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The Role of Private Insurance in Governing Work-Related Risks: A Law and Economics Perspective

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Abstract: This contribution focuses on the governance of industrial accidents and occupational diseases. Prevention of work-related accidents and diseases and compensation of employee-victims can be the subject of public regulation, such as OHS regulation and social security. However, also private actors may be involved in the regulation of work-related accidents, especially when compensation of damage caused by work-related risks is not (sufficiently) covered by public regulation. These private actors include representatives of employers and employees, but may also include private insurers. In some jurisdictions liability insurers provide supplementary cover for OHS risks and policy-makers often expect that the monitoring by liability insurers will increase safety at work. The main research question addressed in this paper is whether insurers (and more particularly insurers of employers' liability) are indeed able to contribute to safety at work. Taking a law and economics perspective, we expect that this depends crucially on the possibilities insurers have to control moral hazard and adverse selection. However, the extent to which liability insurers have a financial interest in combatting these phenomena plays an important role. That may crucially depend upon the generosity of the public compensation scheme. First, we recapitulate the economic theory of insurance to the extent that it relates to work-related risks. Second, we address the question whether in some jurisdictions insurers have actually made use of these instruments, based on a literature survey. Third, we examine information on insurance policies offered by insurers in The Netherlands and the United Kingdom, to analyse to what extent theory matches practice.

Keywords: Work-related risks, moral hazard, insurance, experience rating, risk governance

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1 Introduction

This contribution focuses on the governance of two types of work-related risks: industrial accidents and occupational diseases. The term governance here refers to the prevention of such risks *ex ante* and to the compensation of employee-victims *ex post*.[1] Private actors often play an important role in these governance mechanisms, in addition to public actors such as enforcement agencies and regulators. These private actors may include (representatives of) employers and employees, as shown e.g. by the 'collective labour agreements' in the Netherlands[2] or the globally operating value chains, but may also include private insurers. Especially in jurisdictions where there is a shift away from public compensation of work-related risks and where employers are still exposed to employers' liability, one would expect liability insurers to step in to offer (supplementary) insurance coverage. In this contribution we therefore examine one particular form of privatisation, being the shift towards an increasing role of liability insurers. Policy-makers often expect that liability insurers will via risk differentiation monitor employers' behaviour and thus contribute to safety at work. The question however arises whether that is indeed the case.

The main research question addressed in this paper is therefore whether liability insurers are indeed able to contribute to the prevention of industrial accidents and occupational diseases. Following the existing law and economics literature, it is expected that this crucially depends on the possibilities insurers have to control moral hazard and adverse selection. Both moral hazard and adverse selection are (insurance) market failures caused by information asymmetry between the insured party and the insurer. Moral hazard occurs when the behaviour of the insured party changes as soon as the risk is removed from him. Adverse selection occurs when only persons with above-average risks buy insurance. The essence of controlling moral hazard and adverse selection lies in obtaining information about the behaviour (level of care) and characteristics of the insured parties. In the case of work-related risks, this includes information on the investments made by employers to prevent work-related injuries and diseases and information on the care taken by employees to prevent injuries. When such information is not available, insurance companies may resort to using indirect information, for example about the type of company, industry

1 See on the goals of prevention and compensation in relation to workplace injuries e.g. Kötz/Schäfer 1993; Dewees et al. 1996 and Philipsen 2009.

2 See section 3.1 below.

sector, or past injury rates. On the basis of the information obtained, insurance companies can classify risks and adapt premiums accordingly (first best solution) and/or impose deductibles or upper limits on benefits (second best solution).

Insurers can engage in many different ways in providing compensation for work-related risks. An important role for insurers lies in providing supplementary cover, i.e. in addition to public compensation schemes (provided via the social security system) for disability. Our focus will be on one particular form of insurance: insurance of employers' liability which provides supplementary compensation in addition to basic (public or private) disability insurance. Many countries have excluded employers' liability, with important exceptions being the Netherlands and the United Kingdom. It is for that reason that we will take those legal systems as case studies to analyse in more detail how liability insurers contribute (via particular policy conditions) to safety at work.

It is important to note here that the need for victims to rely on private tort law (and liability insurance) will be related to the cover provided by the social security system. That is, to the extent that social security covers a major part of all costs inherent with disability risks, the exposure to liability of employers may be relatively limited. Even though we cannot fully analyse the scope of the social security cover in this paper, we will address the correlation between public compensation schemes and the exposure to liability. More specifically, we will argue that the marginal benefits for insurers of investing in risk differentiation may be limited when other institutions (more particularly the public compensation schemes) have a higher financial interest in investing in prevention.

The paper is structured as follows. In section 2 we will first recapitulate the economic theory of (first and third party) insurance to the extent that it relates to work-related risks. In that respect we will also examine in more detail, and from a theoretical perspective, how the moral hazard risk can be addressed by insurance companies, e.g. via risk-related premiums and experience rating. Next, section 3 will present a (multidisciplinary) literature survey, which addresses the question of whether there is any evidence of the *effects* insurance arrangements have had on the governance of work-related accidents and diseases (e.g. on work-related injury rates, working conditions or the behaviour of insured parties). In that survey, which draws from available studies across western jurisdictions on the effects of insurance for work-related risks, we take a broad approach, taking into account both the effects of direct monitoring efforts (of which, as it turns out, there are very few examples) and the effects of premi-

um differentiation on the basis of companies' characteristics or past accident records.[3] We then turn to the specific situation of the Netherlands and the United Kingdom in section 4, by focusing more closely on the liability insurance policies offered for employers' liability in those legal systems. These jurisdictions were selected because in both the Netherlands and in the United Kingdom employer liability and liability insurance play a relatively large (supplementary) role in the compensation of work-related damage, compared to jurisdictions where employers enjoy immunity from tort liability. The reason to focus on those two legal systems is that they are among the few systems where employers are not immune from liability; moreover, the case studies provide an opportunity to look at specific liability insurance policies in order to examine how insurers try to incentivise employers towards safety at work via specific conditions in the policy. This is particularly important as the literature review presented in section 3 teaches us that the monitoring efforts by insurers generally have been rather modest,[4] which raises the question whether this (somewhat surprising) result also holds for work-related risks and more particularly for employers' liability.

Having addressed the above questions, section 5 will provide a conclusion both on the possibilities insurance companies have to offer additional coverage for work-related risks, and on their actual involvement in the governance of work-related risks. We will argue that the way in which liability insurers monitor the behaviour of employers does not always correspond to the expectations formulated in the theoretical law and economics literature. It is this dichotomy between on the one hand the expectations concerning insurers' behaviour as expressed in the literature and on the other hand their behaviour in practice that has not been addressed in a detailed way in the existing literature. It is on this point that we contribute to the literature, more particularly through the two case studies which allow us to focus on the contents of liability insurance policies.

3 The studies reviewed in section 3 broadly look at available evidence concerning the role of insurers in promoting safety at work, so also outside the context of liability insurance (for the simple reason that in many countries employers enjoy immunity of liability). Those studies are interesting because they provide insight on the channels by which insurers try to incentivise employers to promote safety at work.

