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Insurance of terrorism-related risks

MICHAEL FAURE AND NIELS PHILIPSEN

An important instrument to spread the risks of terrorism is insurance. Insurance may thus be an important instrument for both operators and the security industry to limit their risk exposure. This chapter will deal with the way in which insurance can act as a risk-spreading mechanism. It will first provide the legal and economic background to insurance, discuss conditions of insurability, explain the difference between first-party and third-party insurance and discuss techniques that are used in the insurance industry to remedy the so-called “moral hazard” risk (6.1.). Next, specific attention will be paid to catastrophe insurance and more particularly the insurance of man-made disasters. Some difficulties in the insurance of catastrophes will be sketched; in that respect attention will be paid to solutions that have been developed to deal with supply-side problems and demand-side problems, especially the emergence of so-called public–private partnerships in the insurance of (man-made) disasters (6.2.). It will be shown that those types of solutions have not only been employed for traditional man-made disasters, but also for the insurance of terrorism (6.3.). Other solutions that have been developed in the related field of natural disasters will be discussed in Chapter 8 of this book, which addresses alternative systems for redressing terrorism-related risks. Section 6.4. concludes.

6.1. Insurance: Legal and economic background

This section discusses the legal approach of insurance companies towards man-made risk (terrorism and large-scale industrial accidents with a chemical, biological, radiological, nuclear or explosive component) and natural disasters. The focus is on contractual features of liability policies, as well as case law pertaining to insurance claims due to man-made and natural disasters, including the position of insurers in these cases and

the main reasoning that led to the outcome of the cases. Although the analysis centres on European cases and companies, a few other examples (the Bhopal disaster in 1984, the BP “Deepwater Horizon” oil spill in 2010) are briefly discussed.

Before discussing the way insurance manages risk, we first present a discussion of how insurance works and why it is desirable. This discussion is relevant to understanding risk management by insurers and the limits of insurance. Then, in the section on managing liability risks, we focus also on recent development in the area of insurance against the risks of terrorism.

Insurance is generally deemed desirable because it spreads risks. There are two type of risk-spreading: spreading over time (inter-temporal) and spreading over persons (inter-personal). Corporations are generally believed to be in a substantially better position than any single individual to spread risks broadly.¹

6.1.1. *Reducing risks*

Insurance as an objective (or function) of civil liability has also been defended on grounds derived from insurance theory. In simple terms, insurance involves a choice to incur a small and certain loss (the premium) now in exchange for not being exposed to a larger, uncertain loss in the future. Like risk-spreading generally, insurance is attractive to risk-averse persons (and risk-averse societies). More precisely, insurance meets needs in society because it shifts risks from persons with inferior risk-bearing capabilities to persons with superior risk-bearing capabilities.

The theory of diminishing marginal utility of money can explain insurance only in terms of inter-temporal and inter-personal risk-spreading. However, insurance is a complicated mechanism for managing risk. In addition to risk-spreading, insurance has important risk-reducing effects. Its risk-reducing effects, according to Priest (1987), are likely to be far more significant than the risk-spreading effects. Insurance reduces risks in two ways: first, it reduces the underlying injury rate and, second, it reduces the effective cost of remaining injuries by lowering the magnitude of total risk. Since an insurance company aggregates many potential

¹ See Calabresi 1970, 47–55. As Priest has pointed out, under this theory an incidental social benefit of corporate-provided insurance is that it offers insurance coverage to consumers that would not otherwise obtain insurance. See Priest 1985.

losses incurred by the insured pool, the law of large numbers makes the total loss to the insurance company highly predictable, as a result of which the insurance company's reserves for anticipated losses is much smaller than the total of all reserves of individual risk bearers and, thus, losses can be dealt with more efficiently.² Insurance thus permits corporations to reduce or eliminate their reserves for anticipated losses so that their capital can be put to more efficient uses. In addition to risk aggregation, insurance employs risk segregation by defining risk pools and setting premiums according to the average level of risk brought to the pool. Both risk aggregation and risk segregation serve to reduce risk variance and, thus, insurance premiums. By segregating an individual into a risk pool with a sufficiently narrow range of exposures to risks, the insurance premium remains attractive to persons in the low end of the range.³ This technique will keep the risk pool intact. Once the disparity between the insurance premium and the exposure of the low-risk pool members becomes too great, the risk pool will unravel.⁴ Segregation reduces both pool risk and insurance cost and, accordingly, adverse selection (to be discussed below).

As noted above, insurance can help also to reduce the level of injuries actually suffered.⁵ This effect flows directly from the risk-segregation function of insurance. Through the size of the premium charged, insurance informs decisions as to whether and how much to engage in the covered activity: high risks are charged a high premium and thus there is an incentive to scale down the activity. As a result of extremely high premiums, very high-risk individuals may not be able to contract insurance and may refrain from engaging in the pertinent activity, which may make the activity safer. In addition, to the extent that insurance companies possess superior knowledge about risk reduction and bring this expertise to bear in their relations with insureds, insurance can also play a direct role in risk reduction.⁶ Thus, in addition to possible benefits through increasing utility, insurance may result in increased efficiency through reduced total risk.

² See Riegel, Miller and Williams Jr. 1976, 15–21; Marshall 1974.

³ The more precisely risks are segregated, the more accurately premiums reflect the risk brought to the pool, the more broadly insurance is available in the society.

⁴ See Priest 1987.

⁵ Insurance's risk-reducing effect can be counteracted by the "moral hazard" arising from insurance coverage. This issue is discussed below.

⁶ Insurance also provides a valuable function by monitoring the activities of the insured: see Freeman and Kunreuther 1997, 25.

6.1.2. *Conditions of insurability*

Not each and every risk⁷ can be insured. To be insurable and for insurance to deliver the benefits discussed above, risks must meet certain prerequisites. The main requirements are the following. First, the risks to be insured must have a sufficiently probabilistic character. Insurability requires that risk is probabilistic either as to *whether* it will occur (e.g., a fire risk), or as to *when* it will occur (e.g., death). If there is no reliable information on whether or when, on average, damage occurs, insurability will be adversely affected. If the damage will likely or certainly occur, the aggregation advantages of pooling cannot be obtained. As a related matter, risks must be sufficiently predictable and quantifiable in monetary terms. If the risk posed by any given pool of policy holders cannot be predicted with a reasonable degree of confidence, insurance is impeded. If risks are entirely unpredictable in terms of probability and size of potential harm, they cannot be insured.⁸ On the other hand, the magnitude of risks and size of potential harm do not have to be fully understood and quantifiable. Insurers can handle some degree of uncertainty in this regard but there are limits. If the risk to be insured is the risk of being held liable for damages, the applicable rules govern the size and scope of the risk. This, in turn, means that the law itself must be sufficiently certain and precise. One particular risk seriously undermining insurability is the risk of retroactive changes in the law increasing the scope of liability, as insurers have set their premiums and policy conditions not on the basis of such an expanded liability regime, but on the previous narrower regime. Thus, retroactive expansion of liability regimes, by definition, is uninsurable, since the relevant risk in this case is the risk of an unforeseeable court ruling, which is very uncertain and not quantifiable. Note also that where the time lag between the relevant occurrence and the damage increases (i.e. long-tail damage), informational and causal uncertainties increase, retroactive changes in liability law become more likely and the insurability of the risk decreases.

A further prerequisite is that the risks to be insured are statistically independent. Risks are statistically dependent if, when one insured suffers damage, the probability increases that another insured suffers damage; an example would be a nuclear war, where many insureds would suffer

⁷ The term “risk” denotes a specifiable probability of loss. Uncertainty, on the other hand, involves an unspecifiable probability of loss.

⁸ Faure and Hartlief 2003, 84–85.

damage at the same time. In insurance language, this risk is known as a “common factor”, which is one of two major portfolio risks.⁹ In the context of liability insurance, changes in the law present a common-factor risk.

