DEPARTMENT OF ECONOMICS AND FINANCE

SCHOOL OF BUSINESS AND ECONOMICS

UNIVERSITY OF CANTERBURY

CHRISTCHURCH, NEW ZEALAND

The Composition of Health and Safety in Employment Sentences in New Zealand: An Empirical Analysis

Andrea Menclova and Alan Woodfield

WORKING PAPER

No. 13/2013

Department of Economics and Finance

School of Business and Economics

University of Canterbury

Private Bag 4800, Christchurch

New Zealand

WORKING PAPER No. 13/2013

The Composition of Health and Safety in Employment Sentences in New Zealand: An Empirical Analysis

Andrea Menclova[1] and Alan Woodfield[1*]

29/04/2013

Abstract: Sentences for employers convicted of offences under NZ health and safety in employment law have been subject to constraints from two main sources (i) legislation; and (ii) guideline judgment cases. This paper analyses the determinants of HSE offences over the period following the introduction of the De Spa Guidelines in March 1994 to the Hanham & Philp Guideline judgment in December 2008, and also splits the period to account for the implementation of the Sentencing Act 2002 and the HSE Amendment Act 2002. Among the De Spa Guidelines we find that the level of harm in particular, and employer culpability are not only consistently represented among significant determinants of HSE sentences in respect of fines and total liability faced by employers, but also emerge as important determinants of awards to accident victims. These results hold at the single s 6 charge level and at the case level, as well as for alternative specifications of our estimating model. Considering the two periods separately, we find that estimated coefficients are considerably larger in magnitude for the latter period. Results for the remaining De Spa factors and case-specific facts are less robust, although a defendant's financial limitations provides a consistent and sizable fine discount, and several others also regularly appear as systematic HSE sentencing determinants.

Keywords: Health & Safety Offences, Judicial Guidelines, Sentencing Determinants.

JEL Categories: K32

Acknowledgements: Our thanks to Grace Lee for her excellent research assistance and the (former) Department of Labour for providing primary data on HSE prosecutions and continued access to many judicial decisions, sentencing notes, and returns on prosecutions. Particular thanks to Tim Beverstock, Mike Hargreaves, Ross Hill, George Mason, and Rex Moir for locating and clarifying interpretations of the data. Our thanks also go to the College of Business and Economics at the University of Canterbury for financial support from their Contestable Research Fund. Any errors, naturally, are ours.

1. Department of Economics and Finance, University of Canterbury, Private Bag 4800, Christchurch, New Zealand.

* Corresponding Author: e-mail: alan.woodfield@canterbury.ac.nz, phone: (+64-3) 364 2631. Fax: (+64-3) 364 2635

WORKING PAPER No. 13/2013

The Composition of Health and Safety in Employment Sentences in New Zealand: An Empirical Analysis

1. Introduction.

Sentences for employers convicted of offences under the Health and Safety in Employment ("HSE") Act 1992 in New Zealand ("NZ") have been subject to constraints from two main sources. The first are those imposed by the legislature, viz., the HSE Act and its amendments, and the Sentencing Act 2002. The second are the guideline judgments in two Full Bench High Court appeal cases; viz., *De Spa*[1] and *Hanham & Philp*[2], both of which involved successful appeals against sentences by the (then) NZ Department of Labour.[3] In *De Spa*, the convicted employer's fine was raised by 130%, and nine sentencing criteria to which frequent reference has been made in subsequent sentencing decisions were specified. The *De Spa* Guidelines were later codified with only minor changes in s 51(A) of the HSE Act following its amendments in 2002. *Hanham & Philp* involved appeals in three cases considered together, and both fines and reparations were generally increased significantly, in part a belated response to a five-fold increase in the maximum fine introduced in the HSE Amendment Act 2002. In addition, several ranges of substantial sentencing starting points were established.

While a major purpose of sentencing guidelines is the promotion of sentencing consistency for similar offending,[4] it has been argued that little attempt is made in NZ guideline judgments to analyse, categorise, and weigh the various factors deemed to be relevant to sentencing.[5] In this respect, the *De Spa* Guidelines are typical in that they merely constituted the following (non-exhaustive) list of identified relevant sentencing factors: (1) the degree of culpability; (2) the degree of harm resulting; (3) the financial circumstances of the offender; (4) the attitude of the offender, including remorse, co-operation, and taking remedial action; (5) any guilty plea; (6) the need for deterrence, both particular and general; (7) compensation to the victim under s 28 Criminal Justice Act 1985; (8) the employer's safety record; and (9) the facts of the particular case. No direct indication was given as to whether these factors were listed in any particular order of importance, nor whether different weights should have been applied to the various criteria. Not even the signs of the effects of the various criteria on penalties were provided,

1. *Department of Labour v De Spa and Co Ltd*. [1994] 1 ERNZ 339.
2. *Department of Labour v Hanham & Philp Contractors Limited & Ors* [2008] 6 NZELR 79.
3. Incorporated in the Ministry of Business, Innovation and Technology on 1 July, 2012.
4. Cf., Sentencing – Courts of New Zealand, http://www.courtsofnz.govt.nz/about/system/role/sentencing.html, accessed 18_02_2009, and s 8 Sentencing Act 2002.
5. Cf., Hall (2009 at I.2.2(c)).

although these may be implicit in general NZ sentencing principles.[6] Further, while guideline judgments typically establish sentencing ranges for particular offences, the judgment in *De Spa* did not do so (although an indication of what was considered a likely appeal-proof upper bound for the penalty was provided).[7]

In a previous article, we examined empirically the NZ District Courts' sentencing criteria and the associated financial liability in terms of fines and reparation awards for employers convicted of offences under the HSE Act between March 1994 and June 2007.[8] We focused on s 6 offences that were by far the most common, and also examined the aggregation of sentences to the case level in order to be able to investigate all multiple-charge and/or multiple-victim cases. The data were also stratified into two time periods: before the implementation of the Sentencing Act (i.e., prior to 30 June 2002) and after the commencement of the HSE Amendment Act 2002 (i.e., after 5 May 2003). Various specifications of a single-equation linear (and log-linear) OLS model were estimated, including a 'baseline' model incorporating proxies for the case characteristics listed in *De Spa* (excluding factors 7 and 9) together with the Consumer Price Index and annual time dummies, and a 'full' model that included several 'facts of the particular case' (the presence of voluntary employer payments to victims, attendance at a restorative justice conference, employee breach of duty, and employer size) and District Court (or District Court judge) binary variables. We also allowed for interactive effects of the explanatory variables, and included the number of charges as an explanatory variable for the case-level analysis.

A number of statistically significant results persisted across these various specifications. For example, we showed that financial liability for employers increased with the degrees of culpability and harm, and with the need for particular deterrence. The most significant mitigating factors seemed to be the defendant's financial limitations and small employer size. Other variables, such as a 'guilty' plea, cooperation, or the need for general deterrence did not seem to play a significant role. For the case-level estimations, the number of charges was a significant predictor of financial liability imposed for the entire period and for the earlier period considered separately. Regarding the separate-period estimates, the most obvious pattern was that the (absolute) sizes of the significant coefficients were much larger in the more recent period indicating that the monetary penalties/discounts associated with various case characteristics have increased substantially over time. Notably, the estimated models exhibited quite high explanatory power.

The present article empirically examines the extent to which the above determinants of HSE sentencing apply to total financial liability and to its divisions between fines not awarded to

6. Cf., Hall (2009, section I).
7. Since *De Spa* was a relatively early case in terms of administration of the HSE Act, the High Court judges may have had few similar cases to which reference might have been made in order to establish sentencing ranges. Starting points in health and safety sentencing, however, were considered to be potentially misleading. In their view, the sole merit of a starting point was to indicate the magnitude of any discount for a plea of guilty.
8. Cf., Menclova and Woodfield (2011).

victims and awards to victims (including fines awarded to victims and reparations) over the entire post *De Spa* – pre *Hanham & Philp* period and in the separate periods comprising the post *De Spa* – Sentencing Act 2002 period and the post HSE Amendment Act 2002 – pre *Hanham & Philp* period.[9] A major overall result is that while both components of sentences have some common factors (levels of harm to victims in particular and, to a lesser extent, levels of employer culpability), a number of other determinants of these components differ. For example, these include financial limitations and particular deterrence as significant determinants of fines but not of awards to victims, and it is usually the case that the number of significant determinants of the level of fines exceeds those for victim awards.

The article is organised as follows. Section 2 discusses the sentencing behavior we expected to find in each of the two sub-periods, while section 3 describes the HSE offence data used in this study. Section 4 provides a detailed examination of estimations of the baseline and full models in respect of fines not awarded to victims and awards to victims for the complete period and for periods 1 and 2 considered separately. Some brief concluding remarks are included in Section 5.

2. Expected Sub-period Sentencing Behaviour.

At face value, it might have been expected that for the sub-period estimates, the explanatory power of the model should have been superior for the earlier period. The periods are basically separated by two related pieces of legislation that created fundamental structural shifts in the HSE sentencing process. First, and noting that there is no minimum fine for HSE offences, in the first decade of the application of the HSE Act the maximum fine that could be imposed was $50,000[10] for the vast majority of offences involving non-compliance with various provisions of the Act.[11] Subsequently, a strong signal to the Courts to significantly increase penalties was provided by a fivefold increase in maximum penalties in the amended HSE Act. Section 51(A) of the amended Act, however, also required the Courts to pay particular regard to sections 7–10 of the (over-riding) Sentencing Act dealing with the purposes and principles of sentencing, and to the requirements of s 35 and s 40.

The Sentencing Act repealed s 28 of the Criminal Justice Act 1985 which had permitted payment of all or part of any fine to a victim of an offence suffering physical or emotional harm at the judge's discretion. A new sentence of reparation that could be awarded when a victim suffered loss or damage to property, emotional harm, or loss or damage consequential on any emotional

9. For analysis of the post *Hanham & Philp* era in comparison to period 2 as defined in the present paper, see Woodfield, Hickson and Menclova (2013a, 2013b).
10. All financial amounts are in New Zealand dollars (denoted '$').
11. Hall (2009 at [I.1.1]) argued that maximum penalties are reserved for the most serious offences of their type and offer little guidance to sentencing judges, and also noted (at [I.1.4]) that the statutory language of the Sentencing Act "is frequently expressed in such general terms that it does not place any substantial fetter upon the sentencing discretion."

or physical harm, or loss or damage to property, was introduced. Courts are generally required to impose a sentence of reparation where applicable, and reparation can also be imposed in conjunction with other sentences. Unlike fines for HSE Act offences, reparation awards are not capped. If an offender can meet reparation but not fine payments, reparation takes precedence, while, under s 35, the Courts can discount losses or provide time to pay where the offender is impecunious. Further, under s 40, if reparation is ordered, the Court must take its magnitude into account in assessing the level of any fine imposed.

The interpretation of s 40 proved to be contentious. Gordon and Woodfield (2006), for example, argued that the Courts initially appeared reluctant to increase total financial liabilities much at all, and fines were substantially substituted by reparation awards. Although more recent evidence suggested that liability levels were increasing markedly, they remained well below the levels signalled by legislation. Gordon and Woodfield (2007) argued that such substitution had deleterious effects on precautionary incentives and consequently undermined the amended legislation. Mason (2008), drawing on comments by Harrison J in *Police v Ferrier* HC Auckland CRI-2003-404-000195 18 November 2003 (at [15]), argued that reparation is intended to be restorative rather than punitive and attempts to right a wrong, whereas fines are essentially punitive in nature. Mason was strongly critical of the Courts in respect of the level of discounting of fines to the point where they had frequently become almost trivial percentages of total financial liabilities, and where effective liability for reparation had been substantially eroded via the purchase of reparation insurance.[12] Hall (2009 at I.3.5) also raised doubt as to whether "true" reparation should be classified as punishment rather than constituting the equivalent of civil damages. In this interpretation, assuming an employer is found liable, reparation should presumably reflect the extent of (non-physical) harms suffered by victims.[13] In spite of its primacy, reparation is then properly seen as a complement to fines rather than a substitute, and it would not be appropriate for Courts to relegate fines to being a mere residual so as to satisfy a "totality principle" requiring the overall severity of a sentence to be proportionate to the level of offending.[14]

Mason (2008), however, went further, arguing that "totality" in context referred only to the penal component of a sentence. Although admitting to "an element of deterrence" in compensatory liability, its effects were downplayed in comparison to those available via uninsurable fines. In contrast, Clark (2008) noted that the compensatory purpose of reparation does not imply that

12. Mason was particularly concerned about the serious dilution of the deterrence objective resulting from heavy discounting of fines. In his view (at 40), the fault was less with the legislation than "… with how it has been applied and in the probity (or lack thereof) of the process undertaken by judges to reconcile reparation paid with the fine to be imposed in constituting the overall level of penalty."
13. Partial compensation for physical harms is available under NZ's accident compensation legislation and civil claims are generally barred.
14. As outlined in *Department of Labour v Ferrier Woolscours (Canterbury) Ltd* [2005] DCR 356, the source of the "two-step" approach in HSE sentencing.

reparation awards have no punitive or deterrent effect. In Menclova and Woodfield (2011), we took a similar view. Thus, whatever the intent of a sentence, our focus was on the severity of the overall sentence as far as incentives were concerned, and as a working hypothesis we effectively treated total financial liability as a monetary penalty.

As far as sentencing variability is concerned, the widespread awarding of reparations at significant levels, *ceteris paribus*, should have been expected to lead to a greater level of unexplained sentencing variation since the extent of (non-physical) harms to be compensated would be expected to be highly variable across cases and no formal guidelines exist with respect to such awards.[15]

In what follows, three time periods are investigated. One is termed the 'complete' period, following the *De Spa* appeal decision on 23 March 1994 through to the *Hanham & Philp* appeal decision on 18 December 2008. The others are described as follows.

Period 1 (23 March 1994 – 31 May 2002).

