UNITED STATES HOUSE OF REPRESENTATIVES

COMMITTEE ON FINANCIAL SERVICES

SEPTEMBER 19, 2013

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Chairman Hensarling, Ranking Member Waters, and members of the Financial Services Committee, my name is Eric Smith, and I am president and CEO of Swiss Re Americas. On behalf of Swiss Re, I thank you for the opportunity to testify this morning on the state of the terrorism risk insurance marketplace and the important role the Terrorism Risk Insurance Act (TRIA) plays in providing market stability and certainty, and ensuring an orderly economic recovery following catastrophic terrorism in the United States. Swiss Re is a global reinsurance company with a highly-skilled workforce of several thousand employees in more than thirty offices throughout the U.S., and we transact U.S. business through U.S. companies, including primary insurance companies that are subject to TRIA.

Swiss Re recently published a paper, *Terrorism Risk Insurance Act: The Economic Case for Public-Private Partnership*, that covers in detail many of the topics in this statement. It is attached for your review.

As the CEO of a company with dual marketplace roles as a global reinsurer and an insurer offering coverage for terrorism risk, I believe that I can offer the Committee a unique perspective on three critical issues:

1. Why the risk of terrorism continues to be uninsurable;
2. How both the traditional and non-traditional reinsurance markets view the risk of terrorism; and
3. How other governments manage terrorism risk insurance compared to the United States.

In focusing on these three issues, I hope to reinforce for this Committee the critical role that TRIA has played in supporting the management of terrorism risk exposure by the private market and stabilizing the U.S. economy since its initial enactment in 2002. I also hope to clarify the impact of the recently reported influx of capital into the catastrophe bond market and what, if any, role this capital has in supporting the terrorism reinsurance market. Last week, Swiss Re submitted comments to the Federal Insurance Office for their report on the long term availability and affordability of insurance for terrorism risks. In those comments, we reach a conclusion that bears repeating to this Committee today: unlike most natural catastrophes, major acts of terrorism remain uninsurable by private markets, and the extension of TRIA is vital for the stability of the U.S. insurance industry.

Summary of TRIA as Public-Private Partnership

Just over 12 years ago, in the wake of the devastating September 11 attack, the re/insurance industries responded to unprecedented levels of terrorism loss by helping our policyholders, and the economy, recover. The total insured loss of $32.5 billion ($42.1 billion in 2012 dollars) was the largest terrorism loss on record and remains many multiples of any other terrorist attack loss.[1] After the 9/11 attack, the industry recognized that the peril of terrorism had changed forever, with the prospect of truly catastrophic terror events being carried out by well-organized, and well-funded, terrorist groups. Terrorism was a new form of warfare carried out in the shadows and was not a peril that was viewed as "insurable" in the traditional sense of the word.

As a result, the insurance industry worked with the federal government in evaluating a number of different proposals for creating a public-private partnership for financing terrorism risk. Ultimately, the federal government passed TRIA in late 2002, providing a loss sharing partnership between the federal government and commercial property-casualty insurers, while making terrorism coverage available to all U.S. businesses. The passage of TRIA solidified the economy and reinforced the resiliency of the markets against future terrorist attacks. Subsequent extensions of TRIA have maintained the public-private partnership, providing stability that has enabled insurers to manage their individual terrorism exposures to the extent possible, while ensuring that the federal government remains a backstop for large-scale terrorism as well as a necessary post-hoc redistribution channel.

Terrorism Remains an Uninsurable Risk

Swiss Re is celebrating its 150th anniversary this year. Terrorism has been around since our company began operations, as have natural catastrophes. Yet re/insurance for natural catastrophes is much more available and much more affordable than coverage for terrorism Why is this the case? The answer is straightforward: even with all our years of underwriting experience, we do not believe that we understand terrorism risk in the same way that we understand natural catastrophe risk.

