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Economic Criteria for Compulsory Insurance*

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This paper applies the economic analysis of law through the question of under what conditions should insurance be made compulsory. A distinction is made between first-party (victim) insurance and third-party (liability) insurance. It is argued that under some circumstances compulsory victim insurance may be indicated, for example, when information problems or externalities arise. The major argument in favour of compulsory liability insurance is insolvency of the potential injurer. His insolvency may lead to underdeterrence. This can be cured through making the purchase of insurance compulsory. However, equally a few limits and warnings with respect to the introduction of a duty to insure are presented. If the moral hazard problem cannot be cured or if insurance is not sufficiently available, making insurance compulsory may create more problems than it cures. Also, it is argued that a major disadvantage of compulsory insurance is that it may make governments too dependent on the insurance market.
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Introduction

Regulatory interventions in insurance markets are certainly not a new phenomenon. What seems to be increasing, however, is the tendency of legislators to increasingly impose duties on market participants to obtain insurance coverage. This basic idea already originated in the early years when social security systems were introduced, but it has been expanded to the area of private insurance as well. Especially in the area of liability one can now see increasing duties laid upon potential injurers to secure themselves of sufficient liability coverage.

The arguments one hears in favour of compulsory insurance vary. Social security systems are usually defended as a means to provide a minimum amount of financial security to victims. Lawyers furthermore use this victim protection argument also in favour of compulsory liability insurance, arguing that victims should be protected against the danger of insolvency of the potential injurer. Economists as well have not only pointed out the advantages of insurance, but have also equally indicated that without sufficient solvency guarantees underdeterrence may arise and hence the accident risk could be increased.

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Notwithstanding the increasing popularity of compulsory (liability) insurance one can also hear several worries and warnings both from insurers and in academic writings. One worry relates to the fact that policymakers too easily impose a duty to obtain insurance coverage; a totally different matter is whether competitive insurance markets are able and willing to provide the necessary coverage required by the law. In addition, economists have warned against the increasing use of liability insurance linked with strict liability regimes and have often pointed at the advantages of first-party insurance schemes. That argument has had its influence in actual policy since one can now clearly see a tendency to move away from third-party liability toward first-party and direct insurance schemes in various areas. This raises the question whether – if a regulatory intervention is needed at all in insurance markets – one should not primarily focus on a duty for victims to obtain insurance coverage instead of using the traditional compulsory liability insurance. Nevertheless, one can still notice that as soon as new liability regimes are introduced, for instance in the environmental area, the question will always be asked whether this liability can be covered adequately through insurance and whether a duty to purchase liability cover should be imposed.

There is therefore reason enough to submit this phenomenon of compulsory insurance to a critical economic analysis. We will begin from the well-known economic starting point, which is that a liability system is considered as a system aiming at the deterrence of accidents on efficiency grounds and that insurance is efficient on the condition that the well-known problems of moral hazard and adverse selection can be controlled. The crucial question is therefore why in certain circumstances parties would not use the potential benefits of insurance and why a duty to purchase insurance coverage should be introduced. We will follow the traditional economic approach that would answer that a regulatory intervention is warranted in case of market failure. The question will therefore be addressed whether some of the classic market failures can explain the introduction of compulsory insurance.

Given the important difference between first-party and third-party insurance, the economic arguments related to compulsory insurance will be discussed separately for compulsory victim insurance and compulsory liability insurance. In addition, a few limits to the analysis and warnings concerning the introduction of compulsory insurance will be formulated. A flexible solution will be suggested and the question will be asked what the consequences of the analysis are for the choice between compulsory first-party and third-party insurance.

This paper also follows the traditional economic starting point that regulatory intervention to control market failures can be warranted to increase social welfare, and in that sense a positive economic analysis of compulsory insurance will be provided. That is to say that economics will be used to formulate positive criteria indicating in which cases compulsory insurance may increase social welfare. This paper, however, does not claim that compulsory insurance should at the normative level then necessarily be introduced. In this respect, it should also be remembered that victim compensation is from an economic perspective not a goal of accident law. Hence, the victim compensation argument is not used as a criterion to introduce compulsory insurance. Only one view of the cathedral is provided in the sense that only *economic* criteria for the introduction of compulsory insurance are discussed.

Compulsory victim insurance

Introduction

Economists have often stressed the blessings of first-party insurance schemes. As is well-known, in a first-party insurance scheme the victim insures himself directly with an insurer or (in a direct insurance scheme) a third party (like an employer) takes insurance directly to the benefit of the victim. It is often held in the economic literature that these first-party insurance schemes have as main advantage that they better enable a risk differentiation than liability insurance. The simple reason is that the victim can signal all his properties on whether he is a high- or a low-risk individual directly to the insurer, who can thus better exercise an adequate risk differentiation.[1]

These economic lessons have been well understood by insurers. Nowadays one can increasingly find a tendency towards a use of first-party insurance, for instance in environmental damage insurance,[2] but a tendency towards an increasing use of first-party insurance can – sometimes at the policy level, sometimes only in legal doctrine – equally be found in the areas of occupational health,[3] traffic accidents and medical malpractice.[4]

However, the question arises whether from an economic perspective these advantages of first-party insurance schemes are so high that they merit to be introduced mandatorily. Some indications on economic arguments in favour of such a duty can be found in the literature on social security. Indeed, there is often a small line between on the one hand first-party accident insurance or health insurance and on the other hand social security systems. Without going into this literature in detail one can indicate that at least two economic arguments are traditionally advanced in favour of compulsory insurance.

