NEGLIGENCE 'IN THE AIR' AND NEW ZEALAND'S HEALTH AND SAFETY IN EMPLOYMENT ACT: A LAW AND ECONOMICS ANALYSIS

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Abstract

Given relatively weak industrial safety incentives in New Zealand's accident compensation legislation, an important development has been the Health and Safety in Employment Act 1992. In addition to penalties imposed in the event of accidents involving loss, the Act also imposes penalties where accidents or losses have not occurred. Ordinary negligence rules are *ex post* in that both an accident and loss must occur before liability accrues, whereas negligence-based *ex ante* liability rules hold agents liable for deficient care prior to such deficiency being manifested in an accident. This paper examines whether breaches of statutory duties which do not give rise to accidents have a useful incentive-enhancing role when used in conjunction with *ex post* negligence rules. It is argued that *ex ante* standards may usefully complement *ex post* liability rules where the latter are insufficient to induce appropriate levels of precaution due to the presence of errors in courts' decision-making processes. More strict standards than socially optimal precaution levels may be necessary since inspection probabilities and penalties are relatively low, while fines should be several times larger than expected accident costs resulting from deficient levels of care. The distribution of penalties emerging from the relevant case law is examined, and some, but not much, merit is found in continuing adherence to capped fines which in themselves further strengthens the case for stringent *ex ante* safety standards.

1. Introduction

New Zealand introduced legislation by way of the Accident Compensation Act 1972 which, by 1974, had effectively displaced the tort system for accidents involving personal injury. Notably, while the Accident Compensation Corporation ("ACC") had statutory responsibility to actively promote safety, it had no enforcement powers, so that its activities were limited to those of discussion, persuasion and motivation.
Opportunities to establish financial incentives for safety emerged when the Accident Rehabilitation and Compensation Insurance Act 1992 ("ARCI Act") was enacted. The ARCI Act restricted the concepts of personal injury and accident and excluded certain injuries, conditions, and circumstances from cover.¹ To the extent that exclusions were applicable, victims were not covered and if negligence was provable, victims could sue for damages. Nevertheless, the vast majority of potential common law tort claims involving personal injury remained barred.² For the broad majority of industrial injuries, the ARCI Act retained only two major potential financial incentives for industrial safety, viz, risk-classified premiums and exemplary damages.

Section 103 of the ARCI Act provided for classification of employers into various industry classes for premium setting. The industry classification used by the ACC, however, was based on the aggregation of 'similar' products and services rather than similar risks of work injuries. Consequently, there was significant pooling of heterogeneous risks, and with premiums based on average accident rates in these categories, a given firm had only a marginal effect on accident rates and, hence, on premiums. There was consequently a very limited incentive for any firm to invest in accident-prevention activities from this perspective. Further, while provisions for experience rating had been available since 1982, systematic rating whereby the basic premium for an employer was adjusted by reference to accident experience did not take place until s 104 of the ARCI Act was amended in 1993. Nevertheless, in the White Paper which preceded the enactment of the ARCI Act, explicit recognition was given to the equivocal nature of the available evidence regarding safety incentives induced by experience rating, and according to Department of Labour (1991, p.

¹ For a detailed account, see Harrison (1992), and Rennie (1993). Lump-sum payments were also abolished, being replaced by independence allowances for greater than 10 per cent disability, and with a modest weekly maximum.

² For an account of the availability of private actions for damages under the ARCI Act, see Todd (1997, Chapter 2).
23), its introduction was largely justified on equity grounds. Finally, the introduction of the Accident Insurance Act 1998 largely served to partially privatise accident compensation, which feature was removed by the Accident Insurance (Transitional Provisions) Act 2000. The Accident Insurance Amendment Act 2000, however, provided for adjustments in premiums for individual employers depending on demonstrated safety management practices (s 281E), and also re-established employer accreditation agreements whereby employers meeting stringent safety criteria could agree to be liable for part or all of compensation liabilities resulting from their workplace injuries in exchange for a reduction in premiums (s 326D). How pervasive and effective are these provisions is yet to be seen.

The right to sue for exemplary damages, however, had always been available. Exemplary damages are typically awarded in cases where levels of care are well below those consistent with an orthodox negligence standard, although they generally exceed compensatory damages. The incentives created thereby, however, are limited in that if agents take a level of care barely sufficient to avoid liability for exemplary damages, the resulting care level will generally be inappropriately low.

Given relatively weak incentives for safety embodied in accident compensation legislation, an important development with respect to industrial accidents has been the Health and Safety in

3 For discussions of the application of exemplary damages, see Todd (2000, 447 – 56 and the references cited therein), and Miller (1997). Recovery of exemplary damages, however, is likely to be barred if a defendant has been subject to a prior criminal proceeding: Daniels v.Thompson [1998] 3 NZLR 22 (CA).

4 Donselaar v. Donselaar [1985] 1 NZLR 43. Exemplary damages punish conduct that is "wanton and careless, and of a standard falling well below that of the reasonable man", typically being of an outrageous and contumelious nature, and where the damage awards reflect the nature of the conduct of the defendant. In Somerville v. McLaren Transport Limited [1996] 3 NZLR 426, [1996] 2 ERNZ 336, exemplary damages of $15,000 were awarded to a farmer injured by an exploding tyre as a result of his being involved in assisting an employee of a rural garage who knowingly pursued wrongful actions and for which the Court concluded that the conduct of the garage was grossly negligent and reckless.
Employment Act 1992 ("HSE Act", hereafter, "the Act"). The Act, which replaced what Carr and Sherriff (1996, p. 1) described as "untold regulations and statutes which had a prescriptive ("do this") and proscriptive ("don't do this") approach containing considerable detail and specificity", establishes general principles and statutory duties on both employers and employees to regulate workplace risks, with sanctions following from detection of substandard levels of care.

Part II establishes duties relating to safety and health in employment. In addition to a general duty to take all practicable steps to ensure the safety of their employees at work, employers are subject to particular duties in relation to the working environment. These focus on the provision and maintenance of facilities for the safety and health of employees at work, ensuring that machinery is safe and that employees are not exposed to hazards (s 6).

Sections 7 - 10 establish a hierarchy of actions in relation to significant hazards. Specific duties are established in relation to systems for identifying existing and new hazards and the monitoring of hazards (s 7), the elimination of significant hazards (s 8) and the isolation of workers from such hazards that cannot be eliminated (s 9). Where a significant hazard cannot be eliminated, and employees cannot be isolated therefrom, all practicable steps are to be taken to minimize the likelihood of harm (s 10).

The result is that it is the onus of employers to identify hazards and deal with them. Employers are required to provide employees with the results of monitoring (s 11), and are to be provided with information concerning work hazards, emergency procedures, potential hazards to others, and the location of safety equipment (s 12). Proper training and supervision is also to be provided (s 13).

The concept of "all practicable steps" is central to Part II of the Act, since most of an employer's duties are qualified by this phrase. The concept, however, is not identified with all feasible steps, and is qualified by employing the phrase "reasonably practicable" and defining this
by reference to the balancing of issues such as gravity of harm, degree of risk and cost of
avoidance. In so doing, the definition appears to approximate an employer’s common law duty in
the law of negligence. It is arguable that the list of considerations relating to what is reasonably
practicable reflects the standard of care in negligence. There is, however, strong authority for the
proposition that despite the similarity of the concepts, direct comparisons between the statutory
duty and the principles of negligence are of little value and the proper course is for the Court to
apply the words of the statute. The context provided by the legislation might require
consideration of factors which would fall outside those relevant to a claim in tort, and the burden
of proof is different. While the Courts have avoided any extended discussion of the differences
between the test of reasonable practicability and the law of negligence, the weight of authority
favours the proposition that the statutory test is more demanding than the corresponding test in
negligence.

Further, ordinary negligence rules are ex post in the sense that both an accident and loss
must occur before any liability may accrue, whereas negligence-based ex ante liability rules hold
agents liable for deficient care prior to such deficiency being manifested in an accident. In addition
to penalties imposed under the Act on non-compliers in the event of accidents involving loss, the
Act also provides for penalties in the event of non-compliance even where accidents have not
occurred, or where losses have not been suffered. Such rules can be thought of as negligence ‘in
the air’ in that liability for deficient care is not ‘grounded’ in an accident.

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5 Marshall v Gotham Co Ltd [1954] AC 360, followed in Cox v International Harvester
Co of NZ Ltd [1964] NZLR 376.

6 Powley v British Siddeley Engines Ltd [1966] 1 WLR 729; Trott v WE Smith [1957]
1 WLR 1154.
In what follows, we focus on the question of whether breaches of statutory duties created by the Act but which do not give rise to actual accidents have a useful incentive-enhancing role when used in conjunction with \textit{ex post} negligence rules. Section 2 reviews the efficiency of \textit{ex post} liability rules under certainty. Section 3 examines the possible complementarity of \textit{ex ante} and \textit{ex post} liability rules when uncertainty surrounds legal interpretation of the required standards of precaution, while section 4 addresses the optimality of \textit{ex ante} regulation. Section 5 considers the interpretation of \textit{ex ante} safety standards implicit in the Act, and the appropriateness of these standards for inducing optimal precautionary decisions is discussed in section 6. The closely-related issue of penalties for negligence ‘in the air’ imposed under the Act are examined in section 7, and section 8 contains some concluding remarks.

