THE POTENTIALLY PERVERSE EFFECTS OF CORPORATE CRIMINAL LIABILITY

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BOTH the maximum allowable criminal fines for corporate crime and the fines actually imposed on corporations have increased dramatically in the last ten years.[1] Moreover, courts and legislatures have considerably expanded the scope of criminal liability.[2] These reforms appear to be premised on the idea that imposing vicarious criminal liability[3] on corporations necessarily reduces corporate crime, with higher sanctions leading to lower amounts of corporate crime. Many seeking to evaluate these reforms have looked for guidance to the economic analysis of corporate crime. The standard economic approach to corporate criminal liability supports the view that imposing strict vicarious criminal liability on cor-

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[1] Mark Cohen, Corporate Crime and Punishment: An Update on Sentencing Practice in the Federal Courts, 1988–1990, 71 B.U.L. Rev. 247 (1991) (discussing changes in federal corporate sentencing).

[2] See, for example, John C. Coffee, Jr., Does "Unlawful" Mean "Criminal"? Reflections on the Disappearing Tort/Crime Distinction in American Law, 71 B.U.L. Rev. 193 (1991).

[3] Throughout this article the term "vicarious liability" is used to refer to both vicarious liability and to corporate liability for criminal acts of senior officers and directors, which the law generally treats as direct liability.

[*Journal of Legal Studies*, vol. XXIII (June 1994)]
 0047-2530/94/2302-0007$01.50

porations invariably reduces corporate crime, with higher sanctions leading to less crime. A more thorough analysis of strict vicarious liability as it is currently applied reveals that this conclusion is not necessarily correct.

The simplest economic approach treats the corporation as a person capable of committing crime. In this view of corporate crime, corporate criminal liability operates as a direct sanction on the actual wrongdoer—the corporation—with higher sanctions leading to lower amounts of crime. Crime is deterred efficiently, this view holds, if the corporation is held strictly liable for all its crimes, subject to a fine equal to the social cost of crime divided by the probability of detection (H/p), because this forces the corporation to internalize the social cost of its criminal activity.[4] As corporate criminal fines historically have been far less than the social cost of the crime,[5] this analysis appears to support both the current use of strict vicarious liability and the current trend toward higher corporate fines.

Devising efficient corporate criminal sanctions is substantially more complicated than this analysis indicates, however. Corporate crime is not analogous to individual crime. Corporate crimes are not committed by corporations; they are committed by agents of the corporation. These agents are rational self-interested utility maximizers who commit crimes in order to benefit themselves. In pursuit of his own self-interest an agent may commit a crime that incidentally benefits the corporation, but this is not its purpose.[6] In addition, an agent who commits a crime risks direct individual criminal liability for his actions.[7]

Some scholars, recognizing the agency cost nature of corporate crime, argue that corporate criminal liability is best analyzed as a substitute for

[4] See, for example, Gary Becker, Make the Punishment Fit the Corporate Crime, Bus. Wk., March 13, 1989, at 22, col. 2; Michael Block, Optimal Penalties, Criminal Law and the Control of Corporate Behavior, 71 B.U.L. Rev. 395 (1991); Jeffrey Parker, Criminal Sentencing Policy for Organizations: The Unifying Approach of Optimal Penalties, 26 Am. Crim. L. Rev. 513 (1989). See William Landes, Optimal Sanctions for Antitrust Violations, 50 U. Chi. L. Rev. 652 (1983); John Byam, Comment: The Economic Inefficiency of Corporate Criminal Liability, 73 J. Crim. L. & Criminology 582 (1982). This approach to organizational sentences, and the one presented in this article, originates with Gary Becker, Crime and Punishment: An Economic Approach, 76 J. Pol. Econ. 169 (1968).

[5] See text around note 19 *infra*.

[6] The conclusion that corporate crime is a product of agency costs is supported by the available empirical evidence. See Cindy Alexander & Mark Cohen, Why Do Corporations Become Criminals? (unpublished manuscript, Vanderbilt Univ., Owen School Mgmt., August 1992); see also Jennifer Arlen & William Carney, Vicarious Liability for Fraud on Securities Markets: Theory and Evidence, 1992 Ill. L. Rev. 691.

[7] Cohen, *supra* note 1, at 268 (individual codefendants were convicted in sixty-five percent of the federal cases involving organizations sentenced for nonantitrust violations in 1988–90).

direct criminal liability of the agent. In this view, corporate liability is simply an indirect means of sanctioning wrongful agents, on the assumption that corporations subject to criminal liability will in turn sanction the wrongful agents, either by seeking indemnification or by reducing the agents' wages. Corporate criminal liability accordingly is warranted when corporations are better able to sanction agents than is the state. Should this be the case, this view holds that a corporation should be strictly liable for its agents' crimes and subject to a fine equal to H/p. The corporation will in turn impose this liability on the wrongful agent in each case, producing efficient deterrence. Corporate criminal liability is not justifiable, however, when the state is as capable as the corporation of sanctioning the wrongful agent directly—as often is the case.[8]

Corporate criminal liability may indeed sometimes deter crime by inducing corporations to sanction their agents for wrongful acts. But corporate liability also has another effect. Many corporate crimes—such as securities fraud, government procurement fraud, and some environmental crimes—cannot be readily detected by the government. Corporations[9] often are better positioned to detect such crimes and determine which agents committed them.[10] In these circumstances, corporate criminal liability may affect corporate expenditures on detecting and investigating crimes committed by their employees, here described as "enforcement costs."[11] Should vicarious criminal liability increase corporate enforcement expenditures, it magnifies the deterrent effect of direct agent liability by increasing the probability that wrongful agents will be detected

[8] Direct agent liability generally will be preferable to corporate liability even when the agent's wealth is less than the efficient fine: the state can impose both nonmonetary and monetary sanctions, whereas the corporation can only affect the agent's wealth. Note 79 *infra;* see 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); Kathleen Segerson & Tom Tietenberg, The Structure of Penalties in Environmental Enforcement: An Economic Analysis, 23 J. Envtl. Econ. & Mgmt. 179 (1992); see also note 58 *infra* (discussing activity levels).

[9] See note 31 *infra*.

[10] Unlike large environmental crimes such as oil spills, which necessarily are detected if they occur, most corporate crimes are not immediately apparent once they are committed. Accordingly, often the government must rely on information provided by the corporation (and its agents)—voluntarily or otherwise—in order to determine that a crime has occurred. Moreover, even if the crime is detected, determining the responsible agent often will require government use of corporate information.

[11] For example, Richard Posner, An Economic Analysis of Law 421–23 (1992); Coffee, *supra* note 2, at 196. See Lewis Kornhauser, An Economic Analysis of the Choice between Enterprise and Personal Liability for Accidents, 70 Calif. L. Rev. 1345 (1982) (civil enterprise liability is intended in part to induce corporations to engage in optimum monitoring and investigation); Reinier Kraakman, Corporate Liability Strategies and the Costs of Legal Controls, 93 Yale L. J. 857 (1984) (same).

and sanctioned. Should it have the opposite effect, however, corporate crime will increase. The deterrent effect of vicarious criminal liability therefore depends on the effect of vicarious liability on corporate enforcement expenditures.

Recognizing the influence of corporate enforcement expenditures, this article demonstrates, dramatically changes the analysis of corporate criminal liability. Previous analysis suggests that increased corporate liability necessarily reduces crime. Introducing corporate enforcement costs, however, reveals that increased corporate liability does not necessarily reduce corporate crime and, indeed, may result in increased crime. The existing legal regime governing many crimes is best approximated as a rule of "pure strict vicarious liability," under which the fine imposed for a particular crime is fixed, in that it does not vary precisely with the level of corporate enforcement expenditures.[12] This regime of strict vicarious liability presents corporations contemplating enforcement expenditures with conflicting, potentially perverse, incentives. On the one hand, increased enforcement expenditures reduce the number of agents who commit crimes by increasing the probability of detection and thus each agent's expected cost of crime. On the other hand, these expenditures also increase the probability that the government will detect those crimes that are committed, thereby increasing the corporation's expected criminal liability for those crimes. If the expected cost to the corporation of the resulting increase in its expected criminal liability exceeds the expected benefit to the corporation of the reduction in the number of crimes, a corporation subject to strict vicarious liability will not respond by increasing its enforcement expenditures because additional enforcement would only increase the firm's expected criminal liability. In fact, in some circumstances a corporation subject to vicarious liability may spend less on enforcement than it would absent vicarious liability. Moreover, even when strict vicarious liability can induce efficient enforcement, the conflicting incentives it creates affect the efficient fine: to induce efficient enforcement, the fixed fine must exceed the net social cost of crime divided by the efficient probability of detection.[13] These results call into

[12] See text around notes 27–28 *infra* (many corporations will view their liability as effectively governed by a pure vicarious liability rule even though the ostensible rule contains a mitigation provision). Nevertheless, under federal law, in some cases an effective mitigation provision will apply. These mitigation rules, when effective, more closely resemble negligence liability than strict vicarious liability and are discussed in Section V *infra*.