Almost 11 years after TRIA's enactment, the industry's knowledge of terrorism has evolved. We have made great strides in exposure management and in understanding the potential severity of different conventional terrorism attack scenarios. Unfortunately, the one aspect of terrorism that has not changed is that, absent a federal government role in managing terrorism exposure and loss, the risk is ***not*** privately insurable. For the private insurance marketplace to function with respect to a risk, it must be measurable, have loss occurrences that are largely independent, have manageable average and maximum losses, and be mutually acceptable to both the insured and the insurer. Terrorism risk fails each of these conditions.

Despite the best efforts of modelers, terrorism risk remains unmeasurable today, largely because of the ***intentional nature*** of a terrorist attack. In the case of natural catastrophes, events represent random, uncorrelated outcomes from underlying physical processes or

[1] Hartwig, Robert P and Claire Wilkinson, "Terrorism Risk: A Constant Threat: Impacts for Property/Casualty Insurers," Insurance Information Institute, June 2013.

phenomena. As such, through the efforts of geologists, engineers, and meteorologists, insurer's understanding of the risk of natural disasters has improved and a steadily growing

body of data exists for the development of catastrophe models for natural disasters. While the data may still exhibit uncertainty, insurers can manage to this uncertainty. In contrast, for terrorism, the terrorist actually tries to confound those who study them – effectively invalidating any sample used to estimate their behavior. As such, even the most skilled practitioners are far from an informed consensus regarding how to accurately model terrorism risk. The models that do exist have not been tested, so we don't have the same level of confidence in terrorism models that we would have in models for other types of perils, where we have much more information that has permitted us to test the waters. There simply is no effective basis for assessing the likelihood, location or type of a terrorist attack.

Moreover, the risk of terrorism is ***dynamic*** and ***interdependent***. The goal of a terrorist is to avoid detection and inflict the maximum loss possible at precisely the weakest link in our economy. Since terrorists modify their tactics in the face of any known defensive strategies or loss mitigation, their methods and targets are constantly changing. This constantly changing threat dynamic places a premium on the secrecy of the government's intelligence information and effective countermeasures. Keeping this information confidential is vital to the efficacy of the government's interdiction efforts, but it undermines attempts to measure the risk of terrorism in the private sector – an acceptable trade-off to limit the overall likelihood of an attack.

At the same time, terrorism losses have the potential to be truly ***catastrophic in size and scope,*** impacting a wide array of different policies and policyholders, as well as impacting the overall financial markets and economy. This extreme correlation is another classic example of a failure of private "insurability." The loss potential from a successful terrorist attack using unconventional means such as nuclear, biological, chemical, or radiological weapons can measure in the hundreds of billions of dollars and be well in excess of the maximum loss potential for natural catastrophe events in the United States. With at most an estimated $200b in surplus backing all of the different sources of risk to TRIA-eligible lines of business, the insurance industry simply does not have the capital, absent TRIA, to absorb this level of loss.

In fact, no private capitalization strategy for unconventional terrorism makes economic sense. If re/insurers were asked to hold a sufficient level of capital to withstand these cataclysmic losses – maybe to maintain ratings for writing other lines of business -- the price of terrorism insurance would have to be so high as to make it uneconomic for the policyholder. The net result is that the market for terrorism would violate the ***mutuality*** principle requiring the transfer of risk to be mutually beneficial for all members of the risk pool. Suggestions to the contrary and proposals to cross-subsidize the provision of terrorism insurance with surplus backing other lines of business demonstrate a failure to understand terrorism risk, the private insurance mechanism and business model, the process for establishing risk-based premiums, and the parameters of state insurance law. Simply put, a public-private structure for pooling catastrophic terrorism losses is necessary.

