

NEW YORK UNIVERSITY LAW REVIEW

VOLUME 72

OCTOBER 1997

NUMBER 4

CONTROLLING CORPORATE MISCONDUCT: AN ANALYSIS OF CORPORATE LIABILITY REGIMES

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Corporations have historically been held to a standard of strict vicarious liability for the wrongdoing of their employees. However, several areas of federal and state law have shifted to new duty-based schemes that mitigate liability for companies that have implemented compliance programs or reported wrongdoing to the government. Some states even grant privilege to environmental audit reports.

Professors Arlen and Kraakman compare the norm of vicarious liability with various types of duty-based liability regimes, analyzing the benefits and costs of each approach. They conclude that social welfare is maximized by a mixed regime that includes elements of both strict and duty-based liability. The authors find that the mixed liability regime with the widest application is a composite regime, which imposes high penalties subject to mitigation for firms that engage in compliance activities. Under this regime, firms that satisfy all enforcement duties would nonetheless

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face substantial residual liability equal to the harm caused by wrongdoing divided by its probability of detection. They then examine the existing composite liability regimes embodied in the United States Sentencing Guidelines for corporate defendants and the evidentiary privileges that many states have adopted for companies' environmental audit reports. They conclude that both current approaches are flawed, as they do not adequately create proper incentives for companies to monitor, investigate, and report employee wrongdoing.

INTRODUCTION

How should the law structure the responsibility of corporations for the crimes and intentional torts of their managers and other employees? This question has received little attention despite its intrinsic importance. Under both criminal and civil law, a firm is directly and vicariously liable for wrongs committed by its agents (managers and other employees) within the scope of their employment. A firm's liability under this principle is far reaching. For example, it extends to crimes committed by the firm's subordinate agents (including salesmen, clerical workers and truck drivers),¹ even when these agents violate corporate policy or express instructions.² Moreover, although culpable agents must generally intend to benefit the firm before it is liable, this requirement is easily met if there is any possibility that wrongdoing might increase corporate profits—even if its net effect is to injure the firm, once expected corporate sanctions are considered.³

¹ See generally Pamela H. Bucy, *White Collar Crime: Cases and Materials* 192-93 (1992); Kathleen F. Brickey, *Corporate Criminal Liability: A Primer for Corporate Counsel*, 40 *Bus. Law.* 129, 131 (1984) (stating that corporation may be held liable for criminal acts of even menial workers).

² See, e.g., *United States v. Basic Constr. Co.*, 711 F.2d 570, 573 (4th Cir. 1983) (holding that "corporation may be held criminally responsible for antitrust violations committed by its employees if they were acting within the scope of their authority, or apparent authority, and for the benefit of the corporation, even if . . . such acts were against corporate policy or express instructions"); *United States v. Hilton Hotels Corp.*, 467 F.2d 1000, 1004 (9th Cir. 1972) (holding that criminal liability of corporation may arise from acts of agents without proof that conduct was within agent's actual authority); see also *United States v. Twentieth Century Fox Film Corp.*, 882 F.2d 656, 660 (2d Cir. 1989) (holding that corporate compliance program—"however extensive"—will not shield the company from criminal liability for its employees' actions); cf. *Yates v. Avco Corp.*, 819 F.2d 630, 636 (6th Cir. 1987) (observing that supervisor's sexual harassment was foreseeable because company had adopted policy to address problem).

³ Generally, the benefit requirement is imposed only when the crime requires a specific mental state. See 10 William Meade Fletcher et al., *Fletcher Encyclopedia of the Law of Private Corporations* § 4944 (1986). Moreover, the benefit requirement does not require proof that the corporation actually received any benefit; all that is necessary is that the agent intended to further a corporate interest. See *United States v. Carter*, 311 F.2d 934, 943 (6th Cir. 1963) (holding that corporation may be found criminally liable for act of its president when he acted in course of employment and in furtherance of business interests of corporation); Bucy, *supra* note 1, at 201.

The wide-ranging liability of companies for the crimes and torts of their agents raises two related questions: first, how should the law allocate liability for corporate misconduct between the firm and its agents; and, second, how should the law structure the liability of the firm? The scholarly literature to date has focused chiefly on the first of these questions by exploring the rationales for holding both firms and culpable employees liable for corporate misconduct.⁴ Here, commentators broadly agree that corporate liability usefully enlists the firm in interdicting or deterring its wayward agents and assures that it fully internalizes the costs arising from its activities. By contrast, scholars have only begun to address the question that we explore here—that is, how to structure the corporation's liability for its agents.⁵

But, while scholars have devoted little attention to the structure of corporate liability, this issue has assumed considerable practical importance in light of state and federal efforts to reform corporate liability regimes. In many areas, particularly in the criminal law, lawmakers are replacing strict vicarious liability with regimes that reduce or eliminate liability when principals act to deter wrongdoing. The United States Sentencing Commission's Sentencing Guidelines

⁴ For legal scholarship applying agency cost analysis to the issue of corporate versus individual liability, see generally Christopher Stone, *Where the Law Ends: The Social Control of Corporate Behavior* (1975); Bruce Chapman, *Corporate Tort Liability and the Problem of Overcompliance*, 69 S. Cal. L. Rev. 1679 (1996); Stephen P. Croley, *Vicarious Liability in Tort: On the Sources and Limits of Employee Reasonableness*, 69 S. Cal. L. Rev. 1705 (1996); Lewis Kornhauser, *An Economic Analysis of the Choice Between Enterprise and Personal Liability for Accidents*, 70 Cal. L. Rev. 1345 (1982); Reinier H. Kraakman, *Corporate Liability Strategies and the Costs of Legal Controls*, 93 Yale L.J. 857 (1984); Jonathan R. Macey, *Agency Theory and the Criminal Liability of Organizations*, 71 B.U. L. Rev. 315 (1991); A. Mitchell Polinsky & Steven Shavell, *Should Employees Be Subject to Fines and Imprisonment Given the Existence of Corporate Liability?*, 13 Int'l Rev. L. & Econ. 239 (1993); Gary T. Schwartz, *The Hidden and Fundamental Issue of Employer Vicarious Liability*, 69 S. Cal. L. Rev. 1739 (1996); Kathleen Segerson & Tom Tietenberg, *The Structure of Penalties in Environmental Enforcement: An Economic Analysis*, 23 J. Envtl. Econ. & Mgmt. 179 (1992); Alan O. Sykes, *The Economics of Vicarious Liability*, 93 Yale L.J. 1231 (1984).

Note that neither these articles nor our own discussion assumes that the firm is always a literal corporation. Rather, our conclusions extend to *any* principal-agent relationship. We focus our inquiry—and our terminology—on corporate misconduct, because the corporation is the most common form of the firm as principal.

⁵ See, e.g., Jennifer Arlen, *The Potentially Perverse Effects of Corporate Criminal Liability*, 23 J. Legal Stud. 833 (1994); John C. Coffee, Jr., *Does "Unlawful" Mean "Criminal"? The Disappearing Tort/Crime Distinction in American Law*, 71 B.U. L. Rev. 193 (1991) (discussing blurring of line between civil and criminal law); David A. Dana, *The Perverse Incentives of Environmental Audit Immunity*, 81 Iowa L. Rev. 969 (1996) (arguing against environmental audit liability); Daniel R. Fischel & Alan O. Sykes, *Corporate Crime*, 25 J. Legal Stud. 319 (1996) (arguing for strict corporate liability); Eric W. Orts & Paula C. Murray, *Environmental Disclosures and Evidentiary Privilege*, 1997 Ill. L. Rev. 1.

for corporate defendants,⁶ enacted in 1991, replace the traditional rule imposing strict vicarious liability on the firm for its agents' wrongdoing with a "composite" regime in which the firm incurs a reduced penalty if it has discharged certain compliance-related duties. Some states have similarly replaced their strict liability regimes with composite regimes; others have not. In the environmental area, some states have gone even further, enacting duty-based regimes that immunize firms from liability for internally detected environmental violations that firms disclose and correct.⁷ Similarly, both the Environmental Protection Agency (EPA) and the Antitrust Division of the Department of Justice have announced that they will generally eschew criminal charges against firms that take appropriate steps to deter, report, and correct wrongdoing.⁸ In other areas, some federal prosecutors have gone beyond the mitigation provisions of the Sentencing Guidelines to refrain altogether from prosecuting firms with good compliance programs, reporting, and post-offense reforms.⁹

These widespread defections from the common law norm of strict vicarious liability implicitly recognize the need for a novel liability structure in many settings. To be sure, strict vicarious liability remains a benchmark norm in the common law, civil law, and in the theoretical literature alike.¹⁰ Moreover, it is not only the most familiar regime of corporate liability, but also is the most plausible one whenever agents only act in the best interests of their principals—either because they share these interests or because they do as they are told. In this situation, the firm's agents are logically compelled to avoid misbehavior if the firm must internalize its costs. But when this condition does not hold—when the firm has different interests from its agents and cannot control them costlessly—then simple vicarious liability may no longer be the preferred corporate incentive regime. In that case, the state

⁶ U.S. Sentencing Guidelines Manual, ch. 8, 393-433 (1993) [hereinafter *Sentencing Guidelines*].

⁷ As of the end of 1996, at least 18 states had some form of environmental audit privilege. See Louis M. Brown et al., *The Legal Audit: Corporate Internal Investigation*, § 9.10[5] (1997) (detailing various state audit privileges); David R. Erickson & Sarah D. Matthews, *Environmental Compliance Audits: Analysis of Current Law, Policy and Practical Considerations to Best Protect Their Confidentiality*, 63 Mo. L. Rev. 491, 517 (1995); *infra* Part IV (discussing environmental audit privileges).

⁸ U.S. Environmental Protection Agency, *Final Policy Statement, Incentives for Self-Policing: Discovery, Disclosure, Correction and Prevention of Violations*, 60 Fed. Reg. 66,706 (1995) [hereinafter *EPA Guidelines*]; Antitrust Division, U.S. Dep't of Justice, *Corporate Leniency Policy* (Aug. 10, 1993), 328 Trade Reg. Rep. 20,649-21, at ¶ 13,113 (1994) [hereinafter *Antitrust Division Guidelines*].

⁹ See Richard Gruner, *Corporate Crime and Sentencing* § 8.5.2 (Supp. 1995).

¹⁰ See, e.g., Fischel & Sykes, *supra* note 5, at 327-30; Polinsky & Shavell, *supra* note 4, at 250-53.

cannot deter misconduct simply by setting liability high enough to ensure that firms cannot profit from it.

Instead, the firm must be induced to take direct action to deter agents from committing wrongs, including measures to prevent misconduct and policing measures to detect and sanction it. As the recent profusion of alternative regimes suggests, strict vicarious liability may not be the best regime for inducing the firm to implement optimal deterrence measures. Determining what sort of regime is best—at least for particular forms of misconduct—requires a framework that permits systematic comparison of alternative liability regimes.

This Article develops such a framework to examine the range of regimes for imposing liability on principals—and therefore on corporations—for agent misconduct.¹¹ The core issue associated with these regimes is whether to hold the firm strictly liable for agent misconduct, to hold it liable only upon failure to perform a mandated enforcement duty (such as under a negligence regime), or to employ a combination of both regimes. In this Article, we evaluate the use of strict, duty-based, and “mixed” liability to deter intentional wrongdoing.¹² Our general analysis also applies, with some modifications, to liability imposed for unintentional wrongs.¹³

We take the basic objective of liability to be enhancing social welfare by minimizing the net social costs of wrongdoing and its prevention.¹⁴ In some cases, individual liability alone can optimally deter

¹¹ In a later paper we will consider a second class of incentive regimes that reach inside the firm to structure the incentives of corporate managers or employees directly. We term these incentives “targeted incentives.” See Jennifer Arlen & Reinier Kraakman, *Controlling Corporate Misconduct: The Role of Supervisory Incentive Regimes* (draft in progress). Corporate liability and targeted incentive regimes are partial substitutes because the enforcement rationale for both regimes is to mobilize the firm’s resources to prevent misconduct by subordinate employees.

¹² We do not consider the issue of whether this liability should be criminal or civil. For a discussion of this question, see, e.g., Fischel & Sykes, *supra* note 5 (arguing there is no need for corporate criminal liability in legal system with appropriate civil remedies); V.S. Khanna, *Corporate Criminal Liability: What Purpose Does it Serve?*, 109 *Harv. L. Rev.* 1477 (1996) (favoring corporate civil liability over corporate criminal liability); Jeffrey S. Parker, *Doctrine for Destruction: The Case of Corporate Criminal Liability*, 17 *Managerial and Decision Econ.* 381 (1996) (same).

¹³ Although we focus on intentional wrongdoing, our conclusions about the basic structure of an optimal corporate liability regime apply as well to unintentional wrongs when liability for the underlying activity is governed by a strict liability rule. Optimal sanctions may differ from liability targeting intentional misconduct, however, because firms are likely to bear their agents’ expected individual liability for unintentional wrongdoing in the form of higher wages. See *infra* note 27. Also, application of our analysis to private actions would raise the further issue, not addressed here, of ensuring that damages do not induce insufficient caretaking by victims or frivolous or inefficient lawsuits.

¹⁴ Corporate liability may serve other aims. Deterrence, however, is generally recognized to be the central goal of corporate liability. Moreover, to the extent policymakers

wrongdoing. However, corporate liability is generally needed because, for example, individual agents are judgment-proof or government sanctioning of agents is too costly.¹⁵ Where corporate liability is justified, it must accomplish two goals: it must induce firms to select efficient levels of productive activity (the activity level goal) and to implement enforcement measures that can minimize the joint costs of misconduct and enforcement (the enforcement goal). We demonstrate that neither strict nor duty-based corporate liability regimes—nor even the recently implemented composite regimes—can achieve both these goals except in special cases. To our knowledge, a mixed liability regime that can achieve both goals under all circumstances has yet to be adopted.

Satisfying the activity level goal is straightforward: a firm must be strictly liable for its employee's misconduct related to its productive activities and subject to an expected sanction equal to the resulting social cost. Only strict liability will force each firm to consider the full social cost of its actions in determining whether, and how much, to produce.¹⁶ By contrast, a duty-based regime—under which a firm is liable only if it failed to take appropriate actions to discourage wrongdoing—would distort activity levels by allowing the firm to avoid liability for the full costs of their employees' actions simply by acting reasonably or taking "due care."¹⁷

But if strict liability satisfies the activity level goal, structuring a firm-level regime to meet the enforcement goal—or the enforcement and activity level goals together—is more difficult. To see why, we must preview the enforcement mechanisms through which entity liability deters misconduct.

First, entity liability can reduce enforcement costs by inducing firms to sanction wrongdoers in those circumstances where firm-level sanctions are cheaper (or more accurate) than government-imposed sanctions and have the equivalent deterrent effect.¹⁸

wish to pursue other aims, our analysis reveals when pursuit of these aims comes at the expense of increased corporate wrongdoing.

¹⁵ See *infra* text accompanying notes 20-23.

¹⁶ See, e.g., Arlen, *supra* note 5; Polinsky & Shavell, *supra* note 4; Segerson & Tietenberg, *supra* note 4.

¹⁷ See Steven Shavell, *Strict Liability Versus Negligence*, 9 J. Legal Stud. 1, 2 (1980) (noting negligence rule is inefficient because actors will choose too high an activity level); see also Polinsky & Shavell, *supra* note 4, at 241, 252 (stressing that duty-based corporate liability will induce excessive activity levels); Alan O. Sykes, *The Boundaries of Vicarious Liability: An Economic Analysis of the Scope of Employment Rule and Related Legal Doctrines*, 101 Harv. L. Rev. 563, 579-81 (1988) (same).

¹⁸ Private sanctions imposed by the firm may be superior to state imposed sanctions when the firm can determine guilt more accurately, or has lower administrative and sanctioning costs, and is not more restricted than the state in the sanction it can impose. Cf.

Second, entity liability can lead companies to institute “preventive measures” that deter by making misconduct more difficult or expensive for wrongdoers, or by reducing the illicit benefits of unpunished (or successful) misconduct, without affecting the probability that it is detected by enforcement officials. Such measures can assume many forms, ranging from personnel policies—for example, firing price fixers and raising the salaries of law abiding managers—to sophisticated financial controls, screening procedures, and similar mechanisms for limiting agents’ opportunities to commit misconduct. The commonality is that these preventive measures reduce the returns or increase the costs of misconduct to culpable agents—and so enhance deterrence—without affecting the probability that the firm is sanctioned.

Third, entity liability can induce the firm to undertake a variety of actions that increase the probability that wayward agents will be sanctioned, which we term “policing measures.” For example, firms often will be better than government officials at monitoring or investigating agent misconduct, in which case entity liability can deter wrongdoing by inducing firms to undertake such activities. Moreover, once misconduct is detected, entity liability can induce firms to report misconduct. This prospect serves as a deterrent by ensuring that culpable agents will be officially prosecuted once misconduct is detected.

Finally, entity liability can reduce enforcement costs by functioning as an “enforcement bond,” that is, by assuring the credibility of the firm’s enforcement measures in the eyes of its agents. Because all preventive and enforcement measures are costly and some—like investigating, reporting, and sanctioning—must be performed after misconduct occurs, a firm may be unable to commit credibly to undertake them even if it wishes to do so. Similarly, it may be difficult to make certain unobservable forms of monitoring credible. Agents may therefore doubt that the firm will do—or is doing—these things at all. Entity liability can give the firm an obvious and highly credible incentive to carry through on its enforcement promises. Improving firm credibility may justify entity liability even in circumstances where it is unnecessary to induce optimal activity levels or prevention—for example, when the market forces the firm to internalize the costs of that particular wrong.¹⁹

Polinsky & Shavell, *supra* note 4, at 240 (emphasizing that state-imposed sanctioning of employees improves social welfare if employers have limited sanctioning power).

¹⁹ See *infra* Part I.D. and text accompanying note 74. These market forces include the reputational penalties that firms bear when their agents commit certain types of wrongs. See Jonathan M. Karpoff & John R. Lott, Jr., *The Reputational Penalty Firms Bear from Committing Criminal Fraud*, 36 J.L. & Econ. 757, 758-59 (1993) (analyzing the reputational

Taken together, the diverse ways in which corporate liability can advance the enforcement goal do not unambiguously favor either strict or duty-based liability. Rather, as we demonstrate below, these four enforcement effects—encouraging private sanctioning, inducing prevention, inducing policing measures, and enhancing credibility—can be arrayed on a spectrum according to whether they favor strict or duty-based corporate liability. Strict liability clearly dominates where corporate liability is deployed to encourage the private sanctioning of corporate agents, and is weakly preferable where it is a means of inducing firms to adopt preventive measures. However, duty-based liability is generally better able to induce firms to undertake optimal policing measures such as monitoring, investigating, and reporting. At the far end of the spectrum, duty-based liability is clearly superior to strict liability as a means of enhancing the internal credibility of the firm's enforcement measures.

Because strict and duty-based liability regimes each have distinct enforcement advantages, we explore "mixed" liability regimes that combine aspects of both types of liability. Two classes of mixed regimes are possible. The first includes modified forms of strict liability that are adjusted to induce firms to adopt policing measures ("adjusted strict liability"). The second includes "composite" liability regimes that combine monitoring and reporting duties with a residual element of strict liability to induce preventive measures and regulate activity levels. Although several forms of adjusted strict liability perform better than simple strict vicarious liability, none of these can satisfy every enforcement objective. By contrast, many composite regimes can achieve the goals of optimal deterrence and activity levels, albeit at a greater administrative cost than that of adjusted strict liability. We identify several potentially optimal regimes which in our view are superior to existing composite regimes and discuss the circumstances in which each should be employed. As we indicate, which of these is best turns in part on the characteristics of particular forms of misconduct. Thus, our conclusions call into question the United States Sentencing Commission's effort to find a single regime to govern all corporate crimes.

The organization of this Article proceeds as follows. Part I develops the diverse mechanisms through which corporate liability can serve the enforcement goal—that is, by inducing firms to undertake preventive and policing measures, and by assuring the credibility of

impact of firm wrongdoing). Indeed, for this reason, entity liability of the right sort actually benefits firms that the market fully punishes for agents' misbehavior by providing the private benefit of a low-cost commitment device.

their enforcement policies—and examines the relationship of these mechanisms to the selection of strict or duty-based liability. Part II describes and evaluates the two broad classes of mixed liability regimes: adjusted strict liability and composite liability regimes. Part III introduces a comparative analysis of different composite liability regimes. Finally, Part IV applies the analysis of this Article to two existing regimes of entity liability, the modified strict liability regime created by environmental audit privileges and the composite liability regime established by the Federal Sentencing Guidelines.

I

THE CHOICE BETWEEN STRICT AND DUTY-BASED LIABILITY

To recall a familiar bumper sticker: corporations don't misbehave, people do. In a perfect world populated by savvy and solvent human actors, most forms of corporate liability—as well as other forms of third-party liability for misconduct—would be unnecessary. The law could deter all socially undesirable actions simply by forcing every individual to bear the full cost of her own misconduct.²⁰

Of course the world is not perfect, and individual liability alone often cannot adequately deter corporate wrongdoing. A principal reason is that culpable agents frequently lack the assets to pay expected sanctions equal to the social costs of corporate wrongdoing—a problem which is particularly likely to arise if wrongdoing is likely to go undetected.²¹ A second reason is that, even when the state can

²⁰ See Gary S. Becker, *Crime and Punishment: An Economic Approach*, 76 J. Pol. Econ. 169, 190-93 (1968). This Article focuses on intentional wrongdoing. In the case of unintentional wrongs, corporate liability might be justifiable, even in a world of solvent and savvy individuals, for collective torts for which no individual agent could be made personally responsible—although even there, many wrongs probably could be ultimately attributable to company managers, who would be indemnified by their firms.

²¹ Absent insolvency concerns, the state could deter socially undesirable misconduct by relying solely on individual liability, with the expected sanction set equal to the social cost of the harm. See *id.* To minimize enforcement costs, the state could impose large sanctions on a relatively small number of wrongdoers who would face a low probability of detection. Since enforcement costs would be de minimis, there would then be no need to consider whether an entity other than the state—for example, the firm—might be able to deter wrongdoing at lower cost. This low-probability—high-sanction strategy will not work, however, if agents lack the wealth to pay large fines. In this case, agents' expected sanctions will be less than the social cost of wrongdoing and too many wrongs will result. As we will discuss, corporate liability can increase agents' expected liability by increasing the probability of detection.

Of course, the legal system can also supplement monetary fines with nonmonetary sanctions, such as prison sentences, when agents lack the wealth to pay large monetary fines. Yet these nonmonetary penalties are, at best, only a partial solution to the problem of agent insolvency: they generally do not eliminate the need to make substantial enforcement expenditures to deter wrongdoing. First, imprisonment is very expensive. Many crimes can be deterred more efficiently by increased expenditures on "enforcement." See

sanction an agent adequately, doing so is costly for the state. The firm, however, may be able to identify and sanction its agents much more cheaply.²² Finally, a third reason is that corporate agents may sometimes be neither savvy nor rational, and may therefore be unresponsive to individual liability alone.²³

infra. Second, the use of nonmonetary sanctions is limited by "marginal deterrence" concerns—the state is limited in the sanction it can impose for relatively minor crimes by the need to impose greater sanctions on more serious crimes. Finally, normative considerations other than efficiency may limit the use of nonmonetary sanctions. For example, the state may be unwilling to impose a long jail term on someone who committed a relatively minor crime with a very low probability of detection because it seems unjust. See John Coffee, Jr., "No Soul to Damn; No Body to Kick": An Unscandalized Inquiry Into the Problem of Corporate Punishment, 79 Mich. L. Rev. 386, 401 (1981) (stating that imprisonment imposes externalities); Reinier Kraakman, The Economic Functions of Corporate Liability, in *Corporate Governance and Directors' Liabilities* 178, 194-97 (Klaus J. Hopt & Gunther Teubner eds., 1985) (discussing constraints on the magnitude of enterprise sanctions). Thus, even when the state can and does use imprisonment as a sanction, it is unlikely to deter all wrongdoing, particularly if enforcement expenditures (and thus the probability of detection) are very small.

In addition, the state may need to increase enforcement expenditures (and thus turn to the firm for help) for other reasons. If individuals are risk averse, a low-probability—high-penalty strategy increases the likelihood that an individual accused of wrongdoing will plead guilty to that wrong even though he is in fact innocent. The state can reduce this risk of false convictions by increasing enforcement expenditures, thereby reducing the sanction. See Bruce H. Kobayashi & John R. Lott, Jr., Low-Probability—High-Penalty Enforcement Strategies and the Efficient Operation of the Plea-Bargaining System, 12 *Int'l Rev. L. & Econ.* 69, 70 (1992) (discussing how large fines may cause innocent people to plead guilty). Once significant enforcement expenditures are required, however, it will often be optimal for the state to induce firms to incur some of these enforcement expenditures by employing corporate liability in addition to individual liability. See *infra* note 22 and accompanying text.

²² See Steven Shavell, *Economic Analysis of Accident Law* 172-74 (1987) (discussing benefit of imposing vicarious liability on firm for its employees' actions when firms can better identify wrongdoers and evaluate their actions); Stephen Salzborg, The Control of Criminal Conduct in Organizations, 71 *B.U. L. Rev.* 421, 428 (1991) (same). Sanctioning costs justify corporate liability only if the sanction the state would need to impose if it spent virtually nothing on enforcement exceeds agents' wealth. Absent wealth constraints, sanctioning costs would not justify corporate liability because the government could optimally deter wrongdoing by spending almost nothing on enforcement and imposing large sanctions on those few individual wrongdoers that it managed to catch. This low-probability—high-penalty strategy will not necessarily work if agents are insolvent, however. In this case, private sanctioning reduces enforcement costs if it is less expensive and as effective as public sanctioning. The benefit of lower cost and more frequent sanctions would be even greater if, as evidence suggests, individuals are not rational utility maximizers, but rather are more deterred by a high probability of a relatively low sanction than a low probability of a very high sanction. See James Q. Wilson & Richard J. Herrnstein, *Crime and Human Nature* 397-401 (1985).

²³ For example, it appears that, holding the expected sanction constant, individuals are deterred more by a high probability of paying a relatively low fine than the relatively low probability of paying a high fine. See, e.g., Wilson & Herrnstein, *supra* note 22, at 397-401. This might justify imposing corporate liability to induce firms to raise the probability of detection, even if it would not be justifiable were individuals risk neutral and utility maximizers.

For all of these reasons, corporate liability fills an important enforcement niche. Like other third-party incentive regimes, it harnesses the social context—in this case, the context of the firm—in the service of optimal deterrence by pursuing the basic enforcement goals of (1) inducing efficient activity levels and (2) minimizing the joint costs of misconduct and enforcement, given a firm's activity level.²⁴ However, these objectives place different, and potentially inconsistent, demands on a corporate liability regime that inevitably affect the choice among the available regimes:²⁵ strict vicarious liability, under which a firm is liable for all its agents' wrongdoing; duty-based liability, under which the firm is liable only if it failed to satisfy a legal duty to discourage wrongdoing (e.g., undertaking optimal enforcement); or a regime that mixes elements of strict and duty-based liability.

²⁴ Corporate liability is not the only third-party liability regime capable of achieving these goals. Other possibilities include regimes designed to induce third parties within the firm to monitor firm agents and report agents, such as supervisory liability and bounty regimes, see Arlen & Kraakman, *supra* note 11; Jennifer Arlen, *Commentary on Rewarding Whistleblowers: The Costs and Benefits of an Incentive-Based Compliance Strategy*, in *Corporate Decisionmaking in Canada* 635 (Ronald J. Daniels & Randall Morck eds., 1995); Ronald J. Daniels & Robert Howse, *Rewarding Whistleblowers: The Costs and Benefits of an Incentive-Based Compliance Strategy*, in Daniels & Morck, *supra*, at 525-49; and those designed to induce outsiders to monitor and report, such as accountant liability, see Reinier H. Kraakman, *Gatekeepers: The Anatomy of a Third-Party Enforcement Strategy*, 2 J.L. Econ. & Org. 53, 53-54 (1986) (discussing "gatekeeper liability"—"liability imposed on private parties who are able to disrupt misconduct by withholding their cooperation from wrongdoers").

