

# Why Do Corporate Charters Waive Liability for Breach of the Duty of Care?

Holger Spamann\*

Early Draft May 15, 2015 – Please Do Not Cite

## Abstract

This paper clarifies why corporate governance arrangements in public firms generally do not make use of judicial evaluations of boards' and managers' business decisions. In principle, information generated in litigation, particularly discovery, could usefully supplement public information (particularly stock prices) in the provision of performance incentives. In particular, the optimally adjusted combination of standard performance pay and litigation could impose *less* risk on boards and managers than standard performance pay alone. Caps, indemnification, or insurance could achieve the requisite tailoring of litigation payments; ruinous liability risk and ensuing risk aversion would not be an issue. Similarly, court biases can be offset by contractual adjustments. The appendix shows this in a formal model summarizing well-known results.

Consequently, the reason not to use litigation incentives is not absolute but a simple cost-benefit trade-off. Litigation is expensive, while the benefits from additional information are limited. Stock prices already provide fairly good information, courts have difficulties evaluating business decisions and thus provide only noisy information, and the agency conflict in standard business decisions is limited. A different result may obtain, however, when other governance mechanisms are weaker, particularly when stock prices or other reliable public signals are not available; when courts can measure the decision against an accepted benchmark; or as the agency conflict becomes more severe.

---

\*Harvard Law School, Cambridge MA 02138, USA. [hspamann@law.harvard.edu](mailto:hspamann@law.harvard.edu). While this paper is still very preliminary, it has already benefitted from generous comments from workshop participants at the 2015 ETH-NUS Law & Finance Colloquium, the Harvard Law School Corporate Lunch, and the Harvard Law School Law & Economics Seminar, especially Louis Kaplow, Mike Klausner, Steve Shavell, and Kathy Spier. The many remaining errors are mine alone.

# 1 Introduction

The charters of large US corporations routinely waive monetary liability for breach of the duty of care by directors and managers.<sup>1</sup> Even if they did not do so explicitly, the Business Judgment Rule (BJR) would achieve almost the same effect by default: directors and managers are not liable for bad business decisions except in the most egregious cases. Similar rules in other jurisdictions go by different names.<sup>2</sup>

As a contractual provision between sophisticated parties, the waiver is presumptively efficient.<sup>3</sup> In this paper, I ask why. After all, the foundational problem of corporate governance is to ensure that boards and managers run the corporation for the benefit of shareholders rather than their own.<sup>4</sup> Performance pay goes a long way in aligning the interests of boards and managers with those of shareholders, but it is highly imperfect. In particular, stock prices and other publicly available signals are imperfect indicators of the quality of board and board decision-making. If this is so, why not complement the pay-incentives with liability incentives? More to the point, why not augment the publicly available information with more fine-grained information generated in litigation (or, for that matter, arbitration), in particular through discovery? Using all available information is intuitively superior and a standard recommendation in contract theory (Holmström 1979; Shavell 1979).

The standard justification of the BJR does not deny that perfect legal liability might help mitigate the residual agency problem. Rather, the concern is that courts make errors; that such errors would have ruinous consequences for board and managers; that this downside is disproportionate to whatever small share of the upside they stand to gain from a risky decisions; and that as a consequence, boards and managers would shy away from taking risks if faced with the threat of liability.<sup>5</sup> This justification has superficial appeal and contains a kernel of

---

<sup>1</sup>Section 102(b)(7) of the Delaware General Corporation Law (DGCL) and similar provisions in other states explicitly allow such a waiver.

<sup>2</sup>The BJR shields managers from liability, provided they were disinterested, reasonably informed, and acted in good faith. Other jurisdictions use different terminology but reach the same result of no liability (Kraakman et al. 2009; Black et al. 2006). Procedural devices may achieve the same result by hindering lawsuits against managers, as would complete insurance or indemnification. For most of this article, this difference seems minor. I will, however, discuss some relevant details later in the paper.

<sup>3</sup>The reason for hesitation are the shortcomings of the contractarian model in explaining corporate governance practice (Klausner 2013).

<sup>4</sup>This is the dominant shareholder-value model. The competing stakeholder model would replace “shareholders” by “stakeholders.” Nothing in this article hinges on this distinction.

<sup>5</sup>For example, according to the leading US casebook (Allen et al. 2012, 219), the rationale of the BJR is that

corporate directors and officers invest other people’s money. They bear the full costs of any personal liability, but they receive only a small fraction of the gains from a risky decision. Liability under a negligence standard therefore would predictably discourage officers and directors from Much concern with court error.

A leading modern treatise on corporate law and economics (Bainbridge 2002, 261) opines that if judicial decisionmaking could flawlessly sort out sound decisions with unfortunate outcomes from poor decisions ..., the case for the business judgment

truth. On reflection, however, it is unconvincing. First, liability need not and should not be ruinous – if the law does not provide limitations by default, charters and contracts would through caps or partial indemnification or insurance.<sup>6</sup> Second, liability can, should, and historically did attach to *not* taking efficient risks, such that liability risk may actually increase efficient risk-taking.<sup>7</sup> If liability is neither ruinous nor asymmetric, however, then it can usefully guide behavior. Court error reduces those benefits but does not eliminate them, much like random stock price fluctuations do not eliminate the benefits of incentive pay. Judicial biases (cf. Rachlinski 1998) can be offset through contractual adaptations.

The argument against liability thus boils down to a simple cost-benefit trade-off. The administrative cost of liability – litigation – is high. By contrast, its (marginal) benefits are likely to be low. Courts have difficulty evaluating business decisions, making for a noisy signal. A noisy signal adds little value when fairly precise signals are already available, in particular the stock price and accounting measures, and when governance mechanisms other than incentives limit the agency problem. At the same time, recognizing the cost-benefit trade-off also points to areas where liability might be an appealing governance tool after all. In particular, the cost-benefit tradeoff is more favorable when the information from litigation is more precise or when the information from other sources is less precise, such as for unlisted entities or worse accounting regimes. The cost-benefit trade-off also becomes more favorable as the underlying agency conflict becomes more severe. In this perspective, stringent liability for “conflicted transactions” under the duty of loyalty or similar regimes is merely one end of a spectrum analyzed in this paper.

While details of the cost-benefit trade-off might be different for outside directors on the one hand and managers on the other, the basic argument seems identical. Charter waivers and the BJR apply to boards and managers indiscriminately. Both boards and managers are supposed to exercise their corporate power for the benefit of shareholders, but both may be swayed by personal in-

---

rule would be substantially weaker. As long as there is some nonzero probability of erroneous second-guessing by judges, however, the threat of liability will skew director decisionmaking away from optimal risk-taking, undertaking valuable but risky projects.

For other, similar statements cf., e.g., American Law Institute Principles of Corporate Governance 4.01, introductory comment d (arguing that the BJR exists “to protect directors and officers from the risks inherent in hindsight reviews of their unsuccessful decisions, and to avoid the risk of stifling innovation and venturesome business activity”), and comment c to 4.01(c) (“For efficiency reasons, corporate decisionmakers should be permitted to act decisively and with relative freedom from a judge’s or jury’s subsequent second-guessing. It is desirable to encourage directors and officers to enter new markets, develop new products, innovate, and take other business risks.”).