[13] In other words, the efficient fine exceeds h/p^*, where h is the *net* social cost of crime. Indeed, recognizing agency costs reveals that under certain circumstances the corporate fine should be based on the net social cost of crime to others ($H - b$), where b is the agent's benefit, not the gross social cost of crime, H. See note 33 *infra*.

question both the current trend toward increased corporate criminal liability and much of the accepted wisdom regarding strict vicarious criminal liability. This analysis also may be relevant to administrative sanctions against corporations and to vicarious civil liability, including employer liability for sexual harassment under Title VII.[14]

In theory, the perverse incentives created by strict vicarious criminal liability can be eliminated by employing a variable fine equal to the net social cost of crime divided by the actual probability of detection (given the corporation's expenditures on enforcement). This rule would eliminate the perverse incentives otherwise present under strict vicarious liability because any increase in the probability of detection occasioned by corporate enforcement expenditures would result in an equivalent decrease in the fine imposed. Implementing this rule, however, would require a dramatic change in the current law. In particular, it would require us to abandon the goal of imposing relatively fixed fines for each type of crime—a goal that permeates the U.S. Sentencing Guidelines—in favor of a rule under which the corporate criminal fine could not be determined until after the crime was committed and investigated since only then could the corporation's precise expenditures on enforcement be determined. Perhaps more important, the precise calculations required for this rule—if feasible—would be very costly.

Accordingly, alternative rules to strict vicarious criminal liability warrant consideration. Three such rules are considered briefly in the present analysis: (1) mitigation rules, under which the fine is reduced (but not eliminated) if the firm's enforcement is efficient; (2) a "negligence" rule, under which the firm bears no liability if it incurs efficient enforcement; and (3) a modified "evidentiary privilege" (akin to use immunity) under which any information disclosed by the corporation can be used to prosecute the wrongful agents but cannot be used against the corporation in criminal or civil litigation.

The present analysis proceeds as follows. Section I summarizes the law governing corporate criminal liability, focusing on the recent reform of corporate criminal sanctions for violations of federal laws. Section II presents an intuitive description of the impact of strict vicarious criminal liability on corporate expenditures on enforcement costs and provides a numerical illustration. Section III presents a formal economic model. Section IV discusses in detail the assumptions underlying the analysis in Sections II and III. Section V explores three alternative criminal liability rules.

[14] 42 U.S.C. 2000e (1988); 29 C.F.R. 1604.11(a) (1990).

I

Under federal law and the law of many states, corporate criminal liability is governed by the doctrine of respondeat superior. Under this rule, a corporation is criminally liable for criminal acts of its agents committed within the scope of their authority. The scope of this liability is remarkably broad. Corporations may be held liable for crimes committed by subordinate agents (including salesmen, clerical workers, and truck drivers).[15] Moreover, corporations also may be held criminally liable even though the criminal acts were against corporate policy or express instructions.[16] Finally, although in theory vicarious criminal liability often requires that the agent intended to benefit the corporation, this rule does not effectively limit the scope of vicarious liability in any significant way.[17]

Although vicarious corporate criminal liability tends to be broad in scope, until recently the penalties imposed on corporations were not particularly large. Prior to 1984, there were no specific guidelines governing corporate criminal sanctions; corporations, therefore, were subject to the same penalties as individual defendants.[18] Because the maximum fines generally were set with individual defendants in mind, they were relatively low—both in absolute terms and relative to the harm caused. One empirical study found that the median corporate fine imposed by federal courts was 13 percent of the harm caused.[19]

In 1984 and 1987, Congress enacted statutes designed to increase cor-

[15] See, generally, Pamela Bucy, White Collar Crime: Cases and Materials, 192–93 (1992); Kathleen Brickey, Corporate Criminal Liability: A Primer for Corporate Counsel, 40 Bus. Law. 129, 131 & n. 11 (1984).

[16] For example, United States v. Basic Construction Co., 711 F.2d 570, 573 (4th Cir.), cert. denied, 464 U.S. 956 (1983); see United States v. Twentieth Century Fox Film Corp., 882 F.2d 656, 660 (2d. Cir. 1989), cert. denied, 110 S. Ct. 722 (1990) (a corporate compliance program—however extensive—will not shield the company from criminal liability for its employees' actions); compare Yates v. Avco Corp., 819 F.2d 630, 636 (6th Cir. 1987) (observing that a supervisor's sexual harassment was foreseeable because the company had adopted a policy to address the problem).

[17] Generally, the benefit requirement is imposed only when the crime requires a specific mental state. William Fletcher, 10 Fletcher Cyclopedia 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. Bucy, *supra* note 15, at 201; see, for example, United States v. Carter, 311 F.2d 934 (6th Cir.), cert. denied, 373 U.S. 915 (1963).

[18] 10 Fletcher, *supra* note 17, at § 4946. If penalty for the crime was limited to death or imprisonment, the corporation could not be indicted for the crime. *Id.*

[19] Cohen, *supra* note 1, at 258. The median total sanction multiple (including civil penalties) during this period was 46 percent. *Id.*

porate criminal sanctions.[20] These statutes dramatically increased the fines imposed on corporations by federal courts: a recent study found that, although prior to the Acts 60 percent of the fines imposed on corporations were less than $10,000, after the Acts took effect approximately 60 percent of the fines imposed exceeded $100,000. According to the same study, the average fine imposed on corporations increased from $45,790 before the 1984 Act to $825,636 after the 1987 Act took effect.[21] Nevertheless, corporate criminal fines generally were substantially less than the harm caused—particularly if the harm was large.[22]

The trend toward increased corporate criminal sanctions for federal crimes continued in the 1990s. Acting at the behest of Congress, in 1991 the U.S. Sentencing Commission promulgated guidelines to govern the sentencing of organizations in federal court.[23] Under the guidelines, corporate criminal fines are based on the greatest of (i) the pecuniary gain to the organization from the offense, (ii) the pecuniary loss to others from the offense (to the extent the loss was caused intentionally, knowingly, or recklessly), or (iii) an amount determined by a table presented in the guidelines corresponding to the offense level of the crime.[24] To determine the actual fine, the guidelines provide that the court must adjust this base fine by a multiplier which reflects the corporation's level of culpability; unless the firm can get relief under the guideline's mitigation provisions, the multiplier generally will exceed 1 and may be as high as 4.[25] Given that previously corporate fines generally did not equal the harm caused, much less exceed it, the guidelines should dramatically increase corporate criminal fines, particularly for crimes that impose substantial harm on others.[26]

In addition to increasing and standardizing organizational sanctions, the federal sentencing guidelines introduced an additional innovation: explicit provisions regarding fine mitigation for corporations that have "ef-

[20] Criminal Fine Enforcement Act of 1984, Pub. L. No. 98-596, 98 Stat. 3134; Criminal Fines Improvement Act of 1987. Pub. L. No. 100-185, 101 Stat. 1279.

[21] Cohen, *supra* note 1, at 254–56.

[22] *Id.* Total sanctions also generally were less than the harm caused when crimes are large; total sanctions substantially exceeded the harm for small crimes, however. *Id.*

[23] U.S. Sentencing Comm'n, Guidelines Manual, § 3E1.1 (November 1991).

[24] *Id.* at § 8C2.4.

[25] *Id.* at § 8C2.5, 8C2.6.

[26] For example, applying the guidelines to a corporation with more than 5,000 employees reveals that under the guidelines the corporation could face a base fine of $1,000,000–$2,000,000 should one of its "high-level" personnel commit a fraud that imposes a harm of $800,000–$1,500,000 on more than one victim.

fective'' monitoring programs and that report violations promptly to the government.[27] These provisions represent an important departure from state law governing corporate criminal liability, which generally does not include explicit mitigation provisions. Nevertheless, they may be less significant than might at first appear. The federal mitigation provisions stop substantially short of effectuating a negligence rule: under the guidelines corporations with effective monitoring programs may nevertheless be subject to substantial criminal liability. Moreover, and more important, the mitigation provisions generally will not be applicable to many important crimes. The guidelines provide that a corporation generally is not eligible for fine mitigation based on its monitoring program if the crime was committed by a more senior employee with managerial authority. Fine mitigation accordingly generally will not be available for crimes such as antitrust violations, securities fraud, or government procurement fraud, which are likely to be committed by employees with managerial authority.[28] Accordingly, in this situation the fine imposed on the corporation is essentially fixed, invariant to corporate enforcement expenditures. Nevertheless, in some circumstances, the guidelines do impose what may best be described as negligence-based liability with fine mitigation. This innovation is analyzed in Section V.

II

As is recognized by existing economic analyses of corporate crime, a rule of ''pure strict vicarious criminal liability'' best approximates the existing law governing corporate criminal liability, especially for those crimes which are of particular concern, such as securities fraud, government procurement fraud, and antitrust violations.[29] This vicarious liability

[27] U.S. Sentencing Comm'n, *supra* note 23, § 8C2.5 (f). A lesser reduction also is possible if the corporation effectively and promptly aided the government's investigation after the fact. *Id.* at § 8C2.5 (g).

[28] See Arlen & Carney, *supra* note 6 (securities fraud is likely to be committed by senior managers). In addition, the corporation is not eligible for mitigation if, after discovering the offense, it unreasonably delayed in reporting the crime to the government. Given the realities of corporate decision making, and the possibility that some decision makers may have conflicting incentives in deciding whether, when, and what to report, many corporations will not report crimes sufficiently quickly to be eligible for fine mitigation and, thus, will be subject to pure strict liability.