This period covers cases following the *De Spa* appeal decision through to the date at which the Sentencing Act commenced. During this period, reparations could be awarded under s 22 CJA but were rarely used (1% of cases). Sentencing factor 7 of the *De Spa* Guidelines made specific reference to s 28 CJA in respect of victim compensation, and whole or partial awards of fines to victims became the first port of call for compensatory payments. Fines were capped at $50,000 and judges had discretion regarding awards to victims. Where a fine was imposed, no award was made to victims in 28% of cases, and District Court judges were obliged to set the level of a fine prior to deciding whether to award any part to the victim.[16]

Caps on fines (especially at low levels) together with the rarity of reparation awards tended to encourage consistency in penalty setting since it prevented high upper levels on sentences and as we know, the maximum fine was never approached in this (or any other) period in any case.

15. Some criteria were outlined by Harrison J. in *Ferrier*. These include: (1) the judge must fix the amount of reparation on a stand-alone basis, i.e., solely by reference to the amount that is properly claimable and the means of the offender; (2) the judge must then determine whether any additional penalty by way of a fine should be imposed, with the amount of the reparation sentence being taken into account in assessing the quantum of the fine. Harrison J. noted (at [15]) that it is inappropriate to apply a totality principle in fixing the amount of a reparation sentence, and the only point at which any issue of totality can become relevant is in terms of s 40(4) Sentencing Act when, after reparation has been fixed, the amount of the fine requires determination. This does not provide guidance as to how the amount of reparation should be set, i.e., what is "properly claimable," and neither does it specify what is meant precisely by "taking into account the amount of reparation" when subsequently setting the fine.
16. According to the High Court decision in *Debro Transport v Department of Labour* [1995] ELB 121.

Period 2 (5 May 2003 – 18 December 2008).

This period covers cases after the date from which both the Sentencing Act and HSE Act amendments jointly applied through to the decision/sentencing date for *Hanham & Philp*. During this period, the *De Spa* Guidelines (as codified by, and in conjunction with, the Sentencing Act) continued to apply except that fines could no longer be awarded to victims and (uncapped) reparations were required to be awarded where applicable.[17] The two-step sentencing principle outlined in *Ferrier Woolscours* was generally adopted, and claims of dollar-for-dollar discounting of fines by reparations were widely accepted. Fines seemed to have become a residual, of limited quantitative importance in many major cases where employers were financially capable of meeting significant levels of liability, in some cases because they carried reparation insurance.

Reparations in this period tended to encourage variability in the total sentence for three main reasons. First, unlike fines previously awarded to victims, reparations are uncapped. Reparations are required to be routinely awarded, however, and were awarded in 93% of cases during the period. Second, reparations could be awarded in more circumstances (including consequential losses, augmenting accident compensation payments, and to a widely-defined group of family members in the case of fatal accidents) than could fines in period 1. Third, and unlike fines, there are no separate sentencing guidelines comparable to *De Spa* available for reparations. Mason (2008, at 35) noted that while average reparations had remained uniformly consistent over a period of five years, this was "despite the fact that generally such sentences lack any coherent or logical basis in the calculation of reparation for emotional harm or loss or damage consequent on emotional or physical harm in the case of serious harm injuries or death."[18] Against these arguments, however, is the downgrading of fines to become a residual category satisfying a totality principle which may not have been all that different (especially in the earlier years) from period 1. Further, the available case-level information is much better and more complete in period 2 than in period 1. Finally, the provisions of the Sentencing Act and s 51(A) of the HSE Act largely maintained the *De Spa* Guidelines as sentencing factors in HSE cases generally.

17. Note that it was not uncommon during period 2 to include accident compensation 'top-ups' in reparation awards. An early post Sentencing Act example is *Department of Labour v University of Otago*, DC Dunedin, CRN 3012510001, 24 November 2003.
18. The judiciary are frequently at pains to emphasise the difficulties in setting the quantum of reparation payments and the lack of guidance in this regard. Thus, Judge Zohrab in *Department of Labour v Fletcher Concrete and Infrastructure Ltd*, DC Nelson, CRI-2009-042-001043, 20 August 2009, noting that he was "acutely conscious of the fact that consistency of sentencing is required," commented that "Other Judges have noted in various decisions, and have put it more eloquently than myself, that the quantification of loss of the type for emotional harm reparation is inherently intractable." It is evident that the *De Spa* criteria were not designed to provide such guidance.

3. HSE Offence Data.[19]

Our main dataset consists of coded charge-level information. The major source, provided by the (then) Department of Labour, contains a largely comprehensive list of successful prosecutions for HSE offences since inception of the HSE Act.[20] This database includes, *inter alia*, the amounts of any fines imposed and reparations awarded, along with case decisions and sentencing notes where available. Cases by judge were also identified.[21] The Department was also particularly helpful in tracking down and supplying copies of summaries of facts, judicial decisions, sentencing notes, and returns on prosecutions that were otherwise unavailable to us. In addition, the Safeguard CourtBase provided succinct summaries of each accident and returns on prosecutions for post-2002 cases (however, only since 2004/5 did the returns on prosecutions begin to include information on the sentencing factors). Returns on prosecutions were very useful where no decision/sentencing note was available for a particular case.

As in Menclova and Woodfield (2011), we measure an employer's total financial liability by the sum of all fines imposed and reparations awarded in each charge/case.[22] With respect to sentencing criteria, the data we code contains detailed information on the characteristics of each charge/case (such as the degrees of harm and culpability, employee breach of duty, and the presence of remedial action) and the defendant (such as the employer's safety record, need for particular deterrence, and financial limitations and size).[23] Using this information (where available), we create proxies for the case characteristics specified in the *De Spa* Guidelines that most closely resemble the categories typically used in case decisions and/or sentencing notes as follows.

1. The degree of culpability: we assign each charge/case into one of the following six culpability categories: 'low', 'low-medium', 'medium', 'medium-high', 'high', and 'unknown';
2. The degree of harm resulting: we use four mutually-exclusive categories of harm: 'low or medium', 'high', 'fatal', and 'unknown';
3. The financial circumstances of the offender: we use a binary variable to indicate the presence of a defendant's financial limitations;
4. The attitude of the offender, including remorse, co-operation, and taking remedial action: the presence of remorse, cooperation, and remedial action is indicated by three separate binary variables – one for each of the expressions of the offender's attitude;

19. Our discussion in this section closely follows section 5 in Menclova and Woodfield (2011) which frequently elaborates many points to which the reader is referred for details.
20. Department of Labour, *HSE.xls* (unpublished), Wellington.
21. Department of Labour, *Cases by Judge.xls* (unpublished), Wellington.
22. We do not include court costs in our measure of total financial liability for two reasons. Although we have comprehensive data on fines and reparations, there are many cases with missing information on cost awards. Also, there is no indication in the *De Spa* Guidelines that court costs should in a systematic manner depend on the characteristics of the case or the defendant.
23. Unfortunately, the quality of information available to us varies and we know relatively little about some of our early charges/cases.

5. Any guilty plea: indicated by a binary variable;
6. The need for deterrence: the need for deterrence is expressed by two binary variables indicating separately the 'need for particular deterrence' and the 'need for general deterrence';
7. Compensation to the victim under s 28 Criminal Justice Act 1985: the HC judges considered that the level of fine should be set prior to deciding if, and how much, of the fine would be awarded to the victim. Therefore, we do not include compensation to the victim as an explanatory variable in our models of the financial liability imposed;
8. The employer's safety record: we use six categories of the defendant's safety record: 'poor', 'previous convictions', 'no previous convictions', 'good', 'great', and 'unknown';
9. The facts of the particular case: in some of our models described below, we include additional characteristics of each case. Namely, we create separate binary variables for the presence of a voluntary payment, employer attendance at a restorative justice conference, and an employee breach of duty. We also express the size of the employer as: 'small', 'medium', 'large', or 'unknown'.[24] The number of physically harmed employees is also included. Finally, we indicate in which year the offence took place in order to account for a national trend in HSE sentencing including any structural shifts in sentencing after the implementation of the Sentencing Act 2002, the introduction of the HSE Act amendments, and the end of the relatively low-penalty 'honeymoon period'.

To obtain a proxy for the need for general deterrence (in addition to the judge's explicit recognition of such need), we merged our charge-level data with industry-level ACC new claims accident data and Household Labour Force Survey employment data to create ACC accident rates which were lagged by six months to mitigate potential problems of reverse causality. To account for the potential effects of price level changes on the nominal level of financial penalties imposed, we merged our charge-level dataset with Consumer Price Index data provided by Statistics New Zealand. We tried linear as well as logarithmic specifications. The results were very similar and so, for an ease of interpretation (especially with interacted explanatory variables), we only report CPI coefficients in the tables below.

Our master dataset includes 2,105 charges. Out of those, we initially focus on s 6 offences that are by far the most common (representing 49% of all charges in our dataset). Section 6 of the HSE Act states that "Every employer shall take all practicable steps to ensure the safety of employees while at work" and section 2A of the HSE Amendment Act qualifies "all practicable steps" as "all reasonably practicable steps". As such, a s 6 offence is a relatively general offence (unlike most criminal offences in New Zealand). We examine s 6 offences in order to limit ourselves to a reasonably coherent set of charges for which similar sentencing criteria might be

24. As expected, smaller employers are more likely to be subject to financial limitations but the correlation is far from perfect. While only one of the employers identified as 'large' is recorded as having financial limitations, 36% of 'small' and 'medium' employers have financial limitations recorded. Data on employer size, however, is limited.

expected. We only examine charges for an injury, limit ourselves to District Court cases, and study convictions without a discharge. For all of our charges, we identify which District Court and judge handled the case. The above restrictions leave us with 878 charge-level observations for which a s 6 charge was either the sole charge or listed in a multi-charge case with a sentence explicitly imposed on the s 6 component. In each of our model specifications (described in section 5 below), we use all observations for which all of the variables of interest (dependent and explanatory) can be constructed.[25]

To check how our model performs in multiple-charge and/or multiple-victim cases (including those without a s 6 offence), we also examine the aggregation of sentences to the case level. This analysis can address the concern that sentencing variability regarding s 6 charges arises in part because judges may attach the whole sentence to a single (often s 6) charge. Our inclusion criteria in the case-level analysis are similar to the charge-level analysis. Namely, we investigate cases which involved at least one injury, were handled by a District Court, and involved convictions without discharge (for each case, we aggregate all charges on which the defendant was convicted). The resulting case-level sample contains 1,167 observations and all observations for which the necessary variables can be constructed are used in each model specification.

4. Estimation Results.

To examine the effect of various sentencing criteria and other case characteristics on HSE sentencing variability, we estimate OLS versions of a 'baseline' linear model where total financial liability and its two components are separately regressed on a vector of specific sentencing factors from the *De Spa* Guidelines as interpreted by District Court judges, year binary variables, the Consumer Price Index, the number of employee accident victims, and include a normally distributed error term. In a second model, called the 'full' model, we add several other 'facts of the particular cases' (the presence of a voluntary payment, employer attendance at a restorative justice conference, employee breach of duty, employer size, and, for case-level analysis, the number of charges laid) and District Court binary variables. We also allow for some interactive effects of our explanatory variables.[26]

25. In charges/cases where information is incomplete, we code some charge/case characteristics as "unknown" and include these observations in our regression analysis. While we cannot draw any inference from our results on the "unknown" categories, this method enables us to at least preserve and use all the remaining (i.e., reported) characteristics of those charges/cases.
26. The models are similar to that used in Menclova and Woodfield (2011) except that we now include the variable measuring the number of directly harmed victims for each charge/case. This variable could be interpreted as a further refinement of the Courts' assessment of harm, and, *ceteris paribus*, we expect that sentence severity should be increasing in the number of victims. The estimated coefficients on the year binary variables, the District Court binary

Estimated OLS coefficients are reported in Tables 1-6, which are shown at the end of this paper. In each table, the specific case characteristics listed in the *De Spa* Guidelines are shaded. The notation ***, **, and * denote statistical significance at the 99%, 95%, and 90% confidence levels, respectively, while standard errors corrected for heteroskedasticity are reported in parentheses. We also conducted Tobit estimates that are qualitatively similar to OLS in each case and are not reported here, details being available from the authors on request.

4.1. Estimation Results for the Complete Period.

4.1.1(a). Complete Period Section 6 Results - Total Financial Liability.

Although we focus on the composition of sentences in this article, we also provide estimates for total financial liability for two reasons. The first is to provide comparisons with the results in Menclova and Woodfield (2011) that utilizes a shorter data period. The second is to provide a benchmark for comparison with the decomposition of total financial liability into its two components.

(Table 1 approximately here)

OLS estimation results for total financial liability utilizing all observations for the period post *De Spa* – pre *Hanham & Philp* are reported in Columns 1 & 2 of Table 1, and are similar to our previous findings for the shorter period (ending 30 June 2007).[27] First, focusing on estimates of the baseline model in Column 1, total financial liability for employers increases with the degree of culpability; e.g., compared to the medium culpability level, liability is $6,334 lower for medium-low culpability, $11,722 higher for medium-high culpability, and $14,700 higher for high culpability. Liability is also increasing in the level of harm. Compared to a high level of harm, low-medium harm attracts a discount of $3,061 while fatal harm attracts a premium of $22,033. These estimates are all highly significant. The need for particular deterrence raises liability by $5,646 although the estimated coefficient is only significant at the 90% level. A similar result is found for the number of victims, which raises liability by $4,482 on average for each additional victim. The only significant mitigating factor with the expected sign is the presence of a defendant's financial limitations, the discount for which is estimated to be $6,312 on average. Other variables from the *De Spa* list, including a plea of guilty, cooperation with the authorities following an accident, prompt remedial action, the need for general deterrence, and the quality of an employer's safety record do not appear to play a significant role although most of the estimated coefficient signs are as expected. The only apparently counterintuitive result

---

variables and their interactions with 'remorse', and the 'unknown' values of the explanatory variables generally, are not reported here.

27. Tobit results are similar to OLS results especially for total financial liabilities and fines where zero values are less common.

relates to claims of remorse. In the baseline model, employers pay a large, positive, and highly significant premium for expressions of remorse that Courts accept as being genuine. We return to this result in our later discussion.

