The Insurance of Fines: the Case of Oil Pollution¹

by Michael Faure* and Günter Heine**

1. Introduction

During the past 20 years, many coasts and seas have suffered from oil pollution. The accidents of the Torrey Canyon (March 1967), the Amoco Cadiz (1978), and the Exxon Valdez in Alaska (1989) are illustrative examples. Early instances of marine oil pollution led to the adoption of several international conventions (e. g. the CLC and MARPOL conventions). These conventions were implemented in national legislation through various statutes, most of which are enforced through fines.

In many cases, the fines are fully insured through so-called Protection and Indemnity Clubs (P&I clubs), which are mutual insurance companies organized by the shipowning companies. According to a criminal court in Hamburg, this insurance coverage removes the deterrent effect of the fines. Therefore, the court decided in a 1985 case not to impose a fine, but to confiscate the tanker that caused the oil pollution and to send the master of the oil-tanker to prison.

This decision raises several interesting questions concerning the efficiency implications of the insurance of fines. In the second section of the article, we briefly summarize the decision of the criminal court of Hamburg. The third section focusses on the legal systems of different West-European countries and describes whether the law prohibits the insurance of fines in general. This question is addressed both from the point of view of insurance law and criminal law. We especially focus on some of the legal systems of the coastal states of the North Sea (United Kingdom, Netherlands, Belgium, France, and Germany). The fourth section examines whether legal mechanisms can be used to prohibit the insurance of fines. In the fifth section, we examine the insurance of fines from an economic viewpoint. Finally, a few concluding remarks are made.

¹ We thank all those who provided practical information concerning the insurance of fines. We are especially grateful to Owen Lomas (University of Warwick) who provided information on the situation in the United Kingdom. We also thank the participants in the conference on the Law and Economics of Insurance (Lund, August, 28-29, 1989) and the participants in the 6th Annual Conference of the European Association of Law and Economics (Vienna, September, 25-26, 1989). We are especially grateful to Jürgen Backhaus, Jan Bongaerts, Herman Cousy, Manfred Prisching, Steven Shavell, Göran Skogh, Charles Stuart and an anonymous referee, for their useful comments.

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2. The decision of the Hamburg criminal court of the 24th of October 1985.²

The facts that lead to the decision of the Hamburg court are the following: a Brazilian cargo ship, the MS Tapajos, arrived in the harbour of Hamburg. The defendant, Mr. Milton da Silva, was responsible for operation of the engines of the Tapajos, which was run on oil. The waterpolice discovered that the water was polluted with an oilslick of 2 sea miles in length and 200 meters in width. The defendant was found guilty of intended water pollution (§ 324 of the German Criminal Code).

The court held that the behaviour of the defendant caused a substantial pollution of the environment. Therefore, the court decided that a severe punishment should be imposed. Given the preventive function of the criminal law, the court held that to deter other potential wrongdoers, an imprisonment should be imposed, especially since the criminal sanctions that courts actually impose tend to become known rapidly in the maritime world.

Furthermore, the court held that a fine should not be imposed, since this would have no influence on the defendant. In this respect it was noted that it has been known for some time that ocean ships have had a wide range of insurance coverage through P&I clubs for all kinds of risks. In particular, this insurance would also cover fines that would be imposed upon members of the crew. According to the court, even fines for intentional criminal acts have been reimbursed under the P&I-insurance coverage.³ These facts were affirmed by a P&I representative, who participated in the court-hearing as a witness. For these reasons, the court decided to impose a prison-sentence of 6 months.⁴

In fixing the amount of the *Bußgeld*,⁵ the court again took into consideration the fact that the fines would be covered under the P&I insurance. Therefore the court decided that the amount of the fine should be high enough to deter the ship owners from polluting the environment. The fine should be higher than the costs of the legal oil removal (oil clean-up or avoidance of spills). If the P&I-club would, as a consequence, raise the premiums for insurance against fines for illegal oil spills, the avoidance of spills would become financially attractive. How high the actual *Bußgeld* in this case was, was not mentioned in the decision.

² Amtsgericht Hamburg, judgment of 24th of October 1985, Nr. 1452b-1108/25. For a comment see Heine, 1987, p. 289 and following.

³ When one looks at the various statutes and rules of the P&I Clubs, one can conclude that the Hamburg judge had a point: full insurance coverage is provided for the fines which the insured has to pay for the oil pollution. For instance, Rule 14 of the 1985 *Statutes and Rules* of Gard, a large Scandinavian P&I club states: "*The Association shall cover liability, fines and loss arising in consequence of the discharge or escape from the ship of oil or any other substance or the threat of such discharge or escape.*" In addition to this explicit provision for fines as a result of oil pollution, Rule 23 has an even broader scope: *The Association shall cover: 1. Fines as set out below whether imposed upon the Member or upon a member of the crew whom the Member may be legally liable to reimburse or reimburse with the approval of the Association:*

a. *immigration and custom fines;*
b. *fines incurred as a result of the conduct of the crew. ...*"

The Rules of Gard are not an exception since similar provisions can be found in the Rules of other P&I-clubs (see e.g. section 22 of the Rules 1987 of the UK P&I-club).

⁴ The sentence was, however, not effectively executed; the defendant was granted probation according to article 56 of the German criminal code.

⁵ A *Bußgeld* can be imposed according to the German "Ordnungswidrigkeitengesetz" and is not a criminal sanction, but a kind of administrative fine.

The decision is of major importance since the criminal court of Hamburg usually has jurisdiction in case of pollution of German waters (§ 10a of the German Code of Criminal Procedure). In addition, the decision raises several questions. The first is legal: Is the P&I insurance of fines illegal (section 3)?, if so, can a prohibition of insurance be enforced (section 4)? What are the economic effects of making insurance against fines illegal, and of imposing criminal sanctions for polluting (section 5)?

3. Insurance of fines: a comparative legal analysis

3.1. Insurance law

In most West-European countries, there is no general statutory provision prohibiting the insurance of fines. A prohibition of the insurance of fines is generally based on the principles of contract law, which prohibit contracts with an illegal cause. For instance, in the *Netherlands*, art. 246 of the Commercial Code provides that insurance is a contract. Thus the general principles of contract law should be applied. In this respect, art. 1373 of the Dutch Civil Code provides that a contract has an illicit cause if it is prohibited by law or if it is contrary to public order or “ethics”. According to Dutch insurance law, a contract including the insurance of fines could be considered contrary to the public order and thus not enforced.⁶ Also, insurance covering fines is in practice non-existent in the Netherlands.⁷ It should be noted, however, that although insurers claim that insurance contracts covering fines would be contrary to the public order and that such contracts do not exist in the practice, there is no clear prohibition in a statute or in case law, nor is there any explanation of why such policies would be judged to violate the public order.

