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Alternative systems for redressing terrorism-related risks

LUCAS BERGKAMP AND MICHAEL FAURE

This chapter turns to alternative systems for redressing terrorism-related risks. In the US, following the 9/11 attacks, specific legislation has been enacted to encourage security firms to develop and deploy new security technology, products and services. This legislation is called the US Safety Act. Under the Safety Act, protection against tort liability is available to qualifying companies. Section 8.1. sketches the key features of this legislation and asks whether this regime could be transplanted to Europe. Further, this chapter explores whether other alternative compensation mechanisms, more particularly direct compensation systems, might provide a solution. Insurance of natural disasters (8.2.), a victim compensation fund (8.3.) and government-provided compensation (8.4.) are discussed in turn. The final section (8.5.) presents some conclusions.

8.1. The US Safety Act

The Safety Act is the main legal instrument for producers of security-related products and services to limit third-party liability claims against them. It passed narrowly through the US Congress as part of the Homeland Security Act of 2002 (“HSA”) to encourage innovation with respect to anti-terrorist security products and services after the September 11th attacks on the World Trade Center in New York City and other targets in the US.¹ The HSA also established the Department of Homeland Security (“DHS” or “the Department”), a Cabinet-level department within the US government, headed by the Secretary of Homeland Security (“the Secretary”), to administer the new legislation, including the Safety Act provisions. The rationale behind the Safety Act is that stimulating innovation and the development and deployment of anti-terrorist products and

¹ Safety Act Articles 861–865, 6 USC 441–444.

services is the best way to strengthen the US's front-line defence against terrorism.² Congress believed that this innovation was being stifled by risk and litigation management issues arising from the US product liability regime and the associated liability exposure of manufacturers and users of anti-terrorism products and services, potentially leading to crippling litigation as well as public relations and shareholder issues in the aftermath of a terrorist attack.³ Congress also recognised that adequate and affordable insurance was either unavailable or far too costly to effectively mitigate liability for developers and providers of anti-terrorism products and services.⁴ Additionally, government contractors had become increasingly unwilling to accept the potentially enterprise-threatening risk of developing and deploying anti-terrorism technologies and bidding for related contracts. This was limiting the pool of otherwise qualified bidders; reducing competition and limiting the range of cost-effective, best-value solutions for the buyer; and creating disincentives for investment in new technology.

Under the Act, an “act of terrorism” means “any act determined to have met the following requirements or such other requirements” as defined and specified by the Secretary:

- is unlawful;
- causes harm, including financial harm, to a person, property, or entity, in the United States, or in the case of a US-flagged carrier or vessel, in or outside the United States; and
- uses or attempts to use instrumentalities, weapons or other methods designed or intended to cause mass destruction, injury or other loss to citizens or institutions of the United States.⁵

DHS has broad discretion in determining whether to approve a product or service as a “qualified anti-terrorism technology” (“QATT”) and, in

² See PL 107–296, House R. 107–609 (Part 1) at 118.

³ Congressional Hearing Before the Subcommittee on Cybersecurity Infrastructure Protection, and Security Technologies of the Committee on Homeland Security House of Representatives, particularly the Statement of US Representative Daniel Lungren: “[l]egal precedents such as those emanating from the 9/11 attacks as well as those holding the Port Authority of New York and New Jersey liable for the 1993 World Trade Center attacks make it clear that civil litigation can intimidate the developers and users of security technologies and services after a terrorist event.”

⁴ Testimony by DHS Assistant Secretary Parney Albright, *Implementing the SAFETY Act: Advancing New Technologies for Homeland Security*, Hearing before the House Committee on Government Reform, 12, 17 October 2003.

⁵ 6 CFR §25.2.

doing so, it must consider both technical and economic criteria which must include the following:

- Evidence of prior US Government use or demonstrated substantial utility and effectiveness;
- Availability of the technology for immediate deployment in public and private settings;
- Existence of extraordinarily large or extraordinarily unquantifiable potential third-party liability risk exposure to the Seller or other provider of the technology;
- Substantial likelihood that the technology will not be deployed unless Safety Act risk management protections are extended;
- Magnitude of risk exposure to the public if the technology is not deployed;
- Evaluation of scientific studies that can be feasibly conducted in order to assess the capability of the technology to substantially reduce risks of harm; and
- Evidence of the technology’s effectiveness in facilitating the defence against acts of terrorism.⁶

The main tools employed by the US Safety Act to insulate certified security providers from third-party liability are examined below:

8.1.1. *Exclusive federal cause of action against sellers of QATT*

The creation of a specific, federal cause of action confirms that the proper respondent in any civil claim is the manufacturer of a security product or the provider of a security service, which may mean that others in the supply chain, such as users, contractors, subcontractors, customers, vendors and suppliers, benefit from immunity from litigation in this regard. This is justified on the grounds that “[i]f the Seller of the Qualified Anti-Terrorism Technology at issue were not the only defendant, would-be plaintiffs could, in an effort to circumvent the statute, bring claims . . . against arguably less culpable persons.”⁷ This targeting of liability also creates confidence among suppliers and customers engaging in trade and contractual relations with producers and providers of QATTs.

⁶ 6 USC § 442(b)(1)–(7). ⁷ 71 Fed Reg at 33150.

8.1.2. *Exclusive jurisdiction in a federal district court*

Before the passage of the Safety Act, terrorism-related liability lawsuits would likely have been brought in State courts, as a result of which defendants would not have had the benefit of significant liability protection. As DHS explains in the implementing regulations, federal suits under the Safety Act will nevertheless likely be decided in accordance with the law of the State where the attack occurred.⁸

8.1.3. *Limited relief*

The Safety Act also limits the nature, type and scope of damages that plaintiffs may seek in bringing an action against a QATT supplier.⁹ Condensing potential cases into a single cause of action restricted to the Federal Court allows the Act to ban the award of punitive damages in such cases.¹⁰ The Act further limits liability by restricting the award of non-economic damages. While these damages are usually available to all plaintiffs in third-party liability claims in the US, the Safety Act stipulates that these damages may only be sought where the plaintiff has suffered an actual, physical injury. Plaintiffs who have not done so are precluded from seeking damages for pain and suffering, inconvenience, mental anguish, loss of enjoyment of life, loss of consortium, injury to reputation or any other non-pecuniary losses.¹¹ The total exposure of security providers is further limited by the collateral source compensation requirements, which reduce the respondent's liability where they have collected damages from other sources, including for example, from insurance.¹²

8.1.4. *Government contractor defence*

The government contractor defence is an affirmative defence that immunises defendants from certain liability claims, thus providing a significant benefit to the seller of a QATT in a lawsuit. The defence is based on the principle that if a contractor works according to government-provided specifications, it is entitled to the government's privilege of immunity and should be protected by that immunity to the same extent that the government would be if it had performed the work itself. The Supreme Court applied this doctrine in *Boyle v. United Technologies Corp.*,¹³ where

⁸ 71 Fed Reg. at 33150. ⁹ 6 USC §442(b)(1). ¹⁰ 6 USC § 442(b)(1).

¹¹ 6 USC §442(b)(2)(A). ¹² 6 USC §442(c).

¹³ *Boyle v. United Technologies Corp.*, 487 US 500, 512 (1988).

it concluded that holding contractors liable for damages resulting from government contracts would subvert the sovereign immunity protections of the federal government by causing the contractor to subvert its costs back to the government. The Court said that it would apply the defence to “shield . . . contractors from tort liability for products manufactured for the Government in accordance with Government specifications, if the contractor warned the United States about any hazards known to the contractor but not to the Government”.¹⁴ Since this judgment, some federal courts have applied the defence narrowly and refused to allow its use by non-military contractors.¹⁵ However, the Safety Act expressly extends this defence not just to military procurements, but more broadly to companies selling anti-terrorism technology or services to any customer, including private entities. As a result, any seller of a certified technology cannot be held liable for design defects or “failure to warn” claims, unless the presumption of the defence is rebutted by evidence that the seller acted fraudulently or with wilful misconduct. Once certified, the presumption in favour of the government contractor defence applies in perpetuity to all deployments of the product or service that occur on or after the effective date, as long as it was sold before the certification’s expiration or termination.

