EXCLUSION OF TERRORIST-RELATED HARMS FROM INSURANCE COVERAGE: DO THE COSTS JUSTIFY THE BENEFITS?

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INTRODUCTION

The September 11 attack was "the largest single insured event in history."[1] In the end, insurance companies are expected to pay approximately $50 billion to victims of the attack.[2] This is a huge loss. To put it somewhat in perspective, it is more than eight times what the federal government is expected to pay through the Victims Compensation Program.[3] It is also more than three times the total expected cost of the airline bailout, of which the Compensation program is a part.[4] As one industry observer put it, "[n]o matter how much is written about it, it is hard to overstate the significance of Sept. 11 to the insurance industry."[5]

In response to the perceived potential of future terrorist losses, many insurers have begun to exclude terrorist-related losses from their policies.[6] In light of the size and uncertainty of future losses, this is understandable. In adopting this

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1. Jeff Woodward, *The ISO Terrorism Exclusions: Background and Analysis*, IRMI INSIGHTS, Feb. 2002, *available at* http://www.irmi.com/insights/articles/woodward006.asp.

2. *See Terrorism Insurance: Rising Uninsured Exposure to Attacks Heightens Potential Economic Vulnerabilities: Before the House Subcomm. on Oversight and Investigations, Comm. on Fin. Servs.* (Feb. 27, 2002) (testimony of Richard J. Hillman, Director, Financial Markets and Community Investment), *available at* http://www.gao.gov [hereinafter Hillman testimony]. Estimates of the insured losses from the Sept. 11th attack are still uncertain and variable, ranging from $30 million to as much as $90 billion, with consensus estimates in the range of $36-$54 billion. *See Need for Federal Terrorism Insurance Assistance: Before the House Subcomm. on Oversight and Investigations, Comm. on Fin. Servs.* (Feb. 27, 2002) (testimony of Mark J. Warshawsky, Deputy Assistant Secretary for Economic Policy, U.S. Treasury), *available at* 2002 WL 2011117 [hereinafter Warshawsky testimony]; Press Release, Swiss Re, Terrorist Attack in New York Causes Record Losses for Property Insurers in 2001 (Dec. 20, 2001), *available at* http://www.swissre.com.

3. "The government estimates the [Victims Compensation] program will cost about $6 billion." Bob Van Voris, *Lawyers Take Over Ground Zero*, NAT'L L.J., Mar. 8, 2002, *at* http://www.law.com.

4. "The September 11 Victim Compensation Program is part of a $15 billion airline bailout passed in September." *Id*.

5. *What Makes Terrorism Different?: Insurers Must Demonstrate How Terrorism Is Distinct from Other Violent Perils*, 26 VIEWPOINT No. 3, Winter 2002, *available at* http://www.aais. org [hereinafter *What Makes Terrorism Different?*].

6. *See, e.g.*, Woodward, *supra* note 1; Jim Carroll, *Terrorism Insurance Much Harder to Find After Sept. 11th*, ERIE TIMES-NEWS, Mar. 10, 2002, *at* 2002 WL 15912668.

approach, however, it appears that little thought has been given to the transaction costs associated with the exclusion. One of the significant contributions of Law and Economics to legal literature has been to illuminate the importance of transaction costs in making normative and policy decisions.[7] This Article applies that contribution to the insurance industry's response to the September 11 attack. It contends that the transaction costs associated with the terrorism exclusions will be so great that they will seriously erode, and perhaps outweigh, the benefits to be derived from the exclusion.

This Article begins with a brief description of the events leading up to the adoption of the exclusion and an outline of the basic provisions of the exclusion. It then develops a simple quantitative model to illustrate and evaluate the potential transaction costs from the use of the exclusion. The final section of the Article will identify insights and conclusions that can be drawn from the model.

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7. The importance of transaction costs was brought to light in the seminal work of Ronald Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960). By first looking at a world of no transaction costs, Coase shows that legal rules have little or no effect, which has come to be known as the Coase Theorem. This theorem has been the subject of much commentary and critique. *See, e.g.*, Guido Calabresi, *Transaction Costs, Resource Allocation and Liability Rules-A Comment*, 11 J.L. & ECON. 67 (1968); Robert Cooter, *The Cost of Coase*, 11 J. LEGAL STUD. 1 (1982); Allan C. DeSerpa, *The Pure Economics of the Coase Theorem*, 18 E. ECON. J. 287 (1992); H.E. Frech III, *The Extended Coase Theorem and Long Run Equilibrium: The Nonequivalence of Liability Rules and Property Rights*, 17 ECON. INQUIRY 254 (1979); G. Warren Nutter, *The Coase Theorem on Social Cost: A Footnote*, 11 J.L. & ECON. 503 (1968); Donald H. Regan, *The Problem of Social Cost Revisited*, 15 J.L. & ECON. 427 (1972). An overview of this literature can be found in STEVEN G. MEDEMA, RONALD H. COASE 82-90 (1994). Nevertheless, many commentators have missed the point of transaction costs. *See* Robert C. Ellickson, *The Case for Coase and Against "Coaseanism,"* 99 YALE L.J. 611 (1989). A careful reading of Coase "reveals that the set of ideas which have come to be known as the Coase Theorem was not an end, but a means." Steven G. Medema, *Through a Glass Darkly or Just Wearing Dark Glasses? Posin, Coase, and the Coase Theorem*, 62 TENN. L. REV. 1041, 1043-44 (1995). It was a means to move economics away from the Pigouvian approach of government intervention to address externalities, *see id.*, and to consider a world where transaction costs are important to cost-benefit analysis. *See id.* at 1056. To put it differently, "[t]he importance of transaction costs in economic activity has been one of the dominant themes of Coase's work and is, in fact, a common theme that links *The Problem of Social Cost* with the other Article cited by the Royal Swedish Academy in awarding Coase the Nobel Prize, *The Nature of the Firm*." *Id.* at 1046. Indeed, by Coase's own account, the focus on transaction costs has been characterized as his "contribution" to economics. Ronald H. Coase, *The Institutional Structure of Production*, 82 AM. ECON. REV. 713, 713 (1992). Although not quite as controversial, the transaction costs point has also been subject to criticism. *See, e.g.*, Pierre Schlag, *The Problem of Transaction Costs*, 62 S. CAL. L. REV. 1661 (1989).

I. Background

A. Cost of September 11 in Context

Understanding the scope of the losses caused by the September 11 attack in context will help explain the insurance industry's adoption of the terrorist exclusion. The fact that it was the largest insured event in history does not fully convey the significance of the losses. The losses caused by the September 11 attack were proportionately much larger than previous catastrophes. Depending on which estimate is used, the insured losses from the September 11 attack were at least *double* the next largest loss in history, and could be as much as *five times greater*.[8] The next four largest single-event losses were Hurricane Andrew (1992 - $15.5 billion), the Northridge Earthquake (1994 - $12.5 billion), Hurricane Hugo (1989 - $4.2 billion) and Hurricane Georges (1998 - $2.9 billion).[9] Assuming the loss figure of $50 billion for the September 11 attack, the following chart shows the proportional differences between the five largest single-event losses in insurance history:
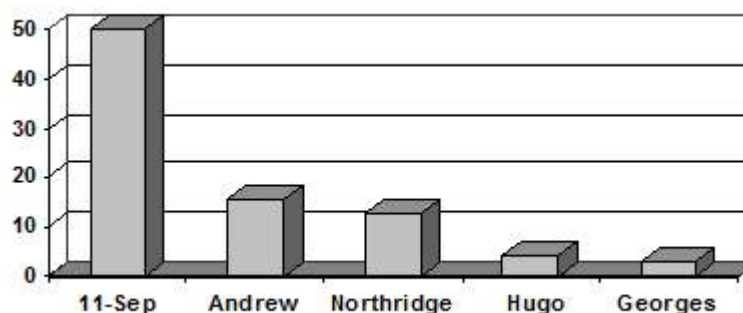

Chart 1 – Five Largest Single-Event Insurance Losses (in billions)

It is noteworthy that the other large, single-event losses are all natural disasters. Man-made disasters have generally not been among the most significant losses. The two largest man-made disasters prior to the September 11 attack caused damages of $3 billion (the 1988 explosion of the Piper Alpha drilling platform) and $2.9 billion (the 1989 explosion of a petrochemical factory in Texas).[10] When comparing the size of losses from man-made disasters, the

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8. Hurricane Andrew caused $15.5 billion in insured losses. Robert P. Hartwig, *The Long Shadow of September 11: Terrorism & Its Impacts on Insurance and Reinsurance Markets*, *at* http://www.iii.org/media/hottopics/insurance/sept11/content.print (July 25, 2002). This is compared to between $30 billion and $90 billion in insured losses for the September 11 attack. *See* Warshawsky testimony, *supra* note 2.

9. This data comes from the Senior Vice President and Chief Economist of the Insurance Information Institute. *See* Hartwig, *supra* note 8.