Information problems

One could argue that most potential victims would probably largely benefit from an insurance scheme, either first-party insurance or social security, covering them against the risks of, say, hospitalization. If no insurance were available the victim would be exposed to enormous costs against which he is likely to be risk averse. If it could be established that victims would, being well informed about the risks and the benefits of insurance, purchase insurance coverage, but that they failed to do so because of lack of information, information deficiencies can be advanced as an argument for making some form of first-party insurance (either through private insurance or through social security) mandatory, for example, for major medical risks.

The argument then simply is that if victims were fully informed of the benefits of such an insurance scheme and if they were fully informed of the risks involved

[1] The major arguments in favour of first-party insurance can *inter alia* been found in Bishop (1983, pp. 241–266); in Epstein (1985, pp. 645–669); Epstein (1995); and Priest (1987, pp. 1521–1590).
[2] See Bergkamp (2001) and Faure (2002, pp. 283–328).
[3] See for the area of occupational health, Faure and Hartlief (2003b, pp. 253–255).
[4] See for the area of medical malpractice, Dute *et al.* (1999) and Faure (2004b, pp. 5–87).

(also the costs of a medical bill) they surely would take out insurance coverage. The information deficiency in this respect is then the motivation for a regulatory intervention.

However, in this respect one should again be cautious. It may probably be assumed that persons are highly averse towards, for example, the risks of having to pay a hospital bill, but it is not sure that this is the case as well for smaller risks, such as a visit to the doctor. Thus, one can explain why there would be compulsory insurance for the larger risks, but probably not for smaller (health-related) risks.

One has indeed to be very careful with the information deficiency argument. This is valid only if there is a clear evidence that victims, if they were fully informed, would be willing to pay a premium to have risks removed from them. Hence the information deficiency argument should be clearly distinguished from the argument that insurance is beneficial since it generally removes risks from risk-averse persons and thus increases their utility. The problem with the latter argument is that the attitude toward risks of individuals can vary and therefore also their demand for insurance. A generalized duty to insure might therefore create a social loss. As a consequence, the simple fact that insurance increases utility cannot justify the introduction of a duty to insure as long as it is assumed that all individuals are perfectly informed about the risk to which they are exposed and the availability of insurance. There is always a danger that the information asymmetry is assumed to quickly justify a regulatory intervention. In the absence of a proof of information deficiencies, a generalized duty to insure would amount to mere paternalism and could create inefficiencies, since also persons who have no demand for insurance might be forced to take out insurance coverage. Moreover, one would always first have to examine whether information deficiencies cannot be cured through regulation aiming at solving the informational asymmetry.

Indeed, a second reason why economists would traditionally still be very cautious with generalized duties to purchase insurance coverage is that preferences among individuals in that respect can largely differ. Some potential victims may have a large demand for all-inclusive coverage, but others may have a different attitude towards risk and may not have such a demand. An all-inclusive duty, for example, for all citizens to purchase mandatory accident insurance may thus lead to a negative redistribution. Some victims may largely benefit from such an insurance, whereas others may not. A generalized duty then forces the good risk to subsidize bad risks. This form of cross subsidization can be avoided if a first-party insurance like accident insurance is largely offered but not imposed compulsorily.

Externality

The most important argument probably for compulsory first-party insurance for large medical risks for example, is the externality argument. If victims were uninsured (or not covered under social security) they could impose high costs on others, more particularly on society at large if they were hospitalized and unable to pay the bill. Thus, uninsured victims could externalize their costs. This is probably the most important reason why, at least for those larger risks (involving high costs), societies

have introduced *ex ante* compulsory first-party insurance, either through private first-party insurance or through social security schemes.

Public good and economies of scale

A classic argument that is sometimes advanced in social security literature is that an insurance organized through government may be cheaper than a coverage organized through the private insurance market since it may be more effective to insure certain risks on a collective basis. This argument could be given with respect to, *inter alia*, social security schemes. However, the danger is always that when insurance is provided collectively through government intervention insufficient incentives will exist for cost reduction, given the absence of the discipline of the market mechanism. Social security has the advantage that a uniform arrangement can be executed, which applies, in principle, to the whole population; this can generate economies of scale and may reduce transaction costs. However, the disadvantage is again that individual citizens may suffer a welfare loss since they cannot purchase an insurance which would be fully adapted to their particular demands and risk profile if they were forced into the uniform arrangement offered by government. Moreover, from the citizens' perspective, the disadvantage of social security is always that – contrary to insurance – the conditions of the policy are not fixed. The coverage under social security could thus be changed at random, for example, as a result of a differing political climate.