<sup>6</sup>Legal rules may restrict indemnification or insurance. In particular, DGCL 146(b) restricts indemnification for liability to the corporation. The conceptual argument of this paper can abstract from this for the time being; ultimately, the result could be achieved through a cap on liability, which is less restrictive than a total waiver and hence should be legal.

<sup>7</sup>As discussed in section 3 below, the infamous *Smith v. Van Gorkom* (488 A.2d 858 (Del. 1985)) held the Transunion board liable for accepting an offer, i.e., for not taking the risk of continuing the sales process.

terests such as laziness, reputation, or pet projects instead. To be sure, some argue that boards are not or should not be motivated by economic incentives (e.g., Stout 2003), and if this were so, liability and other financial incentives might be detrimental. I remain agnostic about this debate in this article, and merely note that the growing use of equity incentives for outside directors seems to assume that financial incentives matter. Finally, managers may be subject to board oversight, but there is pervasive concern that boards remain captive to management, and in any event the board might have to allow judicial vetting to commit itself to an incentive plan using the information (cf. Cebon and Hermalin 2015). From here on, I will therefore refer only to boards for short.

The rest of this paper is structured as follows. Section 2 describes the basic argument for the use of all information, in particular judicially generated information, for the design of optimal incentives. The technical version of this argument is in the appendix. The argument is very general and robust to various infirmities of the information-generating process. In particular, it is often optimal to draw a costly second signal only if the first is sufficiently negative, as happens in “opportunistic” litigation. Intuitively, the sensitivity to the first signal can be reduced on the downside so that the net downside risk remains constant when using the second signal but becomes more precise. Nevertheless, section 3 backs up the assertion that liability can and historically did target failures to take risks, particularly in the *Smith v. van Gorkom* decision.<sup>8</sup> Section 4 discusses the costs of generating information in litigation and the benefits of using it. It is plausible that the costs outweigh the benefits in standard business scenarios in listed corporations. Section 5, however, identifies several areas where the cost-benefit tradeoff might come out differently, including charities, trusts, and other unlisted entities, standardized transactions, and transactions with a more severe conflict of interest such as takeovers. Section 6 concludes.

## 2 Why Litigation is Good, *In Principle*

This section will explain the basic idea why using litigation would be beneficial, in principle.

### 2.1 The Informativeness Principle

This simple principle is that more information is better when monitoring behavior. This so-called informativeness principle is one of the foundational results of contract theory (Holmström 1979; Shavell 1979).

The starting point is the observation that the interests of boards and shareholders are imperfectly aligned. This observation is the foundation of the corporate governance problem. Incentive pay aims to improve the alignment, and other governance devices aim to mitigate remaining imperfections. But a residual divergence remains. The board may share in  $x\%$  of any value change, but that still leaves  $100-x\%$  that it does not internalize. Where a single owner might

---

<sup>8</sup>See supra note 7.

work a little more, look a little more carefully, or forego some prestige spending, the board might not bother. Unless the board owns 100% of the firm, its incentives will inevitably fall short of the idealized single owner. Nor, for that matter, would it be efficient to make the board the residual owner. As a residual owner, the board would internalize all the consequences of its actions, but it would also have to bear all of the risk from developments beyond its control. This is undesirable if the board is risk averse.

The problem here is that stock price changes reflect the combination of two components. The first component is the actions of the board. This component is good for incentives and, from the board's perspective, riskless. But the second component is idiosyncratic and systematic noise, i.e., elements outside the board's control. Exposure to this component does not improve incentives, while being costly for a risk-averse board. A different way of looking at the problem is to note that the noise will distort inference of the board's action.

This provides two rationales for using additional information about the board's action. One rationale is diversification. Instead of putting 100% weight on one source of information, one may put 50% on two equally noisy but separate sources of information.<sup>9</sup> The total amount of information about the action will remain the same, while the two sources of noise will partially cancel each other out, reducing risk. The second rationale is the law of averages: using the average of two signals will be more precise than using one alone. These two rationales are really two sides of the same coin. Combining two sources of information preserves the information content while reducing the noise.

## 2.2 The Information from Litigation

Litigation, particularly US-style litigation, is a formidable information-generating device. Discovery not only produces lots of insights about internal decision-making such as internal agendas and projections. Most importantly, it provides an uncensored picture of available alternatives. Crucially, shareholders generally lack such information to evaluate the board's actions. In particular, standard incentive contracts can only use relatively simple financial metrics without attention to the board's contribution to those metrics.

Parenthetically, I note that information from litigation might conceivably be beneficial through channels other than liability incentives. In the US, there is plenty of litigation even with the BJR. These suits are usually settled. Much information may emerge during discovery, however, that shareholders can factor into decisions such as contract extensions, bonus awards, or perhaps most to the point reelection of directors.<sup>10</sup> One important caveat here is that discovery records are usually sealed, so that the information does not become available

---

<sup>9</sup>When one of the two sources is more reliable, it should be overweighted.

<sup>10</sup>Miller (2010, 320) proposes that Delaware "empower Chancery Court judges to conduct judicial inquiries into credible allegations of gross negligence and to issue reports evaluating the claims." Kamar (1999) argues that shareholder litigation of duty of care claims in the absence of meaningful liability threats (due to indemnification and insurance) already serves mostly the purpose of producing information of a different kind, namely about the applicable law.

after all. A second caveat is that well-known governance problems may impede shareholder action on the information. Finally, and most importantly, plaintiffs will still need incentives to bring suits, requiring at least a bounty system of sorts.

### 2.3 Tailored Liability

Of course, information must be used judiciously. Courts and liability threats would be part of an overall incentive package. This incentive package can limit the exposure to liability threats through caps, indemnification, and insurance, and compensate liability risk with increases in fixed or variable pay. In principle, court signals could even be used to trigger increases in monetary payments, but this is not necessary.

Consider for example the following arrangement. Imagine a board that has been given 1% of the company's stock to incentivize value-enhancing decisions. The board is now exposed to 1% of any swings in the corporation's value, even completely unrelated to its decisions. The stock could be replaced by a cash payment of the same value, call options on 1% of the corporation's stock, and the threat of damages equal to 1% of any stock price drop *if* a court finds that the board was responsible. [NEED TO WORK THIS OUT BETTER. AS WRITTEN, INCENTIVES ARE LESS SENSITIVE TO BOARD ACTIONS THAN 1% STRAIGHT STOCK.]

### 2.4 Court Bias

The preceding example also shows that it is acceptable that liability be triggered only if the value of the firm decreases. As long as the rest of the incentive package is properly adjusted, this will not deter efficient risk-taking any more than the previous incentive package. In fact, the preceding example will lead to less risk-aversion on part of the board because the judicial intervention partially protects the board against losses due to sheer bad luck. Moreover, triggering litigation only in rare situations saves litigation costs.

