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Economic Analysis of Compensation for Oil Pollution Damage

Michael Faure* and Wang Hui**

I INTRODUCTION

In recent years, almost all continents have suffered severe damage as a result of oil spills. The most known ones probably occurred in Europe. The names Torrey Canyon, Amoco Cadiz etc. still come to mind as major incidents that occurred in the 1960s and 70s. The international legislator reacted soon after the Torrey Canyon incident with an International Convention on the Civil Liability for Oil Pollution Damage of 1969¹ and with an additional Fund Convention.² The goals of these legal arrangements were to guarantee some compensation to victims of oil pollution incidents. A strict liability rule was imposed on the tanker owner and the liability was channeled to him, but strict limits on the liability applied. The new incident with Amoco Cadiz made clear that the then existing limits did not suffice to compensate the victims and additional institutional arrangements were proposed (in the form of amendments and protocols).

Meanwhile in 1989, the US was also severely hit by the Exxon Valdez incident that led to severe damage in the State of Alaska. The US, that had not joined the international oil pollution conventions, then instituted its own Oil Pollution Act in 1990.³ After that, other new incidents again hit the

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¹International Convention on Civil Liability for Oil Pollution Damage ("CLC or Liability Convention"), open for signature, Nov. 29, 1969, reprinted in full 3 Benedict on Admiralty §116 (7th ed. 2005).

²International Convention on the Establishment of an International Fund for Compensation for Oil Pollution ("Fund Convention"), open for signature, Dec. 18, 1971, reprinted in full in 3 Benedict on Admiralty §117 (7th ed. 2005).

³Oil Pollution Act of 1990, 33 U.S.C. §§2701-2761.

coasts of Europe, more particularly with the Erika (along the coast of Brittany-France) in 1999 and the Prestige (along the coast of Galicia-Spain) in 2002. Again, new changes to the conventions took place in order to increase the amounts available for compensation of victims. Most recently in 2003, a Supplementary Fund was established to provide third-tier compensation in addition to the Liability Convention and the existing Fund.

Of course, the problem of oil pollution is not at all limited to Europe and the US. With the demand for oil increasing in Asia, the sea borne oil trade has enormously increased to that continent as well. One reason is that Japan, as a major oil import country has become the biggest oil contributing State to the Fund. Another reason is that China, with its fast developing economy, has turned from an oil exporter into an oil importer, increasing the demand for oil transport. Also, a number of Asian states have recently been the victims of serious oil spills.

Notwithstanding the ever changing legal landscape (more particularly the evolving amendments to the existing conventions) the current international regime seems hardly able to provide adequate prevention of and compensation for oil spills. In that respect, it is, from a law and economics perspective, striking that the regime in the international convention is quite different from traditional tort law in most legal systems. For instance: not all parties involved in an oil pollution incident are held liable, but the liability is (often exclusively) directed to the tanker owner under the Liability Convention. The fact that a strict liability rule applies may not be such an exception, since that is often the case for environmental damage. However, in this case short statutes of limitation apply and there is a so-called cap on liability. Above the amount of limited liability of the tanker owner, compensation is provided through an International Oil Pollution Compensation Fund, which is financed by the oil receivers.

The goal of our paper is to critically examine the compensation for oil pollution damage as arranged in the international conventions (more particularly the Liability Convention and the Fund Convention) from a law and economics perspective. The traditional economic analysis of accident law will be used to sketch how, from a theoretical perspective, the optimal compensation of victims of oil pollution damage should take place. Then, the conventions will be described and critically analyzed, using the economic framework. After this critical economic analysis, the question will also be addressed to what extent (at a normative level) suggestions for improvements of the current conventions could be made to make them more in line with the predictions of economic analysis.

Hence, the paper will be structured as follows: after this introduction (1), a theoretical approach will be presented (2) whereby the basic economic lit-

erature will be used to indicate how compensation for victims of oil pollution damage could be arranged through various legal instruments in a way to increase social welfare. In that respect, attention will of course be given to the question whether victims are third parties or stand in a contractual relationship with the tanker owner (in which case the Coase Theorem might provide a solution). The question of the efficient liability rule will be addressed (strict liability or negligence) as well as whether the contributory negligence of victims should be taken into account. Attention will also be given to the question whether a financial limit should be placed on the liability of the tanker owner and whether guarantees against insolvency should be provided. Given potentially limited possibilities of insurance markets, the question whether alternative compensation mechanisms (like a compensation fund) should be used will be addressed as well. Moreover, according to Shavell's criteria, it will be examined whether the liability rules should be supplemented with regulation.

After this theoretical approach, a brief overview of the legal regime as developed in the international conventions will be presented (3). Then, the existing legal regime (3) will be submitted to a critical economic test in (4) using the theoretical approach in (2). To the extent that the economic test leads to a finding that in some respects, the current legal situation does not match with the economic model finally some policy recommendations will be formulated (5) indicating how the reform process of the international conventions could benefit from economic analysis.

II COMPENSATION FOR OIL POLLUTION DAMAGE: THEORETICAL FRAMEWORK

In this part of the paper we will simply use the existing economic literature on tort, insurance and regulation to examine how, from a theoretical perspective the compensation of oil pollution damage should be taken care of if economic goals were to be achieved by the policy maker. Of course there are many aspects concerning the compensation of victims of oil pollution which one could discuss. We will, however, limit ourselves to a few highly debated issues related to the international oil pollution conventions that constitute the main features of this compensation regime. The specific issues that we will address are the following: first the question whether a distinction between a contractual or a third party liability should be made (1), then what the nature of the liability rule should be (2), whether liability should be capped (as in the conventions) or be unlimited (3) and whether it should be exclusively channeled to the tanker owner (as in the conventions) or extended to the other parties as well (4). The question also arises how financing of

oil pollution damage can be guaranteed (5) and what conditions should be met to make an alternative compensation mechanism (like a fund solution) operate in an efficient manner (6). Finally the question will be addressed whether liability can be expected to have a deterrent effect in addition to the preventive role that safety regulation will play in this area (7). Other issues of interest, like procedural matters and the statute of limitations can equally be of interest from an economic perspective, but will not, given space limits, be discussed within the scope of this paper.

A. *The Coase Theorem*

Starting point for any economic analysis, also of the compensation for victims of oil pollution is undoubtedly the Coase theorem.⁴ One can argue that the Coase theorem does have a relevance in the sense that there is a contractual relationship between the tanker owner who agrees to ship cargo with his tanker and on the other hand the party representing the cargo interests. In such a contractual bargaining setting parties could in principle *ex ante* agree on the optimal amount of care to be performed by the tanker owner, which could be related to the specific preferences of both parties and to e.g. their ability to seek insurance coverage. In that case the agreement concerning the distribution of risk might also be reflected in the contract price that has to be paid for shipping the oil (the freight).⁵

A result of this reasoning is that it would in the context of liability for oil pollution damage in theory make no difference whether liability is allocated to either the tanker owner or to the cargo interests. As long as free negotiations (in a low transaction cost setting) are possible, shifting the liability to the tanker owner would simply mean that the price charged for transport would be increased. In the alternative it would be the cargo owner (in the assumption that that would be the presiding rule) that would bear the liability. In any event the cargo interests will pass on the costs of liability for oil pollution damage to the end user of the cargo, being those who have a demand for oil related products.

The Coase theorem of course only applies in the situation where passing on of costs of a tanker owner and the cargo interests is possible and may hence have its importance for the question whether liability should be allocated to one of these parties. In the assumption that the conditions of the Coase theorem are met one could argue that this should in principle not

⁴Coase, R. A., "The problem of social cost", *Journal of Law and Economics*, 1960, 1-44.

⁵See for an application of the Coase theorem to the issue of products liability Oi, W.Y., "The economics of product safety," *Bell Journal of Economics*, 1973, 3-28.

make a difference. It may only be different if costless passing on of increased liabilities were not possible.

The same conclusion could also be reached with respect to another issue closely related to liability for oil pollution damage, being a financial cap on liability. Such a so-called financial cap is from a policy perspective not too problematic as long as this is (implicitly) agreed between a potential injurer (tanker owner) and a victim within a contractual setting. In the contractual setting well informed parties may agree to cap liability; in that particular case there is as such no specific reason for a legislative intervention, to prohibit a cap.

The situation may only be different (and this may play an important role in the context of oil pollution damage) when the victim is not a party standing in a contractual relationship with the injurer, but a third party. In that case transaction costs are prohibitive and hence Coasean bargaining may not provide a solution.

B. The Liability Rule

Given the fact that many victims of oil pollution damage (e.g. coastal states) may not stand in a contractual relationship with the tanker owner, legislative intervention is necessary to remedy the externality resulting from oil pollution damage. A legal rule should thus be put in place to give the tanker owner appropriate incentives to follow an optimal care level. The economic literature on accident law has largely demonstrated that liability rules may be put in place to serve this goal.⁶ The outcome of this literature can well be applied to the case of oil pollution damage as well. The literature holds that in a so called unilateral accident case, being one where only one party (usually referred to as the injurer) can influence the accident risk, both negligence and strict liability lead to efficient care levels, but only strict liability leads to an efficient activity level of the injurer as well.⁷ The picture, however, changes somewhat when account is taken of the victim's influence on the accident risk as well. This is usually referred to as the bilateral accident situation. In that case it is held that no liability rule is optimal.⁸ The result is

⁶For a summary of this literature see Shavell, S., *Economic Analysis of Accident Law*, Cambridge, Harvard University Press, 1987 and Shavell, S., *Foundations of Economic Analysis of Law*, Cambridge, Harvard University Press, 2004, 175-287.

⁷See Shavell, S., "Strict liability versus negligence," *Journal of Legal Studies*, 1980, 1-25 and for a summary Schäfer, H. B. and Schönenberger, A., "Strict liability versus negligence" in Bouckaert, B. and De Geest, G. (eds), *Encyclopaedia of Law and Economics, II Civil Law and Economics*, 2000, 597-624.

⁸For the simple reason that strict liability with a contributory negligence defence will give optimal incentives for care and activity level to the injurer, but not to the victim (no optimal incentives to follow

that it is usually held that in order to develop some kind of a test for strict liability one should examine whether it is more important to control the injurer's activity than the victim's. If it can be held that the injurer's influence on the activity is far more important than the victims this may be an argument in favor of strict liability.⁹ It is, however, important to stress that from the economic literature it follows that whenever the victim can have its influence on the care level as well (so-called bilateral accidents) a liability rule should be chosen that provides incentives to the victim for taking optimal care as well. This may either be a negligence rule or a defence which has to be added to the strict liability rule (comparative or contributory negligence).¹⁰

Applying these basic insights to the case of oil pollution damage one can hold that there may be a strong economic argument in favor of a strict liability rule. Oil pollution damage is certainly not purely unilateral. Also victims (like e.g. coastal states) may be able to take preventive measures once an oil pollution incident has occurred. However, the influence on the accident risk of the tanker owner seems to be far more important than that of the victim. Hence, according to the economic test, it seems far more important to control the injurer's activity than the victims, which may create a preference for strict liability.¹¹ A condition is, as indicated, that the victim's care level would be controlled by adding a (comparative or contributory negligence) defense to the strict liability rule. Moreover, it should be added that the economic literature has equally indicated that strict liability provides incentives for prevention only in case the injurer has assets at stake to pay for the damage. In case of insolvency strict liability may lead to underdeterrence. Indeed, under negligence rule underdeterrence will only arise when the costs of taking efficient care are higher than the injurer's wealth, whereas under strict liability underdeterrence already arises as soon as the magnitude of the damage is higher than the injurer's wealth.¹² This means that this economic advantage of strict liability holds only in the hypotheses of full solvency of the injurer. If the injurer (the tanker owner in the case of oil pol-

an optimal activity level), whereas negligence will give optimal incentives for care and the activity level to the victim, but not to the injurer (because the optimal activity level is not incorporated into the negligence standard). See on this issue also Shavell, S., *Foundations of Economic Analysis of Law*, 182-193.