Traditional Reinsurance Capacity

As Swiss Re is a leading global reinsurance company, I also want to comment on the capacity of the reinsurance market and the potential real and illusory opportunities for growth in the terrorism reinsurance market. Recognizing the same challenges of insurability that face primary insurance companies, the reinsurance market has dedicated very limited capacity to

support the provision of terrorism reinsurance. The capacity we do offer supports our clients and the mandates that they must adhere to under TRIA. Based on the most recent estimate, the total amount of reinsurance capacity available for terrorism in the United States is approximately $6-10b – well below the $27.5b insurance marketplace aggregate retention under TRIA and the $34-35b cumulative insurer loss retentions. As a point of reference, the total global capacity for natural catastrophe risks has been estimated as $300-$350 billion, with the U.S. commanding roughly 35-45% of this capacity.

Moreover, the reinsurance capacity that is available for terrorism in the U.S. generally is limited to conventional terrorism losses, with virtually no capacity available for unconventional NBCR terrorism. Even for conventional terrorism, terrorism reinsurance may be further constrained within large metropolitan areas due to exposure aggregation challenges. Thus, while private reinsurance is playing a role in helping to manage the risk of terrorism, the market for terrorism reinsurance is relatively small and operates within the existing TRIA retentions for large insurance companies.

With TRIA in place, private reinsurance companies have been able to make marginal increases in the amount of capacity provided for conventional terrorism losses – increasing from $4-6 billion several years ago to $6-10b today. This additional reinsurance capacity can be extremely valuable to primary insurers as they manage their considerable exposure within the existing TRIA retentions. The commitment that the federal government has provided to the terrorism insurance market through TRIA has given the reinsurance community the confidence in the market to offer this capacity. I don't envision a scenario where private reinsurers are competing against TRIA for providing reinsurance against extremely large or unconventional terrorism losses. Simply put, the existence of TRIA supports the ability of the reinsurance markets to providing capacity for our clients to manage terrorism losses within the aggregate industry retention. If TRIA were permitted to expire, that capacity would no longer be available.

Capital Markets and Insurance-linked Securities

I would also like to take a moment to comment on the recent influx of capital into the insurance-linked securities (ILS), or catastrophe bond, markets, as Swiss Re is a market leader in providing this alternative risk management solution. Spurred by the quest for higher yields in a persistent low interest rate environment, many pension funds and asset managers have created or expanded their mandates to invest in insurance-linked securities (ILS). As a result, Swiss Re estimates that total alternative reinsurance capacity – including catastrophe bonds, sidecars and other non-traditional financing vehicles – has grown to approximately $40b worldwide – comparable to the levels reached immediately after hurricanes Katrina, Rita and Wilma in 2005.

The maturation of the ILS market over the past decade has been an exciting and welcome development. The ability of primary insurance and reinsurance companies to access new sources of capital to fund peak natural catastrophe exposures – the main recipient of these capital investments -- has helped keep capital costs down and traditional insurance more affordable. Moreover, the timing of the capital flows is fortuitous, especially with demand for natural catastrophe coverage expected to grow between 50% in mature markets to 200% in high growth markets, as population growth in high risk areas continues unabated.[2]

However, the ILS market does not substitute for traditional insurance and the ILS market has not been willing to underwrite risks that are not being underwritten by the traditional reinsurance market. Moreover, investors are reluctant to buy terrorism bonds for two reasons. First, there is a correlation between terrorism risk and the broader equity markets -- financial markets are more sensitive to terrorism risk and the possibility of broader economic disruption. Second, there is a greater potential for adverse selection – that is, those with the highest risks purchasing the coverage. Finally, rating agencies have been reluctant to rate terror bonds because of the inherent uncertainty in determining the risk, which further restricts potential investor interest. As a result, to date, there have been no securitizations of property catastrophe bonds solely for terrorism risk in the market despite this influx of capital.[3] With terrorism risk largely uninsurable, we may never see a significant market for terror bond securitizations.