We argue that \textit{ex ante} standards may have an important role in complementing \textit{ex post} liability rules where the latter are insufficient to induce appropriate levels of precaution due to the presence of errors in the decision-making processes of the courts. \textit{Ex ante} standards can send a signal to employers as to the court’s ‘bottom-line’ permitted level of precaution and so reduce the dilution in incentives to take care due to uncertainty surrounding the implementation of \textit{ex post} liability rules. While the literature suggests that \textit{ex ante} standards should be lower than corresponding socially optimal precaution levels, however, we argue that more strict standards may be necessary if, as is observed in the enforcement of the Act, the inspection probability is relatively low and penalties are set at relatively low levels. Given unchanged resources for detection of negligence ‘in the air’, we suggest that fines should be several times larger than the expected accident costs resulting from deficient levels of care. The distribution of penalties emerging from the relevant case law is examined, and we find little merit in the continuing adherence to capped fines which serve to bound penalties to relatively low levels. Continued
adherence to capped fines, however, further strengthens the case for stringent *ex ante* safety standards.

2. The Efficiency of Ex Post Liability Rules Under Certainty

We first review the efficiency properties of *ex post* liability rules under certainty in a unilateral-care framework in which only employers can vary their level of safety precaution, and where levels of employer activity (output and employment) are exogenous. Employers and employees are both assumed to be risk-neutral. In what follows, it is assumed that with respect to actual accidents, the employer's statutory duties under the Act either closely approximate a standard negligence rule, or that the employer's behaviour is similar to that generated by such a rule. For the moment, *ex ante* provisions are ignored.

In a unilateral care framework, the efficiency of the following three *ex post* liability rules have been carefully examined, namely strict liability, negligence, and zero liability ('no-fault'). Denote the socially optimal level of care as \( x^* \), where the marginal costs of precaution from an extra unit of employer care equals the saving in marginal expected accident costs from that unit increase in precaution. This level of care may be compared with the privately optimal choice of care \( x^o \) by employers.

Under strict liability, an employer is liable for the total cost of any accident they cause, whatever their level of care. An employer's best policy is to minimize their expected costs. Since

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7 One justification for the unilateral care approach might be the clear focus in the Act on the conduct of the employer. The employee's level of care has been interpreted as relevant only as a mitigating factor in setting the appropriate fine on a careless employer: *Department of Labour v de Spa* [1995] 3 NZLR 527. Another justification would be to assume that employees always take optimal levels of care. Neither justification is compelling.

8 See, for example, Shavell (1987).
these coincide with total expected costs, the social and private problems are identical, implying $x^o = x^*$. Under the negligence rule, the employer is liable for the costs of accidents they cause when they fall below the standard of care required by the courts. The employer again sets $x^o = x^*$ since for $x > x^*$, the employer will not be found negligent and care costs can be reduced by lowering $x$ to $x^*$. If $x < x^*$, the employer will be found negligent and must bear total expected accident costs which are minimized at $x = x^*$. Under zero liability, however, since employers expect to pay zero accident costs, they have no incentive to take any safety precautions at all.\footnote{At least, in the absence of both exemplary damages and enforceable safety regulations with penalties for breach. Notably, the HSE Act replaced 10 major pieces of regulatory legislation, over 50 Orders in Council and Notices (Regulations) were repealed, and significant amendments were made to many existing regulatory Acts.}

The conclusion is that either strict liability or negligence rules induce employers to take optimal care under the assumption of certainty, and there should be no accidents which might be construed as involving negligence. As a consequence, the question arises as to why might there be any efficiency improvements expected by the introduction of negligence in the air, in addition to an \textit{ex post} negligence rule?

A case for \textit{ex ante} liability arises from the possible dampening of incentives from four sources. First, employers assess a positive subjective probability of employees not bringing suit. Instances may arise where employers have the ability to conceal some accidents, or tamper with evidence, or else employees are not willing to bear the cost of a failed claim. Secondly, the legal system may not perfectly enforce the liability rule, an example being evidentiary problems concerning cause. In each case, expected accident costs are discounted and so employers do not face the full expected social cost of accidents when $x < x^*$. Under strict liability, $x^o < x^*$. Under
negligence, it may (but need not) pay the employer to reduce the level of care below $x^*$. The employer will take too few precautions if the additional savings in costs of precaution generated when $x$ is reduced below $x^*$ are no smaller than the corresponding reduction in expected liability payments arising because expected accident costs are now discounted. Such an employer is always negligent, which tends to raise liability payments, but is no longer always found to be negligent, which reduces liability.

Next, employers may have bounded assets. Employers now plan for expected accident costs up to the level of $\bar{a}$, and choose $x^0 < x^*$ if the probability that damages exceed $\bar{a}$ is positive. Employers, for example, may have different levels of inherent riskiness in the sense that high-risk firms have a relatively high level of expected accident costs at any given level of care. Such firms have a correspondingly higher optimal level of care. Due to limited liability, a firm with an asset level $\bar{a}$ will not plan for expected accident costs in excess of $\bar{a}$, and the choice of care will be bounded above independently of the risks posed. With solvency constraints, ceteris paribus, if asset bounds are uncorrelated with risk, the more risky firms will tend to under-protect their workers.

Fourthly, there may be potential inefficiencies associated with an ex post negligence rule when the care required by the courts is not known with certainty by employers and employees. Legal remedies have a number of important flaws relating to issues of information and knowledge. ¹⁰

¹⁰ These include:
- the difficulty of establishing a connection between health problems and workplace exposure, especially in the event of delayed reactions and multi-factorial causes.
- employee ignorance involving the causal relationship between a health condition and the workplace relationship.
- the disappearance of the firm prior to the manifestation of health problems, or insolvency in the face of accident claims.
- relatively high transaction costs of legal action may deter small claims.
Shavell (1984a) examined the nature of the diluted incentives under negligence and investigated whether cases might be established in some circumstances for their substitution by regulatory standards. Further, Shavell (1984b, 1987), emphasized the possible complementarity of combined ex ante and ex post mechanisms for preventing the dilution in incentives to take care. Building on earlier work of Calfee and Craswell (1984) and Craswell and Calfee (1986), Kolstad et al. (1990) developed a model of legal rule uncertainty which will be followed closely in what follows in an attempt to explain the negligence 'in the air' characteristics of the Act.

3. Complementary Ex Ante and Ex Post Liability Rules Under Uncertain Legal Standards

Under some circumstances, ex ante liability rules may complement ex post rules rather than substitute for them, and so enhance the efficiency properties of ex post rules. In Kolstad et al. (1990), uncertainty regarding legal standards was modelled as follows. The employer's subjective probability of an accident of magnitude $D(x, e)$ is $p(x, e)$. Let $\bar{x}(e)$ be the court's interpretation of the social optimum $x^*$ as a function of $e$, where $e$ is a random variable representing the errors the court may make in estimating the socially optimal standard, distributed with density function $q_e$. This recognizes that courts may err as to what the employer should have expected. Comparing the employer’s privately optimal choice of care $x^o$ with the socially optimal level $x^*$, the employer’s expected accident costs are given by:

$$A(x, e) = E[p(x, e)D(x, e)] \quad \text{over } e.$$  

- employees may jeopardize their future with an employer by bringing suit, especially problematic if their human capital is highly firm-specific, and fellow employees may be reluctant to testify for related reasons.

11 The basis for the negligence standard is what a reasonable man would have foreseen without the information possessed by the defendant: see Takaro Properties v Rowling [1991] 1 NZLR 567.
If the expected court error is zero, the socially optimal level of care is defined by the first order condition $C_x(x^*) = -A_x(x^*)$, noting that $x^*$ is an *ex ante* parameter since it is defined in terms of minimization of *expected* damages. By contrast, the legal standard $\bar{x}(e)$ is an *ex post* parameter, revealed by the courts once an accident has occurred. For the problem

$$\min \quad C(x) + p(x, e)D(x, e),$$

the corresponding first order condition is given by:

$$C_x(x) = -d[p(x, e)D(x, e)]/dx.$$

Since $e$ is a random variable, the employer has a subjective probability distribution $q(x, e)$ (hereafter, $q$) over the standard of care required by the court. Under an *ex post* negligence rule, the employer is liable if $x < \bar{x}(e)$. The employer’s total expected costs are:

$$TC(x) = E[C(x) + L(x, e)p(x, e)D(x, e)],$$

where $L(x, e) = 1$ for $x < \bar{x}(e)$, and 0 for $x \geq \bar{x}(e)$.