A major concern is that courts may misinterpret efficient risk-taking for inefficient waste, and impose liability for the wrong actions. Again, however, liability is at worst as deterring as the downside of unconditional incentive pay of the same magnitude. Even biased courts can thus be used beneficially in a comprehensive incentive plan. See appendix section D. Moreover, it is not clear that assuming such bias is appropriate. As the next section will show, liability may just as well attach to *not* taking (efficiently) risky actions.

In other areas, researchers and other commentators have identified scenarios where incentives are counter-productive (Holmström & Milgrom 1991). For example, incentivizing teachers to improve test scores may lead to a neglect of other, unobservable skills, and thus be undesirable. The problem here is that some relevant dimension is not observable, or at least contractible, at all. This is not a problem in corporate governance because the stock price is always available as a signal, and the stock price is the object of ultimate interest. Any

action that influences the stock price will thus already be targeted by equity incentives. Using additional information helps, however, reduce the riskiness of equity pay, and hence improve joint welfare of shareholders and the board.

### 3 The content of the negligence rule: *Smith v. Van Gorkom*

In the preceding discussion, I have assumed that professional negligence liability correctly applied attaches to any action that reduces expected value. In particular, it attaches not only to damages caused by taking inefficient risks, but also to damages caused by the failure to take efficient risks. Many of the concerns against board liability seem predicated on a different understanding of the applicable liability rule. I thus dedicate this brief section to a discussion of the applicable liability rule.

To fix ideas, it is helpful to consider an analogy from medical malpractice liability. Patients often die during or after medical treatment even though the treatment was optimal according to the present state of medical knowledge. Doctors and other medical practitioners are undoubtedly not liable for such deaths. That is, liability does not attach to a patient's death per se. Rather, doctors are liable only if they negligently cause such death. Does this mean that doctors have to do everything to prevent death, and are liable if they fail to do so? The answer is clearly no. Doctors routinely perform operations that are known to carry a risk of death, but where the expected benefits nevertheless outweigh the expected harm.<sup>11</sup> If the risk of death materializes, the doctor is not liable. For example, a doctor may operate on a broken leg in full knowledge that the anesthesia will lead to death with a certain low probability. This is true even if the unoperated broken leg is not lethal, i.e., even if there is no tradeoff between two non-zero probabilities of death. In fact, the doctor would be liable for the leg's lost functionality if she did not operate. In other words, doctors can be held liable in a negligence regime for not taking efficient risks.

Board liability would take the same form. The best evidence for this is the very case that US corporate law scholars usually hold up as the poster child of board liability gone wrong, namely the 1985 decision of the Delaware Supreme Court in *Smith v. Van Gorkom* (e.g., Fischel 1985).<sup>12</sup> *Van Gorkom* concerned the leveraged buyout of the Trans Union Corporation for \$55 per share by the Pritzker family in 1980/81. Trans Union's CEO Jerome Van Gorkom had initiated the transaction in a visit to Jay Pritzker's home on September 13, 1980. Van Gorkom had presented Pritzker with the results of an internal study showing that the debt required to finance the \$55 purchase price could be paid off in full in five years time. Pritzker made a formal offer within a few days, setting a September 21 deadline for acceptance. On September 19, Van Gorkom

---

<sup>11</sup>Oftentimes, the decision will be the patient's. One may therefore want to think of situations in which the patient is unconscious or otherwise not able to make a decision.

<sup>12</sup>See supra note 7.

convened a special meeting of the Trans Union board for the following day. At the meeting, he informed the board of his contacts with Pritzker for the first time. After a two-hour meeting, the board approved the deal. The merger agreement was executed on the sidelines of a social event on the same day. Trans Union shareholders voted to approve the deal on February 10, 1980. Trans Union's pre-announcement share price had been \$37.25.

The Court ruled that Trans Union's board was not reasonably informed when it agreed to the merger on September 20. In particular, the Court found fault with the short duration of the meeting, the lack of preparation, and the absence of outside advisors such as investment bankers. Under Delaware doctrine, the lack of reasonable information deprived the board of BJR protection. Certain passages in the Court's decisions read as if the lack of adequate information was also the basis of liability, rather than merely a reason to remove a barrier to liability. In any event, there is no liability without damages, and the Court explicitly ruled that the board would be liable only to the extent that the "fair value of the shares ... based on the intrinsic value of Trans Union on September 20, 1980," exceeded \$55 per share.<sup>13</sup>

The case settled before the lower Chancery Court could determine the shares' fair value. An evaluation of the decision thus requires some guessing as to what that determination would have been. It would appear, however, that the only way the Chancery Court could have found a value above \$55 was to posit a substantial likelihood of an alternative transaction at a higher price, or of the possibility of negotiating a higher price with the Pritzkers. Trans Union's pre-announcement stock price of \$37.25 was too far below the merger price of \$55 to argue that Trans Union could reasonably have been worth more than \$55 on a stand-alone basis. Betting on a higher offer, however, is risky. The offer may not materialize, and the existing offer may disappear if the existing bidder withdraws.<sup>14</sup> Taken together, this implies that liability would only have attached if the Chancery Court had ruled that the board took too little risk by accepting the transaction that was immediately available. In as much as it concerns the actual decision rather than the supporting information, the threat of liability articulated in *Smith v. Van Gorkom* is thus directed at excessive prudence rather than excessive risk.

That being said, *Smith v. Van Gorkom* arguably did penalize the board for starting any sales process in the first place. If the board had not entered into any transaction and related decision, it is very likely that no suit would ever have been brought and liability could not have arisen. At first sight, liability thus appears to exert a chilling effect on actions that change the status quo. Again, however, the problem disappears on reflection, once appropriate contractual adjustments are taken into account. Specifically, the optimal contract would

---

<sup>13</sup>Id. at 893.

<sup>14</sup>In fact, Trans Union's counsel specifically warned the board that they might be sued if they did not accept the offer (and, one presumes, did not receive a better offer in the end). Id. at 868. McChesney (2002) argues that a substantially higher premium was so unlikely that obtaining a somewhat higher premium would have had to be almost certain (say, 85%) for the court to find liability.

limit the amount of liability and decrease the performance sensitivity of equity pay on the downside. See the preceding section and the appendix for a more detailed explanation. Perhaps *Smith v. Van Gorkom* illustrates the noisiness of judicial evaluations of business decisions, as the price of \$55 appears to be a good one from a pre-transaction perspective. Then again, the point of the liability would be to incentivize the board to do better within the sales process, for which there clearly was room in the sale of Transunion.

## 4 Cost-Benefit Analysis of Liability

What then are the problems with board liability? Ultimately, the argument against liability is a simple cost-benefit argument. The discussion above and the model in the appendix show that the benefits of a second signal (litigation) depend critically on three factors: the precision of the signal, the precision of other information that is already available (the first signal), and the extent of the agency problem (and hence the quality of other governance tools). In the context of publicly traded corporations, the precision of litigation about business decisions' merits is likely to be low, while equity-based performance pay and other governance mechanisms already eliminate most of the agency cost. Consequently, the benefits of litigation are likely to be limited and will not outweigh corporate litigation's substantial cost.

### 4.1 The Cost of Obtaining Information in Court

Litigation costs are likely to be high, in part because they will not be focused on the cases that are most relevant for incentives.

