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The economic case for a private-public terrorism insurance partnership

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Summary

This report explores why a Federal backstop for the terrorism insurance market is sound public policy.

Because the terrorism insurance market is prone to failure, government intervention can improve the economic outcome.

Terrorism risk is largely uninsurable for several reasons.

Post 9/11, the unavailability of terrorism insurance caused real estate transactions to be cancelled.

A government backstop would mitigate the negative externalities of a major terrorist attack.

A viable terrorism insurance market is a basic public service.

The industry lacks capacity to cover a devastating terrorist attack.

The ILS market for terrorism risk has yet to begin.

This report explores why a Federal backstop for the terrorism insurance market is sound public policy, based on three considerations. First, terrorism does not have the usual characteristics of an insurable risk. Second, industry capacity is insufficient to handle the losses that would arise from a major terrorist event. Third, the government has already created an implicit backstop that distorts economic incentives

Competitive private markets generally lead to the most productive allocation of resources. Nonetheless, markets sometimes fail to function efficiently, creating a waste of resources and the loss of economic value. Terrorism (re)insurance is one such business prone to market failure. When market failure occurs, an appropriate government intervention can improve the economic outcome.

Terrorism risk is largely uninsurable for several reasons:

- Terrorism risk cannot be measured satisfactorily because terrorist events are willful acts undertaken by parties who wish to confound those who study them. The historical data on these events is scant and of little relevance. There is no reliable model that measures terrorism risk.
- Terrorists' coordinated large-scale attacks cause loss occurrences to be highly correlated over time and across business lines. This makes the risk difficult to diversify.
- The vast loss potential of terrorist events further undermines the private insurance industry's ability to diversify its terrorism risk exposures.
- Due to adverse selection, terrorism insurance may become unaffordable in the major urban areas, where the need for coverage is greatest.

After 9/11 highlighted these dimensions of terrorism risk, insurers withdrew from the market. Real estate transactions, particularly those in target areas such as New York, were delayed or canceled due to the unavailability of terrorism cover. This in turn caused the loss of jobs.

A major terrorist attack could have negative externalities, or spillover effects, on the economy. A government backstop can mitigate these losses by: keeping insurers solvent; assuring that insured victims of attacks receive policy benefits promptly; and by preventing a run on insurers and their forced sale of securities.

Security, stability and respect for property rights are public services critical to society. This is why governments provide law enforcement and national defense. A viable terrorism insurance market with adequate capacity is likewise a critical public service.

Although the US property/casualty sector has an aggregate surplus of more than \$400 billion and writes nearly \$500 billion in annual premiums, it lacks the resources to cover large-scale terror events. Only a small fraction of premiums and surplus is available to cover terrorism losses because these funds must be available to pay policyholders for losses arising from many other risks, such as workers' compensation, product liability, fires and earthquakes.

Insurance-linked securities (ILS) will not provide substantial terrorism risk coverage for the foreseeable future. Because ILS investors have many of the

Summary

same concerns about terrorism risk as insurers and reinsurers, no pure terrorism bond has yet been issued. The most mature ILS segment, catastrophe bonds and sidecars (a variant on cat bonds), had \$10 billion of issuance in 2006, an amount dwarfed by the size of potential insured losses from a large terrorism event.

The government provides an implicit terrorism risk backstop, which distorts incentives.

Many observers believe that the government would be forced to provide aid to individuals, insurers and other businesses who suffer devastating losses from a terrorist event, even if they have not purchased insurance. Thus, the government provides an implicit backstop. The absence of an explicit program distorts incentives.

Private insurers working with the government can withstand the threat of terrorism.

It is sound public policy to build a partnership that grafts the operational expertise of the insurance industry onto the safety and soundness of the government to create a system resilient enough to withstand the threat of terrorism. Many other countries, including the United Kingdom, France, Germany and Spain, have done so. It is now the United States' turn to develop a *permanent* response.

Terrorism risk is largely uninsurable

The mere existence of terrorism insurance...

At first blush it might appear that terrorism risk is insurable. After all, it is a risk that insurers currently carry on their books and that reinsurers have covered, even without TRIA. If a risk has been insured in competitive markets, doesn't that make it insurable?

does not prove that it would be widely and consistently available under free market conditions.