10. *See* Swiss Re, *supra* note 2.

September 11 damages take on even greater significance. Damages from the attack were at least *ten times greater*, to as much as *thirty times greater*, than the next largest man-made disaster.[11] The following chart illustrates the difference:
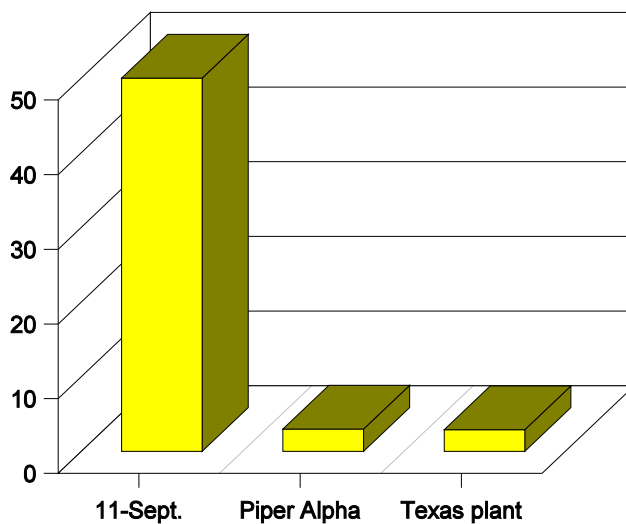

Chart 2 – Three Largest Man-Made, Single-Event Insurance Losses
(in billions)

Finally, not only were the September 11 losses extraordinary in their size, but they also were widely distributed throughout the insurance industry. Although the property/casualty market will bear a large proportion of the losses, substantial amounts are being paid for claims under workers compensation insurance, life insurance, and liability insurance. The Insurance Information Institute estimates the following distribution of losses: property insurance, 22%; aviation hull, 1%; business interruption, 26%; event cancellation, 3%; worker's compensation, 10%; life insurance, 16%; aviation liability, 9%; other liability, 13%.[12] The following chart presents this data in a graphic format:

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11. The damages of $3 billion were compared to between $30 billion and $90 billion in insured losses for the September 11 attack. *See* Swiss Re, *supra* note 2; *see also* Warshawsky testimony, *supra* note 2.

12. *See* Hartwig, *supra* note 8. It should be noted that these percentages are based on an estimated total loss of approximately $40 billion. The distribution, of course, may turn out to be different.
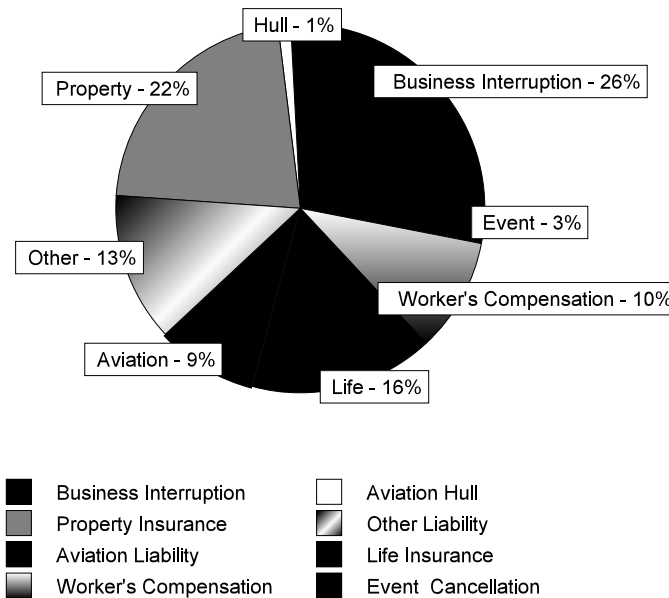
Chart 3 – Distribution of Losses Over Different Types of Insurance

B. The Industry Response

The September 11 attack radically altered the way the U.S. insurance industry handles terrorist-related risks. Prior to the attack, terrorist-related losses were sufficiently small and infrequent that insurers did not take them into account when underwriting risks.[13] The industry had not conceived of an attack that could generate such astronomical losses.[14] Now insurers are keenly aware of real and potential losses, accompanied by their inability to calculate the probable risk. As a result, most insurers consider terrorist risks "uninsurable" from an underwriting perspective.[15] They believe that uncertainty about the probability of a future attack and the amount of damages it could cause make it impossible to calculate an appropriate premium for such coverage.[16]

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13. *See* Press Release, Munich Re, *11th September 2001*, §§ 3.3-3.4 (Oct. 18, 2001); Warshawsky testimony, *supra* note 2; *see also Testimony of New York State Insurance Department: Before the House Subcomm. on Oversight and Investigations, Comm. on Fin. Servs.* (Feb. 27, 2002) (testimony of Gregory V. Serio, Superintendent of Insurance), *available at* http://www.ins.state.ny. us [hereinafter Serio testimony]; Hillman testimony, *supra* note 2, at 3.

14. *See* Munich Re, *supra* note 13, § 3.4.

15. *See* Warshawsky testimony, *supra* note 2; Serio testimony, *supra* note 13, at 25-26; *What Makes Terrorism Different?*, *supra* note 5.

16. *See* Hillman testimony, *supra* note 2, at 3; *see also Terrorism Uninsurable*, INS. DAY,

After September 11, terrorism risks became basically uninsurable from the perspective of many insurers. Consequently, the industry sought federal legislative intervention. The industry wanted the federal government to provide a "back-stop" to limit the potential impact of future catastrophic losses. Several different proposals were considered,[17] though only the House proposal made it to a vote in 2001.[18] The House bill authorized government loans to assist in paying losses due to large-scale terrorist attacks.[19]

The Senate adopted its own version of a federal "back-stop" in June 2002, and authorized the federal government to essentially reinsure catastrophic terrorism-related losses.[20] Under the Senate bill, the government would pay for 80% of terrorism losses up to $10 billion, and then would pay 90% of losses over $10 billion. Insurers would bear a portion of the losses based on their share of the market.[21] A compromise version along the lines of the Senate bill, known as the Terrorism Risk Insurance Act, was passed in November 2002, and signed into law by President Bush on November 26.[22]

The Terrorism Risk Insurance Act "requires the federal government to pay 90% of the cost of an attack by foreign terrorists after losses are greater than $10 billion up to a total of $100 billion.[23] As a condition for such federal support, insurers are required to begin offering terrorism coverage immediately.[24]

When it became clear that legislative assistance would not be available by the end of 2001, however, the industry started to exclude terrorism-related losses from coverage.[25] Reinsurers were the first to adopt such exclusions, in part

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Feb. 21, 2002, at 1, *available at* http://www.insuranceday.com.

17. *See*, *e.g.*, Stephen Labaton, *A Nation Challenged: The Legislation; House Committee Approves Measure to Aid Insurance Industry in Terrorist Attacks*, N.Y. TIMES, Nov. 8, 2001, at B7; Stephen Labaton, *A Nation Challenged: The Aid Bill; White House and Key Senators Revise Proposal on Aid to Insurers*, N.Y. TIMES, Oct. 27, 2001, at B1; Stephen Labaton & Joseph B. Treaster, *Bush Details Plans to Help Insurers on Future Terror Claims*, N.Y. TIMES, Oct. 16, 2001, at C1; Stephen Labaton & Joseph B. Treaster, *A Nation Challenged: The Insurers; Government Role at Issue In Proposal to Help Industry*, N.Y. TIMES, Oct. 12, 2001, at C4.

18. *See Pending Legislation, Terrorism Insurance,* AMERICAN BANKER, Feb. 14, 2002, *available at* 52002 WL 4100042.

19. *See* Stephen Labaton, *A Nation Challenged: The Liability; House Votes to Shield Insurers and Limits Suits by Future Terror Victims*, N.Y. TIMES, Nov. 30, 2001, at B8.

20. *See*, *e.g.*, Joseph B. Treaster, *Senate Passes Aid to Insurers on Terrorism*, N.Y. TIMES, June 19, 2002, at C1.

21. *Id.*

22. Pub. L. No. 107-297, §§ 101-108, 201, 301, 116 Stat. 2322 (2002). *See* Elizabeth Bumiller, *Government to Cover Most Costs of Insurance Losses in Terrorism*, N.Y. TIMES, Nov. 27, 2002, at A1.

23. *See* Bumiller, *supra* note 22. When losses are less than $10 billion the federal government will pay for losses in excess of a percentage of the insurer's direct earned premiums. Terrorism Risk Insurance Act of 2002 § 102(7).

24. *See* Bumiller, *supra* note 22; *see also* Terrorism Risk Insurance Act of 2002 § 103(c).

