An Economic Analysis of Bill C-45: Looking at the Effectiveness of Penalties in Motivating the Optimal Provision of Workplace Safety

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Abstract

Bill C-45, a proposal that led to a 2004 amendment to the *Canadian Criminal Code*, increased the severity of punishments for employers providing inadequate levels of safety in the case of workplace accidents. These amendments including allowing for the criminal prosecution and incarceration of employers found to be in extreme offence with existing health and safety standards. However, no incarceration terms have been served since the amendment which leads many to question both the need and the effectiveness of this legislation. This paper seeks to create a model to explain the shortcomings of fines in a real world context and the ability of incarceration terms to compensate for some of these shortcomings. Consequently, the threat of incarceration terms can ensure the provision of a level of workplace safety that is more optimal than in the context of fines alone. The paper then provides possible explanations for the lack of incarceration terms actually served by individuals found guilty by the courts under this legislation.

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Contents

1 Introduction **5**

2 Background **7**

2.1 General Background 7

2.2 Case Law 10

2.3 Literature Review 14

3 Model **19**

3.1 The Problem of the Firm 19

3.2 Executive Theory 25

4 Explanations for the Scarcity of Incarceration Penalties **29**

4.1 Executive behaviour in setting workplace safety levels 29

4.2 Court opinion on the definition of harm 31

4.3 Different burden of proofs 32

4.4 To prevent the over-provision of workplace safety 33

4.5 Insurance coverage of legal costs under civil prosecutions . . . 33

5 Conclusions **34**

1 Introduction

Bill C-45, which led to an amendment to the *Canadian Criminal Code* (Section 217.1) in 2004, allowed for the criminal prosecution of organizations and individuals in the case of workplace accidents in which employers did not take due diligence to prevent the bodily harm of employees. The penalties of a successful criminal prosecution include fines (up to $100,000 for summary convictions and no upper limit for more serious convictions) and/or incarceration for the guilty party (up to life imprisonment) (Department of Justice Canada, 2011). The intent of the bill was to make it easier to bring criminal negligence charges involving in workplace accidents relating to health and safety. Pursuant to its introduction, however, only a small handful of criminal negligence charges have been laid and no incarceration terms have been served. Given the scarcity of the case law surrounding this section of the criminal code, what effect, if any, does the threat of incarceration have on the level of safety provided by employers in dangerous industries? Does the lack of use of Section 217.1 of the *Criminal Code* imply a lack of effectiveness? This paper's purpose is to argue that, even in light of the rarity of such charges, the possibility of employer incarceration results in the provision of safety closer to the optimal level than in a context where fines are the sole penalty available to the judiciary. Fines and jail terms can be considered inputs into the production of discipline among those who come into conflict with the law. The successful production of punishment is necessary to moti-

vate individuals in society to follow laws, including those relating to health and safety standards. Consequently, the penalties imposed on corporations and executives as a result of workplace health and safety negligence is extremely relevant to the resulting overall level of workplace safety provided by employers. A model has been created to demonstrate that, while fines can theoretically perform efficiently to produce an adequate level of safety, the financial constraints of firms and other considerations of judges prevent them from setting fines optimally. Consequently, fines alone are unable to ensure the efficient provision of workplace safety. We then demonstrate that the threat of incarceration can increase the level of health and safety provided by employers, reaching an outcome closer to the first-best solution than in the absence of that threat.

Outline The remainder of this article is organized as follows: Section 2 gives account of the background of Bill C-45, the body of case law surrounding it, and a summary of the literature surrounding the issue of optimal penalties. The model is described in Section 3. Section 4 discusses the possible explanations for the lack of incarceration terms served, even though their efficiency in the context of the world has been demonstrated by the model. Finally, Section 5 presents the conclusions to be drawn from the model.

2 Background

2.1 General Background

Bill C-45 was introduced in the wake of a 1992 coal mining tragedy at the Westray Mine in Nova Scotia that resulted in the death of 26 miners, as a direct consequence of the company's negligence of workplace health and safety standards(Canadian Centre for Occupational Health & Safety, 2010). Despite frequent notifications of the substandard working conditions at its mine from a variety of governmental bodies, the employer failed to adequately follow recommendations and improve the level of safety provided to its workers. Unfortunately, despite the demonstrable careless disregard displayed by the employer for its workers' safety, the Crown was unsuccessful in obtaining a conviction of the company, given the legislation available to it at the time. Bill C-45 was introduced to remedy this and to ensure that no employers would escape prosecution in the future, if they demonstrated the same negligent conduct towards health and safety displayed by the employer at the Westray Mine.