⁹See for a test for strict liability the classic contribution by Landes, W. and Posner, R., "The positive economic theory of tort law," *Georgia Law Review*, 1981, 877-907.

¹⁰In both cases the contribution of the victim to the accident risk is taken in to account and the victim's claim on damages will be reduced wholly (contributory) or partially (comparative negligence). For a discussion of the difference between both rules see e.g. Haddock, D. and Curran, C., "An economic theory of comparative negligence," *Journal of Legal Studies*, 1985, 49-73.

¹¹See Shavell, S. *Foundations of Economic Analysis of Law*, 188-189.

¹²See on these underdeterrence effects of strict liability Landes, W. and Posner, R., "Tort law as a regulatory regime for catastrophic personal injuries," *Journal of Legal Studies*, 1984, 417-434.

lution damage) were judgment proof, a regulatory solution must take care of the danger of underdeterrence resulting of the insolvency.¹³

C. Financial Caps on Liability?

As we show below, an important feature of the international liability conventions is that the tanker owner is not exposed to full liability, but that his liability is capped at an amount which might be substantially lower than the amount of damage an average oil pollution incident may cause. How can one view these financial caps from an economic perspective?¹⁴

A distinction can be made between the situation where the victim stands in a contractual relationship with the injurer and the one where the victim is a third party. As we have just indicated, discussing the Coase theorem, financial caps on liability can be efficient in the contractual setting. In that case they could simply signal the division of risk bearing between the cargo owner and the tanker owner. Traditionally in maritime law there were always financial caps on the liability of the shipowner as maritime transporter. A limited liability will, of course, be reflected in the transport price. In this particular contractual setting, where informed parties agree to cap liability, this should not cause major worries from a policy perspective.

The situation is of course different when, like in the case of oil pollution damage, victims are third parties and hence the Coase solution cannot apply. Above we indicated that in the case of oil pollution damage strict liability may be warranted on the condition that a defence is introduced to give incentives for optimal care to victims as well. Only under strict liability would the potential injurer have an incentive to adopt an optimal activity level. This full internalization is obviously only possible if the injurer is effectively exposed to the full costs of the activity he engages in and is therefore in principle held to provide full compensation to a victim. An obvious disadvantage of a system of financial caps is that this will seriously impair the victim's rights to full compensation. If the cap is indeed set at a much lower amount than the expected damage, this would not only violate the victim's right on compensation, but the above mentioned full internalization of the externality would not take place either. From an economic point of view a limitation of compensation therefore poses a serious problem since there will be no internalization of the risky activity.

¹³So also Shavell, S., "The judgment proof problem," *International Review of Law and Economics*, 1986, 43-58.

¹⁴For an economic analysis of financial caps see equally Faure, M., Fenn, P. and MacMinn, R., "Economic analysis of financial caps in accident law," paper presented at the annual conference of the European Association of Law and Economics in Ghent, September 2000.

Indeed, if one believes that the exposure to liability has a deterrent effect, a limitation of the amount of compensation due to victims poses another problem. There is a direct relationship between the magnitude of the accident risk and the amount to be spent on optimal care by the potential polluter. If the liability therefore is limited to a certain amount, the potential injurer will consider the accident as one with a magnitude capped at the limited amount. Hence, he will not spend the care necessary to reduce the total accident costs. Obviously, the amount of care spent by the potential injurer will be lower and a problem of underdeterrence will arise. The amount of optimal care, reflected in the optimal standard, being the care necessary to reduce the total accident costs efficiently, will be higher than the amount the potential injurer will spend to avoid an accident equal to the statutory limited amount.¹⁵

The conclusion is, however, different in case of bilateral accidents, where the victim's behavior may also affect the accident risk. The standard argument against providing full compensation to victims in case of bilateral accidents is that victims can take precautionary measures which are not always observable by judges and which can therefore not be fully accounted for in contributory or comparative negligence defences.¹⁶ A limit on the compensation in case of bilateral accidents may therefore be useful in cases where victims should be given additional incentives to reduce the accident risk. Whether caps are efficient in specific bilateral accident cases will depend on the circumstances. The question arises—*inter alia*—whether exposing the victim to risk is indeed necessary to provide these additional incentives or whether the victim's incentives can be optimally controlled via the contributory negligence defence. Also the amount of the cap remains important. If the cap were set too low this would give incentives to the victim but it could equally lead to serious underdeterrence of the injurer.

Several scholars have applied these insights to the domain of nuclear liability where tight limits on liability are in place both in international con-

¹⁵See Faure, M. "Economic Models of Compensation for Damages caused by Nuclear Accidents: some lessons for the division of the Paris and Vienna conventions," *European Journal of Law and Economics*, 1995, 21-43.

¹⁶This point has been made by Rea, S., "Non-pecuniary loss and breach of contract," *Journal of Legal Studies*, 1982, 50-52, but also by Adams, M., "Warum kein Ersatz von Nichtvermögensschäden" in Ott, C. and Schäfer, H.B. (eds.), *Allokationseffizienz in der Rechtsordnung*, Berlin, Springer, 214 and by Ott, C. and Schäfer, H.B., "Schmerzensgeld bei Körperverletzungen. Eine ökonomische Analyse," *Juristenzeitung*, 1990, 564-565.

ventions and in national legislation. It has been argued that these caps inefficiently dampen the operator's incentives to take precautions.¹⁷

D. Allocation of Liability

Another feature of the international conventions is the so-called channeling of liability. This channeling means that the convention or statute indicates which (of many possible) parties can be held liable for the loss and is often exclusive. Thus the question arises whether in the context of oil pollution damage it would make sense to impose (limited) liability for the consequences of oil pollution damage exclusively on one party, say the tanker owner. This would mean that liability would effectively be "channeled" to the tanker owner and that liability suits on other grounds against the tanker owner or against third parties are excluded.

Again, within the context of the Coase theorem one could argue that it would theoretically make no difference on which of the potential liable parties that contributed to the risk liability is allocated since the liable party might be able to pass on his liability on the basis of contract. If such a shifting of the liability burden (e.g. between the tanker owner and the cargo interest) could take place the liability would simply be transferred following the Coase theorem.¹⁸ If a legislator decided that a tanker owner would be exclusively liable, this should not necessarily be a problem to the extent that the liability costs could be passed on to the ones who actually contributed to the loss as well. However, this private re-allocation of liability may not always be possible and may also be limited as a result of insolvency of one of the parties involved.

Hence, several scholars have argued that this regime of channeling is inefficient from an economic perspective at least if one believes that an exposure to liability provides incentives for prevention. It is particularly the aspect in nuclear conventions that channeling leads to a sole liability of the operator, with the exclusion of liability suits against third parties who have contributed to the loss which is criticized in the literature.¹⁹ Indeed, one can

¹⁷See Faure, M. and Van den Bergh, R., "Liability for nuclear accidents in Belgium from an interest group perspective," *International Review of Law and Economics*, 1990, 241, Faure, M., "Economic models of compensation for damage caused by nuclear accidents: some lessons for the revision of the Paris and Vienna conventions," *European Journal of Law and Economics*, 1995, (21) 29-31 and Trebilcock, M. and Winter, R., "The Economics of Nuclear Accident Law," *International Review of Law and Economics*, 1997, 215-243.

¹⁸See for an analysis of the channelling in nuclear liability Trebilcock, M. and Winter, R., "The economics of nuclear accident law," *International Review of Law and Economics*, 1997, 232-235.

¹⁹For a critical economic analysis of the channelling of nuclear liability see Vanden Borre, T., "Transplantatie van 'kanalisatie van aansprakelijkheid' van het kernenergierecht naar het milieu

well imagine situations in oil pollution cases where another party has contributed to the loss as well. Exclusive channeling means that the victim no longer has the right to sue another party who could have influenced the accident risk as well. The effect is that the victim's claim may not be fully satisfied and hence one could criticize channeling from a distributive perspective. Moreover, that third party who has contributed to the loss should be exposed to liability in order to give him incentives for prevention. If the effect of the channeling is that the third party is no longer liable, this seems clearly inefficient.

Channeling may well have this effect, especially in the oil pollution case since the liability of the tanker owner (to which liability is channeled) is also limited because financial caps are introduced on the compensation due the victim. Hence, the effect of the combination of a financial cap with channeling is that the victim's exclusive remedy is to sue the tanker owner, where he is confronted with a financial cap. The victim has no additional remedy if, as a result of the cap, his damages are not fully compensated. A suit based on tort law against the tanker owner for the amount not covered by the cap is precluded in the convention and a suit against a third party is usually excluded because of the channeling as well.

The argument which is sometimes used to defend channeling, is that it makes the life of the victim so much easier since he will no longer have to investigate who precisely is the liable tortfeasor. The convention indeed simplifies the life of the victim by indicating that he can only sue the shipowner to whom liability is channeled. Thus, one could recognize an argument that channeling would lead to a reduction of transaction costs.²⁰ However, this seems hardly valid: the additional benefit of channeling for the victim is limited (the costs of finding out who is the registered tanker owner who may be primarily liable are not that high), whereas the disadvantages for the victim are huge (he no longer has the possibility to claim his damage from other parties who may have contributed to the loss as well). From a victim's and from a deterrence perspective, one may well argue that a joint and several liability rule may be preferable: in that case, the victim can simply sue any of the available tortfeasors who are all exposed to liability and claim full compensation from them jointly and severally.

(aansprakelijkheids)recht: een goede of een gebrekkige zaak?," in: Faure, M./Deketelaere K. (eds.), *Ius Commune en Milieurecht, Actualia in het Milieurecht in België en Nederland*, 1997, 329-382 and Vanden Borre, T., *Efficiënte preventie en compensatie van catastroferisico's. Het voorbeeld van schade door kernongevallen*, 2001, 693-701.

²⁰See Vanden Borre, T., *Efficiënte preventie en compensatie van catastroferisico's. Het voorbeeld van schade door kernongevallen*, 200, 698-699.

In sum, from an economic perspective one would prefer a situation where all those who contributed in some way to the risk are exposed to liability so that they have optimal incentives to reduce the accident risk.

