinsurance Markets for Natural Disasters*, 63 J. RISK & INS. 567, 584–85 (1996).

develop a private market solution, including financial innovations like securitization.²⁷⁹ Given that the rationale for securitization is a lower cost of funds,²⁸⁰ securitization would be unviable if it has to compete with the government's cost of funds.²⁸¹ There is already evidence of market anesthetization in the failure of the market to develop a private market solution (the second of TRIA's goals) and the industry's lobbying efforts to extend TRIA.²⁸² Any "free" capital will tend to distort market incentives and may increase the costs to the economy over a long period. The precise effects are unpredictable, and would inject a significant level of uncertainty. Thus, a government program can also inject a systemic risk to the insurance market and the economy.²⁸³

Individually, the above reasons are significant. Collectively, they are compelling. But perhaps the most compelling reason to refrain from enacting a government reinsurance program is the abundant evidence that the government is a poor assessor and transferor of risk.²⁸⁴ There are several reasons for this. First, the government is but a single entity, and a single department within an agency typically manages any given government program. These micro-agencies, subject only to bureaucratic oversight, cannot compete with the private market, which is subject to the collective forces of supply and demand, innovation and strategy, and incentives and disincentives. The private market is more nimble, intelligent, and diligent than government in turning a profit and improving efficiency within a

279. See *infra* notes 297–299 & accompanying text (discussing a possible contingent capital program). The insurance industry would argue that a government backstop would not be "free" funds because they are then obligated to provide terrorism coverage. This argument would not be persuasive because nothing would preclude them from charging rates that are rational and supported by actuarial principles at least but with the benefit of a capped loss. If a government backstop would force insurers into a loss-making proposition, then one would not expect such heavy lobbying effort by the industry.

280. See *infra* Part IV.A.

281. "Capital market products, especially catastrophe bonds whose principal and interest would be suspended if a disaster occurred, would be at a competitive disadvantage against a subsidized federal program." CRIPPEN, *supra* note 37, at 28.

282. See *supra* note 225.

283. Government regulations and programs can by themselves be a source of systemic risk to the economy. See Rolf Nebel, *Regulations as a Source of System Risk: The Need for Economic Impact Analysis*, 29 GENEVA PAPERS ON RISK & INS. 273, 276–83. While regulations may seek to mitigate market imperfections, they may sometimes cause their own distortions and aggravate existing market deficiencies by introducing distortion of competition, supply distortions, moral hazards, procyclicality, or system risk. *Id.* at 276.

284. See Gron & Sykes, *supra* note 59, at 462; Manns, *supra* note 98, at 2544–45; George L. Priest, *The Problematic Structure of the September 11th Compensation Fund*, 53 DEPAUL L. REV., 527, 527–29 (2003).

market.²⁸⁵ Second, the government generally is not motivated by pure profit, a significant handicap in operating a business. Its actions are motivated by the political self-interests of the individual politicians or bureaucrats, and the underlying rationale of police power, i.e., the need to protect its citizens, to provide welfare on a case by case basis, and to redistribute wealth. The latter are alien in the private market, which only seek the most efficient, profitable outcome, which in competitive markets produces the lowest costs.

The historical efficacy of government sponsored insurance programs has been mixed.²⁸⁶ Experience shows that the government “has difficulty managing risk efficiently.”²⁸⁷ It makes little effort to control adverse selection and is unable to price actuarial risk.²⁸⁸ For example, federal crop and flood insurance programs have had problems of adverse selection, moral hazards, poor underwriting and mismanagement.²⁸⁹ In both programs,

285. I do not suggest that personnel in government agencies are individually less intelligent. Rather, the collective intelligence of a market system in which an enormous amount of information is absorbed is superior to the central planning of individuals or a small group of individuals. Of course, this is the decisive advantage of a free market of self-interested economic actors as first and best articulated by Adam Smith. *See generally* ADAM SMITH, AN INQUIRY INTO THE NATURE AND CAUSES OF THE WEALTH OF NATIONS (Edwin Cannan ed., 1994).

286. Deposit insurance administered by the Federal Deposit Insurance Corporation is often cited as a successful government insurance program with positive net benefit to the general economy. *See* William M. Isaac, *The Role of Deposit Insurance in the Emerging Financial Services Industry*, 1 YALE J. ON REG. 195, 198–99 (1984) (noting that both Milton Friedman and John Kenneth Galbraith credited deposit insurance as bringing order and stability to the American banking system) (citing M. FRIEDMAN & A. SCHWARTZ, A MONETARY HISTORY OF THE UNITED STATES: 1867–1960 434 (1963) and J. KENNETH GALBRAITH, MONEY: WHENCE IT CAME, WHERE IT WENT 197 (1975)). The success of deposit insurance can be attributable to several reasons. Banks are heavily and centrally regulated, and so the government is in the best position to understand the risk and control it. Also, because participation is mandatory, the risk is evenly spread throughout a large pool of similarly situated insureds and there is little chance of adverse selection and moral hazard. It is highly questionable whether universal terrorism coverage is desirable or even a possibility.

287. CRIPPEN, *supra* note 37, at 27.

288. Priest, *supra* note 284, at 527–28; *see also* Manns, *supra* note 98, at 2544 (noting that the government charges as little as 5% of the actuarial risk for flood insurance).

289. *See Flood Insurance: Information on Financial Aspects of the National Flood Insurance Program: Testimony Before the Subcomm. on Hous. & Cmty. Opportunities, House Comm. on Banking & Fin. Servs.*, 106th Cong. 1–11 (1999) (statement of Stanley J. Czerwinski, Assoc. Dir., Hous. & Cmty. Dev. Issues, Resources, Community, & Econ. Dev. Div., U.S. Gen. Accounting Office); David F. Rendahl, *Federal Crop Insurance: Friend or Foe?*, 4 SAN JOAQUIN AGRIC. L. REV. 185, 205–07 (1994) (describing the problems with crop insurance); Smetters, *supra* note 50, at 47 (describing the problems with flood insurance); *see generally Flood Insurance: Being Eaten Away*, ECONOMIST, Aug. 7, 1993, at 32 (stating that the national flood program “encouraged so many of them to build their farms in the path of the mighty Mississippi”); Charles T. Griffin, *The Natural Flood Insurance Program: Unattained Purposes, Liability in Contract and Takings*, 35 WM. & MARY L. REV. 727 (1994) (discussing the national

the risks are not subject to the ordinary assessments of actuarial risk, and have been undermined by low participation and price distortions.²⁹⁰ When the government enters a market, “it tends to create subsidies and cross-subsidies which are not that desirable because of the incentive distortions.”²⁹¹ It does not assess and price risk so much as engage in wealth redistribution “under an insurance guise.”²⁹²

The problems of adverse selection and the Samaritan’s dilemma can be remedied by mandating universal coverage. But universal coverage is problematic on multiple levels. It would create a significant centralized bureaucracy. The effectiveness of this bureaucracy would be questionable in light of the government’s experience in running insurance programs. Government underwriting is often not done on a pure actuarial standard, but is tainted by political and other public interest motivations. Economically, universal coverage makes sense only if a substantial portion of the economy is subject to risk. Although terrorism is capable of striking anywhere, it is a substantial risk for only parts of the country. This is certainly true of catastrophic terrorism. Philosophically, universal coverage means government coercion. Coverage may not be the most preferred use of funds for many policyholders, who may choose to assume the risk and allocate the funds to other endeavors. Some policyholders may experience irrational “myopia,” choosing not to purchase insurance until they first experience an

flood insurance program). Government programs often start with good intentions, but have unanticipated market distortions. Consider for example flood insurance. *See* National Flood Insurance Act of 1968, 42 U.S.C. §§ 4001–03 (2000); *see generally* FED. EMERGENCY MGMT. AGENCY, FLOOD INSURANCE: INTRODUCTION TO THE NFIP, at www.fema.gov/nfip/intnfip.htm (last visited Mar. 8, 2005). Flood insurance was enacted to spread losses through subsidized insurance and to guide the development standards on floodplains. *See* Spann, *supra* note 246, at 596–98. As of 2001, the National Flood Insurance Program (NFIP) had 4.5 million policies in force with over \$570 billion in coverage. *See* Smetters, *supra* note 50, at 47. Government flood losses average about \$800 million per year due to subsidized premiums. *Id.* at 47. Moreover, the prevalence of national flood insurance does not ensure that the risks are adequately covered by insurance, thus eliminating the need for ex post government relief. *See* Spann, *supra* note 246, at 593 (stating that the Midwest Flood of 1993 caused \$15 billion in property damage, requiring a \$5.7 billion emergency aid to victims). The same problems have been noted in the Federal Crop Insurance Program. *See* Levmore, *supra* note 232, at 24 n.47 (noting that the government subsidizes 30% of premiums, but the participation is still a low 25%, putting “political pressures that always come to bear when natural disasters strike a wide path”).

290. *See* Spann, *supra* note 246, at 596–604 (explaining the problems of flood insurance); Rendahl, *supra* note 289, at 205–07 (problems of crop insurance).

291. THE CATO INST., *supra* note 62, at 19 (statement of Anne Gron); *see generally* Richard A. Epstein, *Catastrophic Responses to Catastrophic Risks*, 12 J. RISK & INS. 287 (1996) (arguing against government intervention in insurance market).

292. Priest, *supra* note 284, at 229.

adverse event.²⁹³ But there are rational reasons to opt out of coverage. Commercial policyholders from Fortune 500 to Main Street businesses routinely make allocations of scarce capital. Policyholders may not purchase insurance if the actuarial value is unknown with respect to the premium. This is simply the corollary to the market exit by insurers upon information ambiguity.²⁹⁴ Even if the actuarial risk can be assessed efficiently, insurance premiums (particularly terrorism coverage) are a discretionary expense and each policyholder has its own capital allocation priorities. Accordingly, most policyholders would want the freedom to choose, to weigh the costs and benefits rather than have that decision be imposed upon them by government coercion.

Aside from a shared risk pool concept, other proposals have been suggested. One proposal is the sale of government sponsored excess of loss reinsurance contracts.²⁹⁵ Under this proposal, the government would auction the coverage wherein it assumes a portion of the excess of loss, which is capped, while the primary insurer or reinsurer would assume the remaining risk.²⁹⁶ Because the program is federally backed, there would be no credit risk. But this program is susceptible to the same kinds of negative attributes of an ex ante government intervention. Moreover, the auction could allow any insurer or reinsurer to participate in providing terrorism coverage, even those with marginal credit. Of course, a prescreening of buyers, using some objective standard like credit ratings from rating agencies, may solve this problem but it does not stretch the imagination to see how this screening process could be subject to government interference as well. Thus, an auction does not promote price efficiency, and may incentivize some insurers to engage in “bet the company” type of underwriting.

293. See Howard Kunreuther, *Mitigating Disaster Losses Through Insurance*, 12 J. RISK & INS. 171, 171 (1996).

294. See *supra* note 110.

295. *Insurance and Terrorism Hearing*, *supra* note 136 (statement of J. David Cummins, Harry J. Loman Professor of Insurance and Risk Management, The Wharton School, University of Pennsylvania); see also CRIPPEN, *supra* note 37, at 21–23 (describing a similar auctioning of XOL policies).

296. *Insurance and Terrorism Hearing*, *supra* note 136 (statement of J. David Cummins, Harry J. Loman Professor of Insurance and Risk Management, The Wharton School, University of Pennsylvania). Cummins also makes the following suggestion:

[G]overnment should explore ways in which it could encourage the development of private markets for catastrophic risk without providing Federal financing backing. For example, it should investigate the possibility of lowering regulatory barriers that may exist to securitizing insurance risk and taking control of this aspect of insurance regulation to simplify the regulatory system.

Id.

Another possible solution could be a contingent capital program, which is sometimes used in the insurance industry.²⁹⁷ A contingent capital program uses debentures or derivatives to trigger a capital call upon a specified event.²⁹⁸ The government could charge a fee on an annual basis in consideration for a promise to provide funds, charged at the government's cost of funds. In this way, the private market is still incentivized to provide terrorism coverage, and participating insurers are guaranteed of capital flow in the event of a catastrophe. The goal is the preservation of capital flow. The capital is not "free" in the sense of a pure giveaway; rather it is subsidized capital because the government provides a guarantee of funds, which will ensure that participating insurers are not forced into insolvency and that state guarantee funds are not tapped as a result of a liquidity crisis. But, this type of program could also be subject to the same incentives described above.

Neither an excess of loss auction nor a contingent capital program present a longterm solution. These programs do not change the fundamental economics of providing terrorism coverage, and they call on the deployment of government funds, though the structure may differ. Government participation under both plans amount to capital support of the industry, but does not enhance premium pricing or capacity, incentivize a more permanent market solution, or facilitate the entry of other market participants.

Someone must bear the cost of terrorism. Any apportionment of the risks and costs must be efficient, meaning that each interest group should be incentivized to assume the costs of terrorism. September 11th exposed the weakness in the insurance system. Higher premiums and reduced coverage mean that owners and policyholders must assume more risk.²⁹⁹ It is a basic concept of finance and insurance that concentrated risk is not a good thing.

297. A contingent capital program is one of the alternative risk transfer (ART) methods that has been developed. *See supra* note 26.

298. *See id.* In a contingent surplus note, the insurer issues debt securities, which may be converted into surplus notes at the option of the insurer. Lewis & Davis, *supra* note 26, at 116. In a contingent equity arrangement, the insurer purchases an option to call on pre-committed funds at a pre-arranged rate upon the occurrence of a defined event. *Id.* at 124. In the banking industry, lenders often charge a commitment fee, a small percentage of the total revolving credit, in consideration for a firm commitment of funds.

299. The concentration of too much risk on owners and policyholders is not a desirable result. For example, the earthquake in Kobe, Japan, in 1995 caused \$147 billion in economic losses, of which only \$4 billion was covered by insurance. D'AGOSTINO, *supra* note 253, at 12 fig.2; *see also* CRIPPEN, *supra* note 37, at 9–10 (stating that only 40% of affected homeowners had earthquake insurance during the Northridge earthquake, with \$43 billion of economic losses).

³⁰⁰ Without an alternative mechanism to distribute the risk, we can reasonably assume that in the next catastrophic attack, government will again assume a large portion of the costs. Indeed, there is an indirect social insurance in place as government ends up paying for catastrophes in one form or another. These conclusions assume that the mechanisms of risk distribution remain unchanged. However, if the market can distribute the risks to a broader and deeper pool of risk bearers, then the equation changes. Losses become more dispersed, liquidity and credit concerns are alleviated, and the role of government shrinks. This is the promise of securitization.