4 Faure/Van Boom 2013, provide an overview of some of the available empirical literature on the instruments applied by insurers to control adverse selection and moral hazard; and conclude that monitoring by insurers is limited to markets like traffic liability insurance, D&O liability insurance and medical liability insurance. Their study did not cover work-related risks.

2 Theoretical framework: insurance for work-related risks from an L&E perspective

Insurance for work-related risks can be viewed from different angles, as insurers can intervene in many different ways. The starting point for the economic perspective is that, no matter which form of insurance is chosen, insurance provides protection (compensation) to risk-averse parties. Yet, the compensation mechanism should also aim at minimising costs and at providing incentives for optimal care-taking by all stakeholders that could prevent work-related risks, in other words employers and employees. With incentives in this context we refer to legal and policy instruments (regulation, sanctions, liability rules, taxes) that steer the behaviour of stakeholders towards an optimal prevention of accidents at work and occupational diseases. There is a wide variety of mechanisms that play a role in the prevention of work-related risks, an important one obviously being *ex ante* government regulation. Based on Shavell's well-known criteria for regulation, workplace safety regulation by the government may be the primary instrument to provide incentives for optimal prevention (Shavell 1984). However, effective enforcement of workplace safety regulation is often lacking in practice (Faure/Tilindyte 2010). Therefore, other instruments than government regulation, more particularly private law mechanisms, such as liability and insurance, also play a role in providing those incentives for prevention (Diamond 1977).

In addition to this 'primary goal' of legal instruments (i.e. *ex ante* prevention of work-related risks), law and economics literature also pays attention to the various mechanisms that can be used for *ex post* compensation. Most legal systems rely on mechanisms of social security to provide at least a basic compensation of healthcare costs and of lost income.[5] In some legal systems (such as the Netherlands and the United Kingdom, discussed in section 4 below), victims have the additional possibility to bring private law suits against employers if the conditions of tort liability are fulfilled. That is, as explained in the introduction, also the reason why we focus only on those two legal systems in section 4. In other legal systems (like Germany and Belgium) the possibilities to still use tort law are more limited as employers enjoy partial immunity from tort liability; tort liability is then often limited to cases where the employer was

5 There are, however, large differences between the way in which private insurance and social healthcare insurance schemes function. For details, see e.g. Faure 1998 and Oliphant/Wagner 2012.

grossly negligent or cases involving intentional harm. Depending upon the scope of employers' liability, there is still a (larger or more limited) role for liability insurance to back up the employers' liability. The intervention of liability insurers will provide an important guarantee against the insolvency of the employer, thus guaranteeing victims effective compensation to the extent that they are dependent on payment by the employer. In addition, insurers may promote work safety by imposing a particular occupational health and safety culture via premium conditions.

There is, in other words, a variety of different ways in which private insurers can be involved in the compensation of work-related risks. There are specific idiosyncrasies of the different legal systems that may explain the extent to which private insurers intervene. To the extent that the compensation provided via social security or so-called workers' compensation mechanisms is limited, private parties (either employers, but also the potential victim, the employee) may have a demand to take out additional (mandatory or voluntary) insurance. If the potential victim takes out insurance to cover himself, this will be referred to as *first party insurance*. Employers may also take insurance cover to the benefit of the employee; this is referred to as *direct insurance* and is often the model used in workers' compensation. Finally, as mentioned, under some legal systems there may be employers' liability and employers may seek insurance to cover their liability risks. That mechanism is called *third party liability insurance*. The latter is the main focus of our contribution.

No matter which specific mechanism is followed, insurance companies will be involved in the market of work-related risks in each of those cases. However, insurance companies are only willing to offer insurance cover if several criteria are fulfilled.[6] For a particular risk (like the risk of an industrial accident or occupational disease) to be 'insurable', it is essential that insurance companies can predict risks. That is, insurers need sufficient data to be able to assess the probability and magnitude of these risks. Only on that basis can insurance companies calculate an actuarially fair premium. In addition, it is important that insurance companies can control the problems of adverse selection and moral hazard. Both problems result from an asymmetry of information between

6 For a more elaborate discussion of the criteria for insurability, see Faure 1995 and Faure 2007. In addition to the criteria 'predictability' and 'possibilities to control adverse selection and moral hazard', Faure also discusses the criterion of 'creating sufficient capacity in the insurance market'. The latter criterion is particularly relevant in the context of large-scale risks and seems less relevant in the context of work-related risks (with the possible exception of occupational diseases creating sudden large-scale damage).

the insurer and the insured. Moral hazard generally refers to the problem that the demand for a certain service (like healthcare) may increase because the price for the service is reduced or eliminated. Moral hazard arises in healthcare as soon as full insurance cover is available (Arrow 1963), but moral hazard is in fact present in any insurance mechanism. In the context of OHS, moral hazard relates to employers taking insufficient measures to prevent accidents at work and occupational diseases as a result of being fully insured. Employers can play an important role in promoting safety at work through an appropriate prevention strategy, but moral hazard would imply that employers refrain from those investments as the additional costs they would suffer from accidents at work or occupational diseases would be fully covered by insurers. Adverse selection refers to the phenomenon that insurance is always attractive for the individuals who constitute the highest risks. If insurers are not able to identify who these high risks are, the adverse selection problem will emerge. It is therefore a consequence of the classic asymmetric information problem (Akerlof 1970). Adverse selection in the context of accidents at work relates to the fact that employers' liability insurance would become particularly attractive for high-risk firms. Especially when liability insurance is voluntary, adverse selection would imply that employers with the highest risk would benefit most from insurance and would thus seek insurance coverage.

The classic 'first best' response to adverse selection and moral hazard, according to the law and economics literature, is to adapt insurance premiums to risks. Such risk differentiation can be done *ex ante*, by charging different premiums to different risk groups, or *ex post* on the basis of experience rating[7] and monitoring the behaviour of the insured. The former, i.e. *ex ante* risk differentiation, is particularly relevant when addressing adverse selection; insurance companies generally attempt to classify employers or employees in different (smaller) groups, adapting premiums to the average risk of that particular group. The latter, i.e. *ex post* risk differentiation via experience rating and monitoring, seems more suitable for controlling moral hazard. A 'second best' option for controlling moral hazard is to partially expose the insured to the risk, for example through deductibles or caps. This is obviously a second-best solution, as part of the risk is shifted back from a risk neutral party (the insurance company) to risk-averse parties (employers and/or employees) (Shavell 1979).

It follows from the above that, since both adverse selection and moral hazard are in essence resulting from an information asymmetry, the control of those phenomena lies in obtaining information. For example, for the specific

7 For example, increasing the premiums in case of an increase in the incident rate.

case of the insurance of employers' liability for accidents at work and occupational diseases, insurers need information about the efforts made by employers to prevent work-related injuries and diseases and the care taken by employees to prevent accidents (Faure 2007: 145). An easier but indirect way to collect such information, is to focus on accident /injury rates from the (recent) past. Alternatively, as a second best solution, insurers can impose deductibles or an upper limit on benefits. An assumption in the economic literature is therefore that insurers will strive to use particular instruments to control adverse selection and moral hazards and that they actually are able to access sufficient information which enables them to exercise this control. This raises the question of what instruments insurers of work-related risks actually use to control the moral hazard risk and whether these instruments have been effective in reducing the number and costs of injuries.