Compulsory liability insurance

Information problems

Information problems might arise in case the potential injurer cannot make an accurate assessment of the risk he is exposed to and the benefits of the purchase of insurance. An underestimation of the risk would in that case lead to the wrongful decision of the injurer not to purchase liability insurance. The legislator could remedy this information problem by introducing a general duty to insure. This information problem is probably a valid argument to introduce a generalized duty to insure for motor vehicle owners. Maybe the average driver of a car underestimates the benefits of insurance. If there were no information problem and the legislator would nevertheless introduce a duty to insure because this was "in the best interest" of the insured, it would of course be mere paternalism.

However, one weakness of this argument is that information problems may primarily be remedied through information remedies, such as regulation aiming at providing information to the poorly informed. A duty to insure would, in that respect, be a disproportional remedy. Only when the information asymmetry cannot be cured through regulation aiming at the provision of information could one think about the introduction of a duty to insure.

If empirical evidence existed that most injurers greatly underestimate the costs of damage done by specific risks they may cause and the probability that they will be held liable for this damage, it would lead injurers to reserve too few resources to cover their

potential liability. If these conditions are met and one can indeed assume that injurers underestimate the cost of accidents, this information deficiency may be considered an argument in favour of compulsory insurance. But again, the policy argument based on information asymmetry relates merely to the fact that the injurer would underestimate the potential benefits of insurance. There may, however, be another argument for why the (uninformed) decision of an injurer not to insure may lead to underdeterrence. This policy argument is precisely related to the insolvency risk.

Externalization through insolvency

Another reason to introduce compulsory insurance is indeed an argument often used by lawyers, that of insolvency. The argument goes that the magnitude of the harm will often exceed the individual wealth of an injurer, whereby a problem of under-compensation of victims will arise. Lawyers would, therefore, push forward compulsory insurance as an argument to guarantee an effective compensation to the victim. This (more distributional) argument obviously may play a role in the context of insurance of particular risks as well. Take the example of environmental pollution: if an injurer were found to be judgement-proof and hence, for example, a polluted site were "orphaned", the costs would be borne by society.

It is, however, also possible to make an economic argument that insolvency will lead to underdeterrence problems that might be remedied through insurance.[5] Indeed, this so-called "judgement-proof" problem has been extensively dealt with in the economic literature.[6] If the expected damage largely exceeds the injurer's assets the injurer will only have incentives to purchase insurance up to the amount of his own assets. He is 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 at the fact that in these circumstances of insolvency, compulsory insurance might provide a better outcome.[7] 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.[8] In the latter case, the injurer will indeed only consider the risk as one where he could at most loose his own assets and will set his standard of care accordingly. When the insurer is, under a duty to insure, exposed to full liability he 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 injurer will take the necessary care to avoid an accident with the real magnitude of the 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 is probably another explanation why, in the instance of traffic liability, compulsory insurance was introduced. Uninsured and insolvent drivers who have little money at

[5] This point has also been made by Dari Mattiacci and De Geest (2003a, b) and De Geest and Dari Mattiacci (2002).
[6] More particularly by Shavell (1986). See also Shavell (2004).
[7] Jost (1999). A similar argument has recently been formulated by Polborn (1998) and by Skogh (2000).
[8] See also Kunreuther and Freeman (2001).

stake – which they may lose compared to the possible magnitude of accidents they may cause – may have little incentives to avoid an accident. Insurers might better be able to control this risk and could force the injurer to take care under the threat of shutting him out of the insurance. The insurer then takes over some of the tasks of tort law in promoting safety in society. Thus, under a duty to insure, the insurer becomes *de facto* the licensor of the activity.

Indeed, this economic argument shows that insolvency may cause injurers to externalize harm: they may be engaged in activities that may cause harm and that can largely exceed their assets. Without financial provisions these costs would be thrown on society and would hence be externalized instead of internalized. Such an internalization can be reached if the insurer is able to control the behaviour of the insured. Through risk differentiation, the insurer can set appropriate policy conditions and ask an adequate 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.

Of course, this argument in favour of compulsory insurance relies on a few assumptions and conditions, which will be discussed in further detail below. One is obviously that the argument is valid only if moral hazard can be controlled adequately and insurers also have appropriate incentives to do so. Another condition is that the insurance markets should be competitive. However, one can notice that indeed both from a legal and from an economic point of view the potential insolvency of the injurer is a problem since it can lead to both underdeterrence and undercompensation. Compulsory insurance may remedy both problems as it may provide adequate victim compensation and – if certain conditions are met – remedy the risk of underdeterrence.

Note, however, that (compulsory) insurance is only one of the possible remedies to the judgement-proof problem. Another alternative is to use regulation instead of liability rules.[9] Some even argue that regulation may be intrinsically superior to tort law to control risk under uncertainty.[10] In this paper, however, I merely focus on insurance as remedy to the insolvency risk.

Externality argument continued: strict liability vs. negligence

This externality argument can be further refined by pointing at the fact that in the economic literature, it has been shown that the insolvency problem, as discussed before, is much more serious under strict liability than under negligence. Generally, as soon as the amount of the damage exceeds the injurer's wealth, a problem of underdeterrence will arise. However, under strict liability the injurer will consider the accident as one which is equal to his total wealth and will therefore only take the care necessary to avoid an accident with a magnitude equal to his total wealth. If that wealth is lower than the magnitude of the damage caused by an accident, the injurer

[9] As has been argued by Shavell (1984).