IV. AN ALTERNATIVE INSURANCE MARKET

A. *Brief Primer on Securitization*

Securitization is a structured financial transaction where an expected cashflow from receivables (an illiquid asset) is securitized into a liquid bond traded in the public securities market.³⁰¹ The typical assets are receivables

300. See *infra* note 309 (discussing Markowitz's theory of portfolio diversification).

301. See generally TAMAR FRANKEL, SECURITIZATION: STRUCTURED FINANCING, FINANCIAL ASSET POOLS, AND ASSET-BACKED SECURITIZATIONS § 1 (1991 & Supp. 1994). While the technical details of the transaction can be complex, the basic structure is simple. A pool of expected cashflows, say credit card receivables, is sold in an arms length, "true sale" transaction to a special purpose vehicle (SPV), typically a trust. See STEVEN L. SCHWARCZ, STRUCTURED FINANCE: A GUIDE TO THE PRINCIPLES OF ASSET SECURITIZATION §§ 4.1–4.12.3 (Adam D. Ford ed., 3d ed. 2003) (discussing the "true sale" requirement). The SPV seeks to achieve bankruptcy remoteness so that the originator's liability risk (the enterprise risk) does not flow into the SPV. *Id.* §§ 3.1–3.5 (discussing the bankruptcy remoteness aspect). An investment bank analyzes the receivables and models the expected cashflows. Based on this analysis, the issuer (the SPV) and the investment bank typically structure several different bonds, or tranches. These tranches typically have different terms, e.g., coupon and maturity. They are also structured in a way that their credit risks are different. Some bonds have priority rights to a preset bracket of receivables payments, and so the credit risk is minimized. Other bonds have residual rights to whatever cashflows that may remain, and so the risk is far greater. Each tranche is rated by professional rating agencies, the most common being Moody's Investors Service, Standard & Poor's, and Fitch Ratings. The bonds are then priced so that the proceeds give the investors their expected returns based on the ratings. The receivables are serviced by the originator or a third-party servicing firm, which pays out on the bond terms. See STEVEN L. SCHWARCZ ET AL., SECURITIZATION, STRUCTURED FINANCE AND CAPITAL MARKETS § 1.03, at 6–16 (2004) (describing a typical securitization transaction). By now this process is so standardized that the cost of securitization has been greatly reduced and securitization is a standard structured financing technique that improves liquidity and reduces capital costs. See *infra* note 327 (discussing the transaction costs of securitization as compared to the issuance of equity).

generated from the sale of mortgages (both residential and commercial), credit cards, auto loans, student loans, and home equity loans.³⁰² Securitization was first developed in the market in the early 1970s when the federal government issued mortgage-backed “pass through” securities.³⁰³ Since then, the market has grown to over \$6.4 trillion in capitalization.³⁰⁴

In theory, any stream of receivables can be securitized.³⁰⁵ Securitization finances the asset generation activity with the deeper, cheaper capital available in the markets. The rationale for securitizing a pool of assets lies in a cost of capital differential. If the cost of funds needed to generate the assets (i.e., the originator’s cost of capital) is more than the cost to securitize the assets (i.e., the interest payments on the bonds), securitization benefits all concerned.³⁰⁶ By securitizing the receivables, the originator secures funding for the receivables at a cheaper rate than its own cost of capital.³⁰⁷ The originator can then use the “freed up” capital to originate

302. See ANDREW DAVIDSON ET AL., *SECURITIZATION: STRUCTURING AND INVESTMENT ANALYSIS 4* (2003) (providing market breakdown, mortgages comprising 81% of the market).

303. FRANKEL, *supra* note 301, § 2.4.2.

304. As of June 30, 2004, asset backed securities and agency mortgage backed securities had a total of \$1.77 trillion and \$3.53 trillion, respectively, totaling \$5.3 trillion. See generally THE BOND MARKET ASSOC., at www.bondmarkets.com (last visited Mar. 8, 2005) (providing securities data). In addition, there is also the commercial mortgage backed securities (CMBS) market, which is about \$1.1 trillion. *The Commercial Mortgage Backed Securities Market Flourishes as Supply Tops \$130 Billion*, BOND MKT. ASS’N, June 23, 2004 at www.bondmarkets.com/story.asp?id=1402 (last visited Apr. 5, 2004).

305. The market has securitized such oddities as media royalties, oil and gas assets, and anticipated rock concert receipts. See Charles E. Harrell et al., *Securitization of Oil, Gas, and Other Natural Resource Assets: Emerging Financing Techniques*, 52 BUS. LAW. 885 (1997) (discussing oil and gas assets); Kim Clark, *On the Frontier of Creative Finance: How Wall Street Can Securitise Anything*, 135 FORTUNE, Apr. 28, 1997, at 50 (discussing “Bowie bonds” collateralized by receipts of David Bowie concerts).

306. SCHWARCZ, *supra* note 301, § 1.3, at 1–9. Cost of capital is the weighted average cost of debt and equity. All capital has a cost. The cost of debt is intuitively obvious; it is the cost of the interest expense. The cost of equity is the investor’s opportunity cost of capital that must be provided and that is typically calculated by the Capital Asset Pricing Model (CAPM). See BREALEY & MYERS, *supra* note 204, at 142–50; John Lintner, *The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets*, 47 REV. ECON. & STAT. 13 (1965) (discussing the CAPM); William F. Sharpe, *Capital Asset Prices: A Theory of Market Equilibrium under Conditions of Risk*, 19 J. FIN. 425, 433–42 (1964) (discussing the CAPM).

307. A stylized example illustrates how securitizations maximize the efficiency of using cheaper capital available in the capital markets. To keep the example simple, we do not assume taxes or operating expenses, consider time value of money, or risk and return associated with the residual; and the numbers used do not reflect current market pricing. A credit card issuer (originator) generates \$1,000 in receivables with an anticipated profit of \$100. The customers’ cost of borrowing is \$100 on \$900, or 11.1%. The origination is supported by \$500 of debt at a cost of 8% and \$500 of equity at a cost of 12%, and the weighted average cost of capital is 10%.

more assets or return it to shareholders.³⁰⁸ Market investors benefit because the securitization allows them to participate in the economics of the underlying transactions without exposure to the unique credit risk of the originator, and securitization diversifies a portfolio of investments.³⁰⁹

The profit from holding the receivables on the balance sheet would be \$100, and the debtholders would earn 8% and the equityholders would earn a return on equity (ROE) of 12%. Now, instead of holding the receivables on its balance sheet, the firm securitizes them. Because the assets and liabilities associated with the receivables are sold to the SPV, the firm no longer needs \$1,000 in capital. Instead it may need only \$200 in capital, say \$100 in debt and \$100 in equity. The “freed up” \$800 of capital can then be used for other activities (perhaps more origination of receivables) or returned to the debtholders and shareholders. Assume that the bondholders of the securitization require an 8% return on the \$900 credit, which is \$72. Accordingly, the receivables are sold in an arms-length transaction to the SPV for \$72, and the SPV then prices and issues the bonds. In essence, the bondholders are lending the \$900 to the credit card holders at an 8% rate instead of the 11.1% rate charged by the originator. The originator earns the \$28 gain on the sale of the receivables, which constitutes the cost of capital differential between it and the SPV. Ordinarily, this gain on sale would be subject to tax, but for this example we assume no taxes. *See infra* Part V.C (discussing the tax aspect of securitization). It could then pay its debtholders the \$8 in interest, and its shareholders could keep the remaining \$20, a 20% ROE if it could keep all the profits. But because the market in credit cards is competitive, the firm is expected to pass on most of the cost savings to the customers. For instance, if \$7 of the \$8 capital cost saving is passed on to the customers in the form of a cheaper rate, then the firm yields a ROE of 13%, still superior to the 12% if the receivables were held on the balance sheet, and the cost of borrowing by the firm’s customers on a going basis is lowered by 80 basis points, from 11.1% to 10.3% (= $\$93 \div \900). Thus, securitization reduces the cost of borrowing for the customers, increases the return on capital for the originator, and allows market participants to invest directly in the underlying economics of the transaction without assuming the enterprise risk of the originator as would be the case if they invested directly in the stock of the originator. Missing from these calculations is the transaction costs, which are a tiny fraction of the overall deal value, unlike cost of raising equity capital, which are typically several percentage points of the deal value. *See supra* note 301. Of course, this example is stylized and in the real world the margins are razor thin. Securitization is a bulk business, commoditizing trillions of dollars of receivables. *See infra* note 308.

308. Thus, most companies that generate receivables have an ongoing program of securitizations. *See, e.g.,* CITIGROUP, INC., 2003 FORM 10-K 46 (reporting that the company securitized total assets of \$1.158 trillion).

309. *See* Harry Markowitz, *Portfolio Selection*, 7 J. FIN. 77 (1952). Harry Markowitz proposed the Efficient Portfolio Theory, which showed mathematically that it was superior to diversify one’s investments in an efficient portfolio rather than to concentrate all investments in a single basket. *See id.* at 77 (“[A] rule of behavior which does not imply the superiority of diversification must be rejected both as a hypothesis and as a maxim.”). Any given investment is subject to two forms of risk. Market risk is the general, systemic risk that can adversely affect all stocks. BREALEY & MYERS, *supra* note 204, at 121. Unique risk is the risk associated with an investment in a particular company, i.e., the specific firm’s enterprise. *Id.* The Capital Asset Pricing Model suggests that a firm must compensate an investor for both market and unique risk. *Id.* at 180-89; *see generally* Robert J. Rhee, *The Application of Finance Theory to Increased Risk Harms in Toxic Tort Litigation*, 23 VA. ENVTL. L.J. 111, 122-25 (2004) (discussing the Efficient Portfolio Theory and the Capital Asset Pricing Model).

Consumers benefit because reduced cost of capital ultimately flows to the users of credit in a competitive market. Thus, securitization provides cheaper capital by stripping the originator's credit risk from the risks associated with the assets, thus promoting the efficient use of capital.

The financial community is continuing to make innovations in securitizations,³¹⁰ and some notable financial problems have been solved by the "alchemy" of securitization.³¹¹ For instance, in the 1980s, the U.S. government issued "Brady bonds," which securitized illiquid sovereign bank loans of Latin American nations into collateralized public bonds.³¹² And in the 1990s, insurance companies and financial markets used securitization to increase the capital supporting catastrophic insurance risks.

B. Natural Catastrophe Securitization

Natural disasters have inflicted catastrophic losses throughout the history of humankind.³¹³ Whether natural disasters pose catastrophic insurance losses depends on the frequency of disasters, the level of insurance, and

310. See *supra* note 305. Structured finance has been exported internationally. See Claire Hill, *How Investors React to Political Risk*, 8 DUKE J. COMP. & INT'L L. 283, 291-93 (1998) [hereinafter Hill, *How Investors React*]; Claire A. Hill, *Latin American Securitization: The Case of the Disappearing Political Risk*, 38 VA. J. INT'L L. 293 (1998) [hereinafter Hill, *Latin America Securitization*]; Roy B. True, *Risk and Insolvency Issues in Japanese Asset Securitization*, 28 N.Y.U. J. INT'L L. & POL. 505 (1996); Yuliya A. Dvorak, Comment, *Transplanting Asset Securitization: Is the Grass Green Enough on the Other Side?*, 38 HOUS. L. REV. 541 (2001). Some have proposed that securitizations be used to reduce political risk of investments in foreign firms, including the risk of terrorism. Political risk is risk associated with an investment in a particular country. Factors of political risks are many, including corruption, military status, racial tensions, religion, civil war, indigenous law, and terrorism risk. Hill, *Latin American Securitization*, *supra* at 315-16 n. 90.

311. See generally Steven L. Schwarcz, *The Alchemy of Asset Securitization*, 1 STAN. J. L. BUS. & FIN. 133 (1994).

312. See generally Ross P. Buckley, *The Facilitation of the Brady Plan: Emerging Markets Debt Trading from 1989 to 1993*, 21 FORDHAM INT'L L.J. 1802 (1998).

313. One of the most famous ancient natural catastrophes was the volcanic eruption of Mount Vesuvius in 79 A.D., which completely destroyed the prosperous seaside Roman cities of Herculaneum and Pompeii. The complete destruction of two small, albeit wealthy, cities today would probably result in losses of hundreds of billions of dollars. Cf. *A Dangerous World? Interview With Serge Troeber*, Swiss Re (Jan. 15, 2005) (suggesting that Mount Vesuvius, which is near Naples, is now overdue for an eruption and poses a chance of a mega-catastrophe in the near future). In more recent American history, the San Francisco earthquake of 1906 is estimated to have been 8.3 on the Richter scale, and wiped out 35% of the insurance premiums for that year. See U.S. GEOLOGICAL SURVEY, THE SEVERITY OF AN EARTHQUAKE, at <http://pubs.usgs.gov/gip/earthq4/severitygip.html> (last visited Mar. 10, 2005); see generally *supra* note 32.

property values. These factors converged in the late 1980s and 1990s, a time period where destructive catastrophes surged.³¹⁴ The 1990s saw the two most devastating natural catastrophes in terms of insurance losses. Hurricane Andrew and the Northridge earthquake created significant disruptions in the insurance market,³¹⁵ and they sparked innovations in the private market.³¹⁶ One of the major innovations was the invention of the catastrophe bond (“Cat bonds”) in which catastrophic risk was securitized into a bond and sold in the public market.

In its simplest form, a catastrophe securitization is a collateralized reinsurance obligation. The transaction structure is similar to traditional securitization.³¹⁷ There are some important differences, however.³¹⁸ In a traditional securitization, a special purpose vehicle (“SPV”) is used to package a pool of receivables that fund the bond payout. The receivables are sufficiently similar and the law of large numbers apply so that cashflow modeling has become a reliable process. As a result, the rating agencies routinely provide credit ratings, which are crucial to the marketability of the bonds to the investment community.³¹⁹ In an insurance securitization, the returns to bondholders are funded by a combination of risk-free return on bond proceeds and ceded premium. The securitization collateralizes the reinsurance obligation. Thus, a catastrophe securitization can be considered a structured note transaction.

The transaction structure typically works like this: instead of executing a standard treaty with a reinsurer, the originator of the premium (the insurer) cedes all or a portion of the premium to a special purpose reinsurance

314. Catastrophic losses spiked in 1987 and the trend has continued ever since. Grace et al., *supra* note 36, at 556. From 1989 through 2001, the industry paid out on average \$9.7 billion in catastrophe loss claims. D’AGOSTINO, *supra* note 253, at 8. More than 68 million people live in hurricane zones, and 80% of Californians live near earthquake faults. *Id.*

315. Hurricane Andrew resulted in the bankruptcies of twelve small insurers. Lewis & Davis, *supra* note 26, at 113.

316. See *supra* MUNICH RE ART SOLUTIONS RISK TRANSFER TO THE CAPITAL MARKETS: USING THE CAPITAL MARKETS IN INSURANCE RISK MANAGEMENT, 3 (2001) (discussing various techniques of risk transfer including securitizations, insurance derivatives and other insurance linked securities); note 26 (discussing ART techniques).