#### 4.1.1 The amount of expenditures

The cost of litigation fall into two categories.

The most obvious but less important category are out-of-pocket costs for lawyers and other service providers. Empirically, the few board liability suits that do go to trial tend to be mega-trials. For example, the trial lasted 37 days in the derivative litigation regarding ostensibly excessive compensation for Disney's one-time President Michal Ovitz.<sup>15</sup> [statistics on trial lengths to follow] Out-of-pocket costs in such litigation can go above \$10m, and are thus far from negligible. That being said, they seem small relative to the stakes involved in improving incentives. A mere 1% chance of improving the deal price by \$1bn is worth \$10m. And improving the value of a \$50bn firm by 1% is worth much more.

For the very same reason of scale, however, another cost of litigation looms very large here, namely the opportunity cost of directors and managers for testifying at trial. These costs scale with firm size. For example, if one week of the CEO's full attention improves firm value by, say, a mere 0.1%, then blocking

---

<sup>15</sup>In re The Walt Disney Company Derivative Litigation, 906 A.2d 27 (Del. 2006).

the CEO's schedule with depositions etc for a week is much more costly than \$10m out-of-pocket costs.

The question is if the second type of cost could be reduced or eliminated by limiting the trial to documentary evidence, or testimony from lower-level employees. This is unlikely. The most relevant facts will often be the knowledge and actions of the individual managers, which need to be elicited through testimony (although even more stringent standards of documentation could yet emerge). As discussed immediately below, the relevant questions will tend to be very case-specific, such that only a very detailed review of the facts can hope to reach a correct judgment with any degree of precision.

#### **4.1.2 The targeting of expenditures**

An additional problem is that litigation expenses are likely to be misallocated away from the most important cases to the most lucrative ones. This is a manifestation of “the fundamental divergence between the private and the social motive to use the legal system” (Shavell 1997; cf. Shavell 1982).<sup>16</sup> The social welfare role of corporate litigation is to deter inefficient board actions. That is, the social role of litigation is to set the right incentives. But the private motive to sue is to recover money. That is, the private motive is distributional. The two will rarely if ever exactly coincide. In particular, private individuals do not internalize the benefit of improved deterrence from bringing suit. At the same time, at least under the American rule for costs, they also do not internalize the costs to the other party and the court. Consequently, private individuals may bring too few or too many suits.

### **4.2 The (Low) Benefit of Obtaining Information in Court**

#### **4.2.1 The (Low) Precision of Information Obtained in Court**

While the costs of obtaining the information are thus likely to be high, the information is likely to be of low quality. Commentators such as Fischel (1985) and the courts themselves have long emphasized that judges are not business experts, without, however, clearly articulating why judges are worse at business than, e.g., medicine.

As before, it is important to keep in mind that courts always make mistakes. Judges may not understand business, but presumably they do not understand medicine and other fields either. They judge managers in hindsight, but they also judge doctors and other professionals in hindsight (Rachlinski 1998). From this perspective, they are prone to misjudge decisions of doctors and others just as much as those of managers. In particular, hindsight bias – the fallacy

---

<sup>16</sup>Kraakman et al. (1994) analyze this problem in detail in specific context of board liability. Litigation's other problems from the economic point of view include courts' and juries' insufficient expertise, and the blunting of liability incentives through insurance and judgement-proofness, i.e., defendants' inability to pay damages (and hence be deterred) because of insufficient wealth.

of overestimating a risk just because the risk did materialize – will affect any negligence suit.

There appears to be a difference, however, in the degree of standardization of the decisions of different professionals. Board decisions appear to be particularly idiosyncratic. By contrast, medical decisions seem more standardized. The main reason why this could be true is that there are many more patients with similar illnesses than there are businesses with similar problems. This is particularly true at the high end of the size distribution of businesses – there are not many companies facing the same strategic choices as, say, Google. In addition, it is almost the essence of business to seize new opportunities before anybody else does. This means that there cannot be a suitable comparison almost by definition. As a consequence, expert medical witnesses can provide a comparison in medical malpractice suits that business expert witnesses cannot provide. There certainly are individual medical cases that should depart from standard procedure, and there the risk of judicial misjudgment would then be as large as for business decisions. But for the majority of medical cases, the risk would seem much less than in the business context.

#### **4.2.2 The (High) Precision of Existing Information**

The value of additional information depends on the information that is already available. If the available information is of high quality, the information gap is already small, and hence the benefit of additional information is smaller (cf. the formula in appendix section C).

For publicly traded corporations, the stock price provides a very good signal of the quality of board action. While trading consumes a lot of resources, the stock price is free from the perspective of corporate governance.

To be sure, the stock price is not perfect, and a large literature explores possible problems with existing stock-based incentive pay (Murphy 2013). Among other things, the stock price is subject to manipulation and random fluctuations, both idiosyncratic and systematic. Court-generated signals can definitely improve upon the information environment. However, their impact is much reduced once stock prices are available.

#### **4.2.3 Other Solutions to the Agency Problem: Alternative governance mechanisms**

Equity-based pay is just one of several mechanisms that bind boards to shareholders. The most important other mechanisms are engagement, elections, and takeovers, assisted by devices such as auditors and disclosure. In particular, these governance mechanisms are potent tools to avert harm from long-term decisions, such as the refusal to sell the firm, divest a division, or expand into a new line of business. Shareholders can lobby management or displace it in an election. The problem of corporate shareholders is thus very different from, say, the potential victim of reckless driving.

The argument is subject to important limitations. First, to the extent shareholders really do avert the problem, there will be no harm and hence no damages, so that liability waivers are irrelevant. Second, shareholders have great difficulties in exercising their power. There are not only collective action problems but also the information gap that was at the heart of this paper’s model. Shareholders have less information than the board and hence cannot judge in real time whether managers are doing the right thing. The benefit of litigation is precisely to reveal this information. What remains of the argument, however, is that the alternative governance tools limit the scope for beneficial litigation.

## 5 Exceptions: Where Liability’s Benefits May Outweigh Its Costs

Understanding the cost-benefit trade-off for board liability opens new perspectives on where liability may after all be desirable.

### 5.1 Worse Governance Alternatives: Foundations, Trusts, Private corporations

First of all, many entities face a larger governance gap than publicly traded corporations. Private corporations cannot use the stock price as a signal of board action. Governance devices such as elections are lacking in many non-corporate entities like foundations or trusts. Even in closely-held corporations, such governance mechanisms are de facto lacking. Minority stockholders cannot oust an inferior board. Here, the benefit of liability may be larger, and might outweigh its cost.

### 5.2 Better Judicial Determinations: Oversight Liability?

Second, certain board actions may be standardized after all, and hence suitable for court evaluation. For example, it seems that all companies of a certain size need standard monitoring mechanisms like accounting, controlling, monitoring, and compliance. This would provide a rationale for stricter “oversight liability” standards, as discussed in *Caremark*<sup>17</sup> and many follow-up decisions.<sup>18</sup> While this failure might be portrayed as a failure of “oversight,” it is precisely the sort of activity without a playbook that courts are ill-suited to evaluate ex post.