The answer is no. Although terrorism coverage is available for most insureds much of the time, it is not universally available under free market conditions. Because terrorism risk has many characteristics that make it difficult to insure, insurers limit their exposure. The resulting limited supply of coverage means that, for some insureds, it will be either entirely unavailable or available at prices that they deem unacceptable.

Terrorism risk is prone to market failure, prompting some governments to intervene.

Because it lacks many of the characteristics of an insurable risk, terrorism risk is a business prone to market failure. Countries that have long faced terrorist threats, such as the United Kingdom and Spain, have opted to have the government intervene in the market for terrorism risk.

Terrorism risk lacks many of the characteristics that would make it insurable.

Insurable risks are measurable, have independent loss occurrences, manageable average and maximum losses, high loss frequency, premium rates that are acceptable to both insurer and insured and adequate industry capacity.¹ Terrorism risk fails to meet these criteria.

Information on which to base rates is lacking.

Terrorism risk is unmeasurable

Terrorism risk cannot be measured satisfactorily. It is inherently more difficult to assess than natural catastrophe risk. Natural catastrophes are physical phenomena. Through the efforts of geologists, engineers and economists, insurers' understanding of these risks has improved over time. A steadily growing body of data on catastrophic events — and declining computation costs — have facilitated the development of more accurate catastrophe models, which has promoted the availability of capacity at affordable prices.

Due to the willful nature of terrorist events, modeling approaches remain unproven.

Terrorism risk cannot be assessed in the same way. Data on terrorist acts is not freely available since the government must withhold some information in the interest of public security. More fundamentally, terrorism, unlike a natural catastrophe, it is a willful act. Terrorists try to confound those who study them. Although they have improved in the past several years, models that forecast the frequency and severity of terrorism events remain in their infancy. They are highly subjective and idiosyncratic. We are far from an informed consensus on how to model terrorism risk effectively. It is unclear whether even the most skilled practitioners will ever succeed at modeling this risk.

Insurers' discomfort with ambiguity compounds the problem.

Because the probabilities underlying terrorism risk are poorly understood, insurers exercise great caution when covering the risk. One study found that underwriters require premiums 43% to 77% higher in cases of extreme ambiguity than when the probability of a risk is clearly understood.² Thus, their lack of clarity with respect to terrorism risk makes insurers less inclined to cover

¹ Swiss Re, sigma 4/2005, "Innovating to insure the uninsurable."

² Howard C. Kunreuther et al, "Ambiguity and underwriter decision processes", *Journal of Economic Behavior and Organization*, May 1995.

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the risk, propping them to offer limited amounts of coverage and to charge high premiums.

Terrorism losses are correlated over time and across business lines.

Loss occurrences are not independent

Insurable risks are generally characterized by independent loss occurrences. In recent years, terrorists have shown a preference for launching coordinated large-scale attacks, which can make loss occurrences highly correlated with respect to line of business and with respect to timing. As the scale of terrorist attacks has escalated, their potential to affect many lines of business has grown, causing results from terrorism coverage to be highly correlated across lines of business. Moreover, the phenomenon of simultaneous attacks causes losses occurrences to be correlated over time.

Insurable risks are of a magnitude that insurers can bear.

Maximum losses unacceptably high

Insurable risks are characterized by levels of frequency and severity that the industry can bear. A large-scale terrorist attack is an extremely low frequency event whose potential losses go so far beyond the scope of other insured risks that they cannot be diversified within the private insurance industry. Loss estimates for terrorism scenarios must consider the total loss exposure, i.e., the worst case. Many industry participants learned on 11 September 2001 that their scenario assumptions were not, in fact, "worst case".

Terrorism losses, by contrast, can be truly devastating.

Potential losses are limited only by the imagination of terrorists. An RMS study estimates that a release of anthrax in Chicago could cause \$55 billion in insured workers compensation and life/health losses. Towers Perrin found that a New York City release of anthrax could cause \$91 billion in insured workers compensation losses. Other scenarios that include weapons of mass destruction lead to insured losses in excess of \$250 billion, nearly double the claims paying ability of the US commercial property and casualty sector. Finally, a recent study by the American Academy of Actuaries indicates a potential for \$778 billion of insured losses from a large CNBR (chemical, nuclear, biological or radioactive) attack on New York City. Although these studies address CNBR events, recently-thwarted terrorist plots demonstrate that conventional items can also cause mass destruction.