25. *See What Makes Terrorism Different?*, *supra* note 5.

because they bore about two-thirds of the losses from the September 11 attack.[26] Because reinsurers are international in character, conduct business worldwide, and deal exclusively with sophisticated insurance companies rather than consumers, reinsurers are subject to more limited regulation and could adopt terrorism exclusions without governmental approval.[27] A majority of reinsurance contracts were renewed in January 2002,[28] and the great majority of them excluded coverage for terrorist-related losses.[29]

The reinsurers' decision to exclude terrorism from coverage left the primary insurers bearing the risk of future terrorist attacks. Without reinsurance, a major loss from a terrorist attack could force many primary insurers into insolvency.[30] According to the National Association of Insurance Commissioners ("NAIC"), a $25 million loss for a single primary property/casualty insurer would threaten the solvency of 886 companies, or 44% of the companies writing commercial property/casualty insurance.[31]

Consequently, the NAIC endorsed a terrorism exclusion for commercial property/casualty insurers.[32] As of February, "45 states and the District of Columbia and Puerto Rico" had approved a standard terrorism exclusion drafted by the Insurance Services Organization,[33] which provides many standard form

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26. *See* Hillman testimony, *supra* note 2, at 8.

27. *See id.* at 3-4; *see also* Jane Kendall, Comment, *The Incalculable Risk: How the World Trade Center Disaster Accelerated the Evolution of Insurance Terrorism Exclusions*, 36 U. RICH. L. REV. 569, 576 (2002).

28. The majority of reinsurance policies expired in January, and by some reports could account for as much as 70% of reinsurance. *See* Hillman testimony, *supra* note 2, at 4 n.2.

29. "Industry sources confirm that little reinsurance is being written today that includes coverage for terrorism." *Id.* at 4; *see also* Warshawsky testimony, *supra* note 2 ("the reinsurance industry has almost entirely stopped assuming terrorism risk"). This trend has been confirmed in surveys. The New York Insurance Department received responses from companies that represented 89% of commercial insurance writings in NY state, and 83% of those companies reported that their reinsurers were excluding or limiting coverage for terrorism. Serio testimony, *supra* note 13, at 20-21. Similarly, the AAIS found that "[m]ore than 80% of the 37 personal lines companies [surveyed] indicated that 'their current or upcoming reinsurance contracts exclude or in some way limit coverage for loss caused by terrorism.'" *AAIS Weighs Action In Wake Of NAIC Decision On Personal Lines Terrorism Exclusions*, AMERICAN ASSOCIATION OF INSURANCE SERVICES, *at* http://www.aais.org.

30. *See* Updates and Releases, Insurance Information Institute, *Terrorism Coverage is a Taxpayer—Not Insurance Company—Responsibility, Industry Forum Told* (Jan. 23, 2002) *at* http://www.iii.org; *California, New York take Big Risks on Terrorism Policies*, NAT'L UNDERWRITER—PROPERTY & CASUALTY—RISK & BENEFIT MGMT., Jan. 2002, at 24, *available at* 2002 WL 9935402.

31. *See* Hillman testimony, *supra* note 2, at 17.

32. *See* News Release, National Association of Insurance Commissioners, NAIC Members Come to Agreement Regarding Exclusions for Acts of Terrorism (Dec. 21, 2001), *available at* http://www.naic.org (last visited Apr. 3, 2002).

33. *See* Hillman testimony, *supra* note 2, at 5. The standard ISO war and terrorism exclusion

policies and endorsements used by the industry. Although the Terrorism Risk Insurance Act, which was enacted in November 2002, requires that commercial property and casualty insurers make terrorism insurance "available,"[34] it does set a price for such coverage.[35] As a result, the cost of terrorism coverage is still too high for many businesses,[36] and therefore terrorism exclusion are still being used.[37]

II. THE TERRORISM EXCLUSION

The initial version of the standard terrorism exclusion was rejected by state regulators as overly broad.[38] The National Association of Insurance Commissioners then facilitated discussions to reach a compromise between the industry and regulators. Because the primary justification for the exclusion was the potential that terrorist-related losses could result in insurer insolvency, the revised exclusion included a threshold requirement before the exclusion would apply.[39] The threshold of $25 million was adopted because a loss of that amount would be a significant threat to the solvency of many primary property/casualty insurers.[40]

A. The Threshold Requirement

The threshold requirement is met if the total losses from a terrorist incident exceed $25 million. For purposes of this threshold, multiple losses are aggregated, and include business interruption losses and all losses from related terrorist incidents within a seventy-two-hour period.[41] Related terrorist events are those that appear to be carried out in concert, or have a related purpose or common leadership.[42] For property insurance, the property damage must take place in the United States, its territories and possessions, Canada, or Puerto Rico

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endorsements for property and commercial liability insurance are included as Appendices A and B.

34. Terrorism Risk Insurance Act of 2002, Pub. L. No. 107-297, § 103(c), 116 Stat. 2322 (2002).

35. *See* Bumiller, *supra* note 22.

36. *See* Joseph B. Treaster, *Insurance for Terrorism Still a Rarity*, N.Y. TIMES, Mar. 8, 2003, at C1.

37. The Terrorism Risk Insurance Act nullifies such exclusions, *see* Terrorism Risk Insurance Act of 2002, § 105(a), but then allows insurers to "reinstate" the exclusion if the insured refuses to pay the required premium after proper notice, *see id.* § 105(c).

38. *See* Hillman testimony, *supra* note 2, at 16.

39. *Id*. at 16-17.

40. As noted above, *supra* text accompanying note 31, a $25 million loss for a single primary property/casualty insurer would threaten the solvency of 886 companies, or 44% of the companies writing commercial property/casualty insurance. *Id*. at 17.

41. *Id.* at 18-19. For an example of an exclusion for property insurance approved in most states, see App. A.

42. *See* App. A; *see also* Hillman testimony, *supra* note 2, at 19.

to be counted in the aggregate.[43]

The terrorism exclusion developed for liability insurance has a similar threshold provision, though it is different in several respects.[44] The exclusion also uses the $25 million aggregate for property damage, but it is not limited to property damage that occurs in the United States, Canada or Puerto Rico.[45] In addition, the exclusion for liability insurance uses an alternative threshold of fifty or more deaths or serious injuries.[46] Serious injury is defined to include injuries that involve a substantial risk of death, protracted and obvious disfigurement, or protracted loss or impairment of bodily function.[47] Both the economic threshold and the death or injury threshold are to be aggregated for a single terrorist event, or for related events in a seventy-two-hour period.[48]

If the threshold requirement has been met, then none of the losses from the terrorist incident (or related incidents within seventy-two hours) are covered, even the first $25 million in losses.[49] This is quite different than other thresholds typically used in insurance policies. A policy limit, for example, is a threshold requirement that excludes coverage for losses in excess of the limit. Thus, if a policy has a $1 million limit, the insurer will not pay more than that amount, though an insurer will pay up to the limit. The terrorism threshold operates differently. It excludes all losses once the threshold is met.

Some terrorist acts are exempted from the threshold requirement. Terrorist acts that involve nuclear agents are not subject to the threshold requirements.[50] If the terrorist acts involve biological or chemical agents, the threshold does not apply if the acts were carried out by the release of such agents.[51] However, if biological or chemical agents were released unintentionally in the course of a terrorist attack using other means, the thresholds will apply and the losses from the incident are excluded only if the threshold requirement has been met.[52]

B. Act and Intent Elements

In addition to the threshold requirements, the exclusions contain two other elements: 1) the loss must be caused by a certain type of act, which I will call "a terrorist act," and 2) the act must have a terrorist effect or appear to have terrorist intent, which I will refer to collectively as "terrorist intent."[53]

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43. *See* App. A; *see also* Hillman testimony, *supra* note 2, at 19.

44. For an example of an exclusion for liability insurance approved in most states, see App. B.

45. *See id.*

46. *See* App. B at 1; *see also* Hillman testimony, *supra* note 2, at 18.

47. *See* App. B at 1.

48. *See* Hillman testimony, *supra* note 2, at 18-19; *see also* App. B at 2-3.

49. *See* Hillman testimony, *supra* note 2, at 19.

50. *Id.* at 20; *see also* App. B at 1.

51. *See* App. B; *see also* Hillman testimony, *supra* note 2, at 20.

52. Hillman testimony, *supra* note 2, at 20.

53. The exclusions do not use the term "intent," but instead refer to the "effect" of the act or

The terrorist act element is very broad. To satisfy this element of the exclusion, the act need only be one of the following: use or threat of force or violence, commission or threat of a dangerous act, or commission or threat of an act that interferes with or disrupts an electronic, communication, information or mechanical system.[54] This definition is so broad that it includes any violent crime, vandalism or Internet hacking, and may include any action that has a risk of injury (as a "dangerous" act).