Column 2 of Table 1 reports results for the full model. While the signs of the culpability variables are as expected, only low (relative to medium) culpability is even weakly significant, and although the level of harm continues to be positive and highly significant, the coefficient on fatal harm (relative to high harm) is less than half the value estimated by the baseline model. This is largely due to the fact that interactions of culpability and harm with remorse are also included in the model – as discussed shortly. The weakly significant role of particular deterrence is maintained across the two models, as is the CPI index, but mitigating factors now have no significant role except for a weakly significant estimated premium for previous convictions.

Regarding the variables representing the 'facts of the particular case,' a counterintuitive positive and large coefficient for employer attendance at a restorative justice conference is found but is only weakly significant. Observations on this variable are few and far between and we have little confidence in the result. The positive coefficient on voluntary payments is also counterintuitive, but is not significant, as is also the case for employee culpability and the ACC accident rate. Highly significant coefficients, however, are typically found for the employer size variables, with large discounts for small ($11,496) and medium ($8,128) sized firms compared to large firms.

Also reported are the results of including a limited number of interaction variables that might assist in the explanation of the surprising result found for remorse in the baseline model. When interactions of culpability and harm with remorse are included, both the highest levels of culpability and harm interacted with remorse have large and significant coefficients, indicating to us that the penalty for remorse is the highest in most serious (high culpability and/or harm) cases. The result is consistent with the presence of remorse signalling extreme seriousness within our broad culpability and harm categories.

In the following section, we report results of estimating baseline and full models for s 6 charges over the complete period, distinguishing between the two components of total financial liability, viz., fines not awarded to victims and awards of fines and reparations to victims.

4.1.1(b). Complete Period Section 6 Charges - Fines Not Awarded to Victims.

On the face of it, given that the *De Spa* criteria were carried over with only minor modifications when the Sentencing Act 2002 was implemented, the significant determinants of variability in the level of fines might have been expected to carry over in a fairly similar fashion to those of total financial liability. However, for period 1 observations, we remove any component of fines awarded to victims suffering physical or emotional harm under CJA s 28 as discretionary 'quasi-reparations' and assign these as a component of awards to victims. The latter also include the

rare awards of s 22 CJA reparations in period 1, along with the s 32 Sentencing Act reparations required to be routinely awarded (where relevant) during period 2.[28] Notably, fines imposed during period 2 were required to be subsequent to the awarding of reparations, and their levels were required to "take into account" the levels of reparation payments. Fines were relatively small in many circumstances including a number of cases (8%) where zero fines were imposed generally because of an employer's financial limitations. As a result, it would not have been surprising if estimation of the baseline and full models applied to fines not awarded to victims over the complete period had produced qualitatively dissimilar results from those for total financial liability.

The estimation results for fines not awarded to victims are reported in Columns 3-4 in Table 1. Dealing first with the baseline model, the estimated coefficient on fatal harm is highly significant. Compared to total financial liability, however, fines are much less affected by fatal harm, the coefficient being only 43% of the size of the coefficient for total liability. Similarly, the significant coefficient on high culpability is only 73% of that for total financial liability. The remaining coefficients on culpability, however, are of the expected sign but are small in magnitude and are not significant.

Regarding other factors, the estimated coefficient on the number of victims is weakly significant and similar in size to that for total liability. The coefficient on financial limitations is highly significant but is only 83% of the corresponding coefficient size for total liability. Unlike total liability, a safety record with previous convictions is significant as is the CPI (although its size is only 76% of the size of that for total liability). The coefficient on remorse is significant, but, as with total liability, has a positive sign (although only slightly more than half the magnitude for total liability). Other factors (including particular deterrence which is significant for total financial liability) have no significant impact on sentences.

Turning to the full model, while the coefficient on fatal harm continues to be highly significant, its magnitude is only 36% of that for total liability. None of the culpability variables, however, are even weakly significant for the full model, and the same holds for the number of victims. For the other factors, there is a highly significant estimated discount of $4,729 for financial limitations along with a highly significant sentencing premium of $5,639 (some 24% higher than for total liability) for a safety record with previous convictions. There is a surprising (but only weakly significant) substantial premium for voluntary payments made by defendants (a possible signal of guilt), and a weakly significant discount for small employers that is less than half of the corresponding magnitude for total liability. As with total liability, however, the interaction of high culpability and remorse produces a large premium that is similar in magnitude to that for total liability. The CPI coefficient is also significant, but somewhat smaller than that for total liability.

28. Some 70% of s 6 charges in period 1 involved awards of fines to victims while reparations were awarded in 4% of s 6 charges.

4.1.1.(c). Complete Period Section 6 Charges - Awards to Victims.

Although the legislative changes in 2002 had reversed the primacy of setting capped fines prior to making compensatory payments from these fines to victims in favour of uncapped reparations and had also widened the coverage of compensable victims, it seemed unlikely to us that other than the levels of employer culpability and harm, none of the remaining *De Spa* variables appeared as particularly likely candidates for being significant determinants of variability in awards to victims.[29]

The estimates for awards to victims for the complete period are reported in Columns 5-6 of Table 1. For the baseline model, both harm variables are highly significant, the coefficient on low-medium harm being similar in size to that for total liability. As with fines not awarded to victims, awards to victims also have a somewhat smaller coefficient on fatal harm (61% of that for total liability) but fatal harm is far more important for them than for fines. Increasing harm to its highest level drives compensatory aspects of sentences harder than the corresponding penal aspects. Further, and unlike fines, all culpability coefficients are at least weakly significant, with the coefficient on medium-high culpability over two and one-half times as large as that for high culpability which is somewhat surprising. Except for high culpability, these coefficients are also relatively large in magnitude. Overall, the baseline results suggest an important empirical role for the degree of employer blameworthiness in determining awards to victims in the complete period.

As expected, very few of the remaining factors are even weakly significant. There is, however, a (weakly significant) premium in excess of $4,000 for a poor safety record, while the (surprising) premium for remorse observed for total financial liabilities seems to be roughly equally split between fines and awards to victims.

In the full model, both harm variables are highly significant. For low-medium harm, the impact on awards to victims is estimated to be similar to that of the baseline model and also for both model estimates for total liability. For fatal harm, however, the impact is less than half that estimated for the baseline model and is only 64% of that estimated for total liability for the full model. The culpability variables appear weaker in explanatory power, with weak significance only for medium-high and high culpability and with the coefficient on the former variable more than twice the magnitude of the latter. For case-specific factors, small employer size yields a highly significant discount of $8,245 and a highly significant premium of $11,763 when fatal harm is interacted with remorse. On its own, there is a very small and statistically insignificant discount for remorse.

29. A more general approach to explaining determinants of awards to victims might include the number of victims to be compensated, the ages of the directly harmed victims and their dependants, the extent of any disability insurance carried by victims (or the employer on a victim's behalf), the victim's lost earnings and the like. We do not address this important issue in this paper, however.

4.1.2(a). Complete Period Case-Level - Total Financial Liability.

Case-level results for the complete period are reported in Table 2. Regarding total financial liability, the various culpability-level variables are typically of the expected signs although their degrees of significance are not consistent across the baseline and full models. For both models, however, both low-medium harm and fatal harm are of their expected sign and are highly significant, both models predicting liability discounts somewhat more than $4,000 for low-medium harm and premiums in the range $11,000 - $21,000 for fatal harm. While the number of victims remains insignificant in both models, the number of charges is highly significant implying an average penalty of above $3,000 per charge.

(Table 2 approximately here)

Both models also predict statistically significant premiums in excess of $7,000 for the need for particular deterrence, and significant discounts in excess of $6,000 for both financial limitations and a great safety record. A significant discount of approximately $4,000 for a plea of guilty is also found for both models. None of the remaining mitigating or aggravating factors, however, are consistently significant. Rather, very few such factors are significant in either model. A significant discount approaching $15,000 for being a small employer is also found while the weakly significant premium for attending a restorative justice conference seems counter-intuitive. Other facts particular to individual cases appear to have little explanatory power. The variables interacting culpability and harm with remorse, however, do much better in this regard, several yielding significant premiums approaching $15,000.

In the next section, we decompose case-level financial liability for the complete period.

4.1.2(b). Complete Period Case-Level - Fines Not Awarded to Victims.

Turning to the determinants of fines not awarded to victims, the effects of the culpability variables are statistically weaker than for total liability, with (the highly significant) high culpability variable in the baseline model the only example exhibiting more than even weak statistical significance. Fatal harm continues to exhibit a high level of significance, with predicted premiums in the range $3,000 - $7,000. The remaining factors, however, perform rather better than in the analysis of total liability. For example, both models predict statistically significant premiums of over $4,000 for the need for particular deterrence and also premiums in excess of $2,000 for the need for general deterrence. A great safety record continues to attract a significant discount, albeit about half the size of that for total liability, while a defendant's financial limitations attracts high significant discounts of similar magnitude to those for total liability. A similar result holds for the discounts for an early guilty plea. The full model has a significant negative coefficient for remorse and for being a small employer and a large premium in excess of $18,000 for the interaction of high culpability and remorse. A counterintuitive result, however, is a highly significant premium for the presence of voluntary payments. As for total liability, while the num-

ber of victims is insignificant, the number of charges is highly significant and both models predict that about $2,600 of the estimated average penalty of $3,500 is not further distributed.

4.1.2(c). Complete Period Case-Level - Awards to Victims.

Regarding awards to victims, culpability and harm variables continue to exert strong influences at the case level. Both models predict discounted awards in excess of $6,600 if employers are deemed to exhibit low culpability. There is a $12,286 premium for medium-high culpability predicted by the baseline model, and a premium of $5,497 for the full model. Significance levels are typically high for these results. The premium of $3,439 for high culpability in the baseline model, however, is only weakly significant and the respective coefficient in the full model is not significant. Harm levels, however, are all highly significant, with a discount in excess of $3,200 for low-medium harm predicted by both models, while, for fatal harm, a greater than $14,000 premium is predicted by the baseline model, and a premium of $8,272 in the full model.

Although the contribution of the remaining explanatory variables is limited, some exceptions are noteworthy. At least weakly significant discounts in excess of $3,300 are found for employers possessing a great safety record for both models. A highly significant discount of nearly $8,000 is found for small employers in the full model, and a highly significant premium in excess of $11,000 is found for the interaction of fatal harm and remorse indicating that remorse is penalised especially severely cases where cases involve fatal harm. The number of charges is no longer a significant determinant of awards to victims, however, and, as with total liability and fines, neither is the number of victims for the complete period.

4.2. Estimation Results for Period 1.

This section reports results for OLS estimates for the baseline and full models for period 1, i.e., post *De Spa* HC (23 March 1994) and prior to the commencement of the Sentencing Act (30 June 2002). Estimation results are reported in Table 3. As before, we distinguish total financial liability from its two components.

(Table 3 approximately here)

4.2.1(a). Period 1 Section 6 Charges - Total Financial Liability.

OLS results for total financial liability (which constitutes total fines in the vast majority of cases in the earlier period) for the baseline and full models are reported in Columns 1-2 of Table 3. In terms of statistical significance of the explanatory variables, the results are similar to those for the complete period reported in Columns 1-2 of Table 1, although some differences are evident. For both the baseline and full models, the levels of culpability and harm continue to be major driving forces in determining total employer liability. Low culpability, however, replaces low-medium culpability as a significant determinant of liability in the baseline model, while for the full model low culpability for the complete period is replaced by high culpability. The presence

of financial limitations for an employer continues to be a significant determinant of total liability in the baseline model but is only weakly significant in the full model. Particular deterrence continues to be significant but, unlike the complete period, the presence of previous convictions is now a significant determinant of liability for both models. The puzzling highly significant positive effect of the presence of remorse in the baseline model for the complete period no longer appears in period 1. For the full model, the impact of medium employer size loses significance and small employer size is also not significant.

In the following, we report OLS results of estimating baseline and full models for s 6 charges for period 1.

4.2.1(b). Period 1 Section 6 Charges - Fines Not Awarded to Victims.

In respect of fines not awarded to victims, period 1 estimates reported in Columns 3-4 of Table 3 show that fatal harm accidents continue to be a highly significant determinant of penalties for both the baseline and full models while low-medium harm is significant for the full model. Both models also produce significant discounts for financial limitations in both periods. None of the culpability variables, however, retain significance for either model. There is a pair of unusual results, viz., statistically significant penalties (rather than discounts) both for cooperation (in the baseline model) and a 'guilty' plea in both models. Remorse is weakly significant and has a rare negative sign in the baseline model for period 1, but is not significant for the full model (although the interaction of low culpability and remorse is weakly significant). The ACC accident rate is significant for this period.

4.2.1(c). Period 1 Section 6 Charges - Awards to Victims.

The results for period 1 awards to victims are reported in Columns 5-6 of Table 3. For the baseline model, a weakly significant discount of nearly $4,700 is estimated for low culpability along with a similar-magnitude highly significant premium for high culpability. A significant premium of slightly smaller size for high culpability also appears for the full model. There is a highly significant discount of at least $1,740 for low-medium harm along with a highly significant premium of approximately $5,500 for fatal harm accidents, for both models. A significant discount of $2,366 is reported for financial limitations in the baseline model, along with a significant premium of $3,257 for a safety record exhibiting previous convictions, while the full model exhibits a weakly significant discount for the presence of a voluntary payment. A poor safety record, however, induces a significant and sizeable discount in both models and there is a weakly significant premium for possessing a great safety record in the baseline model, results that are counterintuitive.

4.2.2(a). Period 1 Case-Level - Total Financial Liability.