A third requirement is that insurers must not be seriously restricted in managing and reducing threats to insurability. Two major threats are adverse selection and moral hazard. Adverse selection refers to the phenomenon that persons presenting higher than average (or median) risk are more likely to contract insurance than those presenting lower risk, while it is difficult or expensive for the insurer to distinguish between higher and lower risks. Adverse selection results from ineffective risk segregation.¹⁰ Legal uncertainty may aggravate adverse selection.¹¹ Insurers can control adverse selection by defining their screening and selection procedures, including more sophisticated questionnaires, rejecting applicants presenting higher risks and applying more targeted policy conditions. Moral hazard increases risks for insurers in a different way: it causes insureds (and courts!) to act less carefully and to incur higher costs than they would have, had they not been insured. To control moral hazard, insurers employ instruments such as deductibles, co-insurance, caps, exclusions, premium differentiation, bonus/malus mechanisms and the like.

To understand the risk-spreading and risk-reduction functions of insurance, a sound understanding of the differences between two major types of insurance is required: first-party insurance and third-party or liability insurance. The differences between first- and third-party insurance arise from the fact that the pool of victims in a first-party context are the insureds themselves, while the victims in a liability context are third parties. In a first-party insurance context, insurers have a direct contractual relationship with the victims. In a third-party (liability) insurance context, however, insurers do not contract directly with the persons that may suffer the harm but with a party that under the law can be made to bear the losses incurred by the victims. This has serious implications for the extent to which insurers are able to control the threats to insurance discussed above, i.e. adverse selection and moral hazard. Many of the measures that first-party insurance policies incorporate to control these risks are not available to liability insurers. For instance, while in a first-party context an insurance company can reject potential victims who pose an increased risk (or charge them a higher premium), it cannot do

⁹ The second major risk is known as pricing function. See Tanega 1996, 117.

¹⁰ Priest 1987, 1548. On adverse selection, see Faure and Hartlief 2003, 109–112.

¹¹ See American Law Institute 1991, 86.

so with respect to the persons suffering the loss in a third-party context; the liability insurer can control only the pool of insureds, not the pool of victims. Compared to the first-party insurer, the liability insurer's ability to control adverse selection is significantly smaller, because it is more difficult and more expensive to assess risk only at the level of the insureds (not the victims) and achieve optimal risk segregation. Control of moral hazard is even more difficult, if not virtually impossible, for a liability insurer. To control moral hazard, first-party policies invariably provide for deductibles, co-insurance, caps, exclusions, premium differentiation, bonus/malus mechanisms and the like. Third-party liability insurers can use these instruments but only in relation to the insureds, not in relation to the victims, who create most of the moral hazard.

It is relevant to note that liability insurance, unlike first-party insurance, has regressive income effects. Regressive income effects result from a lack of differentiation in the "insurance premium" in the third-party context. The tort-law insurance premium, which is included in a product's or service's price, is the same for all consumers, although some, i.e. high earners, bring higher risk (e.g., with respect to the size of potential loss of income) to the insurance pool than the low-income earners and, thus, purchase more coverage for the same price.

Substantively, in light of the analysis set forth above, the risk-spreading objectives of liability rules are unpersuasive to the extent that they rely on insurance. Where liability is aimed at risk-spreading through insurance, the issue is whether the risk-reduction and risk-spreading functions discussed above should be pursued through third-party liability insurance or direct first-party insurance. A careful analysis of insurance mechanisms shows that the liability system is not an attractive way to spread risk, at least where liability is not justified on deterrence grounds.¹² In many ways, first-party insurance is a more efficient and otherwise more attractive alternative than third-party liability insurance.¹³ As discussed above, disadvantages of third-party liability insurance, as compared to first-party insurance, include the lack of effective control over adverse selection and moral hazard, problems of excessive and retroactively expanding coverage, regressive income effects and the high administrative cost of this system. The problems of adverse selection and moral hazard become worse and

¹² Priest 1987; Priest 1991, 31–50. It has been argued that the deterrence incentives generated by liability in the real world (i.e. taking into account all other incentives and disincentives impacting an operator's decisions) are uncertain. See e.g., Bergkamp 2003, Chapter 5.

¹³ Priest 1987.

more difficult to control when we move from fault to strict liability. In a first-party policy, premiums can be set in the function of the risk brought to the pool and the coverage offered; premiums for third-party liability insurance cannot be differentiated to the same extent and, accordingly, the price mechanism does not work optimally, as a result of which the total risk increases.¹⁴ Compensation systems other than liability typically offer a much lower level of recovery for non-pecuniary losses than those available in liability suits.¹⁵ Furthermore, victims may be in a better position than those causing the injury to diversify risk.¹⁶ Risk-spreading may provide a justification for compensating and spreading losses, but it does not justify doing so through a liability rule.

6.1.3. *Conclusions*

Insurance can perform its useful risk-aggregation and risk-reducing functions only if the risks to be insured are sufficiently probabilistic and predictable, as well as statistically independent. Uncertainty regarding the scope and size of liability seriously undermines the insurability of liability risks.

In terms of first-party insurance versus liability insurance, in general, the former provides a much better ability to control the major threats to insurability, i.e. adverse selection and moral hazard. In other words, in terms of insurance efficiency, first-party insurance is superior to liability insurance.

There are issues around the insurability of catastrophic risks. Our analysis showed that liability for widespread damage, unlike e.g., product liability for personal injury caused by defective goods, does not necessarily spread risk; insurance does not function adequately in this context and does not produce risk-aggregation and risk-reduction benefits, unless it operates at a very large scale. Significant uncertainty regarding the scope and size of potential liability exposure undermines insurability. If no

¹⁴ Epstein 1985, 645–669. Shavell has argued that regulation of liability coverage, requiring or forbidding insurance, may improve diluted incentives arising from judgment-proof problems or improve the possibility of escaping from liability when insurers are able to monitor insured behaviour. It remains unclear, however, how this ability should be assessed and whether government intervention in the insurance market should be preferred over the market in any situation. See Shavell 2000. Noting that it is much more expensive to insure victims through the legal system than directly by first-party insurance coverage, Shavell rejects the typical justification for mandatory liability coverage where it provides an implicit form of insurance protection for victims.

¹⁵ Cane 1999, 405. ¹⁶ Batsch 1998, 175.

reliable assessment of the monetary size of the potential liability exposure is possible, insurers cannot accurately predict risk. Monetary and time limits on potential liability exposure, generally, enhance insurability.

As discussed above, insurance works only if risks are insurable. Whether or not the risks of terrorism are insurable, is discussed below. We discuss first how insurance manages risks, given that risks are insurable. As noted above, insurers have to manage two types of risk: adverse selection and moral hazard. At the level of individual contracts, the focus is on managing the risks associated with moral hazard. In addition, insurers can manage their overall risk exposure generally through mechanisms such as pooling, reinsurance, etc., which is not discussed further because it is not relevant for the purposes of this book. The same is true for risk management through “claims-made” versus “loss occurrence” policies, which is not relevant here.

Insurers employ instruments such as deductibles, co-insurance, caps, exclusions, premium differentiation, bonus/malus mechanisms and the like, for managing risks.¹⁷

6.2. Insurance of man-made disasters

When referring to man-made (technological) disasters, an important feature is that there is a tortfeasor who can be identified and be held liable. Hence, the main instrument to control man-made risk, also when it is catastrophic, is tort law. We are referring here, for example, to the operation of a nuclear plant, but also to risks emerging from petrochemical companies or offshore installations like the Deepwater Horizon.

¹⁷ These concepts can be defined as follows. Deductibles: also called “own risk”, i.e., the amount that the insured must bear before insurance kicks in. Co-insurance: under this arrangement, the insurance policy covers only a portion (typically expressed in a percentage of less than 100 per cent) of the damage, with the remainder being for the account of the insured. Caps: the upper financial limit of an insurance policy, i.e., the maximum amount that the insurer will pay out under the policy (per year, per event or otherwise). Exclusions: these are specific events, types of damage, causes of damages, or other aspects, that are excluded from insurance coverage and thus for the insured’s account. Premium differentiation: charging different amounts of premiums to different insureds based on the nature and scope of insurance coverage provided and the risk that the insured brings to the risk pool. Bonus/malus mechanisms: such a scheme involves premium reductions for insureds with a good accident record (no or few claims) and premium increases for those with a bad record (many claims), and are intended to create incentives for damage- and claims-avoiding behaviour.