[29] See note 59 *infra* (these crimes are the major source of corporate criminal liability in federal court). For purposes of economic analysis, state law can be reasonably described as imposing a strict liability rule, even though individual judges may decide to mitigate fines in some circumstances. Strict liability also is the effective rule imposed for many federal crimes because the corporation often will not be able to avail itself of the mitigation provisions. See text around notes 27–28 *supra*.

rule holds a corporation strictly liable for its agents' crimes and imposes a fixed fine for each crime of a given magnitude that is invariant to the corporation's expenditures on enforcement. This section summarizes the claim of this article that this rule is inefficient in certain circumstances and explains why strict liability probably cannot be rendered efficient; a more formal discussion is presented in Section III.

The standard economic analysis of strict liability in tort holds that strict liability will induce efficient behavior by injurers when each injurer's expected liability equals the social cost of the harm because this forces each injurer to internalize fully the social costs to others of his harm-producing behavior.[30] Accordingly, an injurer seeking to minimize the net cost to himself of his behavior will act in a way that minimizes the cost of his behavior to society—by taking due care. It might appear that this analysis can be easily extended to cover strict vicarious corporate criminal liability. Assuming, as is reasonable, that corporations[31] bear the cost of criminal liability and are not fully indemnified by agents,[32] it might appear that holding corporations strictly liable for agents' crimes should

[30] See Steven Shavell, Strict Liability versus Negligence, 9 J. Legal Stud. 1 (1980).

[31] Throughout this analysis, the term "corporation" implicitly refers to the owners of the corporation. Accordingly, the present analysis, consistent with existing economic analysis of corporate crime, implicitly assumes that the corporation is the relevant decision maker—in both bearing the liability and deciding how to respond. In other words, it is assumed that the owners of the corporation also manage it and make enforcement decisions. This is a reasonable assumption because the vast majority of corporate crimes involve closely held corporations. See Cohen, *supra* note 1, at 251–52 (between 1984 and 1987 less than 3 percent of the corporations sentenced had publicly traded stock; only 4.6 percent of the firms sentenced in 1988 had publicly traded stock). Even closely held firms face the agency costs of deterring crime discussed here because they often have a large number of nonowner employees, including employees with managerial authority, who are capable of committing crimes. Indeed, recent empirical evidence confirms the conclusion that corporate crime (including those committed by closely held firms) is a product of (and an example of) agency costs. See Alexander & Cohen, *supra* note 6. Nevertheless, not all corporate criminals are closely held corporations. A subsequent paper will examine the effect of efficient corporate criminal liability on publicly held firms—firms that are characterized by a separation of ownership and control. The problems with vicarious liability highlighted in this analysis also apply to publicly held corporations, but in that context additional agency cost problems—at the managerial level—plague efforts to induce corporations to deter crime.

[32] In order to focus the analysis on the effect of criminal liability on the corporation's enforcement expenditures, the present analysis assumes, reasonably, that corporations bear all corporate liability and are not able to shift liability to wrongful agents. This assumption is necessary to this analysis of enforcement costs because, if corporations shift liability entirely to the wrongful agents, they will not bear the cost of criminal liability and thus will have no reason to incur enforcement costs. But compare note 59 *infra*. Moreover, this assumption also generally is realistic because agents often will be judgment proof, and in many circumstances legal rules effectively prohibit the corporation from obtaining indemnification. See text around notes 56–59 *infra*. The situation where the corporation can shift part of its liability is discussed in Section IV.

invariably cause them to increase their enforcement expenditures in order to reduce their expected criminal liability. It also might appear that efficient enforcement results if corporations are subject to a fixed corporate fine, F, equal to the net social cost of crime to others, $h = H - b$, divided by the efficient probability of detection, p^*, because this fine sets an efficient corporation's expected costs of crime equal to the net social cost of crime to others, h, and we know that, given a social cost of crime of h, efficient enforcement is the enforcement level which minimizes the total social cost of crime.[33]

This standard analysis of strict liability in tort does not apply to strict vicarious criminal liability when corporations can undertake enforcement measures, however, because it does not take account of the relationship between corporate enforcement expenditures, the probability of detection, and the corporation's expected liability. Corporations subject to vicarious criminal liability do not take the probability of detection as given. Each corporation recognizes that its enforcement expenditures affect the probability of detection and, thus, its expected liability. This has significant implications for the analysis of corporate criminal sanctions. Under a regime of pure strict vicarious criminal liability, an increase in corporate enforcement expenditures has two offsetting effects on the corporation's expected criminal liability. On the one hand, additional enforcement expenditures reduce the number of crimes committed—thereby reducing the firm's expected criminal liability—by increasing the probability of detection and, thus, increasing agents' expected costs of crime. On the other hand, however, the resulting increase in the probability of detection increases the corporation's expected criminal liability for those crimes that do occur.[34] Corporate enforcement expendi-

[33] The net social cost of crime to others ("other" than the corporation) equals the social cost of crime minus the benefit to the agent of crime: $H - b$. This is the proper basis for the corporate fine whenever the benefit of the crime to the corporation and the agent are independent and the corporation does not reduce the wages of agents who commit crimes by b. These assumptions are reasonable given the difficulty of determining ex ante who will commit a crime and the constraints imposed on ex post shifting. See text around notes 55–59 *infra*. Moreover, agents who believe that the corporation does not want the crime committed might be reluctant to signal their expectation of committing crimes by agreeing to accept lower wages. Nevertheless, should the corporation recapture b ex post (for example, in the form of lower wages), the efficient fine would have to be adjusted; the conclusions of the present analysis regarding the efficiency of strict vicarious liability would still hold, however. See Section IV *infra*.

[34] This analysis assumes that corporations report the crimes they detect. This assumption is a reasonable one, for the reasons given at text around notes 74–76 *infra*. Moreover, abandoning this assumption would only strengthen the conclusion that strict liability may not be efficient. *Id.* This analysis also assumes that the fine is fixed. For a discussion of strict liability with variable fines, see the paragraph following note 49 and text around equation (13) *infra*.

tures, therefore, benefit the firm by reducing the expected number of crimes but increase its costs by increasing the probability that it will be found liable for those crimes that its agents do commit.

These conflicting incentives present the possibility that pure strict vicarious criminal liability is not efficient. If corporate enforcement expenditures increase a corporation's expected criminal liability by more than they reduce it, then imposing strict vicarious liability on a corporation will not cause it to increase its enforcement expenditures—no matter how large the fine. Even more troubling, in this circumstance pure strict vicarious liability may cause a corporation to reduce its enforcement expenditures below what they would have been were the corporation not held vicariously liable. There are circumstances where corporations not subject to criminal liability will nevertheless spend resources on enforcement (albeit less than is socially desirable) because they are directly harmed by agents' criminal acts—for example, by the impact of crime on the firm's reputation.[35] In those circumstances in which a firm's additional enforcement expenditures increase its expected criminal liability, imposing strict vicarious liability on the firm will cause it to reduce its enforcement expenditures because doing so reduces its expected costs.[36] Moreover, in this circumstance increasing the corporate fine would only further reduce the corporation's incentives to spend resources on enforcement. Imposing pure strict vicarious liability on corporations, therefore, does not necessarily reduce corporate crime and may even result in an increase in some corporate crimes.

[35] See John Karpoff & John Lott, Jr., The Reputational Penalties Firms Bear from Committing Criminal Fraud, 36 J. Law & Econ. 757 (1993); see also Arlen & Carney, *supra* note 6 (corporations generally are harmed by fraud on the market because it impairs their access to capital markets). A crime may have a negative net present value from the corporation's perspective, while having a positive net present value from the agent's perspective, even if the agent benefits largely through the effect of the crime on corporate profits. This is because agents often derive a greater benefit than do shareholders from crimes which increase corporate profits (or reduce corporate losses) both because managers generally have proportionately more of their wealth tied up in the firm and because shareholders generally are risk neutral whereas managers are risk averse. This is particularly likely to be the case once last-period concerns are taken into account. See Arlen & Carney, *supra* note 6 (discussing this in more detail).

It should be observed that, notwithstanding the intent-to-benefit rule, a corporation may be held vicariously liable for a crime which injures it. The intent-to-benefit rule focuses on whether the agent apparently thought he was conferring a benefit on the corporation, not on whether the corporation actually benefited once all the direct and indirect costs of the crime are taken into account. A short-term positive effect on corporate profits provides the requisite benefit, even if the expected total effect of the crime on corporate profits is negative. See note 17 and accompanying text *supra*.

[36] Moreover, under certain circumstances corporations may respond to vicarious liability by incurring expenditures to attempt to hide its agents' crimes, even though the corporation might attempt to detect crimes were there no threat of liability. See Section IV *infra*.

This potentially perverse effect of strict vicarious liability is easily illustrated by the following example. Consider a corporation (for example, a securities broker-dealer) which, recognizing the possibility that its agents may commit a crime (defrauding customers), is contemplating incurring one of two levels of enforcement:[37] zero enforcement or optimal enforcement (C^*).[38] If the corporation spends nothing on enforcement, the probability of detection is one in twenty (1/20). If the corporation spends C^* on enforcement, the probability of detection doubles to one in ten (1/10). Assume that the corporation has seven agents, each of whom may commit a crime. The benefit of crime to these agents varies; assume that all of these possible crimes are undesirable, in that the total expected cost of each crime to society exceeds the benefit.[39] Assume that the benefit of crime to the agents is such that, if the corporation does not incur any enforcement costs (and accordingly the probability of detection is 1/20), all seven agents commit the crime but that only four agents commit the crime if the corporation incurs efficient enforcement, C^*, raising the probability of detection to 1/10.