Another area of standardized board behavior is information acquisition as required under Delaware case law for the BJR to apply in the first place. Delaware

---

<sup>17</sup>In re Caremark International Inc. Derivative Litigation, 698 A.2d 959 (Del. Ch. 1996).

<sup>18</sup>Of course, the mere framing of an action as “oversight” does not make it standardized. For example, Citigroup’s board’s failure to detect problems in the bank’s subprime business before the financial crisis of 2007/08 was not a deviation from a standard template, and the Delaware Chancery Court thus properly resisted plaintiffs’ attempts to judge it more strictly than other board actions. In re Citigroup Inc Shareholder Derivative Litigation, 964 A.2d 106 (Del Ch 2009).

courts require boards to be “reasonably informed” before they can avail themselves of the protection of the BJR. This has led to at least the perception that, e.g., boards must solicit fairness opinions about transactions, or else lose the protection of the BJR. Superficially, this may seem justified under the BJR’s rationale explicated in this subsection. On closer examination, however, this argument is circular, and the erection of standardized information protocols may be exactly the sort of misjudgment that the BJR is supposed to protect against. The problem is that the standardized behavior may have emerged only because the courts required it. If this were the case, then the standardization provides no assurance of appropriateness for most firms. There are reasons to think that the appropriate information acquisition may differ strongly by firm and situation. As time is short and time is money, the allocation of time to different tasks is a difficult problem that may depend on many details of the situation. Similarly, information sources are notoriously difficult to evaluate, and fairness opinions in particular are the laughing stock of many commentators (cf. Bebchuk and Kahan 1989).

### 5.3 Severe Conflict of Interest

Takeover defenses may warrant more court intervention also under a different angle implicit in this paper’s analysis, and that has not escaped the court. Takeovers are endgame scenarios. Hence many of the usual governance mechanisms such as elections lose their force. Court intervention may thus become necessary.

In general, the cost-benefit calculation will favor court intervention more when the conflict of interest between shareholders and the board is stronger. This comports with existing corporate law: in the extreme case of “conflicted transactions,” the law of Delaware already applies the very stringent duty of loyalty, which creates a very real liability threat. This paper’s analysis emphasizes, however, that there is no qualitative difference between the situations that the law calls “conflicted,” and all or most other board decisions. Indeed, the conflict of interest between boards and shareholders is pervasive for corporate governance. Only the strength of the conflict differs, and so the cost-benefit trade-off changes. As the trade-off changes, so should the law, but perhaps better gradually than abruptly. Arguably, the law of Delaware explicitly (standards of review) and implicitly (attitude of courts) already follows such a gradual approach.

## 6 Conclusion

Using standard models from contract theory, this paper has shown that incorporating information generated in litigation would in principle improve board incentives. That is, if litigation were costless, it would be optimal to expose boards to (limited) liability risk. In particular, such liability could be tailored and combined with incentive pay to encourage, not deter, efficient risk-taking

even by risk-averse managers. In reality, litigation is not costless. Moreover, the beneficial incentive effect from litigation, while real, may be small. Courts have difficulty evaluating business decisions, and equity pay and other governance mechanisms already do a pretty good job at controlling agency cost. A simple cost-benefit analysis therefore disfavors liability. This rationale, however, also suggests that liability might be useful in worse-governed entities, for more standardized decisions, and in situations where the conflict of interest is larger.

# References

1. Allen, William, Reinier Kraakman, and Guhan Subramanian. 2012. *Commentaries and Cases on the Law of Business Organizations* (4th ed.). Aspen.
2. Bainbridge, Stephen. 2002. *Corporation Law and Economics*. Foundation Press.
3. Bebchuk, Lucian, and Marcel Kahan. 1989. Fairness Opinions: How Fair are They and What Can be Done about it? *Duke Law Journal* 1989:27-53.
4. Black, Bernard, Brian Cheffins, and Michael Klausner. 2006. Outside Director Liability: A Policy Analysis. *Journal of Institutional and Theoretical Economics* 162:5-20.
5. Cebon, Peter, and Benjamin Hermalin. 2015. When Less Is More: The Benefits of Limits on Executive Pay. *Review of Financial Studies* 28:1667-1700.
6. Edmans, Alex, and Xavier Gabaix. 2011. Tractability in Incentive Contracting. *Review of Financial Studies* 25:2865-2894.
7. Fischel, Daniel. 1985. The Business Judgment Rule and the Trans Union Case. *Business Lawyer* 40:1437-1455.
8. Holmström, Bengt. 1979. Moral Hazard and Observability. *Bell Journal of Economics* 10:74-91.
9. Holmström, Bengt, and Paul Milgrom. 1987. Aggregation and Linearity in the Provision of Intertemporal Incentives. *Econometrica* 55:303-238.
10. Holmström, Bengt, and Paul Milgrom. 1991. Multitask Principal-Agent Analyses: Incentive Contracts, Asset Ownership, and Job Design. *Journal of Law, Economics, and Organization* 7:24-52.
11. Kamar, Ehud. 1999. Shareholder Litigation under Indeterminate Corporate Law. *University of Chicago Law Review* 66:887-914.
12. Klausner, Michael. 2013. Fact and Fiction in Corporate Law and Governance. *Stanford Law Review* 65:1325-1370.
13. Kraakman, Reinier, Hyun Park, and Steve Shavell. 1994. When are Shareholder Suits in Shareholder Interests? *Georgetown Law Journal* 82:1733-1779.
14. Kraakman, Reinier, John Armour, Paul Davies, Luca Enriques, Henry B. Hansmann, Gérard Hertig, Klaus J. Hopt, Hideki Kanda, and Edward B. Rock. 2009. *The Anatomy of Corporate Law* (2nd ed.). Oxford: Oxford University Press.

15. McChesney, Frank. 2002. A Bird in the Hand and Liability in the Bush: Why Van Gorkom Still Rankles, Probably. *Northwestern Law Review* 96:631-649.
16. Miller, Geoffrey. 2010. A Modest Proposal for Fixing Delaware's Broken Duty of Care. *Columbia Business Law Review* 2010:319-345.
17. Murphy, Kevin. 2013. Executive Compensation. In *Handbook of the Economics of Finance* vol. 2xxx.
18. Rachlinski, Jeffrey. 1998. A Positive Psychological Theory of Judging in Hindsight. *University of Chicago Law Review* 65:571-625.
19. Ross, Stephen. 1981. Some Stronger Measures of Risk Aversion in the Small and the Large with Applications. *Econometrica* 49:621-638.
20. Shavell, Steve. 1979. On Moral Hazard and Insurance. *Quarterly Journal of Economics* 93:541-562.
21. Shavell, Steven. 1982. The Social versus the Private Incentive to Bring Suit in a Costly Legal System. *Journal of Legal Studies* 11:333-339.
22. Shavell, Steven. 1997. The Fundamental Divergence between the Private and the Social Motive to Use the Legal System. *Journal of Legal Studies* 26:575-612.
23. Stout, Lynn. 2003. On the Proper Motives of Corporate Directors (Or, Why You Don't Want to Invite Homo Oeconomicus to Join Your Board). *Delaware Journal of Corporate Law* 28:1-25.