E. Compulsory Insurance

We already mentioned that a strict liability rule can be considered efficient only if there is no insolvency risk. Indeed, insolvency may pose a problem of underdeterrence. If the expected damage largely exceeds the tortfeasor's assets the tortfeasor will only have incentive to purchase liability insurance up to the amount of his own assets. He is indeed only exposed to the risk of losing his own assets in a liability suit. The judgement-proof problem may therefore lead to underinsurance and thus to underdeterrence. Jost has rightly pointed to the fact that in these circumstances of insolvency, compulsory insurance might provide an optimal outcome.²¹ By introducing a duty to purchase insurance coverage for the amount of the expected loss, better results will be obtained than with insolvency whereby the magnitude of the loss exceeds the injurer's assets.²² In the latter case the tortfeasor will indeed only consider the risk as one where he could at most lose his own assets and will set his standard of care accordingly. When the tortfeasor is under a duty to insure, and is exposed to full liability, it may be expected that the insurer will have incentives to control the behaviour of the insured. Via the traditional instruments for the control of moral hazard the insurer can make sure that the tortfeasor will take the necessary care to avoid an accident with a significant loss. Thus Jost and Skogh argue that compulsory insurance can, provided that the moral hazard problem can be cured adequately, provide better results than under the judgement-proof problem.

This economic argument shows that insolvency may cause potentially responsible parties to externalise harm: they may be engaged in activities which may cause harm which can largely exceed their assets. Without adequate provision to internalize these costs, they would be thrown on society and would hence be externalised instead of internalised. Such an internalisation can be reached if the insurer is able to control the behaviour of the insured. The insurer could set appropriate policy conditions and require an

²¹Jost, P.J., Limited liability and the requirement to purchase insurance, *IRLE*, 1996, 259-276. A similar argument has recently been formulated by Polborn, M., Mandatory Insurance and the Judgement-Proof Problem, *IRLE*, 1998, 141-146 and by Skogh, G., "Mandatory Insurance: Transaction Costs Analysis of Insurance," in: Bouckaert, B./De Geest, G. (eds.), *Encyclopedia of Law and Economics*, 2000, 521-537. Skogh has also pointed out that compulsory insurance may save on transaction cost.

²²See also Kunreuther, H./Freeman, P., "Insurability, environmental risks and the law," in: Heyes, A. (ed.), *The Law and Economics of the Environment*, 2001, 316.

adequate (risk related) premium. This shows that if the moral hazard problem can be cured adequately insurance even leads to a higher deterrence than a situation without liability insurance and insolvency.²³

F. Alternative Financial Mechanisms

From the above it follows that if one fears that those on whom liability for oil pollution damage is placed (the tanker owner) might be insolvent (in the sense that the amount of the damage which they may cause could be higher than their wealth) a duty to seek financial coverage (through insurance or alternative mechanisms²⁴) should be introduced. However, the amount of oil pollution damage may be so large that even traditional insurance mechanisms or pooling by operators (P&I Clubs) may not provide sufficient coverage. The question then arises whether supplementary funding should be provided through a compensation fund and what can be suggested as far as the efficiency of such a fund mechanism is concerned.

First, no matter how a compensation system is organized, the incentives for prevention of pollution damage should always remain untouched. Liability rules can only have a preventive effect if the duty to compensate is put on the one who actually contributed to the risk. The same applies to compensation funds. This means that a duty to contribute to the fund should, in principle, only rest upon those who actually contribute to the risk.

A second, related principle is that this duty to contribute should also be related to the amount in which the specific activity or entrepreneur contributed to the risk. This principle is usually automatically respected in liability law. The duty to compensate under tort law is usually limited to the damage that the specific tortfeasor has caused.²⁵ However, if a collectivisation of the compensation takes place, it remains important to guarantee that the tortfeasor only contributes financially in relation to the amount in which he contributed to the risk as well. This is reflected in insurance policies in the idea of risk differentiation. It simply means that bad risks pay a higher premium than good risks. This principle

²³There are, however, also a few dangers that should be taken in to account when a duty to insure is introduced. One of them is that the moral hazard problem should be cured; another is that there may not be concentration on insurance markets. For these potential dangers of compulsory insurance see Faure, M. (ed), *Deterrence, insurability and compensation in environmental liability. Future developments in the European Union*, New York, Springer, 2003, 185-189.

²⁴See Faure, M., "Alternative compensation mechanisms as remedies for an insurability of liability," *The Geneva Papers on Risk and Insurance*, Vol. 29, nr. 3, 2004, 455-489.

²⁵Unless there would be joint & several or channelling of liability. For an economic analysis of these phenomena see Faure, M., "Causal Uncertainty, Joint and Several Liability and Insurance" in: Koziol, H. and Spier, J. (eds.), *Liber Amicorum Pierre Widmer*, Vienna, Springer, 2003, 79-98.

should also be applied if a compensation fund is installed, meaning that bad risks should contribute more to the compensation system than good risks. This remains important since it will give incentives for prevention to the contributors to the fund. Bad risks will be punished and good risks should be rewarded.

These principles are not only important from an efficiency point of view (providing optimal incentives for prevention), but also include a fairness element. Indeed, if these principles were not followed, it would mean that good risks would have to pay for the bad risks as well and would therefore subsidise bad risks. This negative redistribution should be avoided and, therefore, the compensation mechanism, fund or insurance, should be financed principally by those who really contributed to the damage.

To summarise, the (supplementary) compensation mechanism should aim at a differentiation of the contributions due. This differentiation is only possible if the insurance company or agency administering the fund also possesses information on the amount in which the specific activity contributed to the risk. One key element to determine the choice between insurance or funds is, therefore, who possesses the best information to control the risk.

G. Liability Versus Regulation

So far in this paper we have addressed compensation for oil pollution damage from an economic perspective, whereby the notion is stressed that imposing a duty on those who cause the pollution incident will hopefully have a deterrent effect. However, it has equally been indicated in the literature, more particularly by Shavell, that as far as environmental risks are concerned regulation may be a more appropriate instrument than liability rules.²⁶ The criteria are well known: if information on optimal safety devices can better be acquired through the government than through private parties, if there is a serious insolvency risk, and if the threat of a liability suit may be low there is a strong argument in favour of regulation. All of these arguments may apply in the case of oil pollution damage.

If one looks at the first criterion, that of information costs, it must be stressed that an assessment of the risks of a certain activity often requires expert knowledge and judgement. Smaller organisations or shipowners might lack the incentive or resources to invest in research to find out what the optimal care level (tanker design) would be. Also, there would be little incentive to carry out intensive research if the results were automatically available

²⁶See Shavell, S., "Liability for harm versus regulation of safety," *Journal of Legal Studies*, 1984, 357-374, Shavell, S., "A model of the optimal use of liability and safety regulation," *Rand Journal of Economics*, 1984, 271-280 and Shavell, S., *Economic analysis of accident law*, 277-290.

to competitors in the market: this is the well-known "free rider" problem. This problem can partially be countered by legal instruments granting an intellectual property right to the results of the research. However, the problem remains that it may not be possible for small companies to undertake studies on the optimal technology for preventing environmental damage. Therefore, it is often more efficient to allow the government itself to do the research on the optimal technology. The results of this research can then be passed on to parties in the market through the regulation. Hence, the setting of safety standards in regulations can be seen as a means of passing on information on the minimal safety technology required. Obviously, it is more efficient for the government to acquire information on the optimal safety standard for tanker design than it would be for an individual firm to find out what additional reduction in the probability of oil pollution would produce an optimal reduction of the expected damage. There are undeniable "economies-of-scale" advantages in regulation of tanker design.

Also, the insolvency argument points in the direction of regulation. Pollution can be caused by ships whose owner's assets are generally lower than the damage the ship can cause. In this respect it should not be forgotten that even a small shipowning firm may cause harm to a large number of individuals or to entire ecosystems. The amount of damage caused by pollution can, of course, greatly exceed a small company's individual assets. Moreover, most firms have been incorporated as a legal entity and therefore benefit from limited liability. Hence, the individual shareholders are not liable to the extent of their personal assets. A creditor of the firm can only lay claim on the assets of the firm.

For these reasons it is clear that some form of regulation of tanker design to prevent environmental pollution is necessary. To reformulate: this shows that liability rules alone cannot suffice to prevent oil pollution, but there might be other, publicly imposed, instruments which can be used to reach this goal.

Although there is a strong argument to control the oil pollution risk through *ex ante* regulation, in individual cases there still can be damage to the environment. Then again, liability under tort comes into the picture and the question has been addressed in the literature how regulation influences the liability system and vice versa. The complementary relationship between tort law and regulation has been examined in detail by Rose-Ackerman,²⁷

²⁷Rose-Ackerman, S., *Rethinking the Progressive Agenda. The Reform of the American Regulatory State*, 1992, 118-131; Rose-Ackerman, S., "Environmental Liability Law," in: Tietenberg, T.H. (ed.), *Innovation in Environmental Policy, Economic and Legal Aspects of Recent Developments in Environmental Enforcement and Liability*, 1992, 223-243 and Rose-Ackerman, S., "Public Law versus Private Law in Environmental Regulation: European Union Proposals in the Light of United States and German Experiences," in: Eide, E./Van den Bergh, R. (eds.), *Law and Economics of the Environment*, 1996, 13-39.

Faure/Ruegg,²⁸ Kolstad/Ulen/Johnson²⁹ and recently by Arcuri³⁰ and Burrows.³¹ Rose-Ackerman also compared US and European experiences in using regulation versus tort law in environmental policy.³² The first point which is often stressed is that the fact that there are many arguments in favor of *ex ante* regulation of the environment does not mean that the tort system should not be used any longer for its deterrence and compensation functions. One reason for still relying on the tort system is that the effectiveness of (environmental) regulation is dependent upon enforcement, which may be weak. In addition, the influence of lobby groups on regulation, to which public choice theory has rightly pointed, can to some extent be overcome by combining safety regulation and liability rules. Hence, it follows that although there is a strong case for safety regulation to control the environmental risk, tort rules will still play an important role as well.³³

H. Summary

From this brief overview of the economic literature one can hold that since victims of oil pollution are usually third parties, some form of regulation is necessary to control the oil pollution risk, given prohibitive transaction costs. Since the tanker owner's activity is probably more important than the victim's, imposition of strict liability on the tanker owner might be efficient. However, since most oil pollution incidents can be considered as bilateral accidents a defense should be added to the strict liability rule to provide efficient incentives for care to the victim as well. The liability of all those who contribute to the oil pollution risk should in principle be unlimited. Hence there should be no exclusive channeling to one party, say to a tanker owner, nor should there be any limit put on the liability of the parties involved. Such a limit may be considered efficient only in the bilateral case and only under the strict assump-

²⁸Faure, M. and Ruegg, M., "Standard Setting through General Principles of Environmental Law," in: Faure, M., Vervaele, J. and Weale, A. (eds.), *Environmental Standards in the European Union in an Interdisciplinary Framework*, 1994, 39-60.

²⁹Kolstad, Ch.D., Ulen, Th.S. and Johnson, G.V., "Ex Post Liability for Harm vs. Ex Ante Safety Regulation: Substitutes or Compliments?," *American Economic Review* 88 (AER), 1990, 888-901.

³⁰Arcuri, A., "Controlling environmental risk in Europe: the complementary role of an EC environmental liability regime," *Tijdschrift voor Milieuaansprakelijkheid (TMA)*, 2001, 39-40.

³¹Burrows, P., "Combining regulation and liability for the control of external costs," *IRLE*, 1999, 227-242.

³²Rose-Ackerman, S., "Public Law versus Private Law in Environmental Regulation: European Union Proposals in the Light of United States Experience," *Review of European Community and International Environmental Law (RECIEL)*, 312-332 and Rose-Ackerman, S., *Controlling Environmental Policy: the Limits of Public Law in Germany and the United States* (1995).