²⁵ Alternatively, in theory the state could employ payment regimes, which grant rewards to firms to induce the desired behavior. Like liability regimes, payment regimes may be strict (outcome-based) or duty-based. In theory, payment regimes are functional substitutes for liability regimes in many respects. Moreover, payment regimes—such as bounty regimes—are currently employed. See, e.g., Securities Exchange Act of 1934 § 21A(e), 15 U.S.C. § 78u-1(e) (1994) (bounty provision for information on insider trading); False Claims Act, 31 U.S.C. § 3730(d) (1994) (*qui tam* provisions). Nevertheless, for several reasons payment regimes are not plausible entity-level incentive regimes. Cf. *infra* note 30 (discussing targeted incentive regimes). To begin, payment regimes are very expensive to administer because every firm would have to receive a properly determined payment regardless of whether a wrong occurred. Moreover, this regime would impose additional social costs if the government collected the revenues required for the payment through a suboptimal tax system.

In addition, rewarding firms for thwarting misconduct or discharging enforcement duties would distort activity levels, at least in circumstances where intentional misconduct is appropriately treated as a production cost, because such a regime would not ensure the demise of firms that create excessive risks of wrongdoing; indeed, it might even keep alive firms that are inefficient for other reasons.

Finally, payment incentives offered to firms are open to a peculiar kind of moral hazard, especially when agent misconduct benefits firms as well. Firms that could earn rewards by providing enforcement services, such as reporting the wrongdoing of their own agents, might induce misconduct in the hope of benefitting once or even twice—first from the misconduct itself, and subsequently from reporting it.

The activity-level goal requires that the firm bear the full social cost of misconduct associated with its production in order to ensure efficient output levels. This implies that the firm should be liable for all wrongs resulting from its activities²⁶ and subject to an expected total sanction (civil and criminal) that, when adjusted for the expected costs that the market imposes, equals the net costs that wrongdoing inflicts on others.²⁷ Forcing firms to pay for all components of product cost (including expected misconduct) helps ensure that product prices reflect the full social cost of the product. Production is socially optimal because customers will purchase the product only if its value to them equals or exceeds its full cost of production, as reflected in the product price.²⁸ Thus, for example, when the manufacture of goods produces hazardous waste, firms must bear the full social cost of this waste to ensure an efficient level of output.

²⁶ For analysis of which harms can be said to be "caused" by a firm for purposes of cost internalization, see Sykes, *supra* note 17, at 571-81 (discussing "enterprise causation," which relates existence of business to wrongs by employees). Professor Sykes observes that a harm can be said to be "fully caused" by an enterprise where dissolution of the enterprise would reduce its probability of occurrence to zero. "Partial causation" is defined similarly as a partial reduction in the probability of a harm's occurrence following dissolution of the enterprise. See *id.* at 572.

²⁷ See Polinsky & Shavell, *supra* note 4, at 240; Shavell, *supra* note 17, at 3-4. Strict vicarious liability can induce optimal activity levels if agents are strictly liable for the underlying wrong, as they are for intentional misconduct. By contrast, this rule does not induce efficient activity levels when the *underlying activity* is governed by a negligence standard. In this case, firms escape liability if agents take due care and activity levels are too high. Precisely for this reason, Polinsky and Shavell propose expanding vicarious liability to make the firm strictly liable for harms resulting from activities that are governed by a negligence standard for purposes of determining individual liability, even if the agent was not negligent. See Polinsky & Shavell, *supra* note 4, at 252-53 (arguing that "it is socially desirable to make firms liable according to a strict liability rule but to impose employee sanctions according to a negligence rule").

Expected corporate liability for intentional misconduct must equal the full social cost of wrongdoing to others even if employees also are held liable because, absent a risk of court error, a firm only bears its own expected liability for these wrongs. A firm will not compensate employees for their expected liability for intentional wrongs if the firm does not benefit from the wrong (because it is liable for the full social cost) and the employee can prevent the wrong. See Arlen, *supra* note 5, at 852 n.59 (noting that "corporations will not compensate agents *ex ante* for their expected criminal liability from" intentional wrongful acts that firms do not want committed). By contrast, in the case of accidental harms, a firm must reimburse employees for their expected liability, either *ex ante* through higher wages or *ex post* by indemnifying them. Thus, the firm will undertake optimal activity levels if its expected sanction equals the social cost of the harm minus any expected employee liability. See, e.g., Polinsky & Shavell, *supra* note 4, at 241 (noting that firms effectively pay their employees' liability for unintentional wrongdoing through higher wages).

²⁸ Cost internalization also promotes optimal activity levels by ensuring the demise of those firms whose activities produce excessive costs, once the cost of expected wrongdoing is taken into account. See Shavell, *supra* note 17, at 3-4.

By contrast, the aim of inducing efficient enforcement measures does not lead to a single, straightforward prescription. When, as is often the case, employees cannot pay the optimal sanction, corporate liability can lower the joint costs of misconduct and enforcement in four principal ways.²⁹ First, it can induce firms to sanction agents privately, thereby lowering administrative costs in those circumstances where effective private enforcement is less expensive or more accurate than government sanctions. Second, corporate liability can induce firms to take what we term “preventive measures,” which deter wrongdoing without altering the probability that culpable agents will be officially prosecuted—for example, by rendering misconduct more difficult or costly to undertake or less profitable. Third, it can induce firms to implement “policing measures,” which deter misconduct by raising the probability that it will be sanctioned (that is, by increasing the likelihood that it will be detected or that prosecution will follow if it is detected). And fourth, corporate liability can reduce enforcement costs by increasing the internal credibility—and hence the effectiveness—of company efforts to monitor, investigate, sanction, or report the misconduct of its agents. These enforcement aims, our analysis shows, do not unambiguously favor either strict or duty-based liability.

In this Part, we examine the choice between strict and duty-based liability regimes in light of their ability to satisfy the five goals of corporate liability, focusing on their ability to perform the four major enforcement functions. We begin with the function that is best served by strict liability (reducing sanctioning costs) and conclude with the function that is least well served by strict liability (in our view, the problem of lending credibility to the firm’s enforcement efforts). Our conclusions are summarized in Table 1.

Throughout, our analysis is based on the conventional assumption that a firm’s enforcement policies are designed to maximize its profits, either because its shareholders control these policies or because the firm’s managers serve shareholder interests. Our conclusions about the relative merits of strict and duty-based liability rules also apply to firms whose managers serve shareholder interests only imperfectly. Agency costs should affect the choice of a corporate liability regime far less than they do the decision whether to supplement such a regime with a targeted incentive regime aimed directly at individual managers.³⁰

²⁹ See *supra* note 21.

³⁰ The assumption that shareholders control the firm’s enforcement policy (directly or indirectly) is reasonable when intentional wrongdoing is committed by agents of closely held firms, since the shareholders of these firms exercise managerial power directly. Cf. Mark Cohen, *Corporate Crime and Punishment: An Update on Sentencing Practices in*

Table 1		
	Strict Liability	Duty-Based
Activity Levels	Optimal if expected sanction equals social cost of wrong	Inferior to strict liability because (i) duty hard to specify; (ii) higher administrative costs
Sanctioning	Same as above	Same as above
Prevention	Same as above	Same as above
Policing	Not optimal because of perverse effects	Superior to traditional strict liability because no perverse effects
Credibility	Cannot solve this problem	Solves this problem

A. *Reducing Sanctioning Costs*

A firm's ability to reduce the costs of sanctioning agents is, where it exists, the simplest enforcement function. As long as agents commit any misconduct at all, entity liability is justified if it induces the firm to sanction wrongdoing more cheaply than the government can. For example, where both the firm and the government can administer a comparable sanction (which necessarily is limited to monetary penalties), the firm may be the least-cost administrator simply because it can identify and charge culpable agents more cheaply than the government can. In this case, the government should persuade responsible firms to sanction their own agents rather than doing so itself.³¹

the Federal Courts, 71 B.U. L. Rev. 247, 251-52 (1991) (more than 95% of firms convicted between 1984 and 1988 were closely held). Shareholders of publicly held firms may be less able to rely on managers to implement optimal preventive and policing measures because managers bear much of the cost of prevention and policing but do not directly bear the firm's expected liability for any wrongdoing that occurs. Thus, in these cases all corporate liability regimes become less attractive on the margin. Notwithstanding these agency costs, however, our analysis should apply to the proper design of corporate liability regimes for publicly held firms. Managers of publicly held firms do place considerable weight on firm profits, in which case firms generally will behave as we describe. In addition, to the extent that management discretion exists, it should not affect the optimal design of corporate liability regimes—only their effectiveness. Solving the agency cost problem will not require a better *corporate* liability regime, although it may require other enforcement regimes, including targeted incentives aimed at individuals in the firm, such as supervisory liability or bounty provisions for employees who report wrongdoing ("targeted incentives"). See Arlen & Kraakman, *supra* note 11.

³¹ See *supra* note 22. Inducing firms to sanction privately is entirely consistent with sound enforcement policy, since an effective corporate liability regime should also induce firms to report wrongdoing. Thus, the government also can impose a public sanction on wrongful agents if this is appropriate. Firms should be able to sanction their agents because they bear the costs of misconduct. Moreover, firms cannot impose private sanctions that exceed those permitted by law because agents have no incentive to agree to excessive

Strict liability is clearly the better regime for inducing firms to sanction culpable agents. If the government attempted to impose a duty on the firm to administer private penalties to its agents, the government would have to acquire the same information about agent misconduct that would be necessary to administer sanctions against agents directly. That is, the government could not evaluate whether the firm had adhered to its duty to sanction a culpable employee without determining whether the employee was wrongful and whether the sanction was adequate.³² Of course, this would defeat the purpose of inducing the firm to administer sanctions. Under strict liability, by contrast, the government can induce optimal private sanctioning simply by ensuring that the firm's expected liability equals the net social cost of wrongdoing to others. In this case, the firm will sanction agents when doing so minimizes its—and thus society's—net cost of wrongdoing and enforcement, but not otherwise.

B. *Inducing Preventive Measures*

Preventive measures cover a much broader range of enforcement measures than shifting sanctioning costs. They are best defined negatively: as measures that deter misconduct by agents *without* increasing the probability that the firm will be sanctioned.³³ Preventive measures fall into two categories: those that increase the wrongdoer's costs *ex ante* and those that decrease her expected returns *ex post*.

Consider first measures that raise the costs of wrongdoing *ex ante*. Some forms of misconduct are typically committed by agents

sanctions. Finally, in the case of unintentional wrongs, market forces will ensure that firms do not impose excessive sanctions since wages will reflect workers' expected liability. See *supra* note 27.

³² Of course, strict liability could generate perverse incentives if corporate sanctioning increases the probability that firms themselves will be held liable. See *infra* Part I.C. Private sanctioning will not affect the firm's probability of detection in many important situations—for example, if the firm's responsibility for the wrong is obvious (and liability is certain), even if the identities of its culpable agents are not. As long as the firm's efforts to sanction wrongful employees do not affect its probability of facing liability, there is no danger of perverse incentives. If sanctioning does affect the firm's probability of being found liable, then the issues we raise concerning inducing optimal policing measures will apply. See *infra* Parts I.C. & D.

³³ Although we distinguish between prevention measures that do not affect the probability of detection and policing measures that do, we recognize that many measures are both preventive and policing measures. To the extent a prevention measure also affects the probability of detection, it is, for our purposes, partially a policing measure and our discussion of the problems of inducing policing measures will apply. See *infra* Parts I.C. & D.

Because the distinguishing feature of policing measures is whether they affect the probability the firm is detected, when the firm's own liability for a harm is clear, the firm's efforts to determine which agent committed the wrong can properly be treated as a prevention measure, because these efforts will not affect the firm's expected liability.

who are not senior officers of the firm, such as small-scale dumping of chemical wastes, illicit sales of prescription painkillers, sales misrepresentations to customers, or bribery of foreign officials. Here, a variety of measures might interdict misconduct or at least make it more costly to commit—measures ranging from strict accounting for chemical wastes to tighter security at pharmaceutical warehouses, strict controls over cash disbursements, and careful screening of new employees. For misconduct committed by more senior officers, including price fixing or securities fraud, rules requiring the participation of several managers in price setting discussions or outside counsel's careful review of disclosure documents can have a similar preventive effect. In each case, the preventive measure establishes an internal gate and gatekeeper that can bar misconduct, either literally or figuratively, unless the would-be wrongdoer invests resources and skill in circumventing it.³⁴

Preventive measures that reduce the illicit gains from misconduct *ex post* generally turn on the culpable agent's compensation or continued employment. Firms can structure their compensation and promotion policies to encourage or discourage many forms of misconduct. For example, basing employees' compensation and promotion on short-run profits provides them with an incentive to engage in wrongdoing that increases profits, particularly if the individual wrongdoer is less likely than the firm to be sanctioned. Employees have less incentive to commit such wrongs when their compensation is based on the firm's long-run profits, however, because the firm's long-run profits will be net of any expected entity-level sanctions resulting from the wrongdoing.³⁵ Firms also can deter wrongdoing by firing employees.

³⁴ For development of the gatekeeper metaphor in the context of official, as distinct from private, enforcement measures, see Kraakman, *supra* note 4, at 888-96 (discussing gatekeeper liability for outsiders who can discover and prevent wrongdoing). A gatekeeper interdicts misconduct by withholding critical approval or support *ex ante*. While gatekeepers who undertake extensive monitoring might also increase the probability that wrongdoing will be detected *ex post*, many internal gatekeeper strategies—including those listed in the text—are unlikely to increase the probability of detecting misconduct *ex post*. To the extent they do, however, our discussion of policing measures applies.

³⁵ Empirical evidence suggests that the incidence of certain corporate crimes is higher when agents' compensation or performance evaluations are based largely on their employers' rate of return or short-run profits, as opposed to long-run profits. See Mark A. Cohen & Sally S. Simpson, *The Origins of Corporate Criminality: Rational Individual and Organizational Actors*, in *Debating Corporate Crime: An Interdisciplinary Examination of the Causes and Control of Corporate Misconduct* 33 (William S. Lofquist et al. eds., 1997); Charles W. L. Hill et al., *An Empirical Examination of the Causes of Corporate Wrongdoing in the United States*, 45 *Hum. Rel.* 1055, 1069-70 (1992); John R. Lott, Jr. & Tim C. Opler, *Testing Whether Predatory Commitments Are Credible*, 69 *J. Bus.* 339, 367 (1996) (concluding that firms focusing on short-run profits are more likely to be accused of predatory pricing). Even shareholders of publicly held firms (particularly institutional investors)

In some cases, firms facing large potential liabilities can pay agents supercompensatory wages (or "efficiency wages") to sharpen the loss in the event that an agent is subsequently discharged for engaging in misconduct.³⁶

Determining the right mix of screening, security, and gatekeeping measures *ex ante*, and of compensation-based measures *ex post*, clearly requires detailed knowledge about the firm. For this reason, strict liability ordinarily dominates duty-based liability as a means of inducing preventive measures. A strict liability regime establishes optimal prevention incentives merely by setting the firm's expected penalty equal to the social cost of wrongdoing. The firm, in an effort to choose the level of prevention that minimizes its own total costs, will select the level that minimizes total social costs as well.³⁷ The sanction which achieves this aim is the same as that which induces optimal activity levels, i.e., the social cost of wrongdoing divided by its probability of detection. Moreover, if corporate liability is also structured to induce optimal policing measures,³⁸ the government can accept the resulting probability of detection as optimal and need only

probably can often obtain sufficient information about a firm's compensation policies to determine whether these policies encourage or deter misconduct.

³⁶ See Gary S. Becker & George J. Stigler, *Law Enforcement, Malfeasance, and Compensation of Enforcers*, 3 *J. Legal Stud.* 1, 6-13 (1974); Steven Shavell, *The Optimal Level of Corporate Liability Given the Limited Ability of Corporations to Penalize Their Employees*, 17 *Int'l Rev. L. & Econ.* 203, 204 (1997). Indeed, it might appear that firms could prevent wrongdoing entirely—thereby eliminating the need for enforcement measures—by paying supercompensatory wages, since in theory these wages can increase an agent's wealth enough to eliminate the insolvency problem. Despite their initial theoretical appeal, however, supercompensatory wages cannot be relied upon exclusively to solve the problem of corporate wrongdoing. First, supercompensatory wages are expensive because they must be paid to all agents engaged in particular activities who do not commit a wrong; other prevention and enforcement mechanisms may prove to be more effective. See Becker & Stigler, *supra*, at 13-16; William T. Dickens et al., *Employee Crime and the Monitoring Puzzle*, 7 *J. Lab. Econ.* 331, 343-44 (1989); B. Curtis Eaton & William D. White, *Agent Compensation and the Limits of Bonding*, 20 *Econ. Inquiry* 330, 342 (1982). Second, they will not deter wrongdoing motivated by an agent's fear of impending job loss—for example, fraud concerning the stock price of publicly held firms—because agents who will lose their jobs if they do not engage in misconduct are not going to be deterred by the risk of losing the supercompensatory wage should they commit the crime and get caught. See Jennifer Arlen & William Carney, *Vicarious Liability for Fraud on Securities Markets: Theory and Evidence*, 1992 *Ill. L. Rev.* 691, 708-09. Nevertheless, the possibility of super-compensatory wages may affect the optimal residual sanction. See Shavell, *supra*, at 203-04.

³⁷ See Robert Cooter, *Prices and Sanctions*, 84 *Colum. L. Rev.* 1523, 1539 (1984); Shavell, *supra* note 17. The standard result is that strict liability, with an expected sanction set equal to the social cost of the harm, can induce an actor to take due care, where "due care" here is defined as prevention measures designed to deter wrongdoing. Cf. *supra* note 30 and accompanying text (discussing agency costs). See generally Shavell, *supra* note 22, at 5-46.

³⁸ As can be the case under a composite regime.

calculate the net social cost of the wrongdoing to select the appropriate sanction.

Strict liability is particularly likely to dominate duty-based liability as a method of inducing firms to employ compensation, promotion, and discharge policies to deter wrongdoing. At a minimum, strict liability generally can eliminate any firm-level incentive to induce misconduct by imposing a sanction that ensures that firms do not profit from wrongdoing.³⁹ Beyond this, in some cases strict liability may be able to eliminate entirely the agent's incentive to commit the wrong. Either as a result of strict liability or otherwise, firm compensation and promotion policies may be such that its agents benefit from wrongdoing only when the firm derives a long-run benefit from misconduct net of any expected liability. This will be the case, for example, if an agent's compensation is tied to long-run firm profits and his only motivation for committing a particular wrong is to increase his salary by increasing long-run profits. In this situation, holding the firm strictly liable for the agent's wrongdoing—with an expected sanction equal to the social cost of the wrong to others—will deter the agent by ensuring that the firm, and thus the agent, does not benefit from the wrongdoing.⁴⁰

³⁹ Here, as elsewhere, wrongdoing is defined as conduct for which the marginal social benefit is less than the marginal social cost.

⁴⁰ Even when the agent benefits from a wrong primarily as a result of the effect of the wrong on the firm's profits, he will not necessarily be deterred from misconduct by a corporate liability regime that ensures that the firm bears the full social cost of wrongdoing. A firm's compensation and promotion policies may reward employees when the firm's short-run profits increase as a result of the wrong, without necessarily ensuring that all employees bear their proportionate share of any corporate liability should wrongdoing be detected. Thus, if the firm cannot necessarily determine who committed a wrong, a wrongdoer may expect to get a raise or promotion if the wrong increases profits, without expecting to be demoted or to have his salary fall if the wrong is detected and the firm is sanctioned. Firms also may be unable to link agents' compensation to long-run profits if there is a substantial likelihood of employee turnover or if other concerns—such as excessive managerial risk aversion—militate against such policies.

Similarly, firm liability will not necessarily eliminate agents' incentives to commit unintentional wrongs if firms cannot monitor agents' caretaking perfectly and agents cannot pay the optimal sanction. This is because "caretaking" often imposes a private cost on agents. Thus, wrongdoing which reduces care costs may benefit the agent even if the firm does not benefit.

Finally, despite corporate liability, managers of publicly held firms will have an incentive to commit wrongs intended to secure their positions if the misconduct helps the manager secure his job but its detection does not significantly increase his risk of being fired (either because his position is insecure if he does not commit the wrong, or because, by then, the manager is likely to have retired or moved to another firm). Thus, managers may benefit from wrongdoing even if the firm does not. Indeed, existing empirical evidence suggests that agency costs may explain most wrongdoing by publicly held firms. See Cindy Alexander & Mark Cohen, *Why Do Corporations Become Criminals? Ownership, Hidden Action, and Crime as an Agency Cost* (Mar. 1997) (Working Paper, Owen Graduate

By contrast, a duty-based regime would only discourage some efforts by firms to induce misconduct through compensation techniques—those governed by an explicit duty—and would inevitably miss other inducements too subtle to be identified or too diffuse to be barred.⁴¹ Duty-based liability could hardly eliminate all incentives to commit misconduct arising from diffuse pressures to increase corporate profit. In addition, a duty-based regime would face serious problems of judicial error. Reviewing compensation and discharge policies is a difficult task: legitimate compensation plans designed to reward employee performance also are likely to reward profit-enhancing misconduct. By comparison, strict liability does not require courts to distinguish legitimate from illegitimate firm behavior.⁴²

This said, duty-based liability can be the equal of strict liability as a method for inducing firms to adopt preventive measures when courts and enforcement officials can cheaply and accurately identify the appropriate measures (which are presumably related to the firm's compensation policies).⁴³ But in most cases, strict liability is preferable because it ensures that the firm does not receive a net benefit from wrongdoing (provided the firm is solvent), it taps the firm's own information about preventive technologies, and it minimizes the informational burden on courts and regulators.⁴⁴

School of Management, Vanderbilt University) [hereinafter Alexander & Cohen, Working Paper] (publicly held firms are more likely to engage in crime the smaller management's ownership stake); see also Cindy R. Alexander & Mark A. Cohen, *New Evidence on the Origins of Corporate Crime*, 17 *Managerial & Decision Econ.* 421 (1996) [hereinafter Alexander & Cohen, *Corporate Crime*] (criminal behavior is more likely the larger the firm and the lower shareholders' ability to monitor managers).

⁴¹ In addition, this regime would be less effective than strict liability at reducing agents' benefits from wrongdoing because firms that did not violate a duty would not be liable. In these cases, the firm would still get the full benefit of the crime, and thus agents who benefit when the firm benefits still would have an incentive to commit the wrong.

⁴² See Cooter, *supra* note 37, at 1539-40 (noting that strict liability is superior where it is very costly for firms to determine due care); cf. Richard Craswell & John E. Calfee, *Deterrence and Uncertain Legal Standards*, 2 *J.L. Econ. & Org.* 279 (1986) (noting that where court error renders the legal standard uncertain, duty-based liability will not necessarily cause firms to take optimal care, even if on average courts are correct).

⁴³ Indeed, duty-based regimes may be superior if either (i) there is a risk of firm insolvency, see Arlen, *supra* note 5, at 886, or (ii) if the precaution is unobservable and thus is plagued with possible "credibility problems," see *infra* Part I.D. (discussing duty-based regimes as a means of reducing the credibility problem). A duty-based regime also may have lower administrative costs because there will be fewer cases than under a strict liability regime.

⁴⁴ See Cooter, *supra* note 37, at 1539-40 (arguing strict liability is superior where it is very costly for firms to determine due care). Duty-based regimes are particularly susceptible to error where prevention involves "nondurable" activities (such as those involving human action), as opposed to installing "durable" technologies (such as locking certain cabinets). For cases of "nondurable" controls, the risk arises not only that the court will set the standard incorrectly, but that it may be unable to determine whether the firm has

C. *Inducing Policing Measures*

In contrast to preventive measures, policing measures—such as monitoring, investigating, and reporting—operate by increasing the probability that culpable agents will be sanctioned. Policing measures are thus particularly relevant to intentional misconduct, which is often uniquely difficult to detect because it is deliberately hidden. By raising the probability that such misconduct will be detected and sanctioned, policing measures increase the expected penalty faced by culpable agents without increasing the actual penalty imposed on those who are caught.

Like preventive measures, policing measures can be either *ex ante* or *ex post*, according to whether they function before—or only after—the wrong occurs. *Ex ante* policing generally assumes the form of continuous monitoring under an ongoing compliance program. For example, a securities firm might tape record conversations between its brokers and their customers to guard against misrepresentations or illicit offers by its own agents, or an airline might randomly test its pilots to deter drug or alcohol use on the job. In both cases, a program of credible monitoring can deter misconduct by increasing the likelihood that it will be detected and sanctioned.

Ex post policing measures take place after the wrong occurs and thus do not affect the probability that future wrongs will be detected, unless these measures are continued or repeated after prospective misconduct occurs. These *ex post* measures can be divided into two categories: measures, such as episodic auditing, that the firm undertakes even though it has no particular reason to suspect any misconduct has occurred, and measures, such as investigation and reporting, that a firm undertakes only after it has reason to believe wrongdoing has occurred.⁴⁵ Despite their differences from monitoring, investigation and auditing ultimately deter in the same way: by raising the probability that misconduct will be detected and sanctioned.

adhered to that standard. Cf. Mark F. Grady, *Why Are People Negligent? Technology, Nondurable Precautions, and the Medical Malpractice Explosion*, 82 Nw. U. L. Rev. 293, 317 (1988) (making this distinction in torts context); see also *infra* Part I.C.

⁴⁵ There are important distinctions among monitoring, auditing, and investigating that are not fully addressed in the present analysis. For example, monitoring must be done *ex ante*, before the wrong has occurred, and thus before the firm knows the seriousness of the wrong, whereas investigating occurs when more information is available as to the seriousness of the wrong. Thus, all else equal, investigating often may be superior to monitoring because the firm (and society) can concentrate enforcement expenditures on the most serious wrongs. See Dilip Mookherjee & I.P.L. Png, *Monitoring vis-à-vis Investigation in Enforcement of Law*, 82 Am. Econ. Rev. 556, 556-57 (1992) (discussing optimal choice for government officials between monitoring and investigating). Yet, in some circumstances, monitoring nevertheless may be superior if it is observable because it is undertaken *ex ante* and thus is less likely to be subject to a “credibility problem.” See *infra* Part I.D.

Firms can only report misconduct after it has been detected, whether its detection follows from monitoring, investigating, or pure happenstance. From the firm's perspective, reporting misconduct can substitute for (or supplement) sanctioning it internally. From the government's perspective, reporting not only ensures that detected misconduct is sanctioned, but also increases the probability and reduces the costs of detection.⁴⁶

Regardless whether policing measures operate *ex ante* or *ex post*, however, they favor duty-based liability in the first instance because traditional strict liability generates what we term "perverse effects":⁴⁷ that is, strict liability only encourages policing measures insofar as they reduce the incidence of misconduct, but it perversely discourages them insofar as they increase the firm's expected liability for undeterred misconduct. These perverse effects will sometimes cause firms to avoid policing measures entirely and, in other cases, will force lawmakers to choose between optimal policing measures and other objectives, such as regulating activity levels or inducing optimal prevention.⁴⁸

1. *When Perverse Effects Discourage All Policing Measures*

Consider first how traditional strict liability may actually deter firms from monitoring, investigating, or reporting. The problem arises because a firm's efforts at policing are unlikely to deter all misconduct with certainty. Given that some misconduct will (or might) occur, po-

⁴⁶ Corporate liability should ensure that firms invariably report detected wrongdoing. See Louis Kaplow & Steven Shavell, *Optimal Enforcement with Self-Reporting of Behavior*, 102 J. Pol. Econ. 583 (1994) (arguing that liability should induce individual wrongdoers to report their own wrongdoing). Firms should report even when the firm is the best party to sanction the wrongdoer because reporting is the lowest cost method for informing the government about wrongdoing. The government thus can ensure that firms have adequately sanctioned wrongdoers (increasing the credibility of firms' threats to do so). Also, even if the wrongdoer is sanctioned, the government should hold the firm liable in order to induce optimal activity levels, prevention measures, and policing.