Given the employer’s distribution $q$ over the legal standard, the employer minimizes total costs $TC(x)$ by choosing the level of care $x^*$. If $x^* = x^*$, the liability rule $L$ is *ex ante* efficient. The probability that a level of care $x$ will be found negligent is given by $\int q(x)dx$ and which gives the probability that the employer will pay expected damages of $E[p(x, e)D(x, e)] = A(x, e)$, given the choice of a level of care $x$. The employer will choose $x^*$ as the estimated mean of the distribution $q$ when the court’s interpretation of the legal standard is perceived to be unbiased. Alternatively, the employer may deviate from $x^*$ and choose $x^0$ when information is obtained about the court’s behaviour and the distribution $q$ is formed.

Dealing first with the case of unbiased perceptions of the legal standard, the mean of the distribution $q$ is the socially optimal standard of care $x^*$. For a class of mean-preserving distributions, Kolstad et al. establish that under *ex post* negligence and a legal standard with an
expected value of \( x^* \), the employer will take insufficient (excessive) precaution if uncertainty regarding the legal standard is sufficiently large (small). In the case of diluted incentives, if an employer slightly under-complies with the legal standard, liability is the same as if under-compliance had been greater, ie, when the employer spends much less in taking safety precautions.

In deciding whether to increase or decrease precaution from \( x^* \), the employer must trade off the marginal cost of precaution against the expected marginal benefits in the form of the sum of expected marginal accident costs and the change in the likelihood of being found liable. When there is a great deal of uncertainty surrounding the legal standard of care, significant under-compliance greatly reduces precautionary costs while only slightly increasing expected liability costs. Further, Kolstad et al. establish that under-precaution will occur when the marginal cost of precaution is relatively large, since reducing compliance again significantly reduces the costs of care without significantly increasing the likelihood of being found liable for deficient care.

Regarding the case of biased perceptions of the legal standard where the employer views the mean of the distribution \( q \) as differing from the socially optimal level of care \( x^* \), in these circumstances the bulk of the probability mass lies either below or above \( x^* \). Employers believe courts consistently over-estimate or under-estimate the socially optimal level of care. For a class of variance-preserving distributions, Kolstad et al. then establish the result that under \textit{ex post} negligence, if the mean of the employer's subjective probability distribution of the legal standard \( q \) is sufficiently small (large) relative to the socially optimal level of care \( x^* \), the employer will take insufficient (excessive) levels of precaution. In the case of diluted incentives, if the firm perceives the expected legal standard to be sufficiently less than the social optimum, the injurer will under-protect workers. Even with significant under-protection, the employer is unlikely to be found negligent, so that significant savings in the costs of taking care can be obtained with little additional expected liability payments.
Under-precaution motivates the introduction of \textit{ex ante} regulation of risk. If employers believe that in the application of \textit{ex post} negligence rules, courts will either systematically underestimate the socially optimal level of care or considerable uncertainty surrounds the legal standard even when courts do not make errors, on average, when assessing appropriate levels of care, incentives to under-protect workers will be present. In these circumstances, Kolstad et al. demonstrate that safety regulation \textit{ex ante} may be used to augment \textit{ex post} negligence rules and, if chosen appropriately, can eliminate the problem of diluted incentives for employers to take socially optimal precautions.

\textit{Ex ante} regulations typically specify a minimum acceptable level of precaution, $s$. Kolstad et al. argue that an important asymmetry exists regarding \textit{ex ante} versus \textit{ex post} policies in that legal standards \textit{ex post} are rarely perceived by employers with the same degree of precision as \textit{ex ante} standards. Further, they suppose that the \textit{ex ante} standard is enforced with certainty, justified on the grounds that the sanctions for non-compliance are typically sufficiently high for firms never to choose a level of precaution lower than the minimal level specified by safety regulations. In these circumstances, the employer estimates the strictest legal standard before choosing the level of care that minimizes the employer's private costs. Since the employer knows the \textit{ex ante} standard with certainty, the employer knows that the legal standard cannot be less than this \textit{ex ante} standard. The legal standard, however, may be perceived as being greater than the \textit{ex ante} standard.

The introduction of \textit{ex ante} regulation is then represented by a truncation at the lower tail of the employer's subjective distribution on the strictest legal standard, as illustrated in Figure 1.

\textbf{FIGURE 1 ABOUT HERE}

With a safety regulation at level $s$, the employer will not consider precaution below this level. In effect, the employer's probability distribution on the legal standard is truncated at $s$, so that zero
probability is assigned to values of the legal standard below $s$. The critical assumption is then made that the probability mass previously lying below $\bar{s}$ is now distributed with density $q_\cdot$ above $\bar{s}$. Kolstad et al. establish that increasing the minimum acceptable safety level has the effect of increasing the precaution taken.

If uncertainty regarding the legal standard induces under-precaution, the introduction of an *ex ante* regulation may then promote efficiency, whereas if over-precaution was the current state, *ex ante* regulation will exacerbate the inefficiency of the *ex post* rule. The intuition is that the imposition of an *ex ante* regulatory standard induces potential injurers to revise their perceptions of the strictest legal standard of care. In particular, the higher the level of the *ex ante* regulatory standard, the higher the legal standard is likely to be, at least in the eyes of the employer. If under-precaution characterised the New Zealand situation in the absence of *ex ante* regulation, then *ex ante* regulation such as embodied in the Act appears promising as an efficiency-enhancing device.

4. The Optimal Level of Ex Ante Regulation

Given that employers choose deficient levels of care, the question arises as to the level of *ex ante* regulation $s^\ast$ that induces socially optimal care $x^\ast$. Kolstad et al. establish that with certainty of enforcement of the legal rule, while tightening the regulation increases the privately optimal level of precaution, the socially optimal amount of *ex ante* regulation is *no greater* than the optimal level of precaution. This result is illustrated in Figure 2.

**FIGURE 2 ABOUT HERE**

This figure plots the choice of care given the standard of care required by *ex ante* regulation. The care level $x^0 = \bar{x}$ is the care chosen with no *ex ante* liability rule, ie, only *ex post* liability operates as an incentive. Note that $\bar{x}$ is less than $x^\ast$, capturing the under-precaution taken by employers.
With certainty of enforcement, the locus of care choices given an *ex ante* standard at \( s \) increases at the same rate as \( s \). This locus is kinked at \((x^*,s^*)\) since for \( s \leq x^* \), a choice of care at \( x^* \) will satisfy both the and *ex post* and *ex ante* rules. For \( s \geq x^* \), the choice of care will track the level of *ex ante* regulation one-to-one along the locus \( x^0 = s \). This is because satisfaction of the *ex ante* standard will also satisfy the *ex post* standard. The optimal level of *ex ante* regulation where \( \bar{x} \) is the chosen level of precaution with no *ex ante* standard is \( s^* \).

This may be compared with over-precaution (at \( \bar{x} \), say, in Figure 2) being the choice of care in the absence of *ex ante* regulation. In these circumstances, the introduction of any *ex ante* regulation takes care levels further above the optimal level. In this case, the appropriate level of *ex ante* regulation is zero.

5. *Ex Ante Safety Standards in New Zealand*

In New Zealand, it is arguable that the actual *ex ante* standard set by the HSE Act is more strict than the level of care believed to be optimal in common law courts. The results of Kolstad et al. imply that such an *ex ante* standard will induce over-precaution whatever the choice of care without *ex ante* regulation. Figure 2 illustrates this argument. With a strict *ex ante* standard at \( \tilde{s} \), say, the employer’s choice of care will be over-precautionary at \( \tilde{x} \). The following samples from the relevant case law involving negligence in the air confirm the stringency of New Zealand’s *ex ante* safety standards.

First, *Martin v. Boulton & Paul (Steel Construction) Ltd* provides authority that a defence of common practice in the law of negligence will not apply under the statutory formula of “reasonably practicable”.\(^{12}\) By way of illustration, in *Department of Labour v. Eastern Auto Spares*

(NZ) Ltd, the defendant was charged under sections 6 and 50 of the Act with failing to take all practicable steps to ensure the safety of an employee who was working in the vicinity of leaking oxy-acetylene equipment, and which was known to be leaking by the employee’s supervisor. The bottle caught fire while the employee was using a torch. No injury resulted, but the potential for serious injury was considerable. A Department of Labour official argued that flashback arrestors, which had not been fitted, were “reasonably common” and should have been adopted, while the employer argued that the arrestors were not mandatory. The Court found against the defendant in that once the leak was discovered, it should have acted to reduce the possibility of flashback including the fitting of arrestors. Conviction followed, with a fine of $4,500.

In Mair v Regina Ltd, a charge was brought under s 50 for failing to comply with the provisions of s 6. Here, an extruder machine was unguarded and an inspector had alerted the management of the defendant company to the hazard, an improvement notice had been served, but no suitable guard was fitted. No accident had occurred, but the potential for injury existed if some “unusual” movement occurred, say reaching into the machine to retrieve a dropped object. No injury could occur, however, unless such an action was taken by a worker, and which would have been contrary to the defendant company’s instructions. Further, the defendant company had installed a chute which acted as a guard but had decommissioned it in response to a complaint from employees that it hampered their operational activities.