317. See *supra* Steven Kaplan & Guillaume Lefebvre, *CAT Bonds: Tax Treatment of an Innovative Financial Product*, 16 J. TAX’N FIN. INST. 5, 5–7 (2003) (discussing Cat bond securitization); note 301 (discussing traditional securitization structure).

318. See Tamar Frankel & Joseph W. LaPlume, *Securitizing Insurance Risk*, 19 ANN. REV. BANKING L. 203, 205 (2000) (describing some of the differences).

319. I do not suggest that Cat bonds are not or cannot be rated. Because natural catastrophe data exists and modeling techniques are sufficiently accepted by the market, most Cat bonds are rated. See Lewis & Davis, *supra* note 26, at 130 (“[T]he rating agencies will play an increasingly important role in building investor confidence in these transactions.”).

vehicle (“SPRV”).³²⁰ Due to regulatory and tax restrictions, SPRVs typically are established offshore in the Cayman Islands or Bermuda.³²¹ All phases of the transaction, including meetings and communications, must occur offshore to avoid triggering American tax liability.³²² The SPRV covers any liabilities from the reinsurance agreement by issuing a bond. The proceeds from the bond issue are deposited into a collateral trust, and its assets serve as a guarantee for any reinsurance obligation of the SPRV. The trust invests the assets in fixed income products typically via an interest rate swap that provides a rate of return fixed to LIBOR in exchange for the floating return of the trust assets.³²³ The investor’s return is measured as a spread over LIBOR, and funding for the spread is provided by the ceded premium. Interest on the bond is paid quarterly, and the cedant pays the premiums on a matching basis (and so it does not pay in advance for coverage).³²⁴

320. This process can be done directly between an insurer and an SPRV under a reinsurance treaty, or through an intermediary reinsurer under a retrocession. From the perspective of an insurer, the benefit of the latter is that the reinsurer would assume any basis risk in a nonindemnity transaction. *See infra* notes 332–333.

321. WILLIAM DUBINSKY & DAVID LASTER, SWISS RE, INSURANCE-LINKED SECURITIES 6 (2003); MUNICH RE ART SOLUTIONS, *supra* note 316, at 6–7 (2001); Frankel & LaPlume, *supra* note 318, at 204. Under current U.S. tax scheme, the investment income earned by the SPRV and the interest income earned by the investors are taxed according to the standard two-tier corporate tax scheme. *See* Grace et al., *supra* note 36, at 563 n.4 (noting that only two onshore SPRVs have been formed); Kaplan & Lefebvre, *supra* note 317, at 6 (stating the primary tax reason for locating the SPRV offshore is the avoidance of the double corporate taxation scheme under U.S. tax codes); Vimit Kapoor & Puneet Singh, Indian Institute of Management, *Alternative Risk Transfer Structuring and Efficacy*, DHAN, Feb. 2003, at www.iimcal.ac.in/community/Finclub/dhan5/art51-cr.pdf (last visited Mar. 10, 2005) (noting the problem of double taxation, leading the issuance of bonds in tax havens, and also noting the tax treatment of the bonds as either debt or equity); D’AGOSTINO, *supra* note 253, at 4 (“The SPRVs are typically located offshore for tax, regulatory, and legal advantages.”).

322. Davidson, *supra* note 143, at 163. This aspect of the issuance also raises the transaction costs of insurance securitizations.

323. An interest rate swap is an agreement whereby two parties agree to exchange variable interest rates, the most typical being the swap between a fixed and floating rates. BREALEY & MYERS, *supra* note 204, at 643. The London Interbank Offered Rate (LIBOR) is the short term rate at which banks borrow funds from other banks in large market sums. The rates vary depending on the general interest rate environment and the term. Currently, LIBOR is around 2.0% to 3.0% depending on the term. *See* BRITISH BANKERS’ ASSOC., HISTORIC BBA LABOR RATES (2005), available at <http://www.bba.org.uk/bba/jsp/polopoly.jsp?d=141&a=627> (last visited Mar. 10, 2005) (showing historic British Bankers’ Association LIBOR rates). Because most Cat bonds pay coupons on a quarterly basis, the USD 3-month LIBOR is the relevant rate. DUBINSKY & LASTER, *supra* note 321, at 7 n.1.

324. DUBINSKY & LASTER, *supra* note 321, at 7.

Cat bonds are fixed in terms of amount of capital at risk allowing insurers to exist as secondary risk bearers.³²⁵ Investors have little credit risk, unlike other fixed income investments, because nonpayment of premiums on a matching basis would result in a cancellation of the policy, a default of the bond terms, and a termination of the risk to the bondholders.³²⁶ Investors must assume a greater risk with Cat bonds, however, since information on natural catastrophes is not as voluminous or transparent as commoditized receivables. The transaction cost of issuance is higher than investment grade corporate bonds, but significantly lower than the cost of issuing equities.³²⁷

The risks from natural catastrophes can be dissected and packaged in a number of ways. First, the treatment of principal can be different. In a principal-protected bond, only a portion of the principal is at risk and the remaining portion is paid back after a period of years, typically over a period of five or ten years.³²⁸ In a principal-at-risk bond, the investor puts at risk the entire principal of the bonds,³²⁹ typically three to five years.³³⁰ Second, Cat bonds can come in multiple tranches with varying risk.³³¹ Third, liability can be triggered in two ways. On an indemnity based deal, the parties agree on a trigger based on a percentage of the ceding company's own book of business. Under this structure, there is no basis risk, i.e., no mismatch of the liability on the book of business and the payout based on

325. Frankel & LaPlume, *supra* 318, at 205.

326. *Id.*

327. The transaction costs of issuing natural catastrophe bonds are about 2% of the deal value. U.S. GEN. ACCOUNTING OFFICE, *supra* note 30, at 21. These costs include underwriting fees, legal and accounting fees, modeling costs, and fees charged by rating agencies. *Id.* The costs compare favorably with the cost of issuing equities, which range from 5% to 7% for an initial public offering of equities. See Janet Cooper Alexander, *The Lawsuit Avoidance Theory of Why Initial Public Offerings Are Underpriced*, 41 UCLA L. REV. 17, 69 n.193 (1993). It has been the author's experience as an investment banker that IPOs tend to cost about 7%. See T.J. Jenkinson & H. Jones, *The Bookbuilding Debate*, CAP. IDEAS (OXFORD ECON. RESEARCH ASSOCS.), January 2004, available at <http://www.sbs.ox.ac.uk/downloads/tjhjbookbuilding.pdf> (last visited Apr. 4, 2005) ("Banking fees in the USA are clustered tightly around 7% of the proceeds for medium-sized IPOs, while, in Europe, the fees are somewhat lower.").

328. MUNICH RE ART SOLUTIONS, *supra* note 316, at 6.

329. *Id.* Under current U.S. tax regulations, whether a bond is a principal protected or principal at risk may trigger different tax regulations. See *infra* note 362.

330. DUBINSKY & LASTER, *supra* note 321, at 7.

331. For example, in June 2002, Swiss Re issued a security called "Pioneer" which came in six tranches, each tranche covering five different types of perils in various geographic regions of the world. See *id.* at 12 (describing the bond terms). These perils included hurricanes in North America, windstorms in Europe, earthquakes in California, earthquakes in central United States, and earthquakes in Japan. *Id.*

the index to which the deal is linked.³³² This mimics traditional reinsurance, which is typically indemnity based because treaties are between well-developed, symbiotic business relationships. But Cat bond investors have no vested interest in the underlying business relationship with the insurers other than a financial return. The inability of the investor to oversee or control the underwriting and claims processes creates a moral hazard. Accordingly, investors demand a nonindemnity structure, where liability is triggered by an agreed index rather than the actual loss.³³³ Given that the pool of investors is limited, the investor preference prevails and Cat bonds are typically structured on a nonindemnity basis.

Insurance securitization fits a market niche. It provides an additional layer of capital to the catastrophe market where investors are assuming a portion of the risk alongside policyholders and (re)insurers.³³⁴ The industry benefits because low frequency, high severity risks are shared by a broader and deeper pool of capital. Insurers benefit because securitization provides an additional source of capital and is an alternative to reinsurance, and so they can underwrite more risk. Indeed, securitization offers the tantalizing prospect of disintermediating the insurer altogether.³³⁵ Investors benefit because (1) the bonds have traditionally offered attractive yields,³³⁶ and (2) the bonds are uncorrelated with the general market, thus providing essential portfolio diversification function.³³⁷

332. ZANETTI ET AL., SWISS RE, SIGMA NO. 1/2004, NATURAL CATASTROPHES AND MAN-MADE DISASTERS IN 2003, SWISS RE 16 (Thomas Hess & Aurelia Zanetti eds., 2004).

333. See U.S. GEN. ACCOUNTING OFFICE, *supra* note 30, at 13 (stating that cat bonds are typically on a nonindemnity basis as a result of the investor's lack of information on the underwriting and claims process). Triggers can be based on industry index, modeled loss, or parametric. DUBINSKY & LASTER, *supra* note 321, at 8–11 (describing the various triggers).

334. The catastrophe risk is analyzed by various research firms like Applied Insurance Research, Risk Management Solutions, EQUecat, Guy Carpenter, Milliman & Robertson, Property Claims Services and Tillinghast Towers Perrin. Kaplan & Lefebvre, *supra* note 317, at 7 n.15.

335. In May 1999, Oriental Land, which owns and operates Tokyo Disneyland, directly issued a \$200 million first-ever deal to securitize earthquake risk by a corporate policyholder. Kapoor & Singh, *supra* note 321, at 2; see also U.S. GEN. ACCOUNTING OFFICE, *supra* at 30, at 20 (noting the issuance of Cat bonds by Oriental Land).

336. See D'AGOSTINO, *supra* note 253, at 4 (“The investor’s reward for taking risk is a relatively high interest rate paid by the bonds.”); LENAIN ET AL., *supra* note 14, at 11 (“Catastrophe bonds pay higher interest rates than other bonds with a similar credit rating, as the yield differential compensates for their relative illiquidity, model risk and their non-traditional nature.”).

337. D'AGOSTINO, *supra* note 253, at 11; ZANETTI ET AL., *supra* note 332, at 14; Kaplan & Lefebvre, *supra* note 317, at 6 n.1. Under portfolio theory, diversification can reduce the risk of a portfolio. See Markowitz, *supra* note 309, at 89–91.

There is a growing interest in Cat bonds.³³⁸ The reasons are several: hardening prices in the reinsurance market, particularly after 9/11; a demand for fully collateralized protection to minimize counterparty credit risk; a growing interest by hedge funds devoted to alternative investments; the need by (re)insurers for capital; and the need by fixed income portfolio funds to diversify their portfolios.³³⁹ Given that global warming is now a generally accepted scientific phenomenon and weather patterns have become more volatile over the past several decades,³⁴⁰ insurance securitization may need to take a broader role in spreading risk. But thus far Cat bonds constitute a fraction of the available capital,³⁴¹ when compared to the approximately \$200 billion of capital supporting primary underwriting of lines and another \$200 billion in reinsurance surplus.³⁴² From an insurer's perspective, the appeal and feasibility of reinsurance through Cat bonds depend on the relative pricing of traditional reinsurance. Since their inception in 1996, Cat bonds were slow to develop because the reinsurance market was in a soft price cycle for much of the 1990s and traditional reinsurance has been cheaper than securitization.³⁴³ As reinsurance prices harden, Cat bonds provide a more appealing alternative, and vice versa.³⁴⁴

The cyclical nature of reinsurance alone does not explain why insurance securitization has not experienced a period of rapid expansion culminating

338. Cat bonds constitute the bulk of insurance linked securities, of which \$9.5 billion have been issued. ZANETTI ET AL., *supra* note 2, at 14. Swiss Re data indicates that the market grew from \$783 million outstanding in 1997 to \$4.3 billion outstanding in 2003. *Id.* at 15.

339. *Id.* at 14.

340. See STEPHEN MYERS & OLYMPIA SNOWE, THE INST. FOR PUB. POLICY RESEARCH, THE CTR. FOR AM. PROGRESS, THE AUSTL. INST., MEETING THE CLIMATE CHALLENGE: RECOMMENDATIONS OF THE INTERNATIONAL CLIMATE CHANGE TASKFORCE (2005). The general acceptance of global warming is apparent from the substantial investments made by industry to address the problem and capitalize on it. See, e.g., Jeffrey Ball, *Deep in the Sahara, BP Tries to Put Dent in Global Warming*, WALL ST. J., Feb. 4, 2005, at A1; Abraham Lustgarten, *Getting Ahead of the Weather: How Companies are Protecting Themselves Against the Effects of Extreme Events and Long-Term Changes*, FORTUNE, Feb. 14, 2005, at 87.

341. See U.S. GEN. ACCOUNTING OFFICE, *supra* note 30, at 14 (“[O]utstanding catastrophe bonds accounted for only 2.5% to 3.0% of worldwide catastrophe reinsurance coverage.”). In a December 21, 2004 interview with William Dubinsky of Swiss Re, he suggested that the Cat bond market is larger than the publicly available data would suggest because many deals are done on a private basis. Telephone interview with William Dubinsky, Swiss Re (Dec. 21, 2004).

342. See AM. ACAD. OF ACTUARIES, *supra* note 29, at 12 (“The U.S. P/C industry’s surplus stood at \$347 billion at year-end 2003.”); CRIPPEN, *supra* note 37, at 4 (“[A]t the end of 2000, the top 25 global reinsurers, with more than 80 percent of the market, had \$208 billion of surplus.”); HUBBARD & DEAL, *supra* note 29, at 34 (noting that \$199 billion of \$347 billion of surplus in the U.S. P/C sector was devoted to commercial lines).

343. See *supra* note 72.

344. DUBINSKY & LASTER, *supra* note 321, at 13.

in a mature, stable market like it did for other kinds of securitizations.³⁴⁵ The stunted growth is attributable to several other factors: (1) uncertainties as to the accounting treatment of SPRVs, (2) uncertainties as to the appropriate regulatory framework if the securitizations are done onshore, (3) a lack of a “pass through” tax treatment or other tax incentives, and (4) an underdeveloped information market on natural catastrophes which limit the investment community.³⁴⁶ Many of these limitations have driven the Cat bond market offshore, where few regulatory burdens exist, favorable tax treatment dominates, and a pool of sophisticated investors are willing to undertake catastrophe risk for superior returns.

C. Terrorism Catastrophe Securitization

After 9/11, several scholars, primarily from the insurance and finance disciplines, suggested the possibility of transferring catastrophic terrorism risk to the capital markets through securitization.³⁴⁷ The benefits would be significant. The capital market may be able to price the risk better than any individual insurer or a pool of insurers. Some of the vast amount of capital available in the capital markets could support terrorism risk underwriting.³⁴⁸ Aside from the federal government, only the market can readily absorb mega-catastrophes that exceed \$100 billion.³⁴⁹ Securitization also disperses

345. See *infra* Part VI.

346. D'AGOSTINO, *supra* note 253, at 5.

347. See, e.g., THE CATO INST., *supra* note 62, at 19 (Anne Gron commenting that “there could be a market-based financial security kind of solution”); KUNREUTHER & MICHAEL-KERJAN, *supra* note 29, at 13 (suggesting the potential for terrorism bonds while setting forth the reasons why such a market has not emerged); Davidson, *supra* note 143, at 145 (“The capital market is another promising area.”); Smetters, *supra* note 50, at 1 (suggesting that a capital market solution would be the most efficient means to transfer the risk); *supra* note 219.