³³For a different analysis, leading to the same result that liability and regulation should be combined see Schmitz, P.W., "On the joint use of liability and safety regulation," 20 *IRLE*, 2000, 371-382.

tion that the (contributory or comparative negligence) defenses would not be able to sufficiently take into account the victim's behavior. However, since it is more important to control the tortfeasor's behavior in this particular case, a cap probably has more negative effects (on the tortfeasor's incentives to take care) than benefits (of additional care from victims).

Given the insolvency risk, a duty to seek financial coverage may be imposed on tortfeasors, although this should not necessarily be in the form of insurance. Moreover, traditional insurance markets may (given the large potential damage caused by a major pollution incident) not be able to provide adequate compensation. Therefore alternative compensation mechanisms like compensation funds may be needed. In that case it is, however, important to apply principles of risk differentiation as far as possible. This means that the contribution to the fund should in principle be by those who create the risk and in proportion to the extent that they create the risk. This of course assumes that the costs of further differentiation are lower than the benefits.

Although, at least theoretically, a deterrent effect can be expected from using liability rules to deter oil pollution incidents, the most important preventive instruments probably are provided by regulation. But notwithstanding the primary role of regulation, there may be an additional effect from liability rules that can be used in addition to the regulatory system to deter oil pollution.

We will now address the extent to which the international oil pollution conventions correspond to these theoretical starting points from the economic literature.

III THE LEGAL REGIME

We will now sketch the international oil pollution compensation regime as it has been developed through the International Maritime Organization. Thus we first provide a brief overview of the legal instruments (1), then discuss the type of liability rule (2) and the channeling of liability to the tanker owner (3). Next the financial limit on liability and its justification is discussed (4) as well as compulsory insurance (5). Attention is also paid to the reasons for and working of the International Oil Pollution Compensation Fund (6) and to the regulation aiming at the prevention of pollution incidents (7).

The regulation can only be discussed very briefly (since it is very extensive). In addition we merely briefly address the conventions as developed within the IMO framework. Other legal regimes, like the US Oil Pollution Act of 1990 will not be discussed within the scope of this paper. We will not only briefly sketch the contents of the rules as they can be found in the conventions, but (where possible) briefly address the legal history of the con-

vention as well since this may shed some light on the justifications and reasons for the particular regime.

A. Overview

The international regime on civil liability and compensation for oil pollution was originally established through two International Conventions, The International Convention on Civil Liability for Oil Pollution Damage of 1969 (1969 Civil Liability Convention, referred to as the 1969 CLC)³⁴ and the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage of 1971 (referred to as the 1971 Fund Convention).³⁵

The International Conventions came as a reaction to the Torrey Canyon incident in 1967, which spilled 117,000 tons of crude oil and polluted the south-west coast of the UK and the Brittany coast of France with the total damage in the two countries exceeding 6 million pounds (but it was finally settled for 3.8 million pounds).³⁶ The Torrey Canyon oil spill incident revealed the need for an international system on civil liability and compensation for oil pollution. Hence, the Inter-Governmental Maritime Consultative Organization (the IMCO, later, in 1982, renamed International Maritime Organization, referred to as the IMO) convened a Diplomatic Conference which adopted the 1969 CLC. In this Convention, basic principles for oil pollution compensation were decided, mainly the imposition of strict liability on the shipowner up to a certain limit, a requirement for compulsory insurance, and liability channeled exclusively to the shipowner and its insurer.

However, the 1969 CLC was considered unsatisfactory since it could not afford adequate compensation, especially in cases of serious oil spills due to the financial caps on liability. The shipping industry also felt it had to bear a heavy financial burden due to the system of strict liability and compulsory insurance. Under this situation, the 1971 Fund Convention was adopted as a compromise solution to offer adequate compensation to pollution victims and to relieve the additional financial burden imposed on the shipowner by the 1969 CLC.

The 1971 Fund Convention set up an International Oil Pollution Compensation Fund (the IOPC Fund or the Fund), which is contributed by

³⁴Supra.

³⁵Supra.

³⁶Tanikawa, H., "A Revolution in Maritime Law: a History of the Original Legal Framework on Oil Spill Liability and Compensation," in *The IOPC Funds' 25 Years of Compensating Victims of Oil Pollution Incidents*, London, The IOPC Funds, 2003, 51.

the oil receivers. The Fund Convention applies where there is no liability for the damage under the CLC, or where the shipowner liable for the damage under the CLC was financially incapable of meeting his obligations, or where the pollution damage exceeds the limitation of liability of the shipowner.³⁷ The 1971 Fund also indemnified the shipowner and its insurer under certain circumstances to the amount of the financial caps provided under the CLC.

However, when the CLC came into force in 1975 and the Fund Convention came into force in 1978, the situation had already changed. It was considered "necessary for the international oil pollution compensation regime to respond and adapt to changing circumstances and to new political and social expectations."³⁸ Moreover, another oil spill incident (Amoco Cadiz) demonstrated the insufficiency of the existing compensation system. Hence, the International Conventions were in the need of updating.

The first major amendments took place in 1992. In the 1992 Protocols, the financial caps were increased, the scope of application of the Convention was expanded to include the situation where there is an imminent threat of damage and to cover damage which occurred in exclusive economic zones (EEZ). The second major change to the international regime on civil liability for marine oil pollution took place in 2000, when the amount of compensation available was doubled. The most recent changes occurred in the year 2003, when a Protocol on the Supplementary Fund was adopted. In the same year, a voluntary agreement to increase the limitation amount for small tankers was adopted.

During the 90s, there were two compensating Funds co-existing. As a result of more and more countries joining the 1992 Fund, the 1971 Fund was confronted with great difficulty. Hence, it was decided that the 1971 Fund was to be terminated in 2002. However, there are still two CLC funds functioning at the same time. Although the 1969 CLC is losing power due to the denunciation by major shipping countries, it still has some 40 Member States, mainly countries from Africa, South America and the Middle East.

Despite all the changes to the compensation regime for oil pollution damage through the years, some principles have remained essentially the same since its establishment. These include, *inter alia*, the principles of strict liability, channeling of liability, limitation of liability, and compulsory insurance.

Hence, in this part of the paper, the principles concerning the liability for marine oil pollution with their changes will be examined. Moreover, in addi-

³⁷Article 4 (1) of the 1971 Fund Convention.

³⁸Jamieson, D., *The IOPC Funds' 25 Years of Compensating Victims of Oil Pollution Incidents*, London, The IOPC Funds, 2003, 6.

tion to the compensation for pollution damage *ex post facto*, there are also international conventions dealing with the preventive measures on marine oil pollution *ex ante*. Thus, the regulations on prevention will be examined in contrast with the liability rules.

B. Liability Rule

As we have mentioned before, the 1969 CLC adopted strict liability, which was contrary to the traditional maritime liability rules based on fault. This strict liability of the shipowner has been widely accepted nowadays even in other areas of maritime law, and it remains one basic principle of the CLC. However, at the 1969 Conference negotiating the CLC, the issues on the legal basis for liability and who should be the party to assume liability was hotly debated.

The debates concerning the liability rules mainly centered around the question whether the risk of oil pollution is created by the nature of oil or by the special form of transportation, which party has the actual control over the cargo and is thus in a better position to take preventive measures to minimize the damage; which party is financially capable of paying the huge amount of compensation for oil pollution damage; and, who should be seen as the ultimate beneficiary and thus should bear the consequences thereof?³⁹ However, none of these arguments were sufficient to gain the support of the majority of the delegations. The opinions of the delegations were divergent. Some states, with a strong shipping industry, were in favor of a liability imposed on the cargo, while other states, with a strong oil industry, supported liability on the shipowner.⁴⁰

It was not until the Belgian delegation submitted a proposal on an international compensation fund that the delegations saw some hope of a compromise. Envisaging the additional tier of compensation from the fund contributed by the oil industry, the strict liability of the shipowner was adopted with a slight majority.⁴¹

³⁹Official Records of the International Legal Conference on Marine Pollution Damage 1969, Documents LEG/CONF/C.2/SR3 – 13, IMO, 625 - 689.

⁴⁰Shipping countries advocating liability on the cargo owner include, *inter alia*, Ireland, the Netherlands, Denmark, Greece, and Norway. On the other hand, Japan, as a big oil importing country, advocated liability on the shipowner.

⁴¹The decision on the liability rules to be adopted was taken in two steps due to the complication of the issue. First concerning whether the liability should rest on the ship or on the cargo, 25 (out of 38) votes were in favor of ship's liability while 13 votes against; second, concerning the nature of liability (strict or fault liability), 22 (out of 42) votes were in favor of strict liability, and 17 were in favor of fault liability, with 3 abstentions. Official Records of the International Legal Conference on Marine Pollution Damage 1969, Document LEG/CONF/C.2/SR 9, IMO, 664 – 665.

Article III (1) of the 1969 CLC provided that the shipowner should be strictly liable for the "pollution damage caused by oil which has escaped or been discharged from the ship as a result of the incident" unless he can prove that he can be exempted under paragraphs 2 and 3 of that Article. The exemptions provided in paragraph 2 of Article III are mainly act of war or *force majeure*, third party's intentional act, and negligence or other wrongful act of Government or public authority in the maintenance of lights or other navigational aids.

The contributory negligence of the oil pollution victims may lead to the exemption of the shipowner's liability to the extent of the victim's negligence. As provided in Article III (3) of the 1969 CLC, the shipowner can be wholly or partially exonerated from liability if he can prove that "the pollution damage resulted wholly or partially either from an act or omission done with intent to cause damage by the person who suffered the damage or from the negligence of that person."

In case of multiple tortfeasors, as when the pollution damage is caused by oil escaped from two or more ships, the shipowners of all ships concerned "shall be jointly and severally liable for such damage which is not reasonably separable."⁴²

The strict liability of the shipowner, as established in the 1969 CLC, remained unchanged in the later 1992 Protocols.

C. Channeling

It was probably due to the influence of the nuclear conventions adopted in the 60s, which channeled the liability to the operator of nuclear installations,⁴³ that the 1969 Diplomatic Conference adopted the channeling provision without much discussion or justification. Since the strict liability on the shipowner was adopted, it was assumed that the channeling such liability to this party was established as well.

Article III (4) of the 1969 CLC stipulated that no claims for pollution damage under the CLC or otherwise "may be made against the servants or agents" of the shipowner. However, this does not preclude the shipowner's

⁴²Article V of the 1969 CLC.

⁴³There were mainly three international conventions related to nuclear installation at the time, being the Paris Convention on third Party Liability in the Field of Nuclear Energy of 29 July 1960 (with a supplementary convention on 31 January 1963), the Brussels Convention on the Liability of Operators of Nuclear Ships of 25 May 1962 and the Vienna Convention on Civil Liability for Nuclear Damage of 21 May 1963. The Nuclear conventions channelled the liability to the operator of the nuclear installation operator. For a detailed analysis of the channelling in the nuclear conventions, see the references in note 17, *supra*.

right of recourse against third parties.⁴⁴ Such a channeling provision was modified in the 1992 CLC, although channeling as a principle was not abandoned.