Everitt J found that the company did not treat the prospect of injury with sufficient seriousness. It was argued that in the past workers operating similar machines had been injured

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14 Mair (Health and Safety Inspector) v Regina Ltd, unreported, 4 March 1994, DC Dunedin, CRN 3045004405.
when attempting to retrieve extraneous items, representing an example of an “unthinking or unwitting act”, and that “in unusual circumstances injury happens because someone was thoughtless or acted irrationally, knowing full well the danger that was presented to them”. A side chute could have instead been fitted. The defendant was convicted and fined $3,000, perhaps unsurprisingly since from the time of the Machinery Act 1950 employers have been held to have a duty to guard against the consequences of foreseeable careless and inattentive actions, and even wilful misuse. The frequency of actions of this nature, however, was not addressed in detail, although their unusual nature was nevertheless central to the issue. In this case, a distinction arose between foreseeable carelessness on the part of employees, which should be guarded against, and unforeseeable “skylarking”.

In Health and Safety Inspector v Lund (South) Ltd, a prohibition notice had been issued to the defendant company following inspection, relating to the need to install guard rails on scaffolding. The company’s agent was instructed to comply, but compliance did not occur. A director of the defendant company observed some rails on the site when driving past, but took no further action to check their installation. No injury was involved, and the defendant was fined $1,000 each on two charges under s 6 and a further $1,500 fine for breach of s 43. A defence of reasonable care had not been established. Reliance on the agent to follow an explicit instruction and observing that a necessary if not sufficient condition for installation of the guard rails did not meet the requirement of taking all practicable steps in the eyes of the Court. Presumably, the agent should have been monitored to check that the instructions had been carried out. In Department of Labour v Mark Mayer, and Department of Labour v Steel Fabricators Ltd, an inspector saw a steel erector/rigger walking along a narrow steel beam without any restraint or mechanism to

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15 Health and Safety Inspector v Lund (South) Ltd, unreported, DC Dunedin, 14 August 1997, CRN 7012009889-91.
check a fall.\textsuperscript{16} The hazard was obvious. A catwalk had been constructed, but the employee chose not to use it. The company was fined $3,000 while the employee was fined $500 for failing to ensure his own safety. Presumably, the employer should have monitored the employee’s actions to ensure that either the catwalk was utilized or else the employee was wearing a suitable harness attached to some point which would have arrested the fall. Given the movement around such a site, continuous monitoring of all such employees would appear to have been a practicable step to ensure workers’ safety.

In \textit{Hirepool Auckland Ltd v Department of Labour}, the appellant company had been prosecuted after two of its scaffolders had been seen wearing safety harnesses while working at 8 metres above the ground, but one had no lanyard attached and the harnesses were not attached to anything that would have provided protection.\textsuperscript{17} Five days previously the site had been inspected and the appellant warned of prosecution if workers operated without harnesses. Two fines of $4,500 were imposed. As with \textit{Steel Fabricators}, the company would seem to have been obliged to provide resources to check that proper safety equipment was available, installed correctly, and been in continuous use given the proclivity of some employees to elect to bypass its use. The appeal was against the magnitude of the fine imposed. It was calculated that the average fine at the time was $1,494, excluding the heaviest fine, and $2,155 with its inclusion. The appellant suggested that it was not 2.5 - 3 times worse than the average. Robertson J argued that what was required was an establishment of a “going rate” following the end of the “honeymoon period” under the new legislation which was seen as being “well and truly over”. The Judge argued that a

\textsuperscript{16} \textit{Department of Labour v Mark Mayer} and \textit{Department of Labour v Steel Fabricators Ltd}, unreported, DC Hamilton, 16 February 1995.

\textsuperscript{17} \textit{Hirepool Auckland Ltd v Department of Labour}, unreported, HC Auckland, 4 February 1997AP 301/96.
proper starting point in respect of total offending was about $8,000, but with a guilty plea and a
good record, discounted this to $5,000 while recognising the failure to heed the earlier warning.
This represented an effective division of $2,500 per worker.

In Department of Labour v Frews Transport Ltd & Ors, charges under s 6 were brought
against a company for failing to ensure that a crane was protected from falling objects, and failing
to ensure that work was carried out in a safe manner. The employee defendants were also
charged under s 19(b) of failing to ensure the absence of harm to anyone. An inspector observed a
crane operating near a demolition site, and was suspending a rubbish skip above the ground. An
employee was in the skip and his safety harness was not attached to the block of the crane and
although it was attached to the skip, no protection would have been offered if the skip fell. This
was contrary to the relevant approved code. Further, the crane operator was unprotected from
falling debris. Hard harts were not being worn by either employee. Only two running chains
(rather than four) supported the skip and the employee could have been tipped out as a
consequence. The operator was also the site supervisor but was not a registered operator and was
not formally trained. The employee in the skip had taken actions to speed up the demolition of a
brick wall on instructions of the operator.

Hattaway J found that the employer should have ensured that the operator was protected
with an approved crane-lifted platform and the employee in the skip should have been monitored to
ensure that his harness was properly attached. Further, the unsafe work method should have
ceased, implying that resources for the detection of the unsafe practices should have been made
available. In addition, the employees were convicted. At a later hearing, the company was fined
$4,000 on each charge, and the employees fined $250 each. These fines dramatically illustrate

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18 Department of Labour v Frews Transport Ltd & Ors, unreported, DC Christchurch, 22
where the Courts consider primary responsibility to lie under the Act. Note that this is a case of negligence in the air where the risk of injury was argued (in defence) to be small, being described as “fanciful”.

In *Canterbury Concrete Cutting v Department of Labour*, the appellant argued against a conviction for failure to comply with s 6 in that their employees had been advised not to climb out of a cherry picker at height and that safety had been emphasized to them. Further, a supervisor had been present at the beginning of the work, but had not continued supervision during a period where a (passing) inspector observed one worker operating a concrete saw outside the equipment, being supported by his co-worker who was half in and half outside the cherry picker. In the lower court hearing, Holderness J had found the firm in breach of duty to remind the employees prior to starting work of what they had been previously told, and also argued that a supervisor should have been available to be consulted should difficulties have arisen. This decision was upheld on appeal. The Court’s view was that while the workers breached their obligations under s 19 to take all practicable steps to ensure their own safety, the appellant was not thereby exonerated and the employee breach served only to mitigate its culpability and consequent liability. An appeal against the magnitude of the fine of $2,250 was allowed, with a fine of $1,500 substituted. The abatement of the fine was justified on the basis of the safety precautions and policy adopted, the employer’s good record, and the fact that no harm had been suffered.¹⁹

*Department of Labour v Ross Roofing Limited* provides an interesting early example of the Court’s position regarding the relationship between principals and their agents. The defendant

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¹⁹ *Canterbury Concrete Cutting v Department of Labour*, unreported, 13 February 1995 Christchurch, HC, AP 245/94.

²⁰ Somewhat ironically, Canterbury Concrete returned to court in 1996 and was fined $25,000 when moderate to serious culpability on its part was determined when a concrete wall collapsed, causing a fatal injury of an employee.
company was charged under s 18 as a principal which failed to ensure that its contractor failed to prevent harm to an employee of the latter. The Court accepted that it would be impracticable for a contractor to be required to stand at the shoulders of its various sub-contractors since this would be at unrealistic odds with their respective functions. The defendant’s subcontractor was on the roof of a building placing tiles. An employee caught and stacked tiles thrown by the subcontractor after they had been lifted by a hoist. One tile touched the stack, dislodging two tiles which punctured the lining of building paper and subsequently hit a site visitor, causing head injuries requiring fairly minor medical treatment. Another contractor working on the site floor was nearby and the charge related to having exposed this person to risk.

Regarding the allegedly breached duties of the defendant, the prosecution argued that these included inadequate communication with those on site concerning worksite risks, failure to mark and isolate the house while roofing work was in progress, failing to check that the area below was free of persons who might suffer injury, failing to stack tiles in a safe manner, and not having an on-site supervisor. Joyce J, however, found that all but the last were duties reasonably expected of the subcontractor, and that there was also no general obligation to provide an on-site supervisor at its various worksites. The Court accepted “the sheer impracticability of a contractor being required to stand at the shoulders of its various subcontractors; that would be at unrealistic odds with their respective roles”. While clearing the site would have been an appropriate safety measure, this was clearly practicable for the subcontractor but “far from necessarily so for Ross Roofing to which the site was one of a fair number”. The somewhat unsatisfactory attitude towards safety on

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21 *Department of Labour v Ross Roofing Limited*, unreported, District Court, Auckland, 6 December 1995, CRN 5044011919.
the part of the contractor could not have been foreseen by the principal who was not seen as obliged to determine that a specialist agent was likely to adopt lax standards of care.