Consider now the effect of pure strict vicarious liability on the corporation's expected profit from crime. Assume that the corporation receives a positive benefit of B from the crime, so that absent liability the corporation would not try to deter the crime. The issue is whether imposing pure strict vicarious liability provides the corporation with the requisite incentives to deter the crime. The corporation's expected profit from crime if it does not spend anything on enforcement is

$$7B - (7/20)F, \tag{1}$$

where B is the benefit of crime to the corporation and F is the fixed corporate fine.[40] The corporation's expected profit from crime if it spends

[37] Section III *infra* considers the situation where the corporation's possible enforcement expenditures is a continuous function.

[38] The present analysis assumes that optimal enforcement equals efficient enforcement, calculated by employing the economic approach to crime. See Section III *infra*. The present analysis is relevant, however, even if one rejects the economic approach to crime: it reveals that, whatever one's criterion for setting optimal enforcement, C^*, the state cannot necessarily induce corporations to spend C^* on enforcement using a rule of pure strict vicarious liability.

[39] The present analysis assumes that the state is restricted in the sanction it may impose on agents, both by the agents' wealth and by other considerations, including marginal deterrence. Therefore, enforcement expenditures are required; efficient deterrence is assumed to require that the corporation incur enforcement costs of C^*. See text around notes 64–66 *infra*.

[40] Throughout this analysis of corporate fines, the corporate fine, F, is best viewed as the total sanction imposed on corporations (including civil sanctions, civil liability, and reputational costs).

C^* on enforcement is given by

$$4B - C^* - (4/10)F. \tag{2}$$

Accordingly, in this example strict vicarious liability will not have the desired effect because corporate profits are higher if the corporation does not spend any resources on enforcement. This is true even if B and C^* are zero because spending C^* on enforcement lowers corporate profits by $(1/20)F$. Thus, if B is positive, vicarious liability will have no effect on this corporation's enforcement expenditures.

More disturbing, if B is negative, pure strict vicarious liability may cause the corporation to reduce its enforcement expenditures. Assume that the expected reputational cost to the firm of the crime far exceeds any expected increase in profits, and thus the corporate benefit from crime, B, is negative. In this situation, absent liability the corporation will incur enforcement expenditures to deter the crime if the expected benefit of additional enforcement exceeds the expected costs: in other words, if the expected losses avoided by reducing crime exceed the additional cost of enforcement ($3B \geq C^*$). Those corporations for whom this condition holds will spend resources on enforcement (here C^*) even if they are not held liable. These corporations may discontinue these expenditures if subject to strict vicarious criminal liability, however, because, as previously explained, strict vicarious liability may increase the costs to the corporation of enforcement. For example, in the illustration considered here, strict liability increases enforcement costs from C^* to $C^* + (1/20)F$. For some corporations, this increase will be sufficient to cause them to reduce their enforcement expenditures—in this example from C^* to zero.

This is not to say that pure strict vicarious liability never has the desired effect on corporate enforcement expenditures. In many circumstances, the marginal benefit to a corporation subject to pure strict vicarious liability of increased enforcement expenditures will exceed the additional cost. In this situation, in theory, strict vicarious liability is capable of inducing efficient corporate enforcement expenditures if the corporate fine is set optimally. Determining the efficient fixed fine is not an easy matter, however, because of the conflicting effects of pure strict vicarious liability on corporate profits. Absent these conflicting incentives, it would appear that a fine of h/p^* would be efficient since the fine would appear to set an efficient firm's expected liability per crime, p^*F, equal to the social cost of the crime to others, h. As previously explained, however, the actual impact of enforcement on the corporation's expected liability is a function of conflicting factors: the reduced number of crimes and the increased probability of detection for those crimes which are

committed. The result of these conflicting effects on expected corporate liability is that the corporation does not benefit in the same way as society does from its additional enforcement expenditures. Whereas society obtains the unalloyed benefit of the decrease in crime resulting from increased corporate enforcement, the marginal benefit to the corporation of its enforcement is the benefit to it of the resulting reduction in crime *minus* the cost of the resulting increased expected liability for those crimes which are committed. Accordingly, in order to counteract this latter effect—and make the corporation internalize the full social marginal benefit of its enforcement efforts—the fine imposed on the corporation must exceed the fine at which the expected benefit to the corporation per crime deterred equals the social cost of each crime to others: the fine must exceed h/p^*.[41]

This is easily illustrated by the following example. Consider the firm discussed in the example above, only now assume that the firm has four employees. Assume further that all four agents will commit the crime if the corporation does not enforce, but only one will commit the crime if the corporation incurs optimal enforcement costs of C^*. In this situation, incurring efficient enforcement benefits the corporation by reducing the corporation's expected liability from $(2/10)F$ to $(1/10)F$. The corporation accordingly can be induced to incur efficient enforcement expenditures by determining the fine, F^*, at which the firm maximizes profits by spending C^* on enforcement. Now consider whether h/p^*—which in the present example equals $10h$—will induce this expenditure. Strict vicarious liability will induce efficient enforcement if the fine is such that the corporation's expected marginal benefit of enforcement at C^* equals the social marginal benefit of this expenditure. In the present example, the social marginal benefit of incurring C^* is the benefit to society of deterring three crimes: $3h$. But, given a fine of $10h$, the expected marginal benefit to the corporation of C^* is only h:

$$(4/20)(10h) - (1/10)(10h) = h$$

because much of the benefit to the corporation of incurring C^* is eliminated by its increased expected liability for the one crime which will be committed. Accordingly, because at $F = h/p^*$ the corporation's marginal benefit of efficient enforcement is less than the social marginal benefit of efficient enforcement—whereas the private and social marginal costs are

[41] See equation (11) *infra*. This conclusion that the fine must be adjusted upward follows from the fact that we are considering only those circumstances where the expected benefit from the reduced number of crimes exceeds the expected cost to the corporation of the increased probability of detection.

identical—a fine of h/p^* will not induce efficient enforcement.[42] To counteract the effect of enforcement on the corporation's expected liability for crimes which are committed, the fine must exceed h/p^*. In the present example, the efficient fine, F^*, equals $3(h/p^*)$ or $30h$. As the next section shows, determining the efficient fine in the more general case is a more complicated matter, involving precise calculations of the competing effects of vicarious criminal liability on each corporation's expected profits. Implementing such a fine would impose information burdens on courts far in excess of those normally associated with strict liability rules—information costs more similar to (if not greater than) those of negligence-based liability rules.

The present analysis of pure strict vicarious liability has a number of important implications which reveal the importance of explicitly considering the effect of enforcement costs. First, this analysis reveals that creating efficient incentives under a regime of strict vicarious liability is very difficult if the fine imposed for a given crime is fixed: in some cases, strict vicarious liability is not capable of inducing efficient behavior; in other cases, the rule is efficient, but the efficient fine imposes substantial information costs on courts, rivaling those associated with negligence rules. Moreover, this analysis reveals that pure strict vicarious liability produces an irreconcilable conflict between two possible goals of efficient criminal liability rules: inducing efficient enforcement and inducing efficient corporate activity levels. To induce efficient activity levels (efficient product production), vicarious criminal liability must force corporations to internalize the social cost of the crimes associated with their activities.[43] Accordingly, the sanction imposed on an efficient corporation (one taking C^*) must equal the net social cost of crime divided by the probability of detection, h/p^*.[44] Yet this sanction will not induce efficient enforce-

[42] This conclusion follows because efficient enforcement is the level at which the social marginal cost of enforcement equals the social marginal benefit of enforcement. Accordingly, since the firm's marginal cost of enforcement equals the social marginal cost of enforcement, we know that the cost to the firm of increasing enforcement to C^* exceeds the marginal benefit because the marginal benefit of the additional enforcement to the firm is less than the marginal benefit to society.

Observe that, if the criminal fine is perfectly variable, rather than fixed, and is set equal to h divided by the firm's actual probability of detection, then enforcement will be efficient. Under this rule the marginal benefit to the firm of taking C^* would be

$$(4/20)(20h) - (1/10)(10h) = 3h,$$

which equals the social marginal benefit of efficient enforcement. See text following note 49 and text around equation (13) *infra*.

[43] See Polinsky & Shavell, *supra* note 8, and Segerson & Tietenberg, *supra* note 8; see also Section V *infra* (discussing activity levels).

[44] Polinsky & Shavell, *supra* note 8; Segerson & Tietenberg, *supra* note 8.

ment: the fine must exceed this amount if enforcement is to be efficient. The fine which induces efficient enforcement, however, results in inefficient activity levels.