8.1.5. *Liability capped to the amount of insurance coverage*

The Safety Act also limits liability by imposing a maximum liability ceiling. Following the approval of an application by the DHS, the security provider will be furnished with the details of the level and amount of insurance cover which he will be required to take out under the Act. This amount, determined during the application process, is the maximum liability ceiling for any damages to be paid by a QATT provider found liable after a terrorist incident.¹⁶

There are several prisms through which the effectiveness of the Act may be assessed. First, one can consider the volume of applications that the Department has approved: in Fiscal Year 2011, the DHS approved

¹⁴ Ibid.

¹⁵ See, e.g., *In re Hawaii Fed Asbestos Cases*, 960 F.2d 806 (9th Cir. 1992) (restricting the federal government contractor defence to military contractors) and *Nielsen v. George Diamond Vogel Paint Co.*, 892 F.2d 1450 (9th Cir. 1990) (restricting the federal government contractor defence to military contractors providing military equipment).

¹⁶ 6 USC § 443(c).

more than 40 per cent more applications than the previous year.¹⁷ This increase could be interpreted as an indication that the security industry has warmly accepted the new regime. Second, one could consider the impact that Safety Act designations and certifications have had on the marketplace. Private companies have testified to the positive impact of Safety Act benefits for them,¹⁸ while the Federal Acquisition Regulations were amended in 2007 to mandate that federal government agencies consider whether their homeland security procurements are eligible for Safety Act coverage.¹⁹ The effectiveness of the Safety Act can also be inferred from the broad scope of the products and services which have been approved by the Department. To illustrate this with some specific examples, successful applications include coverage to the comprehensive internal security plan of a chemical company; a technology that provides cybersecurity situational awareness and network security monitoring; and even a process for the production of ammonium nitrate fertiliser to render it less detonable than standard fertiliser. Moreover, the widespread use of the Safety Act Mark, which indicates that a product or service has been properly vetted by the federal government and meets stringent criteria for effectiveness and usefulness, is another sign of the success of the programme. DHS has not released any formal cost-benefit assessment of the US Safety Act. Since these benefits have not been quantified, it is as yet unclear how strong these incentives have been, or how many technologies and products would not have been introduced were it not for the Safety Act.

Yet, the Safety Act has also created new challenges. One potential disadvantage is the risk of premature release and deployment of technology that has not been sufficiently tested. However, this scenario is unlikely to arise given that government must review technology before extending Safety Act benefits to it. Another possible disadvantage is the unavailability of compensation to plaintiffs that have been harmed by the products and

¹⁷ S&T Directorate, FY2011 Year in Review at 47.

¹⁸ Statement of Scott Boylan, Vice President and General Counsel, Morpho Detection, Inc. before the Congressional Committee on Homeland Security: "The transfer of Safety Act coverage . . . was a pre-condition to closing when our company was sold by GE to Safran in 2009. This only serves to illustrate how important this coverage is to investment decisions." Statement of Craig A. Harvey, Chief Operations Officer and Executive Vice President, NVision Solutions, Inc: "By levelling the playing field and capping financial exposure The Safety Act encourages innovation. Without the Safety Act, our desire to bring [our anti-terrorism technology] to market may never have been realized."

¹⁹ See 40 CFR Parts 50 and 52; and 48 CFR § 50.205–1(a).

services deployed by defendants that benefit from protection under the Safety Act. However, no such cases have arisen thus far. The Act has also been criticised because the liability protection it offers is conditional and not complete, while the insurance requirement ensures that compensation is available in appropriate cases. Another concern is the fact that the exclusive remedy provision directs all claims at the QATT producer, thus shielding other actors in the supply chain from liability. It is also unclear how effective the Safety Act would be if an act of terrorism were to occur outside the US, where an anti-terrorism product or service is deployed. While the DHS has stated that, in this case, the Safety Act would apply,²⁰ it has been argued that more should be done to strengthen protection similar to that afforded by the Act outside the US, or to encourage foreign nations to formally recognise its applicability to acts of terrorism occurring in their territory.²¹

The European liability landscape differs from the US system in several respects, which may have implications for both the necessity of a Safety Act-like regime and the way in which such a regime could be designed. This section attempts to identify the closest corresponding features of the EU legal tradition which would affect any replication of the Safety Act regime in the EU. To this end, the key features of the US Safety Act will be categorised as either (1) institutional; (2) procedural; or (3) substantive.

8.1.5.1. Institutional features

8.1.5.1.1. Central role of federal agency The entire process of pre-application review, consultation, application processing and approval is administered at a centralised level through a federal agency, staffed by experts and funded through the federal budget. No similar agency already exists in the EU. Therefore, an EU Safety Act would necessitate entrusting these duties either to an existing or a newly created agency, or the European Commission, which would have to swiftly amass expertise in security measures. Given the significant discretion involved in this process, the Commission would probably be the most appropriate actor to make these decisions. This is so because the long-established *Meroni* doctrine stipulates that delegating executive powers to an agency must involve powers which are clearly defined and must be exercised “subject to strict review

²⁰ The Homeland Security and Defense Business Council, *Why Robust Use of the SAFETY Act Is Critical to Homeland Security & How to Get There*, October 2008, 16.

²¹ *Ibid.*

in light of objective criteria determined by the delegating authority”.²² Under this doctrine, broad powers similar to those currently vested in the US Secretary of the DHS could not be vested in an EU agency or network of agencies, but would have to be redefined so as to minimise the level of discretion afforded in the exercise. This would necessitate defining concepts such as “act of terrorism” and qualifying-product standards. If improperly defined, these definitions could undermine the entire purpose of the scheme, by, for example, allowing liability in cases where actions are deemed to fall outside the scope of an “act of terrorism”. Another option would be the utilisation or creation of national agencies within the Member States, whose decisions would be valid across the EU, possibly through a mutual recognition mechanism.

8.1.5.1.2. Exclusive federal cause of action Another stumbling block is that there are no “federal” courts in the EU, except for the Court of Justice of the European Union (CJEU), which has limited jurisdiction and is currently not competent to hear any civil liability cases involving private parties as defendants. While, in theory, the CJEU’s jurisdiction could be expanded to hear claims by private parties in relation to third-party liability covered by Safety Act-like legislation, this would constitute an unprecedented extension of the Court’s jurisdiction, which would require substantial political will and an amendment of the European Treaties. Moreover, granting exclusive jurisdiction to the CJEU would deprive national courts of jurisdiction, which is currently uncharted terrain in the EU law context.

8.1.5.2. Procedural features

8.1.5.2.1. Review procedure While reviewing applications is familiar territory for the EU, the nature of the Safety Act review process is particularly stringent. Following a thorough internal review under the Safety Act, applications are further subjected to a peer-review evaluation process, during which each application is assessed against the criteria specified under the Act. This peer-review process depends on the availability of experts within the agency and other federally funded research and development centres and agencies. Transplanting this process into the EU may prove onerous or expensive, since an analogous agency or network of agencies would have to be created, or at least coordinated.

²² Case 9/56 Meroni & Co, *Industrie Metallurgische SpA v. High Authority* [1985] ECR 133, 152.

8.1.5.2.2. Publication of the decisions Decisions granting protection pursuant to the Safety Act could be published in the EU Official Journal, national official journals or a publicly accessible database (similar to the database established by the European Chemicals Agency). If decisions by national authorities are notified to the Commission, a central register could be created. The products and services that benefit from specific protection under the Safety Act should be clearly identified in the decisions and register.

8.1.5.2.3. Supervision of the use of the Safety Act mark If an EU Safety Act were to include a mark, supervision of the use of this mark could be performed by the Commission, the competent EU agency to be established and/or the Member States.