OLS results for total financial liability for the baseline and full models for period 1 at the case level are reported in Columns 1-2 of Table 4. For this period, culpability and harm levels

consistently remain as major determinants of sentencing variability. There is a highly significant estimated premium of over $8,000 for high culpability for the baseline model (although the remaining culpability-level variables are only weakly significant). For the full model, high culpability is only weakly significant and low culpability is not significant. There is, however, a highly significant premium of $5,743 for medium-high culpability along with a highly significant discount of $3,548 for low-medium culpability. For both models, however, levels of harm variables are highly significant with estimated coefficients similar for both models, suggesting low harm discounts in excess of $3,200 and fatal harm premiums in excess of $9,300.

(Table 4 approximately here)

Among the remaining *De Spa* factors, the need for specific deterrence is significant for both models, with discounts of nearly $7,500 for the baseline model and over $5,000 for the full model. There is also a significant discount of $3,236 for a defendant's financial limitations in the baseline model and a significant but counter-intuitive premium for remedial action. Otherwise, none of the other *De Spa* factors are even weakly significant. For the full model, there is a weakly significant discount for small employer size, along with significant interaction terms with remorse for one of each of the set of culpability and harm variables. The number of charges appears as a (highly significant) determinant of sentencing variability in period 1, a result which also holds for the baseline model. Both models strongly suggest a similar premium of approximately $3,300 for each additional charge laid in a given case.

For period 1, neither estimated model offers any support for the hypothesis that the number of victims in any given case induced sentencing premiums. Instead, strong support is provided for the hypothesis that sentencing severity is influenced by the number of charges in a given case.

4.2.2(b). Period 1 Case-Level - Fines Not Awarded to Victims.

In respect of fines not awarded to victims, Columns 3-4 of Table 4 show that in period 1 only high culpability among the four culpability-level variables is a significant explanatory variable in the baseline model, while none of the culpability variables are significant for the full model. Fatal harm is a highly significant variable for both models, but the estimated coefficients are less than one third of their respective magnitudes for total liability. Low-medium harm is only weakly significant in the full model. Regarding the remaining *De Spa* factors, both models predict a discount of approximately $1,800 for a defendant's financial limitations and a premium of nearly $4,000 for the need for particular deterrence. Unlike the estimates for total liability, a poor safety record generates significant sentencing premiums of $6,576 and $7,960 for fines not awarded to victims in the baseline and full models, respectively. The baseline model also predicts a significant discount for a defendant's remorse, a rare example where an apparently intuitive result is found. On the other hand, counter-intuitive significant positive premiums are found for pleas of guilty for both models and a weakly significant premium for cooperation in the full model. A surprising significant premium is also found for a good safety record in the baseline model.

For case-specific factors, significant coefficients found for the full model are obtained when three of the four culpability variables are interacted with remorse. Other factors generally have little explanatory power. For both models, however, there are highly significant coefficients similar in size and greater than $2,100 found for the number of charges whereas although the coefficients for the number of employee victims are positive, they are small in magnitude and not significant.

4.2.2(c). Period 1 Case-Level - Awards to Victims.

Awards to victims in period 1 mainly constitute discretionary awards of (capped) fines. Columns 5-6 of Table 4 report the results. Low, low-medium and high culpability levels are all significant for the baseline model. The discount for low culpability is considerably greater at $5,244 compared to $3,079 for low-medium culpability, and the premium for high culpability is $4,826. The baseline model also exhibits a highly significant discount of $2,741 for low-medium harm and a corresponding highly significant premium of $6,604 for fatal harm. The results for the full model are very similar in terms of statistical significance and coefficient magnitudes, except that only low-medium culpability is significant.

Regarding the other *De Spa* criteria, only prompt remedial action by defendants is a significant factor for the baseline model and its coefficient is positive and quite similar in size to that for total liability. Courts may consider that prompt action constitutes shutting the stable door after the horse has bolted, perhaps indicating that defendants might have taken more safety precautions than they did or that remedial action is signalling guilt. In the decisions and sentencing notes available to us for this study, however, many judges specifically commend prompt remedial action, frequently as a preventative measure in respect of further accidents.

For case-specific factors, the full model predicts a significant discount for the interaction of low culpability and remorse and also weakly significant discounts when medium-high culpability and fatal harm are interacted with remorse. As for total liability and fines, the number of victims is not a significant explanatory variable, but the number of charges in a given case is significant in both models. Further, for each model, the estimated coefficients on the number of charges summed across fines not awarded and awards to victims very closely approximate the corresponding coefficients for total financial liability, with approximately two thirds of the total constituting fines not awarded to victims.

4.3. Estimation Results for Period 2.

This section reports OLS results for the baseline and full models for period 2, i.e., after the implementation of the HSE Amendment Act (5 May 2003) but prior to *Hanham & Philp* (18 December 2008).

4.3.1(a). Period 2 Section 6 Charges - Total Financial Liability.

OLS results are reported in Columns 1-2 of Table 5. As for period 1, in terms of statistical significance of the explanatory variables, the results are similar to those for the complete period although some differences are evident. For both the baseline and full models, the levels of culpability and harm continue to be major driving forces in determining total employer liability. Compared to the complete period, high culpability replaces low culpability as a significant sentencing factor for the full model in period 2, and low-medium harm is no longer significant in this period.

(Table 5 approximately here)

The significance of financial limitations is only weak for the baseline model and is not significant for the full model in period 2. Particular deterrence is no longer significant, but, as for period 1 (and unlike the complete period), the presence of previous convictions is now a significant determinant of liability for both the baseline and full models, while a poor safety record is now weakly significant for the full model in period 2. The puzzling highly significant positive effect of the presence of remorse in the baseline model for the complete period also appears for period 2, but remorse is never significant in the full model. For the latter, medium employer size gains significance but, as for period 1, small employer size is not significant. The presence of voluntary payments is now weakly significant in period 2, although its sign is positive (possibly due to signalling guilt).

In the following section, we report OLS results for s 6 charges in period 2, distinguishing between the two components of total financial liability. In this period, fines not awarded to victims are identified with total fines while awards to victims solely constitute awards of reparation.

4.3.1(b). Period 2 Section 6 Charges - Fines Not Awarded to Victims.

Compared to the results for period 1, the later period (for which the data set is much more comprehensive) shows a much more intuitive pattern. In particular, counter-intuitive results from the earlier period disappear and there is now a $12,163 discount for the baseline model ($12,563 for the full model) for a ‘guilty’ plea. Further, compared to the complete period, additional coefficients become significant; for example, large penalties for a poor safety record for both models (while the significance of a safety record that includes previous convictions is strengthened), and a discount for financial limitations. The puzzling penalty for voluntary payment observed for the entire period, however, also appears in the later (but not the earlier) data.

The coefficient on remorse changes sign, if not the (weak) level of significance, in the baseline model for period 2 compared to period 1. Remorse, however, is never significant for either separate period (or the complete period) for the full model.

4.3.1(c). Period 2 Section 6 Charges - Awards to Victims.

The results reported in Columns 5-6 of Table 5 display a much higher penalty for harm caused than the earlier period (e.g., $29,005 versus $5,624 for fatal harm in the baseline model and $17,555 versus $5,474 in the full model). The coefficients for fatal harm and low-medium harm are highly significant in both models, and significant coefficients are also found for low-medium and medium-high culpability in the baseline model and for high culpability in the full model. Most other explanatory variables, however, become statistically insignificant for both models in period 2.

4.3.2(a). Period 2 Case-Level - Total Financial Liability.

At the case level, Columns 1-2 of Table 6 report a number of significant coefficients for the culpability and harm variables for both models, although only low culpability and fatal harm are significant in the full model. Overall, there is a similar pattern in the period-specific case-level results as in our s 6 results: the later period involves much higher financial amounts. For example, high culpability attracts a total liability premium of approximately $8,000 in the baseline model for period 1, but this premium is estimated to be in excess of $19,000 for period 2, while the premium for the period 1 is only 22% of that for period 2 for medium-high culpability. Similar results hold in the case of harm-level variables. The fatal harm premiums of somewhat less than $10,000 in both baseline and full models in period 1 are much smaller than their counterparts ($42,430 for the baseline model and nearly $28,304 for the full model) in period 2, while the discount of $2,918 for low-medium harm estimated for the baseline model in period 1 is only 36% of that estimated for period 2.

(Table 6 approximately here)

Unlike period 1 estimates, Table 6 shows that several other *De Spa* criteria are statistically significant determinants of sentencing variability in period 2, including discounts for a defendant's financial limitations of $10,560 in the baseline model, premiums in excess of $6,600 in respect of the need for particular deterrence in both models, and substantial discounts in excess of $11,800 for an early guilty plea for both models. In addition, there are highly significant substantial premiums for a poor safety record, in excess of $46,000 in the baseline model and just over $28,000 in the full model.

Regarding case-specific factors, the estimated full model suggests a (highly significant) sizable discount of $22,376 for small employers and a significant discount in excess of nearly $13,000 for medium-sized employers. Notably, no interaction variables are significant.

Interestingly, both the baseline and full models predict a fairly similar sentencing premium in excess of $9,000 for the number of victims, the estimated coefficients being highly significant in each case. Further, for each model, the coefficient on the number of charges is negative rather

than positive, although neither coefficient is significant. These results are in sharp contrast with those for period 1.

4.3.2(b). Period 2 Case-Level - Fines Not Awarded to Victims.

OLS results for fines are reported in Columns 3-4 of Table 6. For the baseline model, low-medium culpability exhibits a significant sentencing discount approaching $5,000 and a highly significant premium above $21,000 in the case of high culpability. A highly significant premium of over $13,000 is also found for fatal harm. For the full model, only low culpability among the culpability and harm variables is even weakly significant although high culpability interacted with remorse is significant and retains its positive sign.

In respect of the remaining *De Spa* factors, a defendant's financial limitations is a highly significant explanatory variable for the baseline model, and the estimated coefficient is of fairly similar magnitude to that for total liability. In both models, guilty pleas attract a significant discount of at least $13,300, and (rare) significant discounts for cooperation with the authorities exceeding $6,200. Highly significant premiums for a poor safety record of $34,440 (for the baseline model) and $23,454 (for the full model) are predicted, and there are also significant premiums of at least $5,500 for a defendant's previous convictions in both models. For the full model, a significant discount in excess of $4,700 for a great safety record is predicted.

For case-specific factors, the full model exhibits a weakly significant discount for medium-sized employers, and significant premiums in excess of $12,000 when employers make a voluntary payment and over $5,000 when they attend a restorative justice conference. As indicated earlier, the last two results are puzzling but might be interpreted as an acknowledgement of guilt. As is the case for total financial liability, the number of victims is a highly significant determinant of variability in fines not awarded to victims for both models in period 2, the respective coefficients being roughly three quarters the size of their total liability counterparts.

4.3.2(c). Period 2 Case-Level - Awards to Victims.

OLS results for awards to victims are reported in Columns 5-6 of Table 6. For the baseline model, the coefficient on low culpability is significant while that on medium-high culpability is highly significant. There is a nearly $10,000 discount for low culpability and a premium of nearly $16,000 for medium-high culpability. By contrast, only high culpability is even a weakly significant determinant of awards to victims for the full model in period 2. Both low-medium and fatal harm are highly significant for the baseline model as is fatal harm for the full model. For the latter, low-medium harm is weakly significant. For the baseline model, a discount for low-medium harm of nearly $6,000 is implied. For fatal harm, the baseline model suggests a premium of nearly $30,000 is imposed by Courts, whereas the full model predicts a smaller premium of approximately 80% of this estimate.

For the other *De Spa* criteria, both baseline and full models show a significant discount for a great safety record exceeding $6,300, and the full model also exhibits a weakly significant premium exceeding $4,500 for a poor record. The full model also shows a weakly significant premium of $5,717 for the need for particular deterrence, but, otherwise, *De Spa* criteria other than culpability and harm do not appear to exert a statistically significant influence on awards to victims in period 2.

For case-specific factors, the full model predicts a significant and sizable discount of $13,905 for small employers, and a weakly significant discount approaching $15,000 when high culpability and remorse are interacted.

Finally, the number of victims is a weakly significant determinant of variability in awards to victims in the baseline model in the later period with each additional victim receiving somewhat over $2,500 on average. For the full model, while the estimated coefficient on victim numbers also has the expected positive sign and its magnitude is similar to that of the baseline model, it is not quite weakly significant. For both models, the number of charges is not significant.

4.4. Summarising the Estimation Results.

4.4.1. Performance of the Explanatory Variables.

It is evident that many comparisons could be made among different aspects of our reported empirical results in Tables 1-6. Our results distinguish two model specifications (baseline and full) for total financial liability, fines not awarded to victims, and awards to victims for a combined period and two sub-periods for both section 6 and case-level offences. For the *De Spa* Guideline variables (plus the number of directly harmed victims), thirty-six estimated coefficients are reported. For the remaining case-specific factors, eighteen coefficients are reported.

We focus on the following. First, are there some factors that appear robust in contributing to an explanation of HSE sentencing variability in the sense of being widely applicable in the face of the differences in data periods, model specification, composition of liability and offences evaluated in this study? Without question, two sets of explanatory variables stand out in this regard; viz., the four measures of employer culpability (relative to a medium level of culpability) and the two measures of harm (relative to a high level of harm) suffered by victims of workplace accidents.

Consider the contribution of the culpability variables. The estimated coefficient on low culpability is at least weakly significant (ALWS) in 42% of possible instances. The coefficients on low-medium and medium-high culpability are ALWS in one-third of instances, while that on high culpability (which appears to attract the greatest systematic Court attention) is ALWS in 58% of all estimations. At least one culpability factor is ALWS in 83% of estimations. While 12% of estimated coefficients have the ‘wrong’ sign, many are small in size and none of these are even

weakly significant. A general feature of the results is that culpability variables typically perform better in the baseline model than in the full model. More of the culpability variables tend to be significant in the former, and significance levels are also typically higher.

Among the set of explanatory variables, we treat culpability as one of the two most finely distinguished in practice by the Courts (an employer's safety record is the other). The assessment of the level of culpability lies in the hands of the judiciary. Assessment is necessarily subjective, but in their decisions judges typically make reference to (frequently conflicting) submissions relating to evidence (including the prosecution's summary of facts) and to similar previous cases when assessing levels of culpability. Culpability is listed first among the *De Spa* sentencing factors and although the *De Spa* list does not specify either primacy or importance, the Courts clearly give considerable weight to culpability.