[10] De Geest and Dari Mattiacci (2002). They, however, consider both regulation and insurance as appropriate remedies for the judgement proof problem.

will take less than the optimal care. Therefore, a problem of underdeterrence arises under strict liability as soon as the amount of the damage exceeds the injurer's wealth.

Insolvency is, on the other hand, less of a problem under negligence. Under that rule, the injurer will still have an incentive to take the care required by the legal system as long as the costs of taking optimal care are less than his individual wealth. The reason is that taking due care remains a way for the injurer to avoid having to pay compensation to the victim. Under negligence, insolvency would only constitute a problem as soon as the costs of care would exceed the injurer's wealth.[11]

A simple example can illustrate this argument:

Suppose that we have three different optimal care levels, which correspond to different amounts of damage. It is assumed that the higher the amount of the expected damage will be, the higher the optimal care the injurer should take to avoid the damage. Thus, the three care levels have a corresponding optimal care level (y^*) that varies with the amount of the damage (D) (Table 1).

Assume now that the potential injurer only has 200,000 at stake, but that society faces an accident with a potential magnitude of 1,000,000. What will the injurer *ex ante* decide?

Under strict liability, the injurer will consider the accident not as one where he can lose one million, since he has only (given insolvency) 200,000 at stake. In order to avoid the accident with a magnitude of 200,000 under strict liability, the injurer will choose the lowest care level (3) and only invest 2,000, the optimal care necessary to avoid an accident with an expected damage of 200,000. Hence, a serious problem of underdeterrence arises since from society's point of view the injurer should take the high care level (1) and spend 10,000 in order to avoid the risk that a damage with 1,000,000 can be caused.

That is precisely the result that is reached under negligence. Under negligence, the injurer is only interested in the costs of taking care. The legal system will require him to take the high care (1). If he invests the high care (which costs him 10,000), he will not have to compensate the 1,000,000 to the victim. Given that the injurer has 200,000 as assets, he will invest the 10,000 and optimal deterrence is achieved.

This simple example shows once again that it may be dangerous to introduce strict liability if there are no solvency guarantees since, precisely under strict liability, insolvency can lead to underdeterrence.[12] The externality argument just discussed especially plays a role under strict liability. Hence, one can understand that at the policy level the introduction of strict liability is efficient only when it can be accompanied with sufficient solvency guarantees, such as compulsory insurance. In this respect one can seriously criticize the recent European Directive on Environmental Liability,[13] which introduces strict liability (for damage caused by listed dangerous

[11] This problem has been elaborated by Landes and Postner (1984).

[12] The results could, however, under certain assumptions change, more particularly when precautionary measures reduce the probability of the accident. This is more particularly proven by Dari Mattiacci and De Geest who show that under strict assumptions insolvency may even lead to overprecaution (see Beard (1990); Micelli and Segerson (2003); and Dari Mattiacci and De Geest (2003a, b)). For an analysis of the effects of insolvency on precaution under the negligence rule see also Dari Mattiacci (2004).

[13] Official Journal (2004).

Table 1 Costs of optimal care

Care level	*Costs of optimal care (y*)*	*D*
1	10,000	1,000,000
2	5,000	500,000
3	2,000	200,000

activities), but refers the issue of minimum asset requirements or a duty to insure to the Member States.[14]

A few limits and warnings

Moral hazard

After having discussed these basic criteria for compulsory insurance, a few other points need to be discussed. Firstly, one should remember that with insurance there will always be the moral hazard problem. This means that even if a legislator decides to introduce compulsory insurance he should not restrain the possibilities of an insurer to control the moral hazard problem. Otherwise compulsory insurance will create more problems than it solves. Nevertheless, there seem to be problems since the legislator often limits the possibilities to expose the insured to risk. Indeed, with compulsory (liability) insurance the duty to insure is often equal to the total amount of liability, and deductibles are not allowed. Hence, the total risk is shifted to the insurer, which means that the only instrument available for the insurer to cure the moral hazard problem is a monitoring of the insured. If this seems difficult or very costly the introduction of compulsory (liability) insurance might indeed create problems. Shavell even goes as far as to state that if the moral hazard problem cannot be controlled, the only regulatory intervention with respect to insurance should be a prohibition of liability insurance.[15] In any case, an introduction of compulsory insurance does seem problematic if the moral hazard problem cannot be controlled adequately. In this respect the recent research of Cohen and Dehejia, demonstrating that compulsory insurance regulation in the U.S. led to serious moral hazard costs and thus to an increase in traffic fatalities, provides an important warning.[16]

Duty to accept?

As we will argue below it is, especially in the context of social security schemes, often argued that it should be guaranteed that all citizens get equal access to certain services and that consequently insurance companies should be forced to accept risks. This would, so it is often held, exclude the risk of discrimination by insurance companies.

[14] See Faure (2001) and Faure and Grimeaud (2003).
[15] Shavell (1986).
[16] Cohen and Dehejia (2004).