8.1.5.3. Substantive features

1. The SAFETY Act limits liability exposure by (i) excluding punitive damages and prejudgment interest, (ii) excluding recovery for non-economic damages in the absence of physical injury; (iii) limiting recovery for non-economic damages in proportion to the defendant's liability for economic harm; and (iv) reducing recovery in a suit against the seller of the QATT by any amounts collected by the plaintiff from insurance or other collateral sources.

These methods of limiting liability are unprecedented in EU law. However, there does not seem to be any need to introduce these rules, since Member State civil liability regimes do not provide for punitive damages. Moreover, compensation for pain and suffering and moral damages tends not to be substantial, while collateral sources of compensation, such as insurance, significantly reduce the amount of compensation to be paid following civil lawsuits (and, thus, also the incentive to bring a lawsuit).

2. The US Safety Act authorises the Secretary to set a liability cap on the amount of liability insurance specified by the DHS based on the maximum amount of liability insurance reasonably available from private sources.

Although unusual, this rule is technically possible under EU law. Within the domain of national law, the amount of compensation awarded may be mitigated based on factors such as the insurance coverage limit of the defendant. However, this would entail agreement on pre-determined rules and definitions, which would raise boundary issues. Further, these

rules would have to be standardised, so as to facilitate cooperation among Member State agencies and to ensure that the system is not vulnerable to charges of breach of competition law.

3. The Safety Act creates a rebuttable presumption of a “government contractor defence” in any product liability lawsuit.

The “government contractor defence” and the notions of sovereign and sovereign-derived contractor liability, are typically not found in the domestic laws of the Member States. Accordingly, no such concept could be included in EU law.

The transatlantic differences in the civil liability landscape highlighted above indicate that, while a Safety Act-like regime could be implemented in the EU, many issues would require specific attention and a high degree of legal innovation. While exploring uncharted legal terrain is certainly possible, there are a number of reasons why the EU may not want to look to the Safety Act regime as a source of inspiration. First, in the US, the Act has been criticised because it may extend protection even to those sellers who put anti-terrorism products on the market knowing that these products would provide inadequate protection against terrorist attacks.²³ Moreover, the US Safety Act does not provide a generalised exclusion of liability. Rather, designations are issued only for a reasonable period, no longer than thirty-six months. Additionally, the cap on liability to an insurable amount found in the Safety Act is arguably not necessary in the EU, since the security industry has as yet not experienced an insurability problem justifying similar regulatory action in Europe. Finally and crucially, the aforementioned transatlantic differences are indicative of the fact that the Safety Act was created to alleviate the effects of features specific to the US liability litigation environment. As a result, the Safety Act is not easily transplanted to a different jurisdiction. For example, imposing a liability cap equal to a maximum insurable amount assumes insurability problems for the security industry, while barring punitive damages and limiting the award of non-economic damages are necessary due to the high amounts awarded and the wider array of grounds for claiming damages in the US. These problems do not exist, or are not present to the same extent, in the European tort liability environment. Therefore, it remains doubtful whether a Safety Act-like regime would be a good regulatory choice for Europe.

²³ 149 US Cong Rec S46 (Jan 7, 2003).

8.2. Insurance of natural disasters

In this section we focus on the approach insurers take towards the coverage of large-scale natural disasters. At the outset, we should note that it has taken substantial experience and learning in several countries to arrive at an adequate coverage of natural disasters. The reasons are similar to the case of man-made disasters and terrorism: there are substantial problems both on the demand-side as well as on the supply-side that explain why these insurance regimes have not emerged on a large scale (with the exception of the countries where insurance has been made compulsory, such as in Belgium and France). We discuss the problems encountered and the solutions developed by insurers, as well as the facilitative strategies provided by government, which have played a significant role.

There is a big difference between natural disaster insurance and terrorism insurance, however. In the case of natural disasters, insurance provides first-party coverage, not tort law or third-party liability coverage. The reason, of course, is that natural disasters are typically “acts of God” or force majeure as a result of which no injurer can be identified that could be held liable. The only possibility to invoke third-party liability rules in case of a natural disaster may well be to focus on the public authorities. It has been argued that natural disasters are not necessarily beyond anybody’s control, since most catastrophes are produced jointly by nature and humans.²⁴ Natural forces may create a flood, but what turns the flood into a disaster often is a human decision, for example, the decision of a government to provide permits for building in flood-prone areas. If such disasters occur, the public authority involved may be a possible liable party, if, for instance, it failed to take adequate preventive measures or to give adequate warnings.²⁵ The insurance solutions we discuss below, on the other hand, are so-called first-party insurance schemes, which involve potential victims contracting insurance to seek protection against the financial consequences of a natural disaster.

8.2.1. *First-party insurance for natural disasters*

First-party insurance is a system whereby insurance coverage is provided and compensation is awarded directly, by the insurer to the victim. It

²⁴ See Zeckhauser 1996, 113.

²⁵ See on the governmental responsibility after Hurricane Katrina Bier 2006 and Walter and Kettl 2006.

is thus the prospective victim itself who buys this type of insurance to cover possible future harm and corresponding damages. The underlying principle in first-party insurance is that the insurance company pays out once damage has occurred, provided that the particular damage is an insured risk covered by the insurance policy. Contrary to third-party insurance, payment to compensate damage is made by the insurance company irrespective of whether there is liability.²⁶

Accordingly, insurance protection moves away from tort law and third-party insurance and towards victim-funded insurance coverage on a first-party basis. This trend is visible in the area of environmental damage, where insurance operates often as a form of first-party insurance.²⁷ There is a similar movement toward first-party insurance in the areas of medical malpractice²⁸ and traffic accidents.²⁹ Compared to third-party liability insurance, first-party insurance schemes offer some benefits. Indeed, Priest suggested that the shift towards first-party insurance would have been an appropriate remedy to the American insurance crisis that occurred in the 1980s.³⁰ Priest reasoned that:

[I]n comparison to first-party insurance, third party tort law insurance provides coverage in excessive amounts, in a manner that substantially restricts risk segregation and at costs that far exceed the costs of first-party insurance. For both consumer and provider risk pools, these differences will increase the correlation of risks within existing pools and, as a consequence, increase the extent of adverse selection, leading to the breakdown of the pools.³¹

Other commentators, such as Bishop and Epstein, also favour first-party insurance.³² Specifically, it has been argued that first-party insurance schemes operate at lower administrative costs,³³ and are better able to adapt premiums and policy conditions to specific risks.³⁴ These features enable superior risk differentiation in a first-party context, which is advantageous for both insurers and insured.³⁵ In the case of third-party insurance, the risks to be assessed are possible damages suffered by a third party not known at the time of contracting.³⁶ Lower administrative

²⁶ Faure and Hartliof 2003. See also on the difference between first-party and third-party insurance, *supra* 5.1.3.

²⁷ Faure 2002. ²⁸ Wendel 2004, 367 (showing Swedish system of patient insurance).

²⁹ Faure 2001, 177–179; Tunc 1996. ³⁰ Priest 1987, 1552.

³¹ *Ibid.*, 1552–1553. ³² Bishop 1988; Epstein 1985; Epstein 1996.

³³ Indeed, there is no incentive to identify a liable tortfeasor and bring a liability claim; Epstein 1996.

³⁴ Perry 2004, 771–778. ³⁵ Bishop 1988, 246. ³⁶ Epstein 1985, 648–650.

costs under a first-party insurance policy result from the cost avoidance associated with liability claims and coverage limited to the risk of damage to a particular victim or a particular site.³⁷ It is therefore much easier for the insured to signal particular circumstances, which may influence the risk to the insurer.³⁸ These benefits largely explain the trend away from third-party insurance and toward first-party coverage.

First-party insurances can be divided into two main groups: (1) insurance that compensates for personal injuries; and (2) insurance that provides coverage for specific property damage.³⁹ Typically, the personal injury schemes do not vary coverage based on the source of the injury, i.e. whether or not the cause was a catastrophe.⁴⁰ Accordingly, it takes the form of generalised accident insurance coverage for the costs that a victim incurs as a result of an accident, such as lost income, coverage of (additional) medical expenses and in some cases even pain and suffering.⁴¹ Most European countries cover a large chunk of personal injury expenses through a social security system.⁴² Consequently, well-informed potential victims purchase additional or complimentary coverage according to their individual degree of risk aversion and corresponding need for insurance.⁴³

The second type of first-party insurance schemes covers property damage, for example, fire insurance. In many countries, however, first-party insurance for property damage excludes damages caused by a natural disaster.⁴⁴ In the Netherlands, for example, property damage caused by flooding is excluded.