Labour unions and federations have pointed to the increase in worker fatalities in Ontario as evidence that existing government efforts to improve workplace health and safety are inadequate. The *Toronto Star* reported 73 workplace fatalities in 2011, while there were only 67 workplace fatalities in 2010 (Alphen, 2012). This increase coincides with the expansion of *Ontario Ministry of Labour* efforts to promote safety education and improve enforce-

ment levels. It may be argued, however, that this increase in workplace fatalities stems from increased employment in certain dangerous industries, such as construction and mining, over recent years (Alphen, 2012). Regardless of the cause, unions have used the increase to place blame on the government and courts for insufficient use of the available legislation allowing them to hold employers and workplace supervisors criminally liable for providing an inadequate level of safety for their workers. The president of the *Ontario Federation of Labour* argues that "[worker fatalities and the fines associated with them are] still regarded as a cost of doing business for some employers." (Alphen, 2012) This general sentiment inspired the theme of the 2012 Day of Mourning, marking the 20th anniversary of the Westray Mine disaster, "Kill a Worker! Go to Jail!" (Alphen, 2012) This movement has demanded answers for the extremely small body of case law surrounding Bill C-45 and the lack of jail terms served by parties found guilty for criminal negligence relating to workplace health and safety. Labour federations and unions insist that the only way to achieve adequate and strict enforcement of its terms and legislated safety standards in the workplace is to incarcerate employers more frequently. They believe that moving away from fines towards imprisonment terms for employers and individuals found guilty under Section 217.1 is the only viable method of increasing the provision of workplace health and safety to the optimal level. Is the labour movement correct in their belief that fines are inadequate in enforcing an appropriate level of safety in Canadian workplaces?

Economics argues for the efficient use of resources to attain certain societal objectives. While ethical arguments would tout the provision of health and safety to the extent of preventing any workplace injury or fatality, economic evaluation considers the possibility of an efficient number of workplace accidents. Given the costs associated with providing safety, there can be a point at which the costs associated with providing additional safety exceeds the benefit of preventing bodily harm to a human. This point is difficult to identify given the heavy debate surrounding the value of a human life, and the exhaustive cost-benefit analysis that it would require. Regardless, it can be argued that, within the context of finite resources, allowing for some workplace accidents could be considered efficient, if the cost of providing additional safety exceeds the harm caused by a workplace accident beyond some point. Policy instruments can manipulate the level of safety provided by adjusting the costs associated with providing an inadequate amount of safety, in the event of a workplace accident. Such policy instruments include fines and jail terms following a criminal conviction.

Prior to 2004, the only punishment available to the regulating authorities that could be imposed on employers was sizeable fines, as set out in the provincial *Occupational Health and Safety* ("OHSA") laws (Smith, 2011). While corporations could be held criminally liable for workplace accidents before 2004 under the OHSA, Bill C-45 lowered the threshold needed to convict an organization. Instead of requiring the cause of the accident to be the behaviour and choices of a "directing mind of the corporation," the courts

can now impose criminal liability in cases where the aggregate behaviour of individuals poses an unreasonable risk to workers (Canadian Centre for Occupational Health & Safety, 2010). The amendments also expanded the individuals who could be found culpable from solely the "directing minds" of corporations to all those who direct work(Bélanger, 2008). Following 2004, it became easier to charge organizations and possible to charge employers with criminal negligence in the case of workplace fatalities, creating the very real threat of incarceration for employers and supervisors. Following a serious workplace accident, the police, provincial authorities, and the Crown are responsible for determining whether to press charges under provincial health and safety laws and/or under section 217.1 of the *Canadian Criminal Code* (Canadian Centre for Occupational Health & Safety, 2010). It is possible, though unlikely, for charges to be laid under both provincial laws and the federal *Criminal Code* (Canadian Centre for Occupational Health & Safety, 2010). This significantly altered the costs of providing an insufficient level of workplace safety facing corporations and employers in Canada.

2.2 Case Law

While the Crown has charged a number of firms and individuals using section 217.1, very few have successfully been prosecuted. In two cases, charges were withdrawn, due to the Crown's belief that there was no reasonable likelihood of a successful conviction. One case was *R. v. Fantini*, in which a supervisor was charged with criminal negligence, following a trench collapse

which killed one of the workers under his direct supervision (Gorewich, 2005). Domenico Fantini, the construction supervisor, plead guilty under Ontario's OHSA and was fined $60,000 (Beeho, 2011). The criminal negligence charges were dropped as a part of a plea bargain entered into by Fantini. The other case was *R. v. Millennium Crane Rentals*, in which a crane fell into an excavation hole, killing a worker. The crane was found to be in a state of severe disrepair, and the judge found that the employer failed to take due diligence in maintaining and inspecting the crane to ensure it was in reasonable working condition (Beeho, 2011). The Crown, however, dropped the criminal negligence charges when the Crown found that causation could not be proved and, consequently, there was no reasonable prospect of a guilty verdict.

Three cases were withdrawn following further investigation into the facts. In *R. v. Ontario Power Generation*, a flood occurred which injured seven people, killing two workers . The court found the organization to negligence, though not wholly reckless, and consequently, it did not issue a conviction on the criminal negligence charges. Another case, *R. v. Tammadge and Bednarek*, was brought against two of the employees at the *Ontario Power Generation* plant, for their individual roles in the accident. These employees were also acquitted of the criminal charges laid against them. In a third case, *R. v. Gagne and Lemieux*, the accused were acquitted when the court found the accused workers' behaviour to not sufficiently meet the "marked departure" test required for conviction.