Now consider the contribution of the harm variables. The estimated coefficient on low-medium harm is negative (as expected) and is ALWS in 72% of the possible instances while the coefficient on fatal harm is positive and is ALWS in all but two instances In fact, there are few instances where the estimated coefficient on fatal harm is other than highly significant, and, apart from one instance, the sign of the coefficient on low-medium harm is negative. Low-medium harm, however, unlike fatal harm, frequently has little systematic influence on fines not awarded to victims in both the baseline and full models. On the other hand, discounts for low-medium harm are readily apparent in awards to victims.

Assessment of harm is predetermined in the case of fatal injuries; otherwise, assessment is subjective but appears to be clearly influenced by evidential submissions. Nonfatal harms, however, are not finely graded and while a high level of harm may be expected to dominate the Courts' assessments, a very wide range of harms appear to be captured under this heading. The harm variables, however, are clearly the best performing in the data set.

Among the remaining *De Spa* variables, the estimated coefficient on a defendant's financial limitations is negative in 89% of possible instances and is ALWS in half of these. Apart from one instance, however, this variable does not contribute to explaining variability in awards to victims, implying that a defendant's financial limitations is ALWS in nearly 80% of instances examining either total financial liability or fines not awarded to victims. Particular deterrence is ALWS in 44% of possible instances, but is only weakly significant in the sole instance of awards to victims. The safety record variables yield mixed results. There is no evidence that an employer's good safety record influences sentencing variability; perhaps the Courts view such a record as simply par for the course and not worthy of either discount or penalty. A poor safety record is ALWS in 44% of possible instances, while the presence of previous convictions is ALWS in 39% of these. A great safety record is ALWS in 33% of possible instances, and except for one instance, yields sizeable exemplary previous conduct discounts for all three measures of liability for both models at the case level in both the combined period and in period 2. An early plea of

guilty earns a discount that is ALWS in 28% of possible instances and performs somewhat better at the case level than for the s 6 data.

Of the remaining *De Spa* variables, the evidence is patchy at best. The Courts rarely appear to offer a systematic discount for either an employer's cooperation with authorities following an investigated accident or for taking prompt remedial action. In only 6% of instances is general deterrence even weakly significant. The Courts' acceptance of remorse as genuine is ALSW (with a discount) in only 8% of cases, while, by contrast, 72% of the estimated coefficients on remorse are positive (implying a penalty) and of which 17% (of all instances) are ALWS. The coefficients of the variables that interact remorse with either harm or culpability levels occasionally suggest that interaction effects may provide some insight into the otherwise counterintuitive results for remorse but further work is clearly required in this area.

Regarding case-specific factors, being a small employer induces Courts to provide a systematic discount in more than half of the 18 possible instances, including half of those instances involving awards to victims. In 17% of the 18 possible instances, Courts not only systematically discount sentences for small employer size but additionally provide discounts for financial limitations. Since small employer size and financial incapacity tend to be highly correlated, this raises the prospect of double-dipping in sentencing policy. Systematic discounts for medium-sized employers are found in four instances. Employers making a voluntary payment to victims are systematically rewarded with discounts in only three instances, and there is no evidence in favour of systematic discounts for an employer in the presence of an employee's breach of a duty of care to themselves and to third parties or for an employer's attendance at a restorative justice conference. For the latter, observations are few in number. Also, these conferences were unavailable during period 1. For what they are worth, however, the signs of the majority of estimated coefficients are 'wrong' in all but one instance with five coefficients ALWS. The only negative estimated coefficient is not significant.

Estimated coefficients on the number of charges at the case level are usually positive and either significant or highly significant. For period 2, however, the coefficients are uniformly negative and insignificant. Estimated coefficients on the number of victims are positive in the vast majority of possible instances, but only two instances are even weakly significant in 30 of the 36 instances. In the remaining six instances, however, the coefficients are highly significant in four instances and significant in one other. These instances coincide with the negative but insignificant coefficients on the number of charges.

With the exception of penal aspects of sentences for s 6 charges in the combined period, there is no evidence in favour of systematic adjustment of nominal monetary sentences for changes in the consumer price index. There is also virtually no support for the presence of the ACC accident rate as an additional proxy for general deterrence, a result consistent with the evidence in relation to judges' reference to the need for general deterrence in their sentencing decisions.

The explanatory power of the full model exceeds that of the baseline model in all circumstances, an expected result and an encouraging one given that judges frequently correctly argue that facts specific to a case are of importance in determining sentencing and explaining sentencing variability. While the differences in the explanatory powers of the baseline and full models are quite marked, however, our results suggest that the De Spa Guidelines are of dominant importance in explaining HSE sentencing variability prior to the revised guidelines introduced in *Hanham & Philp*.

4.4.2. Comparison Across Model Specifications.

The inclusion of the small employer size variable that features quite consistently as a significant determinant of sentencing variability along with the occasional significance of other case-specific factors such as voluntary payments, number of victims, number of charges, and remorse-interactive factors is associated with the following: (i) a uniform increase in the proportion of sentencing variability explained by the full model relative to the baseline model, (ii) a reduction in the magnitude and level of significance of variables typically found to be significant determinants of sentencing variability, and (iii) a diminution of the size and significance of the role of culpability levels (but much less so the role of the harm level variables).

4.4.3. Comparison Across Offence Categories.

Our analysis distinguishes the most common offence category (s 6) from cases more generally which frequently include s 6 charges but which may involve multiple charges. At the case level, the number of charges appears as a separate additional explanatory variable. While many sentences may be directed to the s 6 charge alone particularly if it is the leading charge (and can only be so directed if the case involves a sole s 6 charge), this need not be the situation in multiple-charge cases even if they include a s 6 charge. In general, the sentence can be expected to be distributed across the various charges for which conviction occurs even if different weight is given to the various charges. Section 6 charges are also more general in nature than many other charges and greater sentencing variability for s 6 charges alone might be expected compared to multiple-charge cases. Out of our 1,167 case-level observations, 625 are made up of a single s 6 charge, 226 include multiple charges but at least one of them is a s 6 charge, and 316 do not include a s 6 charge.

Overall, there is no clear pattern in terms of the proportion of sentencing variability explained when comparing the s 6 results with those at the case level. For the combined period, the explanatory power of both baseline and full models is slightly higher for total financial liability and for fines not awarded to victims at the case level, but somewhat lower for awards to victims. In general, the case-level results for the combined period are similar to those for s 6 although they seem somewhat stronger, being more intuitive and the explanatory variables are more highly significant. This may reflect the fact that s 6 charges often absorb all of the sentence in multiple-charge cases and also that the s 6 charge is very broad compared to most HSE charges and to the highly differentiated Crimes Act charges. For period 1, the explanatory power of both baseline and full

models is consistently higher for both models at the case level, but is consistently lower for period 2. Nevertheless, for total financial liability and fines not awarded to victims, a larger number of explanatory variables are statistically significant for both models for period 2 than for period 1. Although case-level results are not vastly different from s 6 results, there is some evidence of switching of statistical significance among the variables, more noticeably among those for which we have more finely-graded dimensions, viz., employer culpability and employer safety record.

4.4.4. Comparing Period 1 and Period 2 Results.

A major focus of this article is to compare the estimation results for periods 1 and 2 with emphasis on whether major legislative changes involving the introduction of the Sentencing Act 2002 and the HSE Amendment Act 2002 induced fundamental changes in sentencing behavior. Section 7 Sentencing Act introduced eight purposes of sentencing, three of which refer to harm in terms of accountability, responsibility and acknowledgement, and reparation. Section 8 Sentencing Act specifies sentencing principles, s 8(a) stating that a court "must take into account the gravity of the offending in the particular case, including the degree of culpability of the offender." Neither harm nor reparation directly features in these principles. It is arguable that the Act signals a reduced importance for culpability in determining a sentence of reparation but an increased importance in respect of determining a sentence of fines. Notably, the HSE Amendment Act 2002 raised the maximum fine for incidents (where no physical harm occurs to an employee) to the same level as that for accidents, signalling a more important role for employer blameworthiness in setting fines than previously. Further, in *Hanham & Philp* the High Court (following *R v Taueki* [2005] 3 NZLR 372) introduced specific guidelines for sentencing starting points for fines that were based on culpability alone and which, according to Grieve and Mony (2009, at 16), are consistent with the so-called three step "modern" approach to sentencing "which has developed in respect of sentences across the board." Harm, however, appeared as one of seven suggested determinants of culpability assessments to be made by District Courts in the future.

We first examine whether a change in the importance of employer culpability (relative to harm) in determining awards to victims is evident in period 2 compared to period 1. First, we are unsurprised by the uniform importance of the harm variables (low-medium harm and fatal harm both relative to high harm) as almost exclusively highly statistically significant determinants of awards to victims in both periods independently of whether s 6 charges or case-level analysis is under scrutiny, or whether the baseline or full models are under consideration. As far as HSE sentencing is concerned, there appeared to be no qualitative margin for change in the importance of the role of harm in determining awards to victims after the Sentencing Act was introduced.

As for the culpability variables, we were initially somewhat surprised by the performance of these in determining awards to victims in period 1. Employer blameworthiness, however, may be viewed by the Courts as largely responsible both for the harm caused in a given accident and the severity of that harm, and hence worthy of victim compensation. High culpability (relative to medium culpability) is at least statistically significant except for case-level analysis for the full

model, and at least one other culpability variable is weakly significant or better except for s 6 analysis for the full model.

For period 2, the culpability variables do not perform as well. Although two culpability levels are significant determinants of awards to victims for both s 6 charges and case-level analysis for the baseline model, high culpability is significant only for s 6 charges for the full model and is only weakly significant for this model for case-level analysis. There is evidence, therefore, of a weakening in the influence of culpability in determining awards to victims in the later period. This is unsurprising since period 2 awards to victims constituted reparations solely.

It is evident that in period 1, Courts frequently elected to allocate fines in whole or part to work-place accident victims as compensation. Although reparations could have been separately awarded under s 22 CJA, these awards, for whatever reason, were rarely made.[30] In addition, upper bounds on awards of fines to victims were effectively imposed by legislative caps on fines. Although Courts were bound to set fines prior to any decision regarding distribution to victims, they could, in principle, assure substantial amounts of 'quasi-reparations' to victims by ensuring that fines were substantial, and by awarding most, or all of the amount to victims. Following implementation of the Sentencing Act, however, it was no longer possible to award fines to victims, and it was no longer necessary for fines to be substantial for this purpose. Following the passage of the amendment to the HSE Act, however, there appeared to be a powerful reason for fines to increase markedly, since Parliament had sent a very clear signal by increasing maximum fines by 500%.

Consider some illustrative estimates for period 1 s 6 charges. Inspection of Table 3 shows that a movement from medium to high culpability increases awards to victims by well over $4,000 for both baseline and full model estimates and the respective coefficients are either significant or highly significant, whereas the corresponding increases in fines not awarded to victims are much smaller and are statistically insignificant. Similarly, a movement from a high level of harm to fatal harm induces an increase in awards to victims in the vicinity of $5,500 in both models which is 2-3 times as large as the corresponding estimates for fines not awarded to victims. In all cases, the relevant coefficients are highly significant. Similar results also hold for other statistically significant variables carrying the 'right' sign, viz., low-medium harm, a poor safety record, and a voluntary payment made all have much greater impacts on awards to victims than

30. Section 11 CJA Amendment Act 1993 required courts to consider reparation awards in each case and to impose them unless clearly inappropriate. Reparations, however, applied only to emotional harm and property damage or loss, and required the court to obtain a reparation report in the case of emotional harm. By contrast, the s 28 provision permitted whole or part of a fine to be awarded to a victim suffering physical or emotional harm. It appears, however, that this provision was designed for victims of assault and deliberate acts causing physical harm, and reservations regarding the application of s 28 to negligent acts or omissions were expressed in *Heenan v Ministry of Transport* (1989) 5 CRNZ 229. See the discussion in Ministry of Justice (2000) for details.

on fines not awarded and frequently have coefficients with higher levels of statistical significance than their counterparts. Further, both the baseline and full models explain a much higher percentage of sentencing variability for awards to victims than for fines not awarded to victims, viz., 29% versus 16% for the baseline model and 35% versus 24% for the full model.

A very similar pattern for both models holds for the culpability and harm variables for case-level results reported in Table 4. For fines not awarded to victims, however, the impacts of a defendant's financial limitations, a guilty plea, the need for particular deterrence, a poor safety record, and the number of charges are greater in magnitude and more highly significant than in the case of awards to victims. Both the baseline and full models, however, continue to explain a higher percentage of sentencing variability for awards to victims than for fines not awarded to victims, viz., 35% versus 25% for the baseline model and 40% versus 30% for the full model.

Compare the above results with their period 2 counterparts, for which the data are fewer in number but the coverage of the variables is far more comprehensive. For s 6 charges, in the baseline model a reduction in culpability from medium to low-medium induces a significant reduction of $4,769 in awards to victims and a somewhat smaller and weakly significant reduction in fines not awarded to victims. In contrast, an increase in culpability to medium-high generates a significant and substantial increase of nearly $13,000 in awards to victims but a very small and completely insignificant increase in fines not so awarded. However, for an increase from medium to high culpability, awards to victims increase by a relatively small amount and their relevant coefficient is insignificant whereas that for fines not awarded to victims is significant and greater by nearly a factor. Conversely, for the full model, the coefficient on awards to victims is significant and is in excess of $12,000 but is both smaller and insignificant for fines not awarded.