Against Ross Roofing, however, consider Department of Labour v Central Cranes Ltd and Fletcher Construction NZ and South Pacific Ltd v Department of Labour, two closely-related appeal cases. The District Court in Central Cranes had absolved this company from liability as a principal when workers for a specialist sub-contractor were filmed (in the presence of a Central Cranes employee) walking on wires 41 metres above the ground without wearing any safety equipment (which was, however, available). In Fletcher Construction, the company had been found liable when two workers employed by a specialist subcontractor had climbed on a roof to complete their tasks rather than use a cherry-picker which the principal and the subcontractor had agreed would be used for the purpose, but which was out of action. It was not contractually clear who was responsible for safety issues in this contract.

Both principals were found liable on appeal, jointly with their respective sub-contractors. Cartwright J found that a principal letting a contract to an employer which did not clearly establish responsibility for safety might bear legal responsibility for ensuring the safety of employees of the agent. If, however, employers permitted unsafe workplace practices, they may bear also responsibility. Joint responsibility, however, may be consistent with efficiency in that it encourages clarity in specifying responsibilities in the future.

22 Department of Labour v Central Cranes Ltd, and Fletcher Construction NZ and South Pacific Ltd v Department of Labour, [1996] 2 ERNZ 199 (HC).
In *Central Cranes*, workers were given the option of using the equipment provided, being common practice in the firm. This was not seen as taking all practicable steps to ensure safety; workers were obliged to take appropriate care (ultimately, as determined by the Court) whether they liked it or not. The fact that an employee of *Central Cranes* had not reported the situation was held against that firm. It was not clear that the employee had any responsibility in the matter, but the Court assigned him implicitly responsible and owing a duty of care to workers in another, albeit contractually-related, firm. In any case, Cartwright J found that principals could not inevitably escape responsibility due to lack of knowledge of unsafe work practices. Neither principal nor employer could be absolved because workers had customarily elected to assume personal responsibility for their safety, and both parties had a responsibility not only to ensure that proper equipment was available but also used. In *Central Cranes Ltd v Department of Labour*, the judgement of the Full Court was delivered by Thomas J.23 It was held that ss 15 - 19 could in no way be relied upon to exonerate principals so that joint liability was clearly possible, while admission of liability by an agent would not exonerate a principal. Further, common law developments aimed at apportioning *ex post* liability and damages should not bear on the objective of ensuring worker safety.24 Interestingly, obligations under s 18 were held not to be fulfilled merely by seeking a competent agent, since the Act required that Central Cranes take all practicable steps to ensure the safety of its subcontractor’s employees, and it might be practicable for a principal to take action if an unsafe worksite practice was observed. This appears to extend the rule of last opportunity in *Davies v Mann* to create a duty of care by an employee of a principal who is

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23 *Central Cranes Ltd v Department of Labour* [1997] ERNZ 520.

24 Citing *R v Associated Octel Co Ltd* [1996] 4 All ER 846 (HL).
not himself at risk of an accident, to an employee of a subcontractor who acts in a manner than
appears to clearly involve a breach of that employee's duty of care towards himself.\textsuperscript{25}

For Cartwright J, the fact that workers did not use available safety equipment was seen as a
signal "may well demonstrate either that the employer has washed his hands of responsibility for
safety or that the equipment is unsuitable" (at p. 207). Continuous monitoring of employees,
however, may be very expensive even if the provision of safety equipment would have been
voluntarily supplied under a less onerous standard of required care. Further, safety equipment can
be cumbersome, uncomfortable, and lead to lower productivity. These matters were not addressed
by the Court, yet one might have thought that experienced workers were the best judges of the use
of equipment in inherently dangerous situations where the hazards were patently obvious. That
they chose not to use the supplied equipment begs the important question of why they did not do
so. No evidence from the workers was referred to in the judgement. The Judge, however, did find
a duty of supervision of safe practices generally in addition to supplying suitable equipment.

In \textit{Fletcher Construction}, the responsibility for repairing the cherry-picker was not
contractually specified. Fletchers provided a site supervisor, but who was not present at the time the
workers climbed on the roof. There was no intention to provide continuous supervision. While it
was not clear whether the employees told anybody, they did not advise Fletchers. A passing
inspector detected the negligence in the air. Cartwright J judged that principals could not escape
responsibility even though an agent who directly employers workers on a site may be considered to
have primary responsibility, and even if responsibility for safety matters had implicitly been left to

\textsuperscript{25} In \textit{Davies v Mann [1842]10 M. & W. 546}, a donkey had been let loose by the plaintiff
to graze the verges of a highway, and the defendant was found liable when his vehicle struck the
animal.
this employer. In *Fletcher Construction*, the principal had explicitly assumed responsibility for the provision of safety equipment but not for its maintenance or repair, and for developing a procedure which employees should follow in the event of failure. The principal was fined $1,500 on each of the two charges.

In *Buchanan's Foundry Ltd v Department of Labour*, the judgment of Hansen J examined in detail the meaning of the phrase “reasonably practicable” adopted by Asquith LJ in *Edwards v National Coal Board*. In the latter, a defendant could discharge the statutory duty even by rejecting a “practicable step” if there existed a gross disproportion between the magnitude of risk reduction and the cost of reducing that risk. In *Buchanan*, following a furnace explosion resulting in injury, the prosecution alleged that the employer had supplied deficient and inadequate protective clothing. No available clothing could have protected workers from the serious harm arising, but Judge Erber found that a greater protection from less catastrophic splashing would have been provided by two available brands which the appellants had chosen not to use. Accordingly, the appellants were held to have made an error of judgment which had exposed its employees to a risk of harm and were convicted under s 50. In this case, while an injury occurred, the breach of duty was in respect to exposing employees to excessive levels of risk regarding less serious accidents which did not actually occur Hansen J., however, allowed the appeal. The evidence established that the selection of clothing would involve a compromise of competing interests, and the District Court judgment had limited considerations to only one hazard inherent in foundry operations. The appellant was not deemed to have acted unreasonably, and some regard was due to the reliance on

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three previous inspections which had not resulted in the issuing of improvement notices in relation to protective clothing.

There is a clear indication from these cases that employers are considered duty bound to adopt very high standards of care including protecting their employees and the employees of subcontractors where relevant against harm including that resulting from actions of workers which might reasonably be considered negligent, in some cases verging on recklessness. Employer liability, however, is not absolute. Although the Courts have emphasized the practicality of precautions that could prevent an accident at little cost, the magnitude of cost has a bearing on whether employers are likely to be found in breach of their duties under the Act whether or not their employees might have been considered culpable. Nevertheless, an application of conventional cost-benefit calculus may not see an employer safe from charges of breach of duty since all is required is that costs are not “disproportionately” larger than benefits.

6. Do New Zealand’s Ex Ante Safety Standards Necessarily Induce Over-precaution?

The argument in section 5 above was strongly suggestive of New Zealand’s ex ante safety standards being excessively stringent from the view of compensating for under-precautionary bias.

27 The authority is Marshall v Gotham Co Ltd (supra, note 4) where the cost of shoring up roofs throughout a mine in order to avoid an unusual geological fault would have led to the mine’s closure. The measure was held not to be reasonably practicable. Given a breach of duty by an employer, however, employee culpability generally serves only to mitigate the employer’s liability. Where employers are not in breach, employees may be prosecuted under the Act even when no accident occurs. In Department of Labour v Vari, unreported, DC Rotorua, 28 April 1995, an employee was fined $1,000 for failing to take all practicable steps to ensure his own safety. He stood within two lengths of the direction of fall of a suspended tree, suffering no injury but exposing himself to the risk of serious harm. Department of Labour v Kay, unreported, HC Auckland, 8 December 1997, AP 326/96 involved an employee’s failure to protect a fellow employee from harm. A supervisor employed by a house haulage company was phoning to check whether gas pipes had been disconnected, during which time another employee had severed a gas pipe releasing gas at 60 lbs psi, although no injury occurred. The Judge had dismissed the information but was overturned on appeal, given the general intention of the Act to protect...
arising from the presence of court errors in enforcing *ex post* standards. In this section, and in contrast to the analysis of Kolstad et al., we argue that the stringent *ex ante* standard in New Zealand may nevertheless be efficiency-enhancing. A key to understanding this result lies in the imperfect detection by the Department of Labour of breaches of the *ex ante* standard.