The insurance scheme that one would primarily look at in this situation is liability insurance. Liability insurance has two main functions. One function is that it protects risk-averse injurers from an exposure to liability. Insurance allows the shifting of the risk to the insurance company, thus increasing the expected utility of the insured injurer. In that sense insurance contributes to increasing social welfare. However, since (liability) insurance may create a moral hazard risk, the insurer needs to employ techniques to remedy this problem. The first solution is to perfectly monitor the behaviour of the insured injurer and adapt premium and other policy conditions accordingly. This will in practice be done via classification and differentiation of risks *ex-ante* and *ex-post* via experience-rating systems,¹⁸ such as the well-known bonus-malus system.¹⁹ In the ideal case the insurer will perfectly control the moral-hazard risk, as a result of which the insured injurer still has perfect incentives to take optimal care. However, under full insurance coverage his incentives for care no longer come from liability rules directly but from the control of moral hazard by the insurer.

Generally one would assume potential injurers to have a demand for disaster insurance coverage since even relatively large corporations may be averse against the risk of being exposed to catastrophic liability exposure. For smaller liability risks a willingness to pay the insurance premium may not necessarily emerge, especially when the injurer has alternative options like creating reserves or captives²⁰ that may provide protection against liability exposure in a cheaper way than insurance. However, for catastrophic risks even larger enterprises may have a demand for insurance.

Liability insurance may not only be beneficial from the perspective of the potential injurer. A serious problem that victims may face is insolvency of the liable injurer in case of damage of a catastrophic nature. In that case the damage could easily outweigh the personal wealth of the injurer, as a result of which the victims may not receive compensation.

In sum, both potential injurers and potential victims may have an interest in having liability insurance for man-made disasters. Insurance can protect risk-averse injurers against catastrophic liability risks; insurance can protect the victim against the potential insolvency of the injurer and

¹⁸ Experience rating refers to adapting the premium to the behaviour of the insured.

¹⁹ This is a system whereby an insured receives a reduction of premium (bonus) when during a particular period no accident was reported or a premium increase (malus) if the insured called on the insurance policy.

²⁰ These methods are in some cases referred to as "self insurance".

thus guarantee compensation.²¹ However, there may be many reasons, as practice shows, why liability insurance for man-made disasters is not always available or not always used. Hence, to the extent that operators would have a demand for liability insurance and cannot obtain it, a market failure may arise; the same problem (emergence of a market failure) may equally arise to the extent that operators can externalise liability risks to society as a result of their insolvency which could be cured through compulsory liability insurance.

6.2.1. *Demand-side problems: the case for compulsory liability insurance*

The fact that injurers may not take insurance coverage and thus remain insolvent is referred to in the economic literature as the so-called judgment proof problem.²² If the injurer would be exposed to liability risks whereby the damage would be a lot higher than his personal wealth, an under-deterrence problem emerges. Especially under strict liability (which will often be introduced for these high-risk activities) injurers will consider the accident as one with a maximum damage equal to their personal wealth. As a result they will only take care to avoid accidents with a magnitude equal to their own wealth and not necessarily optimal care. Injurers would, from society's perspective, then be able to externalise harm, i.e. throw the harm on the shoulders of the victims or (if society compensates the victims instead of the injurer) of society at large. Economists have therefore argued that compulsory liability insurance should be introduced in cases where the potential loss caused by the disaster may exceed the injurer's assets.²³ In cases where the damage caused as a result of a disaster would outweigh the assets of an individual tortfeasor (which may often be the case), there is hence a strong economic argument to impose a duty on potential injurers to provide solvency guarantees (such as insurance) since otherwise they would be able to externalise risk. This potential of externalising harm to society may precisely be one of the reasons why liability insurance for disasters is not purchased as often as it should. Liability insurance after all creates costs for industry (paying the insurance premium) whereas injurers that can externalise harm to society can avoid those costs.

²¹ Of course other legal issues would still have to be regulated, such as inter alia a direct right of action of the victim on the insurer and a guarantee that the insurance monies can actually be spent for victim compensation, for example in case of bankruptcy of the injurer after a disaster.

²² See Shavell 1986. ²³ Kunreuther and Freeman 2001.

There are quite a few examples showing that in the absence of compulsory liability insurance injurers will often engage in externalisation of harm. For example, in some countries in the sector of marine oil pollution²⁴ it is common practice for a particular fleet of e.g., tankers to create a separate legal entity for each tanker. These are then constructed as so-called “single ship companies”. As a result of the limited liability of corporations in case something goes wrong (like an oil pollution incident) the company has limited its risk to the assets within that particular company, which is basically only the ship that caused the marine pollution and will in practice often be worthless or even have a negative value.

Also in other cases there are examples of systematic underinsurance by industrial operators. For example in the Netherlands, following the explosion of a fireworks factory in Enschede on 13 May 2000 that caused 19 deaths and 150 injuries, it appeared that the operator of the factory only had purchased very limited insurance coverage.²⁵ A few months’ later on New Year’s Eve in 2000 yet another tragic accident took place in the Netherlands in a bar in Volendam, where as a result of a large fire many youngsters died and others were injured for life as a result of burning wounds. Again, the owner of the facility had only very limited insurance coverage.

This risk of externalisation of harm may hence explain to some extent underinsurance of catastrophic risks. Operators may prefer not to take insurance coverage for high amounts above their own assets for which they could anyway never be held liable in case of an accident because they would be insolvent. Some legal systems do have compulsory liability insurance for particular activities, but it is rather limited. For example, compulsory environmental liability insurance existed in Europe (before the implementation of the ELD) effectively only in Germany, Sweden and Spain.²⁶ Compulsory liability insurance for the risk of fire in public places such as nightclubs and restaurants exists in Belgium, but not in the Netherlands. This led a Belgian commentator to the conclusion that were the tragic fire to have taken place in a bar in Belgium on New Year’s Eve 2000, victims would have been compensated largely through the compulsory liability regime.²⁷

²⁴ Discussed in more detail above in Chapter 1. ²⁵ See Hartlief 2003, 58–59.

²⁶ For an overview of the German system see inter alia Richardson 2000, and for a description of the Swedish system see Faure and Grimeaud 2003, 189–192.

²⁷ Van Schoubroeck 2002.

6.2.2. *Supply-side problems*

Insurers consider catastrophic risks as “difficult to predict”.²⁸ This “insurer ambiguity” limits insurability;²⁹ insurers will add a risk premium and hence ask higher total premiums for catastrophic risks, which may not lead to a willingness to pay on the side of industry, as a result of which a market may not emerge. In other cases insurers may impose very strict conditions or exclusions which may reduce the availability of catastrophe liability insurance. Finally, the magnitude of the damage of a particular catastrophe may also outweigh the capacity of the private insurance market, even if the possibilities of co- and reinsurance are taken into account.³⁰

In sum: insurers may (understandably), given the hard-to-predict nature of catastrophes, lacking statistics and the potentially high magnitude of the damage, be reluctant to provide large coverage for liability insurance for man-made disasters or may only do so at high premiums or with particular exclusions which may make the insurance unattractive.

6.2.3. *Government support needed?*

If it is the catastrophic nature of the damage that restricts the possibilities of (re)insurance and financial markets to cover catastrophic risks, the government may intervene with a facilitative strategy to support the functioning of the private insurance market. This could take various forms. In some cases the government may act as insurer of last resort; in other cases the government could provide reinsurance in cases where capacity on the traditional reinsurance market is lacking.

6.2.3.1. *The case for public–private partnerships*

In law, economics and legal scholarship criticisms have been formulated on the facilitative role of a government stimulating insurance markets.³¹ Gron and Sykes argue that it would be unjust for the government to provide (re)insurance at a lower price than the market price.³² This would give a wrong signal to the market as far as stimulating insurability is concerned. The authors prefer ad hoc solutions whereby compensation is provided to accident victims on an ex-post basis. This would avoid

²⁸ See Gollier 2005. ²⁹ See Kunreuther, Hogarth and Meszaros 1993.