TRIA in Comparison with Other Government Programs

Recognizing the private "uninsurability" of terrorism and the "public good" of protecting an economy from a terrorist attack, many other countries exposed to the risk of terrorism have created their own government mechanisms for financing terrorism losses. The terrorism program in each country is unique to that country's own political environment and perceived risk. The structures range from Israel's complete government insurance model to the public-private partnerships created in the United Kingdom ("Pool Re") and in Germany ("Extremus"). Contrary to other countries, the U.S. program does not collect up-front premiums. However, TRIA incorporates a significant recoupment mechanism for financing losses after an event and has comparatively high insurance company retentions – forcing the private sector to bear a larger portion of the risk.

Specifically, under TRIA, the federal government reimburses 85% of all losses in excess of individual insurance company "deductibles" up to an annual aggregate industry loss cap of $100b. Individual company deductibles are set at 20% of prior-year direct earned premium for TRIA-eligible lines. However, to ensure that the program provides industry protection -- not individual company protection – TRIA includes a mandatory recoupment provision that requires repayment via policy surcharge of any federal tax dollars used to reimburse terrorism

[2] Swiss Re presentation to investors and the media, p. 16, September 9, 2013 (http://media.swissre.com/documents/pres_20130909_Monte_Carlo_final.pdf)

[3] The FIFA event cancellation bond in 2006 and the Swiss Re excess mortality bond program included the peril of terrorism. Both were multi-event bonds, with the FIFA bond covering natural catastrophes and terrorism events, and the excess mortality program covering pandemic and terrorism. In both bonds, the terror component was deemed insignificant to the loss exposure of the investors.

losses up to an insurance marketplace aggregate loss retention of $27.5b. Moreover, program losses above the $27.5b can be funded through discretionary recoupment using the same surcharge mechanism.

In the event of a future terrorist attack, TRIA helps to speed the flow of payments to those affected businesses that have purchased terrorism insurance, as well as their employees, which helps those businesses and the economy recover. The clarity and commitment of an explicit federal backstop enhances the ability of re/insurers to offer terrorism insurance and helps the private market to ameliorate the potential loss from an attack. In addition, taxpayers benefit in many ways from TRIA. First, taxpayers benefit from the economic security provided by having access to commercial terrorism insurance before an attack. Second, after an attack, the immediate flow of claims payments offers stability to commercial taxpayers that suffer directly or indirectly from an attack and minimizes economic disruptions that would otherwise follow an attack. Finally, to the extent that federal resources are needed to respond to a truly catastrophic terrorism loss, TRIA's recoupment mechanism provides a stable way to ensure that federal expenditures ultimately can be recaptured and repaid without compromising the viability of the private commercial insurance marketplace.

Conclusion

At bottom, it is the unique and uninsurable characteristics of terrorism that are driving all of these developments. From Swiss Re's vantage point as a reinsurer and an insurer subject to TRIA, the nature of the risk underscores the need for a continuing government partnership with the private sector under TRIA. TRIA may not be perfect, but it has proven to be an effective way of balancing the challenges of terrorism risk with national security, private market stability, and establishing the foundation for an orderly economic recovery following catastrophic terrorist attacks on U.S. soil. Thank you again for inviting me to testify today, and I would be happy to answer any questions from the Committee at the appropriate time.

Terrorism Risk Insurance Act (TRIA)

The Economic Case for Public-Private Partnership

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The Terrorism Risk Insurance Act (TRIA), a congressional act that has protected the US economy from terrorism since 2002, is set to expire in 2014. Unlike most natural catastrophes, major acts of terrorism remain uninsurable by private markets, and the extension of TRIA is vital for the stability of the US insurance industry. International comparisons with foreign government programs provide insight into the range of options.

Contents

I. Uninsurable features of terrorism risk

The mere existence of terrorism insurance...

At first glance, it might appear that terrorism risk is insurable. After all, it is a risk that insurers currently carry on their books and that reinsurers used to cover in the past, even without TRIA. Yet even though terrorism has been insured in competitive markets previously, it is not a fully insurable risk.

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

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 qualities 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 are prohibitive.