However, introducing a duty to accept certain industries as insured seems like an extremely dangerous path to go, given the importance of an effective control of moral hazard. One important instrument of insurers to control moral hazard is precisely to have the possibility to monitor the risk, which a particular insured may pose *ex ante*. This could ultimately lead an insurance undertaking to the decision that it considers the risk a particular industry poses as too high. A logical consequence of the wish to have an optimal control of moral hazard should be the right of insurance undertakings to freely decide which potentially responsible parties to insure and which not. A duty to accept certain risks seems therefore to collide with the basic principles, which have to be respected to guarantee an effective functioning of insurance markets.

Risks for insurers?

Compulsory insurance, so we have shown, entails clear risks for insurers, more particularly related to the fact that the regulator may want to introduce mechanisms to make sure that sufficient compensation for victims is available when the risk emerges. Thus, the regulator could limit the insurer's possibilities to control moral hazard or even introduce a duty to accept, thus limiting the possibilities of risk differentiation. One can therefore understand that in practice insurers are never enthusiastic about compulsory insurance, at least for larger risks. Cousy claims that this is related to the fact that as a matter of law under compulsory insurance the insurer can often not invoke defences against the third party beneficiary of insurance. Moreover, there would be problems related to the implementation and actual carrying out of the obligation to insure.[17]

A normal consequence of the policy conditions (which usually aim at the reduction of the moral hazard problem) would indeed be that if the insured has not fulfilled its contractual obligations, then insurance coverage may fail. This can *prima facie* be considered an effective tool to remedy the moral hazard problem. Within a first-party insurance context, this still applies to a large extent. However, problems especially arise within the third-party context where the insured may have failed to fulfill his obligations. A failure to provide coverage as a result may primarily harm the victim who will then not be compensated. This relates to the crucial issue, mentioned in the introduction, that lawyers often view especially third-party insurance as an instrument of victim protection, whereas economists would stress the fact that insurance is an instrument to remove risk from the risk-averse injurer or to cure the risk of underdeterrence. Given the fact that the legislator often has this victim protection objective as a goal, the right of insurers to invoke defenses will often be limited by the legislator. Thus one understands the concerns of insurers.

However, compulsory insurance does not entail risks for insurers only, but also for the policymaker.

Dependence upon the insurance market

One reason for caution from the policy perspective is that the legislator should be aware of the fact that as soon as it introduces compulsory insurance, it becomes

[17] Cousy (1996) and Rogge (1997).

dependent upon insurers to fulfill this duty to insure. The practical possibilities of an effective enforcement of a duty to insure will obviously to a large extent depend upon the willingness to insure on that particular market. It will ultimately be the insurers who decide whether they are willing to cover a certain risk. This may in the end lead to the undesirable situation that the legislator introduces a duty to take out compulsory insurance, but the market refuses to provide such coverage. Introducing a duty to insure leads to a high reliance of the policymaker upon the insurance market. This seems to have led to problems with the German Environmental Liability Act of 1990 (Umwelthaftungsgesetz), which requires the owner of an installation that can cause significant damage to take out liability insurance or to have sufficient financial guarantees.[18] However, there are some other experiences as well. Boyd reports that as a result of the introduction of the U.S. Oil Pollution Act (OPA) in 1990, which required financial security, the market developed various new financial and insurance techniques to provide coverage.[19] Hence the introduction of such a duty may also have beneficial effects on innovation.

One should realize that if one makes the availability of insurance coverage a prerequisite for the operation of an enterprise, insurance undertakings in fact become the licensor of the industry, which may be questionable from a policy point of view.[20] In fact, for instance in the environmental case, the insurer becomes the "environmental policeman".[21] If that means, however, that the insurer, as a "policeman" controls the ecological performance of the insured company, there is of course nothing wrong with that. It may only be problematic if insurance companies are effectively able to decide which companies may exercise their activities. This problem especially arises in a monopolistic market. Generally, insurers seem to be reluctant to take over control tasks that according to them belong to other authorities. This explains why, for example in the context of medical malpractice, insurers are reluctant to fully control the capacities of a particular physician.[22]

This may, moreover, cause practical problems. Imagine that an insurer has stipulated in the policy conditions that coverage will be excluded in case of non-compliance of the insured with written mandatory government regulation. This may well be an effective instrument to control moral hazard. If, however, an accident happens under compulsory insurance the insurer will not be able to call on this exclusion ground *vis-à-vis* the third-party beneficiary of the liability insurance policy. The fact that defences in the insurance contract are not opposable to third parties is a well-known problem under compulsory insurance. The insurer will thus have to compensate the victim and may have a (statutory or contractual) legal right of recourse against the insured, provided that the latter is solvent. This is, as we explained, one of the reasons why insurers are reluctant against compulsory insurances.

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[18] See Wagner (1991, 1992).
[19] See Boyd (2003).
[20] This point is also made in the Communication from the Commission to the Council and the Parliament: European Commission (1993). See also Rogge (1997).
[21] See Monti (2001).
[22] See Faure and Van den Bergh (1989).