R. v. Transpavé inc. is the first case where a corporation was convicted of criminal negligence in Canada since the amendments to Section 217.1 of the *Canadian Criminal Code*. The organization plead guilty to the criminal negligence charges and it received a $110,000 fine, following the fatal crushing of a worker by a machine at its workplace (Bélanger, 2008). The fine level was set in recognition of the company's significant investment made to update the workplace in the time following the accident (Chavalier, 2008). The judge recognized that the firm and its owners made no effort to conceal their guilt of the accused charges and had made an honest effort to ensure such an accident would not occur again in the future. Another company, *Metron Construction*, recently also plead guilty to criminal negligence charges and the firm was fined $230,000 by the courts (Edwards, 2012). This followed the death of four workers, and the serious injury of an additional worker, when scaffolding collapsed and left them tumbling 13 stories to the ground. The employer had received notification of safety concerns from the *Ministry of Labour* prior to the incident, however had made insufficient efforts to combat these concerns (Beeho, 2011). The Crown also pressed criminal charges against *Metron Construction*'s owner and two of its managers. The criminal charges against the owner, Joel Swartz, were later dropped, though he was issued a significant fine under OHSA (Edwards, 2012). The decisions regarding the criminal negligence charges of the firm's managers are still pending.

In *R. v. Scrocca*, an employer in the landscaping industry was charged with criminal negligence after one of his workers died when a backhoe's brakes

failed. The court found Scrocca's behaviour, especially that relating to machinery maintenance, to be a marked departure from that of a reasonable individual, and sentenced him with an imprisonment terms of two years, less a day (Keith, 2011). This represented the first incarceration term given by Canadian courts to an employer following the 2004 amendments to the *Canadian Criminal Code*. This sentence was later suspended and Scrocca was ultimately not imprisoned (Beeho, 2011).

One case is still pending prosecution. *R. v. Lilgert* deals with the sinking of a ferry in British Columbia, which resulted in the loss of two passengers, presumed dead (Keith, 2011). Karl Lilgert, the navigating officer, was steering the ferry when it sank. He was charged with criminal negligence causing death in the wake of the accident. The criminal case has not yet come to trial so the judicial decision is still pending.

As is obvious from the case law described above, criminal negligence convictions, as a result of charges brought under the *Canadian Criminal Code*, are extremely rare. Even more rare is an incarceration term to come from a criminal negligence conviction. Additional to the cases described above, there have been a couple of private prosecutions surrounding section 217.1 of the *Canadian Criminal Code* (Beeho, 2011). Given the private nature of discussions, the outcomes of these prosecutions are typically not reported, though they have yet to conclude in jail terms.The fact that incarceration terms have not been a policy reality, thus far, inspires the question of whether fines are sufficient to ensure that safety levels that satisfy the OHSA and

Criminal Code are provided in Canadian workplaces. The next section will look further into the literature surrounding the issue.

2.3 Literature Review

Gary Becker's pivotal paper, "*Crime and Punishment: An Economic Approach*," introduced the method of optimizing policies to combat criminal behaviour. His paper found that, in order to optimize the penalty system, fines should be used whenever possible, in the place of imprisonment, given their lower social costs. However, it was assumed that fines impose no social costs (Becker, 1968). While fines have significantly lower direct costs than imprisonment, the indirect costs can still be significant. Such costs include the closing of businesses and the loss of employment. Regardless, it does seem reasonable to assume that the costs associated with imprisonment would be significantly greater than those associated with fines.

A. Mitchell Polinsky and Steven Shavell followed up Becker's paper with a closer look at appropriate penalties in the context of individuals with different wealth and risk aversion levels. They also assume that fines are socially costless for society to impose, while imprisonment is associated with a significant social cost. Polinsky and Shavell (1984) find that a context in which fines are the sole penalty available to the judiciary and individual wealth levels are identical leads to "under-deterrence" of criminal activity. This is a result of fines' inability to fully force less wealthy individuals to internalize the full cost of their behaviour (Polinsky and Shavell, 1984). They

report that, if wealth levels vary, fines should equal the wealth level of the less wealthy individuals, and equal the social cost of the behaviour for the wealthier individuals. Similar to Becker, Polinsky and Shavell (1984) believe that in an environment where both fines and imprisonment are available to the judiciary, it is optimal to assign fines to the maximum possible amount. Only at the point where that has been reached should imprisonment terms be assigned. They also find that, if individuals are risk averse, sanctions should be set at a lower level, while the probability of detection should be set at a higher level.