The 9/11 event brought to light previously-unrecognized dimensions of terrorism risk.

The 9/11 wake-up call and its economic fallout

The 9/11 event brought to light dimensions of terrorism risk that were previously unrecognized: its significance, unpredictability, the correlation of loss occurrences and the scale of potential losses. In this new environment insurers came to recognize that extremely large terrorism losses could endanger their solvency. As a consequence, insurers withdrew from the market and many companies could not get terrorism coverage.

Terrorism insurance became far less available, causing the cancellation of real estate transactions.

Terrorism insurance prices skyrocketed for some properties and coverage was unavailable for others. Before 9/11, Chicago's O'Hare airport had \$750 million of terrorism insurance coverage at a \$125,000 annual premium. Post-9/11, insurers offered the airport just \$150 million of coverage at an annual premium of \$6.9 million, which it had to purchase in order to continue operating. Unable to find adequate coverage at reasonable rates, Amtrak went without coverage after its \$500 million property insurance policy came up for renewal on 1 December 2001. Football teams including the Miami Dolphins and the New York Giants were unable to insure their stadiums. A survey by the Real Estate Roundtable cited 50 projects that, as of September 2002, had been delayed or

Terrorism risk is largely uninsurable

cancelled due to the unavailability of terrorism insurance cover, resulting in the loss of jobs.³

For a risk to be insurable, there must be *mutuality*, a communal willingness to share the risk.

Mutuality

One further characteristic common to insurable risks is *mutuality*, which implies that the parties exposed to a given risk are willing to join together to build a risk community to share the risk. Insureds must be satisfied that the terms of the risk sharing with other members of the risk community are economically fair, a perception that depends on society and culture.

Without mutuality, adverse selection occurs, increasing the chance of market failure.

If only high-risk parties are willing to purchase insurance (so-called “adverse selection”), coverage may become unaffordable as premiums rise to reflect the risk profile of the adversely-selected insureds. This problem of adverse selection further increases the likelihood of market failure.⁴

A lack of mutuality makes it difficult to buy terrorism coverage in major urban areas

Just such a lack of mutuality appears to exist in major urban areas, which are at greatest risk of terrorist attacks. An executive at one of the largest insurance brokers recently noted that the entry of London and Bermuda insurers into the market for terrorism risk...

...meant there was adequate capacity in the market to cover terrorism risks in many regions of the US if the Terrorism Risk Insurance Act (TRIA) is not extended at the end of this year. ‘If TRIA is not extended there is the capacity in the market to cope except for regions with specific aggregation issues. But Manhattan, Los Angeles, Toronto and Chicago, among others, will continue to be a problem.’⁵

This represents a basic market failure that policy makers should work to rectify.

These four cities are not mere exception items. Aside from their great symbolic and economic importance, their metropolitan areas are home to more than 55 million people. The total exceeds 60 million if Washington, D.C. – a proven

³ Kent Smetters, “Insuring against terrorism: the policy challenge”, in Robert Litan and Richard Herring (eds.), *Brookings-Wharton Papers on Financial Services*, 2004, pp. 139-182.

⁴ Market failure can be rectified if coverage is made mandatory, solving the problem of adverse selection. Private insurer premiums would be lower, reflecting the risk profile of the entire risk pool, rather than that of just those in high risk areas. Mandatory and enforced risk based pricing can create a system that the public deems equitable.

⁵ Scott Vincent, “New terrorism model launched as Bermuda is challenging Lloyd’s leading role in the terrorism market as capacity continues to flood into the class”, *Insurance Day*, 8 February 2007.

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target — is included.⁶ High profile cities such as these are precisely the ones in which businesses and individuals would purchase the most terrorist insurance, while the rest of the country probably would not, leading to adverse selection and, ultimately, market failure. A market failure of this scale, relating to some 20% of the population of the US and Canada, clearly should concern policy makers.

⁶ *World Gazetteer*, estimates for 2007.

Market imperfections and the need for intervention

Free markets, though often highly efficient, are sometimes wasteful.