The above shows that, although insurance may often be demanded to provide compensation and protection against an uncertain future (either by employers to cover their liability risk or by employees to cover health risks or risks of income losses), insurance may also have a positive incentive effect. Precisely to remedy the problems of adverse selection and moral hazard referred to above, insurers should obtain information about the work-related risks they are covering and impose specific conditions upon the stakeholders, with the aim of risk reduction. In that way insurers could contribute to increasing the safety at work. The economic approach is therefore based on the assumptions: 1) that insurers can obtain information and are able to control adverse selection and moral hazard and 2) that, through this control on employers' occupational health and safety, risks will be reduced.

Yet, empirical research in other domains has shown that, even though this risk differentiation by insurers in general, but specifically for liability insurance, is an important (theoretical) instrument to promote safety, insurers do not always engage in such a control of moral hazard to the full extent. In some cases regulation (e.g. on non-discrimination) prevents them from differentiating risks to the full extent; in some other cases a lack of competition in the insurance market reduces the incentives for insurers to engage in costly risk differentiation (Faure/Van den Bergh 2002). The result is that the moral hazard risk is not sufficiently remedied and insurance can even have a negative impact on safety at work (Shavell 1982). For that reason it is first important to verify the existing empirical literature in order to gain insight generally in the effectiveness of the tools of risk differentiation in reducing occupational risks in practice (3). Section 4 then focuses specifically on the tools applied for risk differentiation to

remedy the moral hazard risk by liability insurers in the specific cases of the Netherlands and the United Kingdom.

3 Risks in practice: a literature survey

3.1 Setting the scene

An interesting question from a law and economics perspective is whether according to the available empirical literature the insurance arrangements discussed above (*ex ante* and *ex post* premium differentiation, direct monitoring efforts), aiming at an effective control of adverse selection and moral hazard, have had any effects on the governance of work-related accidents and diseases. More specifically, some studies have attempted to address the question of whether premium differentiation has had an impact on the prevention[8] of such risks, as measured, for example, by the frequency or costs of work-related injuries. Obviously, it is very difficult to determine a causal relationship between insurance arrangements and frequency of injuries: many other factors having an impact on the number of work-related accidents and diseases need to be controlled for, such as the prevailing workplace safety regulation, the monitoring thereof by labour inspectorates, possible under-reporting of injuries, size and composition of the workforce, etc. Some other studies have therefore tried to measure the effects of premium differentiation on prevention in a different, more direct way, namely by examining the reactions of employers to changes in insurance arrangements. The results of these studies have, however, to be interpreted with caution as the institutional context within which the insurers intervene in covering work-related risks can be quite divergent,[9] which also has an important impact on their risk exposure. Most of the empirical results to be discussed in this section relate to four particular jurisdictions. It is for that reason that before presenting the empirical results, we will first briefly introduce the insurance systems in those four jurisdictions: the United States, Canada,

8 As far as compensation is concerned, we can only state here that social insurance systems generally provide fast but partial compensation (as indicated in the brief discussion of workers' compensation schemes in section 3.3), whereas private insurance offers additional (and potentially full) compensation, depending of course on the specific insurance conditions.

9 Indeed, as will become clear from the literature survey presented in this section, many empirical studies on experience rating relate to disability insurance rather than liability insurance.

Germany and France. That overview of the institutional arrangements is also useful as it allows us to clearly identify the differences with the insurance of employers' liability in the Netherland and the United Kingdom, which will be the focus of the next section (4). In the institutional overview that will follow we focus again on what (if any) attempts have been made by insurers of work-related risks in four jurisdictions to manage the risks of adverse selection and moral hazard (3.2).

Next, we provide an overview of this empirical literature, starting with studies that suggest at least some positive impacts of experience rating on prevention (3.3), followed by studies that found no or even negative effects (3.4).

3.2 Institutional background in four jurisdictions

The *United States* is characterised by state-based workers' compensation systems. The conditions under which compensation becomes available to employee-victims, as well as the amount and duration of such compensation, vary between states. In most states firms need to obtain compulsory insurance from a private (commercial) insurer to comply with the workers' compensation laws; in some others there are insurance providers owned by the state.[10] In addition to the compulsory insurance, firms may have the possibility of obtaining additional, non-compulsory insurance. Different from the compensation systems in the Netherlands and the United Kingdom (to be discussed in section 4), most workers' compensation laws in the United States make the employer fully immune from liability above the amount that is provided by the workers' compensation system, with the possible exception of intent by the employer. On the other hand, if an employer has not complied with workers' compensation laws, employees are free to file a tort claim.[11]

According to various authors, the US workers' compensation systems include experience rating in their insurance arrangements. Premiums are based both on the firm's own accident record and on the historic industry average. The level of experience rating increases the larger the firm (Dewees et al. 1996: 379; Thomason 2005: 13 and Lengagne 2016: 74). The latter characteristic has been

10 Furthermore, in some US states employers can opt out of workers' compensation and become self-insured (Koning 2017: 3). Such 'full experience rating' can be found e.g. in Texas: for an analysis, see Morantz (2010).

11 For an extensive description of workers' compensation and employer liability in the United States, see Green/Murdock 2012.

the starting point for several empirical studies that attempted to measure the effects of experience rating on accident rates (as will be illustrated below).

As in the United States, *Canada* has workers' compensation systems that differ from province to province, but which all have in common that workers who are compensated for workplace injuries (on a no-fault basis) are excluded from suing their employers in tort. Generally, workers' compensation boards are only concerned with insurance, but in some provinces they also contribute directly to regulating workplace safety. Experience rating is common in all provinces: the employers' contributions are related to payroll, industry sector and accident record.[12] One important difference between Canada and the US is that in the former jurisdiction the primary driver of workers' compensation costs are 'loss of earnings' benefits, whereas in the US medical benefits make up most of the costs. This follows from the publically funded nature of the healthcare system in Canada.[13]

Germany has a sectorial workers' compensation system, which is managed by trade associations (the *Berufsgenossenschaften*), which also have various other tasks in relation to prevention, co-ordinating medical treatment, rehabilitation and re-integration. Workers are legally required to belong to one of these trade associations. The workers' compensation programme is financed by contributions from employers, which are calculated *inter alia* on the basis of experience rating (Kötz/Schäfer 1993: 21). It follows from the sectorial character of the system that contributions differ between industry sectors; and sometimes also between companies in a particular sector. Even though the amounts of compensation (which include income loss and medical costs) are limited in size, employee-victims have almost no possibility of taking civil action against employers, except in cases involving intent and gross negligence (Philipsen 2009: 172).