In other countries, it is also held that (insurance) contracts are void if they have an illicit cause, but it is not always held that the insurance of fines is contrary to public order and therefore illicit. For instance, in *France* in the thirties, a distinction was made between insurance of fines for intentional acts and for non-intentional acts. Insurance coverage of fines for intentional acts was impossible since there would have been no risk.⁸

A similar distinction is indeed still made in the insurance law of the *United Kingdom*. A contract to indemnify a person against criminal liability is illegal and unenforceable if the crime can only be committed with *mens rea* (a guilty mind) or negligence. If the offence is one of strict liability and the offence was, in fact, committed with *mens rea*, a contract is also illegal. So if there is *mens rea*, a contract to recover damages would be contrary to public order.⁹

⁶ Art. 1371 of the Dutch Civil Code provides explicitly that a contract with an illicit cause cannot be enforced.

⁷ Letter of the Dutch Association of Insurers to the authors of June, 28th, 1988: no insurance policy actually covers fines.

⁸ Picard and Besson, 1938, p. 51-56. But this is not what we find in French insurance doctrine now. In recent books, it is argued that the insurance of fines is prohibited in all these cases. This prohibition is based on principles of criminal law: the insurance of fines is contrary to the public order since it violates the personal character of the punishment. (Picard and Besson, 1975, p. 39. See also Jacob, 1974, p. 79: “En revanche, en ce qui concerne les amendes pénales, il est de jurisprudence constante que celles encourues mêmes à l’occasion d’infractions non intentionnelles, ne peuvent être couvertes par aucune assurance, ce genre de convention étant contraire au principe de la personnalité des peines et à leur caractère incitant du respect des dispositions réglementaires”).

⁹ See Colinvaux, 1984, p. 64

If there is no *mens rea*, recovery of a fine would be possible if the offence was committed without *mens rea* or personal negligence.¹⁰ It follows therefore that under insurance law, the insurance of fines would be possible when the insured has shown neither *mens rea* nor “personal negligence”, although it is not clear what this “personal negligence” means. It could mean that in the case of strict liability, fines for offences committed without means *rea* are insurable.¹¹

In *Belgium*, insurance contracts covering fines are also held void because they have an illicit cause.¹² There has been a debate, however, whether this prohibition also applies to insurance policies, covering fines imposed by the public prosecutor or by an administrative agency instead of by a criminal court. Some courts have held such insurance policies to be perfectly valid.¹³ However, in recent years, several authors have argued that insurance would be contrary to the goal of such an administrative fine. This fine is said to have a repressive and deterrent function and therefore serves the public order. Insurance would be contrary to those goals and therefore contrary to public order. Most authors in Belgium do now indeed consider such insurance to be contrary to public order and thus void.¹⁴ It is interesting, however, to note that although such insurances have been considered contrary to public order, they have remained in existence in Belgium for quite a long time. For instance, a policy provided by the insurance company ARAG contains insurance of fines in a complementary policy to the legal aid policy. This policy remained in existence until 1981. The policy was withdrawn from the market because of pressure by the Public Prosecutor’s office who complained that through the policy, the wrongdoer would not have to pay for the consequences of his acts.¹⁵

In *Germany*, there is currently no insurance company that offers insurance for criminal fines or *Bußgelder*. However, in the beginning of the 1980-s an insurer applied for permission with the Federal Insurance Regulatory Agency to offer an insurance policy for *Bußgelder* for traffic offences.¹⁶ This permission was not granted. It was held that such a policy would be contrary to public order. The law would be “unworthy” if such violations could be covered through an insurance policy.

¹⁰ This was held the Court of Appeal in the *Osman v. Moss* case (1970), *Lloyd’s Rep* 313.

¹¹ See Lomas, 1989, p. 55-58.

¹² Such a contract is void according to article 1131 of the Belgian Civil Code. See *Les Nouvelles, V, Les Assurances*, Brussel, Larcier, 1966, 117.

¹³ There have been two cases in which insured parties refused to pay their insurance premiums and were sued by the insurance companies. As a defense, the insured argued that the contract was void since such policy would be contrary to public order. The courts overruled those arguments, stating that a “transaction” to be paid to the public prosecutor was not a criminal penalty and that therefore a contract covering such a payment is not contrary to public order (Justice of the Peace of Antwerp, May 28th 1938 and Civil Court of Antwerp, March 14th 1939, *Bulletin des Assurances*, 1939, p. 469-473 and Commercial Court of Brugge, October 15th, 1959, *Bulletin des Assurances*, 1962, p. 669).

¹⁴ See Malengreau, 1979 and *Les Nouvelles, V, Les Assurances*, Brussel, Larcier, 1966, 117; Ver-sée, Th. *Minnelijke Schikking*, in: *Algemene Praktische Rechtsverzameling*, 1955, 86; Lateur, Paul and Elebaers, D.; *Manuel Théorique et Pratique des Assurances*, Vol. II, Brussel, 1967, p. 380-381.

¹⁵ Letter of December, 21, 1987 of ARAG Insurance Company, to Michael Faure.

¹⁶ According to the *Versicherungsaufsichtsgesetz*, private insurance companies are subjected to a control, which also embraces the approval of individual insurance policies.

In general, contracts are void according to § 138 of the Civil Code (Bürgerliches Gesetzbuch), when they are to be considered “immoral”. This is also the case for contracts that violate the “established order”.¹⁷ Finally, § 61 of the Insurance Act provides that an insurer is not bound to pay if the damage has been caused intentionally or with gross neglect. Insurance policies may deviate from this principle, although an insurance of acts that are caused intentionally will always be considered to violate § 138 of the Civil Code.¹⁸

3.2. Criminal law

The question whether the insurance of fines interferes with criminal law can be analyzed from different angles. First, one may ask whether such insurance is contrary to the basic principles of criminal law, such as the deterrent function of the fine on the one hand and the personal character of the fine on the other hand. In addition, the question arises whether criminal law provides for punishment of an insurer who honours a contract for insurance coverage of fines.

3.2.1. Principles of criminal law

In this subsection we address the question whether there are legal rules, either explicit statutory provisions or general principles of criminal law, that force the convicted criminal to pay the fine himself.