Although competitive private markets generally lead to the most productive allocation of resources, markets sometimes fail to function efficiently, creating a waste of resources and loss of economic value. The market for terrorism (re)insurance is especially prone to market failure. When market failure occurs, the government can improve social well-being through appropriate intervention. This intervention can occur through the price mechanism (taxes, subsidies); by mandating provision of service; by public provision of service; by public financing of private provision; or through regulation.

The malfunctioning of markets, which economists call "market failure"...

Markets failures relevant to terrorism insurance

There are three fundamental economic reasons why government intervention in the terrorism insurance market will benefit the country:

- imperfect information
- the private sector's underproduction, or failure to produce, *public goods*
- *externalities* that may not be taken into account

...often arises from imperfect information.

Imperfect information

Information imperfections are a basic source of market failure. Producers and consumers must have adequate knowledge of product quality and prices to make sound economic choices. The absence of sufficient information can reduce market activity because of distrust between buyers and sellers. Used car buyers, for example, may be wary of potential problems that the seller is not disclosing.⁷

Information imperfections are endemic to the insurance industry, ...

The problem of imperfect information is often the central challenge facing insurance buyers and sellers. Insurance contracts promise future delivery and rely on *pricing inversion*, i.e., the price is set before the costs of production (claims and expenses) are known. Insurers and their insureds both face uncertainty with respect to these costs.

...particularly when there is adverse selection or a lack of opportunity to diversify.

When this uncertainty is especially pronounced due, for example, to changes in the legal, judicial or social landscape, markets become suboptimal. Insurers will not provide every type of coverage for which demand exists. In particular, they will avoid risks characterized by heightened adverse selection, basic ambiguity, or a lack of diversification opportunities. Thus, private companies offer little unemployment insurance or insurance for people with acute medical problems.

A government backstop can rectify this source of market failure for terror insurance.

Due to the imperfect information problems noted above — government's need to withhold some information regarding terrorism events, a shortage of historical data, a limited ability to model future events, and the willful nature of the risk — terrorism is a risk whose great ambiguity makes it prone to market failure. The provision of a government backstop would inject some much-needed certainty into the market, making it economically viable for the insurance industry to provide adequate coverage at affordable prices.

A public good is one that all enjoy in common.

Public good

A public good is one that "...all enjoy in common in the sense that each individual's consumption of such a good leads to no subtractions from any other

⁷ George A. Akerlof, "The market for lemons: quality uncertainty and the market mechanism", *Quarterly Journal of Economics*, August 1970.

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Public goods are underproduced because "free riders" can enjoy them without paying.

individual's consumption of that good".⁸ Examples of public goods include national defense, law enforcement (including the system of property rights), public fireworks, clean air and street lamps.

The ability of "free riders" to enjoy public goods without paying for them makes it less profitable for businesses to produce them. Even when society's collective willingness to pay for these goods exceeds their cost of production, individuals may be unwilling to pay a price high enough to warrant their production. Businesses will therefore tend to produce fewer of these goods than is socially optimal, or none at all. The tendency of businesses to underproduce public goods sometimes makes it beneficial for the federal government to provide these goods and services at an efficient level.

Counter-terrorism initiatives and the ability to insure against terrorism risk are public goods.

Government counter-terrorism policies and crisis management following an attack mitigate the risks associated with global terrorism. These initiatives, a natural extension of the government's role in national defense and law enforcement, provide a public good. The presence of a terrorism insurance market with enough capacity to meet the needs of the economy is likewise a public good, reducing the level of uncertainty both before and after a terrorist event. Security, stability, respect for property rights and the absence of violence and coercion are among the cornerstones of any society,

Externalities arise when parties affect one another yet don't take this into account.

Externalities

Externalities arise when the actions of one party make another worse or better off, yet the first party neither bears the costs nor receives the benefits of his effect on others. Externalities can be positive (eg, tastefully landscaping one's lawn) or negative (blasting loud music). Markets provide incentives to maximize profits and minimize costs, but not to consider the profits or costs of others. Consequently, when externalities exist, producers and consumers lack incentives to consider the costs they impose, or the benefits they provide, to other parties.

A major attack would create negative externalities, disrupting the economy.