Jonathan R. Macey, of the *Yale Law School*, looked at agency theory and the insights it can bring surrounding the criminal liability of organizations. He sees criminal law as fundamentally economic in nature, as it attempts to force individuals to internalize the costs of their decisions and behaviour. He distinguished between shareholders and managers, in that managers are those able engage in criminal activity, and their respective benefits and costs of such behaviour. He noted that the incentive for individuals to engage in criminal behaviour fundamentally does not stem from the activity's benefit to the organization but rather the activity's benefit to themselves. Consequently, by imposing criminal liability on the individual, the judicial system would significantly increase the costs of engaging in such behaviour for the managers (Macey, 1991). The benefits, however, would remain stagnant at a much lower level, given that managers must split the benefits of criminal activity among many shareholders. Consequently, the

possibility of the criminal prosecution of individuals within organizations is anticipated to significantly decrease the prevalence of criminal behaviour in organizations(Macey, 1991). Managers are assumed to be significantly more risk-averse than shareholders as a result of their vulnerability to criminal prosecution, if found to have engaged in criminal behaviour within the organization.The under-provision of workplace health and safety could constitute such criminal activity. Thus, according to Macey's reasoning, managers and overseers of work should have a significantly greater incentive to provide an adequate amount of safety than shareholders faced with only limited liability. Consequently, it is "against [the individuals acting in the organization] that the primary criminal sanction should be levied," rather than on the organization (Macey, 1991). However, given that shareholders would have an incentive to hire managers that are more willing to engage in criminal activity and that accidents can be result of a summation of oversights by individuals within the organization, criminal prosecution of organizations is still recommended (Macey, 1991).

Due to the fact that the benefits of criminal activity is likely to be more fully reaped by the manager in the context of a smaller firm, Macey (1991) predicts that the amount of organizational crime should increase in smaller firms and decrease in larger firms. Additionally, criminal activity would be more expected in firms that are just barely viable, as managers have more to lose from not engaging in criminal activity, such as their job and benefits.

Optimal penalty theory observes that "the penalty for a crime represents

the social loss created by the offence adjusted to reflect the probability that the offender will escape detection." If one applies this theory to the appropriate punishment in the event of a workplace fatality, under which detection can reasonably be assumed to be 100%, the optimal penalty would be set at the level of social loss from the death. However, Macey discusses that this analysis is only relevant in the context of risk-neutrality of all involved parties. Given managers and supervisors' risk-averseness, the appropriate penalty would be lower than that found by optimal penalty theory, as it could result in excessive provision of safety. Thus, in the context of risk-averse agents, the criminal punishment should be set lower than the harm incurred by the accident, in order to prevent the over-provision of workplace safety, which could reduce an economy's overall productivity and efficiency.

Joel Waldfogel also looked at optimal penalty theory, however focusing on its prediction, as is found in Beckers study, that fines will be used as much as possible before incarceration is used as punishment. This is because fines are costless and incarceration has significant social costs. He studied penalties against federal fraud offenders in 1984 to understand the judicial rationale behind punishments. Fraud offenders would be comparable offenders to individuals charged with criminal negligence under section 217.1 as they would both be assumed to have a reasonable ability to pay fines and incarceration terms are unlikely to serve a deterrence/rehabilitative function. This is because it is improbable that they would be deemed a hazard to the general public's safety, if left free. As he describes, the "efficiency rationale conceives

of fines and prison terms as substitutable inputs chosen to minimize the cost of producing punishment." (Waldfogel, 1995) Alternative rationales, such as justness and ability-to-pay consider fines and prison terms independently, rather than as substitutes. Waldfogel found that prison terms depend on the level of harm caused by the offenders whereas fines depend more strongly on the offender's ability to pay. As is obvious from the review of the case law surrounding Section 217.1 of the *Canadian Criminal Code*, judges consider the offender's ability to pay when setting penalties. Thus, the judiciary does not solely seek to satisfy the efficiency criteria in setting offenders' punishments. However, Waldfogel finds that empirical evidence of the American judicial system provides evidence that prison sentences demonstrate considerations relating more to efficiency than justice. The lack of prison terms served by those convicted of criminal negligence relating to workplace health and safety may demonstrate Waldfogel's finding that the judiciary still weighs strongly efficiency considerations when setting penalties. These previous analyses all consider fines to be costless or near costless to society for the courts to impose on those convicted of criminal charges, while considering incarceration terms to bear a significant social cost. This paper will look at the cost imposed by fines when they adversely impact a firm's ability to remain in business. This can represent a great cost to society through increases in unemployment, lost contracts, and decaying capital. The model will take into account these costs and seek to explain the lack of incarceration charges and dependency on fines in face of these costs.

3 Model

3.1 The Problem of the Firm

In this subsection, we are interested in looking at whether the optimal amount of safety can be provided in a context in which fines are the only policy tool available for courts to impose on firms. To do this, we can look at a firm's optimal behaviour, as corporations cannot be imprisoned. From there, we can observe whether or not the threat of a fine can sufficiently motivate a firm to provide the efficient level of safety in its workplace.