In the 1992 CLC, there is a list of the parties that are excluded from being considered the liable party under Article III (4). In addition to the servants and agents of the shipowner, as originally specified in the 1969 CLC, the pilot, the charterer, manager or operator of the ship, the person performing salvage operations, and any person taking preventive measures are also specifically mentioned in the list. Hence, all claims against them are excluded.

A Working Group of the Fund was set up in 2000 to consider the adequacy of the international compensation regime. The channeling provision in the 1992 CLC precluded claims for compensation being pursued against a number of parties including the charterer. The Working Group considered a proposal that these provisions should be amended so as to revert to the channeling provisions in the 1969 CLC, which excluded only claims against the servants or agents of the shipowner. A number of Member States considered that the benefit to the victims offered by the current channeling provision was of paramount importance, but supported exploring further a proposal to include charterer's liability in the compensation regime. So far there is no conclusive decision on the channeling adopted yet.

D. Limitation of Liability

Limitation of liability of the shipowner has a long tradition in maritime law. Various important institutions in maritime law have developed on the basis of the limitation system. The limitation mechanism emerged in maritime law because it was needed to encourage shipowners to invest in highly risky maritime adventures.⁴⁵

Before the international regime on civil liability for marine oil pollution had come into being, there were already international conventions concerning the limitation of liability of shipowners, being the 1924 and 1957 Conventions.⁴⁶ It is probably due to the long history of limiting the shipowner's liability in maritime law that the limitation of the shipowner's liability in case of an oil spill was unanimously accepted as a principle at the 1969

⁴⁴Article III (5) of the 1969 CLC.

⁴⁵Seward, R., "The Insurance Viewpoint," in *The Limitation of Shipowners' Liability: The New Law*, Sweet & Maxwell Institute of Maritime Law, 1986, 163 – 185.

⁴⁶International Convention for the Unification of Certain Rules Relating to the Limitation of the Liability of Owners of Sea-going Vessels, 1924; International Convention relating to the Limitation of Liability of the Owners of Seagoing Ships, 1957.

Diplomatic Conference. Moreover, limitation of liability was considered necessary to offset the heavy burden imposed on the shipowner via strict liability.

The major debates on limitation of liability concerned the specific amount of the limitation. The factors raised at the 1969 Conference influencing the limitation amount are that first of all, this amount should provide adequate compensation to the victims, which corresponds with the magnitude of the pollution damage.⁴⁷ Second, this amount should be the maximum amount that is insurable.⁴⁸ Moreover, it was pointed out that a too high a limit may put smaller ships at disadvantage, while too low limit might favor the larger size ships. So the limit should not cause injustice to ships of different sizes.⁴⁹

The limitation figure of 2000 francs per ton with a ceiling of 210 million francs under the 1969 CLC was finally accepted as a figure which was believed to provide sufficient compensation and the maximum amount acceptable to the insurance industry, notwithstanding the lack of justification supported by objective criteria or data. This in fact doubled the then prevailing limitation under the 1957 Limitation Convention, which means that the liability of a shipowner in case of an oil spill is much higher than in case of other maritime casualties.

The 1992 CLC, in Article V, has increased the financial limits, and later in the 2000 Protocols, these limits were again increased by 50.73%.⁵⁰ Today the situation is as follows:

- For a ship not exceeding 5,000 gross tonnage: the liability is limited to 4.51 million SDR, approximately US\$ 5.78 million (under 1992 CLC, the limit was 3 million SDR);
- For a ship 5000 to 140,000 gross tonnage: the liability is limited to 4.51 million SDR plus 631 SDR (US\$ 807) for each additional gross ton over 5,000 (under 1992 CLC, the limit was 3 million SDR plus 420 SDR for each additional gross ton);
- For a ship over 140,000 gross tonnage: the liability is limited to 89.77 million SDR, approximately US\$ 115 million (under 1992 CLC, the limit was 59.7 million SDR).

These increases in compensation limits seem impressive as the amounts available were substantially increased. However, before the 2000 Protocols

⁴⁷Nevertheless there was no discussion of the actual amount of the damage in case of a (serious) oil spill incident.

⁴⁸This concern was raised particularly by the UK delegation. See Official Records of the International Legal Conference on Marine Pollution Damage 1969, Document LEG/CONF/C.2/SR17, IMO, 727.

⁴⁹India as a representative raised such argument. See *ibid.*, 732.

⁵⁰According to the provision on amendment procedures in the 1992 Protocols (Article 15 under the 1992 CLC and Article 31 under the 1992 Fund Convention), these limits cannot be increased by more than 50%.

entered into force, the Prestige accident occurred which again showed that the compensation regime was not adequate.

E. Compulsory Insurance

After witnessing the dramatic damage caused by the Torrey Canyon incident, realizing the difficulty in getting compensation from the liable party especially in case of insolvency of the shipowner, most of the delegations at the 1969 Conference supported the mechanism of compulsory insurance as a means of ensuring the application of strict liability imposed by the CLC. However, there were doubts about the capacity of the insurance market and difficulties in implementing the compulsory insurance. The compulsory insurance was nevertheless adopted by an absolute majority at the 1969 Conference.⁵¹

Not all the tankers are obliged to take out insurance, as specified in Article VII of the 1969 CLC. Only ships “carrying more than 2000 tons of oil in bulk as cargo” are required to maintain insurance or other financial security for their pollution damage liability provided in the CLC up to the amount of the limits of liability.

Moreover, under the provision of Article VII (8) of the 1969 CLC, the claimant is entitled to proceed directly against the insurer or other financial guarantor of the shipowner. This is known as “direct action”. In the case of direct action, the insurer or financial guarantor as defendant, shall enjoy the same defenses that the shipowner would have been able to invoke, except for bankruptcy or winding up of the shipowner.

As for the application of the compulsory insurance, the State has an important role to play. The 1969 CLC provided that the authority of the State where the ship is registered shall issue a certificate attesting that the insurance or other financial guarantee required in this Convention is in force.⁵² Moreover, the State has the obligation to enforce the provision of compulsory insurance in the sense that it has to ensure the availability of such insurance or financial guarantee with regard to the ships that fly its flag or those that enter or leave its territory or territorial sea. First, the Contracting State shall not permit a ship under its flag “to trade” unless a required certificate has been issued.⁵³ However, “to trade” is a rather vague concept and there is no specific provision on how a State could forbid the ship to trade in such a case. Second, the State shall ensure under its national legislation that the

⁵¹Official Records of the International Legal Conference on Marine Pollution Damage 1969, Document LEG/CONF/C.2/SR14, IMO, 701-710.

⁵²Article VII (2) of the 1969 CLC.

⁵³Article VII (10) of the 1969 CLC.

required insurance or financial guarantee should be in force with respect to the ships carrying more than 2000 tons of oil in bulk as cargo "entering or leaving a port in its territory, or arriving at or leaving an off-shore terminal in its territorial sea."⁵⁴

The provisions concerning compulsory insurance remain basically unchanged in the 1992 Protocols, and the minimum requirement for ships to take insurance still remains at 2000 tons of oil.

F. The Fund

As we have mentioned before, since it was realized at the 1969 Conference that the 1969 CLC alone could not offer a satisfactory solution to provide adequate compensation for oil pollution victims, the idea of an international compensation fund was proposed as a compromise to solve the unresolved dispute. The 1971 Fund Convention was designed on the one hand to provide additional compensation to the pollution victims, and to relieve the shipowner and its insurer from the heavy financial burden imposed on them through the 1969 CLC.

The 1971 Fund Convention has substantially increased the compensation amount available to the oil pollution victims to the aggregate amount of 450 million francs.⁵⁵ This was increased in the 1992 Fund Convention to 135 million SDR. The amount was further increased to 203 million SDR under the 2000 Fund Protocol. Thus the compensation available under the most recent regime of 2000 Protocols would reach 750 million SDR.

However, dissatisfied with the international solution and having suffered several sequential major oil spills, the European Union decided to take regional action. In reaction to the Erika incident, the European Commission has adopted two sets of legislative proposals in March and December 2000 respectively, the so-called Erika I package⁵⁶ and Erika II package.⁵⁷ In these two packages, the Commission condemned the international compensation system as set up by the CLC and the Fund Convention as ineffective. According to the European Commission, the international system could not provide adequate compensation due to existence of the limitation of liabili-

⁵⁴Article VII (11) of the 1969 CLC.

⁵⁵Article 4 (4) of the 1971 Fund Convention. Article 4 (6) of the 1971 Fund Convention provides that the Assembly of the Fund may decide to increase the amount to 900 million francs, taking into account the experience of incidents and the damage therefrom and the changes of monetary value.

⁵⁶COM (2000) 142 final, Communication from the Commission to the European Parliament and the Council on the Safety of the Seaborne Oil Trading, 21 March 2000.

⁵⁷COM (2000) 802 final, Communication from the Commission to the European Parliament and the Council on a Second Set of Community Measures on Maritime Safety following the Sinking of the Oil Tanker *Erika*, 6 December 2000.

ty and did not have a sufficient deterrent effect. In the Erika II package, the Commission even proposed to set up a European compensation Fund (the Fund for Compensation for Oil Pollution in European waters, known as the COPE Fund) with an updated ceiling of 1 billion (instead of 200 million under the 1992 conventions).⁵⁸ However, the Council preferred to deliver the issue to the IMO as they considered that the problem, being international in scope, could be better tackled at international level.

As a result of the efforts of the EU, the IMO adopted, in 2003, a Protocol to establish a Supplementary Fund, which provides compensation up to the amount proposed by the EU. The Supplementary Fund Protocol came into force on 3 March 2005 when the requirement of 8 joining Member States and 450 million tones of contributing oil was fulfilled. Many people are very optimistic about the impact of the Supplementary Fund.⁵⁹ However, so far the assessment of the impact of the Supplementary Fund is purely theoretical, and it will not be fully realized until there is an oil spill which is on a large enough scale to bring it into play.

It should be mentioned that the contribution of the 1992 Fund is levied on those who receive in a calendar year more than 150,000 tons of “contributing oil” (including crude oil and fuel oil) in a port or terminal in the territory of a Member State after sea transport. The amount of the contribution of a specific oil receiver is directly related to the quantity of oil he has received in a calendar year. The 1992 Fund Convention also has a provision in Article 36 that the aggregate amount of the annual contributions from one single State shall not exceed 27.5% of the total amount of annual contributions. Otherwise, the contributions of all contributors in that State shall be reduced *pro rata* until their aggregate contribution equals 27.5%, and accordingly, contributions from other States should be increased *pro rata* so as to ensure the total amount of contributions will reach the required amount of contributions. This reflected the concern that the function of the Fund should be ensured by the fair distribution of contributions around the world.

⁵⁸See in this respect the amended proposal for a regulation of the European Parliament and of the Council on the Establishment of a Fund for the Compensation of Oil Pollution Damage in European Waters and Related Measures, OJ C227 E/487 of 24 September 2002.

⁵⁹According to the Director of the 1992 Fund, Mr. Måns Jacobsson, the amount available under the Supplementary Fund could ensure “in practically all cases” that it would be possible from the outset to pay compensation for claims in States Parties at 100% of the amount of the damage. The Secretary - General of the IMO Mr. William O’Neil had the same view that the goal of full compensation of oil pollution victims can be reached through the establishment of this Supplementary Fund. See Måns Jacobsson, “The International Compensation Regime 25 Years On,” *The IOPC Funds’ 25 Years of Compensating Victims of Oil Pollution Incidents*, London, The IOPC Funds, 2003, 22, 32.