The existing laws governing corporate criminal liability bear sufficient resemblance to a rule of strict vicarious liability with a fixed fine that the preceding conclusion that vicarious liability does not necessarily reduce corporate crime—and may even increase it—is cause for considerable concern.[45] This analysis also may be relevant to certain regulatory offenses, such as environmental offenses. For example, both the Department of Justice and the Environmental Protection Agency strongly encourage companies to conduct voluntary environmental audits. Should such an audit reveal evidence of a violation, however, the company may be compelled by federal, state, or local reporting requirements to report the violation to enforcement authorities—thereby subjecting it to increased risk of an enforcement action and possibly criminal prosecution.[46] Moreover, in some circumstances, this information also may be used against the company in civil litigation.[47] Companies complain that the increased risk of liability associated with environmental audits is sufficiently great that some firms forgo self-audits.[48] Similarly, the present analysis may be relevant to the debate over whether strict or negligence-

[45] Of particular concern is the relatively harsh treatment of corporations whose senior managers have committed a crime. See text around note 28 *supra*.

[46] See Mary Ellen Kris & Gail Vannelli, Today's Criminal Environmental Enforcement Program: Why You May Be Vulnerable and Why You Should Guard against Prosecution through an Environmental Audit, 16 Colum. J. Envtl. L. 227, 245 (1991); Jonathan Moses & Wade Lambert, Environmental-Wrongdoing Guide Issued, Wall St. J., September 25, 1991, at B4.

[47] Kris & Vannelli, *supra* note 46, at 245. Under certain circumstances, a company must disclose to the Environmental Protection Agency information about violations uncovered in a self-audit. Various pollution control statutes provide that this information must be made available to the public, except for information on production processes. In addition, this information may be accessible to the public through the Freedom of Information Act, 5 U.S.C. § 552. Finally, government agencies and private litigants may be able to get the audit information during discovery. Phillip Reed, Environmental Audits and Confidentiality: Can What You Know Hurt You as Much as What You Don't Know? 13 Envtl. L. Rep. 10303, 10305 (December 1983).

[48] Moreover, vicarious liability may have adverse effects on how audits are conducted. Firms are often counseled to hire lawyers to conduct all audits—even though lawyers are not always the most qualified people to do so—in an attempt to bring the audit under the attorney-client privilege. Moreover, firms are told to circulate the audit only to the lawyers and those within the firm who must know the results of the audit. See, for example, Edward Hogan & Lisa M. Bromberg, The Hidden Hazards of the Environmental Audit, 36 Prac. Law. 20–21, 26 (April 1990). Indeed, some attorneys who conduct such audits only do oral presentations of their results in order to minimize the risk of losing the attorney-client privilege. This is likely to be inefficient since oral communications generally are not the best way to disseminate complicated information to members of a complex organization.

based corporate liability for sexual harassment provides better incentives for corporations to deter such harassment and to establish effective reporting and grievance procedures. Finally, the results of present analysis may also apply to vicarious civil liability: concerns related to those raised here may arise if plaintiffs use corporate monitoring and product-testing information against firms to establish such matters as product defect, foreseeability of harm, or causation.[49]

Strict vicarious liability can be rendered efficient, in theory, if fixed fines are abandoned in favor of fines which vary precisely with the corporation's actual enforcement level—such that every increase in the probability of detection resulting from corporate enforcement efforts results in an equivalent reduction in the fine. In other words, corporate enforcement will be efficient if the fine equals $h/p(C)$—where $p(C)$ is the probability of detection given actual corporate enforcement expenditures of C. This rule is efficient because the expected sanction invariably equals the net social cost of the crime, h; every increase in the probability of detection is matched by an equal reduction in the fine. Implementing this efficient fine would require a dramatic change in the current law, however, since under the efficient rule all enforcement expenditures, whether "effective" or not, must lead to a reduction in the fine. Moreover, this approach would be very costly: fines would have to be calculated on a case-by-case basis because enforcement efforts would be likely to vary across firms. These calculations would require courts to obtain a detailed understanding of the effect of enforcement on the probability of detection in each particular case. These requirements appear to place this solution outside the realm of realistic alternatives. Moreover, any error in calculating $h/p(C)$ would risk subjecting corporations to the conflicting incentives discussed above, rendering the rule inefficient.

The present analysis, therefore, reveals that—in contrast with direct strict liability,[50] which is both efficient and entails relatively low administrative costs—strict vicarious criminal liability either entails enormous administrative costs or is potentially inefficient or both. Accordingly, alternative criminal liability rules warrant consideration. Three proposals are discussed in Section V: (1) mitigation rules, under which the fine is

[49] Compare C. Chu & Y. Qian, Vicarious Liability under a Negligence Rule (Working Paper No. 92, Stanford University School of Law, 1992) (concluding that strict vicarious liability is efficient, but negligence is not, because corporate monitoring may produce evidence of negligence that can be used by plaintiffs but will not produce evidence affecting the firm's liability under a strict liability rule).

[50] "Direct strict liability" refers to strict liability imposed directly on the individual who caused the harm, in contrast with vicarious liability which is imposed on the responsible individual's employer.

reduced (but not eliminated) if the firm's enforcement is efficient; (2) a "negligence" rule, under which the firm is not liable if it incurs efficient enforcement; and (3) a modified "evidentiary privilege" (akin to use immunity) under which any information disclosed by the corporation can be used to prosecute the wrongful agents but cannot be used against the corporation in criminal or civil litigation.

III

A. The Model

It is assumed that identical risk-neutral agents, each of whom is endowed with wealth w, each have the opportunity to commit a criminal act during the course of his employment by a corporation. An agent's benefit from committing the crime is given by b; the probability density function of b over individuals is $r(b)$. The corporation also receives a benefit, B, from the crime.[51] This benefit initially is assumed to be positive.[52] The external costs of the crime to society is given by H.

To deter crime, society must expend resources to monitor agents and to investigate those crimes that have occurred. These enforcement costs may be undertaken by either the state or the corporation. The probability that an agent will be caught and punished is given by $p(C, G)$, where C and G are the enforcement costs of the corporation and the state, respectively. The probability of detection and punishment is assumed to increase at a decreasing rate with increases in enforcement expenditures. This model assumes that corporate enforcement expenditures are fixed costs that do not vary with the number of crimes committed.[53] It is assumed that corporations reveal crimes they detect to the government.[54]

The present analysis assumes that, should a wrongful agent be apprehended, the agent and his corporate employer are subject to criminal sanctions of f and F, respectively. It is assumed that the corporation is

[51] For simplicity, it is assumed that the agent's benefit is independent of the corporation's benefit. In many cases, the agent's benefit will be a function of the benefit to the corporation: $b = a + f(B)$, where $f'(B) > 0$. See note 33 *supra*. This does not change the central conclusions of this analysis, although it will change the precise calculation of the optimal fine.

[52] Assuming that B is negative would only serve to strengthen the central conclusions of this article. See text around notes 35–36 *supra*.

[53] This assumption is not central to the present analysis. The basic conclusions of this article also hold when enforcement costs are variable, although the precise formula for the efficient fine would change.

[54] This "honesty" assumption is reasonable for the reasons given at text around notes 74–75 *infra*. Moreover, the central conclusions of this article hold even if corporations do not report all discovered crimes. See Section IV *infra*.

strictly liable for its employees' crimes. It also is assumed that the state cannot impose unlimited sanctions on agents. Consequently, optimum deterrence requires some expenditures on enforcement.[55]

The present analysis also assumes that the corporation is not able to shift its liability to the wrongful agent.[56] The polar case where the corporation cannot shift its liability to its agents is examined initially for several reasons. First, this assumption generally is a more accurate reflection of reality than is the more standard assumption that corporations pass criminal liability on to responsible agents. Corporations are sometimes precluded from obtaining indemnification from the agents responsible for the crime.[57] Even when corporations are permitted to seek indemnification, they often choose not to—largely because the expected cost to them of doing so often exceeds the expected benefits given the limited resources available to the responsible agents (particularly if the agent also was subject to a criminal fine).[58] In addition, this polar case is examined be-

[55] See text around notes 62–66 *infra*.

[56] This assumption is discussed in Section IV *infra*.

[57] Although as a general rule a principal is entitled to indemnification from its agents for losses occasioned by their illegal acts—including criminal fines—the principal cannot obtain indemnification in a number of important situations. For example, indemnification is not available if the agents' acts were authorized by management; moreover, action against the managers who authorized the criminal acts may be barred by the business judgment rule if they acted in good faith and took due care. See Harry G. Henn & John R. Alexander, Law of Corporations § 242 (3d ed. 1983). Similarly, the corporation also will not be able to obtain indemnification if its liability is more than vicarious—for example, if it knew about the agent's criminal act. Restatement (Second) of Agency § 411(c); see Deborah DeMott, Fiduciary Obligation, Agency and Partnership 259 (1991). The corporation also may not be able to obtain indemnification if it is unable to show that it suffered an overall loss as a result of the crime. Borden v. Cohen, 231 N.Y.S.2d 902 (Sup. Ct. 1962) (complaint must allege no possibility that corporation gained more than it paid in fines and other losses). Finally, the corporation may not be able to shift its liability if its liability is predicated on the collective knowledge, or collective intent, of its agents, yet no individual agent had the requisite intent to commit the crime. See United States v. Bank of New England, 821 F.2d 844 (1st Cir. 1987), cert. denied, 484 U.S. 943, 108 S. Ct. 328, 98 L.Ed.2d 356 (1987) (demonstrating this approach to corporate intent); United States v. T.I.M.E.-D.C., Inc., 381 F. Supp. 730 (W.D. Va. 1974)(same).