Necessity of cooperation with insurers

One could argue that these problems can be remedied if a good cooperation takes place between the policymaker and the insurance world, whereby the insurance world informs the policymaker on the insurability of specific larger risks. However, practice has shown that information provided by insurers concerning the insurability of a certain risk or with respect to the available amounts of coverage may not always be reliable.[23]

There seems to be a trade-off in that respect: introducing a duty to insure without any cooperation with the insurance world (which may have been the case in Germany) may lead to the catastrophic result that the government forces industry to take out a certain insurance coverage, whereby the market would not be willing to respond with the provision of such a coverage. However, a close cooperation between the insurers (usually represented via one insurance association) and the government only increases the risk of high concentration in insurance markets. Again, the already mentioned U.S. experience, with the introduction of the Oil Pollution Act provides a slightly different picture: even – apparently – without detailed *ex ante* discussions with the insurance world the imposed duty to show financial security could be met without problems by industry since new instruments were introduced to this end.[24] The different experiences are probably related to the more competitive nature of the U.S. insurance market, compared to the more concentrated German market.

Sufficient availability of insurance?

A further problem is that the policymaker should equally realize that for some particular risks that are so new insurance markets may not yet have developed policies for these new risks. If a differentiated offer of insurance policies is limited, one could again question whether it makes sense to introduce a mandatory insurance if such coverage could only be found to a limited extent (or without sufficient competition) on private insurance markets. Of course, the limited availability of insurance cover for specific risks today is to a large extent caused by the adverse selection problem: since too few companies had a demand for insurance an optimal risk spreading (via the law of large number) is not possible.[25] Moreover, only the bad risks will trigger a demand for insurance, which precisely causes the adverse selection problem. Hence, one could naively argue that this can be cured by forcing all injurers (good and bad risks) to take insurance coverage.[26] However, it seems strange to cure the limited availability of

[23] Practice has shown that the information provided by insurers on ‘‘insurability’’ might not always correspond with what is actuarially available in capacity on insurance markets (see on this problem Faure and Hartlief (2003c).
[24] See Boyd (2003).
[25] See Rogge (1997).
[26] This is precisely the argument that was advanced in France to justify the introduction of mandatory coverage for flooding in 1982: without such a duty the risk was considered uninsurable (see on this French first-party coverage model for flooding, Moreteau (2005)).

insurance for particular risks, which may largely be due to their difficult-to-insure-nature by forcing all injurers to purchase coverage.

In this respect, we can refer to the example of the environmental insurance. Indeed, risk differentiation in environmental insurance in Europe still stands at the beginning of its possibilities, and far more possibilities exist to relate policy and premium conditions in an appropriate way to the ecological reliability of firms. Hence, one can really question whether today insurance firms are able to differentiate environmental risks in such a way that one can argue that moral hazard can be controlled optimally in competitive insurance markets. The solution to these problems is obviously not to make a poorly functioning insurance system compulsory.

Competitive insurance markets?

A related issue is that until now we assumed insurance markets are perfectly competitive and thus that premiums and policy conditions are nicely tailored to the individual needs and the behaviour of the insured in order to control moral hazard optimally. In practice, however, many restrictions on insurance markets exist.[27] Important differences remain in that respect between the various European Union Member States. Insurance markets seem to be fairly competitive, for instance in the United Kingdom and the Netherlands, but far more concentrated in, for instance, Germany and Belgium. In an other research, the negative consequences of a high concentration in insurance markets with respect to premiums, but also for the incentives of the insurer to control the moral hazard problem, have been addressed.[28] Indeed, if monopolistic premiums can be set, an insurer will have less incentives to align his premiums to the individual behaviour of the insured, and thus there is less control of the moral hazard problem.

From a policy viewpoint, it also seems highly problematic to make liability insurance compulsory in concentrated insurance markets. Indeed, in that case the inefficiencies in the insurance market would be reinforced by making the purchase of insurance compulsory. Also, here the interest group theory of government can explain why insurers might want to lobby in favour of compulsory liability insurance. If they already can determine the supply-side of the market through monopolistic premium setting, all such insurers should strive for is that every possible injurer should be forced to purchase insurance coverage. Through this regulatory intervention a certain demand is then guaranteed as well.

Towards a flexible solution?

From the above it follows that there are, indeed, arguments in favour of introducing a compulsory insurance scheme, based on possible information deficiencies and on the risk of underdeterrence as a result of insolvency. However, already theoretically one can point to dangers as well, more particularly the fact that insurers may become the

[27] Faure and Van den Bergh (1993).
[28] Faure and Van den Bergh (1995).

licensors of the activities which may cause risks. This should not be remedied through a duty to accept, since it may cause incurable problems of moral hazard. All these considerations are therefore arguments for a policymaker to be extremely cautious with the introduction of a regulatory duty to purchase insurance coverage.