G. Regulation

So far we have only sketched the liability and compensation system on oil pollution. In fact, the IMO has developed other conventions concerning the prevention and safety regulation which functions *ex ante*. In this respect, there are the International Convention for the Prevention of Pollution from Ships 1973 as amended by the 1978 Protocol (MARPOL 73/78), and the International Convention for the Safety of Life at Sea (SOLAS Convention). There are indeed measures to be taken in advance which can prevent the occurrence of an oil spill, such as upgrading the design standard of ships. As demonstrated by the Erika and Prestige incidents (both are single-hull tankers), the double hull design can reduce the chance of an oil spill⁶⁰.

IV ANALYSIS

A. Note on the Literature

We will now examine to what extent the legal regime sketched in section 3 corresponds to the economic principles which we have sketched in section 2. There are no papers that provide a traditional law and economic analysis of the CLC and fund regime as such. However, in the years following the implementation of the CLC (1969) and the Fund Convention (1971) various analyses have appeared in maritime law related journals such as the *Journal of Maritime Law and Commerce*. Remarkably, some of this literature refers to the then embryonic economic analysis of law, e.g. by pointing at the relevance of the Coase theorem. This was, for instance, done in a detailed study of the fund regime by Hunter.⁶¹ In this early literature reference is also made to the fact that a liability regime should be put in place to make tanker owners pay for the social costs they cause.⁶² Wood referred to the fact that civil liability can have a preventive effect and should be used to internalize the social costs of marine oil transportation.⁶³ Also, the issue of whether oil

⁶⁰For a discussion of regulatory measures aiming at prevention of oil spills at the EU level see Wang, H., "The EU Marine Oil Pollution Regime—Recent Developments," *European Environmental Law Review*, 2004, 292-303.

⁶¹Hunter, L.A.W., "The proposed international compensation fund for oil pollution damage," 4 *Journal of Maritime Law and Commerce*, 1972, 117-139.

⁶²See e.g. Bergman, S., "No fault liability for oil pollution damage," 5 *Journal of Maritime Law and Commerce*, 1973, 1-50 and Goldie, L.F.E., "Liability for oil pollution disasters: international law and the limitation of competences in a federal policy," 7 *Journal of Maritime Law and Commerce*, 1975, 303-329.

⁶³Wood, L.D., "An integrated international and domestic approach to civil liability for vessel-source oil pollution," 7 *Journal of Maritime Law and Commerce*, 1975, 1-68. In that paper Wood equally analyses the economic effects of allocating liability to various parties involved in the transport of oil.

pollution incidents should primarily be controlled via design criteria (regulation) or via civil liability was discussed in this early literature.⁶⁴ A critical review of the financial limits on compensation was provided by Smets.⁶⁵

Further, there is substantial literature on the economic effects of various enforcement strategies as far as oil pollution incidents is concerned. However, the main focus of our paper is the civil liability regime; consequently, we will not focus on that earlier work.⁶⁶

B. Nature of the Liability Rule

The CLC, both in its 1969 and its 1992 versions, imposes a strict liability rule for damage caused by oil pollution. In this respect our economic analysis can be brief: We already indicated that the economic literature on accident law proposes a strict liability rule for these situations where the conduct of the tortfeasor has a greater influence on the accident risk than that of the victims. This choice, therefore, seems to correspond with the economic literature. It is interesting to note that both during the preparation of the original CLC and in the early literature justifications for the strict liability were given that correspond largely with the economic reasoning. It was more particularly the French delegation that pushed strongly in favor of strict liability. It held that the liability should be fixed according to a "simple, efficient and economic system."⁶⁷ Goldie equally argued that strict liability for catastrophic damage to third parties should be imposed since otherwise an enterprise might be able to shift social costs from the enterprise to society⁶⁸ and Wood explicitly referred to the need to internalize the social costs of marine oil transportation as justification for the (strict) liability regime:⁶⁹ "Full lia-

⁶⁴Cummins, Ph.A. and others, "Oil tanker pollution control: design criteria vs. effective liability assessment," 7 *Journal of Maritime Law and Commerce*, 1975, 169-206 and Pedrick, J.L., "Tank ship design regulation and its economic effect on oil consumers," 9 *Journal of maritime Law and Commerce*, 377-395 (1978). That paper discusses the economic (price) effects of design regulations on oil prices.

⁶⁵Smets, H. "The oil spill risk: economic assessment and compensation limit," 14 *Journal of Maritime Law and Commerce*, 1983, 23-43. That paper examines the financial consequences of various increases of the financial limits on liability.

⁶⁶See for instance Cohen, N., "The costs and benefits of oil spill prevention and enforcement," 13 *Journal of Environmental Economics and Management*, 167-188, 1986 and Faure, M. and Heine, G., "The insurance of fines: the case of oil pollution," *The Geneva Papers on Risk and Insurance*, 1991, 39-54.

⁶⁷However, it was not only for deterrence reasons that strict liability was proposed. The French delegation equally argued that strict liability would be the only guarantee for an optimal compensation. See Official Records of the International Legal Conference on Marine Pollution Damage 1969, Documents LEG/CONF/C.2/SR3-13, IMO, 625-689.

⁶⁸See Goldie, L.F.E., 7 *Journal of Maritime Law and Commerce*, 1975, 310.

⁶⁹See Wood, L.D., Note 59, 7 *Journal of Maritime Law and Commerce*, 1975, 23-24.

bility for oil pollution damage is necessary to deter unnecessarily dangerous or negligent conduct and to encourage a socially optimal level of precautions for the petroleum industry.”

Moreover it should be added that from Article III (2) of the CLC it follows that there is no liability for pollution damage in case of force majeure or in case of an intentional act of a third party. The exclusion of liability in case of force majeure of course makes sense since the economic analysis assumes that liability will provide incentives to increase the level of precaution. Hence, attaching liability also in the situation where the tanker owner could not influence the accident risk and could therefore not have affected his incentives does not make sense from an economic or social perspective.

It is equally important to stress that Article III (3) of the CLC provides that if the pollution resulted wholly or partially from a (negligent or intentional) act or omission of the victim the tanker owner will be exonerated wholly or partially from liability. Hence, the required defense is added to the strict liability rule to provide the victim incentives to take care as well. Also this corresponds with the economic principles sketched above.

C. Limitation of Liability

In this respect we can equally be brief: the economic literature showed that a strict liability rule is efficient only if the potential tortfeasor is fully exposed to the potential damage which may result from his activity. A financial limit on the (strict) liability of the tanker owner will have the same effect as the insolvency of the tanker owner: underdeterrence. The tanker owner will consider the accident only as one whole the limited amount of liability is the maximum damage that can be suffered and a corresponding (lower) level of preventive measures will be chosen. As such, a financial cap on liability can therefore be considered inefficient, more particularly since it concerns here a situation where damage is suffered by third parties so that Coasean bargaining is not possible.

A possible justification for the cap could be found in the situation where one would argue that the comparative negligence defence (just mentioned) would not provide adequate incentives to victims (more particularly the coastal states suffering the oil pollution damage). In that case one could argue that lower than full compensation for the victims may provide additional incentives for victim care. However, given the fact that it is more important to control the injurer's incentives than the victims and considering the fact that the CLC does provide for a comparative negligence defence there is no reason to assume that this defence cannot adequately provide incentives for care to the victims of oil pollution damage. Moreover, the pos-

itive effects of a cap may have on victim's incentives would probably be totally countered by the negative effects this would have on the tanker owners incentives for prevention.

The fact that, principally, a financial limit on liability as contained in the CLC should be considered inefficient does, however, not necessarily mean that the cap will in practice also lead to a higher level of oil pollution incidents. First, for many (smaller) oil pollution incidents, the damage may well be lower than the limit on liability. The risk of underdeterrence may therefore only arrive in those (catastrophic) cases where the amount of the damage actually was higher than the cap. Second, the prevention of oil pollution incidents is today primarily dependent upon regulation aiming at an optimal tanker design to prevent spill risks. Liability rules, therefore, have at most an additional deterrent effect to back up this regulation. The fact that the cap may create underdeterrence and thus affect this additional incentive should not necessarily lead to an increase of pollution incidents. That will depend upon the effectiveness of the regulatory system and the extent to which liability rules provide supplementary incentives.

Limitation of the liability was, as a principle, hardly discussed during the 1969 conference preceding the CLC. Liability in maritime law had always been limited. The problem is, of course, that in traditional maritime law, limitation applies in the contractual context towards a charterer. In that case the limit does not pose a specific problem since the limitation of liability can be compensated with a lower price for the transport and the charterer could seek protection through first party insurance. Although these arguments do not apply in the context of liability to third parties, the principle of limitation was hardly discussed. It was only mentioned (more particularly by the UK delegation) that a system of limitation of liability was justified by the mechanism of compulsory insurance.⁷⁰ That argument is, however, not very convincing since the duty to insure could have been limited to an (insurable) amount whereas the liability itself could have remained unlimited. Most of the discussions during the 1969 conference merely focused on the amount of the limit, not on the principle as such. Remarkable in that respect was that this amount was fixed on the basis of the tonnage of the ship, but the question was hardly asked whether the limited amount of compensation available would be sufficient to cover the actual costs of a (major) pollution incident.⁷¹ The tonnage of the ship could indeed influence the scale of potential dam-

⁷⁰See Official Records of the International Legal Conference on Marine Pollution Damage 1969, Document LEG/CONF/4, IMO, 487.

⁷¹Only the US delegation argued that the limit should be fixed in such a way that substantially all losses would be covered. See Official Records of the International Legal Conference on Marine Pollution Damage 1969, Document LEG/CONF/4, IMO, 489.

age caused by it, but there are other factors that will also influence the pollution risk. Especially interesting is the empirical study of Smets who analyzed in 1983 what the effects would be of an increase of the available amount of compensation by \$250,000,000 (compared to the \$ 52,000,000 available at that time).⁷² Smets argues that the economic effects of such an increase would be limited as large oil spills are rare events compared with the total number of oil spills. He calculated that the economic impact of the mentioned increase would be less than \$0.055 per ton transported and would thus be insignificant. The same conclusion was reached by the European Commission in the Erika proposals.⁷³

D. Channeling of Liability

As the description of the conventions made clear, the liability in the CLC is “channeled” to the tanker owner. In addition, Article III (4) provides that no claim for compensation for pollution damage may be made against the owner otherwise than in accordance with the convention and that no claim may be made against any other person than the tanker owner. As was indicated in the economic sketch in section 2, this seems inefficient since many other parties than the tanker owner may also influence the pollution risk. Although the tanker owner may of course be the one who can primarily take safety measures to prevent oil pollution, also other parties can influence the risk and their incentives should hence be influenced by a liability rule as well. This choice, more particularly between imposing liability on primarily the tanker owner or on the cargo interests was also extensively discussed during the 1969 conference and in the early literature. For instance, the German delegation argued that it is the operator who uses the ship for his own account and who can ensure that the ship is properly equipped and managed.⁷⁴ The argument was equally made by the UK delegation that the cargo owner could exercise no control over the cargo while it was on the sea and that the carrier would be the only one who had the capacity to prevent an incident on the high seas.⁷⁵ But whereas all these arguments show that at least the tanker owner should be made liable others equally argued that other parties, such as the cargo owners, could take preventive measures as well.