³⁰ See Faure and Hartlief 2003, 88–94 and OECD 2005.

³¹ See Trebilcock and Daniels 2006.

³² See Gron and Sykes 2002 and Gron and Sykes 2003.

the situation that market participants are aware that the government will anyway guarantee compensation.

Also Dutch lawyers, Ammerlaan and Van Boom, have been critical of an intervention by the (Dutch) government to participate in reinsurance against terrorism. They argue that the premium that will be demanded is not a correct premium. Moreover, they argue that it should not be the task of the State to provide private insurance. Damage caused as a result of terrorism, so they hold, should be financed through the public purse.³³

It is striking that most of this criticism is not addressed against the intervention of the government as such, but is based on the assumption that the government will not ask premiums that reflect market prices. It is a criticism shared by Levmore and Logue, who argue that such a regime (of acting as reinsurer of last resort) only has its desired effect of encouraging the purchase of commercially provided terrorism coverage when it involves a substantial subsidy.³⁴ They are sceptical of these types of interventions in the market (for terrorism insurance) arguing that, also without government intervention, “the market would likely have been able to provide the necessary coverage.”³⁵

Apparently, the arguments against government intervention are based on the assumption that the government will not ask competitive reinsurance premiums, hereby subsidising catastrophe insurance. Moreover, without this government support, insurance coverage could have probably developed anyway (at least for terrorism events). Those points can of course only be validated on the basis of empirical research.

The arguments in favour are not surprisingly the mirror image of the arguments against: assuming that capacity on the private insurance market is indeed severely falling behind, it can be assumed that without State intervention, insurance coverage for disasters would simply not have developed.³⁶ Reinsurance by the State can then be considered as an adequate method to resolve the uninsurability problem. A condition is of course that the government charges an actuarially fair premium for its intervention.³⁷ This type of government intervention has, moreover, the advantage that ex-post relief sponsored through the public purse can

³³ Ammerlaan and Van Boom 2003.

³⁴ Levmore and Logue 2003, 304 (arguing that otherwise disaster insurance would still not be “available”).

³⁵ Levmore and Logue 2003, 311.

³⁶ This is a point strongly made by Kunreuther 1996, 180–183; Harrington 2000; as well as by Schwarze and Wagner 2004.

³⁷ Faure 2007, 358.

be avoided. Where the government acts as reinsurer, this at least has the advantage that a premium can be paid by those who actually cause or run the risk. It can thus facilitate market solutions, still provide incentives for prevention to potential victims and avoid negative redistribution. Thus a State intervention as reinsurer may avoid the “catastrophic responses to catastrophic risks”.³⁸ This is further supported by the fact that in case of this type of government-provided reinsurance, the government has the capacity to diversify the risks over the entire population and to spread past losses to future generations, thus creating a form of cross-time diversification which the private market could not achieve.³⁹ On the other hand, they argue that, especially as far as terrorism is concerned, government participation in insurance programmes is crucial since the risk of terrorist attacks is partly in the government’s control and the government can have more information on ongoing terrorist groups’ activities through intelligence services.⁴⁰

Although there is still some criticism on this intervention of government in providing reinsurance coverage, one can notice this type of government intervention in an increasing way, not only in the case of man-made disasters and terrorism but also in the case of natural disasters. However, the literature has indicated that this type of role of government as (re)insurer of catastrophic risks can only be considered efficient when particular conditions are met.⁴¹ These conditions are *inter alia* the following:

- the intervention by government should not distort the normal functioning of the market;
- when government provides reinsurance risk-based premiums should be charged;
- the government intervention should be such that it stimulates the development of market solutions;
- freedom should be left with insurers to choose the statutory insurance; and
- the government intervention should in principle have a temporary character.

³⁸ Epstein 1996. See in this respect also Kunreuther and Pauly 2006, 113, who argue that this government’s role in assisting the supply side allows avoiding the inefficiencies and inequities associated with disaster assistance.

³⁹ See Kunreuther and Michel-Kerjan 2004, 210. ⁴⁰ Kunreuther and Michel-Kerjan 2005.

⁴¹ For a summary of those conditions see Bruggeman, Faure and Fiore 2010.

If these conditions are met it would be possible that government provides efficient reinsurance stimulating the supply of catastrophe insurance. However, as some of the actual cases of government intervention show, government intervention rarely fully complies completely with those conditions.

6.2.3.2. Government providing an additional layer

One example of government support foresees a role of the government to finance catastrophic damages through an additional risk layer, outside of the insurance market and on an ex-post level, above the injurers' own financing. Such a scheme aims at supplementing compensation from injurers (if needed) and thus at maximising the protection of victims in case the damage exceeds certain limits. In this case the role of the State is merely to guarantee an additional layer of compensation and it adds little as far as facilitating insurability is concerned. Examples are the cases of nuclear liability and marine pollution liability discussed above.

As we already made clear when discussing those international conventions, these models do not at all comply with an efficient government support to stimulate insurability. The goal of providing an additional risk layer is also not to stimulate insurability. The main problem is that the government does not charge any price for providing the additional funding; the intervention does not have a temporary character, market solutions are not stimulated by providing government intervention and the government intervention can in that sense largely be considered as distortive.⁴²

In fact, the domains of nuclear power and marine oil pollution are the rare cases where specific statutory measures have been taken to deal with the insurability of liability for damage caused by man-made disasters. Some other cases also relate to civil aviation.⁴³ Before turning to the specific case of terrorism we will present two examples of how industry (supported by government) has dealt with particular catastrophic losses following from man-made disasters. We discuss a reinsurance arrangement with State intervention that has been created in Spain and we briefly discuss the Fukushima case.

⁴² As we discussed in Chapter 1 this criticism mainly applies to the nuclear liability conventions since the additional funding there is provided as a State subsidy. However, in the case of marine oil pollution the additional funding is not paid by the liable ship-owner, but by the oil industry, hence still by a market participant (see above, 1.2.). In fact, in the marine oil pollution case there is in principle no government financing.

⁴³ Equally already discussed in Chapter 1.

6.2.3.3. The *Consortio de Compensación de Seguros*

The Spanish programme offers a good example of a government collecting a fee or premium in exchange for the provision of insurance coverage. The publicly administered disaster financing program “*Consortio de Compensación de Seguros*” (CCS) was founded in 1954 as a corporation providing “extraordinary risks” insurance, namely coverage against natural disasters and risks with “social repercussions” (terrorism, riots, etc.).⁴⁴ The *Consortio* in fact acts as a catastrophe insurer for certain types of insurance and perils in respect of Spanish risks, compensating losses and injuries arising from extraordinary events taking place in Spain and affecting risks located in Spain. It also covers personal damage for extraordinary events taking place abroad if the insured resides habitually in Spain.⁴⁵ This extraordinary risk coverage is a mandatory additional coverage added to fire and natural perils, motor and railway vehicles and other property damage policies. The extra CCS premium is automatically included in the base policy’s premium and varies according to the type of policy offered, although it reflects the base rate charged on the primary policy. Until 1987, disaster insurance premiums were calculated as a percentage of property damage insurance premiums. However, since this meant that the premium income was influenced by events unrelated to disaster insurance, the CCS has set its own premium since 1987, which is not risk-related and equal for the entire country. The extra premium to a personal insurance policy amounts to 0.005 per mille, while that to a property insurance policy differs: 0.08 and 0.12 per mille of the total sum insured for houses and office buildings respectively; 0.18 per mille for businesses; 0.21 per mille for industrial risks; 3.5 euro for vehicle insurance; and between 0.28 and 1.63 per mille for infrastructure.⁴⁶

CCS payments are subsidiary to payments made by the private insurance industry, and the *Consortio* only pays if the risk was not covered by private insurance (e.g., for the poor who did not buy insurance) or if the private insurance company fails to pay due to insolvency. Typically, domestic insurers in Spain do not cover extraordinary risks but issue policy documentation clearly stating that such losses are not their responsibility but that of the *Consortio*, to whom relevant claims should be addressed. Deductibles for property loss amount to 7 per cent of the amount of the indemnifiable damage.