348. As of October 31, 2004, the New York Stock Exchange, the largest securities marketplace, listed over 2,700 companies and had a market capitalization of over \$19.7 trillion. See THE NEW YORK STOCK EXCHANGE, MARKET STATISTICS, at <http://www.nyse.com/Frameset.html?displayPage=/marketinfo/1022963613722.html> (last visited Feb. 17, 2005). The total global market capitalization was \$33.6 trillion. *Id.* This figure includes market capitalization of NYSE, NASDAQ, Tokyo Stock Exchange, London Stock Exchange, Euronext, Deutsche Borse, and American Stock Exchange. In comparison, the global capital base supporting the property and casualty insurance is about \$300 billion, or less than 1% of the global market capitalization. COMMERCIAL MORTGAGE SEC. ASS'N, *supra* note 59, at 46 (estimating capital in the P&C sector to be about \$300 billion); BROWN ET AL., *supra* note 52, at 7 (same).

349. See *supra* Smetters, *supra* note 50, at 1 (noting that the U.S. capital markets routinely lose or gain \$100 billion on a daily basis, and often several trillion dollars on a monthly basis); note 52 (providing estimates of future terrorism losses).

the risk to many investors rather than concentration in a few insurers or even a risk pool of well capitalized participants like Lloyd's of London. Lastly, when the risk is transferred to the market, it allows the government to participate in the process as an investor rather than as an insurer or welfare provider. Government participation as an investor would result in two clear benefits: increased liquidity and a potential mechanism for market stabilization in times of crisis.

While the theoretical possibility is appealing, a structured financial transaction is currently impractical.³⁵⁰ The suppression of a securitization market is rooted in transaction and capital costs.³⁵¹ The current regulatory and tax environments increase the transaction costs of securitization and have "retarded the proliferation of an otherwise promising market."³⁵² These costs typically are not incurred in traditional insurance and reinsurance, and so securitizations historically have been more costly. There are regulatory, accounting, tax, and information costs. First, there is the lack of information on terrorism risk.³⁵³ The current data is insufficient to extrapolate accurate actuarial models.³⁵⁴ Rating agencies will not provide a rating without an understanding of the underlying risk. While most investors are comfortable with financial risk,³⁵⁵ they would be wary of investing in the bonds, particularly if the rating agencies cannot rate them.³⁵⁶ Second, regulatory uncertainties have imposed significant costs, forcing the issuance process offshore in most cases.³⁵⁷ Both state insurance and federal securities

350. See U.S. GEN. ACCOUNTING OFFICE, *supra* note 30, at 30 (consensus of insurance and financial market participants believed that a market in terrorism bonds "was not feasible at this time"); *infra* notes 353–354, 370.

351. See D'AGOSTINO, *supra* note 253, at 4 (explaining the transaction costs involved).

352. Davidson, *supra* note 143, at 161; see also *supra* Part II.E.

353. See KUNREUTHER & MICHAEL-KERJAN, *supra* note 29, at 13–14 (stating that "a combination of ambiguity aversion, myopic loss aversion, and fixed costs of education on a new type of asset" has impeded the development of a terrorism bond market); U.S. GEN. ACCOUNTING OFFICE, *supra* note 30, at 29 (noting investor reluctance to develop cost-effective technical expertise in terrorism risk).

354. See U.S. GEN. ACCOUNTING OFFICE, *supra* note 30, at 7 ("[T]he view of most financial market participants we contacted was that the [terrorism] models are too new and untested to support catastrophe bonds related to terrorism.").

355. The significant developments in the field of finance theory over the past fifty years have led to a transparent, generally accepted understanding of financial risk. Among other things, option pricing theory, the efficient portfolio theory, and the capital asset pricing model were developed. See *infra* note 364.

356. See THE CATO INST., *supra* note 62, at 49 (noting the comment of Larry Gluck, General Accounting Office, that "I don't know that investors will ever understand terrorism risk enough to put money into covering it").

357. Kaplan & Lefebvre, *supra* note 317, at 6 (stating that legal and regulatory reasons are behind the offshore issuances).

regulators have legitimate claims to primary regulation with vastly different schemes and priorities.³⁵⁸ Third, there are significant accounting issues. Accounting standards may make it more difficult for SPRVs to achieve entity independence, thus increasing the costs.³⁵⁹ Also, state insurance regulators may not recognize the reinsurance coverage under a nonindemnity Cat bond for the purpose of determining capital holding requirements.³⁶⁰ Fourth, it is still unclear at what pricing point terrorism coverage can be both profitable for insurers and economically feasible for policyholders. Last, and most importantly, it is unclear whether the SPRVs would be taxed or a “pass through” treatment would apply,³⁶¹ or whether the Cat bonds would be treated as debt or equity.³⁶² The cumulative uncertainties of these issues are great.³⁶³

Uncertainty is not necessarily a barrier to an active, liquid market in a security, though it can be an impediment. The single greatest innovation of the financial market of the past fifty years is the quantification of risk.³⁶⁴ In

358. See Frankel & LaPlume, *supra* note 318, at 209–18 (discussing the various potential regulatory schemes that may affect insurance securitizations).

359. One of the issues is whether a SPRV would be subject to the Financial Accounting Standard Board (FASB) Interpretation No. 46, issued in January 2003 and revised in December 2003. See FIN. ACCT. SERV. BD., FASB INTERPRETATION NO. 46: CONSOLIDATION OF VARIABLE INTEREST ENTITIES (2003), available at <http://www.fasb.org/fin46r.pdf> (last visited Mar. 10, 2005). Interpretation 46 was issued in response to the abuses of the Enron Corporation in hiding debt in off-balance sheet entities. See U.S. GEN. ACCOUNTING OFFICE, *supra* note 30, at 26. Interpretation 46 requires “consolidation of variable interest entities” with the primary beneficiary if one of two conditions is met: (1) equity investors have not invested in an entity capable of standalone status defined as 10% of the total assets, “or (2) equity investors lack any of the characteristics of a controlling financial interest” such as the risk and rewards of ownership. *Id.* at 26, 43–44. It is unclear whether Interpretation 46 would apply to catastrophe bonds. *Id.* at 27.

360. See D’AGOSTINO, *supra* note 253, at 22–24, 41–43. In addition to meeting GAAP accounting standards, which are promulgated by FASB, insurers must also satisfy statutory accounting standards set forth by NAIC and the individual state insurance regulators. At the risk of oversimplifying the matter, the key difference between the two accounting schemes is that GAAP assumes the firm is a going concern and so uses accrual accounting while statutory accounting stresses liquidity and so cash accounting is key.

361. Kaplan & Lefebvre, *supra* note 317, at 6 (suggesting that an onshore SPRV would be subject to the risk of double taxation).

362. See *id.* at 8–16 (discussing the uncertainties surrounding the tax treatment of Cat bonds and the various factors applicable to the tax characterization analysis); see generally William T. Plumb, Jr., *The Federal Income Tax Significance of Corporate Debt: A Critical Analysis and a Proposal*, 26 TAX L. REV. 369 (1971).

363. See Lewis & Davis, *supra* note 26, at 120 (stating that “complexity is a liability” in securitization transactions).

364. Bernstein notes that “the revolutionary idea that defines the boundary between modern times and the past is the mastery of risk” PETER L. BERNSTEIN, *AGAINST THE GODS: THE*

the capital markets, the assessment of risks is so well developed that there is a high degree of transparency in the pricing of the securities. Some securities are highly risky, and thus the risk premium is greater. The market in high yield bonds and private equity securities come to mind. Similarly, terrorism risk poses great uncertainties. The uncertainty is not simply limited to assessing the actuarial risk of terrorism, but also includes the uncertainty arising from informational asymmetries among policyholders, insurers and investors, and the uncertainty of the regulatory and tax environment. But a high degree of uncertainty does not kill a deal, or a market, so long as the risk is appropriately priced.³⁶⁵

A lesson can be learned from the short history of natural catastrophe bonds. When catastrophe securitizations were first introduced into the market in the mid-1990s, they carried the hope of creating an alternative insurance market. The notion of transferring insurance risk to the capital market was theoretically appealing. Since then, the Cat bond market has grown steadily. As of January 2004, the available data indicates that more than sixty bonds were issued with \$7.5 billion in capital at risk.³⁶⁶ In 2003, more than \$2 billion were issued and with over \$4.3 billion outstanding.³⁶⁷ But the promise of catastrophic risk securitization has not been fully met. Cat bonds still constitute only a small percent of the worldwide catastrophe insurance.³⁶⁸ And the question must be asked whether government action can stimulate a nascent financial market.

REMARKABLE STORY OF RISK 1 (1996). "Throughout most of the history of stock markets . . . it never occurred to anyone to define risk with a number. Stocks were risky and some were riskier than others, and people let it go at that. Risk was in the gut, not in the numbers." *Id.* at 247; see also Christopher Farrell, *Three Wise Men of Finance*, BUS. WK., Oct. 11, 2004, at 20 (noting the pioneering works of Markowitz, William Sharpe and Merton Miller, and their theories on efficient portfolios, option pricing, and capital asset pricing as having profound impacts on modern finance).

365. See BROWN ET AL., *supra* note 52, at 7 ("Raising capital to pay losses following a large loss event also is difficult because informational asymmetries between capital markets and insurers regarding loss exposure and reserve adequacy would raise the cost of capital to potentially prohibitive levels.").

366. See ZANETTI ET AL., *supra* note 332, at 14.

367. *Id.* Among these securitizations was coverage for the cancellation of the 18th FIFA World Cup soccer tournament, to be held in the summer of 2006 in Germany. *Catastrophe Securitizations in 2003 Reveal Increased Innovation, Modest Growth in Volume*, INS. J. (2004) (addressing coverage provided by Golden Goal Finance Ltd). This bond insured against natural and terrorism related catastrophes. KUNREUTHER & MICHAEL-KERJAN, *supra* note 29, at 14 n.16. Subsequently, a second terrorism related bond was issued by Swiss Re in 2003 for catastrophic mortality risk. *Id.*

368. See D'AGOSTINO, *supra* note 253, at 4 (risk-linked securities constitute less than 0.5% of catastrophic insurance in 2000); KUNREUTHER & MICHAEL-KERJAN, *supra* note 29, at 13

V. A GOVERNMENT ENHANCED MARKET SOLUTION

A. *Form of Government Action*

Regulatory and tax reforms are crucial to facilitate the convergence of the insurance and capital markets. The capital markets are the most efficient means of assessing and transferring risk and the government should stimulate a private market solution by promoting a securitization market. So far this has been discussed on a preliminary, theoretical basis.³⁶⁹ But the reality of a terrorism bond market in the near future is highly impractical.³⁷⁰ Terrorism bonds would have a high cost of issuance, would be illiquid,³⁷¹ and would be more expensive than traditional reinsurance.³⁷² They must provide an enhanced yield to compensate for the additional risk and would be priced at high yield (or “junk”) bond levels.³⁷³

Regulations and tax play a significant role in suppressing or stimulating a market in terrorism bonds. Government action should reduce the regulatory costs and provide tax incentives to downstream investors, which

(suggesting that the Cat bond market accounts “for less than 3% of worldwide catastrophe reinsurance coverage”).

369. Several scholars in the financial economics and insurance fields and public thinktanks have proposed the idea of a terrorism bond. *See, e.g.*, LENAIN ET AL., *supra* note 4, at 11 (“The use of mechanisms to transfer insurance risks to the financial markets, e.g., in the form of bonds with terrorism-contingent payment structures, could play an important role in increasing coverage against terrorism.”); *supra* note 25.

370. *See* THE CATO INST., *supra* note 62, at 5 (reflecting that Glenn Hubbard, Council of Economic Advisors, felt the possibility was a “bit farfetched”); U.S. GEN. ACCOUNTING OFFICE, *supra* note 30, at 7 (noting the issuance of terrorism bonds as “challenging” according to financial market participants). “We concur with the conclusion that terrorism risk would likely be very difficult to securitize, but believe that efforts are being made to model the risk.” *Id.* at 48 (quoting Letter from Ernst Csiszar, Vice President, Nat’l Ass’n of Ins. Cos., to Davi M. D’Agostino, Director, Fin. Insts. & Cmty. Inv., U.S. Gen. Accounting Office (Sept. 5, 2003)).

371. *See* U.S. GEN. ACCOUNTING OFFICE, *supra* note 30, at 29 (noting investor skepticism of terrorism bonds due to lack of information on the risk and illiquidity of these bonds).

372. “Some insurance company officials and state authority representatives estimated that the total costs associated with catastrophe bonds could be as much as twice as high as traditional reinsurance.” *Id.* at 20.

373. “In a nutshell, an insurance-linked bond has all the appearance of a junk bond.” ERIC BRIYS & FRANÇOIS DE VARENNE, *INSURANCE: FROM UNDERWRITING TO DERIVATIVES* 35 (2001). Uncertainty of terrorism requires a “risk-premium” in investor yield that may make the cost of issuance “prohibitive.” U.S. GEN. ACCOUNTING OFFICE, *supra* note 30, at 7. “[T]he yields on catastrophe bonds have generally equaled or exceeded the yields on some risky fixed-income investments, such as high-yield corporate debt.” *Id.* at 21. Natural catastrophe bonds have returned 9.07% in 2002, 9.45% in 2001, and 11.42% in 2000, which are high-yield returns. *Id.* at 12 n.22 (using data from Cochran, Caronia Sec., LLC).

will reduce the cost of securitization. The benefits of reduced costs and enhanced investment yield will then flow upstream to policyholders, making it more economically feasible to purchase terrorism coverage. There is no question that transaction cost savings and tax benefits from these reforms would constitute indirect ex ante subsidies. But we assume that government will always have some role in the economic development in this area. It is doctrinaire to believe that the government need not play any role in the business of insurance or economic protection against terrorism. Indeed, even government inaction, leaving the whole problem back to the private market as if 9/11 never happened, would constitute a form of action that creates its own costs and consequences. If so, any action taken will always have benefits flowing to some party. The questions are: Who should receive the benefits? What form should those benefits take?

Government stimulation of a private market certainly is not unprecedented.³⁷⁴ Government action can incentivize private market solutions ranging from the profound to the practical.³⁷⁵ Indeed, it is telling that the process of securitization, an indispensable financing technique, was actually initiated by the government. The first structured financing occurred in 1970, when the Government National Mortgage Association (Ginnie Mae) issued publicly traded “pass-through” securities.³⁷⁶ That securitization exists is proof that a partnership between government and private market need not take the form of direct subsidies, but the stimulation of a market solution.