8.2.2. Demand-side problems

Empirical evidence has demonstrated that even in those countries where disaster insurance is widely available (such as in the US and in Europe),

³⁷ Bishop 1988, 249. ³⁸ Ibid.

³⁹ Medaglia et al. 1995, 829. ⁴⁰ Ibid., 829–830.

⁴¹ This is more particularly the case in the French policy referred to as “*Garantie contre les accidents de la vie*”. This new insurance policy provides broad first-party compensation against accidents and compensates as if tort law were applicable, thus including compensation for pain and suffering. See also The French GAV® Accident Compensation, SCOR Technical Newsl. (SCOR Group, Paris, France), Oct 2003, at 2, available at http://scor-front1.heb.fr.colt.net/www/fileadmin/uploads/publics/NTNV2003_05_en_tuknv05.pdf.

⁴² Miller 1982, 554–556.

⁴³ This assumes that competitive insurance markets offer coverage.

⁴⁴ The Demand for Flood Insurance: Statement before the Comm. On Banking, Housing, and Urban Affairs 2 (Oct 18, 2005) (Statement of Mark Browne, Gerard D. Stephens CPCU Chair in Risk Management and Insurance).

individuals tend not to buy sufficient amounts of it, resulting in dramatic cases of underinsurance. This came to light, for example, after the “flood of the century” of the river Elbe in Germany,⁴⁵ and in the US after the Katrina hurricane.⁴⁶ Several reasons have been suggested for this low demand for disaster insurance. First, as a result of cognitive limitations, low probability events such as natural disasters are systematically misjudged,⁴⁷ resulting in a “it will not happen to me” attitude.⁴⁸ Second, there is empirical evidence that people prefer uncertain losses rather than the certain loss incurred by paying the premium. Insurance is considered an investment. The problem with disaster insurance is that a potential victim (such as a house-owner) is confronted with the certain loss of a premium, whereas there is a low expectation of a return on the “investment” during a lifetime and hence a low demand.⁴⁹ Third, some literature indicates that ex-post government relief (i.e. provided after a disaster) may reduce incentives to purchase insurance coverage.⁵⁰

8.2.3. *The case for comprehensive disaster insurance*

Given the problems on the demand side, an efficient demand for insurance for natural disasters may not emerge. It therefore has been suggested repeatedly that a system of mandatory comprehensive insurance should be created.⁵¹

8.2.3.1. Theory

In the liability context, the economic rationale behind compulsory insurance is the externality argument: in the absence of adequate insurance, insolvent injurers would externalise risk. As discussed in 6.2.1., that may be an argument in favour of compulsory liability insurance, but it is not an argument in the case of first-party insurance. One might argue, however, that uninsured (or inadequately insured) victims will call on public resources, such as the healthcare system, for help and thus also “externalise” the risk. Given that most European legal systems provide social security and coverage for healthcare through mandatory healthcare insurance, it is hard to see why that should be supplemented

⁴⁵ See for example Endres et al. 2003; Magnus 2006 and Schwarze and Wagner 2004.

⁴⁶ See Daniels, Kettl et al. 2006. ⁴⁷ See Slovic et al. 2000.

⁴⁸ Kunreuther 1996, 175. ⁴⁹ Slovic, Fischhoff et al. 1977.

⁵⁰ This is a point strongly made by Epstein 1996; and by Harrington 2000.

⁵¹ Kunreuther 1968.

with an additional compulsory accident insurance. The same is true for the property damage that victims may suffer as a result of a disaster. While the absence of insurance may lead to calls from victims for government relief and possibly to political pressure for such relief (if the number of victims is large), there is no direct issue of externalisation of harm.

Another conventional economic argument in favour of compulsory insurance is based on information problems. This argument assumes that citizens would be willing to pay a premium to have the risk of large damages as a consequence of catastrophes removed from them, but simply do not purchase insurance because they lack information on the probability and magnitude of the risk and/or on the availability of insurance. This is some empirical basis for the argument that due to imperfect information, individuals are not fully informed of their own preferences.⁵² Regulation would thus be the classic remedy for such an information deficiency.⁵³

This would be an argument in favour of compulsory (first-party) insurance for property damage caused by natural disasters, where empirical evidence shows that victims greatly underestimate these risks and would demand insurance if they were well informed.⁵⁴ People might experience better life satisfaction or subjective well-being, if arrangements guaranteeing financial compensation after disasters could be made.⁵⁵ Support for a regulatory duty to insure against disasters, in addition to voluntary property insurance (as is the case in France), could also be drawn from behavioural experiments showing that where disaster insurance is sold along with insurance against likely losses (like property insurance) at a reasonable extra cost, this will result in more people taking out insurance against low-probability losses.⁵⁶ Thus, the argument goes, it is in society's best interest for people to insure themselves against unlikely calamities, and there are ways to provide such coverage efficiently.

On the other hand, there are drawbacks to such an insurance obligation. First, the limited empirical evidence available showed that it is not only the lack of information on risk that causes the low demand for insurance,

⁵² Kaplow and Shavell 2001, 1332.

⁵³ See generally Schwartz and Wilde 1979. ⁵⁴ Kunreuther 1968.

⁵⁵ Frey and Stutzer 2002, and for a summary of recent research in this area, Frey and Stutzer 2004.

⁵⁶ See Slovic et al. 2000, 60–61 and 70–71. It has also been argued that compulsory insurance may help to improve hazard perception (Slovic, Kunreuther and White 2000, 25).

but rather “bounded rationality” linked to the idea that “it will not happen to me”,⁵⁷ combined with unwillingness to pay a premium for an unlikely hazard. The question thus arises of whether forcing people to take out disaster coverage should not be considered as paternalistic.

Second, if, on the contrary, one assumes that potential victims are poorly informed as to their potential exposure to disasters and the benefits of first-party insurance, regulatory intervention should instead focus on mandatory disclosure of such information to potential victims, rather than mandatory coverage. Again, this is supported by behavioural experiments, which show that graphic presentations may – to some extent – increase the perceived risk of that hazard.⁵⁸

Third, if a duty to purchase “disaster coverage” were to be introduced for all victims, those who do not run any risk may be at a disadvantage. Taking the example of flood insurance, a person living in a house close to a river may well need flood insurance, but someone living on the twentieth floor of an apartment building will likely not need it. A generalised duty to purchase insurance coverage would force all individuals to take insurance coverage, even if they run no risk at all. This would create inefficiencies and lead to cross-subsidies, whereby those who run no risk contribute to the coverage for those who benefit from the insurance coverage. A more efficient (and fairer) solution may therefore be to limit compulsory coverage (e.g., for flood risks) to those individuals who actually are exposed to the particular risk.

It has also been argued that compulsory insurance for disasters may be necessary to mitigate the risk of adverse selection, which results in only the “bad risks” purchasing insurance coverage. To make the risk insurable, “good risks” should also be covered and therefore insurance should be made compulsory.⁵⁹ Indeed, adverse selection is a crucial issue that merits attention in relation to the insurability of the disaster risk. A possible remedy against adverse selection is a narrow pooling of risks, which reduces the difference between “good” and “bad” risks.⁶⁰ This implies that making insurance mandatory is not necessary to ensure insurability of disaster risk. If it is required in a specific case, the obligation to buy

⁵⁷ Kunreuther 1996, 175.

⁵⁸ Slovic, Kunreuther and White 2000, 15; Slovic 2000, 70–71.

⁵⁹ This argument was, for instance, advanced in the Netherlands by the Dutch Insurers Association with respect to flood insurance. For details, see Faure and Hartlief 2002, 183–189.