⁴⁴ Over time, the activities of the CCS were extended beyond this core function.

⁴⁵ *Estatuto Legal del Consortio* (Legal Statutes of the Consortio), approved by Law 21/1990 dated 19th December.

⁴⁶ See www.consorseguros.es/web/guest/ad_re_er.

The legal nature of the CCS changed in December 1991, following Spain's accession to the European Community, from being a State monopoly institution to a public business institution attached to the Ministry of Economy and Finance. The CCS now has its own legal personality, full capacity to act and its own assets independent from those of the State. In addition, given the peculiar characteristics of the *Consortio's* activity and especially given the high loss potential and the very nature of the *Consortio* as a public organism, it is absolutely necessary for the *Consortio* to count on an unlimited State guarantee. However, the setting up and appropriate financial management of its resources has always enabled it to face up to its claims obligations without having to make use of said guarantee since its inception over sixty years ago.

6.2.3.4. The Fukushima case

We will briefly discuss the Fukushima case, not only because it is a large-scale and recent (March 2011) man-made disaster, but also because it follows a different structure from the compensation under the nuclear liability conventions discussed in Chapter 1. There are a few features of the insurance and reinsurance structure as well as the State intervention that make the Fukushima case interesting.⁴⁷

Japan is not a member of the international nuclear liability conventions but has an Act on compensation for nuclear damage of 1961. Nuclear operators can still be held liable for the nuclear damage caused by a natural disaster such as an earthquake or volcanic eruption, but they can cover such losses through an indemnity agreement with the government. Since insurers usually exclude the damage caused by natural disasters from liability insurance policies, this kind of risk is covered by an indemnity agreement concluded with the government.⁴⁸ A major difference between the Japanese regime and the international regime is that in Japan the liability of the nuclear operator is unlimited. Although there is a minimum for the requirement of financial assistance that has to be provided by the operator, he is still liable for damage in excess of that amount.⁴⁹ This indemnity agreement is hence a contract that the nuclear operator makes with the government with the view to cover damage which is not covered by liability insurance or other means of financial security. This is mostly

⁴⁷ A full discussion of the Fukushima case can inter alia be found in Weitzdörfer 2011; Faure and Liu 2012a and Faure and Liu 2012b.

⁴⁸ See Act on Indemnity Agreements for Compensation of Nuclear Damage, Act No. 148 of 1961, para 3.

⁴⁹ The Act on Compensation for Nuclear Damage, paras 6–7.

for damage caused by natural disasters. It is important that the operator has to pay the government an indemnity fee. The Japanese State hence intervenes in the compensation for the victims of a nuclear accident on the basis of an indemnity agreement for which the operator pays a fee to the State. However, if the damage is still higher than the amount of the indemnity agreement, the State could intervene under section 16 of the Act on compensation.⁵⁰ This State intervention then still takes place on the basis of a political decision.

Looking now at how compensation will take place in the Fukushima case the picture is slightly more complicated. According to the Act on Compensation, the nuclear operator faces unlimited strict liability and has the obligation to seek financial security up to 120 billion yen.⁵¹ If the damage is caused by an earthquake or volcanic eruption, the government should indemnify losses up to the 120 billion yen minimum financial security requirement.⁵² For damages exceeding this amount, the operator is still liable.

Beyond simply defining the scope of compensable damage, the question exists of how this compensation can be financed. Nuclear damage caused by a natural disaster is excluded from the insurance policy provided by JAEIP.⁵³ Thus, the insurance industry does not seem to be seriously impacted by this accident. The government may have to indemnify the losses up to 120 billion yen.⁵⁴ The remainder of the damage may still create a challenge to the financial capacity of TEPCO. According to the Act on compensation, if the operator's liability exceeds the amount of financial security and the government deems it necessary in order to attain the objectives of the Act, the government shall give aid to the operator.⁵⁵ However, whether and to what extent aid will be given depends on the government's decision. Because of the significant impact of the Fukushima

⁵⁰ Section 16 states: “[w]here nuclear damage occurs, the Government shall give a nuclear operator (except the nuclear operator of a foreign nuclear ship) such aid as is required for him to compensate the damage, when the actual amount which he should pay for the nuclear damage pursuant to Section 3 exceeds the financial security amount and when the government deems it necessary in order to attain the objectives of this act.”

⁵¹ Vázquez-Maignan 2012, p. 9.

⁵² See *Fukushima – Compensation of Nuclear Damage after Great Earthquake in Japan*, *Enformable Nuclear News* (13 December 2011), <http://enformable.com/2011/12/fukushima-compensation-of-nuclear-damage-after-great-earthquake-in-japan/>.

⁵³ This is the insurer of the nuclear risk in Japan.

⁵⁴ Act on Compensation for Nuclear Damage § 3.

⁵⁵ Act on Compensation for Nuclear Damage § 16.

accident and the catastrophic nature of the damage, it will be difficult for TEPCO alone to provide full compensation.

To ensure a prompt compensation of the damage caused by the Fukushima accident, the government prepared a law to address compensation through the creation of a corporation in June 2011.⁵⁶ The Act to Establish the Nuclear Damage Compensation Facilitation Corporation was passed on August 3, 2011.⁵⁷ The Act has three aims: ensuring the prompt and proper nuclear damage compensation for affected people, stabilising the nuclear power station to prevent adverse effects on life and commerce in the surrounding area, and maintaining a stable supply of electricity.⁵⁸ To realise those aims, the Act establishes a Nuclear Damage Compensation Facilitation Corporation (“the Corporation”) and a system of financing the compensation for damage.⁵⁹ The Corporation will receive contributions from nuclear operators to cover the costs of operation and reserve funds to prepare for compensation.⁶⁰ The victims still need to make a claim against the liable operator and the liable operator needs to make the payment to the victims. However, the Corporation can facilitate the compensation and “provide . . . necessary information and advice” to the affected people.⁶¹ If the liable operator needs assistance, the Corporation can provide two forms: ordinary financial assistance, which can be given after a resolution of the management committee of the Corporation; and special financial assistance, which needs to be approved by the competent minister.⁶² To obtain the special financial assistance, the Corporation and the operator need to formulate a special business plan.⁶³ Under this plan, the government will issue government bonds to the Corporation and the Corporation will grant the necessary funds to the nuclear operator.⁶⁴ The Corporation can also get government-backed support from financial institutions. After getting this support, the liable nuclear operator pays special contributions to the Corporation.⁶⁵ Other

⁵⁶ Japan’s Parliament Approves TEPCO Compensation Plan, BBC NEWS (3 August 2011, 6:48 AM), www.bbc.co.uk/news/business-14383832; see Outline of the Bill of the Act to Establish Nuclear Damage Compensation Facilitation Corporation, Ministry of Economics, Trade and Industry, www.meti.go.jp/english/earthquake/nuclear/roadmap/pdf/20110614_damage_corporation_2.pdf (last visited 2 November 2012) (hereinafter Nuclear Damage Compensation Outline).

⁵⁷ See Outline of the Nuclear Damage Compensation Facilitation Corporation Act, Ministry of Economics, Trade and Industry (August 2011), available at www.meti.go.jp/english/earthquake/nuclear/roadmap/pdf/20111012_nuclear_damages_2.pdf (hereinafter METI Outline).

⁵⁸ *Ibid.* ⁵⁹ *Ibid.* ⁶⁰ *Ibid.* ⁶¹ *Ibid.*, 3. ⁶² See METI Outline, 2.