B. Regulatory Ambiguities

At the confluence of insurance and capital markets is an ambiguous regulatory framework. The uncertainty begins at the starting point of

374. The New Deal is an example of one such action, albeit on a massive scale. One of my colleagues at Washburn has noted that New Deal legislation on housing and tax policies stimulated housing growth and ownership. Steven A. Ramirez, *The Law and Macroeconomics of the New Deal* at 70, 62 MD. L. REV. 515, 559–61 (2003).

375. See Steven A. Ramirez, *Fear and Social Capitalism: The Law and Macroeconomics of Investor Confidence*, 42 WASHBURN L.J. 31, 73 & n.261 (2002) (noting government’s role in creating the internet) (citing <http://www.isoc.org/internet/history/brief.shtml>); MATT HERMES, CHEMCASES.COM, GATORADE BECOMES A REALITY, at <http://chemcases.com/gatorade/gatorade11.htm> (last visited Mar. 7, 2005) (noting that the University of Florida invented Gatorade).

376. SCHWARCZ, *supra* note 301, § 1.2, at 1–8. These securities gave the holder a fractional, undivided interest in the right to interest and principal of a pool of mortgage loans. *Id.*

insurance regulation.³⁷⁷ States historically have regulated the business of insurance.³⁷⁸ In an era of financial modernization, one marked by consolidation and globalization of the financial services industry,³⁷⁹ this peculiar regulatory scheme is anachronistic.³⁸⁰ The primary rationale for not doing away with the system is that so much has been invested in the system already, a regulatory “sunk cost,” in the absence of any compelling political or economic reason there seems to be no justifiable reason to uproot the fifty state insurance departments.³⁸¹ It is beyond the scope of this article to discuss whether insurance should be primarily regulated at the state or

377. “The most important factor inhibiting the development of risk-linked securitization is state-level regulation.” Smetters, *supra* note 50, at 37. Smetters goes on to note that only a few states have enacted regulations to promote securitization. *Id.* at 38.

378. Congress granted state authority insurance under the McCarran-Ferguson Act of 1945, 15 U.S.C. §§ 1011–15 (2000). Under the statute, the “business of insurance, and every person engaged therein, shall be subject to the laws of the several States which relate to the regulation or taxation of such business.” *Id.* § 1012(a). See *Pilot Life Ins. Co. v. Dedeaux*, 481 U.S. 41 (1987) (discussing the “business of insurance” requirement); *Metropolitan Life Ins. Co. v. Massachusetts*, 471 U.S. 724 (1985) (same); *Group Life & Health Ins. Co. v. Royal Drug Co.*, 440 U.S. 205 (1979) (same). The concept of state regulation was in flux in the earlier part of the twentieth century but, with the eventual settlement of the issue embodied in the McCarran-Ferguson Act, it has gained the force of inertia throughout the years. See Kimball, *supra* note 12, at 509–10.

379. See Gramm-Leach-Bliley Financial Modernization Act of 1999, Pub. L. No. 106-102, 113 Stat. 1338 (2000) (codified as amended in scattered sections of 12 U.S.C.). Among other things, the Gramm-Leach-Bliley Act (GLB) repealed the Glass-Steagall Act of 1933, a Depression era legislation that erected a Chinese Wall between banking, securities, and insurance businesses. GLB allows companies like Citigroup to cross market retail banking, insurance and securities products; the mergers of commercial banks and securities firms such as the merger of Chase Manhattan and JP Morgan; and the entry (albeit small) into the banking business by insurers like MetLife (acquisition of Grand Bank) and PacificLife (acquisition of College Savings Bank). I note that I was the investment banker who advised on the Grand Bank and College Savings Bank transactions, which were among the first post-GLB bank acquisitions by traditional insurers. Thus far, aside from Citigroup, there has not been a major combination of banks and insurers, primarily because the acquisition of insurers (which are the logical targets) would be dilutive to earnings, making a substantial merger or acquisition difficult. Due to the financial incompatibility of banks and insurers, however, even Citigroup has abandoned the business of insurance. See Mara Der Hovanesian, *Citi: A Whole New Playbook: Chuck Prince is Moving Away from Sandy Weill's Empire-Building Strategy*, *BUS. WK.*, Feb. 14, 2005, at 72–73 (noting that Citigroup has sold off most of its insurance assets).

380. *Cf.* Kimball, *supra* note 12, at 509 (“If the question were still undetermined, it is quite possible that American insurance regulation would develop at the federal level.”).

381. Scholars have from time to time reexamined the issue and have arrived at different conclusions. Compare Kimball, *supra* note 12, at 510 (“That question is not an easy one to answer, for there are strong arguments on both sides.”), with Jonathan R. Macey & Geoffrey P. Miller, *The McCarran-Ferguson Act of 1945: Reconceiving the Federal Role in Insurance Regulation*, 68 *N.Y.U. L. REV.* 13, 88 (1993) (concluding that the insurance industry “requires less federal involvement than conventional wisdom might suggest”).

federal level. That issue is better left for another day.³⁸² Rather, this article limits the discussion to the regulation pertaining to terrorism insurance.

The securitization of any insurance risk could be considered the “business of insurance.”³⁸³ A terrorism bond is an insurance obligation; the bondholders act as reinsurers, though the obligation may not be on an indemnity basis. Absent an express federal override, catastrophe

382. For now, I simply note that insurance is a global business and certainly affects interstate and international commerce in a profound way. Insurance is increasingly dominated by large, well-capitalized companies that operate in multiple states and indeed multiple international markets. Smaller insurers and reinsurers are increasingly at a disadvantage; they are disfavored in the financial markets with lower valuation multiples and by consumers due to their credit risks. It is commonly known that European insurers and reinsurers are generally larger and operate on a more global platform than their American counterparts, and that the capital markets favor larger capitalized companies with a size premium on valuation (all else being equal). Given this business reality and the recent overhaul of financial institution regulation under the Gramm-Leach-Bliley Act, state regulation of insurance seems rather antiquated. There is little question that federalization of insurance would be, in the long run, more efficient. *See* Kimball, *supra* note 12, at 511 (“Doubtless federal regulation would be less expensive than state regulation in the aggregate, for there is a large amount of duplication in the present regulatory effort among the states.”). Despite the “complexity and cumbersomeness” of state regulation, however, the insurance industry has not made a concerted push for federalization. In a March 24, 2005, interview with Cheye Calvo of the National Conference of State Legislatures, he opined that insurers are ambivalent to federalization. The American Insurance Association, a trade association representing large commercial stock companies, favor an option federal charter, whereas the Property Casualty Insurers Association of America and the National Association of Mutual Companies, both of which represent smaller insurers, favor state regulation with deregulation of rate filing as the preferred reform.

One wonders if the ambivalence is attributable to “the spectre [sic] of the wide-ranging and generally effective twentieth-century federal agency.” *Id.* at 510. There is a firmly established working relationship between the industry and state regulators, which is coordinated by the National Association of Insurance Commissioners, and it is easy to see how “agency capture” could occur more easily at the local state level than at the federal level. *See* Marlett & Pacini, *supra* note 272, at 84 (discussing George Stigler’s “agency capture” theory); George J. Stigler, *The Theory of Economic Regulation*, 2 BELL J. ECON. 3 (1971). State regulation has the effect of dispersing regulatory power. This has the added benefit of dispersing the efforts of consumer groups and other watchdog organizations, which must muster similar lobbying resources applied by the industry in terms of scope of coverage. Also, I note that a more benign explanation for the lack of interest in federalization may rest on the fact that insurers are generally adverse to informational uncertainty. *See supra* note 62. Federalization of insurance regulation would bring in the short to medium term significant uncertainties, and insurers may prefer to deal with inefficiencies of state regulation than face potentially profound changes under federal regulation.

383. Three factors determine whether an activity can be classified as an insurance business: “*first*, whether the practice has the effect of transferring or spreading a policyholder’s risk; *second*, whether the practice is an integral part of the relationship between the insurer and the insured; and *third*, whether the practice is limited to entities within the insurance industry.” *Union Labor Life Ins. Co. v. Pireno*, 458 U.S. 119, 129 (1982).

securitizations and SPRVs would likely fall under state regulation.³⁸⁴ The implication is that states must provide a concerted approach.³⁸⁵ With respect to terrorism risk, the case for federal regulation and supremacy is compelling.

The fundamental concern of state regulators is liquidity, the insurer's ability to pay claims. Traditional reinsurance fits well within this scheme because it typically provides coverage on an indemnity basis. If a reinsurer fails, the ceding insurer is still obligated to policyholders.³⁸⁶ As noted before, most securitizations are done on a nonindemnity basis, meaning that there is basis risk between the actual loss and payment based on the index trigger.³⁸⁷ Because this risk may ultimately be passed to the insureds or the state's guarantee fund program, state regulators are wary of a potential gap in reinsurance coverage.³⁸⁸ The concern is myopic in the sense that the interests of the state and its policyholders take precedent. We expect nothing short of this from a state regulator, and likewise nothing more. There also is no guarantee that the states can provide a uniform approach to securitizations. Even though catastrophe securitizations have been issued since 1996, only a few states have thus far passed legislation dealing with the issue.³⁸⁹

The regulatory ambiguity begins at the state level but does not end there. There are two potentially competing bodies of federal law. Because securitization would leave basis risk, terrorism bonds are arguably

384. Frankel & LaPlume, *supra* note 318, at 210–12. But there remain thorny questions about how the SPRVs are regulated in terms of capital levels and insurance obligations. *Id.* at 213–14.

385. Presumably, this would take place through the National Association of Insurance Commissioners (NAIC), which propose model insurance laws and regulations. Between natural and terrorism catastrophes, large segments of the country are susceptible. *See* D'AGOSTINO, *supra* note 253, at 10 fig. 1 (providing a map of the US and rating the areas of potential exposure to natural catastrophes). Consider, for example, the cities of Phoenix, Las Vegas, New York, Washington, D.C., Boston, and Chicago. These cities are rated low risk for natural catastrophes, but obviously they could be prime targets for terrorism.

386. *Id.* at 43.

387. *See supra* Part IV.B.

388. *See* Smetters, *supra* note 50, at 39 (noting “considerable resistance” to regulations promoting nonindemnity securitizations).

389. Some states have enacted statutes that purport to reduce the regulatory costs of insurance securitization. *See* Frankel & LaPlume, *supra* note 318, at 220–23 (discussing Protected Cell Acts enacted by Rhode Island and Illinois and citing Protected Cell Companies Act, R.I. GEN. LAWS §§ 27-64-1 to 27-64-12 (1956) and 25 ILL. COMP. STAT. ANN. §§ 5/107.06a, 5/179A-1 to 5/179A-40 (West 1999)). These statutes protect the assets within a protected cell of the insurance company so as to protect them from bankruptcy and liability of the insurer. *Id.* at 221.

securities,³⁹⁰ and so subject to regulation under federal securities laws and the SEC.³⁹¹ Bondholders do not underwrite the risk and do not pay the policyholders directly on an indemnity basis. Rather, they provide capital to the insurer, similar to holders of stock or bonds of an insurer. Sounder this view, the bonds are more like securities rather than insurance instruments and should be regulated by the SEC. An insurance securitization also has a derivative like quality.³⁹² Like a derivative, its value derives from some other thing, in this case a catastrophe index that triggers the obligation.³⁹³ So another ambiguity is whether terrorism bonds are “futures contracts” or “commodity options,” which are regulated by the CFTC.³⁹⁴ Thus, even if federal law prevails, it is unclear which agency would have primary jurisdiction of a terrorism bond.³⁹⁵

These regulatory uncertainties impede the development of a repeatable transaction structure. Any securitization, and particularly one as unique as terrorism bonds, would incur significantly more regulatory costs than what are now “standard” catastrophe securitizations. The capture of exclusive jurisdiction in such a prominent field would be significant for any federal agency, and so the issuance of such bonds would face significant scrutiny. Given this reality, there is a disincentive to be the first innovator and incentive to freeride on the labor of others or to avoid these issues altogether. In part due to these ambiguities, natural catastrophe securitizations are typically issued offshore.

390. See *id.* at 213–15 (discussing the insurance and securities characteristics of catastrophe bonds); Smetters, *supra* note 50, at 38 (indicating that “state jurisdiction over securities with basis risk is not clear”).

391. Securities under federal law are regulated under the Securities Act of 1933, ch. 38, title I, § 1, 48 Stat. 74 (1933), and the Securities Exchange Act of 1934, ch. 404, title I, § 1, 48 Stat. 881 (1934).

392. A derivative is a financial instrument that “derives” its value from some other thing. See generally JOHN COX & MARK RUBINSTEIN, *OPTION MARKETS 1* (1985); JOHN HULL, *OPTIONS, FUTURES AND OTHER DERIVATIVES 1* (James Boyd ed., 1997) (1989).

393. See *supra* note 333 & Part IV.B.

394. Commodities Exchange Act of 1936, ch. 545, 49 Stat. 1491 (1936) (codified as amended in scattered sections of 7 U.S.C.). The Commodity Futures Trading Commission has exclusive jurisdiction over the trading of commodity futures and commodity options on all commodities. 7 U.S.C. § 2 (2000).

395. The SEC and CFTC often compete for exclusive jurisdiction of various financial instruments. See generally John D. Benson, Comment, *Ending the Turf Wars: Support for a CFTC/SEC Consolidation*, 36 VILL. L. REV. 1175 (1991); Mark Frederick Hoffman, Note, *Decreasing the Costs of Jurisdictional Gridlock: Merger of the Securities and Exchange Commission and the Commodity Futures Trading Commission*, 28 U. MICH. J.L. REFORM 681 (1995).

To stimulate a private market in terrorism risk securitization, the government must clarify and streamline the regulatory scheme. The first step is to federalize the securitization process. Terrorism risk is, first and foremost, a national issue that should be governed by national policy.³⁹⁶ The federal government's perspective would be broader, dealing with not only the immediate regulatory issues pertaining to the business of insurance but also issues pertaining to capacity, pricing, national good, security, efficient working of the economy, and capital markets. No single state regulator or group of regulators has the competency, will or power to address these issues. We need only look at the uneven post-9/11 response by state regulators in approving new terrorism exclusions to prove the point that state regulation of such an important interest would be unwise.³⁹⁷

There are many issues involved in streamlining the regulatory scheme. The regulation should provide the precursors to an active market: the formation of SPRVs; the protection of SPRVs and their assets from bankruptcy and liabilities of the sponsoring insurers or reinsurers; reserving requirements of SPRVs; and streamlined reporting and oversight to a primary regulator. A clear set of guidelines would provide clarity that is currently lacking and would reduce the burdens of pursuing securitizations onshore.³⁹⁸

C. Tax Enhancements

The securitization of terrorism risk must “involve fundamental tax reform.”³⁹⁹ The basic problem is that securitizations are subject to potential

396. Cf. Davidson, *supra* note 143, at 135–42 (arguing that a “national framework” is needed to address catastrophic insurance risks).