In Figure 2, with a probability of detection of breach of the *ex ante* standard of less than one, the slope of the locus of points depicting the level of care against the level of *ex ante* regulation is less than one, as illustrated by the locus $x^0 = \bar{x} + \alpha s$, $0 < \alpha < 1$. The locus $x^0 = s$ illustrates the argument of Kolstad et al., with under-precaution in the absence of *ex ante* standards at $\bar{x}$. As the level of the *ex ante* standard is raised, the employer's choice of care increases at the same rate. But with employers now assigning a less than unitary probability of detection and prosecution, the choice of care levels no longer increases at the same rate as the increase in the *ex ante* standard. The choice of care locus $x^0 = \bar{x} + \alpha s$ intersects the locus $x^0 = s$ below $x^*$, and so the optimal *ex ante* standard will exceed not only $s^*$ but also $x^*$. The strict *ex ante* standard from the negligence in the air provisions in the Act may be close to the socially optimal *ex ante* standard when the assumption of perfect enforcement is relaxed.\footnote{Compared to Figure 2, over-precaution in the presence of *ex ante* standards will nevertheless result if, in the absence of *ex ante* standards, the probability of detection is higher than that illustrated or the level of precaution is less than $\bar{x}$.}

Empirical evidence from the United States has shown that firms perceive a very real probability of non-detection of deficient care, and ample evidence exists for low detection probabilities to result in seriously-diluted safety incentives.\footnote{Cf., Mendeloff (1979), Knieser and Leeth (1991). Early econometric evidence for the U.S. suggested that health and safety regulation introduced in 1970 had no significant impact on U.S. injury rates. Later studies for the U.S. (and also for Canada) provide a mixed picture of the} In New Zealand, OSH distinguishes pro-active compliance assessments of workplaces from OSH-reactive investigations of the safety employees and other persons affected by worksite activities from harm arising therefrom.
status of workplaces. Table 1 reports total compliance assessments and investigations for the years ending 30 June 1999 and 30 June 2000, while Table 2 reports the average annual percentage of New Zealand workplaces affected by the various forms of OSH interventions (excluding information visits) over the period 1998/99-1999/2000.

Table 1: OSH Compliance Assessments and Investigations, 1998-2000

<table>
<thead>
<tr>
<th>Year</th>
<th>Unique workplaces, pro-active compliance assessments</th>
<th>Completed investigations</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998/99</td>
<td>7,571</td>
<td>9,632</td>
<td>17,203</td>
</tr>
<tr>
<td>1999/00</td>
<td>10,686</td>
<td>8,680</td>
<td>19,366</td>
</tr>
</tbody>
</table>

Table 2: Average Annual Percentage of New Zealand Workplaces affected by OSH interventions

Table 2 shows that on average, OSH pro-actively visits only about one firm in twenty in a given year from the viewpoint of checking compliance with the Act, although follow-up visits may occur when compliance failure is detected. Total convictions for breaches of provisions of the Act not involving accidents are also but a small fraction of total convictions for breaches. Thus, firms would importance of safety regulations: see Chapple and Mears (1996, s 3.2) for a survey of this literature.
consequently significantly discount penalties associated with convictions for breaches of quite stringent \textit{ex ante} safety standards. While we would not wish to argue the case too strongly, the modest expected penalty arising from the expected detection of breaches of \textit{ex ante} standards may generate a sufficient deterrent to undercompliance with the optimal level of precaution rather than inducing overcompliance as a result of an excessively stringent \textit{ex ante} standard. Considerable care is required with this argument, however, since Table 1 shows that OSH-initiated compliance assessments were over 40 percent higher in 1999-2000 than in 1998-99. It is highly unlikely that other parameters of the problem changed to such an extent that the corresponding compliance assessment rates were both socially optimal in their respective years. Indeed, neither rate may have been appropriate. Given the stringency of safety standards, however, and given that the appropriate level of \textit{ex ante} standards should lie below the common law level of due care, appropriate inspection rates must lie well below 100 percent as indeed they do.

\textbf{The HSE Act and Uncertainty in Court Decisions}

While the test in Edwards suggests a higher \textit{ex ante} standard of precaution than under a common law rule of negligence, the looseness in the concept of “disproportionality” between costs and benefits of safety precautions serves to increase the degree of uncertainty surrounding legal standards of care which, \textit{ceteris paribus}, can induce under-precaution. Employers may at times wrongly believe that courts will deem costs of precaution excessive and hence absolve them from these precautions. This is particularly likely to be the case if courts modify their position over time by strengthening the required standard of care.\textsuperscript{30} Employers may also wrongly believe that courts

\textsuperscript{30} For example, the decision in \textit{Central Cranes} (supra, notes 21, 22) is a case in point. Mazengarb [para. 6018.7] warns against the applications of the earlier decisions concerning the interpretation of “all practicable steps” in the light of this judgement in terms of hiring competent contractors. Thus, “stricter precautions may be necessary”.

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will find them in breach of duty even when costs are high relative to benefits, and yet elect to take relatively low levels of precaution and face occasional prosecution rather than bear these costs. Courts and employers face different information concerning the accuracy of estimated true costs and benefits. Employers will be expected to possess much more accurate information on costs and benefits which are typically specific to their particular operations. Courts cannot be expected to possess more than the most general information, and while both prosecution and defence will supply relevant evidence, their respective interests are conflicting and so may be the nature of their evidence. Thus, courts’ assessment of costs and benefits, especially with regard to changes in the likelihood of serious harms, may frequently be wide of the mark. Further, courts may systematically give added weight to estimated benefits of safety measures since serious harms involve serious personal losses to injured workers, including permanent disability or death. Looming over the HSE Act is the financial responsibility of the State for the bulk of the hospital care costs associated with workplace injuries.

Given that greater precautions are typically required under the statutory duties of the Act than under the negligence rule and which would otherwise lead to excessive precautions, if liability in the event of accidents is less than actual damages, this will be an offsetting factor, as will a reported accident rate that lies below one.\textsuperscript{31} Further, if caps on fines are set such that the maximum is reserved for the most serious offences so that a margin is left for deterrence of more serious offences, employer liability can be very low for quite serious harms.

\textsuperscript{31} The Act requires under s 25 that employers maintain an accident register and record all events that harm, or might have harmed employees and others in the workplace. Events resulting in serious harm to employees must be reported immediately to OSH. Compliance, however, is not guaranteed and minor accidents need not be reported even if recorded.
These points are illustrated in *de Spa*, the leading case on the principles in setting fines under the Act. According to Tipping and Fraser JJ, the maximum penalty is designed to be applied to the “worst possible case”, yet experience suggested that the “worst” case was always waiting in the wings. Further, the District Court had fined de Spa $6,500 in respect to the fatal injury suffered by an employee. On appeal, this was considered to be manifestly inadequate and was raised to $15,000, but even this amount represented only 30 per cent of the maximum fine.

Over the period 1 April 1993 - 7 December 1998, the most common breach prosecuted was with respect to s 6. The 688 cases prosecuted (of which 67.2 percent resulted in convictions and fines) attracted average fines of $5,285 and the average fine across all convictions involving fines for breach of any section of the Act was only $4,170. While fines in the higher range are usually reserved for cases involving serious harms including fatal injuries, the highest fine of $30,000 under the HSE Act might be compared with a penalty of $50,000 imposed on a firm under the Resource Management Act for polluting a stream leading to some 50 ducks being affected. To be sure, fines have been increasing, in part a response to the end of a “honeymoon” period associated with new legislation. The average fine for breaches of s 6 nearly doubled when the period 1 April 1993 - 31 December 1995 is compared with the period 1 April 1993 - 7 December 1998, and the average fine in respect of all convictions involving offences under the Act during the year ended 30 June 1998 and which were concluded in that year increased to $5,030. Even so, the average penalty still seems extraordinarily low as far as deterrence is concerned. Further, given that the detection rate

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32 Supra, note 6.

33 Cf. Mazengarb para [6054.6].


of breaches of the ex ante standard is likely to lie well below one, the expected liability for failure to meet statutory duties but where accidents do not arise is correspondingly expected to lie well below expected liability when accidents do arise unless fines are significantly larger for the former than the latter. The pattern of fines for negligence in the air, however, appear even smaller than the average fines overall, although it must be recalled that the cases are relatively few in number. In Department of Labour v Castlerock Group Ltd, the defendant company was fined a relatively large total of $21,000 on four charges when employees were continued to be permitted to work in dangerous conditions on a construction site.\textsuperscript{36} An improvement notice had been ignored and two prohibition notices had previously been served. Culpability was found to be high, and the company’s safety procedures were found seriously wanting. The company’s position was that health and safety systems were not cost-effective, an interesting position since the probability of detection, prosecution and conviction was likely to be much higher than average since the company must rationally have anticipated that OSH would have been highly likely to follow up its notices to determine whether compliance had occurred. More generally, the probability of prosecution appears to be much less than the probability of detection of breaches, given that prosecution is viewed as a “last straw”. This further weakens the deterrence effect of the Act.

7. Modelling Fines for Negligence in the Air

Penalties under the Act are contained in sections 49 and 50. Where a prosecution has taken place before any accident has occurred, there are two levels of fines;

- a maximum of $100,000 where the employer “knew the relevant act or omission was likely to cause serious harm” (s 49), and

\textsuperscript{36} Department of Labour v Castlerock Group Ltd, DC Auckland, 12 February, 1999.
• a maximum of $25,000 where the employer had no such knowledge but who nevertheless failed to comply with the provisions of the Act (s 50).