⁶³ *Ibid.* ⁶⁴ *Ibid.*, 2–3. ⁶⁵ *Ibid.*

non-affected nuclear operators also need to pay general contributions based on the principle of “mutual support”.⁶⁶

This Act established a mutual support “pooling system” to provide coverage for nuclear liability after the Fukushima accident.⁶⁷ Some scholars advocate pooling as a useful instrument to finance the compensation of catastrophic losses while preserving preventive incentives.⁶⁸ The mutual support system established in Japan has some characteristics different from the practice in other jurisdictions. In both Germany and the US, where resource pooling between nuclear operators has been established, pooling is done before accidents happen.⁶⁹ However, the ex-post system established in Japan cannot create incentives among operators to monitor each other. Unlike the American and German regimes, under the Japanese system the Corporation is not only financed by nuclear operators, but also by government compensation bonds and government-guaranteed bonds.⁷⁰ If those funds are financed without a market price, this system will look more like a bailout of TEPCO than a pooling system to prevent and compensate future damage.

This compensation scheme in Japan hence has a few interesting features. Though the Act on compensation does not set a cap on the potential liability of nuclear operators, the corporate structure only exposes them to risk up to the value of their assets.⁷¹ In this situation, a financial guarantee is important to ensure efficient deterrence. In Japan, the required financial security is set at 120 billion yen.⁷² This amount is provided through a combination of liability insurance, for which the operator will pay a premium, and an indemnity agreement with government, for which a fee will be paid as well.⁷³

Compensation under this indemnity agreement is not a mere subsidy. However, the indemnity fee charged for government coverage is certainly not market-based. On the contrary, the fee is fixed and therefore not risk-related.⁷⁴ Moreover, though the operator remains liable beyond the insured amount of 120 billion yen (except when the incident would be qualified as a natural disaster of an exceptional character) the exposure to liability of the operator is de facto limited to its assets.⁷⁵ Beyond that amount, Japanese law provides that government may use its discretionary

⁶⁶ *Ibid.*, 3. ⁶⁷ Nuclear Damage Compensation Outline, *supra* note 56.

⁶⁸ See Faure and Vanden Borre 2008, 222; Pelzer 2007, 51. ⁶⁹ See Pelzer 2007, 49.

⁷⁰ METI Outline, 1–2. ⁷¹ See Ramseyer 2011, 3. ⁷² *Ibid.*, 8.

⁷³ See Act on Indemnity Agreements for Compensation of Nuclear Damage, §§ 2–4, 6.

⁷⁴ *Ibid.*, § 6. ⁷⁵ See Ramseyer 2011, 17–18.

powers to “take measures”, meaning that it will intervene to compensate victims. In that case a lack of full internalisation of the accident costs remains a problem.⁷⁶ This still raises the question to what extent a nuclear operator like TEPCO is fully liable for accident costs, and to what extent liability rules do provide adequate incentives for taking preventive measures with a view to cost internalisation.

As far as the financing is concerned, Japan’s programme seems to do better than the international regime at compensating victims. As we have indicated above (5.2.), currently, of the total amount available under the international regime of 381 million euro, only 91 million euro consists of operator’s liability, whereas the remaining 290 million euro consists of State aid.⁷⁷ In Japan this amount of 120 billion yen is in principle paid by the operator, either (in the general case) via liability insurance or, in case of uninsurable risks (more particularly damage resulting from earthquakes, tsunamis or volcanoes) via an indemnity agreement with government.⁷⁸ But the indemnity agreement is, unlike State aid in the international regime, not a subsidy since the operator has to pay a fee for the coverage provided by government via the indemnity agreement.

Of course one could question of whether the fee paid by the operator for the indemnity agreement is comparable to commercially risk-dependent premiums that would be charged on a commercial insurance market. One report shows that in 1998 the premium rate was set at an average of 7.9 per cent of the total amount of coverage,⁷⁹ which is substantially higher than the rate of indemnity fee (0.03 per cent or 0.015 per cent).⁸⁰ However, it should be borne in mind that, given the lack of actuarial data for nuclear accidents, commercial premiums are usually set higher than the actuarial premium. Thus the difference between the rate of indemnity fee and actuarial premium – a more accurate measure of risk – may not be that large. On the positive side, at least in Japan, some money is asked from the operator for the government indemnity, whereas in

⁷⁶ Act on Compensation for Nuclear Damage, §§ 16–17.

⁷⁷ Even after the entry into force of the modification protocol of 2004, only 700 million euro of the total amount of 1.5 billion euro would be operator’s liability and a remaining 800 million euro would still be State aid. Yamori and Okada 2007 and accompanying text. See above 5.2.8.2. for the funding of nuclear liability in the international regime.

⁷⁸ See Ramseyer 2011 and the Act on Indemnity Agreements for Compensation of Nuclear Damage, §§ 2–4, 6 and accompanying text.

⁷⁹ Watabe 2006, 222.

⁸⁰ Order for the Execution of the Act on Indemnity Agreements for Compensation of Nuclear Damage, § 3.

the international regime the State aid is provided for free – functionally, a complete subsidy. Therefore less subsidy is given under the Japanese system. Moreover, unlike the international regime there is in Japan in principle unlimited liability of the operator beyond the amount of 120 billion yen,⁸¹ for which the operator must seek either liability insurance or an indemnity agreement. Hence, the Japanese system has less of a subsidy effect than the international regime and thus better prospects of cost internalisation by the operator.

6.3. Insurance of terrorism-related risk

In this section we will focus on the type of technological or man-made disaster that plays a crucial role in this book, being terrorism-related risks.⁸² From an insurance perspective, terrorism has many features that make it look more like a natural disaster than like a “normal” man-made disaster: in case of terrorism, normal liability rules cannot be applied since the terrorist will usually not be identifiable or if he is, he will usually be insolvent. Moreover, remedies we suggested above with respect to liability for man-made disasters, such as compulsory liability insurance, do not work in the case of terrorists either. That is why in Chapter 8 some alternative systems for redressing terrorism-related risks will be addressed whereby also the examples from the insurance of natural disasters will be discussed.

Terrorism insurance has changed dramatically since 9/11. After that date insurance companies began massively cancelling terrorism coverage (usually on first-party insurance policies, but also related to airline insurance).⁸³ As a result of that cancellation, in many countries systems emerged where the State took the role as reinsurer of last resort. Public–private partnerships were created whereby terrorism coverage consisted of several layers with an intervention by insurers, reinsurers and government. The way in which terrorism insurance emerged in different countries is interesting, because it shows again how government can facilitate the functioning of the market mechanism and more particularly insurance. Of course we do not have the possibility to discuss all terrorism insurance schemes that emerged after 9/11. We have already referred to the CCS in Spain where the CCS provided terrorism cover until 31 October 2000,

⁸¹ Weitzdörfer 2011, 70–71.

⁸² This section draws heavily from Bruggeman, Faure and Heldt 2012.

⁸³ See Hartwig 2002.

after which the cover became available on the private market. Examples also exist *inter alia* in the United Kingdom, where reinsurance is provided through Pool Re.⁸⁴ We will now present the insurance schemes for terrorism in the US, France and the Netherlands.

The American Terrorism Risk Insurance Act of 2002 (TRIA) establishes a temporary programme of shared public and private compensation for insured losses resulting from foreign acts of terrorism in order to “protect consumers by addressing market disruptions and ensure the continued widespread availability and affordability” of terrorism insurance and to “allow for a transitional period for the private markets to stabilize, resume pricing of such insurance and build capacity to absorb any future losses”.⁸⁵ TRIA creates a federal backstop for terrorism insurance, meaning that federal financial support is provided for payment of terrorism claims in the event of a fairly large terrorism incident. The programme is similar to reinsurance in that it provides reimbursement to insurers after they pay claims to a specified level (the deductible) and in that insurers retain a portion of the risk (a co-pay).⁸⁶ However, a difference with reinsurance is that insurers do not pay a premium to be eligible and the government does not establish any reserves. Instead, the costs of the TRIA programme are borne by the taxpayers with some or all of the costs subject to recoupment. In short, the Terrorism Risk Insurance Act of 2002 offers an illustration of the federal government providing coverage above a baseline risk that remains under the coverage of private insurers. The federal government temporarily assumes the role of excess liability insurer (i.e. reinsurer of last resort), providing a cap on the losses for which the private insurance industry remains responsible in the event of a terrorist attack.⁸⁷ The programme would initially exist for two years, with the expiration date set at 31 December 2005, but has been systematically extended ever since.