In *Belgium* there is no statutory provision that explicitly forces the convicted to pay the fine himself. However, authors in criminal law argue that all criminal laws have a “public order character” and that, as a result of this principle, no one is allowed to derogate from criminal statutes or to exclude his criminal liability by contract. Therefore, they argue that an insurance contract covering fines is void.¹⁹ The prohibition of the insurance of fines could also be based on the principle that the punishment is *personal* for the convicted.²⁰ However, this argument cannot be made very strongly in Belgium since Belgian law sometimes allows (and even forces!) third parties to pay for someone else’s fines, for instance in the case of an employer paying fines incurred by his employee.²¹ In that case, contrary to where fines are insured, the decision to pay someone else’s fine is often made post actum. The same is true in *France*. In principle, it is said that the punishment should be personal and can hurt no one else but the wrongdoer. Yet it is admitted that a number of exceptions to this principle exist for fines; an example is that others can sometimes be held liable to pay the fine.²² There is no special reference in the French legal literature to the fact that the insurance of fines would violate a general principle of criminal law and would thus be prohibited.

¹⁷ See *MünchKommBGB*, § 138 Nr. 35 and following; Palandt, *Kommentar zum Bürgerlichen Gesetzbuch*, 48th Edition, 1989, § 138, Footnote 1b.

¹⁸ Prolss and Martin, 1973, § 61, No. 8.

¹⁹ See Constant, 1959, p. 84 and Trousse, P.-E., *Les Nouvelles, Droit Pénal*, Vol. 1, p. 61.

²⁰ See Malengreau, 1979.

²¹ The employer is held civilly liable for the fines incurred by his employee. When the employer has indeed paid the fine some labour courts even deny a right of recourse of the employer against his employee. See Faure, M., 1989.

²² Bouzat and Pinatel 1970, p. 395, 400 and Rassat, 1987, p. 468.

In the *Netherlands*, there are various opinions on the question of whether fines may be paid by a third party.²³ However, the fact that some authors claim that a fine can be paid by a third party does not mean that they would allow an insurance company to pay the fine in execution of an *ex ante* fixed contract. In the Netherlands, this question is not explicitly addressed.

In the *United Kingdom*, it seems permissible to pay a fine for someone else. Indeed, it occurs quite often. An example is the case of an offender being sent to prison for not paying a fine and friends paying instead, thus securing his release.²⁴ But in these cases there is no prior agreement to pay the fine, as in the case of an insurance contract.

In the *German* doctrine of criminal law, it has been stressed that one of the basic principles of criminal law is that the criminal sanction should hurt the wrongdoer himself, in order to set an incentive to refrain from criminal behaviour in the future (specific deterrence).²⁵ When criminal sanctions are covered in an insurance policy, the aim of specific deterrence is missed. Moreover, insurance of sanctions would also cause a loss of the general function of criminal law. If the fear of a sanction is removed from the wrongdoer through an insurance coverage, the deterrent effect (which all criminal sanctions are supposed to have) would indeed be defeated.²⁶

The fact that the fine can be paid by a third party and can thus be passed on is seen as one of the main disadvantages of this sanction in German doctrine.²⁷ This is especially relevant when criminal law is applied to acts committed by organizations, for instance, when an employee commits a crime while working for a corporation and the firm reimburses fines imposed on the employee on the ground of an *ante actum* agreement. These arrangements are, as will be explained below, generally punishable, but they are hard to avoid in practice since they remain often unknown to the outside world.

²³ Rummelink argues that it can anyhow not be controlled who will pay the fine and that thus it can not be required that the fine will be paid personally by the convicted (Hazewinkel-Suringa, D. and Rummelink, J., *Inleiding tot de studie van het Nederlandse Strafrecht*, 10th edition, 1987, p. 591. This has also been confirmed by a decision of the Hoge Raad of March 5th, 1906). Van Veen, on the other hand, argues that article 23 of the Dutch criminal code explicitly provides that the convicted should pay the fine (Article 23 states: "He who is convicted to a fine, is due to pay the fine within the period which is fixed by the public prosecutor"). Therefore he claims that third parties are not allowed to pay the fine, although they could give the convicted money to pay the fine (Van Veen, 1978, p. 916). Schaffmeister seems to share Rummelink's view that the fine can be paid by a third party, which he takes as an argument against the use of a fine as criminal sanction (Schaffmeister, 1982, p. 26).

²⁴ Information by Mr. Owen Lomas, Lecturer at the University of Warwick.

²⁵ This principle is generally accepted, see Bruns, 1985, p. 320 and following; Jescheck, 1988, p. 783; Stree in Schönke/Schröder, 1988, § 38, No. 2. The execution of the punishment should make the criminal conscious of the fact that he is liable for the wrong committed. Especially through the fine the criminal should suffer a loss of his wealth, which, as response of the State to the act, should be directed against the criminal in a perceptible way. (See Stree, 1964, p. 589; Hillenkamp, 1987, p. 466; Lackner, 1989, § 258, No. 2. See also Reichsgericht in Strafsachen, 30, p. 232).

²⁶ In addition, insurance coverage will have negative effects on the general respect for legal norms and law-abiding by the public. Whereas this notion of "Rechtstreue" is also called the *positive* general preventive function of sanctions, the deterrent aspect is called the *negative* general preventive function. (See in general Jescheck, H. H. *Lehrbuch des Strafrechts*, p. 782; Müller-Dietz, in *Jescheck Festschrift*, 1985, Vol. II, p. 825 and following).

²⁷ See Jescheck, 1988, p. 676 with reference to Tröndle, in *Leipziger Kommentar*, § 40, No. 58.

3.2.2. *Is insuring a fine a crime?*

We now examine whether an insurer can be held criminally liable. Only very few legislations have provisions that explicitly punish a third party who avoids that a punishment is executed personally by the convicted. For instance, *Germany* has an explicit provision in its criminal code that punishes *Strafvereitelung*. According to § 258, 2nd al. of the German criminal code (*Strafgesetzbuch*), a prison sanction of 5 years or a fine can be imposed on a person who intentionally or willingly defeats the execution of a criminal sanction that has been imposed on another person.²⁸

In other jurisdictions, where no such provision exists, one can only examine whether the insurance of fines can be punished under the general provisions of criminal codes, such as provisions against fraud. However, in many cases these provisions do not apply since the insurer does not at all deceive the insured.