A major terrorist attack might easily result in externalities, with cascading losses, even for those who have insured against the risk. One study finds that absent TRIA, coordinated truck bomb attacks could cause the loss of more than a million jobs and a decline in real GDP due to sharp declines in confidence and investment. The study further notes that with TRIA in place, the number of jobs lost would be reduced by half and the GDP decline averted.⁹

A government backstop would cushion the blow of a terrorist attack.

After an attack, insurers' forced sale of securities could adversely affect bond and stock markets. The corporate bond market would be especially hurt, since insurers hold about a quarter of US corporate bonds, many of which are thinly traded.¹⁰ Bankruptcies of insurers and other companies would impose further deadweight losses on the economy. A government backstop can reduce or prevent these losses in the event of a major attack by: helping insurers remain

⁸ Paul A. Samuelson (1954), "The pure theory of public expenditure", *Review of Economics and Statistics*, 36 (4): 387-389. The opposite of a public good is a private good. Water, for example, is a private good: its owner can exclude others from using it, and once it has been consumed, it cannot be used again.

⁹ Economy.com, "The impact of terrorist attacks on the US economy", Report for The Hartford, October 2005.

¹⁰ Source: Federal Reserve Flow of Funds data, 2006Q2.

Market imperfections and the need for intervention

solvent; assuring that insured victims of terrorist attacks receive policy benefits promptly; and by preventing a run on insurers and the forced sale of securities.

Industry capacity is insufficient to cover a massive terrorist event

Only a fraction of industry premiums and surplus are available to cover terrorism losses.

Based on aggregate data, the industry might appear to have ample resources to cover large-scale terror events. US property/casualty firms have a total surplus of \$433 billion and write \$487 billion in annual premiums. Nonetheless, this considerable accumulation of funds is not available to cover a catastrophic terrorism event, mainly because a large portion of premiums is needed to make loss payments in high-frequency lines such as workers compensation and motor insurance. The aggregate industry surplus of \$433 billion is compartmentalized by line of business. It must also cover all other insured losses, including liability claims and natural catastrophe losses. After deducting the surplus of excluded lines from total surplus, only \$164 billion is available to cover terrorism losses.¹¹ Moreover, this aggregate surplus represents funds held by insurers writing coverage in all states. Were a major terrorism event to occur in, say, New York, Washington or Los Angeles, only insurers writing policies in the state where the attack occurred could be called upon to pay. Caution is therefore required when benchmarking national aggregate premium and surplus data against the size of major terrorism events.

An increase in reserves would help, but would cause accounting and regulatory problems.

One way to better protect against terrorism risk is for the industry to build reserves. But insurers lack incentives to hold capital sufficient to finance losses from extremely high severity, low frequency events for several reasons. US accounting provisions preclude establishing terrorism reserves. Even if they were allowed to do so, tax law would penalize such reserving via double-taxation of the investment income earned on reserves, which would substantially reduce after-tax profitability. Also, substantial reserves might invite takeover bids or aggressive lawsuits from plaintiff lawyers who perceive an insurer as deep-pocketed. Finally, some believe that high reserves would invite regulatory scrutiny and consumer backlash in the event of a rate increase.¹²

According to research, massive Florida catastrophe losses could destabilize the industry.

Massive losses could potentially destabilize the insurance industry. Research on the effects that a \$100 billion Florida natural catastrophe would have had in the late 1990s offers some clues.¹³ Although the industry would have been able to pay 90% of the losses, approximately 140 insurers would have failed, the largest failure rate in more than a century. Post-event, there would be fewer insurers and those that would remain would raise rates, tighten terms and conditions and, in many cases, withdraw coverage completely. Similarly, since Katrina, homeowners insurance has grown more costly and difficult to obtain in New York, particularly on Long Island.

Yet the industry is even more vulnerable to terrorist events.

The insurance industry is more vulnerable to terrorist events than to Florida natural catastrophes. Florida windstorm is well insured, backed by a state fund and global reinsurers. Terrorism risk is a smaller market, backed just by TRIA and a limited amount of reinsurance.

¹¹ Source: Insurance Information Institute. Estimate is as of year-end 2005.