# Appendix: Formal Model

This appendix provides a formal version of the paper’s argument that a costless signal always improves incentives, regardless of its noisiness or even bias. The model is essentially a translation of Holmström (1979) and Holmström & Milgrom (1991), whose proofs will be referred to extensively. Signals from litigation should not be generated only if their cost outweighs the benefits of reduced incentives, which is plausible given the cost of corporate litigation and the ability of incentive pay to align boards and managers relatively closely with shareholder objectives.

For simplicity, this appendix will refer only to “boards” and “shareholders.” As discussed in the main text, it might be appropriate to talk of “managers” instead of “boards,” and then perhaps even “board” instead of “shareholders.”

## A The model

This section sets up the model of boards. The basic problem is that the interests of boards and shareholders diverge, at least from a certain point onwards. Shareholders want the board to maximize firm value, but the board also has leisure, reputation, or other personal interests at stake. In principle, board and shareholders can agree on the optimal action plan in advance. The problem is, however, that the board’s actions are imperfectly observable, such that the first-best contract cannot be implemented. The model nests two important sources of non-observability (i.e., the disturbance term  $\epsilon$  of the model) that are highly relevant for corporate governance. The first possibility is that the board’s actions are imperfectly observable for exogenous reasons: decision contexts cannot be faithfully reconstructed in the court room, the court misinterprets inevitable lapses as carelessness, the court misunderstands the cost-benefit tradeoff, etc. The second possibility is that the board itself can manipulate the performance measure by window-dressing results etc.

### A.1 Basic setup

Shareholders entrust the board to choose an action  $a \in A \subseteq \mathfrak{R}_+$  that affects expected firm value  $V(a)$ : higher  $a$  increases  $V$  but also the personal cost  $C(a)$  to the board. The action  $a$  is not publicly observed, so the contract cannot condition on the action itself. There is, however, a public signal  $s = S(a) + \epsilon$ , where  $\epsilon$  is a disturbance term as explained in subsections A.2 and A.3 below. The board receives a contractual payment  $p(s)$ . Embodying standard assumptions of decreasing returns,  $S$  and  $V$  are concave and  $C$  is strictly convex. An important feature of the model is that there may be multiple actions as well as signals and corresponding noise terms, i.e.,  $a$ ,  $s$ , and  $\epsilon$  may be vector-valued. It is presumed that it is not efficient for the board to buy out the shareholders, which would eliminate the contracting problem, either because the board is risk averse or because the board does not have sufficient wealth.

This formulation is very general. The signal  $s$  could be the stock price (such that  $S(a) = V(a)$ ), but it could also be information from an audit etc. The payment  $p$  could be equity-based incentive pay, but it could also be a damage payment that the board must make under the contract (in which case  $p$  could be negative). The action  $a$  could be effort, such as time spent on a CEO search or talking to the auditors. But  $a$  could also be a parameter indexing project choice, particularly risk (or safety, for that matter). For example, one interpretation of the model is that the board would like to take less risk  $a$  than the level that maximizes firm value, perhaps because the board is afraid of the personal reputational consequences in case the firm fails.

Importantly, the model does not assume that more is always better, or that the board and the shareholders are always in conflict. For example, if  $a$  represents risk choice, the board itself might wish to take *some* risk, but less than the value-maximizing amount. In that case, the shareholders' problem is to motivate the board to take more risk; they need not worry that the board takes less risk or overshoots beyond the value-maximizing risk. The model captures this scenario by letting  $A = [0, \arg \max_a V(a)]$  after normalizing the board's preferred risk to zero.

## A.2 Exogenous noise with a risk-averse board

One practically relevant interpretation of the model thus far, and the standard one in the literature, is that  $\epsilon$  is an exogenous noise term. That is, for technological reasons,  $S(a)$  cannot be observed without error. As a consequence, the board does not have full control over the remuneration it will receive. This is a problem if the board is risk averse: the more the contractual payments vary with the signal, the more it exposes the board to risk that it does not control. Holmström (1979) derives the main results in section C - in particular, that using all information is generally optimal - in the general setting described up to here; the rest of the analysis below would presumably go through qualitatively as well.

It greatly facilitates the exposition and underlies some formal proofs, however, to make more specific assumptions about the utility function and the noise distribution. Concretely, the model will assume that the noise  $\epsilon$  is normally distributed with variance  $\Sigma$  and that the board's utility function is of the Constant Absolute Risk Aversion (CARA) type with risk aversion parameter  $r$ .<sup>19</sup> Under these assumptions, the best possible contract is the simple linear contract  $p(s) = \alpha s + \beta$  (Holmström & Milgrom 1987),<sup>20</sup> and the "certainty equivalent" form of the board's utility is then simply  $CE = \alpha S(a) + \beta - C(a) - \frac{r}{2} \alpha' \Sigma \alpha$ .<sup>21</sup>

<sup>19</sup>Formally, the board's utility is assumed to be  $-\exp\{-r[w_0 + p(s) - C(a)]\}$ , where  $w_0$  is the board's outside (initial) wealth.

<sup>20</sup>Technically, a further assumption required for this result is that  $a$  is not literally a one-off choice but the summary of a sequence of actions taken over time. This is realistic.

A previous draft showed that using the additional signal is beneficial in a model based on the non-linear optimal contract in Edmans & Gabaix (2011).

<sup>21</sup>The first two terms are the expected contractual payments from choosing  $a$ , the third

The board will chose  $a$  to maximize  $CE$ . Ignoring corner solutions,  $a$  is determined by the first-order condition  $\alpha S'(a) - C'(a) = 0$ .<sup>22</sup> Since  $\beta$  can be used to redistribute joint surplus costlessly, any pareto-optimal contract must maximize joint surplus subject to the board's endogenous choice of  $a$ , i.e.,

$$\begin{aligned} \max_{\alpha} \quad & V(a) - C(a) - \frac{r}{2}\alpha'\Sigma\alpha \\ \text{s.t.} \quad & \alpha S'(a) - C'(a) = 0. \end{aligned}$$

Two important features of this formulation deserve emphasis. First, the linearity of the contract is not imposed as an artificial restriction but arises endogenously as the optimal incentive scheme. That is, the deck is not stacked in favor of court intervention by artificially restricting the form of other incentives. Second, the transfer payment  $\beta$  addresses the concern that a board may not be willing to serve under a certain incentive scheme, in particular a high liability risk. That is,  $\beta$  will be set to compensate the board ex ante for any liability risk etc. it may have to bear ex post. Shareholders thus internalize any cost of the incentive scheme. If the model's solution nevertheless provides for incentives, it is because their benefits outweigh their costs.

### A.3 Alternative interpretation: Endogenous manipulation

An alternative interpretation of the model setup is that the board manipulates the signal by choosing  $\epsilon$ .<sup>23</sup> Manipulation is an unproductive activity that nevertheless improves the board's payoff by affecting the outcome measure. In this case, the board can be risk neutral with utility simply equal to  $p(s) - C(a)$ .