We will assume a two-period game in which we have a profit-maximizing firm unilaterally setting the level of safety in the firm. The firm's employees' behaviour is assumed to have no impact on the level of safety. As the level of safety increases, the level of production decreases. We assume a fixed number of workers in both periods, with labour being the only input to production. The value of the firm incorporates both existing assets and profits anticipated in the next period.

$$V = A_0 + \pi_1 \tag{1}$$

The social planner seeks to maximize the following:

$$max \quad \pi(s) \tag{2}$$

Where

$$max \quad \pi(s) = p(s)[Q(s) - h] + [1 - p(s)][Q(s)] \tag{3}$$

Q(s) is the production function, p(s) represents the probability of an accident taking place, and h represents the harm incurred in the event of an accident. Fines and wages do not appear in the profit-maximization problem because they represent a pure transfer.

It should be noted that safety has been included as part of the production function. Instead of explicitly subtracting the cost of providing a certain level of safety, it is assumed that as safety increases, the level of production decreases. Consequently, higher safety levels will decrease firm profitability by reducing its output.

Solving the first-order condition for the social planner, with respect to the level of safety, it is found that the optimal fine would be set equal to the level of harm.

$$\max_s \quad \pi(s) = p(s)[Q(s) - h] + [1 - p(s)][Q(s)] \tag{4}$$

$$\frac{\partial \pi(s)}{\partial s} = p'(s)[Q(s) - h] + Q'(s)p(s) - p'(s)[Q(s)] + Q'(s)[1 + p(s)] \tag{5}$$

$$-p'(s)h + Q'(s) = 0 \tag{6}$$

$$Q'(s) = p'(s)h \tag{7}$$

The above equation states the marginal condition at which the social planner would choose to set the level of safety so that the marginal benefit of s (by decreasing the probability of an accident and harm occurring) equates with the marginal cost of s (by reducing the output of the firm through the

production function).

A profit-maximizing firm would seek to maximize their profits, given the expected legal penalty if an accident takes place. We assume their profit function to be similar to that of the social planner, except that the firm will be concerned about the size of the fine rather than the harm caused in the event of a workplace accident.

$$\max_s \quad \pi(s) = p(s)[Q(s) - w - F] + [1 - p(s)][Q(s) - w] \tag{8}$$

Where F is the fine a judge would allot to the firm if a workplace accident occurs and w represents the workers' wages.

Simple math leads us to a similar first-order condition to the one seen above, except that harm level is replaced by the fine.

$$Q'(s) = p'(s)F \tag{9}$$

Thus, the profit maximizing firm would choose to provide safety at the level at which the marginal benefit of s (reducing the probability of an accident occurring and a fine being payable) equals the marginal cost of s (by reducing the output of the firm through the production function).

It is obvious from equations (7) and (9) that the fine should optimally be set equal to the level of harm, to garner the efficient provision of safety in the workplace.

$$Q'(s) = p'(s)F = p'(s)h = Q'(s) \tag{10}$$

$$p'(s)F = p'(s)h \tag{11}$$

$$F = h \tag{12}$$

The social planner would set the optimal fine at the level of the harm that occurs in the face of a worker death. W. Kip Viscusi looked at a number of previous estimates of the implicit value of human life and finds the median to equal approximately $7 million (Viscusi, 2008). However, given that firms often have available resources that lie far below that amount, fines set equal to this value would frequently cause firm bankruptcy. This means that there is effectively a lower bound to the costs of worker fatalities facing most firms as, if they declare bankruptcy, they will not be responsible for the amount of the fine beyond their available resources. The judicial decision in *R. v. Fantini* (2005) mentions the size of the firm as relevant when setting the level of the fine, as its resource level had to be considered given how it impacts their ability to pay the assigned fine and remain in business. Additionally, as is found in the *R. v. Transpavé inc.* judgment, the judge discussed the relevance of the firm staying open when setting the fine level. This is because the judge considered the other families dependant on the firm for their livelihoods to be relevant when reaching a decision. Consequently, if we assume the judge to be a rational agent, he would set the fine equal to the level of existing assets, providing that the level of assets is smaller than $7 million. This would reduce the firms asset level to 0 (in the case of assets less than $7 million) but production would still continue in the next period. If the level of assets

is greater than the harm incurred, we assume that the judge would rationally set the fine equal to the harm level, as it is then possible for the firm to fully internalize the cost of their behaviour and remain in business in the next period. This finding supports Polinsky and Shavell's argument that fines should equal the wealth level of less wealthy individuals, while they should set at the social cost of the harmful behaviour for wealthier individuals.

Consider the addition of a bankruptcy constraint to the above model.

$$F \leq A_0 \tag{13}$$

If firms possess assets that value less than the harm incurred in the event of an accident then judges will set the fine equal to the level of assets. The firm's asset level will subsequently drop to 0, but production will continue in the next period because they will not be forced into bankruptcy from a fine. Thus, all firms that have asset levels below that of the harm incurred due to a workplace fatality will not fully account for the harm caused by the inadequate level of safety in their workplaces. This is because, if such an accident occurs, they are not responsible for a fine that is set equal to the harm level, but rather one that is set equal to their existing assets.