In some jurisdictions, the question has been addressed of whether doing prison-time for someone else can be punished. In the Netherlands, for instance, there is no specific provision prohibiting this, so it has been punished as swindle since the offender receives the illegal benefits of food and a place to stay, to which he was not entitled.²⁹ However, this provision is inapplicable to cases of fines since it is unclear what the illegal benefit would be of paying a fine for someone else. This also shows that, apparently, no specific provision generally prohibits settling a criminal penalty for someone else.

Finally, under certain circumstances a person offering an indemnity against criminal penalties would be guilty of a criminal offence. Thus, if the person offering the indemnity knew that the indemnified person intended to commit the offence, he may be liable as an accessory (aiding, abetting, counselling or procuring the commission of an offence). However, most jurisdictions have provisions in criminal codes that contain very strict conditions to punish the accessory.³⁰ Ultimately, it should not be forgotten that most legislations do not accept that legal entities can commit a crime.³¹ This increases the

²⁸ This provision is also applicable to the person who pays the fine for someone else or who gives him the money to pay the fine. (For details see Stree, 1964, p. 588 and following; Tröndle in *Leipziger Kommentar*, § 40, No. 39; Jescheck, 1988, p. 676; Lackner, § 258, No. 2; Brüggeman, 1968, p. 165). In this view, an insurer can incur criminal liability according to § 258, 2nd al if he agrees *ex ante* to provide the insured with an amount that equals the fine.

²⁹ Hoge Raad, 14th October 1940, *Nederlandse Jurisprudentie*, 1941, No. 87.

³⁰ For instance, in Belgium under certain circumstances, one can be punished if one has assisted in or facilitated committing the crime (Art. 67, 3rd section of the Belgian Criminal Code). It would be almost impossible to apply this provision to the insurer who indemnifies the fine. Even if one would consider insurance coverage to be substantial aid, it is also required that the accessory had knowledge of the intention to commit a crime, which would be very hard to prove in practice. For instance, in Germany the *ex ante* promise to pay the fine for the wrongdoer can constitute an aid to the act committed according to § 27 of the German Criminal Code (See Dreher/Tröndle, 1988, § 258, No. 9). However, in most cases this would not be punishable under German law since the required intent for criminal liability can not be invoked. Indeed, the intent of the insurer to stimulate the committing of a criminal act has to be directed towards the performance of a well defined concrete act. It is not sufficient to encourage the actor to an unknown or undefined criminal act (See *Entscheidungen der Reichsgerichts in Strafsachen*, 34, p. 65; *Entscheidungen des Bundesgerichtshofs in Strafsachen*, p. 65).

³¹ With the exception of the Netherlands. See art. 51 of the Dutch Criminal Code. In Germany criminal liability is only accepted for the "*Ordnungswidrigkeiten*". See § 30 of the *Ordnungswidrigkeitengesetz*.

difficulties in applying criminal sanctions to insurance companies that provide coverage for fines. In practice, we found no court-decision at all whereby an insurer was convicted for committing a crime because fines were insured.

4. The enforcement of a prohibition of the insurance of fines

The sanction against insurance of fines found in insurance law is to consider insurance that covers fines to be contrary to public order and therefore void. The question then remains how to enforce this rule. Indeed, the fact that the contract is considered void is a sanction that can only be applied in a contractual context. If an insurer sues an insured who does not pay his premium or if an insured sues an insurance company that refuses to pay the fine, a judge has an opportunity to consider the validity of the insurance policy. But if the contract is respected by both parties, the insurance policy itself remains untouched even though it is legally “void”. In such a case the sanction alone is not efficient. This is clear from the example of the insurance policy in Belgium that provided full coverage for fines until 1981, although both insurance law and criminal law considered such a policy void.

An alternative is to combat insurance of fines through a regulatory agency controlling insurance policies. In most West-European countries, such agencies exist. However, the problem remains if the policy covering fines applies even if it has not been approved by the regulatory agency. For instance, the agency is powerless if the insurance company is incorporated abroad and escapes control of its insurance policies. This is clearly the case for the P & I clubs that are situated on the Bermuda Islands. The enforcement of a prohibition of insurance of fines is equally problematic when one considers a third solution: applying criminal law to an insurer who provides coverage for the consequences of crime. We mentioned above that only very few legislations provide criminal sanctions in this situation. In addition, insurance companies are often legal entities to which it is hard to apply criminal sanctions directly. And then another problem arises: in practice it is almost impossible to apply criminal sanctions to foreign insurers who cannot be caught in the state prohibiting the insurance.

A different way to solve the enforcement problem is to take the insurance of fines into consideration when applying the criminal sanction for the oil pollution itself. In light of the abovementioned problems in combatting the insurance of fines, this may be a relatively effective solution. Of course, a major problem in this respect is that the approach presupposes that the criminal courts possess *information* on the fact that imposed fines are fully insured. In the case discussed in the introduction, this was clear through statements made by a representative of a P & I club. But in many other cases, the courts may not possess such information. The obvious problem is that the court can not identify the “true” fine-payer except in cases where it is clear that the fine is insured.

5. An economic analysis of the insurance of fines

5.1. The insurance of fines

In economic theory there has been little analysis of situations in which a criminal can obtain insurance against the negative consequences of being caught and punished.³² Turning to the basic principles of insurance, it is well known that insurance generally increases

³² An exception is an article by Polinsky/Shavell (1979) in which they analyze the insurance of fines as reaction to the risk aversion of the offender.

social welfare since it removes risk from risk-averse persons.³³ Hence, assuming that the “criminal” is risk-averse, his expected utility can be increased by paying an actuarially fair premium to an insurance company that then covers the risk of having to pay a fine. Assuming for instance that social welfare in the sum of parties’ expected utility,³⁴ social welfare will be increased by this insurance arrangement.

The insurance of third party liability is generally accepted in almost all jurisdictions.³⁵ It is not clear from a theoretical point of view why the insurance of fines should be treated differently. Of course, it could be argued that a fine is meant to expose the potential criminal to risk in order to induce him not to engage in the criminal activity. But this argument could also be used against third party liability insurance since the duty to pay compensation to the victim is also meant to give injurers an incentive to take efficient care. Nonetheless, one suspects that one of the problems with insuring the consequences of crime is that the deterrent effect of the fine would be removed. A monitoring problem arises because the insured influences the accident risk. This is known in economics as moral hazard and occurs, legally speaking, when there is “negligence” or “intention”. From an economic point of view both are degrees of influencing the accident risk. The risk may be insurable if the insurer can monitor the insured.³⁶ The monitoring of the insured may be accomplished by making the premium depend on the level of care. Given that the expected claims paid by the insurer equal all costs due to the crime by the offender, the insurer will have an incentive to control the offender optimally.