Concretely, let  $\epsilon = \Sigma^{\frac{1}{2}}m$ , where  $m$  is (possibly vector-valued) manipulation that the board implements at personal cost  $\frac{m'm}{2r}$ , where  $\Sigma^{\frac{1}{2}} \geq 0$  is the effectiveness of the manipulation and  $1/r > 0$  its "price." Faced with a linear incentive contract  $p(s) = \alpha's + \beta$ , the board will choose  $m$  to maximize  $\alpha'\Sigma^{\frac{1}{2}}m - \frac{m'm}{2r}$ , i.e., it will choose  $m = r\Sigma^{\frac{1}{2}}\alpha$  at a cost  $\frac{r}{2}\alpha'\Sigma\alpha$ . Of course, in equilibrium nobody is fooled, and the contract will anticipate the manipulation. As long as the board cannot commit not to manipulate, however, it will because doing so is ex post optimal. The result is that the shareholders and the board collectively sustain a deadweight loss equal to the manipulation cost  $\frac{r}{2}\alpha'\Sigma\alpha$ . Assume for now that this cost is borne by the board, which is without loss of generality because  $\beta$  will be set to redistribute as necessary. Netting out anticipated manipulation, one can again write  $CE = \alpha S(a) + \beta - C(a) - \frac{r}{2}\alpha'\Sigma\alpha$ , and proceed as before.

---

term is the personal cost of choosing  $a$ , and the last term is the disutility of bearing risk, which rises with payment-performance sensitivity  $\alpha$ .

<sup>22</sup>The first-order condition is necessary and because of concavity also sufficient for a putative solution  $a \in A$ .

<sup>23</sup>This possibility is alluded to, but not spelled out, in Holmström & Milgrium (1991, n. 7).

## B Single action, single signal

As a benchmark, consider the standard model where the board chooses only one action (usually effort) generating only one signal (usually the stock price). The value and cost functions determine whether it is efficient for the board to take any action  $a > 0$  and hence to give the board incentives to do in the first place. For example, if  $C'(0) > V'(0)$ , the optimal choice is  $a = 0$  and the contract will not provide any incentives. The problem becomes interesting when  $a > 0$  is optimal. The interesting version of the problem also appears to be the practically relevant one, as boards do indeed receive equity incentive pay.

A standard, particularly convenient parametrization of such a problem is  $V(a) = va$ ,  $S(a) = a$  and  $C(a) = \frac{c}{2}a^2$ , where  $v, c > 0$ .<sup>24</sup> In that case, the well-known, straightforward solution to the constrained maximization problem is

$$\bar{\alpha} = \frac{v}{1 + cr\Sigma}.$$

Optimal performance incentives  $\bar{\alpha}$  increase in the action's value-relevance  $v$  (which could be firm size) and decrease in action cost  $c$ , risk-aversion  $r$ , and noise  $\Sigma$ .

## C Single action, multiple signals

Consider now the scenario at the heart of the paper, namely one where multiple signals are available. As already mentioned, Holmström (1979) shows that using all signals is optimal under very general conditions. For illustrative purposes, however, consider a simple extension of the preceding parametrization with two signals  $s_1$  and  $s_2$  instead of one. In particular, the first signal might be the stock price, as before, and the second signal is a judicial determination of  $a$ .

Now  $\alpha$ ,  $s$ ,  $S$ , and  $\epsilon$  are vectors of length 2, and  $\Sigma$  is a 2x2 matrix. Everything else is as before. Denote the elements of vectors and matrices by subscripts (e.g., the first and second elements of  $\alpha$  are  $\alpha_1$  and  $\alpha_2$ , and the variances and covariance are  $\Sigma_{11}$ ,  $\Sigma_{22}$ , and  $\Sigma_{12}$ , respectively). Then the problem becomes

$$\begin{aligned} \max_{\alpha} \quad & va - \frac{c}{2}a^2 - \frac{r}{2}\alpha'\Sigma\alpha \\ \text{s.t.} \quad & \alpha_1 + \alpha_2 - ca = 0. \end{aligned}$$

The first order conditions are

$$\begin{aligned} \frac{v}{c} - \frac{\alpha_1 + \alpha_2}{c} - r(\alpha_1\Sigma_{11} + \alpha_2\Sigma_{12}) &= 0 \\ \frac{v}{c} - \frac{\alpha_1 + \alpha_2}{c} - r(\alpha_2\Sigma_{22} + \alpha_1\Sigma_{12}) &= 0 \end{aligned}$$

---

<sup>24</sup>Scaling  $V$  but not  $S$  by the parameter  $v$  captures the idea that the board's actions have greater value implications in large firms, even though stock returns remain equally informative. Put differently, the value impact scales with firm size, but so does the noise. An alternative reading of this parametrization is simply that some firms have more informative signals relative to the value impact than others.

It follows immediately that

$$\frac{\alpha_1}{\alpha_2} = \frac{\Sigma_{22} - \Sigma_{12}}{\Sigma_{11} - \Sigma_{12}}.$$

That is, the optimal ratio of the pay sensitivities to the two signals is the inverse of the signal's variances, with adjustments for the covariance between the two. For present purposes, three important corollaries are:

- If any signal will be used, both will be used (with two exceptions to be discussed below). This so-called *informativeness principle* is the starting point of this paper's analysis, which asks why *in spite of* this result, the court's signal is not used.
- A signal will not be used if it has infinite variance. In the latter case, the "signal" is obviously just noise and useless. This extreme case is unlikely to describe judicial decisions.
- The stronger the two signals are correlated, the less is the weight on the more noisy signal.<sup>25</sup> Thus, if a court adds little information to the market signal, the weight on the court decision will be small. The court signal will then add little benefit, and may not be worth its cost.

Focusing on uncorrelated signals for simplicity and rearranging the first-order conditions, the optimal sensitivity for signal  $i \in \{1, 2\}$  and  $j \neq i$  is

$$\alpha_i = \frac{v}{1 + cr\Sigma_{ii} + \frac{\Sigma_{ii}}{\Sigma_{jj}}} \leq \bar{\alpha}.$$

This is the same as in the single-signal case, but with an extra term in the denominator, namely the ratio of the signal's variances. Consequently, the sensitivity to any single signal decreases with the precision of the other signal, and is strictly less than if the signal were used on its own (again excepting the case of infinite variance of the other "signal").

To calculate the benefit of using the second signal, one can exploit the fact that having only a single signal is the same as having a second signal with infinite variance (where  $\alpha_2$  would consequently be zero). Using the envelope theorem, the benefit of a second signal with finite variance  $\Sigma_{22}$  is therefore equal to

$$\begin{aligned} & \int_{\infty}^{\Sigma_{22}} \frac{d \max_{\alpha} va(\alpha) - \frac{r}{2} a(\alpha)^2 - \frac{r}{2} \alpha' \hat{\Sigma} \alpha}{d \hat{\Sigma}_{22}} d \hat{\Sigma}_{22} \\ &= \int_{\infty}^{\Sigma_{22}} -\frac{r}{2} (\alpha_2^*)^2 d \hat{\Sigma}_{22} \\ &= -\frac{r}{2} \int_{\infty}^{\Sigma_{22}} \left( \frac{v}{1 + cr\hat{\Sigma}_{22} + \frac{\hat{\Sigma}_{22}}{\Sigma_{11}}} \right)^2 d \hat{\Sigma}_{22} \\ &= \frac{rv^2}{2 \left( cr + \frac{1}{\Sigma_{11}} \right)} \left[ \frac{1}{1 + cr\hat{\Sigma}_{22} + \frac{\hat{\Sigma}_{22}}{\Sigma_{11}}} \right]_{\infty}^{\Sigma_{22}} \\ &= \frac{rv^2}{2 \left( cr + \frac{1}{\Sigma_{11}} \right) \left( 1 + cr\Sigma_{22} + \frac{\Sigma_{22}}{\Sigma_{11}} \right)}. \end{aligned}$$

<sup>25</sup>At the limit, the weight becomes zero when the covariance equals the variance of the less noisy signal and negative beyond that.