France also applies a no-fault system. Employee-victims receive automatic compensation from the social security (workers' compensation) agencies, if they are injured in the workplace. However, like in the other workers' compensation systems discussed above, this compensation is limited to a fixed rate. Employees can only start legal actions against their employers in cases of inexcusable or intentional negligence (G'sell/Veillard 2012: 203). The public insurance pre-

12 For information about Canadian systems, see e.g. Kralj 1994; Campolieti et al. 2006 and Tompa et al. 2012. See also '7 things to know about workers' compensation in Canada', a blog post by Stacey Jones 2018, available at http://www.thepayrolledge.com.

13 Https://web-files.crawco.com/extranet/CA/UnderstandingCanadianWorkersComp.pdf.

miums that employers need to pay are based inter alia on their claims cost history and occupational risk sector (Lengagne 2016: 70–71).

The four systems discussed here all have in common that they are no-fault compensation systems, where compensation of employee-victims is relatively quick but limited in amount, and where legal action against employers is excluded with only a few exceptions. The jurisdictions differ in how the statutory insurance systems are managed (i.e. in terms of who are the institutions involved and what are their tasks), with Germany as an interesting example of the involvement of special sectorial bodies with many responsibilities, while in the US commercial (private) insurers are involved. Furthermore, there are differences in how the employers' contributions to the workers' compensation programmes are calculated, although it seems that in most systems at least two basic forms of premium differentiation are applied: by sector and on the basis of past accident records. The next section will provide a review of empirical studies that attempted to examine the effects of the insurance systems described above in terms of prevention of work-related risks.

3.3 Studies suggesting positive impacts of experience rating on prevention

3.3.1 North America

Some of the available empirical literature concludes that experience rating and/or risk-related premiums have positively contributed to the prevention of accidents. With respect to the United States, Moore and Viscusi (1990) reached the conclusion that the workers' compensation system, which is financed by premiums paid by the firms and which includes experience rating in its insurance arrangements, had been a driving force in reducing the number of fatal accidents at the workplace. Interestingly, the authors found that increasing benefits for victims had resulted in decreasing fatality rates; a result that suggests that employers react more strongly to experience rating if there is more at stake (in terms of higher premiums). Without workers' compensation and without tort, industrial fatality risks could have risen by more than 40%, according to the authors. This would be equal to 2,000 workers lives saved per year (Moore/Viscusi 1990: 9). This conclusion also implied that workers' compensation, at least in the period studied, contributed much more to the prevention of fatal accidents than safety regulation, as the reduction in risk levels by OSHA safety regulation was estimated to lie between 2 and 4% (Dewees et al. 1996: 382).

Dewees et al. (1996) reported on two earlier "major empirical studies", which – like Moore and Viscusi – concluded that experience rating under workers' compensation had significant effects on accident rates. Ruser (1985) "*used cross-section time series data for 41 states for the period 1972–79 to examine the effects of firm size on injury rates. He attributed the finding that larger firms have lower injury rates to the fact that larger firms are more likely to be experienced-rated*." Worrall and Butler (1985) found "that a 10% increase in the size of the employer decreased the permanent partial injury rate by 4.95% and the temporary total disability rate by 1.55%." Again, this effect was attributed to "increasing use of experience rating among large firms".[14] Durbin and Butler (1998) later examined the effect of the introduction of experience rating programs on workplace fatality rates on the basis of state-level data, again finding that fatality rates reduce significantly because of the experience rating.

Several authors have examined the effect of workers' compensation systems in Canadian jurisdictions and reached conclusions similar to the US-focused studies mentioned above. Kralj (1994) found (on the basis of survey-response data among 500 employers and case study information) that financial incentives provided by newly introduced experience rating schemes in Ontario had an impact on the incidence of workplace accidents and accident claims costs, by inducing employers to undertake strategies aimed at both accident prevention and reduction of workers' compensation claims costs. The author stressed that the latter is at least as important as the former; the evidence he found indicates that claims cost containment strategies for accidents that did occur may have been more economical for firms than activities aimed at frequency reduction. He suggested therefore that future studies on the effects of experience rating should not only consider accident frequency rates but also firms' allocation of resources to post-injury claims cost control. He argued that future studies should focus on the micro level, employing surveys and case studies, rather than analysing aggregate data on final outcomes, because accident frequency rates can be influenced by many factors other than investments in prevention, including non-reporting and suppression of claims (Kralj 1994: 56).[15] Bruce and Atkins (1993) also studied the effects of the move from flat rating to experience rating in Ontario, by examining the number of fatalities in the forestry and con-

14 Dewees et al. 1996: 381; Campolieti et al. 2006: 120–121, interpret the findings by Ruser and by Worral and Butler similarly. See also Lengagne 2016: 75.

15 Also Campolieti et al. 2006 are critical of some earlier studies of experience rating, which "have suffered from data limitations including a lack of direct measures of experience rating, lack of firm-level data, and small sample sizes" (119).

struction industries. The authors found a significant decrease in fatality rates (40% in forestry, 20% in construction) after the introduction of experience rating, leading them to conclude that more resources are devoted to safety in a workers' compensation system with experience-rated premiums than in one with flat-rated premiums (Bruce/Atkins 1993: 67).[16]

Furthermore, Campolieti, Hyatt and Thomason (Campolieti et al. 2006) studied the effects of the introduction in 1986 of an experience rating program in the jurisdiction of British Colombia, using a comprehensive data set of employers with data before and after experience rating. The experience rating system applied in British Colombia is similar to those applied in many other workers' compensation systems: after a first stage in which a "base" rate is determined on the basis of (mostly) an entire sector's recent claims cost history, in a second stage the base rate is further modified according to the accident experience of an individual firm.[17] Like Kralj (1994), the authors suggest that experience rating not only has the potential to improve workplace health and safety conditions (through preventive efforts made by employers), but that it can also reduce claims costs through changes in claims management (Campolieti et al. 2006: 119).[18] With respect to British Colombia, the authors found that the modest (compared to the experience rating plans in the US) financial incentive provided by the experience rating program resulted in a reduction in claims frequency for short-term disability claims and health care only claims, while the average costs increased for health care only claims but not for other claims types.[19] However, the authors note that, although their findings suggest that even very modest financial incentives can result in a reduction of claims for relatively minor injuries, they were not able to attribute this reduction to investments in health and safety or claims management behaviour (Campolieti et al. 2006: 140).

16 The basis for that explanation is in a theoretical model the authors developed in the first part of their paper.

17 It is also different from the systems in other Canadian provinces, which often exclude small employers and may have different experience rating agencies for different industries. See Campolieti et al. 2006: 123.

18 See on the latter point also Thomason and Pozzebon (2002), who conducted a survey in Québec among persons responsible for health and safety in 450 firms. The authors found a positive relation not only between experience rating (based on accident records) and prevention, but also between experience rating and aggressive forms of claims management, such as hastening the rehabilitation of injured workers and challenging claims.

19 It did not affect claims frequency or costs for all other claims types.

Campolieti et al. (2006) refer to some other empirical studies concerning the US workers' compensation system that supported the hypothesis that experience rating results in a reduction in the claims rate. However, the authors consider these studies problematic because they use highly aggregated data at state, provincial or industry level rather than firm-level data (Campolieti et al. 2006: 121).