If fines were set at the level of the harm and firms had infinite resources available to them, the threat of fines could produce an environment in which the efficient level of safety was provided. However, the assumption of infinite resources is a significant stretch from reality. Canada maintains limited

liability for shareholders, meaning that shareholders are not liable for more money than their investment in the firm. Therefore, in the event of a firm bankruptcy, shareholders are not responsible for providing additional funds to cover the cost of the fine, in the event that the firm's available assets are insufficient to cover that cost. Consequently, it is likely that most firms face a lower bound of 0 (below which, they would declare bankruptcy), which would allow them to avoid the internalization of the full cost of the harm inflicted by their insufficient provision of safety. Additionally, for reasons discussed above, judges are apprehensive to set fines at levels that equate with the harm caused by worker injury and deaths. Thus, in a real world context, fines are frequently set below the level of harm caused in any given workplace accident. This means that employers will choose to spend a sub-optimal amount on the provision of health and safety in their workplaces because the punishment, in the case of a workplace accident, is set below its efficient level. While fines have the ability to motivate an efficient provision of workplace safety, the realities stated above prevent courts from allotting fines at an appropriate level, leaving fines an inadequate policy tool to motivate employers to provide an adequate level of health and safety.

An additional issue that is interesting to consider is the inability of tort law to address the issue of appropriately punishing corporations and individuals for negligent conduct relating to workplace health and safety. Employers can purchase commercial insurance coverage that will be responsible for covering both the legal fees related to arguing the case (the duty to defend)

and the penalty imposed on the corporation (the duty to indemnify) (White, Long, and Goh, 2004). Consequently, corporations and individuals would not fully face the cost of their actions, even if fines were set optimally, as insurance companies would cover these costs. The only cost that corporations could face would be higher insurance premiums. As criminal acts are excluded from commercial insurance coverage, corporations and individuals would be fully responsible for any legal costs and penalties assigned to them by the courts. Thus, the movement towards criminal convictions for inadequate workplace safety provision makes fines as effective as possible in the real world context. However, judicial apprehension towards setting fines optimally prevents fines from being fully effective in ensuring the optimal provision of workplace health and safety.

3.2 Executive Theory

Individuals in a corporation can be incarcerated if convicted with criminal negligence by the Canadian courts. Thus, executives and supervisors do not simply face the threat of fines but also the threat of the personal costs associated with serving jail terms such as lost income, loss of freedom, and the deterioration of their skills. This section will seek to seek to find whether the threat of incarceration can, at least partially, compensate for the inadequacy of fines in prompting an efficient level of workplace safety.

The executive is assumed to have an interest in the success and viability of the company through the portion of profits they receive as their salary.

They are assumed to be risk-neutral as they are assumed to receive both a significant portion of the benefits associated with the under-provision of workplace safety (through their wage) and the cost of such under-provision through their vulnerability to criminal prosecution. We assume those influences approximately offset each other, resulting in a relatively risk-neutral executive.

$$Executive\ salary = \alpha(\pi) \tag{14}$$

Where α is a number between 0 and 1 and represents the portion of firm profit received by the executive as the executive's compensation. Consequently, the wage ultimately received depends on the level of production of the firm, which, in turn, depends on the level of safety chosen by the executive. The executive will select the safety level so as to maximize their profits.

$$\max_s \quad \alpha\{p(s)[Q(s) - w - F] + [1 - p(s)][Q(s) - w]\} \tag{15}$$

$$\frac{\partial \pi(s)}{\partial s} = \alpha\{p'(s)[Q(s) - w - F] + Q'(s)p(s) - p'(s)[Q(s) - w] + Q'(s)[1 + p(s)]\} \tag{16}$$

$$\alpha[-p'(s)F + Q'(s)] = 0 \tag{17}$$

$$-p'(s)F + Q'(s) = 0 \tag{18}$$

$$Q'(s) = p'(s)F \tag{19}$$

The first-order condition remains identical to that of the firm's problem. If the problem persists that fines are not set at the efficient level equal to the harm incurred, then the optimal level of safety will not be provided.

Consider an alternative environment in which jail terms can be assigned to the courts if they deem an executive to have provided an inadequate amount of safety in the workplace. We will assume that the organization will not receive a fine in the event of an accident, as the court will choose to impose a jail term on the executive instead. Thus, the problem facing the executive becomes:

$$max_s \;\; \alpha(\pi) - p(s)I \tag{20}$$

Where I represents the disutility associated with an incarceration term that is served in the event of a workplace accident.

$$max_s \;\; \alpha(Q(s) - w) - p(s)I \tag{21}$$

$$\tfrac{\partial}{\partial s} = \alpha Q'(s) - p'(s)I \tag{22}$$

$$Q'(s)\alpha = p'(s)I \tag{23}$$

The first-order condition demonstrates that the executive will set the level of safety so as to ensure that the marginal benefit of providing an additional unit of safety (as it reduces the likelihood of incarceration) equals its marginal cost (as his wage is effectively reduced due to reduced production levels).