⁷²Smets, H., Note 57, 14 *Journal of Maritime Law and Commerce*, 1983, 31-43.

⁷³For the discussion, see Wang, H., “The EU Marine Oil Pollution Regime – Recent Developments,” *European Environmental Law Review*, 2004, 292-303.

⁷⁴Official Records of the International Legal Conference on Marine Pollution Damage 1969, Document LEG/CONF/C.2/SR3, IMO, 627.

⁷⁵Official Records of the International Legal Conference on Marine Pollution Damage 1969, Document LEG/CONF/C.2/SR3, IMO, 638.

Indeed, it may be clear that if liability for pollution damage were imposed on other parties (a cargo owner) this could provide incentives to choose safer ships in order to avoid pollution incidents. In a 1975 paper, Wood argued that the US should not follow this example of the CLC in its domestic liability regime since liability should rest upon each party who could take significant precautions to prevent polluting discharges of oil.⁷⁶ He argues: liability to discourage negligence and reward shipowners would be poorly served by placing all liability upon registered shipowners, since they rarely have significant control over the operation, manning or navigation of oil tankers. Instead, the typical registered owner is a “straw man” corporation in a “flag-of-convenience” nation. Shipowners often surrender all control of their vessels to bareboat or demise charterers, which are often subsidiaries of the oil companies for which most tankers are in fact constructed.”

The decision in the CLC to exclude liability of all other persons than the tanker owner who could have influenced the accident risk therefore does not seem to be in line with economic insights. The underdeterrence of those parties is, however, still mitigated in at least two ways. First Article III (5) provides that the Convention does not prejudice any right of recourse of the owner against third parties. One can, however, doubt that tanker owners will often exercise this right of recourse, so that one should not expect too much of an additional deterrence of this possibility of a right of recourse. Second, at least one of the other parties, being the oil receivers, at least in some way contribute to the compensation of oil pollution incidents, since they finance the International Oil Pollution Compensation Fund. However, this only applies to the oil receivers and moreover, there are serious doubts as to whether the financing structure of the Fund provides adequate incentives for prevention.

Interestingly enough the early literature after the 1969 conference also made reference to the fact that a tanker owner who would face increased liability could also pass on the costs of this additional liability to the oil companies and eventually to the end users. If this presumption (referring to the application of the Coase theorem) were met, one could argue that the problem of underdeterrence caused by excluding the liability of the charterers should not be that large. Indeed, if charterers were confronted with increased transportation costs as a result of liabilities imposed upon the tanker owner they would in turn claim safer ships as well.⁷⁷ For instance at the 1969 conference the Netherlands dele-

⁷⁶Wood, D., Note 55, 7 *Journal of Maritime Law and Commerce*, 1975, 40.

⁷⁷Recall, however, that this argument may only apply to those parties to which the tanker owner can effectively pass on the costs. However, Article III (4) of the CLC mentions a number of other parties that could influence the accident risk with which the tanker owner does not necessarily stand in a contractual relationship and whose liability is also excluded (see e.g. Article III (4) (e): “any person taking preventive measures”).

gation argued that even though the insurance liability rested with the carrier, it would be transferred to the cargo in the form of increasing freight.⁷⁸ This implicit reference to the Coase theorem can also be found in the literature where it is mentioned that oil companies are the most efficient in distributing oil production costs.⁷⁹ It was equally argued that the increased liability would (partially) be passed on to the end users, even though the added costs were at the time of the 1969 conference only estimated at 0.04%.⁸⁰ However, oil companies would, so it was argued, probably not pass on the increment in costs entirely to the end users and would absorb part of it with a decrease in profits.⁸¹

In addition, the point was also made, both at the 1969 conference and in the early literature, that one could wonder whether the exclusion of liability of the tanker owner would make such a big difference since many major oil companies are both tanker owners and cargo owners.⁸² This may be true for the oil companies which indeed have their own tanker fleet. But there are of course also oil companies that use tankers with which they have no ties at all. (These types of tankers are owned by independent owners.)⁸³ Hence the question still arises why at the 1969 conference so much attention was paid to allocating liability either to the tanker owner or to the cargo and whether the exclusion of liability of the cargo owner is indeed that dramatic if increased liabilities could be passed on without costs. The answer is probably that the zero transaction cost assumption of the Coasean bargaining setting is not met in all circumstances in the case of a transport of oil. Legal and practical restrictions may inhibit the passing on of the increased liability to the cargo interests. Moreover, in a law suit the victim may be confronted with the solvency boundaries of the tanker owner and his insurer. Given the fact that this liability is limited and that an additional suit against other liable parties like a charterer are prohibited by the CLC, the underdeterrence caused by channeling remains. In sum: it cannot be argued that since increased liabilities of the tanker owner can simply be passed on to the charterer there would be no negative effect at all of the exclusion of liability of other parties than the tanker owner.

⁷⁸Official Records of the International Legal Conference on Marine Pollution Damage 1969, Document LEG/CONF/C.2/SR3, IMO, 643. This point was also made by Lord Devlin in his report to the International Maritime Consultative Organization in 1967.

⁷⁹Hunter, L.A.W., 4 *Journal of Maritime Law and Commerce*, 1972, 130.

⁸⁰More particularly by the Canadian delegation (see Official Records of the International Legal Conference on Marine Pollution Damage 1969, Document LEG/CONF/C.2/SR4, IMO, 633).

⁸¹This optimistic view was held by Bergman, S., "No-fault liability for oil pollution damage," 5 *Journal of Maritime Law and Commerce*, 1973, 44, referring to the strong market power of oil companies.

⁸²Hunter, L.A.W., 4 *Journal of Maritime Law and Commerce*, 1972, 130.

⁸³In 2000 around 25% of the tanker fleet is owned by oil companies, while around 75% is owned by independent tanker owners. In 1960's, 60% of the oil is transported by independent tanker owners. Statistics from INTERTANKO, Swift, P., *Oil Shipping Today*, 8 March 2005.

A final argument in favor of the channeling of liability to the tanker owner which was also advanced referred to the fact that the tanker owner could more easily obtain insurance coverage than other parties. However, that argument was rightly rejected in the literature as well: each of the other parties who influence the risk of oil pollution incident could easily purchase liability insurance coverage as well. "Insurance rates should reflect the likelihood of a liability-inducing oil discharge and should reward safety measures with lower premiums."⁸⁴ Also the insurance argument can hardly provide justification for the channeling of liability which results in an inefficient exclusion of other parties than the tanker owner who could also influence the risk.

E. Compulsory Insurance

It is not difficult to argue that the introduction of a duty on the liable tanker owner to seek financial coverage to meet his obligations fits into the economic framework. The CLC was wise enough to stipulate that the financial security should not necessarily be provided through insurance. Article VII (1) refers explicitly to "insurance or other financial security, such as the guarantee of a bank or a certificate delivered by an international compensation fund". Indeed, insurance is only one of the ways in which the tanker owner could provide security so that he can meet his liabilities.

During the 1969 conference the main reason which was advanced as justification for the introduction of compulsory insurance was victim compensation. However, from an economic perspective compulsory insurance is, as was indicated above, especially important as a remedy for underdeterrence as a result of insolvency. Of course criticism could be directed at the way in which the obligation was formulated. This refers to the fact that the compulsory insurance only applies to tankers carrying more than 2000 tons of oil in bulk as cargo, whereas also smaller ships could also cause large pollution and face insolvency problems.⁸⁵ Another issue is that during the 1969 conference it was proposed to give the contracting state the right to refuse access to its ports where ships could not produce the required certificate, proving the availability of insurance.⁸⁶ This proposal was not accepted and the finally accepted formulation in the convention merely provided that the states would "ensure" that a ship entering or leaving its port complies with

⁸⁴See Wood, L.D., Note 59, 7 *Journal of Maritime Law and Commerce*, 1975, 40.

⁸⁵See the discussions in this respect at the conference, Official Records of the International Legal Conference on Marine Pollution Damage 1969, Document LEG/CONF/C.2/SR14, IMO, 708-709.

⁸⁶This was more particularly proposed by the French delegation, see Official Records of the International Legal Conference on Marine Pollution Damage 1969, Document LEG/CONF/4, IMO, 468.

the requirement of compulsory insurance, which may of course create enforcement problems.⁸⁷

In the literature criticism has also been directed at the practical working of the insurance, more particularly as it is provided through the Protection and Indemnity Clubs (P&I Clubs) of the shipowners, in particular with respect to the fact that an international agreement between the P&I Clubs has been formulated which restricts competition.⁸⁸ The European Commission has granted an exemption from the old cartel Article 85 (3) of the EEC treaty of 16 December 1985 for this international agreement.⁸⁹ In a report of 12 May 1999 of the European Commission concerning regulation nr. 3932/92,⁹⁰ the Commission held that cooperation between the P&I Clubs is necessary to provide the required coverage (even though the Commission equally states that all P&I Clubs together have a world wide market share of 89% on the market for marine insurance).⁹¹ This exclusion of competition always creates the danger of too high premiums, too little product differentiation and a too low a supply of coverage.⁹² Of course one may argue that since the shipowners themselves largely constitute the P&I Clubs, the consequences of the restricted competition should not be that dramatic since no one would be victimized. That is, however, not entirely true. First of all, there are many shipping lines that do not participate in the P&I Clubs and seek maritime insurance coverage through markets other than the Clubs. Second, the restrictions on competition may, within the context of oil pollution damage, also lead to a reduction in available insurance coverage for pollution damage, which may thus harm the interests of third parties. Another consequence of too little competition between the P&I clubs may be that their incentives for an effective monitoring may be reduced. Thus, the efforts of P&I clubs to monitor oil discharge may be suboptimal.⁹³

⁸⁷Article VII (11) of the CLC 1969.

⁸⁸See Faure, M. and Van den Bergh, R., "Restrictions of competition on insurance markets and the applicability of EC and anti-trust law," *Kyklos*, 1995, 65-85.

⁸⁹For a criticism on this exemption see Faure, M. and Van den Bergh, R., *Objectieve aansprakelijkheid, verplichte verzekering en veiligheidsregulering*, Antwerp, Maklu 1989, 331-336.

⁹⁰Com (1999) 192 final of 12 May 1999.

⁹¹Report, nr. 29.

⁹²For details see Faure, M. and Van den Bergh, R., "Aansprakelijkheidsverzekering, concurrentie en ongevalpreventie" in Hartlief, T. and Mendel, M.N. (eds), *Verzekering en Maatschappij*, Deventer, Kluwer, 2000, 315-342.

⁹³See Faure, M. and Heine, G., "The insurance of fines: the case of oil pollution", *The Geneva Papers on Risk and Insurance*, 1991, 49-50.