In addition, if principals are risk averse, self-reporting reduces risk-bearing costs because those who report wrongdoing pay a lower amount with certainty, which is less costly to them than an equivalent expected sanction based on a lower risk of detection but a higher actual penalty. See Kaplow & Shavell, *supra*, at 584-85.

⁴⁷ The term originates with Arlen, *supra* note 5, at 833. Note too that we define traditional strict liability as strict liability that imposes a fixed sanction on wrongdoers which does not depend on the probability of detection. See *id.* at 842. This may be contrasted with "sanction-adjusted" strict liability, under which actual sanction levels rise or fall. See *infra* Part II.A.2.

⁴⁸ In addition, the fine that enables strict vicarious liability to induce optimal monitoring (when it is capable of doing so) is very complicated. Thus, the standard argument that strict liability places low information demands on courts does not apply to strict vicarious liability employed to induce monitoring or investigation of misconduct. See Arlen, *supra* note 5, at 847, 856-57.

licing measures induced by strict liability can affect the firm's expected liability in two ways. On one hand, they can deter some misconduct by increasing the expected liability of culpable agents, thereby reducing the firm's expected liability (the deterrent effect). On the other hand, they can increase the probability that the government will detect and sanction the residual offenses that occur nonetheless, thereby increasing the firm's expected liability (the liability enhancement effect). For example, policing measures increase the firm's expected liability if either the firm or its agents report detected wrongdoing to the government or if the government independently suspects a wrong and uses its broad search and subpoena powers to obtain the information about wrongdoing from the firm for use against it.⁴⁹ If the liability enhancement effect exceeds the deterrent effect, then a firm subject to strict liability will not undertake any policing measures, regardless how large a fine is imposed, because policing measures only increase its expected liability. In this situation, increasing the sanction only decreases the firm's incentives to police.⁵⁰

For example, consider a securities firm's ongoing program of recording broker phone calls to monitor for securities fraud. Under a

⁴⁹ Our analysis does not require that the government always get the information, just that there is a positive risk it will. The greater the risk, the worse the liability enhancement effect.

The assumption that the government may obtain information about wrongdoing that the firm detects is reasonable for several reasons. First, even when a corporation does not report its discovered crimes to the government, corporate enforcement efforts may increase the firm's expected liability. Corporations recognize that the government often discovers evidence of possible corporate wrongdoing on its own. The government may well respond to evidence of possible wrongdoing by subpoenaing corporate records. These records will include documentary evidence resulting from corporate enforcement efforts—records that may contain evidence of wrongdoing which prosecutors may use to prove their case against the corporation. See *id.* Neither firms nor their managers can shield such records by asserting a Fifth Amendment right against self-incrimination. See Harry First, *Business Crime: Cases and Materials* 382-401 (1990) (discussing scope of Fifth Amendment protection for corporate records). The government also may induce the firm to reveal detected wrongdoing through criminal liability rules that heavily penalize firms that do not report misconduct. See *infra* Part II.B. (discussing such a regime). Second, in some cases the market may penalize firms that detect wrongdoing but do not report it, such as when customers are the victims of the wrong. Third, managers and employees may face strong pressures to reveal enforcement information. Some statutes impose personal liability on managers who fail to report certain violations to the proper authorities. See, e.g., California Corporate Criminal Liability Act of 1989, Cal. Penal Code § 387 (West 1988 & Supp. 1997). Other statutes provide cash bounties to those who report corporate wrongdoing. See, e.g., Securities Exchange Act of 1934 § 21A(e), 15 U.S.C. § 78u-1(e) (1994) (bounty provision for information on insider trading); False Claims Act, 31 U.S.C. § 3730(d) (1994) (*qui tam* provisions). Finally, the threat of higher corporate sanctions should the firm not report may induce innocent corporate officials whose compensation is tied to firm profits to report. See Arlen, *supra* note 5, at 858-60 (noting that penalizing nonreporting may induce innocent corporate managers to report crimes they discover).

⁵⁰ See Arlen, *supra* note 5, at 842-43.

strict liability regime, such a program will deter some potential fraud, but it will also increase the detection of actual fraud for which the firm will be strictly liable.⁵¹ Strict liability will induce the firm to forego a recording program if the expected increased liability from enhanced detection exceeds the reduction in liability from enhanced deterrence.

This problem can be illustrated with a simple numerical example. Suppose a firm has many agents, each of whom can decide to engage in a form of misconduct that may or may not benefit the firm. Suppose further that the firm must choose between monitoring optimally or not at all. Without monitoring, misconduct will be detected with a probability of $1/5$; in this case, five agents engage in misconduct. With monitoring, the probability of detection is $1/2$; in this case only three wrongs will occur. Consider the firm's expected costs under a traditional strict liability regime. The firm's expected costs are $5(1/5)F = F$ if it does not monitor and $3(1/2)F + M^*$ if it does monitor, where F is the firm's sanction and M^* is its cost of optimal monitoring.⁵² Thus, regardless of F , the firm's expected liability if it does monitor, $(3/2)F$, is higher than its expected liability if it does not monitor, F . The firm, accordingly, will not monitor.⁵³

2. *When Optimal Policing Measures Conflict with Other Liability Functions*

Traditional strict liability can induce optimal monitoring, investigating, or reporting when the deterrent effect exceeds the liability enhancement effect. Under these circumstances, a firm will undertake some policing to reduce its expected liability. If sanctions are set at the "right" level, it will select precisely the socially efficient amount of any particular policing measure. The problem is that the sanction that induces efficient policing under traditional strict liability exceeds the sanction that induces optimal activity levels, sanctioning, and prevention measures. Thus, even in the best circumstances, traditional strict liability cannot simultaneously induce optimal policing and serve the other objectives of entity-level liability.

To induce optimal activity levels, sanctioning, and prevention, the sanction must equal the expected cost of wrongdoing. Thus, when

⁵¹ For example, the government used Princeton Newport's own trading records to determine that an employee might have engaged in illegal trading, and then later obtained evidence of alleged wrongdoing by the firm from the firm's own documents and taped conversations of its traders' telephone calls. See James B. Stewart, *Den of Thieves* 348-52 (1991). Other securities firms also faced liability based on their own records.

⁵² This assumes that the wrong does not benefit the firm. If the wrong does benefit the firm, the firm will be even less likely to monitor because monitoring would impose an additional cost of $2B$, which is the benefit to the firm of the two wrongs deterred.

⁵³ For a full mathematical proof of this claim, see Arlen, *supra* note 5, at 850-58.

firms police optimally, the sanction must equal the social cost of wrongdoing, h , divided by the optimal probability of detection, p^* : h/p^* .

In order to induce optimal policing, however, the sanction imposed must exceed h/p^* in order to ensure that the *net* benefit to the firm of additional policing—net of the liability enhancement effect—equals the social cost of the wrongs deterred. The actual expected liability per wrong thus must *exceed* the expected social cost of these wrongs in order to adjust for the liability enhancement effect.⁵⁴ Yet employing such a sanction undermines other liability goals by inducing the firm to invest excessively in prevention measures and reducing the firm's output to suboptimal levels. Thus, strict liability cannot induce efficient activity levels and prevention while also inducing efficient policing, and vice versa.

By contrast, duty-based liability—which bases sanctions on whether the firm monitors optimally—can induce optimal monitoring (or investigation and reporting) without triggering the perverse effects associated with traditional strict liability. Duty-based liability does not create perverse effects for the simple reason that a firm that polices optimally escapes liability for its agents' wrongs. Thus, there is no liability enhancement effect. To see this, return to our example in which a failure to monitor produces five wrongs and a probability of detection of $1/5$, while optimal monitoring yields three wrongs and a probability of detection of $1/2$. Consider a firm facing a possible sanction, $F = 2M^*$, where M^* is the cost of optimal monitoring. Under a pure duty-based rule, if the firm does not monitor, its expected costs are $(5/5)F = 2M^*$. By contrast, the firm's costs, if the firm monitors

⁵⁴ See Arlen, *supra* note 5, at 850-57 (providing a mathematical proof of this point). An elaboration of our earlier example can illustrate the point. Previously we supposed that, without monitoring, misconduct was detected with a probability of $1/5$ and five agents would commit the wrong. Assume now that optimal monitoring increases the probability of detection to $1/3$ and reduces the number of offending agents to two. In this case, the social marginal benefit of monitoring is $3h$, which is three times the social cost of wrongdoing to others. The private marginal benefit, however, is $1F - (2/3)F = (1/3)F$, which is the expected decrease in the firm's expected liability, taking into account the liability enhancement effect. Thus, although three wrongs are deterred, the firm's expected liability only falls by $(1/3)F$. If $F = h/p^*$, the firm's marginal benefit of policing—and thereby deterring three wrongs—would be only h , which is less than the benefit to society of deterring those wrongs. Thus, if, as the definition of optimal monitoring implies, the marginal cost of undertaking optimal rather than nonoptimal monitoring equals the social marginal benefit, $3h$, then this cost will exceed the firm's private marginal benefit if $F = h/p^*$. To counteract the depressing effect of the liability enhancement effect, the sanction must exceed this amount. See *id.*

optimally, are merely the costs of monitoring, M^* , which is obviously less than $2M^*$. Accordingly, the firm will monitor optimally.⁵⁵

Of course, duty-based regimes can induce optimal policing measures only if courts can determine what these measures are. If the standard of care is set too low, firms will monitor or investigate too little; if it is too high, they will police too much. Moreover, any uncertainty about the legal standard or its application can cause duty-based regimes to fail to induce optimal behavior. Even if courts decide cases correctly on average, uncertainty can result in inefficient policing.⁵⁶

The ability of duty-based liability regimes to regulate firms' policing measures thus depends largely on how competently lawmakers and judges can articulate and assess the optimal scope and forms of monitoring.⁵⁷ Despite such problems, however, duty-based regimes generally will be superior to traditional strict liability as a tool for inducing policing measures. Even a poorly specified monitoring duty will induce some policing, in contrast to strict liability which may fail to induce any at all. Moreover, even when traditional strict liability can induce policing, it will not induce optimal policing if courts employ the sanction that induces efficient activity levels, sanctioning, and prevention. The cost to society of the additional wrongdoing caused by firms' suboptimal policing efforts will likely exceed the additional administrative costs of an optimal entity-level liability regime. Finally, attempting to induce optimal policing using traditional strict liability would impose substantial information costs on courts in the form of the complex calculations required to determine the optimal sanction and would not serve the other objectives of corporate liability.⁵⁸ Nev-

⁵⁵ Composite duty-based regimes—which reduce but do not eliminate liability if the firm meets its monitoring, investigating, or reporting duties—can also induce optimal enforcement measures, provided that the implementation of such measures reduces the firm's penalty enough to warrant the investment. In addition, as we discuss below, composite regimes that mitigate (rather than eliminate) liability when firms implement optimal policing measures can induce such measures while simultaneously meeting all other liability aims, including the optimal regulation of activity levels and inducement of preventive measures.

⁵⁶ See Craswell & Calfee, *supra* note 42, at 298; see also Mark F. Grady, *Proximate Cause and the Law of Negligence*, 69 Iowa L. Rev. 363, 403 (1984); Marcel Kahan, *Causation and Incentives to Take Care Under the Negligence Rule*, 18 J. Legal Stud. 427, 437 (1989).

⁵⁷ The problem of uncertain legal standards is likely to be particularly acute when optimal monitoring is firm-specific because there is no standard monitoring technology for all firms in the industry. Similarly, courts are likely to have much more difficulty assessing monitoring measures that involve "nondurable" precautions, such as the human effort involved in detecting securities fraud, than they are in evaluating durable monitoring technologies such as video cameras or tape recorders. See *supra* note 44.

⁵⁸ See Arlen, *supra* note 5, at 847; see also *infra* Part II (comparing a duty-based regime to sanction-adjusted strict liability).

ertheless, in some circumstances the information burdens of a duty-based regime may counsel in favor of employing a modified form of strict liability that shares some elements of a duty-based regime.⁵⁹

D. Assuring the Credibility of the Firm's Enforcement Measures

Duty-based liability is also preferable to strict liability because it makes credible the threats of firms to implement policing measures. Firms face a credibility problem whenever their efforts to monitor agents' conduct are unobservable, or when they cannot commit to investigate, report, or sanction misconduct after a wrong occurs,⁶⁰ by using reputation⁶¹ or third parties⁶² to make their threats credible.

⁵⁹ See *infra* Part II.

⁶⁰ By "commit" we mean the ability of the firm to establish monitoring programs *ex ante* which are sufficiently fixed that the firm cannot reduce its monitoring efforts once agents adjust their behavior to reflect the threatened level of monitoring. Note that this monitoring must also be observable for agents to believe a firm's threats to monitor at a specific level. The credibility problem has been previously noted, generally in models involving government enforcement efforts. See, e.g., Debra J. Aron & Pau Olivella, *Bonus and Penalty Schemes as Equilibrium Incentive Devices, with Application to Manufacturing Systems*, 10 J.L. Econ. & Org. 1, 14-19 (1994); Nahum D. Melumad & Dilip Mookherjee, *Delegation as Commitment: The Case of Income Tax Audits*, 20 Rand J. Econ. 139, 142-44 (1989); Jennifer F. Reinganum & Louis L. Wilde, *Equilibrium Verification and Reporting Policies in a Model of Tax Compliance*, 27 Int'l Econ. Rev. 739, 740 (1986). We are, to our knowledge, the first to consider the impact of strict versus duty-based liability on this problem.

⁶¹ Even under strict liability, firms will not face credibility problems if they have adequate incentives to establish a reputation for making credible threats, or if they can use third parties to implement their policing measures. Reputation is most likely to be effective in situations where deviations by either party are quickly observed and the future costs of losing one's credibility are high. See generally Benjamin Klein & Keith Leffler, *The Role of Market Forces in Assuring Contractual Performance*, 89 J. Pol. Econ. 615, 624-25 (1981) (even when consumers can perfectly verify quality of a good after the fact, high reputation firms will have incentive to "cheat" and supply low-quality goods unless these firms are earning a continual stream of rental income from producing the high quality goods, the discounted value of which exceeds the one-time wealth increase obtained from low quality production).

But reputation can only solve a credibility problem in some circumstances. For example, a firm can credibly develop a reputation for policing only if it is properly viewed as being in a potentially infinitely-lived relationship with its agents. If instead the firm and its agents are in a finite relationship with a fixed time horizon, the agents' knowledge that the firm has an incentive to cheat in the last period will eliminate the reputational benefit to the firm of policing in the second-to-last period, which, as agents will understand this, in turn eliminates the firm's incentive to police in the third-to-last period, and so forth. Thus, in such a situation, reputation will not solve the credibility problem. See generally Drew Fudenberg & Jean Tirole, *Game Theory* 166 (1996). Even if the firm may be potentially infinitely-lived, reputation will not be sufficient to induce optimal policing if the probability the firm will exist in future periods is very small, because then the expected benefit of developing a reputation also will be small. See generally Klein & Leffler, *supra*; cf. Alexander & Cohen, *Corporate Crime*, *supra* note 40 (providing empirical evidence that poor prior performance tends to precede environmental crime is consistent with view that

For example, the most effective way for a brokerage firm to ensure its representatives are not defrauding its customers may be to tape record their telephone calls and then selectively review them. Yet dealers often cannot tell whether the call is actually being taped. And even if a dealer knows his calls are being taped, he may doubt whether the tapes will be reviewed. Similarly, employees cannot determine *ex ante* whether the firm will attempt to ferret out suspected wrongdoing or report the wrong should it detect it.

In these cases, duty-based liability is superior to strict liability because a duty-based regime can make credible a firm's threats to po-

reduced likelihood of repeat dealing increases likelihood that employees will commit crime).

Moreover, reputational effects can solve the credibility problem only if agents can verify the firm's policing efforts once it has implemented them. This often will be difficult for them to do. Thus, when a firm threatens to sample or monitor probabilistically, an agent's observation of *ex post* monitoring will not enable the agent to determine, for certain, whether the firm truthfully announced its monitoring strategy. See Reinganum & Wilde, *supra* note 60, at 742, 754-55 (discussing this point). Similarly, firms may be unable to establish reputations if agents can determine *ex post* whether the firm has monitored but cannot determine how diligent its monitors are. Finally, firms will not be able to establish accurate reputations for reporting wrongdoing if agents do not know when, and how much, wrongdoing has occurred; in this case, agents who observe a firm reporting wrongs will not be able to determine whether the firm is reporting all the wrongs it detects—and thus they should assume it will report any wrongdoing they do—or only some portion of the wrongs it detects—in which case it may not report their misconduct. Thus, firms will have difficulty establishing policing reputations for wrongs likely to be committed by employees and middle level managers, but may be able to establish effective reputations for implementing policing measures aimed at wrongdoing committed by senior officers who are privy to information about both the firm's monitoring policies and about whether the firm has detected possible wrongdoing.

⁶² In some cases firms can solve their credibility problems by hiring third parties to monitor, investigate, and report. This solution, however, will not solve the credibility problem in all cases and imposes its own costs. First, insider investigations often will be more effective than those conducted by outsiders because the insiders will have better information. This is particularly likely because firms will often withhold crucial information from outsiders; for example, they are likely to be reluctant to provide outsiders with the regular reports on production costs, pricing, customers, and negotiations with suppliers that are necessary to monitor for antitrust violations. In addition, third party enforcers are effective only if they have an incentive to investigate and report misconduct even when the firm does not want them to do so. Contractual arrangements alone cannot necessarily provide this incentive because, even if the contract rewards a third party for reporting wrongdoing, the firm can secretly negotiate with its third party monitors to get them to monitor ineffectively or to cover up detected wrongdoing. Cf. Avinash Dixit & Barry Nalebuff, *Making Strategies Credible*, in *Strategy and Choice* 161, 166-68 (Richard Zeckhauser ed., 1991) (one problem with use of third party enforcers to solve credibility problem is that, *ex post*, it often will be profitable for principal to renegotiate contract, unless third party reputation prevents renegotiation, or firm and third party cannot communicate in the future); Jerry Green, *The Strategic Use of Contacts with Third Parties*, in *Strategy and Choice*, *supra*, at 241, 241-42 (same). Finally, the use of third party enforcers will not induce firms to report those wrongs that they themselves detect, as is necessary in order to minimize enforcement costs. See *supra* note 46.

lice. By contrast, under strict liability, employees may not believe a firm's threats to undertake policing measures and thus may not be adequately deterred. When employees cannot observe a firm's policing efforts before committing the wrong,⁶³ they will believe, and be potentially deterred by, threats to implement such measures only if actually undertaking policing measures—rather than just threatening to do so—is in the firm's best interests.

Under strict liability, however, a firm has no incentive to actually incur policing costs because they will benefit it only to the extent that they alter employees' expectations—in other words, only to the extent employees believe the threats and are deterred.⁶⁴ Once the firm threatens to implement unobservable or *ex post* policing measures, employees are either deterred from wrongdoing or not, and the firm has no incentive to actually spend the money to implement its threatened measures. After all, such measures are costly and increase expected liability for any wrongs that occur despite policing. Thus, unless employees can verify its actions *ex ante*, the firm has every reason to announce policing measures but not implement them. The firm's employees know this, however, and thus may rationally assume that the firm will not monitor, report, or sanction (even if it does or will). Agents may thus remain undeterred regardless of the firm's actions.⁶⁵ In this case, strict liability will clearly fail to induce optimal firm or agent behavior.⁶⁶

⁶³ To be precise, the credibility problem occurs when the firm cannot commit to such efforts *ex ante* and agents cannot verify its policing efforts *ex ante*.

⁶⁴ When policing measures are also preventive measures, the firm may have a credible incentive to police even under a strict liability regime. For example, if detecting fraud also prevents the wayward agent from engaging in additional fraud, the firm's threat to monitor may or may not be credible, according to the relative magnitude of its future expected liability and the cost of monitoring. Even in this case, however, monitoring may be suboptimal if the benefit to the firm of preventing future wrongs is not large enough to induce optimal expenditures on monitoring.

⁶⁵ To see this, consider our example of a firm where five agents commit the wrong if there is no policing and only three commit it if the firm polices optimally. See text preceding note 52. Assume that the firm is strictly liable for all wrongs and announces that it will engage in optimal monitoring. The question arises: if agents believe that the firm will police, does it have an incentive to do so? In our example, if agents believe the firm will police, only three commit a wrong. If it monitors optimally, the firm faces a 50% probability that each wrong will be detected. Thus, under traditional strict liability, the firm's expected costs if it actually does police are:

$$M^* + 3(1/2)F.$$

However, the firm's expected costs if it does not police are:

$$3(1/5)F.$$

Thus, it is better off if it does not undertake the threatened policing measures. Agents, knowing this to be the case, thus will not believe the firm's threats.

⁶⁶ This analysis implicitly assumes that firms and agents only pursue pure strategies, that firms either undertake policing measures or do not, and that agents either commit a

This credibility problem under a strict liability regime is particularly serious for ex post enforcement policies that are triggered after misconduct occurs: for example, investigating and reporting misconduct. Unlike monitoring, which occurs ex ante and may be observable to agents, ex post measures cannot be undertaken before misconduct occurs. A firm can threaten to report ex ante but cannot guarantee it will do so. Agents will often disbelieve a firm's threats because strict liability gives a firm a strong incentive not to investigate or report its agent's wrongdoing: such policing measures cannot deter a wrong that has already occurred but will increase the firm's expected liability for it.⁶⁷ Thus, absent the ability to commit to ex post enforcement measures ex ante, threats by the firm to implement such measures may fail to deter agents under a regime of strict liability.⁶⁸

By contrast, duty-based liability can be designed to avoid the credibility problem for both monitoring and ex post enforcement measures. Under a duty-based regime, a firm is not liable if it engages in optimal monitoring, investigation, and reporting. Thus, under this

wrong or do not. In reality, either or both could pursue mixed strategies. Firms could pursue probabilistic policing, under which agents face only a probability of being subject to policing. Agents could respond with a mixed strategy, adopting a probability of engaging in misconduct. The possibility of mixed strategies does not eliminate the credibility problem, however. Consider the question of whether firms will report wrongdoing. If ex post the firm has no incentive to report because reporting only increases its expected liability, then even if it announces a positive probability of reporting, it still will have no incentive to report if it actually detects a wrong. It will only implement a positive probability of reporting if it has reason to report which is independent of any deterrent effect of the *threat* of reporting—for example, if reporting terminates the wrong more quickly, thereby reducing its severity. Similarly, if a firm cannot commit to a monitoring policy, and monitoring is unobservable, it will not implement a probabilistic monitoring program unless it has an incentive to monitor which is independent of the deterrent effect of the threat of monitoring—for example, if rapid detection enables it to reduce the severity of the wrongs it is liable for. Thus, any probabilistic monitoring it does do will be based only on this stand-alone benefit; when credibility problems exist, it will not consider the deterrent effect of any additional monitoring. See Reinganum & Wilde, *supra* note 60, at 754-55 (if enforcement is unobservable and the enforcer cannot commit to its enforcement measures, mixed strategies will not yield positive enforcement efforts unless there is a stand-alone benefit to policing).

⁶⁷ The only potential benefit from reporting is signaling the firm's willingness to report in the future. This benefit is likely to be significant, however, only if firms can develop a reputation for reporting. Firms can develop such a reputation only if agents and firms are in a relationship without a fixed final termination point and agents can verify the firm's reporting behavior. Agents must thus be able to determine whether a firm fails to report because it chooses not to or because it fails to detect misconduct. See *supra* note 61 (discussing reputation); *supra* note 62 (discussing third parties).

⁶⁸ See Aron & Olivella, *supra* note 60, at 14-19 (discussing problem of inducing monitoring when monitoring is unobservable by agents); cf. Reinier Kraakman et al., *When Are Shareholder Suits in Shareholder Interests?*, 82 *Geo. L. Rev.* 1733, 1741 (1994) (noting prospect of suit that is counter to firm's ex post interests will not deter managerial misconduct unless firm makes credible threat to sue).

regime a firm benefits both *ex ante* and *ex post* from its monitoring, reporting, or sanctioning policies. As under strict liability, the firm benefits *ex ante* to the extent that policing deters wrongdoing by shaping agents' expectations. But, unlike under strict liability, the firm also benefits *ex post* under a duty-based regime, because by undertaking optimal policing, it avoids all liability for misconduct that occurs despite its enforcement efforts. Indeed, a firm operating under a duty-based regime might well monitor, report, or sanction misconduct even if doing so had no impact on the behavior of its agents as long as the penalty for failing to do so was sufficiently large. Thus, under a properly designed duty-based regime, agents will expect firms to carry out threats to monitor or report misconduct. The credibility of the court-threatened sanctions, in other words, will serve to enhance the credibility of the firm's policing efforts.

Duty-based liability, therefore, deters more socially harmful conduct than strict liability in those situations where firms face a credibility problem.⁶⁹ Moreover, even where firms can reduce the credibility problem by relying on outsiders to police their employees, duty-based liability may increase social welfare by inducing firms to police directly, rather than relying solely on outsiders who face higher costs of observing and interpreting employees' conduct. Duty-based liability also is superior to relying on outsiders because it ensures that firms that detect wrongdoing themselves will report it.⁷⁰

Of course, a duty-based regime can solve the credibility problem only if the court can determine whether the firm has implemented efficient enforcement measures. This requires monitoring, investigating, reporting, and sanctioning to be *ex post* observable to the court, even though they are not *ex ante* observable to agents. We expect the judicial observableness requirement to be met in most—but not all—circumstances where credibility is a serious issue.⁷¹ Certainly, courts generally can observe whether a firm investigated or reported wrongdoing. Many compliance programs also can be verified *ex post*. For example, courts can review a brokerage firm's library of tape recordings and telephone records to determine whether the firm was taping

⁶⁹ See *supra* notes 61-62 (discussing when credibility problems exist).

⁷⁰ See *supra* note 62 (discussing third-party policing).

⁷¹ This is particularly likely to hold when the level of monitoring is difficult for employees to determine *ex post*, but can be established in court through introducing documents, testimony of monitors, and other evidence. In other words, on a day-to-day basis it often will be difficult to determine the amount of monitoring, while it will not be difficult to do so in a courtroom where the firm has an incentive to introduce evidence unavailable to its workers. Cf. *supra* note 61 (discussing reputation). Nevertheless, *ex ante* monitoring may sometimes be difficult for courts to verify *ex post* if it is a random process. See Reinganum & Wilde, *supra* note 60, at 740.

every call, as threatened, or only some calls. Thus, duty-based rules often can assure the internal credibility of the firm's monitoring, investigating, reporting, and sanctioning measures.⁷²

E. Summary: Reconciling the Multiple Aims of Corporate Liability

Although strict liability is necessary to induce optimal activity levels, neither strict nor duty-based liability is best suited for all four enforcement objectives. Strict liability is generally the superior rule for inducing efficient preventive measures and private sanctioning. But perverse effects and credibility problems will often prevent traditional strict liability from inducing optimal monitoring, investigating, and reporting. And when strict liability can induce these policing measures, they will come at the expense of other aims of most corporate liability regimes, i.e., assuring optimal activity levels and prevention measures. By contrast, duty-based liability can induce firms to monitor, investigate, and report efficiently when courts can identify optimal policing measures. Duty-based liability cannot regulate activity levels or induce the efficient substitution of private for public sanctions, however, and it is presumptively disfavored for inducing preventive measures unless a serious issue of firm credibility is raised (as in threatening to punish misconduct of key employees by discharge).

Since neither strict nor duty-based liability in its simple form can advance all of the mechanisms of corporate enforcement, we now turn to mixed liability regimes that combine elements of both. Mixed liability regimes can be constructed by modifying either strict or duty-based regimes. Part II surveys the primary forms of mixed regimes, while Part III focuses more closely on the most promising family of mixed regimes: composite liability regimes.

Of course, mixed regimes need not be employed in every situation. For example, courts can rely on traditional strict liability when corporate policing is unnecessary, either because the government can easily detect misconduct or because misconduct can be deterred completely through the use of private sanctioning and preventive measures (such as screening employees more carefully or revising compensation to reward law-abiding managers).⁷³ Alternatively,

⁷² See *infra* Part II.C. (discussing the informational requirements of duty-based liability in more detail).