Shavell pointed out that if monitoring is impossible, an efficient solution might still be attained if the insured is partially exposed to risk, either through a deductible or through an upper limit on coverage.³⁷

In either case, insurance of fines can increase social utility: it reduces the disutility from risk bearing while the preventive function of the criminal sanction is shifted to the insurer. The policy conditions (monitoring) or a deductible (being partially exposed to risk) can give the potential polluter an incentive to pollute less. Hence, the insurance of fines as such is not to be considered undesirable.

5.2. *Low detection rates and small fines*

A problem with the use of criminal sanctions is that the probability of being detected may be low and thus also the deterrent effect. A low probability of detection also influences the efficiency of insurance of fines. To see why, we now summarize briefly the economic theory of criminal behaviour. The basic idea is that a rational prospective offender takes into account both the benefits and costs associated with committing a crime.³⁸ If the costs should exceed the benefits, the crime will not be committed.

³³ See Arrow, 1965.

³⁴ See Shavell, 1987, p. 190.

³⁵ Except for the Soviet Union. See Shavell, 1987, p. 214, note 13.

³⁶ On optimal insurance policies to control moral hazard, see e. g. Pauly, 1968 and Shavell, 1979.

³⁷ Shavell, 1979. This solution is second-best since the risk-averse insured is partially exposed to risk.

³⁸ See Becker, 1968 and Bowles, 1982.

The *benefits* for the potential polluter are the savings from spilling the oil instead of discharging it legally, including any costs of avoidance of spills. The *costs* associated with the oil pollution can be broken down into two components. The first part is the probability that the offender will be convicted and the second is the size of the penalty that is imposed in the event of conviction. In general terms, there is little difference between a stochastic fee, a fine or an administrative fee or a confiscation. From the punished party's point of view, all these devices function as penalties.³⁹ The probability itself can be divided into the probability of being caught and the probability of being convicted. The expected cost to the criminal is thus the combination of the two probabilities multiplied by the penalty imposed under a conviction. The problem of the criminal is then to compare the benefits of the oil spill with the expected costs of the spill. Assuming that the rational offender is risk neutral, he will pollute if the benefits outweigh the expected costs of the oil spill. For example, if the fine were \$ 1 million (US) and the probability of being sentenced to such a fine were 1 %, the expected cost of polluting would be \$ 10.000. If this is less than the cost of legal oil removal, a rational, risk neutral potential offender would decide to pollute.

In studying the economic efficiency of crime and its prevention, Becker constructs a social loss function that takes into account the costs of detection and punishment. There is a trade-off between optimal deterrence and enforcement costs, since an increase in the detection rate requires an increase in policing costs.⁴⁰ This leads to two conclusions: 1. When optimal deterrence can be achieved equally by fines and prison sanction, fines are to be preferred since they are less costly to impose than prison sanctions. 2. A higher punishment will be preferred over a higher detection rate because it reduces enforcement costs. However, if offenders are risk averse, heavy punishments may also result in a welfare loss due to risk aversion.⁴¹

Returning to the insurance of fines, the basic problem is that the social harm of the crime may be large, while the probability of being caught and convicted is small. For instance, assume that the harm caused in the example above is \$ 500,000 and the detection rate is 1 %. Then the fine that makes the expected costs for the criminal equal to the harm is \$ 50,000,000 (!), which may be impossible to collect. The detection rate may be increased, but that is costly. Consequently, the expected costs of committing the crime often end up being less than the social harm. This results in less than the optimal level of prevention. The suboptimality remains if the costs of the fine are transferred to an insurer as, as long as the fine is less than \$ 50,000,000 (in the example). If, for instance, the fine is limited to \$ 1,000,000 and the detection rate is 1 %, while the social harm of the crime is \$ 500,000, the insurer will only bear 2 % of the costs and thus has very limited interest in inducing the polluter to reduce pollution. This is true even if full and costless monitoring is possible. Such monitoring will only be efficient if the amount of the fine can be raised to outweigh the low detection rate.

It is thus clear that it is not the insurance of fines as such that is the problem, but the low detection rate and/or the small punishment. If the criminal is risk neutral and the fine

³⁹ Although there are clearly differences in the costs of imposing these sanctions, measures like confiscation presumably simplify collection. These different sanctions will be discussed in section 5.4.

⁴⁰ On this trade off, see Polinsky/Shavell, 1979.

⁴¹ See Skogh, 1982, 72.

can indeed be increased without limit, a rational offender can be induced not to pollute as long as expected costs are higher than expected benefits. The result is the same if the criminal is risk averse, purchases insurance, and can be monitored by the insurer. The insurer would then certainly have an incentive to monitor the criminal. One way of doing so, for instance, would be to exclude intentional harm from coverage. If the criminal is risk averse, punishment may have a strong deterrent effect even though the expected costs due to punishment are smaller than the social harm from pollution.

We have argued that the insurance of fines as such is not to be considered inefficient, provided that monitoring is possible. Problems arise because of the low detection rate and low fines, which reduces the incentives of the insurer to control moral hazard. An efficient response of the legal system may therefore be either to increase the fine or to use alternative sanctions, which will be discussed in the next section. A prohibition on insuring fines is in itself not very useful since it is not insurance but the low fine combined with the low detection rate that is the real problem. In addition prohibition of insurance of fines may be ineffective since such prohibitions are hard to enforce.

Nevertheless, we found in part 3 that the legal system responds to the insurance of fines by prohibiting it. Although this does not seem to be the most efficient response, it may be explained by the "moral character" of the criminal law. Many lawyers believe that a punishment should demonstrate morally bad behaviour. This effect may be lost if criminal sanctions can be insured. In German legal doctrine, it is expressly held that a criminal sanction is inalienable since alienability of sanctions would weaken the general respect for legal norms that the public should have. This may be the main reason why the insurance of fines is illegal: a criminal sanction should demonstrate that a person has behaved immorally. The "immoral" label of the act would be lost if the sanction could be passed to a third party. This is also a reason why for acts of a highly immoral character, lawyers hold that a prison sanction should be imposed: prison sanctions cannot be passed off to third parties. Thus the sanction is made personal to stress the immorality of the act. In sum: the rationale for the individualization and moralization by the legal system might be that stigmatization in combination with risk aversion might deter although the expected costs are less than the social harm. This does not, however, mean that if fines are low, forbidding insurance can, by increasing deterrence, raise efficiency.