The terrorist intent element is also very broad. The intent element is satisfied if the "effect" of the act "is to intimidate or coerce a government or the civilian population or any segment thereof," or is "to disrupt any segment of the economy."[55] Alternatively, if the act does not have that effect, the intent element is satisfied if it "appears that the intent [was] to intimidate or coerce a government, or to further political, ideological, religious, social or economic objectives or to express (or express opposition to) a philosophy or ideology."[56] Thus, terrorist intent will be found if the act causes intimidation or coercion, if that was its purpose, or if the motive falls into six very broad categories (political, religious, social, economic, philosophical, or ideological).

The following table summarizes the elements of the terrorist exclusions:

Table 1 – Elements of Terrorist Exclusions

Required to Make the Terrorism Exclusion Applicable	
Threshold	> $25 million in property damages, including business interruption, from a single event or related events in 72 hours, or
	> 50 deaths or serious injuries from a single event or related events in 72 hours (liability insurance only), or
	a nuclear, biological, or chemical release.
Terrorist Act	use or threat of use of force or violence, or
	commission or threat of a dangerous act, or
	commission or threat of an act that interferes with electronic, communication, information or mechanical systems.
Terrorist Intent	effect to intimidate or coerce, or
	effect to disrupt any segment of the economy, or
	appears that intent was to intimidate or coerce, or
	appears that intent was to further political, ideological, religious, social or economic objectives, or
	appears that intent was to express (or express opposition to) a philosophy or ideology.

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the "apparent intent." Although a terrorist effect (i.e., intimidation or coercion) is not technically terrorist intent, I refer to this as "intent" because the element is a surrogate for intent, though it is broader than traditional intent. *See* Hillman testimony, *supra* note 2, at 17-18.

54. *See id.* at 17; *see also* App. A at 1; App. B at 3.

55. Hillman testimony, *supra* note 2, at 18; *see also* App. A at 2; App. B at 3.

56. Hillman testimony, *supra* note 2, at 18; *see also* App. A at 2; App. B at 3.

III. Transaction Costs and a Model

A. Conceptual Description of Transaction Costs

These elements of the terrorist exclusions, combined with the nature of a claim for insurance coverage, will likely result in substantial transaction costs. As the losses incurred by the September 11 attack demonstrate, the amount at stake can be very large. As a consequence, insurers will have an incentive to assert the exclusion as a defense.[57] As a general matter, parties are willing to invest more in the preparation of their cases when more is at stake.[58] This incentive effect will be magnified because the exclusion provides a complete defense. As a result, the insurer has an extra incentive to undertake discovery and other efforts to see if the exclusion is applicable. If the insurer is undertaking such efforts, the policyholder has a parallel incentive to prevent the application of the exclusion.

Additionally, the vagueness of the terrorism exclusion will increase transaction costs as the parties act on their incentives. Although the definition of a terrorist act is broad enough that it is unlikely to be disputed, establishing "terrorist intent" is likely to be hotly contested. While the particulars of the intent element are also very broad, they involve abstractions that are subject to many possible interpretations. As a result, they will be difficult to apply and to prove. For example, it is difficult to predict how courts will evaluate whether a particular act has the "effect" to intimidate, coerce or disrupt a segment of the economy. How is such an effect to be measured, and how much of an effect will be required to amount to intimidation, coercion or disruption? Such uncertainty will take many years to resolve through common law mechanisms.[59] This legal uncertainty will be compounded by difficulties of proof. Both sides are likely to

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57. Environmental coverage litigation provides a good example of this phenomenon. As Professor Abraham notes, "[M]ass tort and CERCLA coverage claims are rarely paid without dispute. Too much money is at stake, too many other provisions in CGL policies potentially limit or eliminate coverage of mass tort and CERCLA liabilities, and insurers apparently collected so few premium dollars in anticipation of long-tail coverage liability that most policyholders with mega-coverage claims must bring a lawsuit in order to be paid." Kenneth S. Abraham, *The Maze of Mega-Coverage Litigation*, 97 Colum. L. Rev. 2102, 2106 (1997).

58. *See* Charles Silver, *Does Civil Litigation Cost Too Much?*, 80 Tex. L. Rev. 2073, 2096 (2002). A RAND study found that the amount at stake and case complexity were the most important determinants of attorney work hours, accounting for about half of the variance. *Id.* (citing and discussing James S. Kakalik et al., *Discovery Management: Further Analysis of the Civil Justice Reform Act Evaluation Data*, 39 B.C. L. Rev. 613, 637 (1998)); *see also* Judith A. McKenna & Elizabeth C. Wiggins, *Empirical Research on Civil Discovery*, 39 B.C. L. Rev. 785, 793-94 (1998) (finding "discovery incidence and volume to be related to the stakes of the case").

59. This has been the case with uncertainties surrounding coverage issues for environmental claims. *See* Abraham, *supra* note 57, at 2108. These uncertainties can be compounded by choice of law issues. *See id.* at 2110-11.

hire expensive expert witnesses to evaluate the effect of a terrorist act, but it will be hard to predict who will win the "battle of the experts." These legal and factual uncertainties will drive up costs by encouraging litigation rather than settlement.[60]

Alternatively, insurers may try to prove terrorist intent more directly, though this will raise other legal and factual uncertainties. It is unclear how the courts will interpret what constitutes the "appearance" of intent to intimidate or coerce, or to advance religious, social, economic, political or ideological objectives, which increases legal uncertainty.[61] Moreover, even if the standard were more concrete, intent is always difficult to prove from a factual standpoint. In the case of terrorism, this difficulty will be further complicated by the unavailability of evidence. As we have seen in the September 11 attack, much of the evidence may be destroyed by the incident, witnesses as to intent are difficult or impossible to find, and national security concerns may limit access to evidence developed by the government. In addition, although terrorists in the past often took "credit" for incidents, they are less likely to do so in the future due to the intensity of the U.S. response to the September 11 attack.[62]

If the intent element is satisfied, the threshold element will raise its own set of difficulties. In order to calculate whether the threshold has been met, the parties will have to assess their damages, including damages for business interruption (which is complicated on its own), *before* it can be determined whether there is coverage. This reverses the usual order of proof and will result in detailed and expensive damage calculations that are used only to exclude coverage. In addition, the threshold requirement allows the damages to be aggregated. All losses from a single incident, as well as those from related incidents during a seventy-two-hour period, are to be aggregated, regardless of the number of parties or the variety of claims. This will greatly compound the usual damages problems. It will raise additional uncertainties about what damages should count and whether the multiple incidents are related.[63]

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60. *See id.* at 2109.

61. *See supra* note 59.

62. Such complexity will increase the transaction costs. A RAND study found that "high discovery difficulty cases consume about three times as many total lawyer work hours and five times as many lawyer work hours on discovery as low discovery difficulty cases consume." Kakalik et al., *supra* note 58, at 638.

63. This is similar to the complication of adding additional defendants, except that the additional policyholders may not be defendants in a single case. Additional defendants have been found to be a cause of an exponential increase in litigation costs. As Professor Silver explains:

The existence of multiple potentially responsible parties may also change the shape of the marginal defense cost curve, causing it to decline more slowly than when only a single defendant is named. This effect is predictable because each additional defendant causes the number of inter-party legal relationships to expand algebraically. The formula for determining the number of bilateral relationships running between members of a group is n(n-1)/2, where n is the total number of participants. A lawsuit pairing one plaintiff with one defendant thus involves one legal relationship (2(2-1)/2=1), while in

The threshold element also raises transaction costs by reversing the usual incentives regarding proof of damages. It encourages insurers to expand damages in hopes of meeting the threshold, while policyholders want to limit damages to stay below the threshold. Insurers, in trying to reach the threshold, may allow damages that are higher than they otherwise would be, while policyholders, in trying to avoid the exclusion, may request damages lower than they otherwise would be. This will cause the insurers to pay more in those cases where they do not quite meet the threshold, or may result in policyholders being undercompensated in order to avoid the threshold. Such under or overpayments, as well as the cost of proving them, are part of the transaction costs associated with the litigation.

As this discussion shows, the application of the terrorism exclusion will be very complicated. It requires resolution of highly uncertain legal issues such as what constitutes a terrorist effect and whether an act was done with "apparent" terrorist purpose. Once the legal uncertainty is addressed, the parties also must deal with factual uncertainties because of the difficulty of proving that these standards have been met, and the difficulty of gathering evidence about a terrorist event. Moreover, to meet the threshold requirements, the parties will need to collect substantial evidence on damages from the event (including damages not covered by insurance and business interruption losses). The damages figures must then be tallied and aggregated. Because so much is at stake, and because so many different interested parties will be involved, disputes and arguments will likely arise at each step and level along the way.

This kind of complexity has been shown to be a significant determinant of high litigation costs.[64] One study, for example, found that "high complexity cases consume about four times as many lawyer work hours as low complexity cases."[65] Asbestos cases, which also involve numerous claimants, difficult factual issues and multiple defendants, on average, require 63% of the total costs associated with such claims for litigation expenses.[66]

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a lawsuit involving one plaintiff and twenty defendants—the average number for an
asbestos case—the number of bilateral legal relationships is 210 (21(21-1)/2=210).