⁷³ For example, in some cases payout policies might be such that a wrongdoer's benefit from misconduct is directly proportional to the firm's benefit net of any expected criminal liability. This is likely, for example, when shareholder-managers of firms with highly concentrated ownership commit a wrong. In this situation, corporate criminal liability can optimally deter wrongdoing even when agents are insolvent by holding firms strictly liable

courts can rely solely on duty-based liability designed to induce optimal policing measures if market forces cause the firm to bear the full social cost of any wrongdoing, thereby ensuring that the firm undertakes optimal activity levels, sanctioning, and prevention.⁷⁴ Nevertheless, we expect that most forms of intentional agent misconduct will require the full panoply of measures to induce optimal activity levels and optimal prevention and policing measures. Thus, in an efficient system, mixed regimes are likely to be the rule, not the exception.

II

MIXED LIABILITY REGIMES

Given that corporate misconduct is often best addressed by a mixed liability regime, how can such a regime be constructed? The answer is by modifying either of the traditional regimes—that is, by altering strict liability to reward policing measures or expanding duty-based liability to include a dimension of strict liability. We term the resulting classes of mixed regimes “adjusted strict liability” and “composite liability,” respectively. Although these regimes resemble one another as much as they do either strict or duty-based liability, they have very different strengths and weaknesses. Only composite regimes can fully solve the credibility problem and motivate optimal policing measures *ex post*, such as reporting wrongdoing. Yet adjusted strict liability regimes ordinarily require less information to administer and are thus less prone to the risk of judicial error. Composite liability, then, is likely to be superior in the general case where all four enforcement functions are relevant, while adjusted strict liability may be preferable where credibility problems are unimportant or the courts cannot handle the informational burden imposed by a composite regime. We discuss both families of regimes in this Part. Table 2, immediately below, illustrates the range of mixed regimes.

for their agents' crimes subject to an expected sanction equal to the social cost of wrongdoing to others. This regime would ensure that agents do not profit from misconduct by ensuring that the firm does not profit. See *supra* text accompanying note 40.

⁷⁴ In order for this to be true, the *ex ante* sanction imposed by the market must equal the social cost of wrongdoing, which means that either the market must always detect wrongs or must impose a reputational sanction which exceeds the actual cost to victims of the wrong. Cf. Karpoff & Lott, *supra* note 19, at 760-66.

This market penalty does not obviate the need for corporate liability because the fact that the firm bears the full social cost of the harm does not mean agents will necessarily be optimally deterred. Deterring agents generally will require that firms implement policing measures. Market forces alone cannot induce optimal policing because the market essentially effects a regime of traditional strict liability. See *supra* Parts I.C. & D. Thus, to induce optimal policing, market forces generally must be supplemented by a duty-based regime.

Table 2 Mixed Liability Regimes		
	Adjusted Strict Liability	Composite Liability
Primary Variations	1) Probability-fixed liability a) privilege b) use immunity 2) Sanction-adjusted strict liability 3) Adjusted "quasi-strict" liability	1) Two-tier liability 2) Multi-tier liability
Primary Example	Strict liability with environmental audit privilege	U.S. Sentencing Guidelines for corporate defendants

A. *Adjusted Strict Liability Regimes*

Adjusted strict liability regimes hold firms strictly liable for their agents' wrongdoing but attempt to overcome the perverse effects of strict liability by insulating a firm's expected sanction from the effects of policing measures. An insulating adjustment can be made in two ways: (1) by leaving the firm's sanction unchanged by using rules of privilege or use immunity to ensure that the probability that the firm is sanctioned remains fixed despite the firm's monitoring efforts ("probability-fixed strict liability"); or (2) by reducing the sanction to precisely offset the increase in the probability of detection associated with policing measures undertaken by the firm ("sanction-adjusted strict liability"). On an expected sanction basis, these two adjustments to strict liability are virtually identical: both ensure that a firm's decision about monitoring measures will not affect its expected liability, leaving the firm free to make its monitoring decision solely on the basis of deterrence considerations. Despite their functional similarity, however, the two forms of adjusted strict liability differ in their effectiveness, administrative characteristics, and actual incidence in the legal system. Several enforcement regimes deploy variations on probability-fixed liability, but none to our knowledge employ sanction-adjusted liability.

1. *Probability-Fixed Strict Liability*

The full doctrinal equivalent of probability-fixed liability is strict liability coupled with use immunity for information gleaned from the firm's monitoring or investigatory efforts.⁷⁵ This evidentiary privilege bars the use of the firm's information against the firm—and thereby

⁷⁵ See Arlen, *supra* note 5, at 865-66.

ensures that the firm's policing efforts do not increase its expected penalty—but nonetheless permits use of the information in prosecuting the firm's agents. Strict liability modified by use immunity would be a very attractive adjusted liability regime if it were truly possible to insulate a firm from the liability effects of its own policing efforts—even when, for example, the firm hands its own agents over to be prosecuted for misconduct for which the firm itself is liable. Were such insulation possible, the chief theoretical drawback of this regime relative to sanction-adjusted liability would be that it requires the government to impose very large sanctions on some firms to induce them to police against low-visibility misconduct.⁷⁶ Firms with limited assets can escape such sanctions, and will thus do too little policing.⁷⁷ Equally to the point, however, it simply strains credulity to suppose that firms will go so far as to investigate and report misconduct, and risk enormous sanctions, in the belief that the authorities will ignore what they know, including their knowledge that misconduct has occurred at all, and laboriously pursue investigations of misconduct from the outside.⁷⁸

⁷⁶ Probability-fixed regimes created by use immunity or evidentiary privileges have also been criticized on the ground that they will induce firms to shift resources from prevention into auditing, which, it is argued, is less effective at deterring wrongdoing. See Dana, *supra* note 5. We agree with Professor Dana that these regimes lead to a relative increase in the amount of auditing and other policing measures. Yet this is a reason to adopt such regimes, not to reject them. Under the present regime, firms are undertaking too little policing. Increasing policing, therefore, promotes social welfare. And, provided that the expected sanction equals the social cost of wrongdoing, in theory firms nevertheless will undertake optimal prevention. The problem with probability-fixed regimes, as we noted, is that the sanction needed to satisfy the condition that the expected sanction equals the social cost of misconduct will often be so high as to exceed the firm's assets, causing these regimes to be unable to induce optimal prevention or policing. For a discussion of additional problems with privileging the information that firms obtain through policing measures, see *infra* Part IV.A.

⁷⁷ See Arlen, *supra* note 5. As firm insolvency already may be a substantial problem, it often will be impossible to implement the huge fines required by probability-fixed regimes, in which case neither prevention nor policing nor activity levels will be optimal. Cf. Alexander & Cohen, *Corporate Crime*, *supra* note 40 (providing empirical evidence that poor prior performance tends to precede environmental crime); Arlen & Carney, *supra* note 36 (a substantial number of firms which committed fraud-on-the-market securities fraud had a net worth less than shareholders' total harm); Mark Cohen, *Theories of Punishment and Empirical Trends in Corporate Criminal Sanctions*, 17 *Managerial & Decision Econ.* 399, 403 (1996) (finding that 35.7% of organizations convicted of federal crimes between 1984 and 1990 could not afford to compensate for harm caused by offense). For a discussion of *ex ante* composite liability as a partial solution to the problem of firm insolvency, see *infra* note 89.

⁷⁸ Cf. Orts & Murray, *supra* note 5, at 7 (noting that even if firm's internal assessments are privileged, strict liability will not provide optimal incentives to audit if government can use underlying facts contained in audit against firm).

We surmise that it is precisely because a foolproof regime of use immunity is neither possible nor credible, that the prevailing form of probability-fixed strict liability is strict liability accompanied by an evidentiary privilege that prevents outsiders from obtaining the firm's policing information for use in any civil, administrative, or criminal proceeding, including those against its agents. We address the primary example of such a privilege regime—strict liability coupled with an environmental audit privilege—in Part IV. For present purposes, it suffices to point out that this privilege regime is inferior to sanction-adjusted liability because, in addition to the insolvency problem discussed above, a privilege bars reporting or using a firm's enforcement information to sanction the firm's culpable agents. A privilege regime thus undercuts much of the deterrent value of the firm's policing efforts in addition to requiring the deployment of extremely large (and potentially impracticable) sanctions against those firms unlucky enough to be prosecuted on the basis of the government's independent investigation.⁷⁹

2. Sanction-Adjusted Strict Liability

Given the drawbacks of probability-fixed strict liability, the alternative of sanction-adjusted strict liability seems more promising. This regime attempts to induce optimal policing measures within a strict liability framework by continuously reducing sanctions to offset an increased probability of detection. Specifically, rather than facing a fixed *actual* sanction, the firm is subject to a fixed *expected* sanction, pF , equal to the social cost of wrongdoing to others, h . Thus, the actual sanction equals h , divided by the actual probability of detection, p .

This regime escapes the perverse effects associated with traditional strict liability by eliminating the liability enhancement effect: whatever the firm's policing expenditures, its expected liability per wrong remains the same, h .⁸⁰ The firm thus obtains the full benefit of the deterrence effect. It follows that, as long as the firm can credibly announce *ex ante* and *ex post* policing measures, it will undertake op-

⁷⁹ See, e.g., Jennifer Arlen, *Shielding Audits Will Aggravate Pollution Problems*, 17 Nat'l L.J. A23 (Oct. 3, 1994).

⁸⁰ See Arlen, *supra* note 5, at 857-58 (discussing a version of this regime). An adjustable regime that reduces sanctions discretely—rather than continuously—with an increasing probability of detection would induce suboptimal policing unless a reduction in sanctions occurred at the precise point that a firm adopted optimal policing measures. But such a regime would require the court to determine whether the firm had adopted optimal policing measures, and would thus be a duty-based regime in effect.

timal levels of policing, prevention, and sanctioning, and will produce the optimal amount of its product.⁸¹

Yet there remain two important limitations on sanction-adjusted strict liability that are best described as different aspects of the credibility problem. First, to the extent that policing measures are intrinsically costly, firms will fail to implement them unless they are observable or perceived as credible threats. Under sanction-adjusted liability, a firm's expected sanction for any given wrong equals h , the social cost of wrongdoing, no matter what the firm's policing efforts. Policing measures, therefore, reduce the firm's expected liability only by deterring wrongdoing. If policing is unobservable, however, it will deter wrongdoing only to the extent that agents believe the firm's threats to police. But agents know that, if they cannot verify policing *ex ante*, a firm that has threatened to implement policing measures has no incentive to actually do so. Agents therefore will not believe the firm's threats.

To see this, consider our earlier example in which five agents commit a wrong if the firm does not monitor optimally, with a resulting probability of detection of $1/5$, but only three commit the wrong if the firm does monitor optimally, yielding a probability of detection of $1/2$.⁸² The question is: if the agents believe the firm's threats to monitor optimally, does the firm have any incentive actually to do so? Assume that the firm announces it will undertake optimal monitoring and that its agents believe it. Only three agents will engage in misconduct as a result. Under this regime, whether the firm monitors optimally or not, its expected liability per wrong equals h . Thus, if the firm undertakes optimal policing at a cost of M^* its total expected costs are $M^* + 3h$. Since its expected costs are only $3h$ if it does not monitor, the firm will not monitor, and—knowing this—agents will not be deterred by the firm's threat to monitor.

A second aspect of the credibility problem arises under sanction-adjusted strict liability in the case of policing measures, such as investigating and reporting misconduct, which the firm undertakes only after it suspects its agents have committed a wrong. Even under sanction-adjusted strict liability, implementing these measures may enhance a firm's expected liability. Consider the example of reporting misconduct. As previously discussed, optimal enforcement requires that firms report detected wrongdoing.⁸³ Suppose now that a firm de-

⁸¹ See *supra* Parts I.A. & B.

⁸² See *supra* text accompanying notes 52-53.

⁸³ Reporting reduces enforcement costs by saving the government the resources needed to uncover the firm's information independently. It also reduces the risk that firms can escape sanctions through insolvency by raising the probability of detection and lower-

fects misconduct as a result of optimal monitoring. Under sanction-adjusted liability, if the firm reports the wrong it will be held liable, subject to a fine of h/p^{**} , where p^{**} is the probability of detection if the firm monitors optimally and reports detected wrongdoing.⁸⁴ If the firm does not report the wrong and the government detects it, it will be subject to a fine of h/p^o , where p^o represents the government's probability of detection if the firm monitors optimally but does not report misconduct. Although ex ante the firm's expected liability per wrong is h in both situations, the situation is dramatically different from the perspective of the firm that has detected the wrong. Ex post the firm's expected liability if it reports the wrong is h/p^{**} , whereas its expected liability if it does not report the wrong is $g(h/p^o)$, where g is the probability that the government will detect a wrong that the firm has already detected. Since $h/p^{**} > gh/p^o$, the firm's expected liability if it reports is larger than if it does not report.⁸⁵

Sanction-adjusted liability, therefore, generally will not induce optimal policing when credibility problems exist, although it can induce optimal policing—as well as optimal activity levels, sanctioning, and prevention measures—when credibility problems do not exist, for example because the firm can capture the full benefit of policing measures by establishing a reputation for implementing them. In these circumstances, this regime is attractive because it imposes a lower informational burden than duty-based liability. While this regime does impose a higher informational burden than traditional strict liability—specifically, the cost of calculating the probability of detection *in those cases where wrongdoing is detected and firms are sanctioned*—this additional cost is probably justified by the benefit to society of the reduction in wrongdoing *across all firms* resulting from the increased expenditures on policing occasioned by the elimination of perverse effects.

3. *Adjusted Quasi-Strict Liability*

Can adjusted strict liability be modified to eliminate the perverse penalty it imposes on ex post reporting and investigating? The answer is “yes” and “no,” depending on what is meant by strict liability. The answer is “no” if “strict” liability means a sanction determined by a single function (such as h/p) in all states of the world. It is “yes” if

ing the sanction necessary to induce wrongdoers to internalize the cost of misconduct. See *supra* note 46.

⁸⁴ The sanctions must meet these requirements in order to ensure that ex ante the firm's expected liability equals h , as is necessary if this regime is to induce optimal prevention, sanctioning, activity levels, and policing.

⁸⁵ Note that if $g = p^o$, then $g(h/p^o) = h < h/p^{**}$. See *infra* Appendix note 206.

strict liability means a liability regime that is keyed to outcomes—that is, a regime that does not evaluate the quality of a firm's behavior but only whether the firm took a specific action such as reporting wrongdoing. We term this latter type of liability regime—which, absent credibility problems, can induce both optimal ex ante monitoring, and ex post investigating and reporting—an adjusted “quasi-strict” liability regime.

A complete development of adjusted quasi-strict liability is provided in the Appendix. Adjusted quasi-strict liability is similar to adjusted strict liability in that the sanction imposed on the firm depends, at least in part, on the ex ante probability of detection. This regime adds an additional feature, however: a firm's sanction varies according to whether it reported wrongdoing or not. Specifically, a firm that reports faces a substantially lower sanction than one that does not. Thus, there is a duty-based element—the firm's sanction turns on its decision to report—but this “duty” imposes an element of strict liability because the firm's sanction turns on an outcome—whether it reported or not (regardless whether it detected misconduct)—and not on behavior it can control—whether it monitored optimally or reported all detected wrongdoing.⁸⁶

Under this regime a firm can be induced to report misconduct if the sanction it incurs after reporting, F^r , equals the expected sanction imposed on a firm that does not report, gF^{nr} , where g is the probability the government will detect a wrong the firm has already detected and F^{nr} is the firm's fine if it does not report.

In order to induce optimal policing, activity levels, and prevention, however, the firm's ex ante expected sanction must equal the social cost of wrongdoing. This implies that the firm's expected liability if it does not detect the wrong first (and thus cannot report) plus its expected liability if it does detect and report must equal the social cost of the harm. In other words, the sum of F^r and F^{nr} —weighted by the relevant probabilities of detection—must equal h . In addition F^r and F^{nr} must satisfy the requirement for optimal reporting. Calculating these fines is difficult. A court must know not only the overall

⁸⁶ Quasi-strict liability is similar to the regime proposed by Professor Dana, in that the firm's sanction is mitigated if a firm reports wrongdoing. See Dana, *supra* note 5. Dana's regime differs from the two adjusted strict liability regimes we describe, however, in that he does not advocate adjusting the sanction for changes in the probability of detection resulting from policing practices. Rather, Dana appears to be combining his reporting mitigation provision with a traditional strict liability regime. The reporting mitigation provision is consistent with our conclusions. Unlike Dana, however, we conclude that the residual strict liability should be adjusted because otherwise firms will undertake insufficient monitoring and investigation as a result of perverse effects and credibility problems. See *supra* Parts I.C. & D.

probability of detection but also the probability that the government will detect any wrong that the firm has detected—and the probability that the firm will detect and report misconduct *before* the government detects it.

It is not surprising, therefore, that there do not appear to be any examples of this regime. It would impose a significant administrative burden on courts (a burden that may exceed that imposed by a composite regime considered below). Moreover, it cannot induce optimal monitoring or investigation when there is a credibility problem. Consider investigation: as in the case of adjusted strict liability, this regime might not lead a firm to investigate suspected wrongdoing because investigation takes place *ex post*. Thus, investigation cannot deter the wrong but can increase the firm's probability of being found liable for it. Adjusted quasi-strict liability cannot solve this problem by simply reducing the sanction imposed on firms that investigate because, unlike reporting, investigation is not a binary—an either/or—activity. Rather, a firm's investigatory expenditures can vary widely. Accordingly, to decide whether a firm deserves credit for investigation, courts would need to determine whether the firm investigated optimally, which is a duty-based analysis.⁸⁷

4. *A Comparison of Adjusted Strict Liability Regimes*

Adjusted strict liability regimes can be arranged on a spectrum according to their likely enforcement efficacy and informational requirements. As we have shown, probability-fixed strict liability regimes—including regimes accompanied by use immunity or evidentiary privilege—are least able to overcome the perverse effects and credibility problems associated with strict liability but also impose the smallest informational burden on the courts. They simply require that the government know the social cost of wrongdoing and the probability that the firm will be liable—and, of course, that those who prosecute culpable agents withhold information from the legal system about culpable firms.

Under these regimes, courts need not determine the relationship between policing measures and detection probabilities. By contrast,

⁸⁷ In addition, this regime will not induce optimal monitoring if, in addition to increasing the overall probability of detecting misconduct, monitoring also increases the probability that firms will detect wrongdoing before the government does. In this case, firms will receive a private benefit from monitoring: the increased likelihood of detecting the wrong first, thereby rendering a firm eligible for sanction mitigation. This private benefit can induce excessive monitoring under a quasi-strict liability regime, as firms increase monitoring over optimal levels solely to detect first, and thus qualify for sanction mitigation. See *infra* Appendix, Part III.C.3 (discussing excessive monitoring).

sanction-adjusted liability, which sets the firm's liability at the elegant ratio of h/p , produces a significant increase in enforcement efficiency at a relatively modest informational cost. This regime can ensure optimal ex ante monitoring, but standing alone, it cannot induce optimal investigation and reporting, nor can it induce optimal monitoring if agents cannot verify their firms' monitoring efforts ex ante.

Finally, adjusted quasi-strict liability imposes the heaviest informational burden and most closely resembles composite liability. In principle, it can resolve the credibility problem associated with inducing optimal reporting, but it cannot solve the credibility problem associated with ex ante monitoring or ex post investigation. Moreover, quasi-strict liability imposes substantial informational costs on courts which rival those of duty-based and composite liability. Sanction-adjusted strict liability, therefore, appears to be the superior adjusted strict liability regime.

B. Composite Liability

The alternative class of mixed liability regimes—that is, the class of composite regimes that “layer” duty-based and strict liability to induce policing measures and internalize the social costs of misconduct—will have superior enforcement capabilities in many circumstances.⁸⁸ Composite liability can be understood as making the firm separately liable for two distinct wrongs: for its agent's misconduct, and, additionally, for its own failure to discharge its policing duties.

The most common form of composite regime enforces policing duties and sanctions underlying misconduct simultaneously—by holding firms liable for all detected wrongs but imposing an additional sanction on firms with suboptimal policing measures.⁸⁹ Such a regime

⁸⁸ In some cases market penalties may substitute for legally imposed strict liability in a composite regime. Recall that firms must face expected residual liability equal to the social cost of misconduct in order to regulate activity levels and induce preventive measures—including the obvious measure of declining to reward agents for engaging in misconduct. Firms must often pay the price for misconduct in market settings such as securities fraud. In this case, residual liability is unnecessary if the market forces firms to internalize the costs of wrongdoing. See *supra* note 74 (sanction imposed by market must equal harm divided by probability of detection).

⁸⁹ A composite regime could sanction breaches of an ex ante monitoring duty independently of underlying misconduct, as where the government searches for and sanctions any shortcoming in a monitoring program proactively before finding evidence of misconduct. Although administrative economies will ordinarily dictate investigating a firm's monitoring program ex post, in tandem with its misconduct, insolvency concerns may lead to severing this connection in order to inspect monitoring efforts more frequently. Put differently, if liability for underlying misconduct is likely to exhaust a firm's assets, the prospect of facing additional liability for breach of a monitoring duty will have little effect if it can only be

generally must satisfy two requirements. First, it must impose a high “default sanction” large enough to ensure that firms that have not satisfied their policing duties would prefer to satisfy those duties in return for a reduced sanction. And second, it must subject firms that have satisfied their policing duties to a residual sanction large enough to ensure that they implement optimal prevention measures, sanctioning, and activity levels. This residual liability should equal the social cost of misconduct divided by its probability of detection. The regime that results differs from adjusted strict liability most conspicuously by requiring the courts to evaluate whether firms have adhered to their legal duties by undertaking optimal levels of monitoring, investigating, and reporting.

There are many possible composite regimes. The simplest is a two-tiered regime, under which a firm earns a reduced sanction for misconduct only if it performs all of its policing duties optimally.⁹⁰ Specifically, the firm faces a default sanction of F^H for each wrong its employees commit unless it has both monitored and investigated optimally and reported any wrongdoing it detected; it can earn a reduced residual sanction, F^r , only by satisfying *all* of these obligations. F^r , in turn, is designed to induce optimal preventive measures and activity levels.⁹¹ The mitigation provision of this two-tiered regime is thus wholly fault-based. It assigns full mitigation to any firm that monitors and investigates optimally even if it fails to report misconduct, provided that it fails to report because it did not detect misconduct. This regime may be implemented in a variety of ways—for example, entirely through the use of civil sanctions or, alternatively, by combining a residual civil liability with a criminal default sanction.⁹²

Under this composite regime, the optimal residual sanction equals the social cost of wrongdoing to others divided by the probability of detection when policing is optimal, h/p^* .⁹³ The default

imposed when the firm is also liable for the underlying misconduct. In this situation, to induce optimal monitoring the government may need to periodically evaluate a firm's ex ante policing measures and impose sanctions on firms whose efforts are suboptimal. Note, however, that ex post policing duties such as investigating and reporting misconduct generally can only be enforced in conjunction with prosecuting the misconduct itself.

⁹⁰ See *infra* Appendix, Part III.A. (describing such regime).

⁹¹ This Part focuses on monitoring and reporting. The analysis could easily be extended to include either a multi-tiered regime based on ex ante monitoring on the one hand and ex post investigating and reporting on the other, or, probably better, a multi-tiered regime with separate mitigation provisions for monitoring, investigating, and reporting. We remain open to the possibility that a multi-tiered regime may be optimal.

⁹² For a discussion of the relative merits of civil versus criminal corporate liability, see the sources cited *supra* note 12.

⁹³ Alternatively, the sanction could be simply the net social cost of crime to others divided by the actual probability of detection. The advantage of basing the residual fine on

sanction, however, must produce a mitigation amount that is large enough to induce both *ex ante* and *ex post* policing measures. Firms monitor *ex ante*, before agents decide whether to commit wrongdoing, but they investigate and report *ex post*, after it is too late to deter culpable agents. Thus, to induce optimal policing, the mitigation provision must meet two conditions. First, it must ensure that *ex ante*, before agents decide to commit a wrong, the firm's profits are higher if it monitors optimally (and reports detected wrongdoing) than if it does not and faces the higher default sanction for each wrong the government detects.⁹⁴ Second, it must ensure that *ex post*, after wrongdoing is detected, the firm is better off reporting the misconduct—and accepting the sanction F^r —than it is remaining silent and risking the default sanction F^H .

The first requirement is satisfied if firms are subject to a default sanction of h/p^o , where p^o is the probability of detection if the firm does not undertake policing measures, and a residual sanction of h/p^{**} .⁹⁵ These sanctions necessarily induce optimal policing because they ensure that a firm's expected costs equal the total social costs of its activities (including the cost of wrongdoing), whether it polices op-

the optimal probability of detection is that if there are many similarly situated firms, the court could apply the same optimal probability of detection to many firms. This approach only works if mitigation induces optimal policing, however.

In addition to inducing optimal prevention, activity levels, and sanctioning, this residual liability is consistent with optimal policing. Specifically, a firm that adheres to its legal duty to police will not be induced to undertake excessive policing by the threat of strict residual liability. See *infra* Appendix, Part III.A.2.

⁹⁴ See *supra* note 46 (corporate liability should ensure that firms always report wrongdoing).

⁹⁵ This fine structure will induce optimal policing but is not the minimum default sanction that will do so. For a discussion of the minimum mitigation amount, see *infra* Appendix, Part III.A.3.

It might seem that all composite regimes suffer in comparison to traditional strict liability because they require larger penalties and thus are more vulnerable to failure as a result of firm insolvency. In fact, however, the default sanction under our composite regimes is not necessarily higher than the optimal sanction under strict vicarious liability. The minimum default sanction under our composite regimes equals the residual liability h/p^* plus an amount calculated to induce optimal monitoring. The sanction h/p^o certainly will suffice to induce optimal policing, but a lower sanction will also achieve the desired result. See *infra* Appendix, Part III.A.3. By contrast, under traditional strict vicarious liability the sanction simply equals h/p . However, the optimal measure of h/p under traditional strict liability is the harm divided by the expected probability of detection based on the policing measures the firm is likely to implement. Because firms subject to a traditional strict liability rule often will not undertake efficient policing—and indeed in some cases may not implement any policing measures, see *supra* Parts I.C. & D.—the probability of detection under strict liability may be substantially lower than under our composite regimes. Thus, if firms do not implement any policing measures, the optimal sanction under traditional strict liability will equal h/p^o , an amount that exceeds the minimum optimal default sanction under a composite regime.

timally or not. Thus, since by definition optimal policing minimizes total social costs, the firm's expected costs also must be lower if it polices optimally than if it does not. Therefore, firms will have a sufficient ex ante incentive to undertake optimal policing.⁹⁶

To satisfy the second requirement, a two-tiered regime must ensure that after misconduct occurs the firm will be motivated to undertake efficient ex post policing measures such as reporting. A firm that reports a wrong will automatically face residual liability of F^r . Therefore, to ensure that the firm reports,⁹⁷ its expected liability if it does not report detected wrongdoing must equal or exceed its residual liability if it does report.⁹⁸ Thus, its expected default liability, gF^H , must equal or exceed the residual liability, F^r , where g is the probability of government detection given that the firm has already detected misconduct.⁹⁹ This implies that F^H must equal or exceed $h/(p'')g$. Thus F^H must equal or exceed F^r/g . The optimal default sanction, then, equals the greater of the optimal ex ante or ex post default sanctions.¹⁰⁰

This two-tiered regime eliminates perverse effects by ensuring that a firm's expected costs are always lower when it engages in opti-

⁹⁶ See *infra* Appendix, Part III.A.3. If the firm faces a credibility problem with respect to monitoring, this sanction must be adjusted so that agents' expectations that the firm will monitor optimally are correct. See *infra* Appendix, Part III.A.4.

⁹⁷ See *supra* note 46 (corporate liability should ensure that firms always report wrongdoing).