¹² Dwight M. Jaffee and Thomas Russell, "Catastrophe insurance, capital markets, and uninsurable risks", *Journal of Risk and Insurance*, June 1997.

¹³ David Cummins et al, "Can insurers pay for the 'big one'? Measuring the capacity of the insurance market to respond to catastrophic losses", *Journal of Banking and Finance*, March 2002, pp. 557-583.

Industry capacity is insufficient to cover a massive terrorist event

Large losses could disrupt capital markets.

Large losses could also destabilize financial markets. Life insurance companies are the fourth-largest investors in corporate bonds. A sudden need for life companies to liquidate large number of these bonds, many of them thinly traded or untraded, could lead to sharp price declines that further weaken the financial standing of all insurers and undermine investor confidence. In this environment, two additional reactions could drive down the prices of these assets yet further: flight to quality and front-running.

A flight to quality and front running would aggravate the market disruption.

Flight to quality is the tendency for investors to sell riskier assets, such as stocks and corporate bonds, and to purchase Treasury bonds in the wake of heightened uncertainty. Front-running is trading that exploits the needs of other traders to reduce their positions. Large sophisticated investors such as broker-dealers and hedge funds front run to avoid losses and to profit opportunistically from an awareness of the needs of large investors to sell out their positions.

Insurers could be forced to sell assets to a securities firm, who might exploit their weakness.

A Federal Reserve research paper using an audit-trail-transactions dataset found substantial evidence of front running behavior in the Treasury bond futures market during the Long Term Capital Management Crisis.¹⁴ Although traders' true identities are concealed in the dataset, market makers in the aggregate engaged in front running against customer orders from a particular clearing firm "PI7", which closely match various characteristics of LTCM trades placed during the crisis through one of the largest broker-dealers. Specifically, market makers traded ahead of PI7 customer orders in the same direction by just one or two minutes. During the crisis period, PI7 customer orders had an unusually high price impact and the market liquidity was low. In the aggregate, locals made modest abnormal profits from their speculative trades before the rescue. The findings that market makers attempted to exploit their superior information about customer order flow by front running suggests that if front running is common, it could significantly affect the asset pricing process, and could also make margin constraints more costly to the affected traders.

¹⁴ Fang Cai, "Was there front running during the LTCM crisis?" Federal Reserve Board International Finance Discussion Paper, 2003-758, February 2003.

Securitization is not yet a viable substitute for terrorism insurance

Over the past decade, a market for Insurance Linked Securities (ILS) has developed.

The inception of a market for Insurance Linked Securities (ILS) over the past decade has been an exciting development. It is important to bear in mind that the market, despite its great potential, is of limited economic relevance today and will remain so for the next several years. Moreover, because terrorism risk is largely uninsurable, an economically significant market will take longer for terrorism bonds than for other ILS, and may never develop.

Yet the \$10 billion issuance of cat securities in 2006 is dwarfed by the size of a major terrorist event.

Catastrophe bonds, the most mature segment of the ILS market, were first issued in 1994. Issuance of cat bonds exceeded \$2 billion for only the second time in 2005. Issuance of cat bonds and sidecars (a variant on cat bonds) was \$10 billion in 2006. This amount is dwarfed, however, by the **size of potential insured losses from a large terrorism event**. Thus, even if all \$10 billion of annual issuance covered terrorism risk, it would amount to a fraction of a percent of the protection needed – and would only be available in several years, if ever.

Terrorism risk will likely represent a small share of overall ILS issuance in coming years.

Moreover, this discussion considers ILS issuance in total. Terrorism bond issuance will likely be a small fraction of this amount for the foreseeable future. To date, two types of terrorism-related bond have been issued. Neither is a terrorism bond *per se*. Rather, each is a multi-event cat bond associated with the risk of terrorist attack or the risk of natural disaster or pandemic. The first bond was developed by FIFA, the world football governing body, to protect its investment in organizing the 2006 World Cup in Germany. The security, rated investment grade (A3) by Moody's, covered natural and terrorist catastrophic events that would result in the cancellation of the World Cup game.

Mortality bonds provide coverage against major disasters, including a massive terrorist attack.