The harm variables produce more consistent results. In the baseline model the coefficients on fatal harm are highly significant for awards to victims and for fines awarded to victims, but are nearly $10,000 more for the former than for the latter. On average, victims (and their dependants and immediate family members) receive over $29,000 if the victim fails to survive a workplace accident compared to an accident for which harm is high, but is nonfatal. There are also highly significant and substantial discounts for low-medium harm for awards to victims in both models that have no counterparts for fines not awarded to victims. Financial limitations, a poor safety record, a guilty plea, and previous convictions all have the "right" signs and are all ALWS and substantial in magnitude for fines not awarded to victims but contribute little to the explanation of awards to victims. In period 2, the baseline and full models no longer explain a higher percentage of sentencing variability for awards to victims than for fines not awarded to victims for s 6 charges, the results being 51% versus 54% for the baseline model and 61% versus 68% for the full model.

The general nature of these results is also found in case-level estimates for period 2 as shown in Table 6, although the explanatory power of both models is somewhat less than for the s 6 estimates. The culpability results are similarly inconsistent and the harm results are similar to those for

s 6 except that the coefficient on low-medium harm is insignificant for awards to victims for the baseline model. Results for other De Spa variables are also similar, and cooperation is a highly significant explanatory variable for fines but not for awards to victims. A great safety record now marginally favours awards rather than fines. Interestingly, the number of victims is a highly significant determinant of variability in fines but the coefficients are much smaller for awards to victims and are insignificant for both models. Notably, the explanatory power of both models is considerably higher for the period 2 datasets compared to their period 1 counterparts.[31]

A major finding reported in Menclova and Woodfield (2011) is that total financial liabilities are much larger in the later period, and this is also evident in the present study. For example, in respect of s 6 charges, for the baseline model high culpability is associated with a $6,169 penalty in the earlier period but a $25,292 penalty in the later period. The corresponding numbers for fatal harm are $7,638 and $48,296, respectively. Similarly, a defendant's financial limitations receives a discount of $3,675 in the earlier period and $7,273 in the later period.

The following issues also appeared worthy of address. First, were more of the variables reported in our tables ALWS determinants of awards to victims in period 1 than in period 2 for baseline and full model estimates both across s 6 and case-level analysis? For the full model, the numbers were greater by one for both s 6 charges and for the case level. For the baseline model, the numbers were the same at the case level while for s 6 charges, there were four additional significant determinants in period 1 compared to period 2. It must, however, be remembered that awards to victims in period 1 mainly constituted fines awarded to victims so that variables that do well in explaining total liability (mainly total fines) and fines not awarded to victims might also be expected to be likely to be important determinants of awards to victims in the earlier period. This is particularly so to the extent that judges first set fines and then set awards of fines to victims in similar proportions. Further, since statistical significance also depends on the number of observations in each period - ceteris paribus, we would expect fewer variables to be significant in a period with fewer observations. Against this, awards to victims were not made in 28% of cases and in many period 1 cases the entire amount of the fine was awarded to the victim. Further, the precision with which period 1 variables are measured is considerably less than that for period 2, so we would expect fewer variables to be significant in a period with less complete information.

Second, consider a similar question for a comparison of total financial liability (mainly fines) in period 1 and awards to victims (reparations only) in period 2. The numbers favoured total liability 10-5 for s 6 charges and 7-5 for the full model. Third, comparing period 1 fines not awarded to

31. We reestimated our models after excluding the following two possible outliers. First, we excluded a period 1 case (*Department of Labour v Fume-It Ltd*, DC Napier, CRN 2020006981-7002, 27 September 2002) with a single s 16(1)(a) charge involving 42 victims, and also a period 2 case (*Department of Labour v Talley's Frozen Foods Limited*, DC Blenheim, CRI-2006-006-002158,) with 11 separate s 6 charges involving a similar number of victims (that was subsequently successfully appealed with the number of charges reduced to 1). Neither exclusion affected our qualitative results; hence our reported results include both cases.

victims and awards to victims for s 6 charges, a surprising result is that the number of significant determinants of awards to victims substantially exceeds those for fines for the baseline model, a result, however, that is reversed for the full model estimates. For case-level analysis, there are a greater number of significant determinants for fines in both models. Finally, consider a comparison of total financial liability with (i) total fines (none of which were permitted to be awarded to victims) and (ii) awards to victims (exclusively reparations) for period 2. For s 6 charges, the number of significant determinants of total liability is slightly larger than for fines for the baseline model but this result is reversed for the full model. For case-level analysis, a similar pattern emerges. Further, the number of significant determinants of total liability substantially exceeds those for awards to victims for s 6 charges for the baseline model and for both models for case-level analysis, and also marginally exceeds those for s 6 charges for the full model.

Finally, it has been noted that the Sentencing Act requires courts to give priority to reparations in the sentencing process. Although the number of significant variables that explain awards to victims (reparations) in period 2 is limited, especially for the baseline model, a great safety record for an employer generates a statistically significant reduction in the amount paid as victim compensation on average by more than $6,300 for both baseline and full models. On the face of it, this result is surprising in that there seems little reason for Courts to reduce compensation on the grounds that an employer has a particularly good safety record. Many judges accept that compensation for actual harm suffered is often inadequate, and reduced compensation serves to exacerbate under-compensation. Instead, judges could easily increase compensation by the amounts awarded to employers for their exemplary safety records and increase the discounts to fines by a similar amount. In monetary terms, victims would be better off and employers would be no worse off.

A possible justification for the Courts' apparent practice in HSE cases is that if compensation does not properly cover actual victim harm, it might usefully be interpreted as being for the reduced risk faced by employees and their dependants. A discount for a great safety record then rewards those employers who have no previous court history of non-compliance with the provisions of the HSE Act, and who have demonstrably gone out of their way to protect their employees from industrial accidents, the present case excepted. There is, however, a major flaw in this argument in that if the discount for a great record is to reflect a reduced past risk of accidents, it should apply to all employees potentially exposed to such accidents rather than just to victims and their dependants. The discount should also take into account any reduction in employee earnings reflecting the low level of risk being borne, otherwise the employer will be over-rewarded. At present, the status of reparations as compensation seems to be in disorder, although there seems to be general agreement that reparations (together with accident compensation payments) fail to make victims and their families indifferent to the accidents in which they have been involved. In the case of serious accidents, indifference may be unobtainable by monetary compensation.

5. Some Brief Concluding Remarks.

This article empirically examines the influence of the *De Spa* sentencing factors along with other relevant 'facts of the case' in determining the total financial liability for which employers convicted of HSE offences are sentenced and its composition between fines not awarded to accident victims and awards to victims (including reparations). The two first-listed among the De Spa Guidelines, viz., employer culpability and victim harm, demonstrate explanatory power that is widely applicable in the face of differences in data periods, model specification, composition of liability and offences evaluated. The harm variables, however, are clearly the best performing in our data set, a result that gives us no surprise and which is robust to legislative changes introduced in the Sentencing Act 2002 and the HSE Amendment Act 2002.

The good performance of the culpability variables in determining awards to victims prior to the passage of the Sentencing Act which made reparations routinely available may be partly explained by the fact that victim awards in this period mainly constituted discretionary awards of capped fines. We find evidence, however, of a weakening of the influence of culpability variables in determining awards to victims (solely reparations) in the period following the implementation of the Sentencing Act. The increase in maximum fines and the absence of caps on reparations also leads to much more responsive adjustments in fines imposed and the magnitude of reparation orders in the later period. Part of the former result, however, is due to the inability of judges to use fines to fund reparations.

Of the remaining *De Spa* factors, a defendant's financial limitations shows up particularly strongly in generating discounted fines (and total liability) for impecunious employers, but appears to have very little impact on the level of awards to victims. Particular (but not general) deterrence also has an impact on fines and total liability in a number of circumstances but has little impact on awards to victims. Penalties for below average safety records emerge in a number of circumstances as do discounts for superior records whereas a good record appears to be viewed neutrally. An early guilty plea occasionally earns a discount, but the record for this variable is generally patchy, a comment that also applies to the remaining *De Spa* factors.

Regarding case-specific factors, being a small employer yields a discount in more than half of the instances examined, including a number involving awards to victims. In one third of possible instances, Courts not only discount sentences for small employer size but additionally provide discounts for financial limitations, raising the prospect of "double-dipping" in sentencing policy. At the case level, a higher number of charges generally tends to increase sentences, whereas a higher number of (physically harmed) victims of a given accident increases sentences in most instances. Where the impacts of victim numbers are statistically strong, however, they coincide with statistically weak impacts of the number of charges.

While the ability of a number of the *De Spa* sentencing factors along with some of the particular 'facts of the case' to explain the variation in sentences of awards to victims in the earlier period is not entirely surprising, we did not expect much other than the harm variables and the number

of victims to contribute to this explanation in the later period. As it transpires, victim numbers have a limited impact but a few other sentencing factors also have some impact. Although guidelines for sentencing behavior have existed since 1994, they have effectively applied only to fines, and formal guidelines are still lacking for setting the quantum of reparation. In our view, the judiciary seems generally agreed that an intractable problem exists in this context, and seem relieved to be referred to similar cases in making their decisions. While such a policy may aid sentencing consistency in setting awards, it is unclear to us what particular purpose is attempted to be achieved by reparation orders, other than to satisfy an ill-specified notion of (mainly) emotional harm compensation. This is a rich potential field for further research.

References

Clark, A., 2008. Reparation and sentencing. *New Zealand Law Journal*, 437-439.

Criminal Justice Policy Group, 2000. *Review of Monetary Penalties in New Zealand*. Ministry of Justice, Wellington.

Gordon, P., and Woodfield, A., 2006. Incentive effects of the changing structure of penalties in New Zealand's Health and Safety in Employment Act. *Employment Law Bulletin*, 111-115.

Gordon, P., and Woodfield, A., 2007. *Ex ante* liability rules in New Zealand's Health and Safety in Employment Act: a law and economics analysis. *New Zealand Economic Papers* v41no1, 91-108.

Grieve, S., and Mony S., 2009. Taking a modern approach to sentencing. *NZ Lawyer* 113, 29 May, 16-17.

Hall, G.G., 2009. Hall's Sentencing (NZ). LexisNexis, http://www.lexisnexis.co.nz (accessed 5 March 2009).

Mason, G., 2008. Reparation in sentencing under HSE. *New Zealand Law Journal*, 33- 42.

Menclova, A. & Woodfield, A., 2011. An empirical analysis of health and safety in employment sentencing in New Zealand. *Asia Pacific Law and Economics Review*, v1, 5-34.

Woodfield, A., Hickson. S. and Menclova, A., 2013. An empirical analysis of changing guide-lines for health and safety in employment sentencing in New Zealand. Working Paper 2013/ 14, Department of Economics and Finance, University of Canterbury, Christchurch, NZ.

Woodfield, A., Hickson, S. and Menclova, A., 2013. Forecasting fines for health and safety in employment offences in New Zealand. Working Paper 2013/15, Department of Economics and Finance, University of Canterbury, Christchurch, NZ.

Tables 1 – 6

Table 1.

Determinants of Financial Liabilities; s 6 Charges
De Spa – Hanham & Philp

Explanatory variable		Total Financial Liability		Fine Not Awarded to Victim(s)		Award to Victim(s)	
		'Baseline' model (N=877)	**'Full' model** (N=847)	**'Baseline' model** (N=875)	**'Full' model** (N=845)	**'Baseline' model** (N=875)	**'Full' model** (N=845)
Number of employee victims		4,482*	3,091	4,144*	3,034	336	50
		(2,430)	(2,718)	(2,414)	(2,746)	(669)	(990)
Degree of culpability (compared to medium)	Low	-5,945	-7,040*	-1,266	-2,515	-4,680*	-4,519
		(3,678)	(4,120)	(1,474)	(2,517)	(2,756)	(2,795)
	Low-medium	-6,334***	-4,155	-2,071	-1,985	-4,262**	-2,163
		(2,241)	(3,544)	(1,498)	(2,761)	(1,749)	(1,808)
	Medium-high	11,722***	5,426	1,708	-714	10,016**	6,151*
		(4,221)	(3,789)	(1,602)	(2,094)	(3,925)	(3,310)
	High	14,700***	2,306	10,772**	-854	3,924*	3,159*
		(5,040)	(3,926)	(4,670)	(3,289)	(2,068)	(1,880)
Degree of harm (compared to high)	Low/medium	-3,061**	-3,297***	-60	-181	-3,009***	-3,136***
		(1,291)	(1,235)	(866)	(865)	(721)	(804)
	Fatal	22,033***	9,584***	8,639***	3,409***	13,387***	6,157***
		(3,133)	(1,746)	(2,464)	(1,161)	(1,927)	(1,469)
Defendant's financial limitations		-6,312**	-3,090	-5,233***	-4,729**	-1,077	1,643
		(2,530)	(2,761)	(1,792)	(2,144)	(1,745)	(1,775)
Remorse		8,769***	511	4,894*	-1,058	3,876**	1,601
		(3,159)	(4,135)	(2,710)	(2,430)	(1,614)	(3,059)
Cooperation		-2,313	-2,555	-2,578	-1,860	269	-685
		(3,983)	(3,639)	(3,659)	(3,468)	(1,782)	(1,901)
Remedial action		-1,992	-1,461	-799	-189	-1,196	-1,277
		(2,486)	(2,301)	(1,676)	(1,979)	(1,481)	(1,338)
Guilty plea		-3,636	-2,221	-3,060	-2,775	-584	540
		(2,418)	(2,120)	(2,223)	(1,940)	(831)	(869)
Need for particular deterrence		5,646*	5,048*	2,651	1,768	2,993	3,274
		(3,100)	(2,911)	(2,144)	(1,816)	(2,262)	(2,326)
Need for general deterrence		-440	-1,186	835	593	-1,277	-1,787
		(1,717)	(1,948)	(1,012)	(1,101)	(1,379)	(1,493)
Safety record (compared to no previous convictions)	Poor	10,474	12,526	14,716	17,860	-4,239*	-5,319
		(12,502)	(13,426)	(11,430)	(11,288)	(2,484)	(3,231)
	Previous convictions	4,276	4,558*	4,966**	5,639***	-695	-1,093
		(2,645)	(2,507)	(2,038)	(1,698)	(1,617)	(1,794)
	Good	161	-1,448	1,093	343	-930	-1,800
		(2,733)	(2,861)	(1,777)	(1,932)	(2,063)	(2,075)
	Great	118	771	-724	-624	839	1,383
		(3,152)	(3,088)	(2,035)	(1,712)	(2,024)	(2,333)
Voluntary payment made		-	4,144	-	6,804**	-	-2,659
			(3,491)		(2,646)		(2,082)
Restorative justice conference		-	22,938*	-	20,477	-	2,459
			(13,606)		(14,107)		(6,615)

Employee breach of duty		-	-981	-	-917	-	-15
			(1,746)		(952)		(1,601)
Size of employer (compared to large)	Small	-	-11,496***	-	-5,371*	-	-6,127**
			(4,281)		(3,249)		(2,934)
	Medium	-	-8,128**	-	-2,479	-	-5,661
			(3,891)		(2,879)		(3,543)
Degree of culpability (compared to medium) × ***remorse***	Low	-	-6,608	-	-6,534	-	-81
			(9,385)		(6,522)		(4,900)
	Low-medium	-	-2,703	-	403	-	-3,118
			(4,502)		(3,094)		(3,002)
	Medium-high	-	5,394	-	-693	-	6,079
			(7,715)		(3,527)		(6,780)
	High	-	20,452*	-	21,231**	-	-774
			(10,502)		(9,471)		(3,821)
Degree of harm (compared to high) × ***remorse***	Low/medium	-	-1,239	-	326	-	-1,544
			(3,768)		(2,467)		(2,201)
	Fatal	-	21,697***	-	4,694	-	17,021***
			(5,622)		(3,443)		(4,058)
Consumer Price Index (CPI)		130*	140*	99**	104**	31	37
		(72)	(77)	(45)	(51)	(55)	(53)
ACC accident rate (accidents per 1,000 employees)		-	21	-	4	-	18
			(27)		(17)		(22)
$\mathbf{R^2}$		0.52	0.61	0.39	0.50	0.41	0.50

Table 2.