⁹⁸ This specification of the sanction assumes that reporting only affects the firm's expected liability for this particular wrong. In other words, reporting one wrong does not deter other wrongs. This assumption is justified if employees are fully informed about the costs and benefits to the firm of reporting any given wrong—since in this case reporting one wrong does not provide employees with any information about the firm's willingness to report other wrongs. If reporting does help deter other wrongs, then a lower default sanction than described here will be capable of inducing optimal reporting. See *infra* Appendix note 188.

⁹⁹ See *infra* Appendix, Equation (19).

¹⁰⁰ To illustrate, return to our example where the probability of detection is $1/2$ if the firm optimally monitors and reports and $1/5$ if it does neither; five employees commit wrongs when the firm does not police but only three occur if the firm undertakes optimal policing. See *supra* text accompanying notes 52-53. Assume that the firm does not benefit from the wrong. In this case, a firm which undertakes optimal policing will bear the full social cost of the harm if its expected sanction per wrong, $(1/2)F$, equals the social cost of the wrong, h . Thus, F^r should equal $2h$. The firm will monitor optimally if its expected cost of optimal monitoring plus its expected liability for the three expected wrongs, $M^* + 3(1/2)2h$, is less than or equal to its costs if it does not, $0 + 5(1/5)F^H$. This implies that $F^H \geq M^* + 3h$. To ensure that the firm reports detected wrongdoing, the firm's expected liability if it does report, $F^r = 2h$, must be less than or equal to its expected liability if it does not, gF^H . Assuming that once the firm has detected a wrong, the probability that the government will eventually detect it is 80%; this implies that $(4/5)F^H \geq F^r$. Thus, $F^H \geq (5/4)2h = (2.5)h$. Therefore, the optimal residual liability, F^r , is $2h$ and the optimum minimal default sanction, F^H , is $M^* + 3h$.

mal policing than when it does not. This regime also eliminates the credibility problem, since a firm that fails to implement threatened policing measures faces the prospect of a much higher default sanction. In other words, the composite regime provides a firm with a reason to police independent of the expectations of its agents, and so makes its threats to police credible.¹⁰¹ Finally, the residual liability ensures that the firm undertakes optimal activity levels, sanctioning, and prevention.

This regime will induce optimal policing even if courts do not calculate the default sanction precisely, provided that the default sanction exceeds the minimum amount necessary to induce optimal policing, and provided that firms and courts can accurately determine when policing is not optimal.¹⁰² Courts need worry about setting the default sanction too high only when there is a risk of judicial error, in which case an excessive default sanction may induce excessive policing.¹⁰³

C. *Adjusted Strict Liability and Composite Regimes Compared*

Composite liability is thus the only form of liability able to regulate activity levels and satisfy all four enforcement objectives, including the objective of assuring the credibility of the firm's own policing measures to its agents. Yet, this versatility has a price. Although increasingly elaborate strict liability regimes meld into composite regimes, composite liability always forces a heavier informational burden on courts, and hence imposes larger administrative costs. The choice between composite and adjusted strict liability, then, frequently involves balancing enforcement efficiency against administrative costs.¹⁰⁴ This point is most usefully made by comparing the informational requirements of the most attractive form of adjusted strict liability—sanction-adjusted liability—with those of simple composite liability.

Table 3, which compares the informational requirements of these liability regimes, indicates that both regimes require at least two kinds

¹⁰¹ See *supra* Part I.D.

¹⁰² Thus, courts could employ a rough rule of thumb to determine the default sanction, provided the standard for optimal policing is set correctly.

¹⁰³ See Craswell & Calfee, *supra* note 42, at 280, 288-89. The conclusion that liability may induce excessive policing holds for government imposed civil and criminal sanctions provided that, as is generally the case, the government need not show that the firm's failure to comply with its legal duties "caused" the harm. Cf. Kahan, *supra* note 56, at 437-39 (showing that uncertainty leads to suboptimal caretaking when private plaintiffs must show "but-for" causation).

¹⁰⁴ That is, the court's administrative and information costs. Firms require the same information under all regimes.

of information: (1) an estimate of the ex ante probability that the misconduct will be detected, given the policing measures undertaken by the firm, and (2) an estimate of the net cost of the misconduct to actors other than the firm.¹⁰⁵

Table 3 Informational Requirements of Mixed Liability Regimes		
	Adjusted Strict Liability	Composite Liability
1) Actual probability of detection	Yes	Yes, unless courts can determine benefit of wrong to marginal agent
2) Net social cost of misconduct	Yes	Yes (net of firm's benefit of wrongdoing)
3) Marginal increase in detection with increase in policing	No	Yes
4) Sanction imposed on marginal agent	No	Yes, unless courts can determine benefit of wrong to marginal agent
5) Number of agents deterred by marginal increase in detection	No	Yes
6) Whether firm that detects misconduct also reports	No	Yes
7) Probability that government detects if firm does not police	No	Yes, but can be a rough estimate
8) Probability that government detects if firm detected	No	Yes, but can be a rough estimate

We do not underestimate the magnitude of this informational burden that is imposed by both regimes. Although a court should be able to discharge the traditional task of estimating the social cost of

¹⁰⁵ Courts probably need to know the probability of detection to determine whether the firm took due care. To determine whether due care was taken, courts must know the net social cost of wrongdoing deterred—i.e., the net social cost of the marginal wrong. See *infra* Appendix, Equation (6). This equals the social cost of wrongdoing to others plus the cost of committing the wrong minus the benefit of the wrong to the marginal wrongdoer and to the firm. As it often will be difficult to determine the benefit of wrongdoing to the marginal wrongdoer, courts often will need to determine that benefit by determining the expected individual sanction, pf , which will equal the net benefit of wrongdoing to the marginal wrongdoer.

wrongdoing,¹⁰⁶ estimating the ex ante probability of detection is likely to prove more difficult, given the need to correct for the distortion of hindsight (i.e., the fallacy that misconduct must have been likely to be detected because it was in fact detected). In theory, a court might either make a point estimate of this probability based on the circumstances of the particular case, or determine the general relationship between policing and detection—that is, a probability schedule—and deduce the probability of detection based on a firm's policing expenditures. In practice, a court is likely to rely on both approaches. Although determining a full probability schedule based on the efficacy of multiple policing measures is doubtlessly unrealistic, making a point estimate of the probability of detection without at least local insight into the effect of policing measures on detection seems equally improbable.

In addition to the core information that both regimes require, however, a composite regime requires courts to obtain six additional categories of information (items 3-8 in Table 3). But of these categories, only those dealing with the firm's choice of policing measures (items 3-5) impose a qualitatively different informational task on the court: a task that is in effect the administration of a negligence standard.

Under a composite regime, a court must determine whether a firm merits a reduced penalty for having satisfied its monitoring and investigatory duties. But contrary to initial appearances, this negligence-based inquiry does not require the court to identify optimal policing measures as a yardstick for evaluating the firm's actual behavior. Like any negligence rule, the mitigation provision of a composite regime only requires a search for efficient enforcement measures that the firm failed to take.

Consider the case of a duty of reasonable monitoring. Monitoring is optimal when the marginal cost of additional monitoring exceeds its marginal social benefit. Thus, to determine whether the firm's monitoring is optimal, a court need only determine whether the benefit of an additional unit of monitoring exceeds the cost. If so, then the firm's own monitoring—whatever it may have been—was deficient; if not, the firm satisfied its duty.¹⁰⁷ In other words, the court need not determine the optimal level of monitoring

¹⁰⁶ Under composite liability, but not under sanction-adjusted strict liability, the net social cost of wrongdoing (item 2 in Table 3) must be net of the benefit of wrongdoing to the firm.

¹⁰⁷ This assumes that the cost function is well-behaved in that marginal costs are constant or increasing and marginal benefits are constant or decreasing, so that if the court finds that a particular level of monitoring is a local maximum it also is a global maximum.

but only whether, on the facts at hand, additional monitoring was cost-justified.¹⁰⁸ This determination can be made with far less information than would be needed to calculate the optimal level of monitoring. Often a firm will clearly have failed to take an obvious monitoring measure, while in other cases it will be equally clear that there was little else the firm could have done. Only in difficult cases must a court actually evaluate the cost and benefit of a marginal change in policing measures.

The heart of this negligence evaluation lies in estimating how much misconduct might have been deterred by an additional policing measure such as an intensified monitoring program. The first step is to estimate the marginal impact of the measure on the probability of detection (item 3). This determination is similar, we believe, to the task of estimating the probability of detection under a sanction-adjusted strict liability regime. It does not require knowledge of the full probability schedule associated with multiple policing measures, but it does require insight into how the detection probabilities change in the neighborhood immediately beyond the probability associated with the firm's actual level of policing effort. The increase in the probability of detection leads easily to a determination of the marginal increase in expected liability faced by those engaged in misconduct (item 4). Often sanctions for wrongdoing are well-known. For serious wrongs the expected sanction often will be the agent's wealth—what the agent stands to lose—discounted by the probability of detection.¹⁰⁹

The final step in determining the benefit conferred by a marginal increase in a policing measure lies in estimating the number of wrongdoers who would have been deterred by the resulting increase in their expected sanction (item 5). Again, this determination does not require comprehensive information about the distribution of private gains from misconduct over all wayward agents. Rather, a

¹⁰⁸ Cf. Mark Grady, *A New Positive Economic Theory of Negligence*, 92 *Yale L.J.* 799 (1983) (negligence analysis involves a specific analysis of whether there exist any precautions that defendant should have taken but did not, not a global analysis of what is due care); Mark Grady, *Untaken Precautions*, 18 *J. Legal Stud.* 139 (1989) (same).

¹⁰⁹ When agents are solvent, this expected liability will equal pf , where f is the individual sanction (monetary plus nonmonetary) and p is the probability of detection. When agents are insolvent (or there is a limit on nonmonetary sanctions), it will equal pW , where W is the agent's wealth. See *infra* Appendix, Equation (3) (for the marginal wrong, $b = p'(M)W$). Unlike in the case of sanction-adjusted strict liability, courts need not necessarily determine the cost to the wrongdoer of committing the wrong because, although the net benefit of the wrong to an agent equals his direct benefit, b , minus his cost of committing the wrong, the direct benefit should equal the marginal cost of doing the wrong, which equals his expected fine, pW , plus the cost of committing the wrong. So the net benefit simply equals the expected individual sanction.

court need only estimate the number of agents on the margin—those for whom wrongdoing is only barely profitable and for whom a relatively small change in the expected sanction would suffice to deter wrongdoing.

After a court determines the effect of a marginal increase in policing on the amount of misconduct, it can quickly rule on whether a firm has breached its policing duties. Once again, if the cost of the marginal policing measure exceeds its benefit—the amount of harm deterred multiplied by its expected social cost—the firm has fulfilled its duty. In this case its policing measures are optimal—providing that the firm does not engage in a coverup by failing to report misconduct that it has detected (item 6).¹¹⁰ If policing is optimal the firm should face a mitigated sanction of h/p^* , where p^* , the optimal probability is, in this situation, the actual probability of detection. That is, in this case p^* is the same probability that would be used to calculate a sanction under the sanction-adjusted strict liability regime.

By contrast, if the firm has violated its policing duties because additional measures would have been beneficial on the margin, the firm faces the default sanction. Calculating the optimal default sanction also is relatively straightforward. It should equal or exceed the greater of (1) the social cost of wrongdoing to others divided by the probability of detection if the firm does not undertake policing measures (item 7), and (2) the optimal residual sanction divided by the probability the government will detect a wrong the firm has already detected (item 8). To determine the optimal default sanction courts need only avoid setting the default too low. As long as duties are defined with reasonable precision, courts do not need to worry about excessive default sanctions.

Accordingly, although a composite regime requires more information than sanction-adjusted strict liability, the additional information required is less than it at might first appear. Specifically, courts do not need to determine the optimal forms of policing or select the optimal levels of monitoring and investigation to administer a composite regime.

This is not to minimize the administrative advantage of adjusted strict liability. When the credibility of the firm's policing measures is

¹¹⁰ We expect that courts often will be able to determine whether a firm has detected misconduct. They will generally have access to the information produced both by the firm's monitoring programs and audits and by its internal investigations. See *supra* note 49 (discussing Fifth Amendment).

The government also may be able to reduce the likelihood that detected wrongs will go unreported by providing properly designed bounties to individuals who report wrongs. See Arlen & Kraakman, *supra* note 11 (discussing bounty provisions).

not an issue—when the firm can effectively commit itself through reputation or otherwise—sanction-adjusted strict liability clearly dominates composite liability. But when credibility is a problem, as we believe it often is, the deterrence benefit of employing a composite regime can easily overshadow the administrative advantages of sanction-adjusted strict liability, particularly since administrative costs are relevant only when actions are actually brought.¹¹¹ Or put somewhat differently, composite liability is relatively more attractive the more significant the credibility problem and the lower the expected number of legal proceedings, while adjusted strict liability is more attractive otherwise.

Because only a composite regime can convincingly meet all the objectives of corporate liability, the structural characteristics of composite regimes merit closer analysis. In Part III, we provide a systematic comparison of alternative composite regimes.

III COMPOSITE LIABILITY REGIMES

In principle, an efficient composite regime requires no more than two liability levels: a default and a residual liability level. However, a composite regime can also include intermediate levels of liability to reward a firm for performing some (but not all) of its policing duties or, alternatively, to reward it for achieving certain results, such as reporting misconduct, irrespective of whether it has performed all of its policing duties. In this Part, we undertake a comparative evaluation of composite regimes.

Although the two-tiered regime introduced in the preceding Part has the advantage of simplicity, it also has limitations that incline us to favor a more complex regime in many circumstances. In particular, the two-tiered regime fails if managers perceive a significant risk that a firm will not be eligible for sanction mitigation as the result of either judicial error or an agency problem affecting one of its several policing duties (for example, employees who refuse to report misconduct). Under the simple regime, the possibility that the firm may be found to have breached one of its policing duties can cause it to abandon the rest because it receives no mitigation unless it satisfies all its duties. Thus, a firm that fears its agents will not report detected wrongdoing may also decide that, for this reason, it cannot earn a mitigated sanction by monitoring.

¹¹¹ Under sanction-adjusted strict liability and a composite regime, firms will need to be able to calculate optimal monitoring and investigation and determine whether to report wrongdoing.

Where this concern arises, we favor a multi-tiered regime that unbundles and separately motivates ex ante policing measures such as monitoring and ex post measures such as investigating and reporting. For example, such a regime could subject the firm to a very high sanction if it neither monitors optimally nor reports, but partially mitigate this sanction if it either monitors or reports. Thus, the firm will have an incentive to take one efficient policing measure even if it lacks an incentive to take another—although it can only earn full mitigation by performing all of its policing duties.

Such a multi-tiered regime can assume several forms. It can specify two duties, ex ante and ex post, or it can specify an ex ante monitoring duty but tie the mitigation of liability for ex post behavior to the achievement of a result, such as the reporting of actual misconduct. The choice between these alternatives is of considerable practical significance—as will be shown, the result-based alternative will not necessarily induce optimal monitoring and also is more costly to implement. Nevertheless, as we discuss in Part IV, the structure of the regime established by the Federal Sentencing Guidelines is, effectively, a result-based structure.

Table 4, below, compares the sanction structure of the simple two-tiered regime; a two-duty, multi-tiered regime (the mitigation-aggravation regime); and a duty- and result-based multi-tiered regime (the mitigation-mitigation regime). The key distinction to note is that firms receive full mitigation only if they report actual misconduct under the result-based mitigation-mitigation regime. They do not receive full mitigation if they fail to report, even if this is because they did not detect misconduct through no fault of their own. By contrast, under the duty-based two- and multi-tiered regimes, firms receive full mitigation if they perform all policing duties in good faith—even if they do not detect and report misconduct.

Table 4					
	No Monitoring or Reporting	No Monitoring but Reporting	Monitoring; no Reporting		Monitoring and Reporting
			Detect	Good Faith	
Simple Regime	F ^H	F ^H	F ^H	F ^r	F ^r
Mitigation Aggravation	F ^{AA}	F ^A	F ^a	F ^r	F ^r
Mitigation Mitigation	F ^{hh}	F ^h	F ^m	F ^m	F ^R

A. Mitigation-Aggravation Regime

In essence, the mitigation-aggravation regime expands the simple regime to allow for partial mitigation if a firm satisfies one, but not both, of its monitoring and reporting duties. Under this regime, a firm that fails to satisfy both policing duties faces a default sanction, F^{AA} . If the firm monitors optimally, its liability is fully mitigated to F^r , the residual sanction, unless it fails to report detected wrongdoing. If optimal monitoring is followed by a failure to report a detected wrong, the sanction is increased to an intermediate sanction, F^a . Similarly, the firm faces a second intermediate sanction, F^A , if it reports wrongdoing but fails to monitor optimally.¹¹²

The optimal sanctions under this regime are essentially identical to the optimal sanctions under the simple regime. As before, assuming there are no market-based sanctions, the residual liability, F^r , must equal the net social cost of wrongdoing divided by the optimal probability of detection. In addition, the mitigation provision must provide the correct ex ante incentives to monitor and the aggravation provision must motivate a firm that suspects wrongdoing to investigate and (if warranted) report. The aggravation provision thus must ensure that a firm which has discovered wrongdoing is better off reporting wrongdoing whatever its commitment to monitoring.¹¹³ This condition is identical to the condition for inducing ex post policing in the simple regime. Thus, F^a must at least equal the residual liability, F^r , divided by the probability the government will eventually detect the wrong, g . This implies that the minimum F^a equals $h/(p'')g$.¹¹⁴

¹¹² For a complete discussion of this regime, see *infra* Appendix, Part III.B.

¹¹³ As before, the present analysis assumes that the firm cannot commit to reporting wrongdoing it detects. Therefore, the aggravation provision will induce optimal reporting only if reporting lowers the firm's expected liability for the wrong it has detected. See *supra* text accompanying notes 97-99 and *infra* text accompanying Appendix note 188.

¹¹⁴ Similarly, F^{AA} and F^a must be such that a firm that has not monitored optimally is better off reporting detected wrongdoing. In other words: $F^{AA} \geq F^a/g(M^o)$, where $g(M^o)$ is the probability the government will detect the wrong if the firm does not monitor optimally and does not report the wrong.

Table 5					
	No Monitoring or Reporting	No Monitoring but Reporting	Monitoring; no Reporting		Monitoring and Reporting
			Detect	Good Faith	
Simple Regime	F^H Max $[h/p^*,$ $h/(p^{**})g^*]$	F^H (Same)	F^H (same)	F' h/p^{**}	F' h/p^{**}
Mitigation Aggravation	F^{AA} $h/(p^*)g^*$	F^A h/p^{**}	F^A $h/(p^{**})g^*$	F' h/p^{**}	F' h/p^{**}

Conversely, the mitigation provision must ensure that a firm is better off monitoring optimally, whether or not it reports wrongdoing that it detects. This implies that the firm must face sanctions that leave its expected costs per worker lower if it monitors optimally than if it does not. Thus, the sanction imposed on a firm that reported but did not monitor, F^A , must approximately equal or exceed the firm's expected residual liability if it does monitor plus the additional cost of monitoring optimally, divided by the probability that the firm will be found liable if it does not monitor optimally (but does report).¹¹⁵ This requirement can be satisfied simply by setting the default sanction, F^A , equal to social cost of wrongdoing, h , divided by p^{**} , the probability of detection if the firm does not monitor optimally but reports any detected wrongdoing.¹¹⁶

Thus, a full duty-based mitigation-aggravation regime can induce optimal monitoring, reporting, prevention, and activity levels by independently mitigating liability to reward ex ante monitoring, and aggravating liability to punish failures to report detected misconduct ex post. Because this multi-tiered regime can induce optimal monitoring even when the firm doubts that it will get credit for reporting (and vice versa), it is superior to the simple regime

¹¹⁵ See *infra* Appendix, Part III.C.3. Similarly, F^{AA} and F^A must ensure that a firm will monitor optimally even if it will not report detected wrongdoing. Thus, we need F^{AA} to be greater than or equal to F^A/g^* . This condition ensures that even if the firm cannot guarantee that it will report wrongdoing (for example, because of agency problems), it nevertheless will have an incentive to undertake efficient monitoring.

¹¹⁶ This sanction will induce optimal monitoring because in this situation, the firm's expected costs if it monitors optimally and reports detected wrongdoing equal social costs when monitoring is optimal. The firm's expected costs if it does not monitor optimally (but does report) equal social costs when monitoring is suboptimal. Notice that, under this regime, there is no liability enhancement effect because the firm dramatically reduces its expected liability by taking due care. See *infra* Appendix, Part III.A.2 (showing that this regime will not induce excessive monitoring).

whenever courts may err in applying policing duties or the firm cannot completely control whether it will satisfy these duties.

B. A Mitigation-Mitigation Regime

A mitigation-mitigation regime, like the mitigation-aggravation regime, bifurcates the policing duties into an *ex ante* monitoring duty and *ex post* investigating and reporting duties. Under the mitigation-mitigation regime, however, the firm is eligible for full mitigation only if it actually reports wrongdoing. The reporting component of this mitigation regime is thus outcome-based: a firm that monitors optimally but fails to detect misconduct in good faith receives only partial mitigation. In effect, then, this regime makes the firm strictly liable for failure to report misconduct. Moreover, the firm must report before the government detects the wrong in order to receive credit for reporting. This is necessary because firms would otherwise have an incentive to refrain from reporting until the government detects misconduct.

Thus, the mitigation-mitigation regime subjects the firm to a residual sanction, F^R , if it both monitors optimally and reports misconduct. It faces a partially mitigated sanction of F^m if it monitors optimally but does not report, and another intermediate sanction of F^h if it reports but does not monitor optimally. Finally, it faces a default sanction of F^{hh} if it neither monitors optimally nor reports.¹¹⁷

The mitigation-mitigation regime is capable of inducing optimal reporting, activity levels, and prevention, but it will not necessarily induce optimal monitoring. Indeed, it will lead to excessive monitoring in some cases, and it is more difficult to administer than the mitigation-aggravation regime.

Consider the efficient level of residual liability under this regime. As before, the residual liability must ensure that the firm's expected liability equals the social cost of wrongdoing. But here the expected liability of a firm that monitors optimally and reports all detected wrongdoing is quite complex because the firm will not necessarily detect before the government does. Thus, the firm's expected residual liability is the sum of two components: F^r multiplied by the probability that the firm detects first plus F^m multiplied by the probability the government detects first.¹¹⁸ It is this weighted expected liability that must equal the social cost of wrongdoing, not sim-

¹¹⁷ See *supra* Table 4.

¹¹⁸ See *infra* Appendix, Part III.C.1.

ply the fully mitigated liability, F^R .¹¹⁹ This is more difficult to calculate than is residual liability under a mitigation-aggravation regime. Moreover, F^R and F^m must satisfy another requirement: they must ensure that firms will indeed report detected wrongdoing.¹²⁰ Thus, F^R and F^m also must satisfy the same requirement as the aggravation provision in the previous regime, which further complicates its sanction structure.¹²¹

Moreover, administrative complexity is not the only drawback of the mitigation-mitigation regime. It may also create an excessive incentive to monitor. The problem arises if monitoring increases the probability that the firm will detect a wrong before the government does, because in this case, monitoring increases the likelihood that the firm will be able to report wrongdoing before the government detects it, and so obtain full mitigation. The consequence is that the firm has an incentive to monitor excessively to gain the sanctioning advantage of detecting first.¹²² The quest for this purely private benefit, then, may induce social waste.¹²³

¹¹⁹ To see this, consider our example. See *supra* text accompanying notes 52-53. Assume that the firm and the government are equally likely to be the first to detect. Thus, if the firm intends to satisfy its reporting duties, the overall probability of detection is $1/2$. The probability that the firm will get full mitigation is only $1/4$. The firm's expected residual liability per wrong, therefore, is: $(1/4)F^R + (1/4)F^m$. This amount must equal the social cost of wrongdoing to others.

¹²⁰ See *infra* Appendix, Part III.C.

¹²¹ The other components of the mitigation-mitigation regime, F^{hh} and F^h , must ensure that the firm is better off if it satisfies its duty to monitor optimally. This requires that the firm's expected costs if it does monitor optimally be lower than if it does not. See *id.* Calculating the optimal amount of mitigation under this regime is complex because the firm may or may not detect and report misconduct before the government does. Thus, its expected sanction if it does not monitor is the sum of F^h and F^{hh} , weighted according to the probability that the firm or the government will detect wrongdoing first. See *supra* note 119.

¹²² The risk of excessive monitoring produced by a mitigation-mitigation regime can be eliminated, but it is more expensive to do so. Specifically, mitigation-mitigation will not provide firms with an incentive to engage in excess monitoring if, instead of employing F^m and F^R , the fines described in text, F^m and F^R are variable and depend on the firm's actual monitoring efforts (provided the firm at least took due care). Under such a regime, the firm will not have an incentive to engage in excessive monitoring because implementing additional monitoring above the required level will not change the firm's expected sanction, which equals the social cost of wrongdoing to others.

¹²³ To see this in the context of our simple example, assume as before that when the firm monitors optimally the total probability of detection is $1/2$, and the firm and the government are equally likely to detect wrongdoing first. Assume also that if the firm engages in excessive monitoring the overall probability of detection is $3/4$. This does not deter any additional misconduct and thus the extra expenditures are socially wasteful. Yet the firm may benefit. Assume that this additional monitoring ensures that the firm detects first. In this situation, if the firm takes optimal care, its expected liability is $3[(1/4)F^R + (1/4)F^m]$. If it monitors excessively its expected liability is $3(3/4)F^R$. Thus, if $F^m > 2F^R$ the firm reduces its expected liability by monitoring excessively and it may be profitable to do so.

C. *A Comparison of Composite Regimes*

The simple regime discussed in Part II will generally be the superior regime when policing duties are easily defined and the firm can tightly control its own policing efforts as, for example, when ownership is concentrated in the hands of shareholder-managers. By contrast, a multi-tiered regime is preferable when firms may not get credit for satisfying their monitoring or reporting duties, either because performance of these duties is inherently difficult to specify or confirm, or because it is difficult to implement and control. Put differently, in comparison to the simple regime, a multi-tiered regime is less vulnerable to errors in control and assessment of policing duties.

The choice between multi-tiered regimes depends on whether the benefits of using a true duty to induce reporting under the mitigation-aggravation regime exceed the costs. If courts can determine whether a firm detected wrongdoing but failed to report it, then the mitigation-aggravation regime generally will be superior to the mitigation-mitigation regime. Both residual liability and the minimum amount of mitigation are easier to calculate under the mitigation-aggravation regime because the firm always faces the same residual sanction if it monitors optimally and reports detected wrongdoing in good faith. By contrast, a firm that behaves optimally may not receive full mitigation under a mitigation-mitigation regime if the government happens to detect wrongdoing before it does. As we have seen, this complicates the determination of the residual and default sanctions. Moreover, the mitigation-mitigation regime may induce excessive monitoring whenever monitoring reduces a firm's expected liability by decreasing the probability that the government will spot misconduct first.¹²⁴ Nevertheless, the mitigation-mitigation regime also has an important advantage whenever courts cannot necessarily detect when a firm has discovered wrongdoing. Under a mitigation-mitigation regime, firms cannot get full mitigation by monitoring optimally but pretending not to detect anything.¹²⁵

¹²⁴ The problems peculiar to the mitigation-mitigation regime vanish if the firm that monitors optimally will always detect misconduct before the government does. In that case, if the firm monitors optimally, its residual liability under the mitigation-mitigation regime will be F^R , because the firm will always detect first and thus can ensure itself complete mitigation by reporting. As a result, the optimal sanctions under this regime will be identical to those under the mitigation-aggravation regime, because there will be no risk that the government will get there first.

¹²⁵ Mitigation-mitigation also may be superior when the central concern is that courts will not set the monitoring standard high enough. The mitigation-mitigation provision provides firms with an extra incentive to monitor—that is, the hope that by doing so they will be able to detect and report misconduct before the government discovers it. See *supra* text accompanying notes 122-23 and note 123. By contrast, under the mitigation-aggravation

IV COMPARISON WITH EXISTING LAW

Our analysis of corporate liability regimes has important implications for evaluating existing rules governing corporate liability. The simplest conclusion of our Article is that traditional strict corporate civil and criminal liability for employees' wrongdoing will not induce firms to monitor employees and to investigate and report wrongdoing optimally. Thus, our analysis generally supports the recent trend away from traditional strict criminal liability and toward various forms of mixed liability regimes for most corporate wrongdoing potentially subject to criminal liability. More importantly, however, we also provide a framework for critiquing existing regimes of mixed liability, which often fall short of being optimal from an enforcement perspective.