Silver, *supra* note 58, at 2101(citation omitted); *see also* JAMES S. KAKALIK ET AL., VARIATION IN ASBESTOS LITIGATION COMPENSATION AND EXPENSES 80 (RAND 1984) (finding that "defense expenses per claim increase substantially with the number of defendants").

64. Along with the amount at stake, the complexity of the case is one of the key determinants to the amount of time attorneys devote to a case. *See* Silver, *supra* note 58.

65. *See* Kakalik et al., *supra* note 58, at 637 (a RAND study).

66. *See* Deborah Hensler et al., *Asbestos Litigation in the U.S.: A New Look at an Old Issue*, THE INSTITUTE FOR CIVIL JUSTICE (Aug. 2001). Professor Silver correctly criticizes what he calls the "compensation ratio" as failing to include the costs of payments for unmeritorious claims and the costs of failing to pay valid claims. *See* Silver, *supra* note 58, at 2078-79. Thus, by focusing exclusively on litigation expenses, this approach understates the total transaction costs.

Although the transaction costs appear to be the highest in asbestos cases, at least as compared to other tort claims that have been systematically studied, litigation costs are also high in other areas as well. A RAND synthesis of studies by the Institute for Civil Justice has shown that the litigation

B. A Model to Analyze Transaction Costs

Although we do not know as an empirical matter how much it will cost to litigate the terrorism exclusion, a simple model will help to illustrate and evaluate the potential impact of such costs. This model will not address the terrorist act element because it is so broadly defined that it can be easily satisfied. Instead, the model will focus on terrorist intent and the threshold elements. It will consider the costs associated with those elements in three different terrorist scenarios considered at three different levels of damages. These scenarios will also be weighted by comparative probabilities.

1. Action Scenarios.—The three action scenarios considered by the model are bombings, chemical attacks, and Internet vandalism. The bombing scenario is included to represent the most typical terrorist attack. The chemical attack is included because of concerns that such threats will occur in the future, especially in light of the anthrax incidents. In addition, a chemical attack provides an example of a scenario where the threshold element does not apply. The Internet scenario is included as the least typical scenario, though one that is considered of growing concern as the Internet becomes a more significant part of our economy. It is also included as an example of activity that might be brought within the exclusion that has not been attributed to terrorist activity in the traditional sense. Incidents of computer hacking and the creation and release of computer viruses have become somewhat commonplace, yet those incidents have not been attributed to traditional terrorist activity.

2. Three Levels of Damages.—Each of these scenarios will be considered at three levels of damages designated as high, medium, and low. The high level of damages will be $1 billion, which is well above the threshold requirement, but substantially less than the damages caused by the September 11 attack. The medium level of damages will be $25 million or fifty deaths or serious injuries. This level of damages is used to consider the effect of being at or near the threshold requirement. The low level of damages will be $1 million and ten or

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costs in automobile cases, which tends to include the more simple of tort cases, comprise 48% of the total costs of such cases and 57% of the total costs in non-auto tort litigation. *See* Silver, *supra* note 58, at 2099 (citing and discussing DEBORAH R. HENSLER ET AL., TRENDS IN TORT LITIGATION: THE STORY BEHIND THE STATISTICS 27-28 (RAND 1987)). Professor Silver notes that "[o]ther sources confirm that litigation costs vary systematically across liability areas, with automobile liability cases and workers' compensation cases tending to cost much less to defend per dollar transferred than cases involving medical malpractice, products liability, and other claims against corporations." Silver, *supra* note 58, at 2009 n.112 (citations omitted).

I am unaware of any studies of the litigation or transaction costs associated with insurance coverage litigation, but an internal review of construction defect coverage litigation reveals that 12% to 30% of total recoveries are paid for legal fees in construction defect cases, depending on the amount at stake. *See* Jeffrey E. Thomas, *To Insure or Not to Insure: The Contribution of Insurer Ambivalence to Transaction Costs in Construction Defect Litigation*, *in* DEFECTIVE CONSTRUCTION: CRISIS IN INSURANCE 2-3 (ABA 1997).

fewer deaths or injuries. This level of damages avoids the threshold by being well below $25 million, but damages are still high enough to create an incentive to litigate the coverage issue if it is available.

   3. Probability of Losses.—The model also considers the probability of these different levels of losses. As a general matter, the probability of a loss is inversely related to the size of that loss. Low loss incidents are quite common, while catastrophic losses are rare. For purposes of this model, we will assume that the high damage scenario has a probability of 1/1,000,000 (.000001), the medium damage scenario has a probability of 1/10,000 (.0001), and the low damage scenario has a probability of 1/100 (.01).

   4. Transaction Costs Expenditures.— Because of the stakes involved, even with relatively low probabilities the parties will be motivated to expend significant resources in litigating the applicability of the terrorist exclusion.[67] For purposes of this model, we will work with the rather conservative assumption that no party will spend more than 10% of the amount at stake in litigating this particular exclusion.[68] To keep the model simple, we will assume two-party litigation with equal incentives and costs. The total maximum transaction costs will therefore be 20% of the amount at stake. The total maximum transaction costs by the level of damages are $200 million for high damages, $5 million for medium damages, and $200,000 for low damages.

   The model analyzes two elements of the exclusion: the intent and threshold elements. However, not every element is involved for each scenario at each level of damages. As a result, the transaction cost assumptions have to be adjusted within the maximum to reflect which elements are at issue. At the high level of damages, only the intent element is at issue because the damages of $1 billion far exceed the threshold requirement of $25 million (by forty times). Thus, the model will assume that the transaction costs are half of the maximum for the high level of damages, or $100 million. Once the probability of a high-damage event is taken into account, the weighted transaction costs are $100 ($100 million x .000001)

   At the medium level of damages ($25 million), both the threshold and intent elements are at issue for the bombing and Internet scenarios. As a result, the model assumes that the maximum transaction costs will be incurred for those scenarios. The parties must invest additional resources to measure and aggregate damages. In addition, attempts to increase or decrease damages to exceed or come within the threshold will add to transaction costs. Those efforts may artificially increase or decrease damages in cases where the threshold turns out to be inapplicable.

   The threshold element does not apply to the chemical attack scenario under the terms of the exclusion, so we assume that litigation over a chemical attack at

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   67. *See supra* note 58.

   68. Average litigation costs are likely to be much higher than this figure. In relatively simple automobile cases, as much as 48% of total costs can be devoted to litigation expenses. In more complex asbestos cases, the percentage can reach as high as 63%. *See supra* note 66 and accompanying text.

the medium damage level will incur only half of the total maximum possible transaction costs.[69]   The transaction costs at the medium level of damages therefore are assumed to be $5 million each for the bombing and Internet scenarios, and to be $2.5 million for the chemical attack scenario. Once the probability of a medium damage scenario is taken into account, the weighted transaction costs for the bombing and Internet scenarios are $500 ($5 million x .0001) and $250 for the chemical scenario ($2.5 million x 0001).

At the low level of damages ($1 million), the threshold element is unlikely to be met because it is twenty-five times higher than the damages. As a result, in the bombing scenario the insurer probably would not pursue a defense based on the exclusion, and the policyholder would not be required to respond. The model therefore assumes that no transaction costs will be incurred for the bombing scenario at the low level of damages.

In the case of Internet damages, however, computer viruses can multiply so quickly and easily, and can be spread so widely over the Internet, that it may be possible to aggregate enough low level damages from Internet vandalism to meet the $25 million threshold. Some transaction costs are therefore likely to be incurred in that scenario, even at low level damages. The likelihood of such transaction costs is lower than in the case of medium level damages, where they are very likely, so the model assumes only half of the maximum possible transaction costs. Thus, transaction costs at the low level for the Internet scenario are assumed to be $100,000. Once the probability of a low damage event is taken into account, the weighted transaction costs are $1000 ($100,000 x .01).

Because the chemical attack scenario is not subject to the threshold requirement, the parties still have incentives to litigate terrorist intent even at the low level of damages. As a result, the model assumes the same proportion of damages as in the other scenarios, or 10%. This puts transaction costs at $100,000 for a low damage chemical attack, and the weighted transaction costs, accounting for probability, at $1000 ($100,000 x .01).

To summarize, at the low level of damages the model assumes no transaction costs for the bombing scenario, transaction costs of 10% or $100,000 ($1000 weighted by probability) for the Internet scenario (two elements each at half the usual cost ratio), and costs of 10% or $100,000 ($1000 weighted by probability) for the chemical scenario (intent element). At the medium level, the model assumes full transaction costs for the bombing and Internet scenarios ($5 million/$500 weighted by probability), and half of the full transaction costs for the chemical scenario ($2.5 million/$250 weighted by probability) because the threshold element does not apply. At the high level, the model assumes that each scenario will incur transaction costs at half of the full level because the threshold element is inapplicable to all three scenarios. The transaction costs at the high level of damages are $100 million, which is $100 when weighted by the

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69. I wish to reemphasize that this is a conservative assumption. It is possible that a party that does not have to meet the threshold requirement will actually devote more resources to the litigation of the intent requirement.

probability of a high-damage event.