All insurers providing commercial⁸⁸ property or casualty insurance are required to participate in the programme as elaborated in the Terrorism

⁸⁴ See Huber and Amodu 2006. ⁸⁵ The TRIA act does not cover any of the 9/11 losses.

⁸⁶ Russell and Thomas 2008. ⁸⁷ Rabin and Bratis 2006, p. 325.

⁸⁸ TRIA only applies to commercial property and casualty insurance, which is defined to specifically include excess insurance, workers' compensation insurance, and during the first three years of the TRIA Programme, surety insurance. TRIA does not apply to personal insurance, such as homeowners', automobile or life insurance. Moreover, by law, the TRIA programme does not apply to: federal or private crop insurance; private mortgage insurance or title insurance; financial guarantee insurance offered by a monoline financial guarantee insurance corporation; insurance for medical malpractice; health or life insurance, including group life insurance; federal flood insurance; and reinsurance or retrocessional reinsurance.

Risk Insurance Act of 2002. The insurers must make terrorism insurance available to all policyholders, but are free to choose the applicable extra terrorism premium, which should not be excessive, inadequate or fairly discriminatory.

If a certified foreign act of terrorism causes losses in excess of \$100 million, participating insurers must pay a certain amount in claims – a deductible – before federal governmental assistance can become available. This deductible is now set at 20 per cent of the insurer's directly earned premiums during the preceding year. Losses above the deductible will for 85 per cent be covered by the federal government, while the insurance industry contributes 15 per cent. An annual cap of \$100 billion to all aggregate insured losses has been installed. In case the cap would be exceeded, Congress has the authority to decide who will pay and in what amounts: the Secretary shall determine the pro rata share of insured losses to be paid by each insurer that incurs insured losses under the programme. Insurers that meet the deductible will not be liable for losses in excess of this cap.

French primary insurers that offer fire insurance are required by law to also provide terrorism coverage. In practice, coverage against acts of terrorism was generally included in all standard insurance policies, which means that all private and commercial properties were generally covered against terrorism events. However, after the September 11th attacks, reinsurers cancelled their terrorism coverage and many primary insurers that could not obtain reinsurance chose to stop offering (especially commercial) property insurance to avoid the mandatory terrorism coverage. According to French insurance industry officials⁸⁹ the French government responded to this situation by, first, temporarily requiring the extension of all contracts and, second, beginning negotiations with the insurance industry to develop a more permanent solution. As a result, the "GAREAT" ("*Gestion de l'Assurance et de la Réassurance des Risques Attentats et Actes de Terrorisme*") reinsurance pool was created jointly by insurers, reinsurers and the *Caisse Centrale de Réassurance* (CCR) on 1 January 2002.⁹⁰ The idea is based on the existing administrative structures of the insurance associations and the natural catastrophe programme already in place in France. The goal of GAREAT is to cover acts and attacks of terrorism (including those involving the use of nuclear weapons) which cause damages on French territory (and assimilated territories).

⁸⁹ As interviewed by the United States Government Accountability Office. See GAO 2005, pp. 39–40.

⁹⁰ For all information on GAREAT, see: www.gareat.com/en, which includes the internal rules, co-reinsurance conventions, statutes, etc. of the pool programme.

Though GAREAT membership is not mandatory for insurance companies operating in France, insurers affiliated to FFSA (the national association of insurance companies) and GEMA (the main trade body for mutuals) automatically qualify as members of the pool. Upon subscription to GAREAT, each member is liable in proportion to the amount of the premiums ceded to the pool in respect of the subscription year.

The GAREAT programme is divided into two sections: the “Large Risks” section and the “Small and Medium-Sized Risks” section. The Large Risks section entails all contracts which fall within the scope of application of the GAREAT pool and whose sums insured for direct property damage, business interruption and construction, engineering and financial institution lines are in excess of 20 million euro. The pool’s Large Risks section is in other words limited to commercial, professional and industrial risks where the sums insured are equal to or greater than 20 million euro. The Small and Medium-Sized Risks section, on the other hand, includes those contracts which fall within the scope of application of the GAREAT pool and whose total sums insured are less than 20 million euro. The Small and Medium-Sized Risks section will not be further discussed in the following section, since properties less than 20 million euro may be ceded to the pool on a voluntary basis.

Both sections are the subject of specific provisions and each section is divided into layers. GAREAT’s structure (see Figure 7) may then briefly be described as follows:

- (1) The first layer of the programme consists of co-reinsurance between the members of the pool. The losses to this layer are split between the members proportionally to their respective shares of the section in question.
- (2) The next layers consist of reinsurance by professional reinsurers, who provide capacity in the form of Annual Aggregate Excess of Loss treaties. For the Large Risks section, the members of the pool may participate in these reinsurance layers. These layers are the subject of reinsurance treaties.
- (3) The top layer consists of, for the Large Risks section, unlimited reinsurance granted by the CCR with a guarantee from the French State.⁹¹ This layer is the subject of a reinsurance treaty with the CCR. The CCR receives for this purpose a premium from GAREAT.

⁹¹ The scope of application of GAREAT is not exactly the same as that one of the top layer which is reinsured by CCR with the French State’s guarantee. The scope of application of the CCR corresponds to that of Article L. 126–2 of the Insurance Code, which does

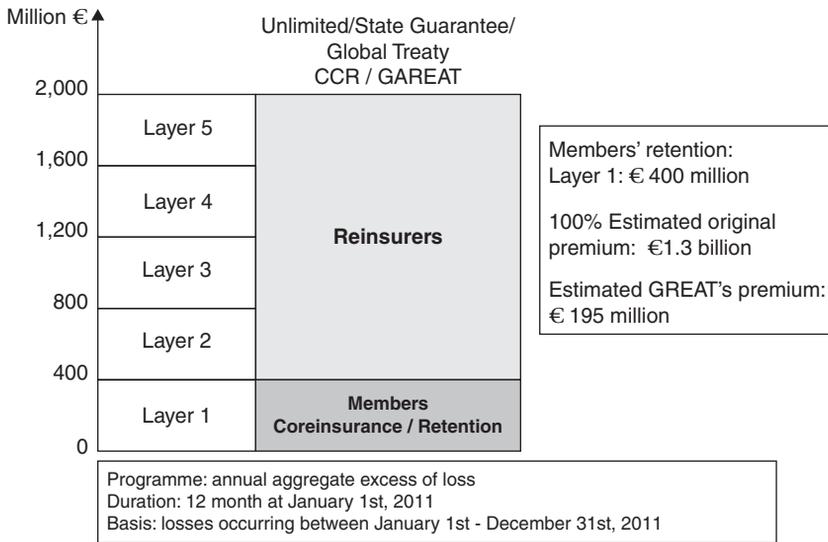


Figure 7 Structure of GAREAT

For the year 2012, the co-reinsurance layer has a limit of 400 million euro for the entirety of the losses. The second, third, fourth and fifth layers constitute the Annual Aggregate Excess of Loss reinsurance programme taken out by GAREAT on the international reinsurance market. The second to fifth layers are each limited to 400 million euro. The sixth layer constitutes the top layer where the CCR provides coverage (with an unlimited guarantee from the French State) in excess of a loss threshold of 2 billion euro.⁹² The premiums paid to GAREAT are intended to cover: (1) the premiums paid to the members and reinsurers participating on the various reinsurance layers; (2) the premiums paid to CCR; and (3) GAREAT's operating expenses. The GAREAT premiums, paid by its members, are calculated independently of the terrorism insurance premiums these members charge under the contracts issued by them. With regard to

not include (or which excludes) a certain number of risks which are covered by GAREAT. Coverage for railway vehicles and coverage for business interruption following a shortage in supplies, for example, do not enjoy the CCR's unlimited coverage. The risks which do not fall within the scope of application of the top layer are co-reinsured by the members of the pool in the same conditions as those applicable to the first (co-reinsurance) layer.