Thus, the efficient imprisonment term would be set such that:

$$I = (\alpha)h \tag{24}$$

If the α is quite small then the executive only receives a small portion of the company's profits. Consequently, the penalty threatened by the courts, in the event of a workplace accident, can be significantly smaller than if the executive received the entirety of the profits. This finding could encourage courts to be more lenient with the penalties they assign to individuals found guilty under Section 217.1 of the *Canadian Criminal Code*.

Providing that an incarceration term can reach this level (ie. life imprisonment would provide *at least* this amount of disutility to the executive), then an optimal penalty is available to the judiciary and an efficient level of workplace safety can be reached. It seems reasonable that this level of disutility from imprisonment could be reached as firm owners and executives are among the wealthier individuals in a given population and it is well-accepted that jail terms elicit greater disutility from wealthier individuals than from less wealthy individuals (Polinsky and Shavell, 1984). Consequently, if we assume incarceration terms can provide individuals with the appropriate amount of disutility, then the threat of incarceration can motivate an optimal provision of workplace safety that fines alone, for reasons discussed earlier, cannot.

Additionally, it seems possible that incarceration terms for wealthier individuals could act as a more efficient and preferred penalty if a short incarcer-

ation term can provide a level of disutility significant enough to compensate for a large fine. While incarceration charges are typically assumed to be more socially costly than fines, if we allow for the possibility of firm bankruptcy, it is possible that a brief incarceration charge could be less socially costly than a fine that would result in the closing of the firm.

4 Explanations for the Scarcity of Incarceration Penalties

The findings from our model above suggest that incarceration terms can be an efficient penalty if judges remain hesitant and unwilling to set fines equal to the harm level resulting from the workplace fatality. Why, then, has an incarceration term yet to be served by an individual convicted of criminal negligence relating to the provision of an inadequate level of workplace safety? This section discusses possible explanations for this reality.

4.1 Executive behaviour in setting workplace safety levels

Executives who are fronted with the possibility of incarceration terms could be motivated to provide the minimum level of workplace health and safety necessary to avoid a jail term in the event of an accident. Organizations and executives are likely to look at the existent case law and adjust their

behaviour to just avoid a criminal sentence. It is possible, in reading the judgments in various related cases, to establish an approximate point at which a corporation or individual could avoid imprisonment and, instead, face a fine. A rational agent is likely to consider this when setting a level of workplace health and safety.

Any level of safety provided short of the level ensuring the probability of an accident is 0 (which is potentially non-existent in certain, particularly dangerous, industries), still leaves room for the possibility of an accident resulting in a worker fatality. In the event of a workplace accident, corporations and certain individuals encounter the reality that they could face charges under the *Canadian Criminal Code*. If the accused feel that the level of workplace health and safety provided prior to the accident could be considered negligent, they may choose to make extraordinary efforts to improve the firm's health and safety in the aftermath of the accident, in order to discourage the judge from assigning them with a very severe penalty. Judges have in the past considered firm behaviour after the occurrence of a workplace accident when selecting the appropriate penalty, as demonstrated in the *Transpavé* judgment. Consequently, it is likely that corporations and executives would go through quite strenuous lengths after an accident if they believe an imprisonment term would be assigned to them based on their prior behaviour. This practice would be exacerbated by the *Transpavé* judgment, as corporations have tangible evidence that post-accident behaviour can alter a case's outcome. Thus, rational behaviour on behalf of corporations and executives

may be able to explain why incarceration terms have rarely been assigned as penalties in criminal negligence cases relating to workplace safety.

4.2 Court opinion on the definition of harm

Viscusi's estimate of the cost of a human life as approximately $7 million might not be the social cost considered by the courts of a worker fatality. Judges, particularly in the environment of the Canadian judicial system in which relatively small settlements are typical, may choose to look a significantly smaller number than that estimated by Viscusi. It is also possible that courts consider the "danger pay" that is incorporated in the higher worker compensation in dangerous industries as a form of "pre-payment" of a fine by firms. This is because they are continually paying employees a higher wage due to the elevated possibility of injury or death by working at their firm, compared to firms in safer industries. Additionally, the decision of workers to take employment in danger industries could reflect their lower willingness to pay for greater workplace safety and risk-loving nature, which then could reflect a lower personal value set on their health and well-being. Judges may consider this argument when looking at the social cost imposed by an accident and the appropriate fine level to be set as a result of it. While these points could be interpreted as cynical and inhumane, they are interesting factors that could be recognized by judges when setting punishments.

The wage received by workers in dangerous industries, however, should *not* necessarily be considered a true reflection of their willingness to pay

for the provision of greater workplace safety. While economics provides no formal distinction between ability to pay and willingness to pay, it is important to consider that willingness to pay for harm reduction through a greater provision of workplace safety may not be an appropriate measure of harm incurred when those involved stem from the less wealthy echelons of society. The measure of willingness to pay, as it is used in economics, is constrained by an individual's budget constraint. Consequently, judges should avoid considerations that involve assume workers in dangerous industries are risk-loving and have a lower willingness to pay for safety and thus, justify smaller punishments on those grounds. The "actual" harm incurred could be more appropriately measured by the harm to society felt through others' empathy and upset stemming from the workplace accident.