⁶⁰ Schwarze and Wagner 2004.

insurance can be limited to those who are exposed to the risk.⁶¹ Within the group that is exposed to risk (and need insurance), an adequate differentiation of risks and premiums, as a remedy to adverse selection, may well be possible.

Fourth, a duty to insure should be considered only if sufficient competition in the insurance market exists. If this is not the case, the introduction of a duty to insure creates dependency, as a result of which the (concentrated) insurance market could engage in quasi-monopoly pricing and determine unilaterally the conditions under which to sell coverage. Thus, in a monopolistic market, compulsory insurance will create inefficiencies,⁶² and if mandatory coverage is introduced, sufficient room should therefore be left for competition. This means that premiums for disaster coverage should not be fixed by law but be the result of competition between insurers.

Fifth, some catastrophic risks may be so “new” that insurance markets have not yet developed insurance coverage. If a differentiated supply of insurance policies is unavailable, one might question of whether it makes sense to introduce mandatory insurance. The idea of mandatory disaster insurance has also been defended from the point of view that sentimental politicians are *de facto* unable to deny post-disaster aid.⁶³ Whether such inability exists, however, is an open question.

8.2.3.2. Examples

A well-known example of mandatory first-party insurance is the French model, according to which all individuals who have taken out first-party property damage insurance policies have to pay a supplementary premium for mandatory coverage for natural disasters. Thus, France does not have a generalised duty to insure, but a compulsory complementary coverage on (voluntary) property damage contracts. However, property damage policies are widespread and all individuals who purchase such

⁶¹ Priest 1996, 225–226.

⁶² It has, for instance, in relation to environmental insurance, also been suggested that if one makes the availability of insurance coverage a prerequisite for the operation of an enterprise, insurance undertakings become *de facto* licensors of the industry. From a policy perspective, this may be particularly problematic if it happens on concentrated insurance markets (see Monti 2001, 65).

⁶³ Viscusi 2010, 142–148. “Saying that one will not support assistance after a future hurricane may, of course, be a form of hypothetical trash talk. It is a quite different matter to actually deny assistance once there are identified victims with their stories featured on the evening news.” (146)

a policy have to pay for the additional coverage for natural disasters.⁶⁴ This system is apparently accepted in France, because the risk of cross-subsidisation may be small: France seems to be confronted with many types of natural disasters. This means that if one is, as inhabitant of an apartment on the twelfth floor, not exposed to the risk of flooding, one may be at risk from other natural disasters, such as earthquakes or heavy storms.⁶⁵

Belgium has adopted a similar model. It has had a compensation fund for disasters since 1976. As a result of a legislative amendment in May 2003, a compulsory flood coverage has been introduced tied to (voluntary) property damage insurance contracts. The Belgian model appears to mimic the French system, but the difference is that this mandatory supplementary coverage applies only in specific risk areas. This avoids a negative redistribution, since those who are not exposed to the risk are not forced to take out coverage.⁶⁶ Recently, this system was changed again and Belgium now follows the French model of mandatory disaster coverage.⁶⁷ In Belgium, the disaster coverage applies to voluntary fire insurances.⁶⁸ In Italy and Germany, legislative initiatives for some form of mandatory coverage against damage caused by disasters are currently under discussion.⁶⁹

In France, due to the explosion in Toulouse on 21 September 2001, a law was enacted in July 2003 that ensures that victims now also have additional compulsory coverage for damage caused by technological risks (such as the explosion in Toulouse). The rationale of this change, however, is unclear: mandatory coverage for technological disasters does not make much sense if a liable wrongdoer can be identified. Instead, the

⁶⁴ The supplementary coverage for disasters is financed through an additional premium of 12 per cent on all property damage insurance contracts. For a description and critical analysis of this French model, see Schwarze and Wagner 2004 and Lafay, Cannarsa and Moréteau 2006.

⁶⁵ The same point is made by Schwarze and Wagner 2004: if a number of previously distinct risks (flood, windstorms, and hail) is pooled, individual exposure to one or more of such risks would almost be guaranteed.

⁶⁶ Through the charging of exposure-related premiums “cross-subsidization” between various areas could be reduced (Schwarze and Wagner 2004).

⁶⁷ For a critical discussion of the Belgian system, also with a comparison to the Netherlands see Bruggeman 2011 and Faure, Bruggeman and Haritz 2010.

⁶⁸ Act of 17 September 2005, *Moniteur Belge*, 11 October 2005. It seemed impossible to pursue the idea of limiting the mandatory coverage given the high (political) costs of identifying the special “risk areas” where the duty to insure would apply.

⁶⁹ Faure 2006, 442–444.

introduction of solvency guarantees on the side of the wrongdoer, such as compulsory liability insurance, could have been examined.

8.2.4. *Supply-side problems*

In addition to questionable demand for catastrophe insurance, there are also problems on the supply side. A number of insurers exclude coverage for property damage caused by (natural) catastrophes based on alleged uninsurability of losses. The three principal reasons for this uninsurability are the fear of catastrophic losses, the uncertainty of the risk and the lack of insurance capacity.⁷⁰

First, natural hazards normally affect a large area and, thus, are highly correlative. Past disasters indicate that a significant number of (in particular, non-geographically diverse) insurance companies became insolvent as a result of catastrophic losses caused by natural hazards. Consequently, property insurance became increasingly difficult to obtain in hazard-prone areas.

Second, the absence of historical data and the imperfect scientific knowledge contributes to the supply deficiencies of first-party catastrophe coverage.⁷¹ However, this point needs to be put into the perspective of new catastrophe modelling.⁷² The lack of predictability regarding the probability of both an extreme event occurring and the outcomes of such an event, results in ambiguity. This ambiguity may lead to uninsurability of a specific type of catastrophic event or in a specific hazard-prone area.⁷³ Insurers, however, can take account of such uncertain probability of catastrophic damage by charging a so-called risk premium.⁷⁴ If they do, two problems still exist: (1) a higher insurance premium may decrease demand for insurance against catastrophic risks; and (2) insurance regulation may limit insurers' ability to charge higher premiums for catastrophic risks.⁷⁵ Regulated rates are a major problem in some countries and, in certain high-risk areas, may be the main obstacle to an effective voluntary insurance market for consumers.⁷⁶

⁷⁰ Kunreuther 1996, 178–179; Gollier 2005, p. 28. ⁷¹ Faure and Hartlieb 2003.

⁷² See generally, Hartington et al. (1997) (discussing scientific issues associated with catastrophes).

⁷³ Kunreuther, Hogarth and Meszaros 1993, p. 83; Kaplow and Shavell 2001.

⁷⁴ Kunreuther et al. 1995, p. 338. Doherty et al. recently found that, under one-year contracts, mean annual premiums are 25 per cent higher when the probability of the event is ambiguous than when it is given precisely. Under a 20-year contract, aversion to ambiguity is even stronger. See Doherty et al. 2008, 147. The source of the uncertainty does not affect the insurers, contrary to Cabantous' beliefs. Cabantous 2007, 220, 235.

⁷⁵ Faure and Hartlieb 2003, 83, 86. ⁷⁶ Gollier 2005, 24.

Third, insurance companies need sufficient financial reserves to cover the particular catastrophic risk.⁷⁷ In many cases, however, and especially in relation to catastrophic events, the expected loss may exceed the capacity of the individual insurer.