Nor can the corporation shift the burden of criminal liability from itself to the agent indirectly by firing him. Firing an agent has little or no effect on the agent's expected wealth if the government is going to send the agent to prison for his crime or if the agent committed the crime on the eve of his last period of employment. Compare Arlen & Carney, *supra* note 6 (analyzing securities fraud as a last-period problem). Moreover, even in those cases where firing the agent does impose a cost on the agent, it will not necessarily shift any costs from the firm. If the corporation needed the agent in the first place, it probably will have to hire someone else to replace him at the same market wage.

[58] See John Coffee, Corporate Crime and Punishment: A Non-Chicago View of the Economics of Criminal Sanctions, 17 Am. Crim. L. Rev. 419, 469 (1980) (the available empirical evidence does not support the claim that firms subject to criminal fines discipline responsible employees); Kathleen Segerson & Tom Tietenberg, Defining Efficient Sanctions, in Innovation in Environmental Policy: Economic and Legal Aspects of Recent Developments in Environmental Enforcement and Liability 53, 61–63 (Tom Tietenberg ed. 1992) (discussing

cause it is the circumstance most favorable to the use of vicarious liability to induce corporate enforcement expenditures: the case for vicarious liability is weakest when corporations shift liability to agents because, in this case, they will not treat this liability as a cost, and thus vicarious liability will not induce firms to incur enforcement expenditures.[59] Accordingly, if, as this analysis reveals, vicarious criminal liability does not necessarily induce efficient enforcement even under the favorable assumption that corporations do not shift liability to agents, it is even less likely to do so if corporations are able to shift liability to agents. Finally, the results of this article do not depend on the extreme assumption that the corporation cannot shift any of its liability to the agent: the present results hold whenever the corporation expects to bear directly some of its expected criminal liability.[60]

B. Criminal Sanctions for Individuals

An individual will commit a crime if the benefit to him of the crime equals or exceeds the expected costs: $b \geq p(C, G)f$. The efficient amount of crime is the level that maximizes social welfare, where social welfare

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the circumstances where one cannot reasonably assume that liability for environmental crimes will be shifted to responsible agents).

[59] The conclusion that corporations will not incur enforcement costs if they can shift liability to agents results from the present analysis' focus on crimes that are the product of affirmative wrongful acts by agents—such as broker-dealer fraud, dumping hazardous waste, and much government procurement fraud. The analysis differs when corporate crimes result from agents' failure to take care, however. Examining crimes which result from a failure to take care, Professors Mitch Polinsky and Steven Shavell show that corporate criminal liability may affect corporate behavior—in their analysis, corporate activity levels—even when corporations are indemnified by agents. When crimes result from agents' failure to take care—as opposed to from affirmative wrongful acts—employees cannot prevent the crime from occurring; they can only decrease its likelihood by taking care. Accordingly, each employee will properly view expected criminal liability as an inevitable cost of employment, for which he must be compensated. Consequently, the corporation will bear the expected cost of criminal liability through higher wages, and vicarious liability will affect corporate activity levels (and enforcement expenditures). Similarly, and for the reasons given above, in the case of crimes of "neglect," pure agent liability will affect corporate activity levels and enforcement expenditures because corporations must compensate agents for their expected liability. Polinsky & Shavell, *supra* note 8. The same is not true, however, of crimes which result from affirmative wrongful acts by agents—such as fraud-on-the-market securities fraud, fraud on the government, and bribery of foreign officials—because the agent can avoid all expected criminal liability by choosing not to commit the crime. Accordingly, corporations will not compensate agents ex ante for their expected criminal liability from these crimes (except, perhaps, if the corporation wants the crime committed), and thus a corporation which is fully indemnified for such a crime will indeed shift the incidence of liability to the agents. Compare note 33 *supra*. These "affirmative" crimes appear to constitute a majority of the corporate crimes committed, see Cohen, *supra* note 1, at 252, and are the focus of the present analysis.

[60] See Section IV *infra*.

equals the sum of the benefits of crime minus the cost of crime and the cost of enforcement:[61]

$$\int_{pf}^{\infty} (b + B - H) r(b)\, db - C - G. \tag{3}$$

Analysis of equation (3) reveals that a crime is socially beneficial whenever the social benefit of that crime ($B + b$) exceeds the social cost of the crime (H). Efficient deterrence is achieved by inducing an agent to refrain from crime whenever his benefit is less than the net social cost of the crime ($H - B$) and to commit the crime otherwise (when $b > H - B$).[62] Given enforcement expenditures, in a perfect world this goal could be achieved by imposing a criminal sanction of f on each apprehended agent, where f is such that

$$f = \frac{H - B}{p(C, G)}, \tag{4}$$

where p is as small as possible in order to minimize enforcement costs.[63]

This high sanction/low probability strategy generally is not feasible because agents' wealth usually will be less than the resulting efficient sanction, and marginal deterrence[64] and justice concerns limit the nonmonetary sanctions available to the state.[65] Accordingly, the optimum sanction for individuals often will exceed the feasible sanction, and en-

[61] See note 38 *supra*. Initially, this analysis ignores the activity level issue. Thus, the utility of the firm's consumers is not included in this social welfare function. The activity level issue is discussed in Section V *infra*.

[62] If enforcement costs are variable, not fixed, then the additional marginal enforcement costs should be treated as a social cost of the crime. See Block, *supra* note 4. Crimes for which the private benefit of crime is not also a social benefit can be analyzed by setting $B = b = 0$ for purposes of equation (3) and adjusting criminal fines accordingly. Compare Fred McChesney, Desperately Shunning Science? 71 B.U.L. Rev. 281, 284–85 (1991) (explaining why the benefit to the criminal of certain crimes should not be treated as a social benefit).

[63] See A. Mitchell Polinsky & Steven Shavell, The Optimal Tradeoff between the Probability and Magnitude of Fines, 69 Am. Econ. Rev. 880 (1979).

[64] Marginal deterrence is concerned with what relative sanctions for lesser and more serious crimes will deter both types of crimes efficiently. Marginal deterrence analysis reveals that optimally deterring murder limits the sanction that can be imposed for armed robbery: for example, were the state to impose a mandatory death penalty for armed robbery, an armed robber would risk nothing by shooting his victim. Similarly, deterring armed robbery limits the sanction available for robbery, and so forth.

[65] See John Coffee, "No Soul to Damn, No Body to Kick": An Unscandalized Inquiry into the Problem of Corporate Punishment, 79 Mich. L. Rev. 386, 401 (1981); Reinier Kraakman, The Economic Functions of Corporate Liability, in Corporate Governance and Directors' Liabilities 178, 195 (Klaus Hopt & Gunther Teubner eds. 1985); Polinsky & Shavell, *supra* note 63.

forcement expenditures will be necessary in order to deter crime by increasing the probability of detection. The remainder of this section captures these limitations on the maximum individual sanction by assuming that all sanctions are monetary and that all agents are judgment-proof relative to the efficient high sanction/low probability fine. Accordingly, the second-best optimum individual sanction equals

$$f^* = w, \tag{5}$$

where w is each agent's wealth.[66] In this circumstance, agents for whom $b > pw$ will commit the crime; the others will not. Assuming $w < (H - B)/p$, some of the crimes committed will be socially undesirable.

C. *Enforcement Costs*

Optimum enforcement expenditures can be determined by maximizing social welfare taking the individual fine as given ($f^* = w$). This yields the following equations that determine the optimal level of enforcement by the corporation and the government:

$$1 = p_1(C, G)wr(pw)(H - pw - B) \tag{6}$$

and

$$1 = p_2(C, G)wr(pw)(H - pw - B). \tag{7}$$

Equations (6) and (7) express the familiar condition for optimal behavior: the government and the corporation each should engage in the level of enforcement at which the social marginal cost of enforcement equals the social marginal benefit. The social marginal cost of enforcement is simply the cost of spending an additional dollar on enforcement—and thus equals one. The social marginal benefit of enforcement is the expected gain to society of an additional dollar expended on enforcement—this is the net social cost of each crime deterred ($H - pw - B$)[67] multiplied by the resulting decrease in the expected number of crimes ($p_i(C, G)wr(pw)$, where $i = 1, 2$).

[66] The central conclusions of this article also hold if agents' wealth varies and only some agents are judgment proof, although the precise formula for the efficient fine will differ from that presented here. For a discussion of efficient criminal sanctions for individuals when wealth varies, see A. Mitchell Polinsky & Steven Shavell, A Note on Optimal Fines When Wealth Varies among Individuals, 81 Am. Econ. Rev. 618 (1991).

[67] Given a fine of w, the benefit of crime to the marginal agent who commits a crime is pw.

Equations (6) and (7) also reveal a second condition for efficient enforcement expenditures: enforcement expenditures are optimal when the marginal effect on the probability of detection of the state's enforcement expenditures equals the marginal effect of corporate enforcement expenditures: $p_1(C^*, G^*) = p_2(C^*, G^*)$. This result also is consistent with our intuition. Should the last dollar spent by the state on enforcement be more productive than the last dollar spent by the corporation, the state could increase social welfare by reallocating enforcement expenditures between itself and the corporation (increasing its own expenditures and reducing corporate enforcement expenditures) until the last dollar of enforcement expenditures by the state and the corporation yield equal benefit.