Results that are somewhat similar to those of Kralj were found by Tompa et al. (2012) on the basis of panel data covering all firms in the Ontario experience-rating programme between 1998 and 2007. That is, the authors found no significant relationship between level of experience rating and number of injuries declared, suggesting that the effect on "primary prevention" (measures that directly reduce work-related risks) is low or non-existent. However, they did find that "secondary prevention efforts" by employers, such as adapting worker activities to allow a quicker return-to work, may have increased. They also conclude that there is "some indication of an incentive for cost management".

3.3.2 Europe

Kötz and Schäfer (1993) studied the sugar industry in Germany. As explained in section 3.2 above, the German compensation system is organized around its trade associations, which are the carriers of statutory accident insurance (Kötz/Schäfer 1993: 21). Firms are obliged by law to contribute to the accident insurance. Experience-rated premiums were introduced in the German workplace compensation scheme in the 1960s. In the Sugar Trade Association, the contributions by employers to accident insurance were characterized by particularly high surcharges and rebates (reflecting bad or good accident records), making it an interesting case to study. Kötz and Schäfer found, using multiple regression analysis, that the number of accidents in the sugar industry reduced considerably after the introduction of the experience rating in 1966. The authors explain their finding by referring to the economic incentives given to managers of firms in the sugar industry to take preventive measures (Kötz/Schäfer 1993).

Lengagne (2016) studied industry and construction sectors in France on the basis of sectorial data for the year 2005. She presents evidence of experience rating having a positive effect on working conditions (by reducing tiring postures and movements as well as a decreased exposure to dust and smoke) and

reducing work-related injury rates.[20]. Moreover, the author found that firms *do* react to high premiums and disability costs (by incorporating health and safety issues in their decisions) but *do not* lower their health and safety effort when premiums go down.[21] One possible explanation for this is that premium increases induce firms' awareness of risk prevention.

In relation to the Netherlands, Koning (2009) studied the effect of the introduction of experience rating in 1998 on the inflow into (public) disability insurance. He found that the inflow into a firm's disability insurance decreased substantially (15%) when premium rate changes were introduced, based on a 'difference-in-differences' analysis of panel data for three years (2000, 2001 and 2002). The author also suggests that the reduction in disability inflow observed in the whole of the period 1998-2007 may be partly attributed to the introduction of experience rating. He argues that employers seem to have been triggered to invest in preventive activities *after* having experienced increases in disability insurance premium rates, i.e. with some delay. These premium increases occurred in steps, due to the nature of the Dutch scheme at the time.[22] Another study by Hassink et al. (2018) deals with the insurance of disability risks in the Netherlands. Noting that in the Netherlands firms may opt out from the public to the private disability insurance, the authors found a strong selection into private insurance of firms with low recent disability insurance inflow rates and low current sickness rates. Apparently, private insurers succeeded in attracting firms with low anticipated costs and thus to exclude adverse selection.[23] De Groot and Koning did another empirical study on the effects of disability insurance experience rating in the Netherlands. They noticed that the removal of experience rating for small firms in 2003 and 2004 led to an increase of the inflow in disability insurance of 7% (De Groot/Koning 2016).

20 In order to measure working conditions, the author calculated aggregated indicators of adverse working conditions, based on data collected from the French 2005 Working Conditions survey. Information on premium rate changes was taken from French decrees that regulate collective premium rates for specific risk classes.

21 Lengagne 2016: 94. Emphasis added by the authors.

22 For details on the public disability insurance as it existed in the Netherlands in the early and mid 2000s, see Koning 2009.

23 To be clear: this is a different type of insurance than the insurance of employers' liability which is the central focus of our study.

3.4 Studies suggesting no or negative impacts of experience rating on prevention

There are also studies that found no, or even a negative, effect of experience rating on preventive measures taken by employers. Chelius and Smith (1983), contrary to the later study by Moore and Viscusi mentioned in 3.3 above, found that experience rating in the US workers' compensation insurance arrangements, has no measurable effect on employer safety. The authors reached a similar result in another study from 1993, by examining an experience rating system used in Washington State, in which small firms were eligible for a reduction in premium if they had no lost-time injuries during an experience period. One explanation for this seemingly counter-intuitive result may lie in the limited awareness of experience rating among small firms, which in turn can be explained by the complexity of the premium calculation system and administrative time delays (between the moment of introducing experience rating and any effects it may have on behaviour) (Koning 2009: 318–319).

Later research by MacEachen et al. (2006) on experience-rating rules in Ontario, Canada, reached conclusions different from the Canadian studies mentioned in the previous paragraph. The authors find that experience rating encourages employer 'gaming', that is, cost-reduction attempts by employers, which do not necessarily increase workplace safety. The explanation for this somewhat counter-intuitive result can be found in the fact that experience rating may have adverse effects in markets where non-standard employment arrangements are on the rise. Employers can, and have been found to do so, in this Canadian study,[24] outsource workplace injury risks to temporary work agencies, which cannot properly manage injury prevention and return to work. The authors advise that, if experience rating is applied in employers' insurance, workers' safety and return to work are made more significant priorities for employers, making workplace health less of a tradeable commodity (MacEachen et al. 2006).

In a review of the literature on the relationship between experience rating and injury severity in workers' compensation, Campolieti et al. (2006) conclude that evidence of such relationship is mixed at best. Referring inter alia to Smith (1992), Thomason (1993), Ruser (1993) and Boden (1995), the authors note a

24 The authors' findings are based on focus groups and in-depth interviews with 64 participants (low-wage agency workers, temporary work agencies, client employers and key informants) between 2009 and 2011, as well as an analysis of legal documents and data.

"failure to clearly associate declines in risk or reductions in workplace hazards with increases in injury costs" (Campolieti et al. 2006: 121).

A study based on experiences in Finland concludes that experience rating may not always have the expected result when the insured party is a smaller firm, despite the potentially large costs associated with increased premium rates (Kyyrä and Tuomala 2013). This conclusion, which is in line with the behavioural law and economics literature, seems to suggest that at least for some insured parties the effects of experience rating are too difficult to calculate and understand in advance. Indeed, the authors argue that the lacking effects on disability inflow (related to an extended coverage of experience rating of employers' disability insurance premiums) may be due to the complexity of experience rating calculations and/or limited employer awareness.[25]

Finally, we would like to point out that some of the results we presented in section 3.3, more particularly those finding a link between experience rating and aggressive claims management (Kralj 1994; Thomason/Pozzebon 2002 and Campolieti et al. 2006), can also be considered by some as a negative effect of experience rating. After all, a reduction in the cost of claims may come at the expense of the wellbeing of employee-victims and it may influence the way in which employers select future employees.[26]

3.5 Discussion

This section primarily focused on the question of whether the tools aiming at a control of adverse selection and moral hazard had the desirable result, i.e. of increasing occupational health and safety. The results of the empirical literature we reviewed seemed to be mixed. Addressing first the effects of experience rating on the governance of work-related risks, various papers suggest some positive effects of experience rating on either 'primary prevention' (e.g. reduction of number of fatalities or number of reported accidents) or 'secondary prevention' (in the form of better claims management/cost control). Most of these papers finding positive effects attribute these, at least in part, to how firms respond to

25 Kyyrä and Tuomala (2013: 28–29). Note that there is some similarity with the findings on France by Lengagne (2016), discussed above in section 3.3. Lengagne also found that firms respond imperfectly to experience rating.