Another type of terrorism-related ILS is linked to extreme mortality risk and has no terrorism exclusion. One such note, issued in December 2003 in the amount of \$400 million, provides a payout tied to a mortality index. To increase transparency to investors, the index is calculated by an independent firm using publicly available data. To minimize basis risk, it uses weights that reflect the issuer's book of business. The transaction demonstrates how reinsurers can shift mortality risk to capital markets. To date, three bonds covering extreme mortality risk have been issued.

A pure terrorism bond is not yet feasible.

A pure terrorism bond would require rating agency evaluation and would need to overcome investor resistance. To rate terrorism bonds, ratings agencies would need to rely on third party terrorism risk models. These have not yet proven trustworthy to the investment community. Even with a rating, investors would be reluctant to buy terrorism bonds due to the potential for moral hazard and asymmetric information. Since investors feel most comfortable with risks that insurers underwrite, terrorism bonds can supplement, but not replace insurance.

Advantages of a private-public response to terrorism

Even without a backstop, the government would likely step in after a major terrorist attack,

This implicit backstop distorts incentives and increases waste.

An explicit government backstop offers numerous advantages.

By lowering the disruptive impact of terrorists, a government backstop reduces their incentive to strike.

Without TRIA, the Federal government would lack an explicit backstop for major terrorist attacks. Many observers believe that the government would nonetheless be forced to provide aid to individuals, insurers and other businesses who suffer devastating losses from a terrorist event, even if they have not purchased insurance. There is ample precedent to support this belief.

Thus, even without an explicit terrorism risk backstop, the government provides an implicit backstop. Aside from distorting incentives, the absence of an explicit program increases the likelihood of misspending funds.

This confusion – about whether the government would step in – is clearly not constructive. Consider two possibilities: either the idea that the government provides an implicit backstop is widely accepted, or it is accepted by only some people and businesses, but not others. Either possibility will lead to distorted, inefficient and unjust economic outcomes.

An explicit government terrorism risk backstop offers numerous advantages. It reduces ambiguity both pre- and post-event and enhances transparency by making it clear who will pay how much for what, should an event occur. This clarity makes it easier for insurers to price risks and strengthens the incentives to mitigate risks and to purchase terrorism insurance. A broader societal sharing of terrorism risk makes lower premium rates possible. A Marsh client survey found that the TRIA backstop helped reduce the cost of property terrorism coverage by more than 25% from 2004 to 2005. TRIA has also made coverage more widely available. The take-up rate for terrorism coverage rose steadily from 23% in 2003Q2 to 64% in 2005Q4.¹⁵ By reducing uncertainty, a backstop also reduces the risk of financial market disruption in the wake of an attack.

A final benefit of an explicit backstop is that it reduces the “gains to terrorism”. A goal of terrorists is to undermine a society through confusion and fear. A backstop that provides contingent resources reduces the cost of disruptions and the gains to terrorist acts. Gradually, it will become apparent that terrorist events are less disruptive than attackers had hoped. The prospect of a smaller “payoff” for their activities may conceivably reduce the incentive for terrorists to act, allowing the private-public insurance partnership to do its part to discourage terrorism and to promote the public good of social piece of mind.

¹⁵ Marsh, *Marketwatch: Terrorism insurance 2006*.

Conclusion

The following conclusions are clear from the above analysis:

- Free markets do not always provide socially optimal production and distribution of goods and services.
- Insurance markets, particularly the market for terrorism insurance, suffer from problems such as adverse selection and moral hazard that lead to market failure.
- Terrorism risk is particularly difficult to assess due to the willful nature of terrorists, who seek to thwart and confound their enemies.
- Unlike natural catastrophic risk, terrorism risk cannot be easily modeled.
- Terrorists' coordinated large-scale attacks can make loss occurrences highly correlated over time and across business lines.
- Potential losses are so large that the risk cannot be diversified across the private insurance industry.
- Adverse selection, under a free market system, is likely to result in very high insurance rates or no coverage for those who most need terrorism insurance.
- Citizens implicitly expect that if a major attack were to occur, the government would help the victims.
- It is sound public policy for the insurance industry and the government to cooperate in creating a system resilient enough to withstand the threat of terrorism.
- Other countries that have long faced terrorist attacks, such as the United Kingdom and Spain, have found such systems to improve social welfare.
- It is time for the United States to develop a permanent response.