    5.   *Probability of False Positives*.—Finally, the model makes some assumptions about the probability of false positives. By false positives, I mean those cases that are treated as terrorist incidents, meeting the requirements for both terrorist act and intent, but that, in fact, are not due to terrorism. This distinction, of course, begs the definitional question of what constitutes terrorism. Although there is no consensus definition of "terrorism,"[70] I draw a distinction between what I will call "traditional terrorism" and terrorism as defined by the exclusion.[71] I recognize that "traditional terrorism" is necessarily fuzzy at its margins, but my intent is to reference a core understanding consistent with common perceptions and academic definitions. In terms of common perceptions, most people "readily recognize the bombing of an embassy, political hostage-taking and most hijackings of an aircraft as terrorist acts."[72] Such activities also fit an academic definition of terrorism. Starting in 1972, the Rand Corporation began a database of international terrorist incidents. Deciding which incidents to include in the database required the development of a definition, which is essentially "violence, or the threat of violence, calculated to create an atmosphere of fear and alarm in the pursuit of political aims."[73]

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    70. "Terrorism is a phenomenon that is easier to describe than define. . . . [N]either the United States nor the United Nations has adopted official definitions of terrorism." Public Report of Vice-President's Taskforce on Combating Terrorism, *in* WHAT IS TERRORISM, OPPOSING VIEWPOINTS PAMPHLETS 17 (1986) [hereinafter Public Report]. For a thorough discussion of the definitional problems, see BRUCE HOFFMAN, INSIDE TERRORISM at 13-44 (1998).

    71. It is, of course, an open question as to whether courts would also adopt a definition of terrorism more restrictive than the literal definition used by the terrorism exclusions. There is some indication based on the past interpretation of the war exclusion that courts may adopt a more limited definition using the doctrine of *contra proferentem*. *See* Kendall, *supra* note 27, at 576. If the courts apply the exclusion using a more literal definition, the "false positives" will not be obvious because they will be treated as terrorist incidents under the exclusion even though under a more commonly accepted definition the incidents were not terrorist events. This would affect the numbers and assumptions in the model, making transaction costs appear lower than what the model shows. However, applying a literal definition would actually increase transaction costs rather than reduce them because the substantive payments made for these "hidden" false positives should be included as transaction costs. *See infra* text accompanying note 80.

    72. *See* Public Report, *supra* note 70.

    73. Bruce Hoffman, *Terrorism Trends and Prospects*, *in* COUNTERING THE NEW TERRORISM 7, 11 n.10 (1999). For a more complete exposition of the definitional problems faced in developing the chronology, see Brian Michael Jenkins, *The Study of Terrorism: Definitional Problems* (Dec. 1980). A more complete exposition of the operational definition is as follows:

> We concluded that an act of terrorism was first of all a crime in the classic sense such as murder or kidnapping, albeit for political motives. Even if we accepted the assertion by many terrorist that they were waging war and were therefore soldiers—that is, privileged combatants in the strict legal sense—terrorist tactics, in most cases, violated the rules that governed armed conflict—for example, the deliberate targeting of noncombatants or actions against hostages. We recognized that terrorism contained a

Using this concept of "traditional terrorism," the model assumes differing levels of false positives for the three scenarios being analyzed. Because bombing is a common terrorist tactic that is not used very often for non-terrorist purposes,[74] the model assumes that there will be relatively few false positives will arise in the case of a bomb attack. The assumption is that terrorists are behind a bombing in four out of five cases, or 80% of the time, leaving false positives of 20%.

Chemical attacks are much less common than bombings,[75] but the escalation of lethality of terrorist acts, the availability of materials to develop a chemical attack, and the foiled plots of terrorist groups makes chemical attacks a serious threat.[76] This model, taking what might be a conservative view, will assume that two out of five chemical attacks (or 40%) are due to "traditional terrorism,"

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psychological component—it was aimed at the people watching. The identities of the actual targets or victims of the attack often were secondary or irrelevant to the terrorists' objective of spreading fear and alarm or gaining concessions. This separation between the actual victim of the violence and the target of the intended psychological effect was the hallmark of terrorism. It was by no means a perfect definition and it certainly did not end any debates, but it offered some useful distinctions between terrorism and ordinary crime, other forms of armed conflict, or the acts of psychotic individuals.

Brian Michael Jenkins, *Foreword* to COUNTERING THE NEW TERRORISM, at iii (1999).

A "global" definition of terrorism for insurance purposes has been suggested as follows: An act, including, but not limited to, the use of force or violence, committed by any person or persons acting on behalf of or in connection with any organization creating serious violence against a person or serious damage to property or a serious risk to the health or safety of the public undertaken to influence a government for the purpose of advancing a political, religious or ideological cause.

Thomas A. Player et al., *A Global Definition of Terrorism*, Proceedings of the Asia Pacific Risk and Insurance Association Sixth Annual Conference (July 24-26, 2002) (on file with author). It should be noted that this definition tries to address some of the transaction costs by having a judicial or administrative official certify that an act is one of terrorism under the definition, and that this certification is not subject to appeal. *Id.*

74. For example, nine out of thirteen significant terrorist incidents used to illustrate the religious element to recent terrorism involved bombings. *See* Hoffman, *supra* note 73, at 17-19. The other four incidents were a nerve-gas attack, an assassination, "bloodletting by Islamic extremists . . . that has claimed the lives of more than an estimated 75,000 persons," and a "massacre . . . of foreign tourists" in Egypt. *Id.* If bombs were used in the last two incidents, which is certainly possible or even likely, then bombing was involved in eleven out of thirteen incidents.

75. The use of sarin nerve gas by Aum, an apocalyptic Japanese religious sect, in 1995 was the first use of a chemical warfare agent by a non-state entity against a civilian population. *See* BRUCE HOFFMAN, TERRORISM AND WEAPONS OF MASS DESTRUCTION, AN ANALYSIS OF TRENDS AND MOTIVATIONS 3 & n.1 (1999).

76. *See generally id.* For a couple of examples of foiled plots, see *id.* at 29-30. It is noteworthy that "[t]he position of most academic terrorism analysts has been far more restrained and skeptical than many of their counterparts in government, the military and law enforcement" about the likelihood of terrorist use of weapons of mass destruction. *Id.* at 58.

leaving a 60% rate of false positives.

Internet vandalism, while a subject of great interest and concern, is even less likely than a chemical attack to be the result of terrorism. Reports of computer hacking and viruses are quite common, but, while there is speculation that terrorists might be behind such incidents (as well as evidence of terrorist plots to disrupt the Internet), there are few, if any, cases of Internet vandalism connected to terrorism.[77] Those involved in "traditional terrorism" generally use violence or threat of violence to cause fear of personal injury, whereas Internet vandalism is mostly, if not entirely, limited to property damage. The model, again taking a somewhat conservative view, assumes that only one out of five Internet vandalism incidents (20%) are due to traditional terrorism, leaving a false positive rate of 80%.

6. *Summary Tables*.—The probabilities of false positives and of damages can be used to calculate average, weighted costs and damages for the different scenarios. The following tables summarize the assumptions and do the weighting calculations. Table 2 shows the three damage scenarios with their related damages and maximum and minimum transaction costs (depending on the elements at issue), all weighted by the probability that such a scenario will occur. The minimum and maximum transaction costs are based on the preceding assumptions. The maximum reaches the upper limits of the model's assumptions only in the case of a bombing or Internet vandalism at the medium level of damages because that is the only time that both elements are likely to be fully contested.

Table 2 – Damage Scenarios and Transaction Costs, Weighted by Probability

	Probability	Damages	Weighted Damages	Max TC	Weighted Max TC	Min TC	Weighted Min TC
High	.000001	$1 B	$1000	$100 M	$100	$100 M	$100
Med	.0001	$25 M	$2500	$5 M	$500	$2.5 M	$250
Low	.01	$1 M	$10,000	$100 K	$1,000	$0	$0

The next table, Table 3, carries over the weighted transaction costs from the three damages scenarios, puts them with the three action scenarios (bombing, chemical attack and Internet vandalism), and makes an allocation to account for

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77. *See* DOROTHY E. DENNING, *Activism Hacktivism and Cyberterrorism: The Internet as a Tool for Influencing Foreign Policy*, *in* NETWORKS AND NETWARS: THE FUTURE OF TERROR, CRIME, AND MILITANCY 239, 288 (John Arquilla & David Ronfeldt eds., 2001) ("With regard to cyberterrorism, that is the use of hacking tools and techniques to inflict grave harm such as loss of life, few conclusions can be drawn about its potential effect on foreign policy, because there have been no reported incidents that meet the criteria."); *see also* Simon Hayes, *Net Terror Fails To Live Up To Hype*, THE AUSTRALIAN, Sept. 10, 2002, at 30; Bill Wallace, *Security Analysts Dismiss Fears Of Terrorist Hackers; Electricity, Water Systems Hard to Damage Online*, S.F. CHRON., June 30, 2002, at A11. For a general description of the possible use of the Internet for terrorism, see Tom Regan, *When Terrorists Turn to the Internet*, CHRISTIAN SCI. MONITOR, July 1, 1999, at 17; *see also Get Ready for Cyber-terrorism*, THE DAILY TELEGRAPH, May 17, 2000, at 39.

false positives. It uses the minimum weighted transaction costs for the high damages scenario because the threshold element will not be at issue in that scenario.