5.3. *The case of oil pollution*

It is obvious that the risk of oil pollution can be influenced by the insured. This is of course the case for deliberate oil spills, but also for accidental ones.⁴² The P & I Statutes and Rules provide coverage both for accidental and for deliberate oil spills. In addition, no distinction is made concerning the behaviour of the insured tanker owner and his employees: both intentional and negligent behaviour are insured (note 3).

If fines for accidental oil spills caused by negligent or intentional behaviour were insured, this could be efficient if a perfect monitoring of the insured were possible. With respect to the control by the P & I club of the insured tanker owner, several authors have

⁴² Of all the oil pollution in the North Sea, 44 % is caused by emission from the coast; 13 % is accidental, and 22 % results from the operation of tankers ("operations spills"). See Wildhaber, L. *Rechtsfragen des internationalen Umweltschutzes*, 1. Herbert Miehsler Gedächtnisvorlesung an der Universität Salzburg am 19. Juni 1987, Nr. 1/1987, p. 6.

argued that monitoring is inadequate.⁴³ One reason is the fact that competition between the P & I clubs is limited.⁴⁴ Too high a degree of concentration in the insurance market reduces the incentives of the insurer for an effective control of moral hazard. Some authors have argued that generally monitoring costs reduce the incentives to control moral hazard.⁴⁵

However, we argue that a major reason for inadequate monitoring is fines that are too low combined with a low probability of detection.⁴⁶ Therefore in this case it is not costly monitoring on a monopolized insurance market which is the underlying problem. If fines that are in practice imposed by courts are too low then the expected fine will also be too low and the P & I club, as a rational decision maker, will not have an adequate incentive to monitor and control moral hazard. Thus by this logic, an increase in fines would counter-balance the low detection-rate and could lead to adequate incentives to monitor and control polluters.⁴⁷ If actual fines imposed by criminal courts were raised sufficiently, premiums would also rise and P & I clubs would have an incentive to monitor insured tanker owners. Indeed, if fines (or detection rates) were to increase substantially, insurers would almost surely exclude intentional harm (operational oil spills) from policies.

Today, it is not at all clear whether the P & I clubs even wish to prevent deliberate oil spills. Given the fact that both deliberate and accidental oil spills are unconditionally insured, one cannot escape the impression that P & I clubs do not mind polluting behaviour by insured tanker owners (= oil discharge). The absence of control by the insurer is understandable given the small fines and low probability of being detected. Insurance seems to compound the problem by reducing the deterrent effect of the fine.⁴⁸

5.4. Possible solutions

The situation today is that the detection rate is low, fines imposed by criminal courts are low, insurance by P & I-clubs is prevalent, and oil pollution causes serious harm. We now discuss the legal mechanism that might be used to improve economic efficiency.

⁴³ Bongaerts/De Bièvre, 1987, p. 152-155; Faure/Vanden Bergh, 1989, p.334.

⁴⁴ Normally, a shipowner insures his entire fleet with the same P & I club. Changes from one P & I club to another are rare. If a change occurs, this is often the result of personal dissatisfaction with the service offered by the club. There will never be a change because another P & I club would offer lower premiums. This follows from the idea that P & I clubs are non-profit organizations. Price competition in this market is restricted, since the London Group of P & I clubs supervises premium competition. It should also be noted that the cartel agreement between the P & I clubs through this London Group of P & I clubs has been granted an exemption by the EEC Commission, based on art. 85, al. 3 of the EEC Treaty. (Decision of December, 16, 1985, *Official Journal* L 376 of December, 31, 1985, 6, No. 22. For a critical analysis of this exemption, see Faure/Van den Bergh, 1989, p. 331-336.

⁴⁵ See Adams, 1985, p. 213-245.

⁴⁶ The EC commission reports that in 1982 one study identified a total of 37 oil slicks greater than 0,5 km in community waters. Yet only 5 of these (13 %) were reported and of known cause. (*The State of the Environment in the European Community*, EC Commission, p. 255). The probability that the offender is found and can actually be sentenced can still be lower. An expert in the field informed us that he judged the detection rate of an average oil spill be lower than 1 % (Interview with Mr. Ost, Dockmaster at the Antwerp harbour on November, 4, 1989). See with respect to enforcement problems by oil pollution e.g. Eppele and Visscher, 1984, p. 29-60 and Cohen, 1987, p. 23-51. These papers focus on optimal penalty and enforcement strategies. They do not consider, however, the fact that in the case of oil pollution, fines are fully insured.

⁴⁷ We will discuss the legal difficulties to which such an increase leads in the next section.

⁴⁸ Of course, the criminal sanction is not the only enforcement mechanism to induce the tanker owner to prevent oil spills. Civil sanctions are also directed toward this goal.

5.4.1. Increasing fines

One possibility is to increase fines to a level where insurers exclude intentional crimes from the policies. This was suggested in the Hamburg case. Specifically, the court suggested that if the fine had been higher than the costs of legal oil removal (oil clean up or avoidance of spills), potential polluters would have been deterred since premiums for insuring illegal oil emissions (oil spills) would have been too high.

A problem from a legal point of view is, that it is not easy to base the amount of the fine on the fact that a third party (an insurer) will pay it. Most legal systems hold that the amount of the fine should be based only on the personal conditions of the defendant. In the United Kingdom, the 1980 Magistrates Court Act held that the court should take into account the means of the person charged. Thus English courts would ignore the fact that the master of the ship will be indemnified by the shipowner and that the shipowner is insured against his fines. It was explicitly stated by the court in the unreported case of *Paderewski versus The Tees & Hartlepool Port Authority*⁴⁹ that the court should ignore the fact that some owners indemnify the master of the ship for fines. Therefore, only the means of the master of the ship are relevant when the court sets the level of the fine. A similar solution is reached in other legislations. For instance, article 24 of the Dutch Criminal Code explicitly provides that judges fixing the amount of a fine should take into account the ability to pay of the defendant.⁵⁰ Although this clearly refers to the wealth of the defendant, one could argue that the ability to pay depends on the fact that the defendant is insured. In Germany, the amount of the fine is set on the basis of the personal and financial situation of the defendant (§ 40 of the German Criminal Code). The personal character of the fine does not allow for an increase of the fine when the latter is insured.⁵¹

It is clearly a problem that, due to these legal constraints, the fine is in practice limited to the ability of the individual to pay. As long as this is the case, fines are not very useful. From an economic point of view, it might be argued that a more efficient rule would be to base the fine on the ability to pay of the tanker owner or the P & I club. Another view of the problem with the present legal situation which takes into account only the individual's ability to pay is that it is impossible to control who will actually pay the fine.