4.3 Different burden of proofs

While it is possible for individuals and corporations to be convicted under both provincial OHSA laws and the *Canadian Criminal Code*, it is extremely rare and far more difficult for a Crown attorney to successfully pursue. This stems largely from the argument that the judiciary will consider punishments already allotted to corporations and individuals and they will rarely choose to assign a "double" penalty. Consequently, it is possible that Crown considers that "provincial occupational health and safety offences are strict liability offices and, accordingly, the Crown has a lower onus than in respect of a *Criminal Code* offence." (Francis, 2012) Thus, it is possible that fewer charges are

pressed under Section 217.1 of *Canadian Criminal Code* than would be the case if charges could not also be placed under provincial OHSA laws. This would help to explain the rarity of criminal convictions and, subsequently, incarceration terms assigned.

4.4 To prevent the over-provision of workplace safety

If Macey's (1991) argument concerning the risk-averseness of managers and overseers of work and the findings in equation (24) are correct, then the courts would be interested in setting the punishment level below that of the social harm incurred in the event of workplace death. Since incarceration provides a great deal of disutility for the guilty, the courts may see that imposing jail terms on offenders would increase the threat of incarceration and push managers and work supervisors to provide more workplace safety than efficiency demands. Judges may seek to prevent this inefficiency in the economy by assigning fines instead of incarceration terms. This would also help to explain why fines are set at a level far below the social cost of a worker death.

4.5 Insurance coverage of legal costs under civil prosecutions

Commercial coverage provides for the duty to defend in the case of a civil charge. However, this same duty to defend would not normally extend to

cases involving allegations of criminal behaviour (White, Long, and Goh, 2004). Consequently, organizations and individuals could be left without insurance coverage for legal costs if charges are laid under Section 217.1 of the *Canadian Criminal Code*. The police, provincial authorities, and the Crown (ie. those deciding how to press charges) could be sensitive to this reality and choose to press civil charges so as to ensure corporations are insured by their commercial coverage. This tendency to prefer civil charges for their insurance coverage would be exacerbated if it was believed that a firm would go bankrupt from a fine. This is because the full fine would then not be paid by the firm, if they were fined under a criminal penalty and, thus, not covered by insurance. Consequently, the shortage of incarceration terms could be a result of a fewer criminal charges than would be the case if insurance also covered criminal penalties.

5 Conclusions

Pursuant to the amendments to Section 217.1 of the *Canadian Criminal Code*, the judiciary was given significantly greater latitude in imposing penalties on employers and individuals who do not demonstrate sufficient concern for workplace health and safety. The movement towards convictions under the *Criminal Code* implies that there is now no upper limit on the punishments that can be assigned to parties deemed guilty for criminal negligence. However, the judiciary has been reluctant to use this latitude and, rather,

has assigned penalties that appear to be quite conservative when considering estimates of the value of a human life.

As was found by Becker (1968) and Polinsky and Shavell (1984), given the lower social costs of assigning fines than incarceration charges, it is more efficient for penalties to be assigned through fines at the level of the social harm incurred than through incarceration terms, providing all agents are risk-neutral. However, judges have historically been unwilling to allot significant fines in the event of workplace fatalities for a variety of reasons including considerations of the future of the business, the offenders' ability to pay, and the firm's behaviour after the accident. Thus, if we assume that this resistance will continue into the future, we have found that incarceration terms, and the threat thereof, can help to compensate for fines' shortcomings. As wealthier individuals, a faction in which it seems reasonable to place the owners and executives of involved firms, typically derive great disutility from short incarceration terms, it seems possible that an incarceration term can force individuals to fully internalize the cost of their actions. Consequently, the threat of incarceration terms can stimulate an increase in workplace safety towards optimal levels that fines, at the level at which they have historically been set, cannot. Many businesses consider these relatively conservative fines a simple cost of doing business, so the threat of incarceration can inspire a more optimal level of workplace safety provided by firms.

The longer the courts continue without incarcerating an employer, the less credible the threat is that stems from the 2004 amendments to the *Canadian*

Criminal Code. If incarceration terms are continually avoided by judges as penalties for criminal negligence relating to workplace safety then the historical probability of serving a jail term decreases. Consequently, the threat posed by these amendments will likely decrease and its effectiveness in motivating a higher level of workplace safety would decrease. The labour movement will likely continue their movement arguing for tougher sentences on corporations and executives demonstrating unsatisfactory concern for worker safety. They will argue for a penalty based on "justice" for the crime, not solely based on efficiency or ability to pay arguments. Whether the judiciary are swayed by this movement will determine future workplace safety levels as it will affect the credibility of the incarceration threat on corporations and individuals within corporations responsible for setting safety levels.

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