D. Efficient Corporate Criminal Sanctions

The goal of a system of optimum corporate criminal penalties is to set the fine, F, such that the corporation incurs enforcement costs of C^* when the state incurs enforcement costs of G^*. The optimum fine accordingly can be determined by finding the F at which the corporation's total expected costs of crime, given $G = G^*$, are minimized at $C = C^*$. Assuming $f = w$, the corporation's total expected costs of crime are

$$\int_{pw}^{\infty} (B - p(C)F)r(b)db - C, \tag{8}$$

where $p(C) = p(C, G^*)$.

Given a rule of pure strict vicarious liability, under which the corporate fine, F, is fixed, the corporation will engage in the level of enforcement at which

$$1 = p'(C)wr(pw)(pF - B) - p'(C)F[1 - R(pw)], \tag{9}$$

where $p'(C) = p_1(C, G^*)$ and $R(b)$ is the cumulative distribution function of $r(b)$.[68] Equation (9) reveals that, as might be expected, the corporation engages in the level of enforcement at which the private marginal benefit of enforcement equals the private marginal cost of enforcement. Although this condition is as should be expected, it yields unexpected results. First, and perhaps most important, equation (9) reveals that under certain circumstances vicarious liability will not induce any corporate expenditures on enforcement. As shown in equation (9), the corporation's marginal

[68] Accordingly, $1 - R(pw)$ represents the probability that an agent will commit a crime when $f = w$.

benefit of enforcement equals the gain to corporation of reducing the probability of crime ($p'(C)wr(pw)(pF - B)$) minus the increase in the corporation's expected criminal liability resulting from the increased probability of detecting those crimes that do occur ($p'(C)F[1 - R(pw)]$). If the latter exceeds the former, the corporation's marginal benefit of enforcement is negative. If for all $F > 0$ the firm's marginal benefit of enforcement is negative (or less than one)[69] for all C, the corporation will not spend any resources on enforcement regardless of the fine. Should the firm's marginal benefit be negative (or less than one) at C^* for all $F > 0$, pure vicarious liability may induce some corporate enforcement expenditures but will not induce efficient enforcement. Only when the net marginal benefit of enforcement is positive (and equal to one) at C^* for some $F > 0$ is pure strict vicarious liability capable of inducing efficient enforcement.

Equation (9) yields a second surprising conclusion: the optimum corporate criminal sanction is not equal to h/p^*. Consider the private and social marginal benefit of enforcement when $F = h/p^*$. A comparison of equations (6) and (9) reveals that when $F = h/p^*$ the marginal benefit to the corporation of efficient enforcement is less than the social marginal benefit of enforcement by $p'(C)(h/p^*)[1 - R(pw)]$, which reflects the firm's increased criminal liability resulting from the increased probability of detection for the crimes agents do commit. Accordingly, since by definition equation (6) is satisfied at C^*, equation (9) cannot also be satisfied at C^* when the fine equals h/p^*.[70] Therefore, imposing a fixed fine of h/p^* on corporations will not induce efficient enforcement.

The efficient corporate criminal fine can be calculated by finding the fine, F^*, which induces the corporation to incur enforcement costs of C^*. This efficient fine is the F^* at which equation (9) is satisfied at $C = C^*$. Comparing equation (9) to equation (6) reveals that F^* is given by[71]

$$F^* = \frac{(H - p^*w)}{p^*} \frac{k}{k - p^{*\prime}[1 - R(p^*w)]}, \tag{10}$$

where $p^* = p(C^*, G^*)$ is a constant, $k = p^{*\prime}r(p^*w)p^*w$, p^*w is the benefit of the crime to the marginal agent when $f = w$ and the probability of detection equals p^*, $p^{*\prime}r(p^*w) = p_1(C^*, G^*)r(p^*w)$ is the reduction in the probability of a crime resulting from a marginal increase in enforcement expenditures at C^*, and $p^{*\prime}(1 - R(p^*w))$ is the increase in the

[69] Here the marginal cost of enforcement is one.

[70] This follows from the fact that the corporation's marginal cost of enforcement equals the social marginal cost of enforcement.

[71] See note 40 *supra*.

probability of detection resulting from a marginal increase in enforcement costs to C^*. The precise relationship between the efficient fine and h/p^* is given by

$$F^* > \frac{h}{p^*} \quad \text{if } k > p^{*\prime}[1 - R(p^*w)] \tag{11}$$

and

$$F^* < 0 < \frac{h}{p^*} \quad \text{if } k < p^{*\prime}[1 - R(p^*w)]. \tag{12}$$

These equations reveal that the efficient fixed corporate fine either exceeds h/p^* or is negative. The nature of the optimum corporate criminal sanctions depends on whether corporate enforcement expenditures result in a net decrease or a net increase in the expected number of crimes detected. In those circumstances in which increasing enforcement expenditures to the efficient level results in a net increase in the expected number of crimes detected, a corporation subject to a criminal fine has more to lose by incurring enforcement expenditures than it has to gain. Accordingly, pure vicarious criminal liability will not induce efficient enforcement. The government can employ this rule to induce efficient enforcement expenditures only by awarding the corporation a bounty whenever one of its agents is apprehended for committing a crime.

In some circumstances increasing enforcement expenditures to the efficient level will reduce the expected number of crimes detected. In this circumstance, pure strict vicarious liability can be used to induce efficient enforcement expenditures, but the efficient fine exceeds h/p^* in order to make up for the fact that the corporation's cost of increasing enforcement expenditures includes an element—the increase in its liability for those crimes that nevertheless occur—that is not also a cost to society. As equation (11) reveals, the difference between F^* and h/p^* is larger the larger is the impact of the firm's increased enforcement on its expected criminal liability for crimes that do occur—in other words, the greater is $p^{*\prime}[1 - R(p^*w)]$.[72]

In theory, strict vicarious liability could be rendered efficient by abandoning the current essentially fixed fine in favor of a rule under which the corporate fine, F, equals

$$F = \frac{h}{p(C)}, \tag{13}$$

[72] Observe that, if no crimes are committed at $C = C^*$, then $F^* = h/p^*$.

where $h = H - b$. As equation (8) reveals, this fine would induce efficient enforcement because it would set $p(C)F$ equal to h, for any given p. Accordingly, this fine would equate the corporation's private net costs of crime with the relevant net costs to society of crime. The corporation's efforts to maximize its own profits thus would result in it taking the socially optimum level of enforcement.[73]

Although equation (13) is the first-best optimum corporate fine, it probably cannot be implemented in practice because the information requirements and administrative costs are too great. The fine described in equation (13) is not a fixed fine, but rather is a variable fine rule which bases the corporate fine on the actual probability of detection, $p(C)$. Under such a rule, the fine imposed varies precisely with changes in the actual probability of detection and thus varies precisely with changes in corporate enforcement expenditures: the smaller the enforcement expenditures, the larger the fine, and vice versa. In order to be efficient, the fine would have to vary precisely with these enforcement expenditures, such that $dF/dC = p'(C)$. This level of precision is plainly impossible. Moreover, any attempt to achieve such precision would be extraordinarily costly. Certainly these costs are sufficiently high to warrant consideration of alternative criminal liability rules. Three such rules are discussed in Section V.

IV

The analysis of Sections II and III incorporates various assumptions which warrant examination. Analysis of these assumptions reveals that the results of this article are remarkably robust; indeed, in some cases, changing an assumption strengthens the central claims of this article.

A. Corporate Honesty

The preceding analysis assumes that corporations which discover crimes reveal these crimes to the government. This "honesty" assumption is employed for a variety of reasons. First, it is a better reflection of reality than the alternative simplifying assumption that corporations do not report any detected crimes. Notwithstanding the effects of pure vicarious liability on corporate profits, powerful incentives exist for innocent corporate managers who discover evidence of crimes to report them. For example, a number of statutes impose individual liability on managers

[73] Compare equations (3) and (8).

who learn of a corporate crime and fail to report it to the appropriate authorities.[74] These statutes—combined with statutes which protect "whistle-blowers"—provide these managers with a strong personal incentive to report crime. In addition, in some circumstances agents who report crimes may benefit directly: for example, some federal statutes effectively authorize the payment of substantial bounties to informants.[75] Finally, innocent corporate officials may decide to report a detected crime because failing to report may result in a higher corporate fine should the crime be detected; innocent managers whose wealth is a function of firm profits (such as innocent owner-managers) may decide to report the crime in certain circumstances in order to minimize the corporation's expected criminal liability.

The honesty assumption is not necessary to the present analysis, however. Even if firms do not report all detected crimes, the central conclusions of this analysis hold so long as corporations expect corporate enforcement expenditures to increase their expected liability for the crimes their agents commit. Corporations often will expect their enforcement efforts to increase their expected liability for crimes they cannot deter—even if they do not report the crimes—because they recognize that the government often discovers evidence of possible corporate wrongdoing on its own, without initial disclosure by a corporation. 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 which may contain evidence of wrongdoing which prosecutors may use to prove their case against the corporation. Moreover, corporate records may harm the firm indirectly. Internal corporate records may provide prosecutors with the leverage necessary to induce agents implicated by these documents to cooperate with authorities. If these agents provide prosecutors with evidence of additional wrongs committed by other agents of the firm,[76] the firm will face vicarious liability for these additional wrongs. Accordingly, it is reasonable to assume that under a pure vicarious liability rule in-

[74] For example, California recently passed a law imposing criminal liability on managers and corporations that fail to report regulatory violations to the proper regulatory agency. Calif. Penal Code § 387. Direct managerial liability should even induce innocent owner-managers to be "honest" because it imposes direct personal liability, whereas the corporate fine is imposed on the other owners as well, and each owner's losses are limited by limited liability to his capital contribution in the firm. See note 31 *supra*.