Pooling between insurers may alleviate these issues, but in some cases leads to welfare losses due to cartel agreements that cause uninsurability of natural disasters. For example, in the Netherlands during the 1950s, the Dutch Insurers' Association issued a so-called "binding decision" on all of its members, prohibiting them from insuring flood and earthquake risks (the latter being a relatively small risk in the Netherlands with the exception of the area around Southern Limburg). Their argument was that these risks were technically not insurable, since flooding and earthquake risks were inherently uncertain and, hence, difficult to calculate. Moreover, these types of insurance would only be attractive to high-risk individuals (e.g., those living in flood-prone areas) and this would result in incurable adverse selection. As a consequence, the members of the Dutch Insurers' Association all refrained from covering these risks. While the arguments concerning the uninsurability are doubtful, the Association's binding decisions violated competition law. At the time, Commission Regulation 3932/92 of December 21, 1992⁷⁸ exempted, under certain conditions, cartel agreements in the insurance industry from the prohibition of Article 85(3) of the EC Treaty,⁷⁹ but this exemption was heavily criticised.⁸⁰ The Dutch binding decisions not to insure flood and earthquake risks, of course, limited supply and violated the conditions of Regulation 3932/92.⁸¹ In a 1999 report to the European Parliament and to

⁷⁷ Doherty draws attention to the fact that the importance of capital as a requisite to secure an adequate rate of return is often not fully understood. The capital needed by an insurance firm to be able to cope with catastrophic losses must be high enough to cover (1) the expected claims costs and other expenses, and (2) the costs of allocating risk capital to underwrite this risk. See Doherty 2008, 149.

⁷⁸ 1992 OJ (L 398) 7–14.

⁷⁹ Pursuant to Article 85(3) of the EC Treaty (now replaced), agreements, decisions by associations of undertakings and concerted practices in the insurance sector which seek cooperation with respect to: (a) the establishment of common risk-premium tariffs based on collectively ascertained statistics or on the number of claims; (b) the establishment of standard policy conditions; (c) the common coverage of certain types of risks; or (d) the establishment of common rules on the testing and acceptance of security devices, shall not be prohibited as incompatible with the common market. EC Treaty Article 85 (as of 1985) (now article 81), available at http://ec.europa.eu/comm/competition/legislation/treaties/ec/art81_en.html (last visited October 2008).

⁸⁰ Faure and Van den Bergh 1995.

⁸¹ It violated Preamble 8: Standard policy conditions may in particular not contain any systematic exclusion of specific types of risk without providing for the express possibility

the Council concerning the functioning of the exemption in Regulation No. 3932/92,⁸² the Commission discusses these binding decisions and reports that, as a result of the questions asked by the Commission, the Dutch Association of Insurers decided to bring its binding decision in line with EU law by simply converting it into a non-binding recommendation, which left each insurer free to extend coverage to flood risks. This example demonstrates that a minimal supply of insurance coverage may well be the result of anti-competitive behaviour by insurers, who mutually agree not to cover particular catastrophic risks.

At a policy level, this demonstrates that a necessary condition of insuring catastrophic risks is a competitive insurance market that offers a wide variety of differentiated insurance policies and responds to the demand of the market. Instead of direct government intervention, government should guarantee an adequate competition policy with respect to insurance markets. Otherwise, uninsurability, as the Dutch example shows, may simply be the result of a cartel agreement.⁸³ As long as insurers are able to estimate the frequency and magnitude of potential catastrophic losses, catastrophic first-party insurance should be available. Due to problems of ambiguity, adverse selection, moral hazard and highly correlated losses, insurance companies may well want to charge a substantial risk premium that is not much lower than the expected loss. If this is the case, there may be little demand for coverage and the insurer may not want to invest the time and money necessary to develop the product. If, on the other hand, the insurer is convinced that there is sufficient demand, he will attempt to raise sufficient capacity to survive possible catastrophic losses.

8.2.5. *Government support*

As in the case of man-made disasters and terrorism which we discussed in the previous section, a public policy that makes the government reinsurer

of including that cover by agreement and may not provide for the contractual relationship with the policyholder to be maintained for an excessive period or go beyond the initial object to the policy. This is without prejudice to obligations arising from Community or national law. 1992 OJ (L 398) 7–14.

⁸² Report from the Commission to the Council and the European Parliament on the operation of Commission Regulation No. 3932/92 concerning the application of Article 81 (ex-Article 85), para 3 of the Treaty to certain categories of agreements, decisions and concerted practices in the field of insurance, COM 1999, 192 final.

⁸³ We do not argue, however, that competition necessarily provides better results than (State) monopolies. See Winand Emons 2001, 247–248 (empirical research showed that under specific circumstances, particularly when insurers are unable to differentiate risks adequately, a natural monopoly with one (State) insurer may provide better results than a competitive environment); see also Von Ungern-Sternberg 1996.

of last resort may cure some of the supply-side problems in the insurance of natural hazards.⁸⁴ Since the theoretical and policy considerations behind such facilitative strategies by government to stimulate insurability have been explained in the previous section,⁸⁵ a few examples of insurer approaches towards large-scale natural disasters with government support suffice.

8.2.5.1. CCR

To provide reinsurance back-up to the market, France established a publicly owned reinsurance company, the *Caisse Centrale de Réassurance* or “CCR”.⁸⁶ Reinsurance is not compulsory and insurers are free to contract with other private reinsurance companies. Reinsurance with CCR, however, is particularly attractive in terms of premiums and scope of coverage: a State guarantee kicks in once CCR exhausts its resources. However, a CCR official noted that insurance companies must transfer half of their (natural) catastrophe risk to CCR in order to be covered under the State guarantee.⁸⁷ The French State thus intervenes as a reinsurer, or, more precisely, as a “*retrocessionnaire*” of CCR. In exchange for this State guarantee, CCR pays a premium to the State (Article R. 431–16–2 Insurance Code).⁸⁸ The reinsurance programme is set up so that insurers manage policyholders’ claims because they have the best claims-paying experience and expertise. Coverage from CCR takes effect after insureds have incurred a certain deductible.⁸⁹

Insurance companies that decide to reinsure with CCR are offered two types of contracts: quota-share contracts and stop-loss contracts.⁹⁰ With a quota-share contract, the insurer cedes a certain proportion of the collected premiums to the reinsurer and the reinsurer undertakes, in return, to pay a corresponding portion of the losses. The reinsurer will

⁸⁴ Government acting as reinsurer of last resort, of course, can only deal with the supply-side problems of correlation, uncertainty and limited capacity, but not remedy the cartel agreement not to cover particular risks. In that case, competition policy should provide a remedy, as it did in the case of the Netherlands (even though there is still only limited flooding insurance available in the Netherlands).

⁸⁵ See *supra* 6.4.4.

⁸⁶ Decree No. 82–706 of 10 August 1982 on the Reinsurance Operations for the Natural Catastrophe Risks by the *Caisse Centrale de Réassurance*. Application of Article 4 of the Act No. 82–600 of 13 July 1982, JORF 11 August 1982. See for further details Bruggeman, Faure and Heldt (2012), pp. 185–241.

⁸⁷ GAO 2005, p. 33. ⁸⁸ Bidan 2001 and Bruggeman, Faure and Heldt (2012), p. 228.

⁸⁹ CCR’s coverage for natural disasters is unlimited because of the State guarantee. The deductible under the CCR reinsurance contract represents the maximum amount that an insurer will have to bear in the course of a year, regardless of how many losses occur.

⁹⁰ Bruggeman, Faure and Heldt (2012), p. 228.

then be exposed in the same way as the insurer, since the latter has to cede a percentage of each of the policies in its portfolio to the reinsurer. The adverse selection risk is thereby avoided. Proportional cover varies between 40 per cent and 90 per cent. On the other hand, with a stop-loss contract, CCR covers all claims that exceed an agreed multiple of annual premium income. The insurer will then be protected against the risk of such excess claims. To avoid insurers buying their risk-sharing cover from private reinsurers and using CCR only for stop-loss cover, the two contracts were tied: stop-loss contracts were offered only to those insurance companies who also purchase quota-share contracts from CCR with a minimum participation of 40 per cent. It has been argued that the combination of these two types of reinsurance necessarily imply that CCR (and ultimately the taxpayer) will bear most of the cost if a large-scale disaster occurs.⁹¹

In the first twenty years of its existence, CCR never managed to accumulate any substantial level of reserves, despite the fact that the average claims/premium ratio of disaster insurance since its creation was only 60 per cent. Nevertheless, very few changes to the reinsurance scheme were made, although CCR reinsured mainly the bad risks⁹² and excessively high compensation (24 per cent) was paid for claimed administrative costs.⁹³ In addition, the combined effects of changes in the market (mergers, freedom of services within Europe, etc.) and the deterioration of the claims figures made it increasingly unsuitable for just a single scheme to be offered. As a result, from 1 January 1997 onwards CCR introduced new reinsurance conditions which paid greater attention to the nature of each ceding company's portfolio and enabled insurers to retain a larger proportion of the risks.⁹⁴ Nevertheless, in 1999, CCR was on the verge of bankruptcy after it was called upon to make a major withdrawal from its reserves. Although no exceptionally large event occurred in 1999, two major events hit France: the flooding in the Aude department in the south

⁹¹ Jametti and von Ungern-Sternberg 2004.