As we indicated in Part II of this Article, mixed liability regimes divide into two families: adjusted strict liability regimes and composite liability regimes. In this Part, we examine a prominent example of each of these mixed regimes: (1) the environmental audit privilege, which is often deployed to construct a probability-fixed strict liability regime; and (2) the United States Sentencing Guidelines for Organizations, which establishes a far-reaching composite liability regime for corporate crime. Both mixed regimes, we believe, are superior to the traditional common law rule of strict corporate liability. Yet each of these regimes has severe enforcement limitations. Relative to any of the composite regimes we examined in Part III, the environmental audit privilege is likely to cost far more, in terms of diminished deterrence, than it saves in administrative costs and judicial accuracy. By contrast, the basic approach of the composite regime erected by the United States Sentencing Guidelines is consistent with our analysis. Yet the particular structure of the Sentencing Guidelines does not adequately serve the enforcement objective of composite liability.

A. Environmental Audit Privileges

In the environmental area, at least eighteen states have granted an evidentiary privilege to corporate environmental audit reports. Although these privilege statutes vary widely, they generally establish a broad privilege for environmental audits which protects environmental audit reports from civil, criminal, and administrative discovery and renders them inadmissible in any civil, criminal, or administrative

provision, a firm that will be deemed to have monitored optimally has little to no incentive to incur additional monitoring costs to ensure that it detects wrongdoing.

action.¹²⁶ This privilege is generally available only if the firm promptly reported any wrongdoing it detected during its audit and moved promptly to remedy the problem.¹²⁷ Nevertheless, the scope of the privilege can be quite broad. It can cover not only the audit report itself, but all documents developed for the primary purpose of doing the audit, including filed notes, photographs, and surveys. In some states, moreover, this privilege is absolute.¹²⁸

Of course, the audit privilege must function together with a liability regime. When combined with traditional strict liability, this privilege creates a regime of probability-fixed strict liability, which eliminates the perverse effects associated with traditional strict liability—at least as to policing measures covered by the privilege.¹²⁹ States that have adopted this form of the audit privilege, then, rely entirely on adjusted strict liability to induce environmental policing measures. Other states combine an audit privilege with a significant mitigation of liability if a firm detects and reports misconduct¹³⁰—a variation on the strategy of quasi-strict liability developed in Part II.¹³¹

Even well-designed environmental privileges are generally inferior to well-designed composite or sanction-adjusted strict liability regimes as deterrents of misconduct, however. First, and most important, audit privileges may reduce deterrence by insulating culpable agents. Privileging the firm's environmental audits deprives the government of the use of this information to detect and strengthen its case against the individual wrongdoers. Thus, culpable corporate agents face a lower probability of liability under an audit privilege regime than they would otherwise and therefore have less incentive to refrain from misconduct.¹³² To counteract this reduced deterrence ef-

¹²⁶ See Orts & Murray, *supra* note 5, at 22-24. Privilege statutes thus differ from use immunity in that a privilege protects the material from discovery for any purpose, whereas use immunity allows the government to obtain the material for use against others, but not for use against the firm.

¹²⁷ See *id.* (describing exceptions to standard privilege).

¹²⁸ See Dana, *supra* note 5, at 971 (stating that 18 states have recently adopted environmental audit privilege or immunity statutes).

¹²⁹ See Arlen, *supra* note 5, at 865-66 (discussing evidentiary privileges); see also *supra* Part II.A.

¹³⁰ Particularly when the firm must report the wrongdoing in order to keep the audit privilege, auditing could increase the firm's expected liability unless firms that report are granted mitigation. Cf. Orts & Murray, *supra* note 5, at 45-69 (proposing evidentiary privilege which excludes information about underlying facts but noting that privilege must be accompanied by mitigation provision).

¹³¹ See *supra* Part II.A.3.

¹³² See Arlen, *supra* note 79; cf. Arlen, *supra* note 5, at 865-66 (considering modified privilege, akin to use immunity, under which information cannot be used against firm but can be used against individual wrongdoers).

fect, moreover, the government must often waste enforcement resources acquiring information that the corporation already has. By contrast, a well-designed composite regime permits the government to tap all of the firm's information to sanction individual wrongdoers.

For the reasons given in Part II, an audit privilege accompanied by strict or quasi-strict liability also suffers in comparison to composite liability because it will not induce firms to implement policing measures other than audits if either the perverse liability effects or credibility problems discussed in Part I are serious. In addition, an audit privilege enhances the private value of auditing relative to other policing measures, and hence distorts the allocation of private enforcement expenditures.¹³³

Moreover, in contrast with composite regimes, a pure audit privilege regime will not even induce optimal auditing if firms face a credibility problem. Generally, environmental auditing is a form of ex post monitoring that occurs periodically and not continuously. Thus, employees deciding whether to commit a wrong cannot necessarily determine ex ante whether the firm will conduct an audit covering the time period of their wrong. Granting firms an audit privilege removes the fear of liability as a disincentive to monitor, but it does not provide a positive *incentive* for firms to monitor. By contrast, our mitigation provision provides just such an incentive.¹³⁴

Finally, an audit privilege may undermine the ability of corporate liability to serve its other deterrence goals. A strict liability regime with an audit privilege can regulate optimal activity levels and induce optimal preventive and sanctioning measures if the expected sanction equals the social cost of wrongdoing. Thus, the sanction imposed on the firm must equal the social cost of the harm divided by the probability the firm will be held liable, given that the government cannot use the firm's own audit information against it. Since this probability of sanctioning may be quite low, a much higher sanction is necessary under an audit privilege regime than under a composite regime.¹³⁵ Thus, there is a greater risk that firms will be rendered insolvent by sanctioning, in which case an audit privilege regime will not induce optimal activity levels, prevention, and sanctioning.¹³⁶

¹³³ See Dana, *supra* note 5, at 993-1000 (discussing impact of privilege laws on relative expenditures on audits and other enforcement measures).

¹³⁴ Perhaps for this reason, some states with environmental audit privileges also grant immunity from prosecution to firms that conduct environmental audits, report detected wrongdoing, and take prompt action to correct the wrong. See *id.* at 971 n.7.

¹³⁵ In addition, the optimal default sanction imposed on firms that do not report detected wrongdoing must also be higher under an audit privilege regime.

¹³⁶ Cf. Arlen, *supra* note 5, at 865-66 (risk of insolvency also is greater if state employs modified use immunity rule under which information cannot be used against firm).

B. The Federal Sentencing Guidelines

The United States Sentencing Guidelines governing the Sentencing of Organizations is easily the most important example of a formally developed composite regime.¹³⁷ The Sentencing Guidelines provide that any firm that fails to comply with its duties to monitor, investigate, or report criminal misconduct can be subject to a large default sanction. This sanction may be two to four times the "base fine," which often is based on the harm caused by the wrong.¹³⁸ Under the Sentencing Guidelines, a firm becomes eligible for mitigation of the default sanction if its offense occurred despite "an effective program to prevent and detect violations of the law," provided the firm reported all detected violations within a reasonable time after becoming aware of them.¹³⁹ Thus, the firm can earn mitigation for monitoring only by reporting any wrongdoing it detects. It can earn additional mitigation by fully cooperating in the investigation of wrongdoing and accepting responsibility for the wrongs that have already occurred.¹⁴⁰ In contrast with our mitigation-aggravation regime, then, a firm that fails to detect misconduct before the government discovers it can only earn partial mitigation despite implementing an effective compliance program.

The Sentencing Guidelines erect a true composite regime by mandating that even a firm eligible for full mitigation remains subject to residual criminal liability. Although this residual liability is likely to be very low, it can often be augmented by additional sources of liability: for example, firms must make restitution whenever possible under the Guidelines and may face government-imposed or private civil sanctions as well. Conversely, however, enforcement officials can also subvert even the minimal residual liability imposed by the Guidelines. Thus, the Department of Justice and the federal agencies charged with prosecuting government procurement fraud, antitrust, and environmental wrongdoing have adopted policies that come close to insulating firms from criminal prosecution when they report wrongs

¹³⁷ See Sentencing Guidelines, *supra* note 6, at § 8. Environmental crimes are governed by all provisions of the Sentencing Guidelines except those relating to fine amounts. Courts may apply the Sentencing Guidelines by analogy.

¹³⁸ Under the Sentencing Guidelines, the base fine equals the greater of (i) the amount determined from a fine table (which is based on offense level); (ii) the pecuniary gain to the organization from the offense; or (iii) the pecuniary loss from the offense caused by the organization, to the extent the loss was caused intentionally, knowingly, or recklessly. See *id.* at § 8C2.4. Often, the pecuniary loss will exceed the other measures. But see *infra* text accompanying notes 151-57 (discussing base fine).

¹³⁹ See Sentencing Guidelines, *supra* note 6, at § 8C2.5(f).

¹⁴⁰ See *id.* at § 8C2.5(g). Should the firm satisfy the last one or two requirements it receives partial mitigation.

before the government discovers them, take prompt remedial action, and in the case of environmental offenses, institute an intensive and comprehensive compliance program.¹⁴¹

1. *The Mitigation Provisions*

The basic approach of the Sentencing Guidelines—to mitigate fines for those firms that have an effective compliance program, cooperate with the government's investigation, and/or report wrongdoing—is consistent with our recommendations. The structure of the Sentencing Guidelines' composite regime, however, is not.

The amount of mitigation firms receive for monitoring, investigating, and reporting is not necessarily sufficient to induce optimal policing. Under the Sentencing Guidelines the proportional amount of mitigation granted for monitoring, investigating, or reporting promptly depends on the size of the firm and the seniority of the individual wrongdoer. By contrast, as we show, the mitigation amount should be larger the greater the benefit to society of implementing optimal policing measures—or more specifically, the greater the impact of optimal policing measures on the probability of detection.¹⁴² The amount of mitigation must increase with the impact of policing on the probability of detection to ensure that policing does not increase the firm's expected liability for wrongdoing.¹⁴³ To induce optimal po-

¹⁴¹ See EPA Guidelines, *supra* note 8; Antitrust Division Guidelines, *supra* note 8. See generally Laurence A. Urgenson, Voluntary Disclosure: Opportunities and Issues for the Mid-1980s, 943 PLI/Corp 225 (June 1996). This description of the programs focuses on their common features. For a more detailed discussion of the programs, see Urgenson, *supra*. In addition, there is evidence that in other areas some prosecutors have decided not to prosecute when firms with an ongoing compliance program report wrongdoing to the government and take any necessary steps to correct it. Firms are still subject to substantial civil penalties, however, which may include treble damages in the case of antitrust violations and double to treble damages in the case of government procurement fraud, as well as a possible risk of a *qui tam* action. See Gruner, *supra* note 9, at § 8.5.2 (discussing prosecutorial trends under the Sentencing Guidelines and mitigation where potential defendants adopt voluntary reforms).

¹⁴² For example, under our simple composite regime the amount of mitigation is $h/p^* - h/p^0$.

¹⁴³ Indeed, careful examination of the Sentencing Guidelines reveals that they particularly disadvantage large firms. Under the Sentencing Guidelines, the sanction equals the base fine (which may equal the harm caused) multiplied by a culpability score (or "multiplier") which reflects the firm's culpability. Mitigation provisions affect the size of the multiplier. Under the Guidelines, all firms are eligible for 5 points of mitigation for reporting, investigation, and accepting responsibility for the wrong. This in turn results in a reduction by 2 in the maximum multiplier—e.g., from 4 to 2—and a reduction by 1 in the minimum multiplier—say from 2 to 1. This would appear to grant equal mitigation to all firms. But this is misleading. Under the Sentencing Guidelines, larger firms generally can expect to start with a higher culpability score than smaller firms, say a maximum multiplier of 4 instead of a maximum of 2.4. The 2-point decrease in the multiplier granted to a larger firm—from 4 to 2—only decreases its expected sanction by 50%. By contrast, a 2-point

licensing, therefore, the Commission must abandon its goal of standardizing fines for all similar crimes, and attempt to take into account the impact of policing measures on the probability of detection.

To see the problem, consider the mitigation provisions governing reporting, investigating, and cooperating—measures that dramatically increase the firm's probability of detection. The Sentencing Guidelines provide that a firm that reports, cooperates, and accepts full responsibility for a wrong is eligible for mitigation of five points. For a larger firm this may only result in a 50% reduction in the fine if it reports, investigates, and cooperates. This mitigation provision will induce reporting, therefore, only if a firm that detects and does not report faces at least a 50% chance of getting caught. If the probability that the government detects wrongdoing is lower, the firm has no reason to report.¹⁴⁴

2. *Structure of the Duty-Based Provisions*

In addition, the structure of the Sentencing Guidelines' duty-based provisions is flawed in several respects. To begin, the Guidelines improperly exclude firms from eligibility for mitigation in certain situations. For example, firms are ineligible for mitigation based on their monitoring efforts whenever misconduct is committed by certain managerial employees—such as an individual within the high-level personnel of the organization or managers of a unit with more than two hundred employees—on the theory that in this case monitoring necessarily is ineffective.¹⁴⁵ This means that a firm cannot earn miti-

reduction in the multiplier imposed on a firm facing a multiplier of 2.4 would reduce its multiplier to 0.4—resulting in a six-fold reduction in its expected sanction.

¹⁴⁴ In this situation the default sanction equals $2F^*$. The firm's expected liability if it does not report, $g(2F^*)$ equals or exceeds its liability if it does report, F^* , only if $2g > 1$. This implies that the firm will report only if the probability the government will detect a wrong the firm has detected equals or exceeds 50%. This amount of mitigation, therefore, will not always be sufficient to induce reporting.

¹⁴⁵ See Sentencing Guidelines, *supra* note 6, at § 8C2.5(f). In addition, there is a rebuttable presumption against mitigation if an individual within substantial authority personnel participated in the offense. See *id.*

The Commentary to the Sentencing Guidelines provides as follows:

"High-level personnel of the organization" means individuals who have substantial control over the organization or who have a substantial role in the making of policy within the organization. The term includes: a director; an executive officer; an individual in charge of a major business or functional unit of the organization, such as sales, administration, or finance; and an individual with a substantial ownership interest.

Id. at § 8A1.2 cmt. 3(b).

"Substantial authority personnel" means individuals who within the scope of their authority exercise a substantial measure of discretion in acting on behalf of an organization. The term includes high-level personnel, individuals who exercise substantial supervisory authority (e.g., a plant manager, a sales man-

gation for programs designed to deter wrongdoing by directors, executive officers, and supervisors of major units,¹⁴⁶ even though such programs may be worthwhile. In effect, firms facing the possibility of wrongdoing by such persons are governed by a traditional strict liability rule, at least as far as monitoring efforts are concerned. As we have demonstrated in Part I, such a regime will generally not induce optimal policing.

The Sentencing Guidelines also provide that a firm is not eligible for mitigation for reporting or cooperating in an investigation unless it "accept[s] responsibility" for the offense. The Guidelines state that only in "rare situations" will a firm be able to satisfy this requirement without pleading guilty.¹⁴⁷ This requirement, in combination with the requirement that firms report detected wrongdoing "promptly" to be eligible for mitigation, may force firms to report—and even plead guilty to—suspected wrongdoing before they can determine whether their agents committed wrongs. Firms may thus be trapped into paying for wrongdoing that they did not commit, which is undesirable because it distorts activity levels and preventive measures.

In addition, like the mitigation-mitigation regime, the Sentencing Guidelines deny full mitigation to any firm that fails to detect misconduct before the government does, even when it has adopted an optimal monitoring program. This regime, therefore, is subject to the same criticisms as the mitigation-mitigation regime: its optimal residual sanction is difficult to calculate, and it will induce excessive monitoring in certain circumstances.¹⁴⁸

Moreover, a close look at the Sentencing Guidelines reveals that this regime suffers from the problems associated with each of our three composite regimes—simple, mitigation-aggravation, and mitigation-mitigation—with few of the benefits of any of them.

As previously explained, the Guidelines' reporting provisions adopt a partial mitigation-mitigation approach and consequently reflect the problems associated with this regime. Yet the Guidelines do not share the chief advantage of this form of composite regime: that is, that the court only needs to determine whether the firm reported a

ager), and any other individuals who, although not a part of an organization's management, nevertheless exercise substantial discretion when acting within the scope of their authority (e.g., an individual with authority in an organization to negotiate or set price levels or an individual authorized to negotiate or approve significant contracts). Whether an individual falls within this category must be determined on a case-by-case basis.

Id. at § 8A1.2 cmt. 3(c).

¹⁴⁶ See *id.* (defining high level personnel).

¹⁴⁷ See Sentencing Guidelines, *supra* note 6, at § 8C2.5 cmt. 13.

¹⁴⁸ See *infra* Appendix, Part III.C.

wrong before the government detected it in order to assess whether the firm has earned sanction mitigation for reporting. Instead, under the Guidelines a firm is not eligible for mitigation for monitoring unless it promptly reported detected wrongdoing to the government. Thus, the Guidelines impose the cost of a mitigation-aggravation regime without the benefits of such a regime—its straightforward residual liability provision and the ability to induce optimal monitoring—just as they impose the cost without the primary benefits of the mitigation-mitigation regime. Finally, having adopted a multi-tiered approach, the Guidelines nevertheless suffer from a defect of the simple regime: the danger that if a firm cannot receive partial mitigation for monitoring even if it fails to report detected wrongdoing, it will lack a strong incentive to monitor whenever it fears that it might be seen not to have reported promptly enough as a result of judicial error or agent willfulness. Thus, the Guidelines incorporate the chief drawbacks and none of the advantages of any of the preferred composite regimes.

3. *Residual Liability*

The Sentencing Guidelines' provisions governing the residual liability level of firms are also in need of revision. In all of the composite regimes we examined in Part III, the optimal expected residual sanction equals the social cost of the harm.¹⁴⁹ Thus, the actual residual sanction must equal the social cost of the harm divided by the probability of detection when the firm's policing efforts are optimal.¹⁵⁰ Yet, under the Sentencing Guidelines, the residual fine is not necessarily based on the harm caused, and when it is, the measure of harm is limited to the pecuniary losses resulting from the misconduct, not all the social costs of the harm.¹⁵¹ This is a substantial deviation from the optimal sanction.

¹⁴⁹ See *supra* Part III. This rule should apply even if the firm's benefit exceeds the harm, provided that this private benefit is one that society counts as a social benefit. The social cost of the wrong should include the dynamic costs of wrongs, including victims' expenditures to prevent such wrongs. See Fred S. McChesney, *Boxed In: Economists and Benefits from Crime*, 13 *Int'l Rev. L. & Econ.* 225, 229 (1993) (discussing this point); Fred S. McChesney, *Desperately Shunning Science?*, 71 *B.U. L. Rev.* 281, 285 (1991) (same); Gordon Tullock, *The Welfare Costs of Tariffs, Monopolies and Theft*, 5 *W. Econ. J.* 224, 228-31 (1967) (same).

¹⁵⁰ As previously noted, the precise statement of the optimal residual liability is more complicated to the extent that the Sentencing Guidelines' regime is a mitigation-mitigation regime.

¹⁵¹ Specifically, under the Sentencing Guidelines, the fine is based on the pecuniary losses caused by the firm's misconduct only if these losses were caused intentionally, knowingly, or recklessly—and even then, only if these losses exceed both the firm's pecuniary

Moreover, even when the sanction is based on the harm caused, a firm's expected liability under the Sentencing Guidelines generally will not be optimal. To induce optimal deterrence, the total sanction (civil, criminal, and market-based) must equal the social cost of wrongdoing multiplied by one over the probability of detection. The Sentencing Guidelines make no effort to ensure that this condition is met. First, under the Sentencing Guidelines, courts cannot even determine the total sanction imposed on the firm because the Sentencing Guidelines do not enable courts to take full account of civil, administrative, and market penalties in determining the appropriate residual sanction. Thus, where these sanctions are large, residual liability under the Sentencing Guidelines may be excessive; where these other sanctions are small, firms may be subject to insufficient residual liability.

In fact, residual liability under the Sentencing Guidelines is likely to be insufficient unless firms are subject to other substantial sanctions. Even when the Sentencing Guidelines base residual liability on the pecuniary losses occasioned by misconduct, the firm's expected residual criminal fine generally will not equal the social cost of wrongdoing. Under the Sentencing Guidelines, the maximum liability imposed on a firm eligible for full mitigation is 40-80% of the base fine (e.g., 40-80% of pecuniary loss), and some firms might well be subject to a sanction of no more than 5-20% of the base fine.¹⁵² Thus, even if the pecuniary costs equal the full social costs of the harm, the residual sanction will be no more than 80% of the social cost of the harm; for smaller firms, the sanction will be even lower. This would be insufficient even if firms with optimal policing measures were always sanctioned for employees' wrongs.

Of course, in some cases the residual liability imposed by the Sentencing Guidelines will be higher because the Guidelines mandate that, wherever possible, courts should require firms to provide compensation to victims and otherwise remedy any harm caused by the offense.¹⁵³ In such cases, residual liability will equal this restitution amount plus the criminal fine. The total sanction, therefore, may equal the social cost of the harm but it still will be less than twice the harm caused. This liability alone will be insufficient if the *ex ante* probability that the firm is liable for its employees' wrongs is less than 50%. Thus, the criminal liability provided for in the Sentencing

gain and an arbitrary amount set forth in the Offense Level Fine Table. See Sentencing Guidelines, *supra* note 6, at § 8C2.4.

¹⁵² See *id.* (detailing arbitrary threshold amounts for each offense level).

¹⁵³ See *id.* at § 8C2.6 (detailing minimum and maximum multipliers for different culpability scores).

Guidelines will not induce the firm to implement efficient activity levels, sanctioning, or prevention measures.¹⁵⁴ Whether total corporate liability will induce optimal deterrence depends on the magnitude of other forms of liability—liability which will vary widely from one type of misconduct to another.

Moreover, residual liability is even less effective when firms with effective policing measures can avoid criminal sanctions altogether—as appears to be generally the case for antitrust and environmental offenses¹⁵⁵ and may also be the case for other wrongs as a result of prosecutorial discretion.¹⁵⁶ The problem is likely to be particularly great when those firms that escape criminal liability face, at most, only civil liability for the actual damage they cause and may escape any sanction at all if their wrongdoing goes undetected.

4. *Reforming the Sentencing Guidelines*

Thus, although the Sentencing Guidelines erect a composite liability regime, as we recommend, this regime needs significant reform if it is to become an efficient enforcement tool. First, in designing corporate sentences, the Sentencing Guidelines should permit courts to take account of civil, administrative, and market penalties that firms may face for the same misconduct.¹⁵⁷ Second, judges should be instructed to base penalties on estimates of the probability of detection when enforcement is optimal and when it is not. Third, firms

¹⁵⁴ The comment about prevention measures depends in part on whether courts consider prevention measures in assessing the firm's eligibility for mitigation for "prevention and detection." Some of the measures we consider to be prevention measures—in particular salary structure—probably will not be examined under § 8C2.8(f) of the Sentencing Guidelines, in which case the strict liability residual is needed to provide adequate incentives to undertake these measures.

¹⁵⁵ See *supra* note 8. The Environmental Protection Agency refuses to adopt a blanket immunity proposal, but has said it generally would not seek gravity-based penalties and would refrain from recommending firms for prosecution if the firm detects the wrong as a result of a comprehensive environmental audit, takes prompt steps to correct the wrong, cooperates with the EPA, and outlines a program to prevent future violations. See Urgenson, *supra* note 141, at 235-36.

¹⁵⁶ See Gruner, *supra* note 9, at § 8.5.2 (discussing prosecutorial trends under Sentencing Guidelines and mitigation where potential defendants adopt voluntary reforms).

¹⁵⁷ The Sentencing Guidelines determine the basic parameters of the firm's liability without regard to other forms of liability or to whether the market will force the firm to bear some or all of the cost of wrongdoing to others. Judges can take into account collateral consequences of conviction, including civil obligations, in determining what fine to impose within the range of fines set by the Sentencing Guidelines, but such considerations do not affect the base fine amount. See Sentencing Guidelines, *supra* note 6, at § 8C2.8. For a discussion of the need to consider market forces in determining the appropriate sanction for fraud, see Jonathan Lott, Jr., *The Level of Optimal Fines to Prevent Fraud When Reputations Exist and Penalty Clauses Are Unenforceable*, 17 *Managerial & Decision Econ.* 363 (1996).

should not be automatically precluded from mitigation based on monitoring programs when senior officials engage in misconduct. Fourth, firms should be eligible for partial mitigation for monitoring even if they do not report wrongdoing—unless circumstances are such that a simple composite regime is superior to the other regimes, in which case no partial mitigation should be available.

These changes would require the Commission to focus on the goal of optimal deterrence, instead of the goal of standardizing sentences for misconduct of comparable seriousness and eliminating firm-specific or industry-specific considerations from sentencing. While standardization may be a laudable objective in the abstract, our analysis reveals that its pursuit has come at a cost: a liability regime that leads to insufficient corporate enforcement expenditures,¹⁵⁸ increased wrongdoing, and increased administrative costs. We suggest that uniformity cannot be worth this price, particularly in the context of corporate liability where the normative concerns that animate attention to fairness in the sentencing of individuals have considerably less force.

CONCLUSION

Corporations generally must be held liable for their agents' wrongdoing to deter wrongdoing and to ensure that firms' production levels are efficient. However, when structuring a corporate liability regime, it is crucial to understand firms both for what they are—organizations in which agents sometimes commit misconduct—and for what they are not—autonomous entities that wholly control their own agents. Recognizing that firms are not themselves wrongdoers, but are organizations in a position to monitor and influence their own agents, leads to a more complicated role for corporate liability than generally has been acknowledged. To deter agents' wrongdoing optimally, corporate liability must both regulate activity levels and induce the firm to implement enforcement measures, such as preventive measures (that make misconduct less attractive to agents), policing measures such as monitoring for and reporting misconduct (that increase the likelihood that wayward agents will be identified and sanctioned), and, where appropriate, measures to sanction wrongdoers. To induce optimal policing, moreover, a corporate liability regime will often have to solve a credibility problem: when agents cannot observe

¹⁵⁸ As previously noted, the Sentencing Guidelines may induce efficient policing measures in some cases, but the mitigation provisions will not induce efficient policing measures in other circumstances. To the extent that policing is suboptimal, more wrongs will be committed than is socially desirable.

a firm's monitoring *ex ante* or the firm cannot commit in advance to investigate and report wrongdoing, agents may not believe a firm's threats to undertake policing measures. Many corporate liability regimes will be fully effective only to the extent that they can perform all five of these functions.

We show that the traditional rule of strict vicarious liability generally results in excessive wrongdoing because it does not provide firms with sufficient incentives to implement policing measures such as monitoring, investigating, and reporting misconduct. Except in cases where wrongdoing is plainly visible to all, wholly controllable by the firm, or where the firm bears the full social cost of the wrong, a regime that mixes elements of strict and duty-based liability is preferable to a regime of strict vicarious liability alone. Two types of mixed regimes are possible: adjusted strict liability regimes and composite liability regimes. In general, adjusted strict liability (which includes strict liability modified by doctrines such as use immunity and privilege) imposes the lower informational burden and administrative costs. Only a composite regime, however, can yield first-best deterrence in all cases.

In most cases, we suspect that the best general regime of corporate liability is a multi-tiered composite regime. Under such a regime, a firm faces a high default penalty that is reduced to a much lower residual penalty if the firm satisfies its monitoring, investigating, and reporting duties. The implicit reward inherent in the drop from the default penalty to the residual penalty must be large enough to induce the firm to satisfy its policing duties; the remaining residual penalty should be just large enough to ensure that the firm internalizes the full cost of undeterred misconduct that remains despite an optimal enforcement effort.