This section addresses the following issues regarding these provisions:

(i) what the above model implies for the nature and level of the fine;
(ii) a possible rationale for the ‘caps’ on fines, and why this rationale may be misguided;
(iii) the suggestion in the case law of positively correlating levels of fines with the defendant’s wealth (hereinafter called ‘asset-testing’ of fines).

7.1 Detection Resources and Optimal Fines

In a world of imperfect detection of breach of statutory duties under the HSE Act, a (well-informed) regulator can induce the socially optimal level of care by different combinations of (i) the probability of detection, and (ii) the expected magnitude of the fine. We assume that the probability of detection is an increasing, convex function of resources devoted to detection; boosting detection resources increases the probability of detection, but returns to investment in detection mechanisms are diminishing. The optimum fine $F^*$ and detection probability $\rho^*$ is defined by a point of tangency between the iso-care curve consistent with the socially optimal care level $x^*$ and the lowest iso-cost curve. Deriving the optimal fine and probability of detection enables the derivation of the optimal value of resources devoted to detection $V^*$.

The assumed convexity of iso-care curves implies that increases in the fine or probability of detection are more effective at increasing care levels when levels of fines or the probability of detection, respectively, are low. Iso-cost curves are likely to be steep in $(F, \rho)$ space, reflecting the very low cost of increasing fines relative to the increase in the probability of detection. Increasing fines may only carry the cost of statutory amendment, while increasing the probability of detection by a small amount may involve significant expenditures on additional detection mechanisms. The
point of tangency in this model will therefore be characterized by high fines and a relatively low level of detection probability.

This is observed in practice. Detection probabilities under health and safety regulations are relatively low. Fines, on the other hand, are significantly higher under the Act than previously the case in New Zealand under the pre-HSE Act statutes that governed health and safety.\(^{37}\)

In the *ex post* liability analysis, the optimal level of care is generated by equality between the marginal cost of care \([C_x(x)]\) and the marginal benefits of care, being savings in expected accident costs \([-A_x(x)]\). For an *ex ante* rule, the expected costs of a given level of care are the probability of detection times the expected magnitude of the fine. To maintain the optimal level of care generated by the *ex post* rule, the expected liability under an *ex ante* rule will mimic expected accident costs under an *ex post* rule. That is,

\[
\rho(x)F(x) = p(x)D(x) = A(x),
\]

where \(\rho(x)\) is the probability of HSE Act authority detection of breach of duty and consequent fine of \(F(x)\). This implies that the optimal fine, given a deficient level of care, should be set equal to the expected damage from that level of care divided by the probability of detection *ex ante*:

\[
F(x) = A(x)/\rho(x).
\]

Since \(\rho(x) < 1\) and is likely to be relatively small, the optimal fine should be set significantly above expected accident damage \(A(x)\).

Prosecution data regarding health and safety violations are revealing to the extent that they reflect the relative sizes of the probability of \textit{ex ante} detection and the probability of an accident. Butterworths provide the following data on HSE Act prosecutions since the inception of the Act through 7 December, 1998:\(^{38}\)

I. Following Accident 1369  
 II. Following Incident 37  
 III. Following Complaint 100  
 IV. Following Inspection 250

Prosecuted accidents totalled 1756 over this period. \textit{Ex post} negligence liability, however, would be triggered only by I. This is presumably because I is the only case above where personal injury has occurred. In contrast, II, III, and IV are examples of detection \textit{ex ante}, or 'in the air'. This data suggests the following estimates:

(i) given a prosecution, the probability that it represented \textit{ex ante} detection is 0.20.

(ii) given a prosecution, the probability that it was \textit{ex post} an accident is 0.80.

While it is not possible to derive the absolute probabilities of an accident or probability of \textit{ex ante} detection,\(^{39}\) their relative probabilities may be derived as \(p(x)/p(x) = 0.80/0.20 = 4.0\), whence \(p(x) = 4.0p(x)\). These values should be treated with suitable caution as precise estimates of the true values.

These sample results, however, at least suggest that the probability of an accident (given deficient care) is significantly greater than the probability of detection of that deficient care.

\(^{38}\) Cf. Mazengarb para [6054.6].

\(^{39}\) This would require, \textit{inter alia}, data for the absolute number of workplaces with deficient care levels and the total number of accidents, neither of which are available.
An implication of this sample result is that since:

\[ F(x) = A(x)/\rho(x), \quad \text{then} \]

\[ F(x) = E[p(x)D(x)]/\rho(x) = 4.0\rho(x)E[D(x)]/\rho(x) = 4.0E[D(x)]. \]

Thus, the HSE Act fine should be set at four times that of the expected accident costs resulting from (deficient) care level \( x \). This contrasts sharply with the tendency for fines for breaches of the \emph{ex ante} standard under the HSE Act to lie significantly below those for which harms were suffered. Contrary to the judicial decision in \emph{Canterbury Concrete}, for example, where the fact that no harm had been suffered was used in part to justify a reduction by one third in a rather modest initial fine, we would argue that given that a fine was appropriate in the circumstances, the initial fine should most likely have been significantly greater rather than smaller. The potential harm was serious and the likelihood of detection was small, given that it was detected by a “passing” inspector.

Expected compensatory damages, however, need not have an upper bound. There is perhaps no conceivable limit on the amount of money it would take to compensate for the consequences of some very serious accidents, and those involving death are uncompensable, although surviving dependents may receive compensation. This raises the legitimate point as to whether or not employees may be compensated \emph{ex ante} in terms of higher wages for bearing workplace risks. \footnote{See, for example, Moore and Viscusi (1991) and Viscusi (1992).} The presence of accident compensation statutes may substitute for compensating variations in wages, tending to neutralize variations in risks between jobs. In motivating these statutes, if workers are not fully aware of the risks they face, appropriate risk premiums and the efficient matching of jobs and workers may not occur. The provision of job risk information, however, may be a promising means of augmenting the ability of market forces to develop appropriate risk-based wage differentials. \emph{Ex post} accident rehabilitation and compensation is a
different matter from risk information provision, however, although New Zealand’s legislation does provide for the ACC to “promote measures to reduce the incidence and severity of accidents and other causes of personal injury”. These include undertaking or funding safety programmes which are viewed as likely to be cost-effective in decreasing employer premium rates, and which may include publication and distribution of informational literature and the like. Since premiums are based on broad industrial groupings which may be unrelated to risk, apart from possible gains through experience rating of premiums, such investments are likely to have a low rate of return, and activities are likely to be very limited. No evaluation of the ACC’s activities in this matter is available to date.

For those sceptical of the ability of market forces to appropriately internalize workplace risks via wage premia, however, an issue arises regarding the possible award of fines in whole or part to workers when employers are convicted for breaches of the HSE Act but where no accident has occurred. If workers are undercompensated with suitable wage premia for bearing additional workplace risks, courts might instead effect such compensation by awarding fines to the potential victims of accidents where employers are at fault. Appropriate compensation, however, may have to be applied across a large number of persons in a workforce if they are exposed to similar risks. Fines for negligence in the air, however, tend to be very small, perhaps reflecting the fact that harm did not occur. Yet serious harm does occasionally occur, and an argument for fines to be much greater than imposed currently may be necessary to compensate numerous workers for risks they do not know they are bearing, and only a few of which are detected by inspection. Against this, however, is the obvious moral hazard effect of compensating for large risks arising from lack of care on the part of workers themselves. In a number of instances of negligence in the air, it would appear that employees would have been found culpable under a legal rule permitting a defence of contributory or comparative negligence, and this point is itself recognized by the Courts in
mitigating the magnitude of fines imposed on employers when their employees are also deemed to
be in breach of their duties of care towards themselves.\textsuperscript{41}

7.2 \textit{Caps on Fines}

The law of negligence does not typically impose upper bounds on the range of
compensatory damages available. The analysis above suggests that optimal fines under the Act
should be set significantly \textit{above} expected compensatory damages, in which case bounded fines
might appear to be inappropriate on efficiency grounds, particularly for accidents where the
consequences are severe. A different perspective, however, may have some merit. A cap on fines is
one method by which the legislature may influence an employer’s subjective probability distribution
on the range of fines the courts will impose upon \textit{ex ante} detection of deficient care. The legislature
may use caps to signal to the courts information about what is perceived to be the appropriate
distribution of fines. Uncapped fines may not necessarily be justified for offences involving
breaches of duty to take care, however severe the consequences.