Determinants of Financial Liabilities; Case-Level Analysis
De Spa – Hanham & Philp

Explanatory variable		**Total Financial Liability**		**Fine Not Awarded to Victim(s)**		**Award to Victim(s)**	
		'Baseline' model (N=1264)	**'Full' model** (N=1234)	**'Baseline' model** (N=1263)	**'Full' model** (N=1233)	**'Baseline' model** (N=1263)	**'Full' model** (N=1233)
Number of employee victims		489 (473)	515 (443)	297 (368)	422 (338)	194 (134)	97 (132)
Number of charges		3,350 *** (994)	3,127*** (953)	2,611*** (784)	2,590*** (759)	745 (476)	544 (448)
Degree of culpability (compared to medium)	Low	-8,807*** (3,201)	-11,240** (3,720)	-2,167 (1,569)	-4,526* (2,513)	-6,639*** (2,527)	-6,701*** (2,066)
	Low-medium	-1,493 (2,489)	-5,458** (2,606)	-2,134 (1,359)	-2,925 (2,288)	642 (2,132)	-2,539* (1,441)
	Medium-high	13,162*** (4,130)	1,658 (3,348)	876 (1,638)	-3,838 (2,605)	12,286*** (3,731)	5,497** (2,485)
	High	13,386*** (4,160)	2,002 (3,274)	9,939*** (3,816)	-1,256 (2,728)	3,439* (1,903)	3,231 (1,995)
Degree of harm (compared to high)	Low/medium	-4,042*** (1,171)	-4,585*** (1,179)	-366 (783)	-1,329 (750) *	-3,681*** (671)	-3,260*** (714)
	Fatal	20,946*** (2,378)	11,269*** (1,441)	6,854*** (1,605)	2,982*** (971)	14,088*** (1,773)	8,272*** (1,237)
Defendant's financial limitations		-8,809*** (2,152)	-6,307*** (1970)	-7,227*** (1,573)	-6,060*** (1,360)	-1,584 (1,448)	-250 (1,367)
Remorse		3,585 (2,330)	-5,997 (4,413)	980 (1,964)	-5,645** (2,863)	2,607* (1,344)	-348 (3,167)
Cooperation		-4,518 (3,584)	-4,777 (3,211)	-3,021 (3,378)	-2,752 (3,137)	-1,494 (1,579)	-2,025 (1,677)
Remedial action		3,403 (2,207)	3,112 (2,095)	1,945 (1,648)	1,847 (1,590)	1,457 (1,173)	1,265 (1,227)
Guilty plea		-4,403** (2,075)	-3,882** (1,953)	-3,599* (1,903)	-3,578** (1,781)	-810 (826)	-309 (859)
Need for particular deterrence		7,431** (3,207)	7,364*** (2,781)	4,863** (2,415)	4,205** (2,142)	2,564 (2,144)	3,157 (1,927)
Need for general deterrence		2,219 (1,570)	1,314 (1,697)	2,308** (956)	2,443*** (942)	-182 (1,306)	-1,130 (1,458)
Safety record (compared to no previous convictions)	Poor	7,916 (10,265)	6,430 (10,677)	9,328 (9,534)	10,035 (9,477)	-1,411 (3,540)	-3,606 (3,787)
	Previous convictions	1,057 (2,836)	-322 (2,553)	2,497 (2,100)	2,437 (1,793)	-1,441 (1,693)	-2,755 (1,738)
	Good	-1,753 (2,622)	-4,176 (2,590)	-267 (1,568)	-1,477 (1,737)	-1,485 (2,141)	-2,694 (2,017)
	Great	-6,641** (2,789)	-9,094*** (2,989)	-3,332* (1,759)	-4,526** (1,793)	-3,308* (2,006)	-4,568** (2,251)

Voluntary payment made		-	3,244 (3,238)	-	6,778*** (2,190)	-	-3,532 (2,353)
Restorative justice conference		-	13,129 * (7,212)	-	7,251 (5,636)	-	5,877 (5,691)
Employee breach of duty		-	-1,724 (1,545)	-	-669 (883)	-	-1,060 (1,296)
Size of employer (compared to large)	Small	-	-14,745*** (3,531)	-	-6,829** (2,678)	-	-7,909*** (2,473)
	Medium	-	-8,688 (7,940)	-	-2,245 (3,721)	-	-6,434 (5,912)
Degree of culpability (compared to medium) × ***remorse***	Low	-	3,763 (6,024)	-	4,040 (4,107)	-	-293 (4,286)
	Low-medium	-	5,268 (4,191)	-	1,722 (2,818)	-	3,552 (3,359)
	Medium-high	-	14,520** (6,865)	-	4,285 (3,335)	-	10,234* (5,958)
	High	-	13,528* (7,520)	-	18,213*** (6,643)	-	-4,665 (3,673)
Degree of harm (compared to high) × ***remorse***	Low/medium	-	-1,126 (3,400)	-	2,742 (2,040)	-	-3,864 (2,478)
	Fatal	-	14,878*** (4,417)	-	3,723 (2,352)	-	11,170*** (3,358)
Consumer Price Index (CPI)		54 (64)	37 (65)	41 (39)	30 (44)	13 (49)	7 (46)
ACC accident rate (accidents per 1,000 employees)		-	1 (23)	-	1 (14)	-	-4 (21)
$\mathbf{R^2}$		0.53	0.60	0.43	0.51	0.38	0.45

Table 3.

Determinants of Financial Liabilities; s 6 Charges
***De Spa* – Sentencing Act 2002**

Explanatory variable		Total Financial Liability		Fine Not Awarded to Victim(s)		Award to Victim(s)	
		'Baseline' model (N=605)	'Full' model (N=581)	'Baseline' model (N=603)	'Full' model (N=579)	'Baseline' model (N=603)	'Full' Model (N=579)
Number of employee victims		1,629	1,522	783	514	841	1,003
		(1,056)	(1,092)	(775)	(640)	(731)	(798)
Degree of culpability (compared to medium)	Low	-5,591**	-5,922	-899	-3,572	-4,694*	-2,377
		(2,522)	(4,689)	(1,631)	(2,581)	(2,398)	(3,344)
	Low-medium	-1,427	-1,189	-857	-1,207	-573	19
		(1,161)	(1,367)	(803)	(1,030)	(1,242)	(1,477)
	Medium-high	1,386	3,805	1,669	1,400	-277	2,458
		(2,041)	(2,679)	(1,832)	(1,744)	(1,929)	(2,615)
	High	6,169***	4,695**	1,634	470	4,525***	4,270**
		(1,723)	(2,204)	(996)	(1,233)	(1,682)	(2,089)
Degree of harm (compared to high)	Low/medium	-2,519***	-2,790***	-803	-1,020**	-1,740***	-1,782***
		(568)	(620)	(492)	(463)	(523)	(589)
	Fatal	7,638***	7,794***	1,999***	2,303***	5,624***	5,474***
		(1,181)	(1,435)	(745)	(878)	(1,108)	(1,377)
Defendant's financial limitations		-3,675***	-2,523*	-1,304	-662	-2,366**	-1,861
		(1,321)	(1,425)	(800)	(679)	(1,169)	(1,454)
Remorse		-954	857	-1,158*	1,391	201	-445
		(1,224)	(2,026)	(643)	(1,676)	(1,161)	(1,921)
Cooperation		1,108	807	1,853**	840	-726	2
		(1,357)	(1,519)	(721)	(947)	(1,255)	(1,496)
Remedial action		2,414**	884	82	282	2,327**	564
		(1,171)	(1,189)	(595)	(665)	(1,038)	(1,029)
Guilty plea		512	175	1,069**	1,103**	-566	-944
		(710)	(771)	(512)	(514)	(702)	(798)
Need for particular deterrence		3,350**	3,015*	1,450	2,225*	1,887	774
		(1,490)	(1,653)	(1,036)	(1,281)	(1,576)	(1,632)
Need for general deterrence		590	743	25	-87	555	818
		(998)	(1,104)	(493)	(538)	(1,008)	(1,110)
Safety record (compared to no previous convictions)	Poor	-2,865	-3,699	2,739**	3,263**	-5,596**	-6,975**
		(2,706)	(2,699)	(1,339)	(1,643)	(2,301)	(2,921)
	Previous convictions	4,531***	3,288*	987	411	3,527**	2,796*
		(1,647)	(1,748)	(960)	(1,106)	(1,462)	(1,604)
	Good	1,458	648	1,188	-68	273	685
		(1,334)	(1,529)	(882)	(907)	(1,205)	(1,422)
	Great	2,708	2,181	260	845	2,432*	1,302
		(1,699)	(2,019)	(1,172)	(1,316)	(1,449)	(1,680)
Voluntary payment made		-	-2,981*	-	-1,304	-	-1,668*
			(1,708)		(1,408)		(983)
Restorative justice conference		-	-	-	-	-	-
			-		-		-
Employee breach of duty		-	1,445	-	781	-	860
			(928)		(616)		(1,000)

Size of employer (compared to large)	Small	-	-1,396	-	-2,401*	-	1,025
			(3,132)		(1,300)		(3,420)
	Medium	-	-	-	-	-	-
			-		-		-
Degree of culpability (compared to medium) × ***remorse***	Low	-	2,317	-	5,595*	-	-3,255
			(5,479)		(3,323)		(4,153)
	Low-medium	-	786	-	2,163	-	-1,380
			(3,308)		(2,193)		(3,177)
	Medium-high	-	-3,869	-	-68	-	-3,856
			(3,798)		(4,469)		(4,219)
	High	-	648	-	1,751	-	-1,130
			(3,527)		(1,921)		(2,927)
Degree of harm (compared to high) × ***remorse***	Low/medium	-	-1,679	-	-552	-	-1,141
			(2,746)		(1,581)		(1,820)
	Fatal	-	673	-	-419	-	1,108
			(2,760)		(1,833)		(2,359)
Consumer Price Index (CPI)		38	22	30	29	9	-6
		(32)	(35)	(24)	(24)	(28)	(29)
ACC accident rate (accidents per 1,000 employees)		-	23	-	24**	-	-1
			(14)		(11)		(12)
$\mathbf{R^2}$		0.37	0.41	0.16	0.24	0.29	0.35

Table 4.