An alternative would be to have an administrative agency impose a fine, not as a criminal sanction, but as a sort of fee. At first glance this seems advantageous, since the administrative agency imposing the fee would not be bound by the personal characteristics of the wrongdoer, so the fee could be set substantially higher than a criminal fine. However, this argument is not convincing. The amount of the administrative fee can not be raised to an adequate level either. Moreover, one fears that the administrative agency may be captured by the regulated party.⁵² Recent empirical studies also show that the level of

⁴⁹ Teeside Crown Court, 9th October 1982, cited by Bates, *United Kingdom Marine Pollution Law*, Lloyds of London Press 1985, p. 46. See also Lomas, 1989, p. 53-54.

⁵⁰ Hazewinkel-Suringa/Rommelink, *Inleiding tot de studie van het Nederlands strafrecht*, p. 594-595.

⁵¹ See Stree, in Schönke and Schröder, 1988, § 40, No. 17; Tröndle, in *Leipziger Kommentar*, § 40, No. 55.

⁵² For the theory of regulatory capture, see Bailey, E., *Economic Theory of Regulatory Constraint*, Massachusetts, Heath, 1973.

enforcement in administrative law, compared with criminal law enforcement, is low.⁵³ The influence of the polluting firm on the agency might also play a role if pollution has been caused by a tanker under a Brazilian Flag, as in the example we discussed above. In that case, indeed, the Brazilian trade union even threatened not to unload German ships in Brazil if the Brazilian master was sent to jail.⁵⁴

5.4.2. *Alternative sanctions*

One question is whether international conventions on oil pollution allow for an increase in fines. A second question is what alternatives exist to the use of fines. Indeed, non-monetary sanctions have been advocated by economists in cases where fines would lack a deterrent effect.⁵⁵ Therefore, a third and related question is whether legal systems provide for the imposition of prison sanctions for oil pollution.

The treaty of Brussels of November, 29, 1969 called "The International Convention of Civil Liability for Oil Pollution Damage", also known as the CLC convention, was the first international convention concerning civil liability for oil pollution. By November 30, 1982, 49 states had adopted the Convention.⁵⁶ The convention introduces a compulsory liability insurance for the tanker owner. As far as criminal enforcement of this convention is concerned, it is important to note that this is left to the signatory states.

Treaties aimed at preventing oil pollution through mandatory safety regulation existed prior to the Torrey Canyon-accident. In 1954, the "International Convention for the Prevention of Oil Pollution" was promulgated. This so-called "Oil Pol" Convention aimed at the prevention of deliberate oil spills.⁵⁷ According to this convention, enforcement measures are also left to the individual states. This convention has now been replaced by the "International Convention for the Prevention of Pollution from Ships" (the MARPOL convention) of 1973.⁵⁸ In contrast to the Oil Pol and CLC conventions, MARPOL itself contains provisions concerning required enforcement measures. Article 4 of MARPOL explicitly provides that any violation of MARPOL shall be prohibited and sanctions shall be established therefor under the law of the administration of the ship concerned where the violation occurs. It is stated explicitly that punishment should be severe enough to deter violations of MARPOL. Article 4 (4) also provides that the punishments should always be equally severe, no matter where the violation occurs.⁵⁹ Furthermore article 6 of MARPOL

⁵³ Meinberg, 1988.

⁵⁴ See Heine, 1987, 289. The captain did not have to go to jail, since he was released on probation.

⁵⁵ See e. g. Shavell, 1985, p. 1232-1262.

⁵⁶ See Abecassis, 1983, p. 45-47 and Tegelberg, 1984, p. 5-6 for details concerning this CLC convention.

⁵⁷ Deliberate oil spills or "operational" spills are not accidental but result from the operation of a tanker (e. g. washing of tanks).

⁵⁸ For more details concerning MARPOL, see Faure/Van den Bergh, 1989, p. 278-380, Gold, 1985, p. 59-74, and Tegelberg, 1984, p. 13-38.

⁵⁹ "The penalties specified under the Law of a Party pursuant to the present Article shall be adequate in severity to discourage violations of the present Convention and shall be equally severe irrespective of where the violations occur". (See also Timagenis, Gr., *International control of Marine Pollution*, Vol. 2, 456-459).

contains provisions concerning control and inspection. MARPOL obviously leaves less discretion concerning the enforcement measures to the individual states than the earlier conventions. It clearly prescribes that the sanctions for non-compliance should be of a criminal nature and severe enough to deter potential wrongdoers.

MARPOL has not yet been implemented in many states. Even when a statute to approve MARPOL has already been promulgated, it is also necessary to adopt a statute with detailed regulations since the provisions of MARPOL are not self executing.

Table 1 illustrates whether a prison sanction can be imposed in various European countries.

*Table 1: Sanctions on oil pollution*⁶⁰

CLC Convention			
Country	Statute	Fine	Imprisonment
Belgium	20 July 1976	500.000,- 1.000.000,- BEF.	no
Netherlands	11 June 1975		
France	26 May 1977	50.000,- 500.000,- FF	no
Germany	27 January 1975	10.000,- German Marks	no
OIL POL			
Country	Statute	Fine	Imprisonment
Belgium	4 July 1962	1.500,- 7.500,- BEF	no
Netherlands	9 July 1958	not applicable any longer	

⁶⁰ For an overview of national legislation to combat oil pollution see Gold, 1985, p. 105-107.

Country	Statute	MARPOL	
		Fine	Imprisonment
Belgium	17 January 1984 ⁶¹	not entered into force yet	
Netherlands	14 December 1983	25.000,— Dutch guilders ⁶²	2 years
United Kingdom	Merchant Shipping Regulations 1983	£ 50.000,— ⁶³	no
Germany	23 December 1981	3.600.000,— German Marks ⁶⁴	5 years
France	5 July 1983	100.000,— 1 000.000,— FF	3 months — 2 years

Table 1 shows that in some legal systems, fines are imposed on oil pollution but no imprisonment is possible.⁶⁵ Hence in those legal systems, the sanction of imprisonment cannot provide a remedy for the inefficiency created through insurance of fines (and low detection rates). The table also indicates that there are a few notable differences between the sanctions on oil pollution in the various legal systems, which is interesting from an EEC perspective. Fines are high in Germany for instance, but are lower in Belgium and France. In a few legal systems, imprisonment can be used to overcome problems caused by low fines and low detection rates.