Nevertheless, each mixed liability regime has distinctive strengths and weaknesses. We do not recommend any single regime in this Article for all misconduct because the choice of regime depends on the character of misconduct. There is still much work to be done in analyzing the comparative strengths and weaknesses of adjusted strict liability regimes and composite regimes. Nevertheless, it is possible to make a number of significant observations about the weaknesses of existing composite regimes—and particularly the Federal Sentencing Guidelines—based upon our framework for evaluating adjusted strict and composite regimes.

Recent reforms of the laws governing corporate criminal liability constitute an important step towards implementing the most promising of the mixed regimes: a multi-tiered composite regime. Yet they are only a first step. Many additional reforms are necessary, includ-

ing, above all, new mitigation provisions that are clearly designed to induce firms to monitor, investigate, and report misconduct. Also, any reforms should ensure better coordination of civil and criminal liability so that the firm's total expected liability provides the right incentives. These changes will require moving away from the rigid regime created by the Sentencing Guidelines toward a regime which allows consideration of more firm-specific and crime-specific factors. It also will require express recognition that the purpose of corporate sanctions is not to punish wrongdoers but rather to induce firms to detect, report, and punish wrongdoers.

APPENDIX

This Appendix explores the impact of various composite corporate liability rules and two adjusted strict liability regimes on firm prevention efforts, monitoring, reporting, and activity levels assuming that ex post all parties possess perfect information. Thus, courts can accurately determine optimal policing and optimal sanctions. Information costs are discussed in Part II.C. of the main text.

I
THE MODEL

A risk neutral firm hires risk neutral agents to produce a product. Each employee is identical (except as specified). Each is endowed ex ante with wealth W ,¹⁵⁹ and each produces one unit of the product per period. Total firm production per period, and thus total employment per period, is given by q . The total social benefit of the firm's production is given by $V(q)$.

Each employee suffers disutility from work per period which has a monetary value of k ($k > 0$). Thus, to induce an employee to work, the firm must pay him at least k per period; it is assumed that the firm pays the minimum necessary wage.¹⁶⁰

Each employee has the opportunity to commit a wrong during the course of his employment. The cost to society of each wrong is H . It is assumed that the wrong is intentional in the sense that the employee must take affirmative steps to commit it. The cost to each employee of committing a wrong is given by $c(P) > 0$; as is explained

¹⁵⁹ Allowing for variations in wealth only complicates the analysis without changing any fundamental conclusions. For a discussion of strict corporate liability when wealth (and thus insolvency points) vary, see Jennifer Arlen, *Controlling Corporate Torts: Strict Liability Versus Negligence Reconsidered* (June, 1996) (unpublished manuscript, on file with author).

¹⁶⁰ Within the realm of misconduct that we are particularly concerned with—socially undesirable misconduct—the wage per worker will not include any expected individual liability because the misconduct is an affirmative wrong (which the worker need not take care to avoid), the marginal wrong is socially undesirable and, at the margin, the firm does not want to encourage such wrongs because its expected liability equals the social cost of wrongdoing to others. Nor does the wage reflect the net benefit of wrongdoing ($k - (b - pf - C)$), because it is assumed that b is not observable ex ante, although it is observable ex post. See *infra* note 162. *Infra*-marginally, when harms are socially desirable, firms might try to encourage a worker to commit a wrong. This can be accommodated in this model by having B equal the firm's net benefit and b equal the worker's benefit including any payments from the firm. Finally, the firm will not penalize the worker for committing a wrong because the government sanctions the worker to the full extent of the worker's wealth. See *infra* notes 165 & 171 and accompanying text. The model could easily be expanded to allow the firm to penalize workers without changing the central results of the paper. For a discussion of *supra*-compensatory wages, see *supra* note 36 (explaining why firms will not eliminate this problem by paying *supra*-compensatory wages) and Shavell, *supra* note 36.

below, this cost depends on the firm's expenditures on prevention measures, P .

The benefit to an employee of wrongdoing is given by b , which varies across employees.¹⁶¹ The firm cannot observe this benefit *ex ante*, but it is observable *ex post* after misconduct is detected.¹⁶² *Ex ante*, the firm does know the probability density function of b over individuals, which is given by $r(b)$. The corporation also receives a "benefit," B , from the misconduct, which may be positive, negative, or zero.¹⁶³ The following discussion assumes it is positive.

Wrongdoing is optimal (in the sense of maximizing social wealth) if the net benefit of wrongdoing exceeds the social cost of the wrong:

$$b + B > H + c(P) \quad (1)$$

An employee commits a wrong when he benefits from doing so.

Social welfare is maximized by minimizing the joint costs of wrongdoing and enforcement. The state attempts to deter wrongdoing optimally by employing a combination of individual and firm liability. Each employee is strictly liable for any wrongs the state detects and is subject to a sanction f . The probability of a wrongful employee being found liable (the "probability of detection") is less than one.

Were there no wealth constraints, the government could induce employees to refrain from suboptimal wrongdoing solely through the use of individual liability by setting the sanction equal to the social cost of wrongdoing, H , divided by the probability of detection when neither the state nor the firm spends resources on enforcement.¹⁶⁴ This sanction generally would be very high, however, and is assumed to exceed each employee's wealth. The second-best optimal individual sanction equals each employee's wealth:¹⁶⁵

¹⁶¹ These benefits include both direct monetary benefit (including impact on employees' stockholdings), and the benefit to the employee of any increase in salary and job security resulting from the wrong. The latter will be particularly hard for the firm to determine because it will depend on the employee's level of risk aversion, preference for intangibles (such as loyalty and community), and the degree to which the employee's human capital is firm-specific.

¹⁶² Each employee's benefit of wrongdoing may be unknown to the firm because it is unobservable or it is prohibitively expensive for the firm to determine the benefit of wrongdoing with respect to each employee and all possible wrongs *ex ante*. See *supra* note 161.

¹⁶³ For simplicity, it is assumed that the agent's benefit is independent of the corporation's benefit. The possibility that the firm can share its benefit with the agent is discussed *supra* Part I; see also *supra* note 160.

¹⁶⁴ See Becker, *supra* note 20; see also *supra* text accompanying notes 20-23 (discussing the limits of pure agent liability).

¹⁶⁵ See *supra* note 21 (explaining why the problem of agent insolvency cannot always be solved with nonmonetary sanctions). Where nonmonetary sanctions are appropriate, W can be reinterpreted as the maximum amount of monetary and nonmonetary sanctions that the government can optimally impose.

$$f^* = W \quad (2)$$

Thus, all else equal, some employees will commit socially undesirable wrongs.

To deter wrongdoing, the government must employ enforcement measures or induce firms to do so. These measures include "prevention" measures, P , which increase the direct costs of wrongdoing, $c(P)$, without affecting employees' expected liability ($c'(P) > 0$) and "policing" measures—such as monitoring and reporting—which increase an employee's expected liability by increasing the probability of detection.¹⁶⁶ The probability of detection is $p^i(M)$, where M is the firm's expenditures on monitoring and i signifies whether the firm reports wrongdoing, with $i = r$ if the firm reports wrongdoing and $i = o$ if it does not ($p^r(M) > p^o(M)$).¹⁶⁷ Monitoring and prevention costs are assumed to increase with the number of employees (with total costs equal to $q(M + P)$), but not with the expected number of wrongs actually committed. Reporting is costless (aside from the impact on corporate liability). To focus the analysis on corporate enforcement measures, the present analysis assumes that government enforcement is fixed at the optimal level and thus assumes that only the firm's enforcement measures can change the probability of detection.¹⁶⁸ The government employs a corporate liability regime to provide the firm with an incentive to implement optimal enforcement measures.

Monitoring is assumed to be observable and verifiable *ex post* by all parties. Most of this analysis also assumes that all parties can observe monitoring *ex ante* as well, although the situation where employees cannot observe monitoring *ex ante* also is discussed. All parties also can observe reporting *ex post*. Yet, necessarily, no one can observe it *ex ante*. Nor can the firm commit *ex ante* to report

It is optimal to set the sanction equal to the maximum possible sanction—rather than employing a lower individual sanction and higher firm sanction—because it is assumed that imposing a fine is costless, therefore this instrument should be employed to its fullest extent. By contrast, corporate sanctions, while costless to impose, produce costly reactions—e.g., expenditures on monitoring and prevention. Thus, social welfare is maximized by finding the optimal corporate sanctions assuming that society has employed the low cost solution—individual sanctions—to their fullest extent.

¹⁶⁶ See *supra* Part I (defining these terms).

¹⁶⁷ See *infra* note 171 (the firm and its agents face same probability of detection). Throughout this analysis, it is assumed that a firm that reports also cooperates with the government.

¹⁶⁸ The equation governing the optimal level of government enforcement is given in Arlen, *supra* note 5. Directly incorporating government prevention and enforcement expenditures into the model would not significantly change our results. In such a model one would simply calculate the optimal relative levels of government and private expenditures on enforcement, assume that the social planner selects the optimal level of public enforcement, and then proceed as follows to determine what liability rule will induce optimal private enforcement expenditures. See *id.* (employing such model).

wrongdoing it detects. Employees are fully informed about the costs and benefits to the firm of reporting a wrong, however.

If the firm detects wrongdoing and does not report it, the probability that the government will eventually detect the wrong is $g(M)$. We assume that $g(M)$ does not necessarily equal $p^o(M)$, the ex ante probability the government will detect wrongdoing if the firm will not report any wrongdoing it detects.¹⁶⁹ If there is any information leakage between the firm and the state, $g(M)$ will exceed $p^o(M)$. Once the state detects the wrong, it can determine whether the firm detected it first but failed to report it.¹⁷⁰ For simplicity, it is assumed that the government is the superior party to sanction employees; firms do not sanction employees except by reporting wrongdoers to the government.¹⁷¹

¹⁶⁹ Because the firm does not sanction wrongdoers (and so detection by the firm is irrelevant if the firm does not report) $p^o(M)$ is effectively the probability the government will detect. See *infra* text accompanying note 171.

¹⁷⁰ See *infra* note 188 (discussing what happens if state cannot correctly determine whether firm detected wrong).

¹⁷¹ See *supra* note 160. This assumption is particularly reasonable where, as here, the optimal sanction exceeds the employee's current wealth because the government can reach employees' future earnings either by sending the wrongful agent to jail or by imposing a nondischargeable penalty on him. Altering this assumption would alter our formulas for the optimal fines but would not change the essential conclusions of this analysis regarding monitoring or reporting. Even if the firm is the superior sanctioner of agents, the firm should report wrongdoing in order to ensure that the government sanctions it (thereby ensuring optimal activity levels, prevention measures, and so forth). See *supra* Part I.

This assumption results in the firm and its agents facing the same probability of detection. Thus, a firm's enforcement efforts have the identical effects on its agents' and its own probability of detection. Of course, an agent's probability of being sanctioned could exceed the firm's if the firm privately sanctioned agents without reporting the wrong to the government. Cf. *supra* note 32 (private sanctioning may increase probability that government detects wrong). Alternatively, the agent might be less likely than the firm to be sanctioned if it is easier to determine which firm committed the wrong than to determine the identity of the responsible agents. Cf. *supra* text accompanying notes 31 (corporate liability will induce firms to identify and sanction wrongful agents) and 33. Neither possibility significantly alters our analysis. In both situations, the firm's monitoring evidence can increase the firm's expected liability by helping the government both to detect wrongdoing and to prove its case against the firm. See *supra* note 49. Thus, either situation can be easily incorporated into this model by assuming that the probability an agent is sanctioned (publicly or privately) is $p^i(M)$, whereas the probability the firm is sanctioned is $\alpha p^i(M)$. This would change the magnitude of the optimal sanction but would not alter our essential results.

TABLE OF VARIABLES

b:	Benefit of wrongdoing to the agent
\hat{b} :	Benefit of wrongdoing to the marginal wrongdoer, $c(P) + p^i(M)W$. \hat{b}^* is the marginal benefit when firms monitor optimally and report wrongdoing
B:	Benefit of wrongdoing to the firm
$c(P)$:	Cost of wrongdoing to the agent
$C'(M)$:	Probability the firm detects wrongdoing
$G'(M)$:	Probability the government detects wrongdoing when the firm reports;
	$(1 - C'(M))G'(M)$: probability the government detects before the firm
$g(M)$:	Probability the government detects wrongdoing that the firm has already detected but not reported
H:	Direct social cost of wrongdoing
h:	Net social cost of the wrong to others ($H + c(P) - b$)
i:	Firm's reporting: $i = (0, r)$, where r signifies reporting
k:	Disutility of work to employees
M:	Firm's expenditures on monitoring
$p^i(M)$:	Probability of detection, given monitoring, M, and reporting, i
P:	Firm's expenditures on prevention
q:	Total firm employment/production
$r(b)$:	Probability density function of agents' benefit, b
$R(b)$:	Cumulative distribution function of $r(b)$
$V(q)$:	Total social benefit of the firm's production
W:	Each agent's wealth

Employees will engage in misconduct if the benefit to them exceeds the expected costs. Assuming that employees are insolvent even if the firm implements optimal enforcement measures,¹⁷² each employee will engage in those wrongs for which:

$$b \geq c(P) + p^i(M)W \quad (3)$$

Thus, even if firm behavior is optimal, some employees will commit suboptimal wrongs (albeit fewer than otherwise). The total expected number of wrongs is given by:

$$q \int_{\hat{b}}^{\infty} r(b)db \quad (4)$$

¹⁷² The present analysis assumes that enforcement measures do not eliminate the problem of agent insolvency. This insolvency constraint is intended to capture the fact that in many circumstances, even if government and firm behavior employ optimal enforcement measures, some nonoptimal wrongs will be committed.

where $\hat{b} = c(P) + p'(M)W$ is the expected cost of wrongdoing, which in turn is the benefit of wrongdoing to the marginal wrongdoer. The total expected cost of wrongdoing to society is:

$$q \int_{\hat{b}}^{\infty} (H + c(P) - B - b)r(b)db \quad (5)$$

II

THE SECOND-BEST SOCIAL OPTIMUM

Social wealth equals the benefit of the firm's production, $V(q)$, minus the total cost of production, including the cost of enforcement and the net cost of any wrongdoing, and is given by Equation (6):¹⁷³

$$V(q) - q[k + M + P + \int_{\hat{b}}^{\infty} (c(P) + H - b - B)r(b)db] \quad (6)$$

The optimal amounts of monitoring, M , and prevention, P , and activity level, q , are the levels of M , P , and q that maximize social wealth. Thus they are the M^* , P^* , and q^* that satisfy Equations (7), (8), and (9) respectively:

$$1 = p''(M)W[H - p'(M)W - B]r(\hat{b}) \quad (7)$$

$$1 + c'(P)(1 - R(\hat{b})) = c'(P)[H - p'(M)W - B]r(\hat{b}) \quad (8)$$

$$V'(q) = k + M + P + [c(P) + H - E(b/b \geq \hat{b}) - B](1 - R(\hat{b})) \quad (9)$$

where $R(b)$ is the cumulative distribution function of $r(b)$, and

$$E(b/b \geq \hat{b}) = \frac{\int_{\hat{b}}^{\infty} br(b)db}{(1 - R(\hat{b}))} \quad (10)$$

is the expected benefit of misconduct to an agent who expects to engage in wrongdoing divided by $(1 - R(\hat{b}))$. In addition, as reporting is costless but can deter misconduct, efficiency requires that firms report all detected wrongdoing.¹⁷⁴ Thus, Equations (7) - (9) assume firms report detected wrongdoing.

Equations (7) - (9) are the standard conditions for optimal monitoring, prevention and activity levels. Equation (7) provides that monitoring is optimal when the marginal social cost of monitoring per worker, 1, equals the marginal social benefit of monitoring per worker hired—which is the marginal benefit to society of the decreased

¹⁷³ The present analysis assumes, and is limited to the circumstances where, Equation (6) is concave.

¹⁷⁴ See *supra* note 46.

probability that a worker will commit a wrong, $p''(M)W r(\hat{b})[H - p'(M)W - B]$.¹⁷⁵

Equation (8) implies that prevention is optimal when the marginal social cost of prevention per worker equals the marginal social benefit of prevention per worker. The marginal social cost of prevention is the direct marginal cost of prevention, 1, plus the resulting increase in the cost to the worker of his expected wrongdoing, $c'(P)[1 - R(\hat{b})]$. The marginal social benefit of prevention is the reduction in the probability the worker will commit a wrong, $c'(P)r(\hat{b})$, multiplied by the net social cost of the marginal wrong, $H - p'(M)W - B$.

Equation (9) states that the optimal activity level is the q^* such that the marginal social benefit of additional production, $V'(q)$, equals the marginal social cost of this production, where the latter equals the per worker cost of wages, deterrence costs, plus the expected cost of misconduct.

To induce firms to undertake optimal monitoring, reporting and prevention, and also to engage in optimal activity levels, the government holds firms liable for employees' wrongs. The text demonstrates that neither a pure strict vicarious liability regime nor a pure duty-based regime can induce optimal activity levels, prevention measures, and optimal policing.¹⁷⁶ The next two Parts explore the use of sanction adjusted strict liability and composite regimes to induce optimal activity levels, prevention, and policing, showing that only composite regimes can serve all the goals of corporate liability when firms face credibility problems.

III

COMPOSITE CORPORATE LIABILITY REGIMES

This Part shows that composite regimes—which combine duty-based liability with a strict liability residual—can achieve all of the aims of corporate liability, at least when courts and corporations can correctly determine the optimal level of monitoring and reporting and firms can control their own behavior. Indeed, in this circumstance, a variety of composite regimes are efficient. The issue of administrative costs is discussed in Part II.C of the text.

This part presents several composite regimes, beginning with a simple mitigation regime, and moving on to several multi-tiered mitigation regimes. This Part shows that the multi-tiered mitigation-aggravation regime generally is superior to the multi-tiered mitigation-

¹⁷⁵ This equals the reduction in the probability a worker will commit a wrong, $p''(M)Wr(\hat{b})$, multiplied by the net social cost of the marginal wrong, $H - p'(M)W - B$.

¹⁷⁶ See *supra* Part I.

mitigation regime, the regime closest to that adopted by the Federal Sentencing Guidelines.¹⁷⁷ A mitigation-mitigation regime will not necessarily satisfy all the aims of corporate liability because, under plausible circumstances, it may induce excessive monitoring.¹⁷⁸

A. *A Simple Mitigation Regime*

The simple mitigation regime holds the firm strictly liable for all detected wrongdoing but mitigates the sanction if the firm engages in optimal monitoring and reports any wrongdoing it detects. Specifically, the firm is subject to a sanction of F^H for each wrong its employees commit, unless it is determined that the firm both monitored optimally and reported any wrongdoing it detected to the government, in which case the sanction is reduced to F^r ($F^r < F^H$). Under this regime, in contrast to the current Federal Sentencing Guidelines, the sanction is not mitigated unless the firm *both* engaged in optimal monitoring and reported detected wrongdoing. Also in contrast to the Federal Sentencing Guidelines, the firm does receive the benefit of full mitigation if it monitors optimally but fails to detect, and thus to report, wrongdoing in good faith.¹⁷⁹

1. *Residual Liability*

Because the duty-based component of the composite regime is designed to induce optimal monitoring and reporting, the central tasks of residual liability are to induce optimal prevention, activity levels, and to remove any incentive the firm might have to induce suboptimal wrongs.¹⁸⁰

A firm is eligible for residual liability only if it monitors optimally and reports wrongdoing. Thus, the expected profits of a firm subject to residual liability are:¹⁸¹

$$V(q) - q[k + M^* + P + \int_{b^*}^{\infty} (p^r(M^*)F^r - B)r(b)db] \quad (11)$$

¹⁷⁷ See *supra* Part IV.B.

¹⁷⁸ For a discussion of the relative merits of the composite regimes see *supra* Part III.

¹⁷⁹ See discussion in *supra* Part IV.B.

¹⁸⁰ See *supra* Part I.

¹⁸¹ In determining the optimal residual liability, it is assumed that the firm monitors optimally and reports all wrongdoing it detects because the firm is eligible for mitigation only if it engages in such behavior. Appendix, Part III.A.3. determines the amount of mitigation which induces both optimal monitoring and reporting.

This equation implicitly assumes that the firm is a perfectly price discriminating monopolist. The results are not qualitatively different if the firm is in a perfectly competitive market.

Equations (6) and (11) reveal that the firm will engage in the optimal amount of prevention and activity levels if the firm's expected costs equal the social costs of its activities. This implies that the optimal residual liability is the F^r which forces the firm to fully internalize the social cost of wrongdoing, assuming monitoring and reporting are optimal:

$$F^r = \frac{h(P,b)}{p'(M^*)} \quad (12)$$

where $h(P,b) = H + c(P) - b$ is the social cost of wrongdoing to others. Optimal residual liability thus equals the net social cost of wrongs to others divided by the probability of detection when monitoring is optimal and the firm reports detected wrongdoing. This sanction will induce optimal activity levels and prevention; it also will dissuade the firm from inducing value-reducing harms (those for which $B < H + c(P^*) - b$).

2. *The Residual Reconsidered: Excess Monitoring*

In addition to inducing optimal prevention and activity levels, the residual must meet another requirement: it must not cause firms to engage in excessive monitoring. The residual liability described in Equation (12) satisfies this requirement.

The firm will undertake optimal monitoring unless a firm subject to residual liability maximizes its profits by expending more than M^* on monitoring. Thus, the firm will undertake excessive monitoring only if there is an $M > M^*$ which satisfies

$$1 = p''(M)Wr(\hat{b}^r) \left[p(M) \frac{H - p'(M)W}{p'(M^*)} - B \right] - \quad (13)$$

$$p''(M) \left[\frac{H + c(P) - E(b/b \geq \hat{b}^r)}{p'(M^*)} \right] (1 - R(\hat{b}^r))$$

A comparison of Equations (7) and (13) reveals that the M that satisfies Equation (13) is less than M^* . When monitoring is optimal, the marginal private benefit of monitoring is less than the marginal social benefit of monitoring by¹⁸²

$$p''(M)(1 - R(\hat{b}^r)) \frac{[H + c(P) - E(b/b \geq \hat{b}^r)]}{p'(M^*)} \quad (14)$$

¹⁸² This term is positive provided that the net social cost to others of misconduct with average expected benefit is positive.

Therefore Equation (7) holds at M^* , when $M = M^*$ the right-hand side of Equation (13) must be less than one, and thus is less than the left-hand side of Equation (13). Thus given that the marginal private benefit of monitoring is declining,¹⁸³ the level of monitoring that satisfies Equation (13) is less than M^* , which in turn implies that the constraint that $M \geq M^*$ is binding. The firm monitors optimally.

3. *Inducing Optimal Monitoring and Reporting*

The residual fine applies only if the firm monitors and reports optimally. To induce optimal monitoring and reporting, the mitigation regime must impose a sufficiently high default sanction, F^H , on a firm which fails to either monitor optimally or report detected wrongdoing that the firm is better off adhering to its monitoring and reporting duties and facing a higher probability of a sanction of F^r , than it is not adhering to both duties and facing a lower probability of a sanction of F^H . This implies the amount of mitigation, $F^H - F^r$, must be such that (i) firm profits are higher when the firm monitors optimally than when it does not, and (ii) firm profits are higher when the firm reports detected wrongdoing than when it does not. The minimum optimal default sanction, F^H , is the larger of the fines that satisfies these two conditions.

In order to induce optimal monitoring F^H must be sufficiently high that the firm's expected costs when it monitors optimally:¹⁸⁴

$$k + M^* + P^* + \int_{\hat{b}^*}^{\infty} (p^r(M^*)F^r - B)r(b)db \quad (15)$$

are less than its costs if it does not monitor optimally:¹⁸⁵

$$k + M^o + P + \int_{\hat{b}^o}^{\infty} (p^o(M^o)F^H - B)r(b)db \quad (16)$$

where M^o is the $M < M^*$ that maximizes Equation (16)¹⁸⁶ and \hat{b}^o and $p^o(M^o)$ are, respectively, the benefit of wrongdoing to the marginal

¹⁸³ This analysis assumes that Equations (6) and (11) are concave.

¹⁸⁴ This equation assumes prevention is optimal on the assumption that F^r is set optimally, and thus the firm sets $P = P^*$.

¹⁸⁵ Equation (16) assumes that a firm that does not monitor will not report because under this regime a firm which does not monitor optimally has no reason to report. Reporting occurs ex post and thus only serves to increase the firm's expected liability for the detected wrong; absent the possibility of fine mitigation, the firm does not benefit. See *infra* note 188; see also *supra* note 61 (discussing reputation).

¹⁸⁶ Observe that M^o does not necessarily equal zero. Under a duty-based regime, a firm that chooses to engage in less than optimal monitoring is effectively subject to strict liability for all wrongs committed, subject to a sanction of F^H . If the imposition of strict liability on the firm does not produce excessive "perverse effects," then M^o will be positive, but less

wrongdoer and the probability of detection if the firm does not monitor optimally and does not report detected wrongdoing.

This implies that

$$F^H \geq \frac{F^r p^r(M^*)(1 - R(\hat{b}^r)) + M^* - M^o + P^* - P + B[R(\hat{b}^r) - R(\hat{b}^o)]}{p^o(M^o)(1 - R(\hat{b}^o))} \quad (17)$$

In other words, the default sanction, F^H , equals the firm's total expected residual liability plus the total additional cost to the firm of monitoring optimally (including resulting changes in prevention expenditures and any lost benefits from the reduction in wrongs) all divided by the expected number of sanctionable wrongs if the firm does not employ optimal policing measures. Observe that the optimal measures of F^H and F^r are based on the expected probability of detection when policing is optimal and not optimal, $p^r(M^*)$ and $p^o(M^o)$; courts need not know a firm's actual expenditures on monitoring at the time of the wrongdoing in order to calculate the fine.

Equation (17) would impose considerable information costs on courts. There is, however, a simpler default sanction that falls within the class of sanctions that satisfies Equation (17):

$$F^H = \frac{h(P, b)}{p^o(M^o)} \quad (18)$$

This sanction will induce optimal policing because it ensures that the firm's expected costs if it polices optimally and does not police optimally equal total social costs if the firm polices optimally and does not police optimally. Since total social costs are minimized when $M = M^*$, the firm's expected costs also are lowest when monitoring is optimal.

Setting F^H according to Equation (17) or Equation (18) not only ensures optimal monitoring, but provides the firm with the requisite ex ante incentives to report any wrongdoing it detects. If the firm can commit to reporting, then this sanction is the minimum optimal sanction.

Firms generally cannot commit ex ante to ex post reporting, however. Rather, a firm decides after a wrong is detected whether or not to report. The mitigation regime thus must provide the proper ex post incentives: the sanction must ensure that a firm which has discovered evidence of wrongdoing faces lower expected costs if it reports the wrong than if it does not.¹⁸⁷

than M^* , provided that, as is the case, F^H is less than the F^H at which strict liability induces the firm to take due care. If the perverse effects of strict liability are severe enough, however, M^o will be zero. See *supra* Part I.C. (discussing perverse effects).

¹⁸⁷ See *supra* Part II.B. (discussing composite regimes) and note 61 (discussing reputation).

In order to induce firms to report, therefore, a firm's expected liability if it reports must be less than or equal to its expected liability if it does not report. If a firm has monitored optimally and has detected a wrong, its expected liability if it does report equals F^r , because reporting guarantees that the government will detect the wrong and hold the firm liable. If the firm does not report, its expected liability is $g(M^*)F^H$, where $g(M^*)$ is the probability that the government will detect the misconduct given that the firm has detected the wrong. Thus F^H must be such that¹⁸⁸

$$F^H \geq \frac{F^r}{g(M^*)} \quad (19)$$

Thus, to induce both optimal monitoring and reporting, the minimum default sanction F^H must equal the greater of the sanction as determined by Equation (17) and the sanction as determined by Equation (19). Either sanction could be larger, depending largely on the relative magnitudes of the probability of detection if the firm does not monitor optimally and the probability of detection if it monitors optimally, detects, but does not report. Equation (17) will likely exceed Equation (19) if $g(M^*)$ is quite high—as is likely if any information the firm possesses about detected wrongdoing is likely to be leaked to the state, for example, by a law-abiding or disgruntled employee.