26 See also Koning (2016), who finds that employer incentive schemes may decrease the number of hirings of vulnerable workers with health and disability issues. An additional point he makes is that employer incentives may cause under-reporting of disability cases, particularly when employers put strong pressure on workers not to report injuries.

premium adaptations. As shown in section 3.4, some papers however found no significant or even some adverse (MacEachen et al. 2006) effects of experience rating programs on firm behaviour. Also, Green and Murdock (2012) in their paper on the US system, argue that, despite the positive correlation between insurance premiums and injury prevention found in some studies, the correlation is weak and "it is not known whether [having] fewer claims in high benefit states is due to fewer accidents or just more rigorous management of claims by insurers" (Green/Murdock 2012: 478). In that respect, as we explained in section 3.4 above, the positive effects on 'secondary prevention' may be at the expense of employee-victims in situations where better claims management implies more aggressive claims management.

Indeed, several studies hinted at the possibility that premium differentiation does not necessarily lead to better OHS policies by employers. Other means to reduce claim costs – and hence future premiums – may include cost contestation, or worse, putting pressure on employees not to file claims. Furthermore, employers may attempt to hasten the rehabilitation of injured workers, while they may also take into account criteria such as age or health in their selection of employees (Thomason/Pozzebon 2002 and Lengagne 2016: 74). These findings are in line with the conclusions of a recent study by Koning, who also notes that employer incentive schemes "seem to lower sickness rates, but [...] come at the risk of increased under-reporting and less employment opportunities for workers with disabilities or bad health conditions" (Koning 2016: 1).

4 Insurance of employers' liability for OHS

We will now focus on one specific type of insurance, being the insurance of employers' liability for occupational hazards. We will do so by examining the liability insurance policies in two jurisdictions in more detail: the Netherlands (4.1) and the United Kingdom (4.2). In these jurisdictions, employer liability plays a relatively important role (at least on paper) in the compensation of work-related damage, in addition to the compensation provided to victims via social security arrangements. This provides us with the possibility to examine whether private insurance companies in these jurisdictions offer additional voluntary insurance of damage caused by work-related risks and whether they are actively involved in the monitoring of their insured, as predicted by economic theory. The added value of this focus on these two legal systems is that it allows us to focus on one specific type of involvement of the insurer, being employers' liability insurance; a more detailed examination of insurance policies

also enables us to verify to what extent insurers do insist on promoting work safety via the conditions in the liability insurance policy.

4.1 The Netherlands

In the Netherlands, compensation for work-related harm can follow from different channels. Firstly, there is public regulation in the form of social insurance arrangements (*WIA*) that applies generally to all employees. A substantial part of the salary for the first two years of absence (due to sickness more generally or due to work-related injury) needs to be provided by the employer;[27] one could therefore argue that, at least theoretically, Dutch law provides some financial incentives to employers to reduce work-related risks.[28] Secondly, some of the so-called 'collective labour agreements' (CAOs) between employers and employees include provisions on *additional* compensation for employee-victims.[29] In a 2015 study for *Stichting Instituut GAK* on compensation for work-related risks, several examples were found of CAOs that contained provisions on compensation for victims of work-related risks (Klosse et al. 2015: 100–119). Thirdly, employee-victims may attempt to file a claim against their employer under tort law (Lindenbergh 2012: 355–363).[30] Fourthly, there is a possibility of taking out additional (private) insurance for personal injury loss. Unlike the situation in e.g. the United Kingdom, there is no mandatory insurance mechanism for employers in the Netherlands, although political and academic discussions about the need to introduce (full or partial) compulsory first party insurance for work-related health risks return to the fore repeatedly (Lindenbergh 2012: 367).[31]

However, employers can take out voluntary liability insurance for damage caused by work-related risks, because these risks are covered by the general

27 See Lindenbergh 2012 for details.

28 Note again that the WIA, like many of the public insurance schemes discussed above (see section 3), also attempts to integrate some other insights from law and economics, such as risk/premium differentiation.

29 CAOs are a prime example of the Dutch 'polder model'. These agreements are concluded at sectoral level between employers (or associations representing employers) and trade unions and apply directly to all members of the respective trade unions and employers' associations. The government can declare a CAO binding on a sector, but is formally not a party to such agreements.

30 However, very few claims (about 5%) reach the courts. Philipsen (2017: 17–19) summarizes the conclusions of a Dutch empirical study on the motives employee-victims had to file such claims against their own (former) employers.

31 For a detailed analysis of the possible insurance solutions, see Klosse et al. 2015: 141–156.

liability insurance for companies (*AVB*). According to a 2009 study among companies, more than 50% of companies have such insurance.[32] As stated above, employees can also insure themselves in the private market against damage that is not covered by the social insurance. There are several insurance companies offering liability insurance for companies (AVB) and/or disability insurance for private parties (*arbeidsongeschiktheidsverzekering*). The insurance companies involved sometimes offer services related to prevention and cost reduction, and in that respect – at least theoretically – can play an additional role not only in the compensation, but also in the prevention of work-related accidents and diseases.

The policy conditions employed by these insurers differ quite substantially, as became clear from a quick-scan of policies available on the Internet.[33]. For example, insurance companies offering disability insurance to individuals apply rather different exclusion criteria when determining whether or not to pay compensation in case of disability. Some insurers only pay compensation in cases where an occupational disease is on a predefined list of diseases (and hence not for others); some exclude payment in cases where an insured person participates in fighting sports; some exclude payment when the cause of an injury (also) follows from a criminal offence; some exclude physical causes, etc. Also, but not surprisingly, there are many differences between premiums charged and compensation offered in situations where the risk of disability materializes.

AVB policies aimed at companies generally exclude damage that is the result of (intentional) non-compliance with health and safety legislation. Environmental damage is always excluded from compensation. Sometimes, predefined risky activities are excluded from compensation (or are only included in separate insurance policies), such as tiling, grit blasting, demolition work on tall buildings, and working with asbestos. Premiums are calculated specifically for each insured party. Insurance companies apply '*ex ante* premium differentiation', which takes place on the basis of factors such as turnover, number of

32 Lindenbergh (2012: 364–365) discusses some limitations of the AVB in terms of coverage: coverage is usually restricted to personal injury and damage to goods which is not the result of intent and does not include pure economic loss. Furthermore, coverage is usually limited to an amount of (at least) € 1 million per incident and a maximum of 2 incidents per year.