F. Compensation Fund

In our brief economic sketch in section 2 we showed that whenever an alternative compensation mechanism like a fund is installed, in principle a risk and premium differentiation should be applied as well in order to provide optimal incentives for prevention. One can question whether the financing structure of the current International Oil Pollution Compensation Fund corresponds with these principles. Indeed, as we have shown above the Fund is financed by levies on the oil transported, to be paid by the oil receivers. An interesting point is that as a result of this financing of the Fund by the oil interests the compensation regime consists on the one hand of the (limited) liability of the tanker owner supplemented with a Fund which is financed by the oil receivers on the other. At the 1969 conference it was made clear that because only part of the compensation would be provided through the oil interests via the Fund, the liability of the tanker owners was considered acceptable.⁵⁴ If this would mean that as a result of this the oil interests would receive incentives for preventing oil incidents some of the downsides of the channeling could be reduced. However, given the financing structure of the Fund one can doubt whether this actually provides for incentives for prevention to the oil interests. Indeed, their financial obligation to the Fund is merely determined on the basis of the amount of oil discharged, not on the basis of preventive measures taken or actual oil pollution incidents. Hence, the oil receivers are not rewarded for choosing safer ships or punished (with a higher contribution) for choosing riskier ones. Their contribution to the Fund merely varies with the amount of oil transported. In terms of the economic analysis of section 2 one can argue that the financing structure merely provides incentives to the oil industry for reducing the activity level (transporting less oil) but not for an efficient level of care. Moreover, the legal analysis made clear that the Fund (in the normal case) only intervenes for the amount which is not covered by the limited liability of the tanker owner⁵⁵ which is of course a small part of the total costs of an oil pollution incident. It was opined during the conference which created the Fund that only 5% of large scale oil casualties could not be dealt with under the existing rules.⁵⁶ This means that the oil interests would effectively only intervene for a relatively small percentage of oil pollution inci-

⁵⁴See the comments made at the 1969 Conference by various delegates in Official Records of the International Legal Conference on Marine Pollution Damage 1969, Document LEG/CONF/3, IMO, 2-11.

⁵⁵An exception constitutes the case where the tanker owner would be insolvent. In that case the fund would *de facto* act as a guarantor towards the victim.

⁵⁶Official Records of the International Legal Conference on Marine Pollution Damage 1969, Document LEG/CONF/C.2/SR12, IMO, 685-686.

dents, albeit the incidents in which the Fund intervenes are usually considered catastrophic.

Interestingly enough, the early literature from just after the drafting of the 1971 Fund Convention set forth similar serious criticism on the Fund. Already in 1972, in a critical paper, Hunter held that precisely for the reasons mentioned above the Fund would not play a meaningful role in the preventive aspect of oil pollution problems.⁹⁷ The 1971 version of the Fund Convention, moreover, had a curious rule in Article 5, which provided that the Fund would indemnify a shipowner for certain amounts the shipowner would have paid to third parties. Thus the 1971 Fund also had a so-called "shipowner indemnity" function. The literature, of course, held that this reduction of the shipowner's liability through the Fund would reduce his motivation to avoid oil discharges proportionally.⁹⁸ In the 1992 version of the Fund Convention Article 5 has been deleted.

In sum: if compensation of oil pollution damage is set as a policy goal and it appears that traditional insurance markets (or pooling through P&I Clubs) cannot provide more or less full compensation, alternatives will have to be developed through (public or private) compensation funds. However, the economic literature has generally held that also in structuring such a compensation fund a cost reduction should be achieved and the duty to contribute to the compensation mechanisms should in principle be laid on those that create the risk and in the proportion in which they create the risk. It seems that these principles are only to a small extent followed in the design of the Fund Convention. The drafters apparently attached more importance to balancing the contribution of tanker owners and cargo interests instead of designing a system that would provide optimal incentives for the prevention of oil spills by all those who created those risks.

G. Regulation

It is, given Shavell's criteria for safety regulation, no surprise that increasingly the risk of pollution incidents is controlled through regulation aiming at the design of tankers in such a way that pollution incidents can be prevented. The phasing out of single hull tankers, state inspections by port states and controls by classification societies are just some of the regulations that have received increasing attention in recent years. Of course, increased

⁹⁷See Hunter, L.A.W., 4 *Journal of Maritime Law and Commerce*, 1972, 127-137. Compare Cummins, Ph.A. and others, 7 *Journal of Maritime Law and Commerce*, 1975, 174-177, where it is equally argued that a public compensation scheme for oil pollution damage should be based on premiums which are related to expected damages in order to provide incentives to prevent oil spills.

⁹⁸See Wood, L.D., Note 59, 7 *Journal of Maritime Law and Commerce*, 1975, 58.

safety design will lead to (a small) increase in oil prices, which has been calculated in various empirical studies.⁹⁹ This is not the place to discuss the efficiency and effectiveness of these tanker design regulations.¹⁰⁰ More interesting is the question whether in addition to this regulation, any additional deterrent effect can be expected from liability rules. It is, lacking empirical evidence, not possible to provide hard data on the effectiveness of liability rules in supplementing safety regulation. There are, however, some indications in the literature. For instance Wood argues that "civil liability can also serve a prophylactic function. A properly structured system for civil liability would exert a powerful influence to discourage polluting discharges of oil."¹⁰¹ Cummins et al examine explicitly the effectiveness of liability versus regulation in oil tanker pollution control.¹⁰² They argue strongly in favor of liability rules and against regulation, arguing that liability for major oil spills would leave it up to the tanker owner to choose the least cost method of pollution control in case of oil spills.¹⁰³ They conclude that imposing design standards might inhibit innovation and would be much too rigid compared to a liability system.¹⁰⁴ Of course one could state, in rebuttal to these authors that 30 years of experience after they published their papers have indicated that the liability regime has not been able to prevent major oil spills such as the Erika or the Prestige. However, this would hardly be fair given the fact that the liability system as it was installed in the 1969 CLC did not provide adequate incentives, given the channeling of liability and the low limits on the liability of the tanker owner.

IV CONCLUDING REMARKS

In our paper, we have noted that many of the economic arguments we have discussed were also (often implicitly) presented at the 1969 Conference which prepared the CLC and also in early literature published in maritime law journals shortly after the adoption of the CLC and Fund Convention. The difference between these early papers (most of these date from more than 30 years now) and our analysis is that we of course could take into account more recent law and economics literature (like the many

⁹⁹For an early one see Pedrick, J.L., "Tank ship design regulation and its economic effect on oil consumers," 10 *Journal of Maritime Law and Commerce*, 1978, 377-395.

¹⁰⁰For an overview of developments in this respect at the EU level see Wang, H., "The EU marine oil pollution regime – recent developments," *European Environmental Law Review*, 2004, 292-303.

¹⁰¹Wood, L.D., Note 55, 7 *Journal of Maritime Law and Commerce*, 1975, 2.

¹⁰²Cummins, Ph.A. 7 *Journal of Maritime Law and Commerce*, 1975, 169-206.

¹⁰³Cummins, Ph.A., 7 *Journal of Maritime Law and Commerce*, 1975, 175.

¹⁰⁴Cummins, Ph.A., 7 *Journal of Maritime Law and Commerce*, 1975, 204-206.

publications of Shavell on accident law) and that we could address the international oil pollution compensation regime in a more integrated manner.

We have also looked at the evolution of the international oil pollution compensation regime since the set up in 1969/1971. In fact recent evolutions only reinforce some of the early analysis in which *inter alia* criticism was formulated on the channeling and on the financial limits. Indeed, every new pollution incident with ever increasing damages has made an adaptation of the convention limits necessary. The result has been a cascade of protocols and amendments.¹⁰⁵ It even led to a threat of a European Commission initiative to set up a compensation fund for oil pollution damage for Europe, separate from the international regime. Under this threat the amounts in the Fund Convention were in May 2003 again increased so that the total amount of compensation available now totals approximately one billion US dollars.¹⁰⁶ All these evolutions make clear that the idea of limiting liability should probably be critically reassessed. This is obviously the case for the channeling as well, since this leads to the non-liability of many who could contribute to the oil pollution risk.

If one would draw some normative conclusions at the policy level from this analysis they seem relatively straightforward: abolish the financial limits and the channeling of liability and restructure the Fund so that contributions are more risk related. To a large extent these recommendations are implemented already today. The European Commission has, as we indicated, exercised serious criticism on the phenomenon on financial caps as well as on the channeling of liability.¹⁰⁷

Of course, one should always take into account that every economic analysis has its limits. Although this paper focused on the international oil pollution compensation regime, from an economic perspective the main goal of this regime should be the prevention of oil pollution incidents. In the policy reality prevention plays a role as well, but providing actual compensation to victims after an incident occurs is often a much hotter political issue. Moreover, many will argue that prevention should primarily be achieved through regulations, e.g. aiming at a better functioning of the classification societies, port state control and phasing out of single hull tankers. Still, the supplementary deterrent function of liability rules may, also in the context of oil pollution incidents, not be underestimated, as was clearly stat-

¹⁰⁵See Faure, M. and Wang, H., "The international regimes for the compensation of oil-pollution damage: are they effective?," *Review of European Community and International Environmental Law (RECIEL)*, Vol. 12, 2003, 242-253.

¹⁰⁶For an overview see Faure, M. and Wang, H., "Liability for oil pollution - the EU approach," *Environmental liability*, 2004, 55-67.

¹⁰⁷See Notes 52 and 53. In the so-called Erika I and II packages, the European Commission criticized particularly the existence of the limitation of liability and the channelling provision.

ed in the (early) literature. The fact that liability rules have apparently not been able to prevent major oil spill incidents can of course hardly be cited as evidence of an inadequate deterrent function of liability rules generally. Given the channeling of liability and the low limits it is difficult for liability rules to exercise fully their desired preventive effect in the current legal context.

Economic analysis mainly focuses on efficiency and less on distributional issues. The reason why a regime which would be preferred from an economic perspective is not introduced may well be due to distributional reasons. Smets indicated that a problem with an increase in liability limits is that this increase will be borne by all countries but may only benefit one country each year which would be victim of a major oil spill. Moreover the risk of oil spills may vary from country to country and some countries may not be willing to invest additional public expenditure or face an increase in the cost of imported oil.¹⁰⁸

Also, our analysis limited itself to a public interest perspective of the international oil pollution compensation regime. It may, however, be clear that the parties involved do not only strive to serve the public interest, but (mainly) their private interests. The 1969/1971 CLC/Fund regime was clearly the result of a workable balance between the competing interests. The ship owning states defended different interests than coastal states which could be victimized by oil pollution and had less of a shipping interest. Hence, from a public choice perspective the international oil pollution regime (and some of the inefficiencies we discovered, such as financial caps) could well be the result of competition between different interest groups.¹⁰⁹

Finally, it would be desirable if theoretical economic analysis like the one presented in this paper could be backed up by solid empirical evidence. The problem is, however, that basic information, e.g. on the number of oil incidents per year and the damage suffered, are basically lacking or at least not publicly available. This makes it very difficult to test whether changes in the regulation or the liability regime might have a positive impact on the number of incidents. It may be hoped that the responsible organizations will in the future cooperate to make these data available so that effectiveness studies can be performed. This could in turn lead to a further improvement of the legal regime.

¹⁰⁸See Smets, H., "The oil spill risk: economic assessment and compensation limit," 14 *Journal of Maritime Law and Commerce*, 1983, 35-43.

¹⁰⁹See Becker, G., "A theory of competition among pressure groups for political influence," *Quarterly Journal of Economics*, 1983, 371-400.