The benefit of the second signal is decreasing in its own variance and the action's cost, and increasing in the first signal's variance and the action's value-relevance. The greater the increase in information and the greater the net benefit of inducing higher action, the higher the value of the second signal. On the other hand, if the benefit is small, it may not be worth obtaining it, depending on its cost.

## Remarks on the realism of the model

- A critical feature of the environment modelled here is that the sensitivity to the signal can be adjusted to its precision (i.e., the inverse of its variance). If a signal could only be used to impose, say, massive damages, then the proof above would not hold. Superficially, legal liability under a negligence standard appears to have this property. On reflection, however, legal liability can be tailored to optimal size, be it by explicit provision in the charter or contract ("liable for x% of the losses") or implicitly through (partial) indemnification or insurance.
- Legal liability is often not continuous in the signal, but discontinuous at a threshold, particularly negligence. As Holmström (1979, 86) shows in a much more general setting, such discontinuous use of the second signal is still valuable. Intuitively, improved incentives are provided by the differential probability of falling into the liability region of the signal; these improved incentives then allow reducing sensitivity to the first signal.
- Another characteristic feature of legal liability is that usually the second signal is only sought - that is, litigation only occurs - if the first signal is sufficiently damning - e.g., the stock price drops. Again Holmström (1979, 87) shows in a much more general setting that the second signal remains valuable, and in fact that this selective use of the second signal may be optimal if generating it is costly. It is important to remember that the second signal in this case is not only used to exacerbate "penalties." The second signal can counteract a negative first signal, i.e., the first signal provides diversification. Relatedly, using the second signal allows pay to be less sensitive to the first signal, which by assumption in this region is negative.
- Finally, a frequent concern is that liability risk will push boards to spend time "dressing up" its actions. In terms of the present model, this may mean a simple manipulation of the signal, i.e., an action that is costly but does not detract from productive effort. As explained in section A.3, the present model can be read as exploring exactly the tradeoff between providing incentives on the one hand and inducing dead-weight loss from manipulation on the other. The results thus far show that incentives nevertheless remain desirable under general conditions. The next section shows that this generally remains true even if "dressing up" means that the board changes its choice of productive actions.

The bottom line is that if boards' productive behavior could be summed up in a single dimension, the only reason not to use courts would be the high cost of litigation, or more to the point, that the costs of litigation are not worth the (limited) information it generates.

## D Multiple actions, multiple signals

This section turns to the concern mentioned in the last bullet point, namely that liability risk may push boards to change their productive actions, substituting away from an optimally productive mix of activities towards activities that the court is likely to scrutinize.

The theoretical literature examines many extreme cases where one dimension of  $a$  is not observed at all. In these extreme cases, it may be optimal not to provide incentives for the other dimensions either. The corporate governance problem is never so extreme. Shareholders always have the stock price as one signal that bundles all dimensions. The question is if monitoring individual activities *in addition to the observable (with noise) joint result* is beneficial. This section shows that it usually is.

Holmström & Milgrom (1991,32) show that if  $S(a) = a$  and if at the optimum  $a \gg 0$  (all actions are strictly positive), the optimal contract has

$$\alpha = (I + rH(C)\Sigma)^{-1}V',$$

where  $H(C)$  denotes the Hessian matrix of  $C$ , i.e., the matrix of second derivatives of  $C$ , with respect to  $a$ . That is, again all signals are used (with caveats discussed below).

The corporate governance problem fits the foregoing formulation, even if it requires some translation. Consider a board that takes two actions, say  $e$  for effort and  $\pi$  for project choice. Expected firm value is a function of both, i.e.,  $V(a) = f(e; \pi)$  with  $f$  concave. The personal cost to the board also is a function of both, i.e.,  $C(a) = g(e, \pi)$  with  $g$  strictly convex. Thus far, this natural setup does not fit the conditions of the preceding paragraph. However, one can let  $a = (f(e; \pi) \quad \pi)'$  such that  $S(a) = (V(a) \quad \pi) = a$ , as above. Assuming that project choice is important, both elements of  $a$  will be positive at the optimum, also as above. Note that  $C(a) = g(f^{-1}(f(e; \pi); \pi), \pi)$ , which is obviously convex in the second argument. [NEED TO SHOW THAT THIS WILL BE CONVEX IN THE FIRST ARGUMENT AS WELL.] The result from Holmström & Milgrom then says that the optimal incentive scheme puts weight on both firm value (stock price) and the direct signal of project choice, such as might be generated in litigation.

To make this more concrete, consider a parametric version of the problem. To capture the concern that courts rule in hindsight bias, let  $\Sigma_{12} > 0$ . The precise form of  $V$  does not matter; it suffices to note that  $V' = (1 \quad f_2)' \gg 0$ . [TO BE COMPLETED]

[TO BE ADDED: DISCUSSION OF POSSIBILITY THAT OPTIMAL  $\alpha$  IS NEGATIVE: CONSEQUENCES AND RARITY]

The conclusion is again that using the second signal is generally useful, and the only reason not to use it is that its benefits are less than its administrative costs.

### **Conditional signal (and liability)**

The model thus far maintained the assumption that signal noise is constant, regardless of the board's action. This assumption is violated by the canonical example against board liability where the board has the option to choose a project that is less profitable for shareholders but never generates liability for the board. The concern is that the liability threat will deter the board from choosing the more profitable risky project.

This concern is unfounded, however, because the incentive contract can adjust to assuage this concern of the board, while using the second signal to improve incentives once the risky project has been chosen. As shown in section C above, the second signal increases the surplus (in this case, from the risky project) under very general conditions. As to the choice between safe and risky, it hinges entirely on whether the board expects to do better with the risky project. If the risky project generates more surplus with the second signal, however, then the amount paid to the board can be held constant while leaving more to the shareholders. In fact, that the second signal generates more surplus means that the risky project may become viable only if the second signal is available.

Once again, the key to understanding this result is that use of the second signal - litigation, and the ensuing liability risk - need not and should not make the board worse off on average. The contract can adjust to compensate the board for the liability risk with higher base pay, less volatile equity pay, etc. This will be a profitable tradeoff for shareholders because the board now has better incentives to take the right actions, increasing the surplus to be divided between board and shareholders. Of course, as before, any gains from improved incentives may be outweighed by the cost of generating the signal.