33 Note also that websites comparing different private disability insurance policies are available (in Dutch): see e.g. https://www.aovergelijken.nl. We used the latter website to gain quick access to standard insurance policies offered by the following insurers: Allianz, Amersfoortse, Avero Achmea, De Zeeuwse, Goudse, Klaverblad, Lancyr, Movir, Reaal, TAF, UWV and Van Kampen Groep.

employees/total wage sum, company size and sector, but also the amount of the 'own risk' chosen[34] and the insured amount.[35] Furthermore, the insured amount is often capped, for example to € 2,500,000 per event. In our quick-scan of insurance policies we could not find evidence of *ex post* premium differentiation, for example on the basis of accident records. Also, evidence of direct monitoring efforts by the insurer (for example in the form of monitoring health and safety investments made by companies) could not be obtained.[36]

In summary, one can notice that insurers in the Netherlands do employ several instruments to control adverse selection and moral hazard as suggested in the theory (such as risk differentiation). However, the alignment of premiums to risk is often not very specific but instead uses crude measures such as turn-over or the number of employees. That obviously raises the question of whether these measures will be sufficient to adequately control adverse selection and moral hazard. Some insurers may also apply the second best remedy (exposing the insured partially through risk). That is the case in the sense that there is a financial cap on the insured amount; if the total damage is therefore higher than the insured amount, the insured employer is still exposed to risk. Moreover, it is possible that insurers equally apply deductibles.

4.2 United Kingdom

Employee-victims in the United Kingdom can claim compensation for work-related injuries both via social security (in the form of the industrial injuries compensation scheme[37]) and, if liability of the employer can be established, via tort law. Both types of compensation can be claimed at the same time, i.e. an employee having received compensation via the industrial injuries scheme is not excluded from claiming compensation in tort.

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34 Remember that according to economic theory the idea of an 'own risk' is a second-best solution to moral hazard. See section 2 above.

35 See also https://www.premie-vergelijken.nl/aansprakelijkheidsverzekering-voor-bedrijven, another website that offers comparisons of insurance policies.

36 The information in this paragraph is based on an examination of the information offered online by some randomly selected insurers: Allianz, a.s.r., Centraal Beheer, De Goudse and Interpolis. We certainly cannot rule out the possibility that insurers do apply experience rating or direct monitoring, but obtaining such information would require additional research in the form of either interviews with stakeholders or requests for further (confidential) information.

37 For an elaborate overview of this workers' compensation system, see Lewis 2012: 144–173. This scheme provides faster compensation than the tort system, but compensation is limited. Claimants may turn to tort law for additional compensation.

Employers are obliged to take out insurance against liability for bodily injury or disease sustained by their employees and arising out of and in the course of their employment.[38] Such insurance cannot include conditions or exceptions that are prohibited by law.[39] While originally, insurance coverage was unlimited, since 1995 most insurance companies have limited the compensation per incident to £ 10 million, more particularly as a result of increasing costs of awards for damages, increasing court costs and a rise in the number of claims made (Bamber 2005).

According to Lewis (2012), insurers in the United Kingdom have been involved at least to some extent in offering services related to prevention and cost reduction. They have done so for example by directly monitoring the OHS management of companies and providing recommendations to reduce risks, in addition to (the more general) diversification of premiums based on industry risk, previous claims history and size of the pay-roll (Lewis 2012: 194–197).[40] Some commentators have however been critical of the possibilities for insurers in the United Kingdom to differentiate between premiums at the level of the individual company.[41]

More specific information on how insurance companies manage risks is provided in an essay by Lawrence Bamber (2005). He explains that for most types of business/trades, each insurer will calculate its own risk rate, based inter alia on that particular insurer's claims experience.[42] The rate can be increased or decreased based on factors including the insured party's previous claims history, the cost of claims settlement, and the size of pay-roll (as indicat-

38 Employers' Liability (Compulsory Insurance) Act of 1969. According to an elaborate study performed by the Health and Safety Executive in 2003, levels of compliance are high. The Health and Safety Executive (HSE) can impose heavy criminal fines on companies: £ 2500 per day without suitable insurance and £ 1000 for not displaying the certificate of insurance to HSE inspectors. See e.g. Bamber 2005.

39 For example, by the Employers' Liability (Compulsory Insurance) Regulations 1998. See https://www.healthandsafetyatwork.com/feature/employers-liability-insurance-explanation.

40 See also https://www.healthandsafetyatwork.com/content/employers-liability-insurance-explanation.

41 Lewis (2012: 200), referring inter alia to Dewees et al. 1996. One reason provided by the author is that only half of all employers are big enough (in terms of number of employees) to be rated according to their own accident experience. Another reason quoted is that the scope for insurers to give advice on work-related risks is limited.

42 Furthermore, a distinction is made between non-manual (clerical/managerial) and manual types of work, the latter being characterized by higher risk rates. However, the difference between these two categories has reduced due to an increase in claims related to e.g. work-related stress and musculoskeletal disorders.

ed earlier), but also the insured party's attitude to health and safety management. Furthermore, similar to our findings for the Netherlands (see 4.1 above), certain risks are excluded from compensation.

The fact that insurers take into account the insured party's attitude to occupational health and safety (OHS) management, is particularly interesting in the context of this paper. According to Bamber, OHS competent persons working for insurers carry out surveys of the insured's premises in order to measure the impact of existing OHS management systems and "to make risk improvement recommendations designed to minimise the incidence of injuries and diseases within the workplace, once satisfactorily implemented by the insured organisation." In doing so, they may use a "checklist which is designed to quantify the impact of the [OHS] management system currently operational within the insured organisation".[43] Thus this appears to be an example of a form of direct monitoring by insurers of the behaviour of companies.

According to information obtained from various websites comparing employers' liability insurance quotes,[44] most insurers offer a cover of £ 10 million for employers' liability. Information about types of risks that may be excluded from compensation, if there are any, is not provided. Interestingly, these websites often advise employers to combine employers' liability insurance with an insurance for public liability, as a combined insurance is cheaper than having two separate insurance policies. The limits of cover for the latter category (public liability) *do* differ, between £ 1 million and £ 5 million, allowing employers to choose a limit that corresponds with the degree of risk in their business activities. This suggests that at least some of the competition between insurance companies takes place in that particular market rather than (or in addition to) in the employers' liability market.

Just as in the case of the Netherlands, apparently also in the United Kingdom insurers make some attempt to relate the premiums to the risk for example through experience rating (relating the premium to previous claims) and in some cases even by directly monitoring the behaviour of employers as far as occupational health and safety is concerned. Moreover, also in the United Kingdom there are financial limits on the insured amounts as a result of which the insured is still partially exposed to risk. Both remedies to control adverse selection and moral hazard can therefore be observed. Our analysis of the policy

43 The two quotes are taken from Bamber 2005. His essay continues by providing detailed examples of such checklists.

44 See for example the information provided by Quotezone, GoCompare, Simply Business and many other websites.

conditions and of practice in both legal systems therefore shows that liability insurers do employ measures to control adverse selection and moral hazard as was suggested by the theory (in section 2), even though the remedies may not always be introduced in textbook form.