397. See *supra* note 69 (stating that a minority of jurisdictions, constituting 35% of the market, have refused to approve a new terrorism exclusion). I note that this is a relatively minor task when compared to the issues involved in securitizing terrorism risk.

398. See generally Todd V. McMillan, *Securitization and the Catastrophe Bond: A Transactional Integration of Industries Through a Capacity-Enhancing Product of Risk Management*, 8 CONN. INS. L.J. 131 (2001) (discussing the regulatory framework of traditional asset-based securitizations and insurance securitizations and attempting to harmonize some of the conflicting regulatory schemes).

399. THE CATO INST., *supra* note 62, at 38 (comment of Scott Harrington, University of South Carolina); see also D'AGOSTINO, *supra* note 253, at 26–28 (describing the tax problems associated with insurance securitizations); REPUBLICAN POL'Y COMM., *supra* note 105, at 9 & n.50 (noting the tax problem associated with securitizations) (citing Scott E. Harrington & Greg Niehaus, *Government Insurance, Tax Policy, and the Affordability and Availability of Catastrophe Insurance*, 19 J. INS. REG. 591 (2001)); U.S. GEN. ACCOUNTING OFFICE, *supra* note 30, at 48; Davidson, *supra* note 143, at 145 (stating that securitizations “are greatly impeded by U.S. tax law”); Letter from Ernst Csizar, Vice President, Nat'l Ass'n of Ins. Cos.,

double taxation, first of the premium receipts and investment income of the SPRV and then on the distribution to the investors.⁴⁰⁰ Such taxation effectively would kill any development of an onshore securitization market for the economic rationale for securitization—a cost of capital differential—would not hold. From the perspective of an investor, it would be far cheaper to participate in the coverage of terrorism risk through an equity investment in a reinsurer rather than a securitized bond. Because the capital and tax costs are so great, most securitizations are done in tax friendly jurisdictions with little governmental regulation.⁴⁰¹

The basic framework of tax issues has been well developed. The first point of taxation is at the transfer of receivables from the originator to the SPRV, which may trigger a gain on sale.⁴⁰² The transfer of balance sheet assets to a SPRV could be considered a tax sale or a loan secured by the receivables.⁴⁰³ Also, whether a gain is attached could be an issue if the originator had not recognized revenue because the “receivable” is the right to receive a future revenue stream, which has not accrued and so is not an accounting asset.⁴⁰⁴ In an insurance securitization, the reinsurance agreement between the insurer and the SPRV, and the ceding of premiums therein,⁴⁰⁵ would not be an issue because a reinsurance tax treatment would apply. The insurer would recognize income on that portion of the premium that is earned and not ceded to the SPRV.⁴⁰⁶

to Davi M. D’Agostino, Director, Fin. Insts. & Cmty. Inv., U.S. Gen. Accounting Office, *supra* note 370 (“It would appear that at least one major stumbling block to the wider use of risk linked securities remains the uncertainty regarding their tax treatment.”).

400. See Frankel & LaPlume, *supra* note 318, at 218 (discussing the tax problem); Kapoor & Singh, *supra* note 321. This discussion assumes that the investors of a Cat bond are qualified institutional investors. See *infra* note 439.

401. See *supra* Part II.E. Bermuda has no corporate income tax, and there are no taxes on dividends, gains, or capital assets. See Ben Seessel, Comment, *The Bermuda Reinsurance ‘Loophole’: A Case Study of Tax Shelters and Tax Havens in the Globalizing Economy*, 32 U. MIAMI INTER-AM. L. REV. 541, 545 & n.8 (2001) (discussing the tax advantages of a Bermuda domiciled company). Because of these tax advantages, it has become a major center for insurance. Two major reinsurers, ACE Ltd. and XL Ltd., are domiciled in Bermuda, and several U.S. reinsurers have recently relocated there, including PXRE, Folksamerica Reinsurance, and Everest Reinsurance. *Id.* at 544 n.5. Moreover, a substantial portion of the new capital raised after 9/11 was placed in Bermuda.

402. SCHWARCZ, *supra* note 301, § 5:1, at 5-2.

403. *Id.* § 5:2.2 at 5-7. There is no bright line test on whether a transfer is a sale or a loan. Rather, the determination is based on a number of factors. See *id.* § 5:2.2 at 5-7 to 5-9.

404. *Id.* § 5:2.2 at 5-7.

405. The transfer of premiums could also be from a reinsurer to the SPRV per a retrocession agreement.

406. For a reinsurer, the ceded premium is “taxable income to the reinsurer and tax deductible to the ceding insurer.” Grace et al., *supra* note 36, at 584. In the event that a

The second point of taxation is at the SPRV entity level, which may trigger corporate income tax.⁴⁰⁷ “It is generally desirable to avoid taxation of the [SPRV] because it does not have an external funding source to pay the tax.”⁴⁰⁸ This tax issue for traditional securitizations has been resolved favorably. The special purpose vehicle used for traditional securitizations are generally sheltered by tax legislation.⁴⁰⁹ All taxable items—income, gain, deduction, loss, and credit—“pass through” to the security instrument holders, who are the true risk bearers of the underlying mortgage or credit transaction.⁴¹⁰ This pass through treatment recognizes that the special purpose vehicle simply facilitates the transfer of the assets from the originator to the bondholders, and it was the regulatory reform needed to grow traditional securitization markets.⁴¹¹ There is, however, no similar pass through treatment for SPRVs in an insurance securitization.⁴¹² If the securitization is brought onshore, the SPRV may be considered a “per se” corporation “subject to entity level tax” though it is only a special purpose vehicle without an external source of funding.⁴¹³

From a tax perspective, the SPRV receives cash inflow from two sources, the investment income from the bond principal and the ceded premium.

reinsurance obligation is triggered, the reinsurance payment is deductible as an expense to the reinsurer and a taxable income to the insurer. *Id.* at 584–85. The reinsurer pays taxes on the difference between revenues and expenses, and the dividends to shareholders are taxed at the individual level. *Id.* at 585. Thus, in a typical reinsurance transaction, the equity holders of the reinsurer are the ultimate risk bearers. *Id.*

407. SCHWARCZ, *supra* note 301, § 5:1, at 5-2.

408. *Id.* § 5:2.3 at 5-11.

409. There are two sets of statutory provisions that govern “financial asset securitization investment trusts” (FASITs) and “real estate mortgage investment conduits” (REMICs). *See* I.R.C. §§ 860A-L; Financial Asset Securitization Investment Trust of the Small Business Job Protection Act of 1996, Pub. L. No. 104-188, sec. 1621(a), §§ 860H-860L, 110 Stat. 1755, 1858–66 (1996) (codified as amended at 26 U.S.C. §§ 860H-860L) (receivables); Tax Reform Act of 1986, Pub. L. No. 99-514, sec. 671, §§ 860A–860G, 100 Stat. 2085, 2308–18 (1986) (codified as amended at 26 U.S.C. §§ 860A-860G) (mortgages); *see also* FRANKEL, *supra* note 301, §§ 8.15.1, 8.15A.1. Without the application of either, mortgage securitization for example would be taxed. SCHWARCZ, *supra* note 301, § 5:1, at 5-3 n.3.

410. SCHWARCZ, *supra* note 301, § 5:3.2, at 5-26 to 5-27.

411. The “CMBS market was very small a decade ago,” but the market was substantially stimulated by deregulation and tax reform. Smetters, *supra* note 50, at 3.

412. Grace et al., *supra* note 36, at 587. From the perspective of the bond market, the tax costs is the principal reason why securitizations have not been prevalent onshore. D’AGOSTINO, *supra* note 253, at 51 (citing Letter from George Miller, Senior Vice President & Deputy General Counsel, and Michel C. David, Vice President & Assoc. General Counsel, the Bond Market Assoc., to Davi M. D’Agostino, Director, Fin. Mkts. & Cmty. Invs., U.S. Gen. Accounting Office (Sept. 5, 2003)). The Bond Market Association suggests the enactment of a “pass through” legislation similar to FASIT and REMIC.

413. Davidson, *supra* note 143, at 163.

With respect to the investment income, there is a problem of double taxation.⁴¹⁴ There is no logical reason why a bondholder would invest in an instrument knowing that it would be subject to entity level tax and then personal level tax again when the alternative is to invest the money directly in a risk free investment such as Treasury bonds and be subject only to personal tax. The tax consequences of treating the ceded premiums depend on whether the Cat bonds are treated as debt or equity instruments.⁴¹⁵ If the bonds are considered debt, then the income from the invested principal and ceded premiums would be offset by interest deductions to the bondholders. Under this scenario, tax liability is minimized.⁴¹⁶ But if the bonds are considered equity, as is the case in a majority of the principal at risk Cat bonds,⁴¹⁷ then the interest payments to bondholders cannot be deducted, and the investment income and ceded premiums are taxed as corporate income without a deduction of the interest payments to bondholders.⁴¹⁸ This treatment creates a disparity between an equity investment in the reinsurer's stock and the bonds issued by a SPRV. An equity investment in a reinsurer is subject to the standard two tier taxation: corporate income tax and personal income tax on distribution. Because an investor in a SPRV would be institutional, and itself subject to corporate tax, an investment in an insurance securitization would be subject to a third layer of taxation.⁴¹⁹ These unfavorable tax possibilities make "the securitization uneconomic" if brought onshore.⁴²⁰

Even if the pass through issue is resolved sensibly, a terrorism bond still may be an impractical possibility. The impracticality is shown by comparing traditional reinsurance with catastrophe securitization. From the perspective of an investor who wishes to invest in terrorism coverage, an

414. Frankel & LaPlume, *supra* note 318, at 218.

415. Under federal income tax law, a transaction is taxed in accordance with its economic substance rather than the form. *See Gregory v. Helvering*, 293 U.S. 465, 469–70 (1935).

416. *See* SCHWARCZ, *supra* note 301, § 5:2.3, at 5-11; Frankel & LaPlume, *supra* note 318, at 218. A debt is defined as an unconditional obligation to pay a specific sum of money on demand or on a specific date. Kaplan & Lefebvre, *supra* note 317, at 9.

417. Kaplan & Lefebvre, *supra* note 317, at 14.

418. *See* SCHWARCZ, *supra* note 301, § 5:2.3, at 5-11; Frankel & LaPlume, *supra* note 317, at 218.

419. *See* Grace et al., *supra* note 36, at 585 ("Thus, at this point the SPRV transaction would be subject to three levels of taxation: once at the SPRV, once at the taxable institutional investors, and once at the personal level.").

420. Davidson, *supra* note 143, at 163; *see also* Frankel & LaPlume, *supra* note 318, at 218 (stating that double taxation "would render insurance securitization impractical"). The third point of taxation is at the individual investor level, which may trigger income tax as either interest received from bonds or returns on equity. SCHWARCZ, *supra* note 301, § 5:2.4, at 5-18 to 5-20.

investment in a reinsurer will be less risky because of the diversification of the reinsurer's book of business. As we have seen, the insurer must charge a premium that is multiples of the actuarial risk due to the capital holding requirements and tax costs.⁴²¹ An investment in a terrorism bond is a pure play on terrorism risk. Because of the great uncertainties, there would be a risk premium charged on top of the capital costs. A terrorism bond must offer yields on par with high yield bonds and most likely in excess of the yields seen for national catastrophe bonds. In other words, the cost of capital on a pure play investment in terrorism risk will be more than that of a diversified reinsurer.

To illustrate this problem, we can continue with the previous cost of capital problem used earlier in this article.⁴²² Recall that an insurer must charge a premium of \$2,565 to insure against a one in 100 year event with an anticipated loss of \$50,000 and return a cost of capital of 10% to its shareholders. For simplicity, we assume that the insurer cedes all premiums to a reinsurer, and therefore the profit and loss of the reinsurer is coextensive with that of the cedant. We can then compare this result to the procurement of reinsurance through securitization. The bondholders must provide \$50,000 in principal at risk to the SPRV.⁴²³ Although an insurance company with hundreds of millions or billions of dollars in assets can diversify its investment portfolio to achieve higher investment yields, the bond proceeds must be protected from credit and market risk. The proceeds would be put into a trust and invested in a fixed, risk-free LIBOR rate. We assume a 3% LIBOR return.⁴²⁴ Principal at risk natural Cat bonds have historically yielded "250 to 750 basis points" spread over LIBOR.⁴²⁵ As a frame of reference, we can assume the midpoint of 500 basis points. This means that a natural Cat bond must yield 8%. A terrorism bond would surely trade at a premium over this benchmark given the greater risks and modeling uncertainties, and so its yield would resemble that of a lower credit junk bond. For simplicity, we assume a 300 basis point premium, meaning an 11% yield on the bonds, a cost of capital that is slightly higher

421. *See supra* Part II.E.

422. *See id.*; *infra* tbl.5. I again provide the following caveat; This is a stylized example and is not an example in actual pricing. Moreover, any transaction would be far more complex than simply the factors identified here.

423. We assume that the parties would structure a transaction to minimize any potential basis risk between the triggering index and the actual loss.

424. *See supra* note 323.

425. Kaplan & Lefebvre, *supra* note 317, at 7; *see also* DUBINSKY & LASTER, *supra* note 321, at 22. Principal protected Cat bonds have returned on average 100 to 300 basis points above LIBOR. *Id.*

than that of the reinsurer. The income to the SPRV would be \$1,500 from investment income and \$2565 from ceded premium. Even without accounting for the tax liability that would pass through to the institutional investor, we see that the securitization would fall short of the 10% return on capital requirement.⁴²⁶ In this example, reinsurance is a cheaper option than catastrophe securitization. This is consistent with the historical development of the insurance securitization market wherein securitizations had to compete with cheaper reinsurance rates during the “soft” cycle of the 1990s, thus suppressing the market.

If a pass through treatment cannot produce the types of yields that would entice investors, then additional tax incentives are needed. Tax incentives would increase the effective yield on a bond investment, and so close the pricing disparity. Thus far, there has not been a call for stimulating investor appetite through tax enhancements, either by the industry or academics, presumably because the perception is that the government would be averse to the possibility of losing tax revenue. The general concept of stimulation of markets through tax incentive is, of course, not a new idea. The clearest example of this would be the tax deduction for mortgage interest on one’s home. Compelling public policies may also be served by tax enhancements. A clear example would be the tax exempt treatment of municipal bonds.⁴²⁷

My argument is based on the reality that terrorism coverage through reinsurance would be cheaper than through securitization at this stage in the market development. Perhaps at some point in the future, the market environment would be such that securitization would provide a cheaper alternative. But that is not the case now, nor will it be in the foreseeable future. Either costs of securitization must be lowered or its rewards must be enhanced, or both, to stimulate the market. Regulatory reforms address the former, and tax enhancements address the latter.