⁹² von Ungern-Sternberg 2007, p. 160, at pp. 86–95. Since the insurers have a right, but not an obligation, to reinsure a share of their natural disaster risk with CCR, they have a strong incentive to lobby the government to set high premiums for natural disasters. It is then in the insurers' interest to reinsure only a small part of their risks and keep the rest of the premiums for themselves.

⁹³ The effective cost of disaster insurance for the private insurers were almost nil, since disaster insurance was simply added to already existing property insurance contracts. In comparison, Spain, which operates an identical system of premium collection, only charges a 5% commission for administrative costs.

⁹⁴ CCR 2007.

in November 1999 (insured losses of 240 million euro) and a flooding following the winter storms Lothar and Martin (insured losses of 240 million euro). A significant hurricane also occurred in the French Antilles the same year. At the same time, an unexpected peril new to the industry and to the scheme appeared in 1989 – namely subsidence – which eroded CCR’s reserves over time. Consequently, the State guarantee was called into play. As a result, other amendments to the reinsurance scheme had to be made to adapt to the market situation and loss record by, inter alia, modifying underwriting conditions, changing deductibles (including in case the municipality does not have a PPRN),⁹⁵ recapitalising its reserves (the government injected 3 billion French francs, or 460 million euro), abolishing compensation for administrative costs, etc.⁹⁶ According to one scholar, these amendments to the CCR scheme were necessary to remedy flaws in the institutional setup.⁹⁷ Other experts, however, project a very positive outlook on the CCR.⁹⁸

8.2.5.2. CEA

The California Earthquake Authority (“CEA”) provides an example of a government stepping into the private insurance market and assuming the risk of a potential natural catastrophe.⁹⁹ The CEA is a publicly managed, privately funded organisation (without government backing) that was established in September 1996 after the Northridge earthquake in 1994, by the State of California. CEA sells California residential earthquake insurance policies through participating insurance companies to encourage Californians to reduce their financial risks of earthquake losses.

The State of California requires insurers doing business in the State to offer also earthquake coverage in homeowners’ policies, either directly or through CEA. CEA is empowered to set premiums and to bear risks; a so-called “mini-policy” stipulates which classes of real estate losses are covered and which are not. Premiums must be set on an actuarial basis, but, in practice, CEA premiums are tempered so that the price differences between the regions are moderated. Also, CEA may purchase reinsurance, but it does not have access to public funds. As a result, CEA resources are

⁹⁵ The PPRN is the Plan for the Prevention of Foreseeable Natural Risks (*Plan de Prévention des Risques Naturels Prévisibles*) and is a specific plan that municipalities have to draw up concerning the prevention of catastrophic risks.

⁹⁶ Jametti and von Ungern-Sternberg 2004; Erhard-Cassegrain, Masse, et al. 2004; CCR 2007; Vallet 2005, pp. 293–301; Jametti and von Ungern-Sternberg 2006.

⁹⁷ von Ungern-Sternberg 2007. ⁹⁸ Moréteau and Cannarsa 2006, p. 102.

⁹⁹ Bruggeman, Faure and Heldt (2012), pp. 224–225.

adequate to compensate an event with a size no more than double the size of the Northridge earthquake; beyond that level, policyholders will receive only partial compensation.

Participation in the CEA programme is voluntary, so private insurance companies compete with CEA, although this competition is limited to low-risk locations. CEA charges considerable premiums and many homeowners find these too high relative to the coverage provided. Consequently, the percentage of Californians with earthquake coverage (through CEA or a private insurer) declined from 33 per cent in 1996 to 12 per cent in 2010.¹⁰⁰ CEA currently has a claims-paying capacity that exceeds \$9 billion and writes 70 per cent of earthquake premiums. It provides deductibles of 10 or 15 per cent. These relatively high deductibles and the low amounts of compensation are subject to criticism.¹⁰¹

8.2.6. *Conclusions*

As in the case of insurance for man-made disasters,¹⁰² insurance for large-scale natural disasters is also complicated by problems on the demand and supply side. Empirical evidence showed that notwithstanding large subsidies (for example, in the case of flooding insurance provided by the National Flood Insurance Plan in the US), insurance coverage for natural disasters is relatively low. Behavioural phenomena can explain why demand remains low. Mandatory coverage for natural disasters has been proposed to remedy this situation. France and Belgium have adopted this approach and it has been advocated in other European countries and in the US as well. This may be a way to guarantee large-scale coverage against natural disasters.

As in the case of man-made disasters and terrorism, problems on the supply side have been remedied through intervention of the government as reinsurer of last resort. Again, those interventions are not necessarily examples of efficient government strategies. For example, in the case of the CEA, the government steps in as primary insurer and thus competes with other insurers and suppresses supply. CCR in France does not stimulate the emergence of a market solution. Moreover, neither CEA nor CCR seem to have a temporary character.

¹⁰⁰ Residential and Commercial Earthquake Insurance Coverage Study, California Department of Insurance, available at: <<http://www.insurance.ca.gov/0400-news/0200-studies-reports/0300-earthquake-study/index.cfm>>.

¹⁰¹ Bruggeman (2010), p. 460 and Bruggeman, Faure and Heldt (2012), pp. 224–225.

¹⁰² Discussed in Chapter 6, more particularly in 6.2.

Many other examples exist of governments acting as reinsurer of last resort in the areas of natural disasters and terrorism. In Germany (like in most other European Member States), terrorism insurance is provided via a pool in which the government also participates, referred to as *Extremus*.¹⁰³ The model is always similar: after a first layer being provided by insurers and a second layer by reinsurers, a third layer (the amount of which depends on the specific Member State) will be provided by government. As discussed, although there may be advantages in those schemes (in particular, the ability to provide insurance coverage where market supply fails), there are disadvantages as well, which depend on the specific construction chosen. An important problem is that if government provides reinsurance without charging a price, this amounts to an outright subsidy that may provide perverse incentives to operators and will have the result that risks are not accurately reflected in prices. Moreover, to the extent that government provides the third layer of compensation for free, tax payers will end up having to pay for compensation to the benefit of victims. To that extent, one could argue that potential victims pay for their compensation themselves, not those who are creating the risk. However, in some Member States (like in the Netherlands), the third layer is not provided for free by government, but government charges a price which should provide incentives to market players to reduce the government intervention as much as possible. This has had the desirable effect of reducing government intervention in the third layer over time.¹⁰⁴ An important point to remember is the trend towards public–private partnerships, whereby government intervenes in a facilitative strategy to stimulate insurability of catastrophes, in particular in case of natural disasters.

8.3. Victim compensation solutions

The concept of a victim compensation fund has been advocated as an alternative to traditional insurance and indeed a more efficient instrument in serving the goals of tort law. Based on the arguments discussed above, there is no reason why a compensation fund, as a general rule, would provide better protection against insolvency than private insurance markets. An insurer is probably better able to differentiate risks than a fund operator, since an insurer is specialised in risk differentiation and

¹⁰³ Bergkamp, Faure, Hinteregger and Philipsen (eds.) 2013, 301.

¹⁰⁴ For more detailed discussion of the advantages and disadvantages of the government acting as reinsurer of last resort, see Bruggeman, Faure and Heldt (2012), 185–241.

risk-spreading. Insurers use specific techniques to determine how much and in what way their insured contribute to the risk pool. Obviously, this works well only if the insurance markets are competitive. In the absence of competition in insurance markets, either the supply of insurance coverage could be too limited, or premiums could be excessively high. Under these circumstances, a compensation fund may be the preferred option.¹⁰⁵ But, as noted above, if insurance markets are competitive, insurers, compared to fund administrators, are generally better able to deal with classic insurance problems, such as moral hazard and adverse selection. Indeed, it is hard to see why a fund administrator would have better information on risks than an insurer.