5 Conclusions

As shown in section 2, law and economics theory predicts that insurers will apply premium differentiation (first best solution) and introduce deductibles or caps (second best solution) to reduce the problems of moral hazard and adverse selection. Applying this to work-related risks, the underlying causal relationship that is assumed is that the insured employers or employees are thereby incentivized to invest in the prevention of work-related injuries, because by doing so they will benefit financially, by having to pay lower premiums or own contributions. Hence, this also assumes that the investments made by employers or employees actually lead to a reduction in the number of accidents and diseases. Most of the empirical studies presented in section 3 of this paper confirmed that experience-rated premiums (as applied in workers' compensation systems) may lead to lower injury rates or better claims management, while some others concluded that these effects are non-existent. Also, some authors pointed to negative side-effects on employee-victims of aggressive claims handling by insurers.

An earlier literature study by Faure and Van Boom (2013) taught us that in several markets insurers, despite the lessons from law and economics, do not apply much risk differentiation. We found that, at least to some extent, the same conclusion can be made for insurance against harm caused by industrial accidents and occupational diseases. As shown in section 3, in all jurisdictions examined there, some basic forms of experience rating take place: generally, premiums are adapted to the degree of risk of the sector or type of company; and in most jurisdictions historical accident records are also a relevant factor.[45] Sometimes (as in the workers' compensation systems in the US), other criteria such as company size are taken into account.

In section 4 we focused on employers' liability insurance as practiced in the Netherlands and the United Kingdom and found that insurance companies may

45 In the workers' compensation systems discussed in section 3.2 this is generally the result of regulation.

exclude certain types of risks from compensation *ex ante*, as shown by the practice of the private insurers in the Netherlands. We did not find much evidence of direct monitoring by insurers of health and safety investments by employers, but various sources indicated that at least in the United Kingdom insurers conduct surveys of their insured's premises and may adapt premiums on that basis. From this it follows that to a large extent, as the theory (in section 2) predicted, liability insurers do take measures aimed at the control of adverse selection and moral hazards, but the desired results of increasing occupational health and safety are not always obtained. It is almost impossible to show how the specific conditions in the insurance policy would concretely affect the behaviour of employers and employees with respect to work safety. Information about the exact premium conditions and premium calculations is not always available and may require in-depth interviews. But the desired results of premium differentiation (to the extent it does take place) is not always clearly translated in increased work safety. That may be related to the assumptions of the economic approach, inter alia that employers are not always aware of the benefits (for example in reduced premiums) of investments in prevention. The lack of information on the side of employers and the complexity of the premium differentiation mechanism may, especially in the case of medium-size companies inhibit the desirable effects of the measures taken by insurers to control adverse selection and moral hazard.

A possible next step for research in this area would therefore be to look beyond the (often non-specific) information available on the internet and in the literature, by interviewing private liability insurers or their insured employers[46] on the topic of premium differentiation.

An interesting finding from the case studies presented in section 4 related to the Netherlands and the United Kingdom was that the way in which liability insurers control adverse selection and moral hazard seems to some extent to deviate from the theoretical expectations presented in section 2. Insurers seem to prefer 'imperfect' premium differentiation on the basis of easily observable characteristics (such as type of industry, historical accident record, firm size) rather than full premium differentiation based also on direct monitoring of their

46 One could also hypothesize that employers will not consider it worthwhile to invest in reducing the costs of (private or public) insurance premiums, in jurisdictions where they are already obliged by public law to compensate employee-victims for a substantial period of time after the incident (as is the case in the Netherlands) or to contribute to a fund (as in some other countries discussed in section 3.2 and in Belgium). These interactions between the public (social security) scheme and private insurance are of course of high relevance, but were not the subject of this paper and therefore not further addressed.

insured. This can potentially be explained by one or more of the following lines of reasoning:[47]

- The complexity of occupational safety and health policy: it would be *too difficult and costly* for insurers to monitor the actual behaviour of insured employers or employees. Hiring experts to monitor employers in order to apply full premium differentiation may in that case be more costly for insurers than accepting that some form of moral hazard remains, making it rational to apply only partial premium differentiation.
- Insurance companies may prefer to *trust in public regulation* (including the monitoring done by labour inspectorates) to take care of the prevention of work-related injuries, or may simply think that the moral hazard risk is not very serious in this particular insurance market. Indeed, we should not forget that liability insurance is only one of the instruments in the governance of work-related risks, next to public regulation, private regulation, liability rules and suasive instruments (Philipsen 2018). The absence of activities by insurers to fight moral hazard is therefore largely contextual: in a legal system where the public sector already imposes regulation and insures the largest part of disability risks, any activities to control moral hazard by private liability insurers may be crowded out. This is to some extent not surprising as earlier literature showed that adverse selection and moral hazard are largely driven by institutions (Cohen and Siegleman 2010).
- Insurers are not interested in full premium differentiation, because it is easier for them to simply increase insurance premiums generally in cases where the average costs of work-related injuries go up, rather than differentiating between premiums for individual employers. This argument is likely to hold only if the *insurance market is not sufficiently competitive*.
- Insurance premiums and other insurance conditions are *regulated by law*, so individual liability insurers cannot apply full premium differentiation (for example because legal rules do not allow them to discriminate between particular types of insured parties).

Of course, the aim of this paper was not to go deeply into these possible explanations for the absence of (full) premium differentiation, but rather to show that

47 Based on the literature discussed in section 2 above and more particularly the earlier work of the authors of this paper.

liability insurers in practice often behave differently than assumed in the law and economics theory. This may be related to the fact that the (basic) theory assumes that insurers have optimal information on the measures to reduce adverse selection and moral hazard and that these tools can be employed in such a way that they also provide adequate incentives for prevention to employers. Information deficiencies and other practical problems (such as the costs of monitoring) may explain the deviations we found in practice, compared to those theoretical assumptions. Moreover, given that public regulation and social security carriers (other than liability insurers) already invest in prevention, the absence of experience rating and monitoring activities can also be understood from the perspective that the marginal benefits of these mechanisms may be limited.

We do not want to claim here that insurers of employers' liability *should be* engaged in full premium differentiation: after all, they may not be the best-placed party to prevent work-related injuries.[48] Then again, if the legislator relies heavily on private insurance mechanisms for compensation (for example via the insurance of employers' liability like in the Netherlands and the United Kingdom), one should realize that the moral hazard risk is at least partially shifted to insurers – and if efficiency is a goal of the compensation system, then this needs to be addressed.

Our paper has shown that this particular case of risk privatization (the shift of responsibilities to employers and their insurers) may have been based on the assumptions (1) that insurers are able to provide incentives to employers to promote occupational health and safety via the control of adverse selection and moral hazard, and (2) that employers react to those incentives by investing more in prevention. It appears, however, that insurers of employers' liability do not always exercise that control in textbook form and that employers do not always respond to the tools employed by insurers in the expected manner.

48 Obviously, the role of the insurer is different in each jurisdiction and depends strongly on whether only employers' liability is insured (which was the main focus of our contribution) or whether also other work-related risks were covered as well (for example through disability insurance). Those institutional differences make a comparative analysis between jurisdictions difficult.

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