No question that a tax incentive is a form of government subsidy of private insurance.⁴²⁸ It is an indirect way in which the government can

426. A large portion of the shortfall comes from the fact that a reinsurer would be able to invest its capital in investments that would yield greater returns. These returns are possible because of the size of the insurer’s investment portfolio and the benefits of portfolio diversification. On the other hand, the proceeds from a bond issue must be fixed to a risk free rate and the return then is calculated as a spread over this known rate. In this way, the bondholders can properly assess the risk versus return of this investment as opposed to some other investment.

427. 26 U.S.C. § 103(a) (2000).

428. See Levmore, *supra* note 232, at 24 (“[A]s a budgetary matter, it may even be worthwhile for the government to subsidize the purchase of certain kinds of insurance in order to reduce the pressure for post-disaster relief.”).

provide ex ante subsidies. It is only a subsidy, however, if the government loses an opportunity to collect revenue. Two potential opportunities come to mind: a tax on the (re)insurer that applies to capital holdings, and a tax on the investment income by the bondholders. With respect to the former, it is highly speculative that (re)insurers would choose to hold excess capital with the specific purpose of entering the market in catastrophic terrorism. Without a federal backstop, the industry would ensure that the extreme risks are limited. Under these conditions, there is a question whether premiums would be economically feasible or optimal for policyholders who must make economically rational choices. Moreover, higher revenue by insurers means revenues by policyholders. Thus, with or without a tax incentive, the loss of potential premium revenue is probably an insignificant issue.

On the other hand, there is no question that an investment in a tax enhanced instrument, like municipal bonds, presents a lost opportunity. With a fixed amount of capital, an investment in a tax enhanced instrument is less dollars devoted to taxed instruments. It is here, on the investor side, that the subsidies would have a direct effect. When compared to a government sponsored risk pool concept, the benefits of this scheme are clear. A government sponsored risk pool incentivizes (or mandates) the insurance industry to provide terrorism coverage. But it does not incentivize other parties to enter the market. The market players—policyholders, insurers, reinsurers, and government—remain the same, except that the government now ponies up funds to cover losses. It is a *loss* redistribution scheme. This would not be the case if the capital market enters as a risk bearer. It would then be a *risk* redistributing scheme.

Tax benefits on the investment end may incentivize capital market investors to join the risk pool. Unlike upstream subsidies to policyholders, which create the moral hazards of subsidized insurance, downstream tax subsidies would minimize the potential for market pricing distortions. In a nonindemnity transaction, policyholders and insurers are still incentivized to manage their risks for the reinsurance pricing is determined by the market. Tax subsidies promote the convergence of premiums to actuarial pricing. Market investors would not be enjoying a subsidized bond coupons, but would be appropriately compensated for assuming extreme risks. Thus, the potential for market distortions and moral hazards are reduced overall.

The key benefit of a tax incentive is that the scheme is reviewable and renewable on an ongoing basis. Tax incentives can be reasonably flexible in terms of legislative cycles. They should in fact be temporary, and like TRIA they are subject to the same lobbying forces that could push a temporary legislation to the permanent. While legislative review cannot react quickly to the changing markets, tax benefits can be reviewed over a period of time

as the markets change. Just the way TRIA was meant to buy the market some time, tax benefits should be provided to stimulate a potential market.

There are many important questions that this article cannot answer. How much will the tax incentives cost in lost revenue? Will any tax incentive bridge the price gap? How large would the market be? What would be the tangible benefits to the economy? In the event of an attack, how much would the government save in anticipated ex post subsidies? These questions are complex. It is beyond the capabilities of a single legal scholar to provide the answers or to even suggest credibly what they may be. Clearly further studies are needed in the economic and finance fields particularly. Even so the answer may be as elusive as trying to predict the frequency or severity of terrorism losses. Ultimately, there may not be a simple answer, but only policy preferences that are decided on a political level, considering the practical necessities.

D. Investment in Risk Pool

Aside from the benefit to the insurance market, a market in terrorism bond can have several incidental benefits. For one, it gives the government an opportunity to invest in the underlying risk. The provision of subsidies is far more palatable politically if the government has a chance for gains as opposed to a certain loss.⁴²⁹ Rather than simply a policy option, such an incentive may be a policy necessity. Government participation in the market would create liquidity that would otherwise not exist. Although Cat bonds have grown as a market since the mid-1990s, they remain illiquid investments for two reasons: they are not publicly traded, and only a relative few sophisticated investors are comfortable with the insurance risks.⁴³⁰

Illiquidity is a problem for any financial innovation because once an investor commits to an investment it will have a difficult time exiting from or selling the investment. Due to this risk, illiquid investments typically command a liquidity premium that must be offered to the investors, further raising the cost of capital on the instrument. The market has seen a liquidity

429. That government can profit from the private sector is not unprecedented. For example, the government received stock options in the Chrysler bailout that later turned out to be quite profitable. *Id.* at 6 n.12; see also Warren Brown, *Chrysler's Driving Wheel Bids Farewell: Iacocca's and Automaker's Resurgence Were Intertwined*, WASH. POST, Dec. 27, 1992, at H1 (stating that the government earned \$350 million in exchange for \$1.2 billion loan guarantees).

430. See *infra* note 439 (stating that Cat bonds are typically issued in private placements under Rule 144A).

problem in insurance innovations in the past. Catastrophe securitization is not the only alternative risk transfer method that the industry has been explored.⁴³¹ For a period of time, the market also experimented with insurance derivatives. In 1995, insurance-linked catastrophe loss option contracts began trading on the Chicago Board of Trade.⁴³² Trading was “light overall,” making the options illiquid.⁴³³ Due to low demand and illiquidity, the CBOT eventually delisted the options in 2000.⁴³⁴ The experience with catastrophe options shows that liquidity is a significant issue.

By investing in terrorism bonds and perhaps establishing an infrastructure for its trading among interested investors, the government could serve as a quasi-market maker and maintain a minimum level of liquidity among the group of investors.⁴³⁵ The government could affect the market rates similar to the way its actions can affect yields on other fixed income instruments, interest rates, and foreign exchange rates. While government domination would not be a good thing for the reasons discussed in Section III.C., participation could increase the size and growth of the market, improve market liquidity, and alleviate temporary market instability.

There is also the benefit of creating an information market. A public market is the most effective means to incorporate vast, complex data into a price. The derivatives market is highly accurate in predicting the underlying value of assets. While it is difficult to foresee a highly liquid, public market in terrorism bonds in the near future, their trading values may reveal information that would be relevant outside of financial loss or gain. To the extent that terrorism bond prices will fluctuate with political and national security developments, the information deduced from the price movements may indicate the market assessment of terrorism risk. This potential for market based information on terrorism was the impetus for a short-lived Defense Department program designed to create a futures market in terrorism.⁴³⁶ This program would have allowed market participants to trade

431. *See supra* note 26.

432. D’AGOSTINO, *supra* note 253, at 36.

433. Lewis & Davis, *supra* note 26, at 127.

434. D’AGOSTINO, *supra* note 253, at 36.

435. A market maker is a party that stands ready to buy or sell shares on a continuous basis at publicly quoted prices. U.S. SEC. & EXCH. COMM’N, MARKET MAKER, at www.sec.gov/answers/mktmaker.htm (last visited Mar. 7, 2005) (last modified March 17, 2000). In an exchange such as the New York Stock Exchange, market makers maintain liquidity in the shares traded.

436. The program, the Policy Analysis Market, was devised by the Defense Advanced Research Project Agency (DARPA). The program was headed by Admiral John Poindexter, the former National Security Adviser under the second term Reagan administration.

futures contracts on a diverse array of political events, including assassinations and wars. While arguably based on the finance theory that a highly liquid derivatives market is an accurate predictor of market movements,⁴³⁷ the program was so farfetched and tin-eared to political sensibilities that it was quickly pulled once it was publicly disclosed.⁴³⁸

While betting on death and destruction for the predictive value of information can seem downright creepy, a terrorism bond market would not be susceptible to such moral condemnation. In fact, an investment in terrorism bonds could be publicly construed as advancing the national interest.⁴³⁹ A terrorism bond shares similar investment characteristics of a

437. See POSNER, *supra* note 15, at 175 (“The theory [of an information market] is fine but its application to terrorism is questionable.”). There is some market evidence that the futures market is an accurate predictor of political events. TradeSports Exchange, LTD, based out of Ireland, traded “Saddam Hussein futures,” and, based on the pricing, the future’s market predicted there was only a 43% chance that Hussein would be deposed by March 31, 2003, but an 82% chance he would be removed from power by May 30, 2003. Smetters, *supra* note 50, at 41–42. According to a Stanford University study, Saddam Hussein futures closely tracked the spot oil market prices, which are considered a good barometer of Middle East politics. See James M. Pethokoukis, *More Markets for Mayhem*, U.S. NEWS & WORLD REPORT, Aug. 1, 2003, available at 2003 WL 2022188; Andrew Leight et al., *What do Financial Markets Think of War in Iraq?* (2003) (unpublished manuscript), at <http://faculty-gsb.stanford.edu/zitzewitz/Research/iraq.pdf> (last visited Mar. 7, 2005) (Stanford study). The application of an information market in terrorism is problematic, however. The futures market as a predictor of the future depends on high volume, liquid flow of information. TradeSport has 21,000 members, a sufficiently large market of participants. See Julie Hanson, *The Market of the Future: Futures Markets Have Been Used to Successfully Predict Elections and Sporting Events, So Why Not Terrorism?*, CSOnline.com, Oct. 2003, at http://www.csoonline.com/read/100103/wonk_market.html (last visited Mar. 7, 2005) (providing data from John Delaney, CEO of TradeSports.com); see also TRADE SPORTS TRADING & BETTING EXCHANGE, at <http://www.tradesports.com> (last visited Mar. 7, 2005). One question is whether a futures market in terrorist acts, as envisioned by the Defense Department, would ever generate the type of high-volume trading associated with sports events.

438. Some members of Congress described the program as “unbelievably stupid.” Josh Meyer, *Trading on the Future of Terror: A Market System Would Help Pentagon Predict Turmoil. To Critics, It’s “Gambling” on Security*, L.A. TIMES, July 29, 2003, at A1. The program fared no better in the popular press. See Michael Shnayerson, *The Danger List*, VANITY FAIR, Dec. 2004, at 245 (“The Policy Analysis Market was probably the stupidest idea ever proposed by an official of the U.S. Government.”).

439. This is not to suggest that retail investors should invest in terrorism bonds. Catastrophe bonds are typically issued as private placements with an investor pool limited to sophisticated institutional buyers. See D’AGOSTINO, *supra* note 253, at 18 & n.24 (noting that most Cat securitizations are Rule 144A private placements); DUBINSKY & LASTER, *supra* note 321, at 6 (same); Kapoor & Singh, *supra* note 321, at 6 (“[I]t is usually preferred that institutional investors are targeted given their levels of sophistication and understanding of such issues.”). Investors are sophisticated institutional investors who may want the additional portfolio diversification of an asset that is uncorrelated with the markets and/or who may have an appetite for higher risk and higher yield investments.

junk bond. The market in junk bonds tends to be more illiquid with fewer and more specialized investors. For both junk and terrorism bonds, the underlying “bet” is on the financial health of the obligor. The informational benefit may not be as pointed as a futures contract for a specific time, place, manner, and result.⁴⁴⁰ But price fluctuations and trading behavior can yield significant information about market beliefs, particularly if the risks are segregated as they would be in a multi-tranche issue.

Cat bonds have been split into various tranches for various natural risks and geographic regions,⁴⁴¹ and there is no reason why terrorism bonds cannot do the same. Indeed, the concept of diversification of risk would militate that a bond should be based on a diversified portfolio of insured assets. A lesson can be learned from the CMBS market. CMBS bonds can be issued on a single asset or a pooled group of assets.⁴⁴² Single asset bonds are more risky, whereas pooled assets diversify the risk.⁴⁴³ Like a pooled asset CMBS, a terrorism bond would likely pool the risk with diversification of geography and economic assets. If these risks are segregated into different tranches, the trading value of the various tranches could yield significant information on the market’s belief of the current terrorism risk. Of course, these preliminary conclusions presuppose the existence of a public or quasi-public market with sufficient volume to create reasonable liquidity.

VI. A CAVEAT ON MARKET GROWTH EXPECTATIONS

While securitization may be the longterm solution for mega-catastrophic events, manmade or natural, it is wholly unrealistic to believe that it is a ready-made solution. The history of financial innovation suggests that new financial products take time to grow into a mature market.⁴⁴⁴ Many interest

440. Under the DARPA program, we can imagine a future contract for the following bet: a terrorist attack in Manhattan, causing at least \$10 million in property damages, occurring on or before September 11, 2006.

441. See, e.g., *supra* note 331.

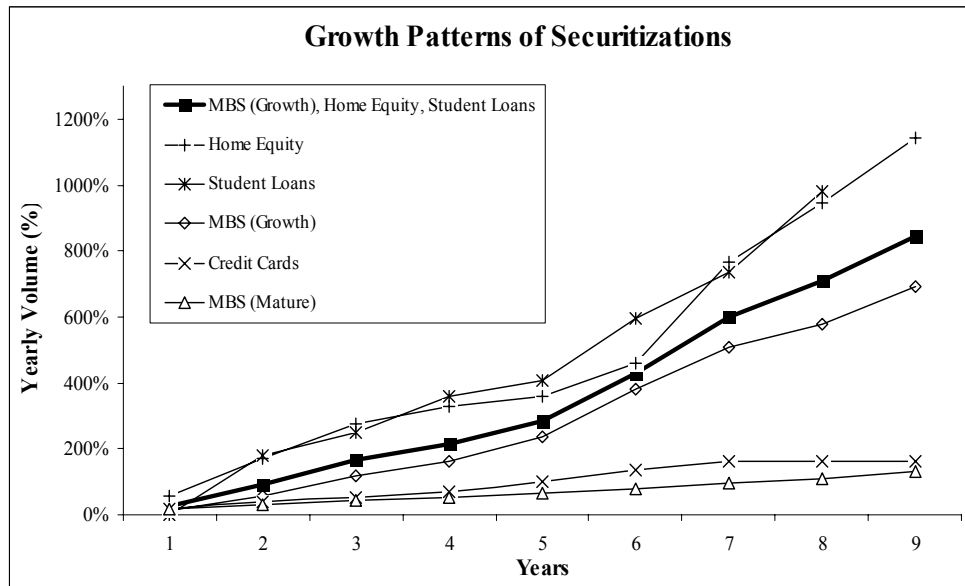
442. Orlans, *supra* note 29, at 104–05.

443. *Id.* at 105.