Consider an employer’s subjective probability distribution over \textit{ex post} compensatory
damages, and, in the absence of caps on fines, suppose this density function is also applied to the
distribution of fines. The effective truncation of the distribution of fines when caps are imposed and
where the probability mass previously lying above the cap is now distributed below the cap lowers
the mean of the distribution. If so, the incentive effects from expected fines will be inefficiently
weak, particularly so if fines are capped at relatively low levels. The truncation leads to the
expected fine being discounted by employers, rather than improving efficiency by raising it above

\textsuperscript{41} Tort law does not typically impose a stringent duty of care towards one’s own
property, presumably because the state feels no obligation to restore damaged property as
opposed to damaged people.
expected damages. Incentive effects would appear to be desirably strengthened by the imposition of a lower bound on fines, rather than an upper bound. There is little comfort for protagonists of fines capped by an upper bound according to this argument.

The court’s fining practices, however, must be expected to affect the shape of the truncated distribution. If, for example, fines are frequently set close to the maximum, the distribution over fines will be skewed to the right of the distribution over damages. The evidence, however, suggests that fines are rarely set close to the maximum, and so this does not appear to be a very promising approach. Further, the cap might be justified if the mean of the employer’s distribution over fines was sufficiently great to induce employers into taking excessive levels of care, given errors by the court in determining appropriate standards of care. This appears unlikely. At least in initial stages, it seems unlikely that the employer’s distribution over fines for negligence ‘in the air’ would lie predominantly to the right of the distribution over ex post damages. In addition, the caps under the Act appear far too small to be interpreted as being typically required to induce employers into significantly reducing their estimates of expected fines in order for them to reduce their levels of care towards socially optimal levels. On the face of it, the cap on fines imposed in the legislation and as applied by the courts would seem to be a deterrent to incentives for safety. The principle of caps on fines, however, is not necessarily denied by this conclusion. Although fines are capped at a relatively low level and the level of maximum fines imposed makes it rather difficult to imagine what circumstances would attract a fine close to the maximum, raising the maximum fine and imposing fines closer to the maximum than at present would permit the legislature to better signal the relative gravity of offences than is the case at present.

42 Note that this policy would conflict with the case law practice of asset-testing fines.
Another possible rationale for caps might be based on the relative tightness of the subjective probability distributions with uncapped damages or capped punitive fines as the operative penalty. With a cap on liability, ceteris paribus, the employer’s probability distribution over expected fines is necessarily tighter around its mean than the subjective probability distribution over uncapped compensatory damages. Recall that Kolstad et al. established that as the subjective probability distribution over the legal liability rule becomes increasingly spread, the likelihood of deficient care decisions increases. A similar argument can be used here. The care decision is based in part on the expected magnitude of fines. With relatively little uncertainty, care decisions are more likely to be based on levels of fines ex ante above the expected fine. With a tight distribution, the employer can eliminate a significant portion of the probability assigned to relatively high fines by taking additional care. This pushes care decisions in the opposite direction to the ‘discount’ in the expected fine due to the introduction of caps. Hence, although caps may motivate a discount in the expected fine due to a reduction in the mean of the distribution, caps may also motivate more precaution because of the tightening of the distribution around its mean.

7.3 Asset-tested Fines

In de Spa, the Court listed criteria in determining the level of the fine to be imposed. These included the financial circumstances of the offender. Thus (at p. 3), a fine “at a particular level will obviously bear differently upon a small impecunious employer as opposed to a large financially strong employer”. We argue that this consideration may lead to inefficient incentives for levels of care for firms independent of their level of wealth.

With asset-testing, the problem facing the employer is the choice of care \( x \) that minimizes \( C(x) + A(x, z) \), where \( z \) represents the asset level of the employer reported to the court. Expected liability payments \( (A) \) are increasing in \( z \); ie, \( A_z(x, z) > 0 \). The privately optimal level of care \( x^0 \)
satisfies the first-order condition $C_x(x^*) = -A_x(x^*, z)$. The socially optimal level of care solves the minimization problem $C(x) + A(x)$ for $x^*$ satisfying the condition $C_x(x^*) = -A_x(x^*)$, ie, the optimal level of care is independent of $z$ and the employer’s asset level is irrelevant for incentives to take care. If expected fines are positively related to reported asset levels, under-precaution will occur for ‘small-asset’ firms, and over-precaution will occur for ‘large-asset’ firms. Firms with high asset levels now face higher expected liability costs so that the function $-A_x(x)$ shifts upwards in (benefits of care, care level) space. The converse is true for low-asset firms.

It is possible that in de Spa the Court was conjecturing that firms with limited assets face smaller marginal costs of care compared to large asset firms, around the optimal standard. There is no discussion of the rationale behind the apparent ‘asset-testing’ in de Spa itself, and this may be another example of how courts may believe that ‘justice’ is served by raiding deep pockets. The explanation that marginal costs may be positively correlated with asset levels appears weak. It may be the case that an increase in the level of care is more costly for production line manufacturing, say, than for automobile paint shops since in the former case the improvement in safety applies across an entire production line of workers. But if so, fines could be correlated explicitly with marginal costs. Alternatively, a small reduction in care for an asset-rich firm may raise expected accident costs much more than for an asset-poor firm since many more workers may be exposed to additional risks in the former case. But this issue has more to do with scale rather than asset levels per se, and, again, fines would be better being tied to expected damages arising from deficient care

\footnote{The only additional incentives created by asset-testing appears to be to conceal reported assets levels. From the first-order condition for $z$, ie, $-A_z(z^*) = 0$, $z = 0$ if the employer can fully manipulate reported asset levels.}
levels. If there are penalties to being asset-rich per se, this is akin to a tax on capital discouraging an optimal capital intensity of production processes.

It may be also be the case that in *de Spa*, the court was concerned about its coming into disrepute with the very people the Act attempts mainly to protect, namely, the workforce. An injured worker may be aggrieved if, after a period of rehabilitation, the worker cannot return to the original workplace because the employer has been put out of business by a finding of ex post negligence or breach of statutory duty. This, however, might be compared with the potential reactions of an uninjured workforce in a given establishment suddenly being advised that they are out of work because of a crippling fine imposed on their employer in response to an unsolicited inspection by an official of the Department of Labour! Nevertheless, such circumstances may be socially optimal in order to deter small establishments from under-protecting their workers. This is, however, unlikely to have much appeal to the workers concerned unless they can find replacement employment at low cost, and particularly for those possessing high levels of firm-specific human capital, alternative forms of compensation may be required. For obvious moral hazard reasons, insurance against bankruptcy is generally impossible. Bankruptcy, however, does not necessarily imply cessation of operations, since the firm may be insolvent yet may still have a viable future under new ownership. The more serious incentive problem is where solvency constraints allow firms to limit their liability in respect of excessive risk-taking in the workplace.

8. Concluding Remarks

The Health and Safety in Employment Act imposes statutory duties on both employers and employees with regard to workplace safety. The Courts have clearly emphasized that the major initiatives regarding workplace safety lie with employers, who are required to take all reasonably practicable steps to ensure the safety of their employees. In addition to penalties for breach of
duties in the event of accidents, employers also face penalties for negligence ‘in the air’, ie, when workers are deemed to be exposed to excessive risks but where no accident has occurred. While *ex ante* standards of precaution may substitute for *ex post* liability in the event of accidents, *ex ante* standards may also be effective in complementing *ex post* liability rules where it is believed that the latter are insufficient on their own to induce the appropriate levels of care by employers. *Ex ante* standards then flag the minimally level of precaution. In so doing, they reduce the dilution in incentives to take care arising from court errors in the implementation of *ex post* liability rules.

While the literature suggests that *ex ante* standards should be lower than corresponding socially optimal precaution levels, we argue that more strict standards may be required where inspection probabilities are relatively low, as is observed in the enforcement of the Act. Further, penalties are set at relatively low levels, in large part a response to the Act’s imposition of relatively low caps on fines along with a desire by the Courts to leave some margin for deterrence in respect of very serious accidents. We find that the case for caps on fines is weak and hence society is likely to face a ongoing stream of prosecutions for breaches of relatively onerous duties. We also find that the Court’s proclivity to ‘asset-test’ fines is unlikely to be an efficient practice.

While we do not claim to have demonstrated the design optimality of the HSE Act, we find that a number of its features may well be efficiency-enhancing, including some that compensate for features that dilute incentives for employer precaution. Underpinning the argument, however, is the common assumption in the literature that *ex post* liability rules are optimal (although their implementation may not be so), and it is certainly arguable that both *ex ante* and *ex post* liability rules are more stringent that their common law counterpart of ‘reasonable care’. Finally, we treat employee choices of care as exogenous. These contentious assumptions are being examined more closely in ongoing research.
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FIGURE 1: Uncertainty Surrounding the Legal Standard

marginal costs and benefits of precaution

\[ C_x(x) \]

\[ -A_x(x) \]

\[ \bar{q} \]

level of precaution
FIGURE 2: Regulation and the Choice of Precaution

The diagram illustrates the relationship between the level of precaution and the level of ex ante regulation. The equations are:

- $\hat{x} = x + \alpha s$
- $x^0 = s$
- $\tilde{x} = \hat{x} + \alpha s$
- $x^* = s^*$
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