Determinants of Financial Liabilities; Case-Level Analysis
***De Spa* – Sentencing Act 2002**

Explanatory variable		Total Financial Liability		Fine Not Awarded to Victim(s)		Award to Victim(s)	
		'Baseline' model (N=901)	'Full' model (N=874)	'Baseline' model (N=900)	'Full' model (N=873)	'Baseline' model (N=900)	'Full' model (N=873)
Number of employee victims		8	45	-64	12	75	61
		(95)	(94)	(41)	(41)	(93)	(88)
Number of charges		3,360***	3,338***	2,143***	2,148***	1,230**	1,203***
		(528)	(516)	(331)	(326)	(433)	(403)
Degree of culpability (compared to medium)	Low	-3,607*	-5,915	1,624	-1,587	-5,224**	-4,311
		(2,154)	(3,810)	(1,928)	(1,712)	(2,335)	(2,754)
	Low-medium	-2,918*	-3,548***	156	-433	-3,079**	-3,120***
		(1,587)	(1,197)	(805)	(1,024)	(1,347)	(1,169)
	Medium-high	3,614*	5,743**	2,261	3,078	1,357	2,776
		(2,066)	(2,834)	(1,902)	(2,970)	(1,694)	(2,082)
	High	8,022***	4,375	3,181***	1,364	4,826**	2,974
		(2,121)	(2,458)*	(1,052)	(1,063)	(1,876)	(2,194)
Degree of harm (compared to high)	Low/medium	-3,445***	-3,215***	-711	-823*	-2,741***	-2,403***
		(599)	(587)	(444)	(423)	(502)	(535)
	Fatal	9,372***	9,824***	2,661***	2,881***	6,704***	6,925***
		(1,060)	(1,201)	(698)	(832)	(948)	(1,083)
Defendant's financial limitations		-3,236**	-2,554	-1,759***	-1,679**	-1,487	-885
		(1,471)	(1,801)	(634)	(694)	(1,294)	(1,568)
Remorse		114	2,117	-1,169**	652	1,284	1,469
		(1,202)	(2,883)	(594)	(1,995)	(1,007)	(2,381)
Cooperation		-622	-288	1,277*	584	-1,896	-868
		(1,409)	(1,394)	(766)	(863)	(1,205)	(1,266)
Remedial action		2,352**	463	358	223	1,994**	243
		(1,102)	(1,075)	(540)	(602)	(920)	(899)
Guilty plea		858	724	1,102**	1,189**	-250	-469
		(848)	(928)	(553)	(580)	(710)	(772)
Need for particular deterrence		7,460**	5,009**	3,953**	3,873**	3,491	1,111
		(2,942)	(2,155)	(1,565)	(1,632)	(2,577)	(1,844)
Need for general deterrence		631	114	73	49	555	58
		(1,034)	(995)	(503)	(525)	(942)	(959)
Safety record (compared to no previous convictions)	Poor	1,314	2,307	6,576**	7,960**	-5,261	-5,648*
		(3,964)	(4,350)	(2,807)	(3,545)	(3,316)	(3,273)
	Previous convictions	2,856	-456	1,498*	554	1,355	-1,012
		(1,884)	(2,070)	(908)	(1,070)	(1,631)	(1,832)
	Good	1,462	-318	1,899**	1,146	-434	-1,461
		(1,652)	(1,464)	(879)	(868)	(1,442)	(1,376)
	Great	2,075	1,281	-148	135	2,222	1,143
		(1,736)	(1,752)	(1,107)	(1,262)	(1,607)	(1,669)
Voluntary payment made		-	-1,438	-	-466	-	-971
			(2,062)		(2,196)		(1,030)
Restorative justice conference		-	-	-	-	-	-

Employee breach of duty		-	2,328	-	495	-	1,823
			(2,421)		(1,331)		(2,474)
Size of employer (compared to large)	Small	-	-2,346*	-	-1,666	-	-664
			(1,243)		(1,103)		(962)
	Medium	-	-	-	-	-	-
Degree of culpability (compared to medium) × ***remorse***	Low	-	2,201	-	9,063**	-	-6,882**
			(3,767)		(3,952)		(3,068)
	Low-medium	-	159	-	2,020	-	-1,882
			(3,214)		(2,263)		(3,021)
	Medium-high	-	-5,927***	-	-2,898**	-	-3,021*
			(1,706)		(1,207)		(1,734)
	High	-	4,541	-	4,971***	-	-416
			(3,249)		(1,912)		(2,126)
Degree of harm (compared to high) × ***remorse***	Low/medium	-	-3,684	-	619	-	-3,052
			(6,086)		(4,410)		(5,128)
	Fatal	-	-2,488**	-	-839	-	-1,628*
			(1,062)		(760)		(931)
Consumer Price Index (CPI)		36	33	23	20	13	13
		(31)	(1,138)	(23)	(879)	(27)	(1,179)
ACC accident rate (accidents per 1,000 employees)		-	-9	-	-2	-	-7
			(12)		(9)		(10)
$\mathbf{R^2}$		0.45	0.49	0.25	0.30	0.35	0.40

Table 5.

Determinants of Financial Liabilities; s 6 Charges
HSE Amendment Act 2002 – *Hanham & Philp*

Explanatory variable		Total Financial Liability		Fine Not Awarded to Victim(s)		Award to Victim(s)	
		'Baseline' model (N=240)	**'Full' model** (N=234)	**'Baseline' model** (N=240)	**'Full' model** (N=234)	**'Baseline' model** (N=240)	**'Full' Model** (N=234)
Number of employee victims		9,825	38,396	9,993	48,700	-168	-10,305
		(6,013)	(36,169)	(7,066)	(40,419)	(1,657)	(8,675)
Degree of culpability (compared to medium)	Low	-2,332	-6,180	3,894	-5,741	-6,226	-439
		(6,620)	(10,557)	(4,037)	(6,345)	(8,033)	(6,993)
	Low-medium	-8,993***	733	-4,225*	783	-4,769**	-50
		(3,403)	(12,548)	(2,479)	(10,641)	(2,415)	(5,964)
	Medium-high	13,274**	1,091	328	-7,212	12,947**	8,303
		(5,882)	(8,581)	(2,345)	(5,871)	(5,590)	(7,550)
	High	25,292***	22,064**	22,816**	10,007	2,477	12,057**
		(9,269)	(10,084)	(9,098)	(9,880)	(3,779)	(6,065)
Degree of harm (compared to high)	Low/medium	-8,893**	-4,870	-2,950	5,350	-5,943***	-10,220***
		(3,593)	(7,356)	(2,754)	(6,069)	(1,721)	(3,560)
	Fatal	48,296***	36,579***	19,291***	19,024**	29,005***	17,555***
		(6,372)	(12,206)	(5,213)	(8,643)	(4,634)	(5,634)
Defendant's financial limitations		-7,273*	-8,781	-7,382**	-10,735***	108	1,954
		(3,922)	(5,334)	(2,941)	(3,598)	(2,424)	(3,691)
Remorse		12,801***	5,190	7,574*	-462	5,228*	5,652
		(4,864)	(7,583)	(4,006)	(6,356)	(2,950)	(6,821)
Cooperation		-7,340	-5,769	-6,121	-7,376	-1,219	1,606
		(6,350)	(6,585)	(5,837)	(5,707)	(3,676)	(4,747)
Remedial action		3,440	-1,806	1,979	-1,412	1,461	-395
		(5,373)	(4,253)	(4,977)	(3,766)	(2,703)	(2,870)
Guilty plea		-9,612	-7,318	-12,163**	-12,583**	2,550	5,266*
		(5,967)	(5,600)	(5,929)	(5,099)	(2,413)	(2,838)
Need for particular deterrence		4,851	3,628	1,202	-689	3,649	4,316
		(3,494)	(4,300)	(2,352)	(2,317)	(2,886)	(3,611)
Need for general deterrence		-1,652	-2,434	-1,873	-1,876	220	-558
		(3,496)	(4,556)	(2,263)	(2,884)	(2,644)	(3,251)
Safety record (compared to no previous convictions)	Poor	71,900**	57,250*	67,297**	54,005**	4,603	3,245
		(29,118)	(32,553)	(26,046)	(26,608)	(4,425)	(8,247)
	Previous convictions	8,102***	6,961**	10,544***	9,992***	-2,442	-3,031
		(2,814)	(3,459)	(1,952)	(2,148)	(2,171)	(2,656)
	Good	-2,145	-4,438	-484	-1,705	-1,661	-2,733
		(4,347)	(4,952)	(2,983)	(3,214)	(3,187)	(3,379)
	Great	-2,714	-1,332	-2,326	-3,006	-388	1,674
		(6,552)	(6,589)	(4,089)	(2,539)	(5,054)	(6,558)
Voluntary payment made		-	8,451*	-	13,798***	-	-5,347
			(5,089)		(3,772)		(3,484)
Restorative justice conference		-	8,169	-	13,971*	-	-5,801
			(9,974)		(8,367)		(7,436)

Employee breach of duty		-	-1,002	-	107	-	-1,108
			(5,312)		(2,922)		(4,884)
Size of employer (compared to large)	Small	-	-11,207	-	-705	-	-10,502
			(8,183)		(4,069)		(6,682)
	Medium	-	-18,865**	-	-7,504	-	-11,361
			(7,816)		(6,448)		(7,567)
Degree of culpability (compared to medium) × ***remorse***	Low	-	-	-	-	-	-
	Low-medium	-	-10,827	-	-4,183	-	-6,644
			(12,961)		(10,859)		(6,949)
	Medium-high	-	11,000	-	7,024	-	3,976
			(11,294)		(6,638)		(10,354)
	High	-	11,961	-	18,050	-	-6,089
			(13,845)		(12,359)		(8,363)
Degree of harm (compared to high) × ***remorse***	Low/medium	-	-3,420	-	-8,387	-	4,967
			(9,746)		(6,858)		(5,752)
	Fatal	-	10,210	-	-8,808	-	19,018**
			(14,180)		(9,406)		(8,473)
Consumer Price Index (CPI)		60	28	68	52	-8	-23
		(151)	(171)	(87)	(110)	(118)	(129)
ACC accident rate (accidents per 1,000 employees)		-	138	-	16	-	122
			(86)		(58)		(74)
$\mathbf{R^2}$		0.63	0.72	0.54	0.68	0.51	0.61

Table 6.

Determinants of Financial Liabilities; Case-Level Analysis
HSE Amendment Act 2002 – *Hanham & Philp*

Explanatory variable		Total Financial Liability		Fine Not Awarded to Victim(s)		Award to Victim(s)	
		'Baseline' model (N=307)	**'Full' model** (N=304)	**'Baseline' model** (N=307)	**'Full' model** (N=304)	**'Baseline' model** (N=307)	**'Full' model** (N=304)
Number of employee victims		10,134***	9,072***	7,565***	7,344***	2,569*	1,728
		(2,700)	(2,124)	(2,335)	(1,847)	(1,401)	(1,334)
Number of charges		-1,409	-1,627	-150	-254	-1,259	-1,373
		(2,788)	(2,271)	(2,321)	(2,104)	(1,612)	(1,326)
Degree of culpability (compared to medium)	Low	-13,646**	-21,587**	3,722	-15,605*	-9,924**	-5,982
		(6,008)	(9,565)	(2,339)	(8,450)	(4,780)	(5,354)
	Low-medium	-3,921	-13,549	-4,831**	-13,003	911	-546
		(3,438)	(11,784)	(2,162)	(11,318)	(2,818)	(5,218)
	Medium-high	16,245***	-4,813	-285	-12,134	15,960***	7,321
		(5,775)	(11,087)	(2,530)	(9,841)	(5,278)	(5,721)
	High	19,076**	10,902	21,033***	1,574	-1,956	9,329*
		(7,400)	(12,589)	(7,169)	(13,327)	(3,711)	(4,922)
Degree of harm (compared to high)	Low-medium	-8,144***	-9,966	-2,163	-611	-5,981***	-9,355**
		(2,974)	(7,002)	(2,233)	(5,981)	(1,569)	(3,865)
	Fatal	42,430***	28,304**	13,133***	5,473	29,297***	22,831***
		(5,267)	(11,028)	(3,352)	(5,803)	(4,486)	(7,574)
Defendant's financial limitations		-10,560***	-8,066	-8,838***	-7,580	-1,722	486
		(4,058)	(12,004)	(3,381)	(10,483)	(2,476)	(7,376)
Remorse		5,760	5,141	1,611	396	4,149	4,744
		(5,751)	(6,066)	(5,550)	(6,134)	(3,132)	(3,899)
Cooperation		-9,616**	-6,917	-6,240**	-7,244**	-3,376	327
		(4,204)	(4,238)	(3,151)	(3,190)	(2,475)	(2,774)
Remedial action		5,402	2,744	2,309	1,646	3,094	1,098
		(6,636)	(7,081)	(6,466)	(7,332)	(2,987)	(3,058)
Guilty plea		-11,867***	-13,549***	-13,315***	-15,129***	1,448	1,581
		(3,626)	(3,237)	(2,732)	(2,311)	(2,547)	(2,483)
Need for particular deterrence		6,666**	7,853**	3,466**	2,136	3,200	5,717*
		(2,893)	(3,214)	(1,717)	(1,752)	(2,460)	(2,929)
Need for general deterrence		314	-3,085	1,264	125	-951	-3,210
		(23,670)	(25,223)	(23,390)	(23,848)	(7,982)	(7,950)
Safety record (compared to no previous convictions)	Poor	46,190***	28,001***	34,440***	23,454***	11,750	4,547*
		(3,491)	(3,524)	(2,486)	(2,334)	(2,370)***	(2,608)
	Previous convictions	3,263	2,159	5,737***	5,506**	-2,474	-3,346
		(3,741)	(4,059)	(2,141)	(2,499)	(3,181)	(3,383)
	Good	-2,090	-4,027	-112	-1,811	-1,978	-2,396
		(4,187)	(4,644)	(2,628)	(2,806)	(3,520)	(3,935)
	Great	-10,869***	-14,838***	-4,568	-7,318***	-6,301**	-7,520**
		(4,178)	(3,905)	(2,819)	(2,440)	(2,835)	(3,007)
Voluntary payment made		-	5,745	-	12,187**	-	-6,440
			(7,289)		(5,785)		(5,853)

Restorative justice conference		-	6,828*	-	5,146**	-	1,681
			(3,606)		(2,125)		(3,219)
Employee breach of duty		-	-7,980	-	-1,906	-	-6,074
			(6,501)		(4,586)		(5,129)
Size of employer (compared to large)	Small	-	-22,376**	-	-8,471	-	-13,905*
			(10,322)		(5,399)		(8,162)
	Medium	-	-12,914**	-	-6,543*	-	-6,372
			(5,202)		(3,519)		(4,338)
Degree of culpability (compared to medium) × ***remorse***	Low	-	6,681	-	12,950	-	-6,269
			(12,430)		(11,610)		(6,542)
	Low-medium	-	10,722	-	10,080	-	642
			(12,653)		(10,190)		(8,181)
	Medium-high	-	22,266	-	12,690	-	9,576
			(14,848)		(15,025)		(6,701)
	High	-	7,430	-	22,339**	-	-14,909***
			(10,352)		(10,046)		(4,765)
Degree of harm (compared to high) × ***remorse***	Low/medium	-	1,244	-	1,777	-	3,020
			(12,277)		(6,426)		(8,810)
	Fatal	-	12,982	-	3,086	-	9,896
			(20,851)		(15,644)		(15,016)
Consumer Price Index (CPI)		73	41	40	13	34	28
		(19,081)	(7,408)	(12,875)	(6,043)	(14,787)	(4,143)
ACC accident rate (accidents per 1,000 employees)		-	52	-	-17	-	69
			(101)		(53)		(89)
$\mathbf{R^2}$		0.56	0.63	0.52	0.60	0.41	0.49