444. For instance, the concept of a derivative was discussed by Aristotle, who described futures contracts that monopolized the ancient olive press market as a “financial device, which involves a principle of universal application.” Aristotle, *Politica*, in *THE BASIC WORKS OF ARISTOTLE*, 1113, 1142 (Richard McKeon ed., Benjamin Jowett trans., Modern Library 2001) (1941). Yet it was not until the 1990s that derivatives grew into a mature market. See MERTON H. MILLER, *MERTON MILLER ON DERIVATIVES* 3 (1997) (stating that the 1990s saw a tremendous growth of the derivatives market); Niall Ferguson, *Who’s Buried by Higher Rates?*, *FORTUNE*, June 14, 2004, at 70 (noting that, since December 2000, “the gross market value of

groups must work together to make the innovation possible: issuers, market intermediaries, rating agencies, investors, and other professional service providers. In the case of catastrophe securitizations, we also must consider the primary insurer and policyholders. And in the case of terrorism securitization, the government must be a key participant.

The history of securitization suggests that each asset class takes many years, perhaps in excess of ten years, to mature into a high volume, liquid market.⁴⁴⁵ Using publicly available data, I constructed the below graph to show the historical development of some of the prominent securitization asset classes: mortgages, home equity, student loans, and credit cards.



The lower, flatter two lines show securitizations for credit cards and mortgages from 1990-1998, representing a period when these assets have grown into a mature market. The top lines show three asset classes at various times in the market that have been identified as the early growth and expansion periods, along with a composite line representing all three asset classes. Calculations of internal rate of return, or the compounded annual growth rate, show that in the growth and expansion periods noted above, home equity, student loans, and mortgage asset classes grew at compounded

over-the-counter derivative contracts has grown from \$3 trillion to nearly \$8 trillion” according to the Bank for International Settlements).

445. See DAVIDSON ET AL., *supra* note 302, at 4 (showing data reflecting rapid growth of manufactured housing, student loans, home equity loans, and equipment leases).

rates of 32%, 46%, and 26%, respectively. This compares with 11% and 9% for credit cards and mortgages, respectively, in the mature years. From the above chart, we see that the development of a securitization class takes three distinct phases: (1) an initial growth phase in which an asset class is introduced to the market and a steady growth of the asset class, (2) a rapid expansion stage that indicates a market acceptance and appetite for the asset class, and (3) a mature stage in which the market reaches an equilibrium.⁴⁴⁶

Even with the most favorable combination of government action, the “gestation” period involved in developing a new class of securitization suggests that a terrorism bond market would not develop for many years. Given the complexity of the issues and the informational unknowns, the development may in fact take longer than other classes. Time is needed by the interest groups to develop an acceptable transaction structure and methodology and to understand the nature of the investment risk. But the

446. The methodology for analyzing the data is this: We know that various asset classes are introduced to the market at various time periods and that the market size of each asset class differs. For instance, while the precursors to agency-backed mortgage back securities (MBS) were introduced in the 1970s, they started to grow as a market in the 1980s; similarly, home equity securitizations started in the mid-1990s. Moreover, the size of the student loans is tiny compared to that of mortgages. Because of these timing and size differences, I fit the data into a common reference time period to facilitate a like-for-like comparison and measured growth in terms of percentages. Years one through nine represent the following years for each asset class: home equity (1996–2004:Q2), student loans (1997–2004:Q2), MBS growth years (1981–1989), MBS mature years (1990–1998), and credit cards (1996–2004:Q2). The chart shows securitization growth as measured by the percent increase of total outstanding volume per asset class referenced to the initial year’s volume (Y-axis), measured over a selected time period representing a similar period in the development of that particular asset (X-axis). Under this methodology, the initial reference year is Year zero.

This methodology was limited by the publicly available data. The data was obtained from the Bond Market Association (BMA). See THE BOND MARKETS ASS’N, at <http://www.bondmarkets.com> (last visited Mar. 7, 2005). In response to inquiries, the BMA stated that it does not have data before 1995 on asset back securitizations. Also, the resulting data will vary somewhat depending on the initial reference year chosen, but the underlying trend should still be evident even if the reference year is changed to another within the same general period. Volumes (in \$ billions) for home equity in the years 1995 to 2004 (Q2) are: 33, 52, 90, 124, 142, 152, 185, 287, 346, 411. *Id.* Volumes (in \$ billions) for student loans in the years 1996 to 2004 (Q2) are: 10, 18, 25, 36, 41, 60, 74, 99, 109. *Id.* The student loan data for Year 9 would be the corresponding volume for 2005, and thus that data point is missing. Volumes (in \$ billions) for MBS in the years 1980 to 1989 are: 111, 126, 176, 244, 289, 373, 534, 672, 750, 876. *Id.* Volumes (in \$ billions) for MBS in the years 1990 to 1998 are: 1024, 1161, 1274, 1350, 1442, 1570, 1711, 1826, 2018. *Id.* Volumes (in \$ billions) for credit cards in the years 1995 to 2004 (Q2) are: 153, 181, 215, 237, 258, 306, 362, 398, 402, 401. *Id.* The “MBS (Growth), Home Equity, Student Loans” category was derived by simply adding the outstanding volume in each class without any adjustments. *Id.* (stating that MBS contributed the majority of the volume).

development stage is not completely removed from the public policy choices. Government action can enlarge or contract the development period. Under the current scheme, there is no question that government (in)action has stalled the development of a capital market solution. Conversely, a market can be stimulated by significant tax advantages that compensate investors for the significant risks and information uncertainties. It is a matter of a policy choice.

VII. CONCLUSION

September 11th created a fundamental long term insurance problem. We now understand that terrorism can be catastrophic, and the possibility of a mega-catastrophe cannot be discounted as a flight of imagination. The 9/11 attacks showed that terrorism can inflict losses exceeding even the most severe natural catastrophes. In the confusion of 9/11, the insurance industry exited the market for terrorism risk. This exodus created capacity and pricing distortions in the market, and these disruptions rippled throughout the general economy. In response, Congress enacted TRIA. Market prices have come down from the fearful early days of the fallout. Whether TRIA had anything to do with this price stabilization is neither here nor there since the take up rate still remains relatively low. In this regard, the statute has had mixed results even by the government's own assessment.

It is an open question whether TRIA will be extended beyond its sunset date. This is the clear policy preference of the insurance industry. But many have argued against an extension, contending that government intervention into what should be a private market would only exacerbate the problem. Direct subsidies to the insurance industry would not offer much in the way of addressing terrorism risk or incentivizing a solution for it. It is simply a scheme to transfer wealth from the government to the insurance industry and to the policyholders. If we assume that TRIA will not be extended after 2005, the private market must formulate a solution to transfer terrorism risk. The industry in its current business and financial configuration cannot assume the bulk of terrorism risk. With 9/11 as a precedent, there will be great pressure and temptation to provide ex post government relief to those who bore the loss in the next catastrophic attack.

This article suggests that the private market can find an alternative risk transfer through the capital markets. Such a solution, however, faces many implementation hurdles: regulatory uncertainties and costs, informational uncertainties and costs, price competition from traditional reinsurance, and investor unfamiliarity and skepticism. The government can enhance and stimulate the conditions necessary for the convergence of insurance and

capital markets. It can reduce the costs of securitization and enhance pricing. It can streamline the regulation of insurance and securitization so that regulatory costs are reduced, and it can provide tax incentives to increase investment yield. There is a compelling policy that is served. The tax subsidies are provided directly to the interest group that is most needed to stimulate a capital market solution—the investors. With the effective investment yield increased, the benefit of the tax policy would flow upstream to the underwriting and pricing of terrorism risk.

While securitization is a promising avenue to expand industry capacity and ultimately reduce prices, it cannot address short term needs. Given the growth history of traditional securitizations, the difficulties in developing the natural catastrophe market, and the unique challenges of terrorism, a market in terrorism bonds is many years away even under the most optimistic assessment and favorable conditions. But, a capital market solution is impossible with the regulatory and tax reforms, which are needed now.

VIII. APPENDIX

Table 1: Top 10 Most Costly Terrorism Attacks⁴⁴⁷

Losses (US\$ M)	Victims	Date	Event	Country
19,000	At least 3,000	9/11/01	WTC and Pentagon attacks	US
907	1	4/24/93	Bombing of NatWest tower	UK
744	--	6/15/96	Bombing in Manchester	UK
725	6	2/26/93	WTC garage bombing	US
671	3	4/10/92	Bombing in London	UK
398	20	7/24/01	Bombing of Colombo Airport	Sri Lanka
259	2	2/9/96	Bombing of London's Docklands	UK
145	166	4/19/95	Bombing in Oklahoma City	US
138	270	12/21/88	PanAm bombing over Lockerbie	UK
127	--	9/17/70	Three planes hijacked, bombed	Jordan

Table 2: Top 10 Most Deadly Terrorism Attacks⁴⁴⁸

Victims	Losses (US\$ M)	Date	Event	Country
At least 3,000	19,000	9/11/01	WTC and Pentagon attacks	US
300	--	10/23/83	Beruit bombing, US Marine barracks	Lebanon
300	6	3/12/93	Series of 13 bomb attacks in Mumbai	India
270	138	12/21/88	PanAm bombing over Lockerbie	UK
253	--	8/7/98	Bombings of US embassies	Africa
166	145	4/19/95	Bombing in Oklahoma City	US
127	45	11/23/96	Hijacking of Ethiopian airliner	Indian Ocean
118	--	9/13/99	Bombing of block in Moscow	Russia
100	--	6/4/91	Arson of warehouse in Addis Ababa	Ethiopia
100	6	1/31/99	Ceylinco House Bombing, Columbo	Sri Lanka

447. ZANETTI ET AL., *supra* note 2, at 17 tbls. 4–5 (giving data indexed to 2001 value; property damage and business interruption loss).

448. *Id.* (giving data indexed to 2001 value; property damage and business interruption loss). This list does not include the September 3, 2004, attack on a school in Beslan, Russia, which killed 350 people; the October 12, 2002, bombing in Bali, Indonesia, which killed 202 people; or the March 11, 2004, bombing of the Madrid train system, which killed 192 and inflicted €35 million in insurance losses. *Id.* at tbl.5. Most of the insurance losses involved in the Madrid train bombing were covered by the Spanish government's insurance pool. *See supra* note 256.

Table 3: Top 10 Most Costly Natural Catastrophes⁴⁴⁹

Losses (US\$ M)	Victims	Date	Event	Country
20,900	43	8/23/92	Hurricane Andrew	US, Bahamas
17,312	60	1/17/94	Northridge earthquake	US
7,598	51	9/27/91	Typhoon Mireille	Japan
6,441	95	1/25/90	Winterstorm Daria	France, UK et al.
6,382	110	12/25/99	Winterstorm Lothar	Western Europe
6,203	71	9/15/89	Hurricane Hugo	Puerto Rico, US
4,839	22	10/15/87	Storm and floods	France, UK et al.
4,476	64	2/25/90	Winterstorm Vivian	Western Europe
4,445	26	9/22/99	Typhoon Bart	Japan
3,969	600	9/20/98	Hurricane Georges	US, Caribbean

Table 4: Top 10 Most Deadly Natural Catastrophes⁴⁵⁰

Victims	Losses (US\$ M)	Date	Event	Country
300,000	--	11/14/70	Storm and flood	Bangladesh
250,000	--	7/28/76	Earthquake in Tangshan	China
138,000	3	4/29/91	Cyclone Gorky	Bangladesh
60,000	--	5/31/70	Earthquake	Peru
50,000	161	6/21/90	Earthquake in Gilan	Iran
41,000	--	12/26/03	Earthquake in Mam	Iran
25,000	--	9/16/78	Earthquake in Tabas	Iran
25,000	--	12/7/88	Earthquake	Armenia
23,000	--	11/13/85	Volcano in Nevado del Ruiz	Colombia
22,000	242	2/4/76	Earthquake	Guatemala

449. ZANETTI ET AL., *supra* note 332, at 38 & tbl.10 (giving data indexed to 2003 value; property damage and business interruption loss). The list in Table 3 does not include the series of hurricanes (Charley, Frances, Ivan, and Jeanne) that hit the American southeast and Florida in August and September 2004. Collectively, this quartet caused insurance losses of \$29 billion, exceeding the losses of Hurricane Andrew and approximating the losses from 9/11. AURELIA ZANETTI ET AL., SWISS RE, SIGMA No. 1/2005, NATURAL CATASTROPHES AND MAN-MADE DISASTERS IN 2004: MORE THAN 300,000 FATALITIES, RECORD INSURED LOSSES 17 (Thomas Hess & Aurelia Zanetti eds., 2005).

450. ZANETTI ET AL., *supra* note 332, at 39 & tbl.10 (giving data indexed to 2003 value; property damage and business interruption loss). This list does not include the tsunami that hit India, Sri Lanka, Indonesia, Thailand, and Somalia on December 26, 2004, with an estimated number of killed and missing of over 280,000, making it the second deadliest catastrophe since 1970. ZANETTI ET AL., *supra* note 449, at 3.

Table 5: Stylized Example of the Cost of Capital and Tax Problem⁴⁵¹

	Scenario 1	Scenario 2
Risk Based Capital Held by Insurer	500	50,000
Income Stream		
Premiums for Expect Losses	500	500
Premium for Overhead Expenses	100	100
Investment Income from Premiums @ 8%	24	44
Investment Income from Capital @ 8%	40	4,000
Losses	(500)	0
Overhead Expenses	(100)	(100)
Premium Delta for Cost of Capital Shortfall	2	1,965
Investment Income from Premium Delta @ 8%	0	157
Pretax Income	67	6,667
Tax Expense @ 25%	(17)	(1,667)
Net Income	50	5,000
Return on Equity (ROE)	10%	10%
Ratio Analysis		
Total Premiums Collected	602	2,565
Premiums Collected / Expected Loss	1.20	5.13
Revenue	667	6,767
Overhead Expenses / Revenue	15%	1%
Tax Expense / Revenue	3%	25%
Expected Loss / Revenue	75%	NA
Net Profit / Revenue	7%	74%

451. The above table is a stylized example that highlights the different cost of capital and tax consequences on two types of insurable interests. Scenario 1 represents high frequency, low severity events. Scenario 2 represents low frequency, high severity events. The example does not consider the impact of loss carry-forwards, which may alleviate the tax impact on the capital costs. Grace et al., *supra* note 36, at 584 (loss carry forward will minimize some of the tax burdens associated with the capital costs of covering catastrophe risk). Over the long term, a loss carry forward would reduce the premiums by reducing the tax burden. Therefore, the \$5.13 in premium for an anticipated one dollar of losses may be an overestimation. Also, the calculations for investment income from premiums for Scenario 1 used a \$300 weighted average figure on the assumption that losses and expenses are evenly paid throughout the year. For Scenario 2, \$550 was used on the assumption that the \$500 for losses are not paid out and only the \$100 collected for overhead is paid out evenly throughout the year.