Finally, a question arises whether complementary sanctions can be imposed that might deter potential polluters and thus cure the enforcement problem. In this respect, one might consider confiscation as an alternative sanction. This sanction has indeed been applied by the criminal court of Hamburg in a similar situation to the one discussed above.⁶⁶ An Egyptian oiltanker was not seaworthy. This was, according to the court, known by the tanker owner. The tanker itself was then confiscated since it was considered an instrument with which the crime had been committed. This can sometimes be an effective sanction since, contrary to a prison sentence, confiscation directly hurts the tanker owner and thereby gives the owner an incentive to avoid oil pollution in the future (assuming that the

⁶¹ This statute only approved MARPOL, but a statute is still necessary to implement it into Belgian Law, since MARPOL is not self-executing.

⁶² According to article 6.1.2° of the Economic Crimes Act, a fine of 25.000 Dutch guilders and/or an imprisonment of max. 2 years is applicable. If the crime has been committed by a legal entity, the fine can amount to 100.000 Dutch guilders according to art. 23, 7° of the Dutch criminal code.

⁶³ Regulations 12, 13 and 16 contain prohibitions on discharges. Regulation 34(2) makes a failure to comply with these regulations an offence and contains a maximum penalty: a fine of £ 50.000,— for summary conviction in the magistrates' court and unlimited fines for conviction on indictment in the Crown Court (see Lomas, 1989, p. 50).

⁶⁴ For other violations of the Marpol convention a *Bußgeld* of maximum 10.000,— German Marks can also be applied.

⁶⁵ For instance, the fine of 1 million Belgian Francs in the Act of 20th July 1976 is one of the highest in Belgian Law. However, no additional prison sanction can be imposed.

⁶⁶ Amtsgericht Hamburg, Judgment of 30th of October 1985, No. 142a–1420/85.

probability of being caught is not too low). Another argument for the extension of this sanction is that costs of collection are presumably relatively low under it. However, in most legal systems confiscation is only possible if the property belongs to the person actually convicted.⁶⁷ Since the tanker does usually not belong to the master or crew-member who is actually prosecuted for oil pollution, confiscation is often impossible under existing criminal codes.

In this respect, one might also consider the publication of judgments as a complementary sanction. Especially for crimes of an economic nature, publication of the verdict can have a deterrent effect since the loss of reputation caused by publication can have financial consequences for a company. Indeed, special statutes that introduce publication as sanction have been legislated recently, although the importance of this practice is still modest.⁶⁸

5.4.3. *Alternative devices*

The statutes implementing the conventions on marine oil pollution all impose fines for violations of statutory provisions. Given the low detection rate, these fines should generally be quite high, which is not possible, as we discussed above. A problem with prison sanctions is that they are costly to impose. As an alternative, we might consider the preventive effect of the tort system. Liability for harm and regulation of safety are often seen as alternatives.⁶⁹ Both systems have advantages. Therefore, one often sees in practice that safety regulation enforced by criminal sanctions is combined with treatment under the tort system.⁷⁰ This is also the case for oil pollution, since the safety regulation applies with sentences irrespective of an accident, while liability for the harm caused by oil pollution is present in case of an accident.⁷¹ As a final potential remedy the negative externality of shipping pollution might in principle also be controlled by a tax system, introducing taxes on oil.⁷²

6. **Concluding remarks**

We started our research with an remarkable decision of a Hamburg court that had discovered that fines imposed for oil pollution are fully insured through P & I clubs. We found that, both in insurance doctrine and in criminal law, serious objections were made against the insurance of fines. Notwithstanding these objections, it is clear that in practice, fines are insured.

Given the low probability of detection insurance is efficient only if quite high fines can be imposed. We then asked what kind of legal rules can remedy this inefficiency. The most

⁶⁷ For instance, according to art. 42 of the Belgian Criminal Code, confiscation is, in principle, only possible with respect to property belonging to the person convicted. In article 33a, the Dutch Criminal Code provides that under strict conditions, some objects that do not belong to the convicted can also be confiscated. However, art. 33a,2 provides that this confiscation is only possible if the third party knew or should have known for what purpose the objects were used. According to article 7 of the Economic Crimes Act, this provision is also applicable to crimes that are punished by the Economic Crimes Act, such as oil pollution.

⁶⁸ See e. g. article 7g of the Dutch Economic Crimes Act, which introduces a possibility to order the publication for all crimes falling under the Economic Crimes Act.

⁶⁹ Shavell, 1984.

⁷⁰ See Skogh, 1982, p. 67-80; Hansson and Skogh, 1987, p. 132-144; Skogh, 1989, p. 87-102.

⁷¹ For details concerning civil liability for oil pollution, see Bongaerts/de Bièvre, 1987 and Faure/Van den Bergh, 1989.

⁷² Gravelle, 1987.

effective way to enforce a prohibition of the insurance of fines may not be to use sanctions based on insurance law or criminal law, which punish the insurance of fines, but rather to accept that fines for oil pollution are insured and thereafter to look for alternative criminal sanctions on oil pollution itself. Indeed, imposing sanctions based on insurance law or criminal law on an insurer who covers fines will not solve the problem since insurance contracts are often not made public and since it is difficult or impossible to impose such sanctions on insurers that are based abroad. In addition it is often impossible to identify the "true" fine-payer.

Increasing the fine does seem a fully viable solution given the low probability of detection. In particular, high fines can only cure the inefficiency if the fines are made extremely high which is problematic in practice due to legal problems. An alternative is therefore to look for solutions based on other sanctions than fines on oil pollution. Prison sanctions are one such alternative. However, few legal systems today have implemented such sanctions in legislation regarding oil pollution. Other alternatives are confiscation or publication of verdicts. But these sanctions, like all criminal sanctions, can only be efficient if there is a reasonably high probability of detection. Therefore, also an increased use of liability rules through the tort system should not be forgotten

Although the real problem from an economic point of view, is not insurance but rather a low expected fine, the response of the law has not been to increase the fine but has instead been to prohibit insurance. Part of the explanation may be the legal idea that criminal sanctions should demonstrate the immoral character of an act, which may be diminished if criminal sanctions were insured. Another part of the explanation may be the economic argument, that if potential polluters are risk-averse, then a prohibition on insurance can increase deterrence. Both of these forces may also explain why prison sanctions are used, since prison sanctions can not be passed on to third parties.

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