From this discussion on compulsory insurance follows probably an important conclusion. Although it may be important from a theoretical perspective to introduce a duty for the permit holder to secure appropriate means, it seems more appropriate to look for a flexible system whereby the licensing administrative authorities can judge in individual cases whether the obligation to provide financial security has been met. Such a system, where it is left to the administrative authorities to decide the form and amount of the financial obligation seems more flexible and entails fewer of the risks and dangers of a generalized system of compulsory liability insurance. Thus, the system could be constructed as a contract between the regulator and the injurer concerning the type and amount of security to be delivered.[29]

To reiterate clearly: the principle that liability should be covered through some form of financial assurance (not necessarily insurance) should be laid down in legislation. The authorities would then only have to fix the amount, taking into account the expected damage (this will allow for an individualization and differentiation), and they would have to check whether the type of financial assurance offered by the potentially responsible party will be adequate to meet his financial obligations. Here maybe the example of the Flemish Interuniversity Commission can be useful.[30] The draft decree on environmental policy chose not to introduce a compulsory insurance, but provided that an obligation can be introduced for the licensee of a classified activity to provide a deposit in order to guarantee that specific obligations shall be complied with. As proposed by the Flemish Interuniversity Commission, the authority to fix the amount and to control the offer of financial assurance could be the one which grants the licence at the start of the operation of the activity.[31] In terms of the IPPC Directive, this would be the competent authority granting the permit.[32] Sweden has a compulsory insurance scheme for environmental harm, which would provide desirable results. Some argue that this is precisely the case because this Swedish scheme is not based upon liability insurance, but upon direct insurance.[33]

In sum, a liability regime should be combined with some kind of obligation to provide financial security for specific risks if one can assume that an insolvency risk may emerge. But:

- this financial security should not necessarily be liability insurance;
- the policymaker could indicate that a wide variety of mechanisms may be used to provide this financial security;

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[29] Compare for a similar approach Hiriard *et al*. (2004).
[30] Bocken and Ryckbost (1996).
[31] Bocken *et al*. (1996).
[32] See Council Directive (1996).
[33] See Bocken (1998).

- the type of financial security provided should not be regulated in a general matter, but its adequacy may be assessed, for example, by the administrative authorities who can require financial security as a condition in the license;
- at the same time the administrative authorities can equally determine the required amount of financial security on a case by case basis;
- there should certainly not be the introduction of a duty to accept risks on liability insurers, since this may have negative effects on the control of moral hazard;
- the administrative authorities imposing such a duty to provide financial security should make sure that sufficient varieties of financial securities exist in financial and insurance markets in order to prevent governments or administrative authorities from becoming dependant upon the financial or insurance industry, which would then effectively become the licensor of industrial activities;
- the proposed regime corresponds with the proposals made by the Interuniversity Commission in the Flemish Region. These proposals were promulgated as the result of information provided by insurers, and the regime moreover applies in the Flemish soil pollution decree. Hence, there is some empirical evidence which shows that such a balanced and mitigated obligation to provide financial security in limited cases may work effectively.

Epilogue: compulsory first-party or third-party insurance?

From the above analysis it follows that at the legislative level it is first of all important to analyse what type of problem the policymaker wishes to remedy in order to find the appropriate cure. If insolvency of the injurer is the problem the policymaker fears, then the risk of underdeterrence seems an appropriate reason for the introduction of a duty to seek financial security for potential injurers. Remember, however, that if we referred to a duty to purchase financial coverage, this should not necessarily be limited to insurance. Alternative compensation techniques could be offered by potential injurers as well.[34] Especially in cases where insurers cannot observe care levels (and hence control of moral hazard is imperfect), minimum asset requirements may be superior to liability insurance.[35] It is only important in that respect that administrative authorities control the reliability of the financial security offered by the potential injurer.

If there are, on the other hand, victim protection concerns that cause major worries to the policymaker then a compulsory first-party scheme might be more logic than a mandatory liability insurance. Not only can we point again at the advantages of first-party insurance schemes as they have often been advanced by economists. If the fear of lacking information concerning the advantages of insurance is the major reason for legislative intervention a compulsory first-party insurance scheme seems more sensible than a compulsory liability insurance. This also offers the advantage that victims can obtain insurance coverage that precisely corresponds to their demand for insurance.

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[34] For an example see Faure (2004a).
[35] Shavell (2004).

Of course, the compulsory first-party insurance can take different forms. In some cases (as with health care and medical expenses), several countries have chosen public intervention via social security schemes. This paper has not dealt with the principal differences between social security and private insurance schemes, which is a totally different matter.[36] Note, however, that the arguments in favour of social security are basically similar to the arguments in favour of compulsory first-party insurance schemes. One can also note that in some countries, especially as a result of the deregulation movement, the government has withdrawn from the social security scene and replaced traditional social security schemes by compulsory first-party insurance offered by commercial insurers on the private insurance market.[37]

In some cases, there might be different reasons for the introduction of compulsory insurance that may warrant even a combination of compulsory first-party insurance with compulsory liability insurance. This is often what one can notice in practice and it can be understood. Liability insurance is then made compulsory as a remedy for the potential underdeterrence caused by insolvency of the injurer whereas mandatory first-party insurance (or social security) could be introduced to remedy a possible externality risk caused by insolvent victims or an information deficiency. Note that the simple fact that, for example, victims would be mandatorily insured and their compensation hence guaranteed is no reason not to introduce mandatory liability insurance in case of risk of insolvency of the injurer.