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, premium rates that are acceptable to both insurer and insured, and adequate industry capacity.[1] Terrorism risk fails to meet these criteria. For terrorism, there is a lack of both historical data and simulation data. Existing data is mostly classified by intelligence agencies, and furthermore, any known attempts to de-classify and model such data in private markets could invite terrorists' deliberate attempts to evade prediction.

Information to quantify risk is not adequate for underwriting.

Terrorism risk is unmeasurable

Terrorism risk is impossible to measure precisely. It is inherently more challenging than natural catastrophe risk, because of the willful nature of terrorist attacks and historical data that is limited and largely irrelevant. 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.

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

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

Terrorism risk cannot be assessed in the same way. Unlike a natural catastrophe, it is a willful act. Terrorists, unlike natural phenomena, try to confound those who study them. Although they have improved in the past five years, models that forecast the frequency and severity of terrorism events remain in their infancy. The models are highly subjective and idiosyncratic. Even the most skilled practitioners are far from an informed consensus on how to effectively model terrorism risk.

Insurers must exercise great caution when promising to cover ambiguous risks.

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] Lack of clarity with respect to terrorism risk makes insurers less able to cover it and prompts them to charge higher risk 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 attacks, which can make loss occurrences highly correlated. As the scale of terrorist attacks has escalated, their potential to affect many lines of business has grown. Results from terrorism coverage can therefore be highly correlated across lines of business.

Insurable risks are of a magnitude that insurers can bear.

Average and maximum losses unacceptably high

Insurable risks tend to occur with a regular frequency that allows the industry to plan for average and maximum losses. For unprecedented events, insurers do not have enough data to accurately estimate risk or hold adequate reserves to cover probable maximum losses. A large-scale terrorist attack could generate potential losses 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 worst-case total loss exposure. Many industry participants learned on 11 September 2001 that their scenarios 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 equal to the total claims paying capacity of the entire 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.

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

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

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.[3]

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

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

Just such a lack of mutuality appears to exist in major urban areas, which are at greatest risk of terrorist attacks. New York City, Los Angeles, Toronto, Chicago, Washington D.C., and Boston are not mere exceptions. Aside from their great symbolic and economic importance, these metropolitan areas are home to approximately 60 million people. In such high profile cities, businesses and individuals are much more likely to purchase terrorism insurance, while those in less densely-populated areas are not, resulting in adverse selection and market failure that affects about 20% of the population of the US and Canada.

II. 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.

Markets failures relevant to terrorism insurance

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

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

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

Imperfect information

…often arises from 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.

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

[3] 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.

avoid risks characterized by heightened adverse selection, basic ambiguity, or a lack of diversification opportunities. For example, private companies offer little unemployment insurance.

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

Due to the imperfect information problems noted above — 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 injects much-needed certainty into the market, making it economically possible for the insurance industry to provide adequate coverage.

Public good

A public good is one that all enjoy in common.

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 individual's consumption of that good".[4] Examples of public goods include national defense, law enforcement (including the system of property rights), public fireworks, clean air and street lamps.

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

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 are 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

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

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 (e.g. creating beautiful architecture) or negative (e.g. 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. For example, the 2005 London Underground bombing cost an estimated $1 billion in lost tourism and transport revenues. One study finds that, absent TRIA,

[4] 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.

coordinated truck bomb attacks in the US could cause the loss of more than a million jobs and a decline in real GDP, due to sharp declines in confidence and investment. With TRIA in place to improve economic confidence and recovery time, the number of jobs lost would be reduced by half and the GDP decline averted.[5] Furthermore, the non-renewal of TRIA could have negative externalities of market uncertainty, so that even without another major terrorist attack, the absence of TRIA would cause US GDP to decline by 0.4% and cut employment by 326,000 jobs.[6]

III. Insufficient industry capacity to cover a massive terrorist event

Total industry capital is not a good indicator of terrorism insurance capacity.