⁹² www.ccrif.org/partnerships/WFCP/Sessions/Day2/France_GAREAT_WFCP_Meeting_Oct_2011.pdf.

Table 8 *GAREAT rates*

Amount of total sums insured	GAREAT premium rate
Sum insured < € 6 mio (facultative session)	3%
€ 6 mio < sum insured < € 20 mio	6%
€ 20 mio < sum insured < € 50 mio	12%
€ 50 mio < sum insured	18%
Sum insured > € 750 mio	Quoted individually
Nuclear risks	24%
Exceptional risks (e.g., captives)	Special rating

the risks ceded to the Large Risks section, the GAREAT premiums are, in principle, calculated by multiplying the GAREAT premium rates, which vary according to the sums insured, by the total amount of the insurance premiums received by GAREAT. The premium to be paid to GAREAT is thus: GAREAT premium rate x premiums collected.

The GAREAT premium rates are indeed fixed by reference to the amount of the sums insured: Consequently, GAREAT earned in 2007 252 million euro in premiums on 105,000 policies.

The Dutch government and the Dutch Association of Insurers agreed to set up a dedicated reinsurance company, called the Dutch Terrorism Risk Reinsurance Company or “NHT” (“*Nederlandse Herverzekeringsmaatschappij voor Terrorismeschaden*”), to cover insurance against terrorist acts in all classes of business.⁹³ This step represented an intervention measure to address a market failure following the limited supply of terrorism risk cover.

Since 1 July 2003,⁹⁴ more than 250 insurance companies (i.e. 93 per cent of all active Dutch insurers), together with the government and some reinsurance companies, participate in NHT. The participating insurance companies are deemed to cede all their terrorism exposure (irrespective of the category of insurance contract) to the NHT pool, which acts as a reinsurance company. The overall capacity of the terrorism-risk reinsurance pool is limited to 1 billion euro per calendar year. It was foreseen that

⁹³ See especially on the NHT: www.terrorisneverzekerd.nl; Ammerlaan and Van Boom 2003 and OECD 2005, 249–253.

⁹⁴ The NHT became operational on 1 July 2003. It has been periodically extended for additional periods, and is expected to be further extended as long as market conditions require.

this threshold of 1 billion euro would be gathered in three layers: the first 400 million euro will be reinsured by the participating primary insurers (even in case a particular insurer does not need to collect revenues from the NHT), while losses in excess of 400 million euro in the annual aggregate will be protected under a reinsurance market excess of loss programme valued at 300 million euro, with any shortfall taken up by the Dutch government, acting as a reinsurer of last resort, up to another 300 million euro. In the first layer applies, moreover, a so-called threshold deductible, meaning that all terrorism damage under the amount of 7.5 million euro belongs to the own risk of the insurers, although this clause has not been laid down in the official regulations. All in all, the solidarity principle among the insurance companies is an important aspect of the NHT – participation in the pooling construction is after all not mandatory, although the non-participants will be followed closely and critically by the supervisor PVK (“*Pensioen - en Verzekeringskamer*”). Further, in order to prevent that a large damage with one insured in one location would monopolise the total capacity of the NHT pool, a premier risk amount of maximum 75 million euro will be insured per location and per insured, for all participating insurance companies together, irrespective of the number of insurance contracts issued.

The Dutch government asks a premium for its reinsurance capacity which is chosen in such a way that it will price itself out of the market at the time insurability of the terrorism risk is restored. From the period of 1 July 2003 until 31 December 2003, the government asked a premium of 10 million euro (i.e. 20 million euro on a yearly basis).⁹⁵ A system of various portions is hereby operated, whereby the first part of coverage is relatively expensive: the first portion of 100 million euro demands the same premium as the second portion of 200 million euro. After all, an incentive is hereby incorporated in order to stimulate the recovery of commercial insurance: in case individual reinsurers would be capable to cover the risk, expectations are that they would offer this coverage against a lower premium. In case of recovery of the commercial insurability the government would indeed price itself out of the market. This point of departure seemed to have started to pay off since a commercial reinsurer declared itself willing to cover the first 100 million euro of governmental coverage (namely between 700 and 800 million euro), so that governmental

⁹⁵ Parliamentary Proceedings of the Second Chamber of Representatives 2002–2003, 28 668, No. 2, 23 June 2003.

intervention was decreased to 200 million euro.⁹⁶ Moreover, since 1 January 2006, the Dutch government only needs to guarantee 50 million euro in case the NHT compensates for more than 950 million euro.⁹⁷

6.4. Conclusions

This chapter has presented theoretical and empirical insights in the approach insurers take with respect to man-made disasters and terrorism. It has shown that particular problems make it difficult to insure third-party liability for man-made disasters.

One problem is that demand for these types of insurances may be relatively limited, generally due to a preference of industry to externalise harm to society. That, of course, reduces incentives to seek insurance coverage for which premiums would have to be paid. The remedy suggested in the literature is to impose mandatory liability insurance. A few cases we presented from the Netherlands showed that this may be necessary. However, for a variety of reasons, one can notice a large reluctance on the side of policymakers to introduce mandatory guarantees.

The main problem in insurance of third-party liability for man-made disasters and terrorism may be related to supply-side problems which cause reluctance on the side of insurers to engage in the coverage of these types of risks. The highly correlated nature of catastrophic risks, the high capacity needed for these high damage events and lack of predictability and statistics all make man-made disasters and terrorism “difficult to insure”. The answer to that problem, given not only in literature but also in practice, is a role for government to facilitate insurability in different capacities. It often takes the form of government acting as reinsurer of last resort.

Some examples, such as the case of the nuclear liability conventions show that government merely provides an additional layer of financing and, in fact, does not stimulate insurability. Case studies related to terrorism but also to Fukushima showed that there are examples where government can play a positive facilitative role in stimulating insurability of man-made disasters and terrorism. For example, the Spanish CCS charges a premium in exchange of the provision of insurance coverage,

⁹⁶ Parliamentary Proceedings of the Second Chamber of Representatives 2002–2003, 28 915, No. 5, 12 August 2003, 3.

⁹⁷ Parliamentary Proceedings of the Second Chamber of Representatives 2006–2007, 31 031 IXB, No. 1, 37.

and the same was the case for the indemnity agreement provided by the Japanese government for nuclear accidents. In some cases, like in the TRIA in the US, reinsurance is an outright subsidy, since insurers do not pay a premium for the State intervention provided. The NHT in the Netherlands, however, charges risk-based premiums and moreover creates strong incentives to create market solutions, since premiums are set in such a way that it becomes attractive for private (re)insurers to develop their own insurance products.

Of course, an important observation related to the preference for one solution or the other may be related to costs. On the one hand, one will have to take into account the potential costs that may arise in case no solution would exist, as shown e.g., by the case of the Netherlands, where operators succeeded in externalising harm. However, these costs of damage externalisation will have to be balanced against the potential costs of a mandatory regime. The problem with e.g., mandatory securities is that a mechanism such as insurance will always lead to costs that are higher than the objective value of the risk. After all, insurance also creates administrative costs (so-called loading) and insurers make a profit. Especially in cases where operators would not be risk-averse, e.g., because they would have substantial assets at their disposition and hence could self-insure, the additional costs of a mandatory regime may be substantial and should hence be taken into account.

The important lesson for the case of the security industry may be that the different schemes and examples we discussed show that even though there are substantial difficulties that insurers face in covering third-party liability for man-made disasters and terrorism, insurance techniques have been developed to mitigate those problems, as a result of which terrorism has become insurable again since most insurance companies first cancelled their policies after 9/11. Interestingly, government played a facilitative role in stimulating those insurance solutions which may be an interesting example for the security industry as well. Several examples also show that it is possible to construct this government intervention in such a way that it mimics market principles (e.g., by charging a risk-related premium) and hence stimulates the functioning of the insurance market, rather than distorting it (as was the case with the nuclear liability conventions discussed in Chapter 1).