In some cases, however, a combination of both regulatory measures may not be possible. This can for instance be the case with situations where there simply is no liable injurer to be identified who could thus be made liable and held to seek financial coverage. This may well be the case, for example, with natural disasters. Natural disasters are often caused by "an Act of God" for which no one can be made liable. A few exceptions aside, compulsory liability insurance will therefore not be a great help. This then often raises the question of how victims can be adequately protected. According to the literature, victims seem largely to underestimate the risk of being victimized by catastrophes such as flooding.[38] Hence, there is too low of a demand for disaster insurance. This information deficiency could be used as an argument, for example, to impose additional disaster coverage on existing voluntary insurances.[39] This is an example where mandatory victim insurance seems a more appropriate response than for example intervention through the public purse.[40] Mandatory insurance for flooding at least has the advantage that through an adequate risk differentiation insurers can provide incentives for prevention.[41]

Of course, one could go a step further and wonder whether a generalized duty should be introduced, given the benefits of direct insurance, for all potential

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[36] On that issue see Faure (1998).

[37] This has for instance been the case in the Netherlands. See further on this tendency Faure and Hartlief (2003a, c).

[38] Zeckhauser (1996).

[39] This is a model that exists in France since 1982 and is now discussed in several other countries as well.

[40] See Epstein (1996).

[41] Kunreuther (1996) and Priest (1996).

victims (potentially all citizens) who may be hurt by particular risks that they can be subjected to.

Such a general accident insurance (non-mandatory) is available in France. The Fédération Française des Sociétés d'Assurances offers a first-party insurance for all the damages that are caused by accidents (wherever they occur). This policy with the very general description "*les garanties des accidents de la vie*" provides compensation irrespective of the question whether someone is liable or not. Important is that the victim gets compensation as if liability law were applicable. In other words, pain and suffering are also compensated for. Obviously, the first-party insurer who has provided coverage for "*les accidents de la vie*" has a right of recourse against the third party who may be liable for the loss.[42] This insurance policy seems attractive for those who wish to receive compensation relatively fast and do not want to wait for the long-lasting procedures in tort law. Moreover, this policy is attractive for those who fear that they might be victim of an accident where no liable injurer can be identified. Such a policy providing protection against "*les accidents de la vie*" may theoretically be a good solution for damage caused by large risks and corresponds to first-party insurance models described above. The advantage is, moreover, that the insurer can provide coverage exactly according to the wishes and individual needs (including the risk profile) of the particular insured. An optimal risk differentiation is therefore possible. The disadvantage is of course that the potential victims will have to finance the coverage themselves.

The question arises whether this French model is so attractive that it should be introduced on a mandatory basis. This is probably not the case. The reason is that it does not seem wise to provide a mandatory coverage also for non-pecuniary losses. In the literature, it has been indicated that the most important feature of non-pecuniary losses is that they do, in principle, not generate a demand for extra money.[43] Moreover, the fact that non-pecuniary losses do not cause *ex post* a demand for extra money has as consequence that non-pecuniary losses do not bring about *ex ante* a demand for insurance. As a consequence, the victim would in principle not take insurance coverage *ex ante* to get compensation for non-pecuniary losses. This payment of a premium *ex ante* will indeed always cause a loss of income and it is doubtful whether the average citizen has a willingness to pay this premium to get compensation for his non-pecuniary losses.

An additional problem is that non-pecuniary losses may be subjective and can be different for every individual. This makes a risk differentiation *ex ante* very difficult, precisely given the subjective nature of non-pecuniary losses. Different people react differently to accidents. This then also causes a moral hazard problem when the amount of compensation has to be fixed. The latter problem can to some extent be dealt with via a standardization of the amounts to be compensated for, but that would again mean that the compensation is not fixed according to the individual means of every victim.

[42] Which is not generally the case under first-party insurance.

[43] This point was made by Adams (1989); Cook and Graham (1977); and Faure (2000).

If there are certain individuals who fear *ex ante* that they will suffer more non-pecuniary losses after an accident than others and if they believe that these non-pecuniary losses will generate a demand for extra money, then these individuals may take an accident insurance according to the French model, which will provide insurance coverage and hence extra money in case an accident occurs. Hence, it seems to make more sense to let individuals purchase this first-party insurance coverage according to their own demands and preferences and according to their own risk profile. It seems wrong to force all potential victims in a system whereby they would be obliged to pay a premium for an additional protection (above the protection provided by the social security system) even if they have no demand for this additional protection. A general duty to purchase first-party insurance coverage may also have negative distributional effects. It would indeed force all victims to pay for this additional insurance coverage whereas only some individuals may effectively have a demand for this insurance. The negative redistribution is caused by the fact that all citizens would have to pay whereas only some have a relatively high benefit (because of their subjective propensities for suffering).

In sum, a first-party insurance (e.g. in the form of the French accident insurance) is certainly useful and desirable as an instrument to cope with damage caused by larger risks. Given the fact that the demand for insurance of every potential victim may be different, a regulatory intervention whereby the government would force all individuals to purchase such an insurance would only have negative consequences. It may lead to inefficiencies and to a negative distribution. Thus, although first-party insurance seems to be an adequate answer to some risks, the credo should still be that it should be purchased on a voluntary basis.

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