Despite the insurance industry's size, total capital is not a good indicator of the amount that would be available to cover losses from terrorism. Based on aggregate data, the industry appears to have ample resources to cover large-scale terror events, as US property/casualty firms had a total surplus of $615 billion and wrote $522 billion in total direct premiums in 2012.

Surplus appears high due to natural catastrophes, low interest rates, and regulatory requirements, but would not be available for terrorism.

However, industry surplus appears high compared to historical levels for three main reasons. First, other catastrophe risks, such as major hurricanes, create the potential for large and increasingly-frequent losses. Industry surplus has grown to provide coverage for natural catastrophes, as these risks have grown over time, due to both weather patterns and property value concentration in coastal areas. Second, surplus currently appears inflated due to historically-low interest rates. Third, regulatory requirements have changed since the financial crisis, and insurance companies have a fiduciary responsibility to shareholders to employ capital responsibly. Therefore, insurers and reinsurers must continually adjust surplus to adhere to both regulatory and financial risk management standards. These factors are subject to change surplus quickly (for example, in the event of a major hurricane or a rise in interest rates) and do not guarantee that surplus would be available for terrorism risk in the future.

Surplus is also segmented by line of business and geography.

Furthermore, the aggregate industry surplus is compartmentalized by line of business, and most annual premiums are needed to pay claims for high-frequency losses such as motor insurance. Also, the aggregate surplus represents funds held by insurers writing coverage in all states. For example, if a major terrorism event occurred in New York, Washington or Los Angeles, only insurers writing policies in the state where the attack occurred would be liable.

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

One possible response is for the industry to build reserves. But insurers lack incentives to hold expensive equity capital sufficient to finance losses from extremely high severity, low frequency events. US accounting provisions preclude establishing pre-tax 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. In

[5] Economy.com, “The impact of terrorist attacks on the US economy”, Report for The Hartford, October 2005.
[6] "Economic Effects of Federal Participation in Terrorism Risk," American Insurance Association, 2004

addition, some argue that high reserves would invite regulatory scrutiny and consumer backlash in the event of a rate increase.[7]

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

Massive losses could potentially destabilize the insurance industry. Research on the effects that a $100 billion Florida catastrophe would have had in the late 1990s offers some clues.[8] 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.

Yet the industry is even more vulnerable to terrorist events.

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

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IV. Securitization not a viable substitute for terrorism insurance

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

The maturation of a market for Insurance Linked Securities (ILS) over the past decade has been an exciting development but does not substitute for traditional insurance. Risk assessment for catastrophe bonds is not done by expert underwriters but by risk rating agencies on behalf of investors. While catastrophe bonds can increase capacity and access for different investor pools, they cannot push the boundaries of parametric uncertainty or ambiguity. Catastrophe bonds therefore focus on the best understood and modeled risks. Thus far, capital markets have not assumed insurance risks that would not be assumed traditionally by reinsurers. Because terrorism risk is largely uninsurable, a significant market for terrorism bonds may never develop.

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 could supplement, but not replace, insurance.

The $14 billion capacity of cat securities in 2012 is dwarfed by the $28 *trillion* value of private and residential structures.

Catastrophe bonds, the most mature segment of the ILS market, are created mostly for natural catastrophes. After a decline in issuance following 2007, total issuance has grown since 2008 and reached approximately $6 billion in 2012, bringing total capacity to approximately $16.5 billion at year end 2012. This amount is dwarfed, however, by the value of private property in the US. The aggregate value of U.S. private nonresidential structures, including office, industrial, and retail properties, is about $11 *trillion*, according to the U.S. Commerce Department's Bureau of Economic Analysis. The total value of residential structures in the US is

[7] Dwight M. Jaffee and Thomas Russell, "Catastrophe insurance, capital markets, and uninsurable risks", *Journal of Risk and Insurance*, June 1997.
[8] 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.

estimated at $17 *trillion*. Thus, the total insurance-linked securities market still provides only a small fraction of the potential capacity needed.