No matter how a compensation system is organised, it is critically important that the incentives for prevention of damage remain adequate. Liability rules can have a preventive effect only if a duty to compensate is put on the person who controls the risk. This means that liability and a corresponding duty to compensate damage resulting from the risk, in principle, should be imposed on the person that actually created or contributed to the risk. To establish the right level of prevention incentives, the duty to compensate should be proportional to the extent to which the specific activity contributed to the risk. Typically, tort liability does exactly that and the duty to compensate is limited to the damage that the specific tortfeasor caused.¹⁰⁶ If a compensation fund takes the place of tort liability, it is important that this feature be mimicked and potential damage causers contribute proportional to the risk contributed. In insurance policies, this idea is reflected in risk differentiation which, as discussed above, means that bad risks pay a higher premium than good risks. Likewise, in any compensation fund programme, bad risks should contribute more to the funding than good risks. Through this differentiation, the contributors to the fund have proper incentives for prevention and reducing risk: bad risks will be financially punished and good risks will be rewarded.

These principles are important from both an efficiency perspective (incentives for prevention) and a fairness and justice perspective. If these principles are not followed, good risks would have to pay for and thus subsidise, bad risks. This negative redistribution will be perceived as unfair and should therefore be avoided; to be fair, a compensation fund should be financed by the persons that cause damage in proportion to the risk they

¹⁰⁵ Faure and Van den Bergh 1995, 65–85.

¹⁰⁶ An exception should be made for cases in which joint and several liability or channelling of liability is justified.

control. Differentiation of risks and the contributions due is possible only if the insurers and fund administrators possess the information necessary to assess the risks associated with a specific activity. A key element relevant to the choice between insurance and fund solutions therefore is who possesses or can acquire the best risk-related information.

If both insurance and compensation funds are available in principle, there is no reason to prefer a fund solution; *ceteris paribus*, insurance offered in a competitive market is more efficient. As discussed in Chapter 6, first-party solutions, such as funds, may be useful if no liable injurer can be identified, as in the case of natural disasters.¹⁰⁷ If, however, a liable injurer can be identified, either the operator or the security provider, a fund would not be desirable, if it does not pursue claims against a liable tortfeasor.

Because, as noted above, any compensation fund should be financed by potential damage causers (operators and/or security providers) in proportion to the risk they create, the French fund for compensation of victims of terrorism is problematic. It is not financed by operators or other potentially liable injurers, but through a tax on property insurance contracts paid by potential victims. Hence, in France, the potential victims themselves finance the fund and not the operators who control the risk. This is inconsistent with the principles of prevention and proportional funding discussed above.¹⁰⁸ The French model of a compensation fund therefore does not deserve to be considered as an option at the European level.

8.4. Government-provided compensation

8.4.1. *Arguments in favour of government compensation*

Although there are strong arguments against government-provided compensation, such schemes may have some positive aspects as well. A positive aspect of government intervention might be that the prospects of large-scale payments in the aftermath of a terrorism-related disaster might encourage the government to take efficient precautions (justified by cost-benefit analysis) before disasters strike.¹⁰⁹ For example, the government may build infrastructure to prevent damage resulting from security risks. Further, a terrorist attack can lead to serious disruption of society. Providing ex-post relief may help to restore public trust. Governments

¹⁰⁷ See *supra* 6.4.6.

¹⁰⁸ See *supra* 8.1.4.4.

¹⁰⁹ Levmore and Logue 2003, 310.

may also be able to implement strategies necessary to react to an attack. These public goods cannot be provided through private action and hence may require government intervention.

A related argument in favour of government intervention, the government has the capacity to diversify risks over the entire population and to spread past losses to future generations, thus creating a form of cross-time diversification and spreading. The market could not achieve such spreading. The argument could thus be made that in some situations the government is in a better position than the market to adapt to, or, in some cases, maybe even prevent, disasters.¹¹⁰

Further, the argument could be made that government, in principle, can compensate without predefined limits. If damages exceed current government budgets, as mentioned above, strategies for cross-diversification over time and spreading over future generations could be implemented.

8.4.2. *Arguments against government compensation*

Notwithstanding these theoretical possibilities of government compensation, the arguments against such compensation are compelling. A strong argument against is that the government would effectively provide a subsidy to an industry. This argument has been advanced in relation to the international conventions on nuclear liability, pursuant to which the government provides compensation via the second and third layer. If the government provides compensation to victims, it provides a subsidy to the industry concerned, as a result of which this industry will be able to externalise the social costs of its activity.

Due to such subsidies, it is no longer the person causing the accident that has the burden of compensation, but society at large and ultimately the tax payer, which results in undesirable redistribution. Further, since operators do not have to bear the total external costs related to their activity, their level of prevention will be too low. Under these circumstances, liability rules cannot have their deterrent effect. The result may be increased accident rates and lower levels of safety. Further, since operators will invest less in safety measures and will be able to externalise part of the damage resulting from their activities, their relative prices will be too low. This market failure will result in higher activity levels and

¹¹⁰ This argument has been made in relationship to terrorism by Kunreuther and Michel-Kerjan 2004.

overconsumptions of the goods or services produced. From a social welfare perspective, that would be an undesirable result.

8.4.3. *Policy recommendation*

On the basis of this analysis, we may conclude that direct compensation by government is not a preferred option to deal with terrorism-related risk and damage. That is not to say that there should be no role for government in the aftermath of a terrorist attack. Relief measures, coordination of disaster management and the like, are tasks that the government should undertake. If the government incurs cost in restoring damage caused (e.g. repair of destroyed infrastructure) or providing relief to victims, however, those costs should be recovered from the liable persons (either through the liability system or otherwise). Such cost recovery is consistent with sound economic principles of cost internalisation and the polluter-pays principle.

This chapter reviewed alternative systems for redressing terrorism-related risk, including their structure and their pros and cons. Such systems could serve as an alternative to or modification of traditional liability and third-party insurance. One such system is the US Safety Act, which is aimed at limiting liability associated with eligible security technology so as to encourage innovation. As discussed in this chapter, the US Safety Act, to a significant extent, is specific to the US liability context with features such as discovery and high punitive damages, which also adversely affect the insurability of third-party liability for terrorism-related risks. Since the European liability environment differs from the US situation and Europe, unlike the US, has never suffered a liability crisis, a Safety Act-like regime would not appear to be necessary in Europe.

Next, we reviewed government-mandated first-party insurance for natural disasters, which has been created in France and a few other countries. These programmes involve mandatory insurance contracted by victims and provide comprehensive coverage, even where data on the probability of adverse events is scarce. High coverage limits can be generated because the government acts as reinsurer of last resort. As this insurance model compels potential victims to take out insurance cover, it may be an option for natural disasters where tort liability plays no role. It is not an appropriate model, however, for terrorism-related risk, because it would reduce the incentives to prevent terrorist attacks. To keep prevention incentives intact, security firms and high-risk facility operators should be exposed to liability. On the other hand, the public-private partnership between

government and insurers whereby government acts as a reinsurer of last resort is of interest and can be applied also with respect to terrorism-related risks. Importantly, such government involvement will result in high coverage limits for terrorism-related risk.

Finally, this chapter reviewed two alternatives to liability involving direct compensation by the government or pursuant to law. There are two main kinds of such alternatives: *ex-ante*, structured compensation funds and *ex-post ad hoc* victim compensation programmes. Such funds compensate victims out of public revenues or specific contributions. Depending on their design, major disadvantages of these programmes are that the government effectively provides subsidies to industry, or that the deterrent effect of liability is diminished if operators are not exposed to liability to the same extent. Consequently, these types of government-supported compensation mechanisms are not the ideal solutions for redressing damage arising from terrorism-related risks.