4. *Credibility Problem*

The default sanction F^H must be modified if the firm faces a credibility problem with regard to its monitoring. A credibility problem arises when agents cannot verify the firm's monitoring *ex ante*. In this situation, the firm may have an incentive to claim it is going to engage in optimal monitoring and fail to do so, unless the duty-based mitiga-

¹⁸⁸ The present analysis assumes that firms cannot commit to report detected wrongdoing and that employees are fully informed about the costs and benefits to the firm of reporting any given wrong. See *supra* Appendix, Part I. Thus, employees will expect the firm to report a wrong only if the firm's expected liability for that wrong is lower if it reports than if it does not. The firm's decision to report other wrongs does not affect this determination. See *supra* note 61 (discussing reputation). Thus, the firm benefits from reporting only to the extent it lowers the firm's expected liability for that particular wrong. The present analysis can be expanded to incorporate the situation where reporting has a signaling effect. This will increase the benefit to the firm of reporting, thereby reducing the sanction necessary to induce reporting.

This analysis also assumes that once the state detects a wrong it can determine whether the firm detected it first. If there is a chance that the firm's prior knowledge of the wrong will escape detection then F^r and F^H must be such that

$$F^r \leq g(M^*)[q F^H + (1-q)F^r]$$

where q is the conditional probability that the state having detected the wrong will correctly determine that the firm knew of the wrong and did not report it.

tion regime provides the firm with an independent reason to monitor optimally.¹⁸⁹ A duty-based regime will render credible firm threats to monitor optimally if the amount of mitigation is sufficiently large that the firm is best off satisfying its policing duties—and getting full mitigation—even if its employees already believe it is monitoring optimally and behave consistent with this expectation.¹⁹⁰ In this case, employees' beliefs that the firm will monitor will be a self-fulfilling expectation.

Accordingly, the minimum default sanction is the greater of F^H such that¹⁹¹

$$F^H = \frac{p^r(M^*)F^r}{p^o(M^o)} + \frac{M^* - M^o + P^* - P}{p^o(M^o)(1 - R(\hat{b}^*))} \quad (20)$$

or the F^H such that Equation (19) is satisfied.

5. Administrative Considerations

The mitigation regime described above will induce optimal monitoring, reporting, prevention, and activity levels, and remove firms' incentives to induce wrongdoing. However, this regime does impose considerable information costs on the courts. Nevertheless, the costs are less than it might at first appear because courts can employ this regime without ever determining the optimal level of monitoring. From Equation (7) we know that the optimal level of monitoring is the level at which the marginal social cost of monitoring equals the marginal social benefit. This implies that a court can determine whether a given firm is engaged in optimal monitoring by examining the firm's actual monitoring and determining whether the cost of an additional unit of monitoring would have been less than the marginal social benefit of the additional monitoring. If so, the firm's monitoring was suboptimal. If increasing monitoring entails greater costs than benefits, the court can confidently conclude that monitoring is optimal. If monitoring is suboptimal, the optimal sanction can be calculated using the probability of detection when firms do not engage in optimal policing, which would be the actual probability of detection. If the firm monitored optimally and also reported detected wrongdoing,

¹⁸⁹ See *supra* Part I.D. What we refer to as the "credibility problem" is often referred to in the economics literature as the "time-consistency problem" or the "commitment problem."

¹⁹⁰ See *supra* note 66 (discussing pure versus mixed strategies). This is a condition for monitoring to be at least locally dominant. In some cases, global dominance may require that it be in the firm's best interests to monitor even if none of the employees believes it will monitor.

¹⁹¹ Equation (20) is simply Equation (17) adjusted to reflect the assumption that all employees believe the firm will monitor and thus monitoring does not affect the number of wrongs that are committed.

ing, then the actual probability of detection was optimal. Thus the optimal sanction is the social cost of wrongdoing to others divided by the actual probability of detection. Courts need never determine the optimal level of monitoring.¹⁹²

B. Multi-Tiered Composite Regime: Mitigation-Aggravation

The simple mitigation regime described above is not the only composite regime capable of inducing optimal firm behavior in a perfect world. Nor, once likely real world imperfections are taken into account, is it necessarily the superior regime. An alternative regime, and we argue a preferable one, is a mitigation-aggravation regime. Under this regime, a firm is granted full mitigation if it monitored optimally and reported any wrongs it detected. In contrast with the "simple" regime, however, the firm obtains partial mitigation if it monitored optimally but did not report detected wrongdoing. It also is eligible for partial mitigation if it did not monitor optimally but did report detected wrongdoing. As under the simple regime, the firm gets full mitigation if it monitored optimally and did not report wrongdoing because it failed to detect wrongdoing in good faith. In this regard, this regime is different from the mitigation-mitigation regime described below in being more fully a duty-based regime.

Thus, under this mitigation-aggravation regime a firm which monitors optimally is subject to a residual sanction of F^r , unless it failed to report detected wrongdoing, in which case it faces an aggravated sanction of F^a . If the firm did not monitor optimally it faces a sanction of F^A , unless the firm also failed to report detected wrongdoing, in which case the sanction is raised to F^{AA} , the maximum default sanction.¹⁹³

This regime is, in essence, a more fully parsed version of the first simple regime. Thus the conditions for optimality are essentially the same.

1. Residual Liability & Aggravation Conditions

Under the mitigation-aggravation regime, the firm's expected profits if it satisfies all its policing duties are the same as under the simple regime. Thus, the optimal residual liability under this regime is given by Equation (12).

Similarly, the expected cost of reporting detected wrongdoing to a firm that is monitoring optimally is the same under a simple regime.

¹⁹² See Part II.C. and Table 3 (discussing relative information costs in more detail).

¹⁹³ See *supra* Table 4.

Thus, the aggravated sanction F^a must satisfy Equation (19). This implies that¹⁹⁴

$$F^a = \frac{F^r}{g(M^*)} \quad (21)$$

2. Mitigation for Monitoring

To induce optimal monitoring, the default sanction imposed on a firm that reports but does not monitor optimally, F^A , must be sufficiently great that the firm's expected costs are lower if it both monitors optimally and reports than if it reports but does not monitor optimally. This implies that Equation (15) must be less than

$$k + M^o + P + \int_{\hat{b}^{or}}^{\infty} (p^r(M^o)F^A - B)r(b)db \quad (22)$$

where M^o is the $M < M^*$ that maximizes Equation (22) and $\hat{b}^{or} = c(P) + p^r(M^o)W$.

This implies that:

$$F^A \geq \frac{F^r p^r(M^*)(1 - R(\hat{b}^{*r})) + M^* - M^o + P^* - P + B[R(\hat{b}^{*r}) - R(\hat{b}^{or})]}{p^r(M^o)(1 - R(\hat{b}^{or}))} \quad (23)$$

In other words, F^A must equal or exceed the firm's total expected residual liability if it monitors optimally, plus the increased cost of monitoring, plus the reduction in the firm's expected benefit of wrongdoing, plus (or minus) any changes in the firm's prevention expenditures, all divided by the firm's total expected probability of being held liable if it fails to monitor optimally. This sanction is less than F^H as determined by Equation (17) because $p^r(M^o) > p^o(M^o)$.

The minimum optimal sanction necessary to induce optimal monitoring must be adjusted if the firm faces a credibility problem. Specifically, if the firm cannot commit to a monitoring strategy and agents cannot verify monitoring, F^A must be equal to or greater than the F^A such that *ex ante*

$$F^A = \frac{p^*(M^*)F^r(1 - R(\hat{b}^{*r})) + M^* - M^o}{p^r(M^o)(1 - R(\hat{b}^{*r}))} \quad (24)$$

Again, this sanction is less than the sanction which solves the credibility problem under dual-tiered mitigation.

¹⁹⁴ For firms that have not monitored optimally, the default sanction provision, F^{AA} must be such that

$$F^{AA} \geq \frac{F^A}{g(M^o)}$$

As before, if courts can calculate optimal policing with certainty, they can rely on a simpler formulation of the sanction:¹⁹⁵

$$F^A = \frac{h(P,b)}{p'(M^0)} \quad (25)$$

3. Summary

The government can induce optimal monitoring, reporting, prevention, and activity levels, and remove firms' incentives to induce wrongdoing by employing a mitigation-aggravation regime. Under this liability regime, in contrast to a regime of strict vicarious liability, there is no risk that a corporate liability regime will be unable to induce optimal monitoring (or will have perverse effects), the credibility problem can be eliminated, and it is possible to induce both optimal monitoring and optimal activity levels.¹⁹⁶ This regime also does not induce excessive monitoring.

C. Mitigation-Mitigation Regime

This Part examines a mitigation-mitigation regime. Under this regime, the firm's fine is reduced to F^m if the firm monitors optimally, and is mitigated further to F^R if it also reports wrongdoing. Thus, the firm obtains full mitigation only if it both monitors optimally and actually reports. It does not get full mitigation if it does not report, even if it fails to report because it did not detect the wrong in good faith.¹⁹⁷ Should the firm neither monitor optimally nor report, it is subject to a default sanction of F^{hh} ; if it does not monitor optimally but does report, it faces a sanction of F^h .

The present section shows that the mitigation-mitigation regime can be designed to induce optimal prevention, activity levels, reporting, and to eliminate suboptimal monitoring. However, this regime may induce excessive monitoring in some circumstances. Moreover, the optimal sanctions are more difficult to calculate.

1. Residual Liability & Mitigation for Reporting

To induce optimal prevention and activity levels, the firm's expected liability when it monitors optimally and reports any wrongdoing it detects must equal the net social cost to others of the wrongdoing. A firm which intends to report all wrongdoing may not

¹⁹⁵ See *supra* text accompanying Equation (18).

¹⁹⁶ See *supra* Part I.C. & D.

¹⁹⁷ In addition, the firm is given credit for reporting only if it reports before the government detects the wrong on its own.

be able to detect the wrongdoing before the government does, however. If the firm reports after the government detects the wrong, it does not get credit for reporting. Thus the expected profits of a firm that monitors optimally and reports all detected wrongdoing equal

$$V(q) - q[k + M^* + P] + q \int_{b^r}^{\infty} [C^r(M^*)F^R + (1 - C^r(M^*))G^r(M^*)F^m - B] r(b) db \quad (26)$$

where $C^r(M^*)$ is the probability the firm detects (and reports) wrongdoing if it monitors optimally and $(1 - C^r(M^*))G^r(M^*)$ is the probability the government (or other sources) will detect the wrong before the firm does.¹⁹⁸

The residual liability that will induce optimal prevention and activity levels and ensure that firms do not encourage suboptimal wrongdoing is calculated by setting the firm's expected profit function equal to social welfare as determined by Equation (6), assuming $i = r$ and $M = M^*$. This implies that

$$C^r(M^*)F^R + (1 - C^r(M^*))G^r(M^*)F^m = h(P, b) \quad (27)$$

where, as before, $h(P, b) = H + c(P) - b$.

The sanctions F^R and F^m also must ensure that the firm reports detected wrongdoing. This implies that F^m must be such that a firm which has already detected a wrong is better off reporting it and facing expected liability of F^R , than not reporting it and facing expected liability of $g(M^*)F^m$. In other words, F^m and F^R must satisfy the conditions for F^H and F^r given in Equation (19). This, combined with Equation (27), implies that F^R and the minimum optimal F^m are¹⁹⁹

$$F^m = \frac{h(P, b)}{g(M^*)C^r(M^*) + (1 - C^r(M^*))G^r(M^*)} \quad (28)$$

$$F^R = \frac{g(M^*)h(P, b)}{g(M^*)C^r(M^*) + (1 - C^r(M^*))G^r(M^*)} \quad (29)$$

These sanctions will induce the firm to engage in optimal reporting, prevention, and activity levels. These equations are considerably

¹⁹⁸ $(1 - C^r(M^*))G^r(M^*)$ generally will not equal $p^o(M^*)$ because $(1 - C^r(M^*))G^r(M^*)$ is the probability that the government detects *before* the firm detects and reports, whereas $p^o(M^*)$ is the probability that the government *eventually* detects wrongdoing when firms do not report detected wrongs.

¹⁹⁹ If the government never detects first then the conditions for optimal residual liability and mitigation for reporting are identical to those under the mitigation-aggravation regime.

more difficult to calculate than the equations for optimal residual and aggravated liability under a mitigation-aggravation provision.

2. *Mitigation for Monitoring*

To induce optimal monitoring the firm's expected costs must be lower if it monitors optimally than if it does not. If the reporting mitigation provisions are set optimally the firm will report all detected wrongdoing. Nevertheless, even if the firm monitors optimally it may not be eligible for full mitigation because the government may detect wrongdoing before it does. Thus, to induce optimal monitoring, the default sanctions, F^{hh} and F^h , must be such that the firm's expected costs if it monitors optimally and reports detected wrongdoing:

$$k + M^* + P^* + \int_{\hat{b}^*}^{\infty} [C^r(M^*)F^R + (1 - C^r(M^*))G^r(M^*)F^m - B] r(b) db \quad (30)$$

are less than its expected costs if it does not monitor optimally (but does report detected wrongdoing):

$$k + M^o + P + \int_{\hat{b}^o}^{\infty} [C^r(M^o)F^h + (1 - C^r(M^o))G^r(M^o)F^{hh} - B] r(b) db \quad (31)$$

This implies that the minimum optimal F^{hh} and F^h are such that²⁰⁰

$$C^r(M^o)F^h + (1 - C^r(M^o))G^r(M^o)F^{hh} = \frac{[H + c(P) - E(b/b \geq \hat{b})](1 - R(\hat{b}^*)) + M^* - M^o + P^* - P + B[R(\hat{b}^*) - R(\hat{b}^o)]}{(1 - R(\hat{b}^o))} \quad (32)$$

Calculating either F^h or F^{hh} is more difficult than determining the default sanctions under a mitigation-aggravation regime because, in addition to knowing the overall probability of detection $p^r(M^*)$ and $p^r(M^o)$, courts must know the probability that the firm will detect the wrong first, both if it monitors optimally and if it does not.

3. *Excessive Monitoring*

An examination of the firm's expected residual liability reveals that a mitigation-mitigation regime may induce excessive monitoring. The problem arises because under this regime the firm has a private incentive to monitor not present under the other regimes: monitoring

²⁰⁰ F^{hh} and F^h will induce optimal reporting by firms that do not monitor provided that $F^h \leq g(M^o)F^{hh}$.

may increase the firm's chances of being the first to detect wrongs, thereby increasing its likelihood of obtaining full mitigation. This additional benefit can induce excessive monitoring.

Assuming that sanctions are set as specified above, a firm that plans to satisfy its monitoring duties will face expected costs as given in Equation (30). The firm thus will employ monitoring of M^* unless there is a $M > M^*$ that maximizes Equation (30). Maximizing Equation (30) with respect to M yields

$$1 = p''(M)W_I(\hat{b}')[C'(M)F^R + (1 - C'(M^*))G'(M)F^m - B] - [C''(M)F^R + \{(1 - C'(M^*))G''(M) - C''(M^*)G'(M^*)\}F^m](1 - R(\hat{b}')) \quad (33)$$

Equation (27) implies that when $M = M^*$ Equation (33) is given by:

$$1 = p''(M)W(h(P) - B)I(\hat{b}') - [C''(M)F^R + \{(1 - C'(M^*))G''(M) - C''(M^*)G'(M^*)\}F^m](1 - R(\hat{b}')) \quad (34)$$

Thus were the firm to engage in M^* of monitoring, the firm's marginal benefit differs from the marginal social benefit by

$$- [C''(M)F^R + \{(1 - C'(M^*))G''(M) - C''(M^*)G'(M^*)\}F^m](1 - R(\hat{b}')) \quad (35)$$

If additional monitoring increases the probability that the firm is subject to a sanction of F^R —in other words if $C''(M) > 0$ —and if it increases the probability the firm is subject to a sanction of F^m —in other words if $(1 - C'(M^*))G''(M^*) - C''(M^*)G'(M^*) > 0$ —then Equation (35) is negative and the firm's marginal benefit of monitoring is less than the marginal social benefit. In this case, the level of monitoring that solves Equation (33) is less than M^* and the mitigation-mitigation regime will not induce excessive monitoring.²⁰¹

However, monitoring may increase the overall probability of detection and yet reduce the probability that the government detects before the firm. In other words, it may be the case that $(1 - C'(M^*))G''(M^*) - C''(M^*)G'(M^*) < 0$. In this case, if F^m is sufficiently large relative to F^R , Equation (35) may be positive. Thus, the firm's marginal benefit of monitoring may exceed the marginal social benefit. In this case, the firm will engage in excessive monitoring. If monitoring is excessive, the firm also will not engage in optimal prevention, although prevention will be optimal *given* the firm's monitoring expenditures.

²⁰¹ This assumes that Equation (26) is concave.

4. *The Cost of Excessive Default Sanctions*

Another potential cost of employing a mitigation-mitigation regime rather than a mitigation-aggravation regime is that courts must calculate the default sanction for failing to report more precisely. Under a mitigation-aggravation regime courts need only worry about setting the aggravation provision too low; any sanction over the minimum optimal sanction will induce efficient reporting, assuming the duties are correctly applied. By contrast, under a mitigation-mitigation regime, courts cannot freely set the default sanction above the minimum optimal sanction without creating a risk of false reporting: firms may report wrongdoing even if they have not detected it in order to become eligible for the fully mitigated fine should the government detect wrongdoing. This false reporting is socially wasteful if it results in the government spending resources investigating wrongs that did not occur.

To see this, consider a worst case scenario from the firm's perspective: assume that if the firm reports falsely the government will detect any wrongs that have actually occurred and will hold it liable. Thus, its net expected liability if it falsely reports every employee for engaging in wrongdoing (net of the benefit of wrongdoing) is²⁰²

$$\int_{b^*}^{\infty} [F^R - B] r(b) db \quad (36)$$

Its net expected liability if it reports correctly is

$$\int_{b^*}^{\infty} [C'(M^*)F^R + (1 - C'(M^*))G'(M^*)F^m - B] r(b) db \quad (37)$$

We know from the discussion preceding Equation (29) that $F^m \geq F^R/g(M^*)$. This implies that if $g(M^*) = G'(M^*)$, the firm would be indifferent between reporting correctly and not if F^m is set equal to the minimum optimal sanction. If $g(M^*) > G'(M^*)$, firms will report correctly if $F^m = F^R/g(M^*)$, but may report falsely if it exceeds this amount.

5. *Summary*

The government can induce optimal reporting, prevention, and activity levels, and remove firms' incentives to induce wrongdoing by employing a mitigation-mitigation regime with sanctions set as specified above. The state also will be able to assure that firms do not monitor too little. However, if monitoring reduces the probability

²⁰² This assumes that the firm is liable for reported wrongs only if a wrong occurred.

that the government detects wrongdoing before the firm, then the possibility exists that such a regime may induce excessive monitoring. This possibility does not arise under the mitigation-aggravation regime. Note that if monitoring is excessive, then prevention and activity levels will be optimal *given* excessive monitoring, but will not equal the optimal level of prevention and activity as determined by Equations (8) and (9).²⁰³

IV ADJUSTED STRICT LIABILITY

This section examines adjusted strict liability regimes: regimes where the sanction imposed depends on the firm's behavior. Two regimes are considered: (1) sanction adjusted strict liability, where the *ex ante* expected sanction invariably equals h/p and (2) quasi-adjusted strict liability, where firms that report detected wrongdoing receive a reduction in their sanction. A third type, associated with use immunity and privileges, is discussed only in the text in Parts II and IV.

A. *Sanction Adjusted Strict Liability*

Under sanction adjusted strict liability the penalty imposed on the firm depends on the firm's behavior, specifically its policing expenditures. The sanction imposed is adjusted to ensure that the firm's expected sanction, $p^i(M)F$, equals the net social cost of wrongdoing, $h(P,b)$, regardless of the firm's expenditures on policing. Thus, under this regime the firm's expected profits are given by

$$V(q) - q[k + M + P + \int_b^\infty (h(P,b) - B)r(b)db] \quad (38)$$

which equals Equation (6), the social welfare function. Accordingly, if monitoring is observable, then *ex ante* the activity levels, prevention measures, and policing measures that maximize firm profits are those that maximize social welfare. There are no perverse effects because policing does not alter the expected sanction.

This regime will not induce optimal policing, however, if firms face credibility problems. Firms may face credibility problems for one of two reasons: (i) *ex ante* policing measures may be unobservable or (ii) the firm may be unable to credibly commit to an *ex post* measure

²⁰³ One partial solution to this problem might be to alter the residual fine to the level that induces optimal monitoring, and then adopt a duty-based regime to govern prevention (since a duty-based regime will be less sensitive to the fine level). Cf. Cooter, *supra* note 37. Activity levels would not be optimal, however. Alternatively, the duty-based regime governing monitoring could be set so that the firm is entitled to mitigation only if it engages in the precise optimal level of care, no more no less.

(in other words, *ex ante*, when agents must decide whether or not to commit a crime, they may not be sure that the firm will investigate wrongdoing or report it *ex post*).²⁰⁴

Consider first the firm's incentives to monitor *ex ante* if agents cannot verify the firm's actual monitoring activities. In this case, the firm's threats to monitor may have some impact on agents' expectations, but actual expenditures on monitoring will not because agents cannot observe them. Therefore, at the point in time when the firm is trying to decide whether to monitor its expected profits are

$$V(q) - q[k + M + P + \int_{E(f)}^{\infty} (h(P,b) - B)r(b)db] \quad (39)$$

where $E(f) = c(P) + E(p)W$ is each agent's expected cost of wrongdoing given agents' beliefs about the firm's policing efforts, and is independent of actual monitoring and reporting; $E(p)$ is the expected probability of detection. Equation (39) reveals that the firm maximizes its expected profits by not monitoring because actual monitoring is expensive and will not reduce wrongdoing.

The disincentives to engage in *ex post* policing are even more severe. Consider a firm that has detected a wrong and must decide whether to report it. Assume that it cannot credibly commit in advance to reporting because agents know that *ex post* the firm can always change its mind.²⁰⁵ In this case, if the firm does report a detected wrong its expected costs equal the costs of reporting (which are assumed to be zero) plus liability for the wrong of

$$\frac{h(P,b)}{p^r(M)} \quad (40)$$

If it does not report, its expected liability equals

$$g(M) \frac{h(P,b)}{p^o(M)} \quad (41)$$

where $g(M)$ is the probability that the government will detect a wrong that the firm has already detected but not reported. Because Equation (41) invariably exceeds Equation (40), the firm will not

²⁰⁴ See *supra* Part I.D. (discussing credibility problem in detail).

²⁰⁵ See *supra* note 61 (discussing reputation as solution to credibility problem); *supra* note 62 (discussing use of third-party policers).

report.²⁰⁶ Adjusted strict liability imposes a similar penalty on ex post investigation.

B. *Adjusted Quasi-Strict Liability*

Adjusted strict liability can be modified to eliminate the penalty it imposes on ex post reporting, but only at the cost of substantially higher administrative costs. Moreover, unlike composite liability, this regime cannot induce optimal ex post investigation if credibility problems exist.²⁰⁷ Adjusted quasi-strict liability holds the firm strictly liable for all wrongs that occur and subject to a sanction that depends on the probability of detection and on whether the firm reported detected wrongdoing. Specifically, in order to solve the credibility problem governing reporting, the sanction imposed on a firm that does report, F^r , is lower than the sanction imposed on one that does not report, F^o . In addition, both sanctions are "adjustable" in that they depend on the probability of detection. This mitigation can nevertheless be classified as "strict liability" because courts need only look at the outcome—whether the firm reported—and do not need to evaluate the quality of the firm's actions to see whether it conformed to a legal duty—for example, a duty to report *detected* wrongdoing.

As with the composite regime, in order to induce optimal reporting the sanction imposed on a firm that reports must be less than or equal to the expected sanction imposed on a firm that does not report. Thus the minimum default sanction must be such that:

$$F^r = g(M)F^o \quad (42)$$

²⁰⁶ To see this let $p^r(M) = p^*$; $p^o(M) = p^o$ and $g(M) = g$. Note that the probability that the firm detects a wrong will be independent of its reporting strategy. The firm will not report if $h(P,b)/p^* > gh(P,b)/p^o$. This implies that the firm will not report if $p^o > gp^*$. We know the following, where R means firm reports and Pr = Probability:

$$\begin{aligned} p^* &= \text{Pr} [\text{Caught/firm reports}] \\ &= \text{Pr} [\text{Caught/Firm Detect; R}] \text{Pr} [\text{Firm Detect; R}] + \text{Pr} \\ &\quad [\text{Caught/Firm Not Detect; R}] \text{Pr} [\text{Firm Not Detect}] \\ &= \text{Pr} [\text{Firm Detect}] + \text{Pr} [\text{Caught/Firm Not Detect; R}] \text{Pr} [\text{Firm Not Detect}] \\ p^o &= \text{Pr} [\text{Caught (by gov't)/Firm not report}] \\ &= \text{Pr} [\text{Caught/Firm detect; not report}] \text{Pr} [\text{firm detect; not report}] + \\ &\quad \text{Pr} [\text{Caught/Firm Not Detect; not report}] \text{Pr} [\text{Firm Not Detect; not report}] \\ &= g\text{Pr} [\text{firm detect; not report}] + \text{Pr} [\text{Caught/Firm Not Detect; not report}] \text{Pr} [\text{Firm} \\ &\quad \text{Not Detect; not report}] \end{aligned}$$

The fact that the probability the firm detects or not is independent of reporting implies

$$p^* = \text{Pr} [\text{Firm Detect}] + X$$

$$p^o = g\text{Pr} [\text{Firm Detect}] + X$$

where $X = \text{Pr} [\text{Caught/Firm Not Detect}] \text{Pr} [\text{Firm Not Detect}]$

Thus $gp^* = g\text{Pr} [\text{Firm Detect}] + gX < p^o = g\text{Pr} [\text{Firm Detect}] + X$

The firm will not report.

²⁰⁷ See supra Part I.D.

In order to induce optimal activity levels, however, the *ex ante* expected sanction must equal the net social cost of wrongdoing to others. This implies that

$$C'(M)F^r + (1 - C'(M))G'(M)F^o = h(P,b) \quad (43)$$

This implies that F^r and F^o must be such that

$$F^o = \frac{h(P,b)}{C'(M)g(M) + (1 - C'(M))G'(M)} \quad (44)$$

$$F^r = \frac{g(M)h(P,b)}{C'(M)g(M) + (1 - C'(M))G'(M)} \quad (45)$$

Provided that the sanctions do vary with the probability of detection and there is no credibility problem, this regime will induce optimal monitoring. By setting the firm's expected liability equal to $h(P,b)$ regardless of its policing expenditures, this regime eliminates the liability enhancement effect and ensures that the firm's expected profits precisely equal the social welfare function. Thus when the firm selects the monitoring level that maximizes its own profits it also maximizes social welfare.

This regime will not induce optimal monitoring, however, if there is a credibility problem, in the sense that monitoring is unobservable, for the same reasons that sanction-adjusted strict liability will not induce optimal monitoring in this situation.²⁰⁸ Nor will this regime induce optimal investigation if credibility problems exist. The mitigation provision can only solve the credibility problem for optimal reporting. Moreover, under this regime optimal sanctions are very difficult to calculate. Indeed, this regime may require more information than the simple composite regime because while the simple regime requires courts to calculate the overall probability of detection and the impact of additional monitoring on this probability, this regime also requires courts to determine the probability the firm will detect the wrong first, given the firm's actual expenditures on monitoring, investigation, and reporting.²⁰⁹

Thus, we expect that this regime is dominated by sanction adjusted strict liability and composite liability. When credibility problems are severe and the additional costs of administering a duty-based regime are low, composite regimes will dominate over quasi-adjusted strict liability. When the credibility problems impose lower costs than are imposed by administering a duty-based regime, straight

²⁰⁸ See *supra* Part II.A. (discussing this regime in more detail).

²⁰⁹ See *supra* Part II.C.

sanction adjusted strict liability will dominate over adjusted quasi-strict liability.²¹⁰

²¹⁰ Information costs are discussed in detail in *supra* Part II.C.