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

Only two types of terrorism-related bond have been issued to date, and neither is explicitly a terrorism bond. 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. The second category of bonds related to terrorism is catastrophic mortality transactions, which cover significant increases in population mortality for any reason. Rating agencies and investors have become comfortable with these transactions, because the main source of risk is a pandemic or natural catastrophe with higher expected value than a terrorist attack, so that terrorism risk contributes only a small portion of the expected loss. Currently, there is no expectation that pure terrorism bonds will be offered in the catastrophe bond market.

V. Advantages of a public-private response to terrorism risk

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

Without TRIA, the Federal government would lack an explicit backstop for major terrorist attacks. Many believe that the government would nonetheless provide aid to individuals, insurers, and other businesses who suffer devastating losses from a terrorist event, even if they have not purchased insurance. Thus, even without an explicit terrorism risk backstop, the government provides a perceived implicit backstop. However, such uncertainty about whether the government would step in distorts incentives for the private market and increases the likelihood of misspending funds.

This implicit backstop distorts incentives and increases waste.

An explicit government backstop offers numerous advantages...

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.

...making lower premiums and higher coverage possible.

A broader societal sharing of terrorism risk makes lower premium rates possible. The median premium rate for terrorism insurance for middle-size and large firms was $57 per million of total insured value (0.0057%) in 2004, $37 per million (0.0037%) in 2008, $25 per million (0.0025%) in 2009, according to Marsh. By 2012, medium rates for the largest companies (those with greater than $1 billion total insured value) declined to $19 per million (0.0019%). The decrease and stabilization of premium rates is largely explained by the absence of any new attack on U.S. soil, as well as the effect of competition in insurance markets. By reducing uncertainty, a backstop also reduces the risk of financial market disruption in the wake of an attack.

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

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. The prospect of a smaller "payoff" may conceivably reduce the incentive for terrorists to act, allowing insurance to discourage terrorism.

Appendix: International comparisons

Most countries facing terrorism risk already have government programs either proposed or in place.

Most countries facing terrorism risk have programs initiated or proposed by their governments to backstop terrorism risk, including European countries (Austria, Belgium, Denmark, France, Germany, Italy, Netherlands, Northern Ireland, Spain, Switzerland, UK), as well as countries in other regions (Australia, Hong Kong, India, Israel, Russia, Sri Lanka, Taiwan, Namibia, South Africa). Some developing countries also face substantial terrorism risk but do not have governance systems in place to address the risk.

Such programs usually develop after a large terrorism event....

Each country has developed a terrorism insurance arrangement unique to its own political structure and perceived level of risk, usually established following the experience of a major terrorist attack. The overview below shows the variety of approaches taken by different countries to terrorism risk sharing between the government and the private insurance industry.

...therefore reflecting each country's unique political and historical situation.

On one end of the spectrum, Israel has faced high costs of terrorism historically, using complete government coverage and no private involvement. On the other end, Germany has established a private insurance company dedicated to extreme risk. Other countries, such as Spain, France, UK, and US, have developed different structures for public-private risk sharing, using pre-determined loss tiers.

On the international spectrum, the US program reflects a middle ground of public and private involvement.

Contrary to what is done in some other countries, the U.S. federal government does not collect any premiums in exchange for covering 85% of the insurer's losses above the deductible. However, compared to other countries, private insurers in the US must pay a high deductible before triggering any government assistance, and this deductible has increased over time.

1. Israel: Complete Government Coverage, No Private Involvement

Israel relies completely on government.

Since 1961, any direct or indirect damages from terrorist attacks within Israel, for either individuals or businesses, have been compensated directly by the State's public compensation fund according to a pre-defined formula. The public fund is financed by the general property tax collected across the country, and there is no private insurance for terrorism risk.

2. Spain: Government Coverage, Sold by Private Insurers

Spain provides state-backed catastrophe reinsurance in exchange for premiums.