Table 3 uses the maximum weighted transaction costs for the bombing and Internet attacks at a medium level of damages because both the intent and threshold are elements likely to be fully contested. It uses the minimum transaction costs for the chemical attack scenario at the medium level because only the intent element will be at issue.

For the low level of damages, Table 3 includes no transaction costs for bombing because the damages are so far below the threshold that the exclusion will not be litigated. It uses the maximum weighted transaction costs for the chemical attack because the threshold element does not apply, so a finding of terrorist intent would preclude coverage for the loss. It also uses the maximum weighted transaction costs for Internet vandalism because the nature of the Internet makes the aggregation of the claim possible. Although this is less likely than in the medium damage scenario, the minimum level of transaction costs is used because both the intent and threshold elements would be at issue and because the maximum at the low level of damages is only 10% (compared to 20% transition costs at the medium level).

In addition to separating out the different level of weighted transaction costs, Table 3 also allocates those costs based on the false positive ratio. It uses the ratio to track the proportion of the transaction costs that are likely to be "wasted" by being used on a false positive case, on what seems to be a terrorist incident within the definition of the exclusion, but which is not within the definition of "traditional terrorism" set forth above.

Here are the figures:

Table 3 – Action Scenarios and Weighted Transaction Costs, Allocated by False Positive Ratios

	False Pos. Ratio	TC High	Allocated	TC Med	Allocated	TC Low	Allocated
Bombing	80/20	$100	$80/20	$500	$400/100	$0	$0
Chemical	40/60	$100	$40/60	$250	$100/150	$1,000	$400/600
Internet	20/80	$100	$20/80	$500	$100/400	$1,000	$200/800

Table 4 takes the transaction costs figures for each action scenario, totals them for the three damage levels, and then applies the false positive ratio. The total transaction costs are then divided into two categories: "correct" and "false positive" cases. The "correct" category represents transaction costs used to obtain the application of the exclusion in cases in which the terrorism exclusion should be applied. The "false positive" category represents transaction costs that are wasted in the sense that they are expended on cases where the exclusion should not apply. The correct and false positive categories are then totaled.

Table 4 – Total Weighted Transaction Costs by Action Scenario, Allocated by False Positive Ratios

	TC High	TC Med	TC Low	Total TC	False Pos Ratio	Correct	False Positive
Bombing	$100	$500	$0	$600	80/20	$480	$120
Chemical	$100	$250	$1,000	$1350	40/60	$540	$810
Internet	$100	$500	$1,000	$1600	20/80	$320	$1280
Total	$300	$1250	$2,000	$3550		$1340	$2210

C. Analysis

1. Wasted Transaction Costs—Intent Element.—The model shows that, under the given assumptions, the transaction costs attributable to false positives ($2210) are significantly greater (by 60%) than those that can be allocated to correct cases ($1340). This shows that, on balance, more of the transaction costs will be wasted than will be used to achieve the desired result. This outcome is due to the relatively higher rates of false positives in the chemical and Internet scenarios combined with the higher probabilities associated with lower-damage cases where the false positives will have even more impact.

If we look at the Internet scenarios individually, the wasted transaction costs are an even greater proportion of the total costs. In that scenario, the wasted transaction costs are $1280 compared to only $320 in transaction costs for correct cases. Thus, wasted transaction costs are four times greater than the transaction costs for the correct cases.

2. Reallocation of Wasted Transaction Costs for the Threshold Element.— This allocation, however, needs to be adjusted to account for the uncertainty of outcomes for the threshold determination. The analysis and tables up to this point have focused on transaction costs associated with the terrorist intent element. Because the medium loss cases have damages at the threshold margin, the threshold element will generate additional wasted transaction costs for false positives cases.

If we assume that insurers will prevail on the threshold issue half the time, while policyholders would prevail the other half of the time, then half of the transaction costs originally allocated to the correct category need to be reallocated to the false positive category at the medium level of damages. Therefore, in the bombing scenario, where the allocation is $400 of transaction costs in the "correct" category and $100 in the "wasted" category,[78] $200 needs to be reallocated from correct to wasted. For the Internet scenario, the original allocation was $100 correct and $400 wasted,[79] so $50 needs to be reallocated. Because the threshold element does not apply to chemical attacks, transaction costs in that scenario do not need to be reallocated.

Transaction costs need to be reallocated at the low level of damages as well,

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78. *See supra* Table 3.

79. *See id.*

but to a lesser extent, and only for the Internet scenario. The threshold element does not apply to the low-damages bombing scenario because $1 million in damages is unlikely to be aggregated to reach the threshold. The nature of the Internet, however, allows viruses to multiply and an spread so quickly and easily that it may be possible to aggregate a $1 million claim with enough other claims to meet the threshold. The model assumes that the threshold element will be litigated only about half the time in the low-damage Internet scenario because the amount of the claim is so far below the threshold that, while aggregation is possible, it would not be an issue in every case.[80] Therefore, when calculating the reallocation of transaction costs for the low-damages Internet scenario, only one-quarter of the transaction costs in the correct category (one-half of the one-half attributable to the threshold element) needs to be reallocated. The original allocation for the low-damage Internet scenario was $200 correct and $800 wasted,[81] so $50 needs to be reallocated (one-quarter of the correct amount). When the $50 for the low-damage Internet scenario is combined with the $50 from the medium-damage scenario, the total reallocation for the Internet scenario is $100.

Table 5 shows the weighted transaction costs for the bombing and Internet scenarios at the medium and low levels of damages, the allocation between correct and wasted transaction costs, and the reallocation to account for the average outcomes regarding the threshold issue. (The chemical scenario and the high damage levels require no reallocation because the threshold issue is not involved for those scenarios.)

Table 5 – Reallocation of Correct Costs by Damages and Action Scenario

	TC Medium	Allocated	TC Low	Allocated C	Total Allocated	Reallocation
Bombing	$500	$400/100	$0	$0	$400/100	$200
Internet	$500	$100/400	$1,000	$200/800	$300/1200	$100
Total	$1000	$500/500	$1,000	$200/800	$700/1300	$300

The total transaction costs to be reallocated is $300 ($200 for the bombing scenario and $100 for Internet). When this amount is moved from the "correct" category to the "wasted" category, the total wasted increases from $2210 to $2510, while the total in the correct category drops from $1340 to only $1040.[82] As a result of this adjustment, the wasted transaction costs are now more than twice the transaction costs used to obtain the correct application of the exclusion. Table 6 shows the reallocation in the context of the other transaction costs separated by scenario.

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80. *See supra* Part III.B.4.
81. *See supra* Table 3.
82. *See supra* Table 4.

Table 6 – Reallocation of Transaction Costs to Account for
Threshold False Positives

	Correct Intent	False Pos. Intent	Reallocation	Correct Intent & Threshold	False Positives Intent & Threshold
Bombing	$480	$120	$200	$280	$320
Chemical	$540	$810	$0	$540	$810
Internet	$320	$1280	$100	$220	$1380
Total	$1340	$2210	$300	$1040	$2510

Table 6 also shows how the correct use of transaction costs is even further eroded once the false positives are considered for both the intent and threshold elements of the exclusion. Even in the case of a bombing, where the probability is quite high for proof of terrorist intent, once the uncertainty of the threshold factor is considered, the transaction costs allocated to the false positives are greater than those allocated to the correct application of the exclusion. That difference is magnified, of course, in the Internet case where we have much less confidence that the exclusion will be attributed to terrorist activity. In the case of Internet vandalism, the false positive transaction costs of $1380 are more than six times as much as the correct transaction costs of $220.

Once the transaction costs for false positives are combined with the transaction costs for correct cases, the total transaction costs are high as a proportion of the total value of the claims. The total weighted value of the transaction costs for the Internet scenario, for instance, are nearly 60% of the total weighted average claim for a terrorist attack.[83] Even the bombing scenario, which has the lowest false positive rate, has total weighted transaction costs of about 50% at the medium level of damages because of the threshold element.[84]

3. Effect of Wasted Transaction Costs.—The range of 50-60% for transaction costs compared to damages figures, though high, does not in itself undermine the justification for the use of the terrorism exclusion.[85] After all,

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83. This is how I arrive at the ratio. The total average, weighted claims for the Internet scenario is $13,500 ($1000 for high damages, $2500 for medium damages, and $10,000 for low damages). The false positive rate, however, is 80%, so the value of an average, probability-weighted Internet terrorist attack is $2700 ($13,500 x .2). Compare this to total transaction costs of $1600 ($220 + $1380). *See* Table 6. Transaction costs of $1600 are 59.26% of $2700.