Since 1954, terrorism has been covered as part of the State-backed insurance compensation for extraordinary risks, which also includes natural hazards and riots, from the *Consortio de Compensation de Seguros* fund. Private insurers sell property insurance including terrorism coverage as an add-on, but private insurers do not bear any catastrophe risk. Commercial enterprises pay a fee of 0.21 euros per thousand of property coverage and an additional 0.25 euros for business interruption insurance against catastrophic risks, with no differentiation in rates. The fund has over 4 Billion euros in reserves, and during its 50-year history, it has been able to pay claims quickly without requiring additional government backstop.

3. France: Public-Private Risk Share, Unlimited Government Reinsurance

The French government backs a reinsurance pool...

Since December 2001, the public-private partnership GAREAT has provided a co-reinsurance pool for sharing commercial terrorism risk, not including personal lines. The first layer of 400 million euros is shared between 105 members, pro-rated to their share of ceded business. The second layer up to 2 Billion euros is provided by private insurers and reinsurers. Beyond 2 Billion euros, the French government provides an unlimited guarantee through the state-owned reinsurance company

...made possible by mandatory universal coverage and uniform insurance premiums.

Caisse Centrale de Reassurance (CCR). Premiums are shared between the pool (52%), reinsurance (36%), and the CCR (12%) (Michel-Kerjan, 2012).

A key feature of the French system is that terrorism insurance is mandatory, so that the take-up rate is 100%. Reinsurance rates do not vary by location; they are spread identically across the country, as a percentage of property premiums. Costs are much higher than those in the United States, with French rates 6-24% of property premiums and US rates 3-8% of property premiums.

4. United Kingdom – Unlimited Government Credit to Private Pool

The UK government provides unlimited debt to a private reinsurance pool, which must repay any funds borrowed.

Since 1993, the UK has provided commercial property and business interruption insurance for terrorism acts (since 2002 extended to chemical, biological, and nuclear risks) through a mutual reinsurance organization called Pool Re. The UK Treasury provides unlimited credit to Pool Re, which is open to any private property insurers, but loans must be repaid in full to the government. Private insurers have an individual retention before being reimbursed by the pool, which is based on their proportional participation in Pool Re, applied to the "industry retention" (£100 million per event, £200 million per year in 2012). Pool Re must exhaust its reserves (currently £4.7 billion) before receiving any UK government assistance, and it shares 10% of its collected premiums with the UK government in exchange for coverage.

5. Germany – Government-Backed Private Insurance Company

The German government backs a private catastrophe insurance company.

Since 2002, the federally-backed property insurance corporation *Extremus AG* has provided catastrophe insurance for Germany, covering property and business interruption for total insured losses over 25 million euros. The annual compensation by *Extremus* for any company is capped at 1.5 Billion euros. Unlike Pool Re, *Extremus* is not a reinsurance institution but a private insurance company. It is reinsurance by both private reinsurance companies (first layer limited to 2 Billion euros), as well as by the federal government (second layer of 8 Billion euros). The annual capacity to pay claims is therefore 10 Billion euros. *Extremus* collects approximately 50 million euros in premiums and pays 12.5% of premiums to the federal government in exchange for coverage.

6. Netherlands – dedicated reinsurance company

The Dutch government backs a dedicated private reinsurance pool.

Since 2003, the Dutch Terrorism Risk Reinsurance Company (NHT) has provided catastrophe insurance as a dedicated reinsurance pool. The NHT has available market capacity of EUR 1 billion per calendar year, with EUR 400 million borne by the pool participants according to their market shares and the excess layer up to EUR 950 million placed on the international reinsurance market, with the Dutch government contributing EUR 50 million.

The above international review shows that different countries have responded to the question of terrorism risk financing differently, and that those responses were often modified after terrorist attacks on national soil. International benchmarks may be relevant for the United States as we rethink the role that TRIA should play in the future.