84. This is how I arrive at the ratio. The false positive rate is only 20% for bombings, but at the medium level of damages only half of the correct cases will meet the threshold. Thus, at the medium level of damages the total average damages will only be $1000 (total average weighted damages of $2500, *see* Table 2, x .8 x .5). The average weighted transaction costs for correct bombing cases at the medium level is $200 plus $300 for incorrect cases, for a combined total of $500. *See* Table 5. The total transaction costs are 50% of the total average weighted damages of $1000 (500/1000).

85. Payments for transaction costs in asbestos cases reach 63% of total costs, and even in auto cases, which tend to be less complicated and expensive, transaction costs account for as much as

even if an insurer expends 60% in transaction costs, that still leaves a net savings of 40%. Therefore, even though not as efficient as it might be, the use of the exclusion appears to be rational.

What makes the use of the exclusion questionable, however, is the ratio of false positive transaction costs compared to correct transaction costs when considered in light of the collection of premium dollars. Because terrorism is excluded from coverage, insurers should not be able to charge a premium for that coverage. Insurers cannot not recoup the transaction costs by charging a higher premium for terrorist risks because such risks are not covered. They will, of course, include the transaction costs in their general expenses, which will affect the overall premium rate being charged to policyholders. In light of the ratios developed in this Article, it may be better as a matter of public policy for insurers to charge a higher premium to cover the terrorist risks and thereby avoid the wasted transaction costs. Depending on how much higher that cost would be, policyholders may well prefer that approach.

One final point is that the foregoing analysis has assumed that the courts will apply the terrorist exclusion only when terrorist intent is proven consistent with "traditional terrorism," which is more narrow than the definition of terrorism used in the exclusion.[86] That assumption could be incorrect. The courts might apply the terrorist intent element literally, which would mean that what has been characterized as false positive transaction costs would be reallocated to the "correct" category. In my view, this would not make the courts' determination "correct," but instead would move the false positives from the transaction costs to the substantive determination of the applicability of the exclusion. In other words, while the transaction costs would not be "wasted" in the sense that they were expended without the application of the exclusion, the determination that the exclusion would apply would be a false positive in the chemical and Internet cases using the preceding ratios. The literal application of the exclusion's definition of terrorist intent would therefore exacerbate the false positives problem, rather than eliminate it.

CONCLUSIONS AND IMPLICATIONS

A. Efficiency

This analysis has shown that the terrorist exclusions will incur significant transaction costs, the majority of which are likely to be wasted in the sense that they are incurred in cases where the exclusion does not or should not apply. In some scenarios, the proportion of "wasted" transaction costs is as much as six times the transaction costs that are incurred for cases where the exclusion will apply.[87] The high ratio of wasted transaction costs is a function of the

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43% of total costs. *See* HENSLER ET AL., TRENDS IN TORT LITIGATION: THE STORY BEHIND THE STATISTICS 27-28 (1987).

    86. *See supra* text accompanying notes 70-73.

    87. *See supra* Table 6 and accompanying text.

combination of the following: the breadth of the exclusion, the rate of false positives, the probabilities of damage levels (in particular those below the threshold), and uncertainty in the threshold requirement. At a minimum, this analysis shows inefficiency caused by the exclusion.

This analysis also suggests some possible ways that efficiency might be improved. In particular, focusing the exclusion on the bombing scenario would increase efficiency because it has the lowest transaction costs, in large part because it has the lowest chance of false positives. In other words, one way to increase efficiency would be to make the exclusion inapplicable to the kind of incidents that are likely to be high in false positive, such as chemical releases and Internet vandalism.

This analysis also shows inefficiency generated by the threshold element for cases at the threshold margin. The threshold element increases transaction costs because it is very difficult to measure and aggregate damages. Because meeting the threshold is essential to the application of the exclusion, parties have a strong incentive to incur these costs in marginal cases. This incentive, however, works in the opposite direction of the incentives in typical insurance coverage disputes. The threshold encourages insurers to find more damages than are claimed, while policyholders are encouraged to underreport damages to avoid the threshold. The uncertainty of calculating and aggregating damages causes the cases at the threshold margin to split between coverage and exclusion fairly randomly, which means that these transaction costs are likely to be wasted in at least half of these cases, even for those scenarios such as bombing that have low false positives. Thus, in the medium-damages bombing scenario, the average weighted transaction costs are $200 for cases where the exclusion is applied and $300 for cases where the exclusion does not apply.[88] As a result, once the wasted transaction costs are added to the other transaction costs, the total transaction costs are 50% of the total average weighted damages that would be avoided by the application of the exclusion.[89]

These high transaction costs suggest that alternatives to the threshold element should be considered. One possibility would be an exclusion without a threshold, which is the approach taken for nuclear, chemical and biological attacks. This may not be politically feasible, but the model shows that this approach would save transaction costs. Alternatively, some of the transaction costs problems could be avoided if the threshold element were treated as a limit on damages rather than a trigger for an exclusion. This would avoid the perverse incentive problem and would avoid the random application of the exclusion to marginal cases. However, it would also limit the ability of the exclusion to prevent insolvency, though perhaps the insolvency could be addressed by using a lower threshold.

The model raises questions about the overall efficiency of the exclusion. Although high transaction costs alone do not demonstrate inefficiency, because one must consider whether there are more efficient alternatives, it suggests that

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88. *See supra* Table 5.

89. *See supra* note 84 and accompanying text.

an efficiency analysis should be undertaken. This model did not analyze overall efficiency because it did not consider the benefits that are incurred by the exclusion. Although the transaction costs are less than 100% of the benefits, thereby leaving some net benefit, this may not be sufficient to justify the high transaction costs once the ability to collect a premium is considered. If terrorist-related losses were covered, the transaction costs would be avoided and insurers would be entitled to an additional premium for that coverage. Overall, this may be a more efficient option than trying to exclude terrorist losses, which may not be effective, will incur high transaction costs, and will leave policyholders bearing the risk. While insurers are understandably nervous about the risks posed by such coverage after the September 11 attack, they are still in a better position to evaluate and pool the risks than are policyholders. Moreover, under the present exclusion, insurers cannot be completely confident that the exclusion will be applied except in the most obvious and catastrophic cases, which are the least likely to occur.

B. Implications

The efficiency conclusions lead to some interesting policy implications for the industry, regulators, and Congress. The combination of high transaction costs and absence of premium may undermine the benefits of the terrorism exclusion, in which case insurers would be better off not using it. Perhaps the market is already moving in this direction. The insurance market is starting to offer some terrorism coverage.[90] Nevertheless, most insurers seem to be opting for the exclusion rather than the premium that would come from offering the coverage,[91] which raises the question of whether, or to what extent, transaction costs have been considered.

Regulators have approved the terrorism exclusion, and, like the industry, may not have considered the transaction costs. If they had, they might have opted for a narrower exclusion. The fact that the threshold element, which is one of the most troublesome parts of the terrorism exclusion, was adopted in response to regulatory pressure suggests that transaction costs were not part of the calculus. This analysis suggests that it should be, and that in considering the transaction costs the regulators can encourage or require a more efficient exclusion.

Finally, one of the potential benefits of congressional action on terrorism insurance is the limiting of these transaction costs. The Terrorism Risk Insurance Act includes measures to reduce transition costs. The Secretary of the Treasury, for example, is empowered by the Act to "certify" an act as an "act of terrorism,"

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90. *See*, *e.g.*, *Terror Coverage Market Grows*, BUS. INS., Feb 18, 2002; *U.S. Terror Pool: Whose Terror Is It?*, REACTIONS, Feb. 2002, at 38-41.

91. *See*, *e.g.*, David Hale, *America Uncovered: Congress's Failure to End the Deadlock in Terrorism Insurance Could Cost the Country Dear*, FIN. TIMES, Sept. 12, 2002, at 11; Jackie Spinner, *Terrorism Insurance Still Rare*, WASH. POST, Sept. 11, 2002, at E03; *see also supra* note 29; Hillman testimony, *supra* note 2, at 3-6.

and that certification is final and not subject to judicial review.[92] This will avoid substantial transaction costs associated with the terrorism intent element of the exclusion for those losses covered by the Act.[93]

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92. *See* Terrorism Risk Insurance Act of 2002, Pub. L. No. 107-297, § 102(1), 116 Stat. 2322 (2002).

93. *See supra* notes 34-38 and accompanying text.