[75] False Claims Act, 31 U.S.C.A. § 3730; see Securities Exchange Act, § 21A(e), 15 U.S.C. 78u-1 (bounty for information leading to imposition of a civil penalty for insider trading).

[76] See, for example, James B. Stewart, Den of Thieves, Bk. 2 (1991) (describing the investigation of Drexel, Burnham, Lambert and Michael Milken).

creased corporate enforcement expenditures will increase the firm's expected criminal liability for those crimes it is unable to deter. This is all that is necessary to support the essential conclusions of this analysis.

Finally, it should be observed that abandoning the "honesty" assumption would only strengthen the case against pure vicarious liability. Rejecting the honesty assumption and allowing for the possibility that corporations may conceal evidence of their agents' crimes reveals that pure vicarious liability may strengthen corporations' incentives to conceal crimes, if doing so minimizes expected liability. Expenditures to conceal crimes are themselves inefficient.

B. Shifting Liability to Agents

The preceding analysis also assumes that the corporation does not shift criminal liability imposed on it to the responsible agents. This assumption is more reasonable than the more standard alternative simplifying assumption of complete liability shifting.[77] Moreover, employing an intermediate assumption of partial shifting would only complicate the analysis without significantly affecting the results. The central conclusions of the present analysis hold so long as the corporation expects to bear some of the liability imposed on it. So long as there is some "unshifted" liability the analysis presented above holds, except that the efficient corporate fine would equal F^* plus the amount of liability the corporation expects to shift to its agents.[78] Accordingly, the possibility that the corporation may shift some of its liability to its agents does not affect the central conclusions of this analysis.[79]

[77] See text around notes 56–60 *supra*.

[78] In addition, in this circumstance the efficient individual fine will be the efficient fine, f^*, minus the amount of liability the corporation will shift to the agent.

[79] Nor does the possibility that corporations will shift liability to agents provide an independent justification for vicarious criminal liability in most circumstances. Imposing liability on corporations as an indirect mechanism for sanctioning agents can be justified only if the corporation is better able to impose liability on agents than is the state. This will rarely be the case. First, as previously mentioned, the corporation will not necessarily be able to shift its liability to its agents. Moreover, the state generally is better able to sanction agents than is the corporation. Both the corporation and the state can affect an agent's current wealth by obtaining a judgment against him. The state is better able to affect future wealth, however. Although the corporation can fire an agent, it cannot prevent him from obtaining employment elsewhere. The state can prevent future employment: in some circumstances the state may prohibit the agent from working in a particular industry (for example, the securities industry); in other circumstances, the state may preclude future employment by incarcerating the agent. Finally, the state may impose nonmonetary sanctions on the agent by incarcerating him. Accordingly, imposing criminal sanctions on agents directly generally will be superior to sanctioning them indirectly by sanctioning corporations in the hope that corporations will shift liability to agents, except in those circumstances where the govern-

C. *Detection versus Protection*

Finally, the preceding analysis implicitly assumes that the corporation deters crime by incurring enforcement costs which increase the probability of detection (for example, monitoring and investigation) rather than by employing mechanisms which prevent agents from committing crimes without increasing the probability of detection, "prevention" expenditures. This assumption also is reasonable: it is not easy to find examples of enforcement mechanisms which have no effect at all on the probability of detection. Nevertheless, in some circumstances corporations will have a choice between enforcement expenditures which affect the probability of detection and pure prevention mechanisms, which do not affect the probability of detection.[80] Pure vicarious liability will not have any adverse effect on corporate prevention expenditures because prevention does not affect the probability of detection. Pure vicarious liability will distort the corporation's allocation of resources between enforcement and prevention mechanisms, however, because the only cost to the corporation of preventing crime is the direct cost of prevention, whereas the cost to the corporation of enforcement is the direct cost of enforcement plus the resulting increase in the corporation's expected liability for crimes it is unable to deter. Accordingly, corporations subject to pure vicarious liability will spend relatively more on prevention and less on enforcement than is efficient, if both prevention and enforcement mechanisms are available.[81]

V

This section briefly considers alternative approaches to corporate criminal liability: specifically, mitigation rules, a negligence-based vicarious liability rule, and a rule, referred to here as an "evidentiary privilege" under which any information disclosed by the corporation can be used

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ment would not be able to identify the individual wrongdoer on its own. See Kornhauser, *supra* note 11, at 1370 (enterprise liability may be desirable if corporations can identify causally responsible agents more readily than can courts); see also note 58 *supra* (discussing activity levels).

[80] Prevention measures include those that increase the agent's cost of committing the crime, thereby lowering the net benefit of the crime. The choice between the two approaches can be captured by modeling the agent's expected benefit from crime as $b(C_1) - p(C_2, G)f$, where C_1 is corporate expenditures on prevention ($b'(C_1) < 0$) and C_2 is corporate expenditures on enforcement.

[81] Observe that a corporate fine of h/p^* will induce efficient corporate expenditures on prevention but insufficient expenditures on enforcement. If the fine is raised to F^*, corporate enforcement expenditures will be efficient, but prevention expenditures will be excessive.

to prosecute the wrongful agents but cannot be used against the corporation in criminal or civil litigation.[82]

A. Negligence-based Liability and Mitigation Provisions

One alternative to strict vicarious liability is to employ a negligence-based liability rule. Two variations of such a rule warrant consideration. The first is a true negligence liability rule, under which the firm is not liable for its agents' crimes if the firm engages in efficient enforcement ("due care").[83] The second is a mitigation provision, under which incurring efficient enforcement expenditures reduces the corporate fine but does not absolve the firm from criminal liability. Mitigation rules have found considerably more favor with legislators than negligence rules—being incorporated, for example, into the U.S. Sentencing Commission's guidelines governing organizational sentences.[84] Under these rules, corporations which incur efficient enforcement costs nevertheless risk substantial liability. The issues arise whether this liability is justified and, if so, whether the mitigation approach is superior to alternative rules which impose criminal liability on efficient corporations.

From the standpoint of inducing efficient enforcement, there is no reason to prefer mitigation rules to straight negligence liability; indeed negligence liability appears to be the superior rule. Both negligence and mitigation rules are capable of inducing corporations to engage in efficient enforcement. Unlike pure strict vicarious liability, negligence-based vicarious liability invariably can be employed to induce efficient enforcement because corporations avoid all liability by taking due care. Thus, increasing enforcement expenditures to the efficient level never increases a corporation's expected liability. This is easily illustrated by our initial example in which pure strict liability is not efficient.[85] In this circum-

[82] One solution which is not considered here is to employ pure strict vicarious liability and pay firms a bounty equal to F^* as given by equation (12), whenever the conditions of that expression are met. This possibility is not considered here because, among other things, it presents serious moral hazard problems.

[83] Should efficient enforcement require both ex ante monitoring of employees and ex post investigation of crimes, the corporation should escape criminal liability under a negligence rule only if its expenditures on both monitoring and investigation are efficient; where one type of expenditure is efficient but not the other, some fine mitigation would be appropriate, but criminal liability should still be imposed.

[84] The guidelines provide that the fine imposed should be reduced substantially, but not eliminated, if (i) the corporation had an effective program to prevent and detect violations of the law, (ii) the corporation reported the crime to the government, or (iii) the corporation cooperated fully in an ongoing investigation. U.S. Sentencing Comm'n, *supra* note 23, § 8C2.5 (f), (g). See text around notes 27–28 *supra*.

[85] See text around notes 37–41 *supra*.

stance, negligence liability will induce efficient enforcement so long as the fine equals or exceeds the F^n such that the firm's expected profits if it takes due care ($4B - C^*$) just equal its profits if it fails to take due care ($7B - (7/20)F$):

$$F^n = \frac{(3B + C^*)20}{7}. \tag{14}$$

Mitigation provisions similarly will induce efficient enforcement so long as the difference between the fine imposed on the firm if it takes due care, $F^{\min}$, and the fine imposed if its enforcement is not efficient, $F^{\max}$, equals (or exceeds) the amount such that the firm's expected profits if it incurs efficient enforcement costs equal (or exceed) its expected profits if it is negligent:

$$7B - (7/20)F^{\max} = 4B - C^* - (4/10)F^{\min}. \tag{15}$$

Accordingly, in this example $F^{\max}$ and $F^{\min}$ must be such that

$$F^{\max} = (8/7)F^{\min} + F^n. \tag{16}$$

A comparison of equations (14) and (16) reveals that, from the standpoint of inducing efficient enforcement, negligence liability is superior to mitigation provisions. Under a mitigation approach, the firm's incentive to incur efficient enforcement expenditures depends on the difference between $F^{\max}$ and $F^{\min}$—the magnitude of the fine imposed on efficient corporations, $F^{\min}$, is irrelevant. The mitigated fine, $F^{\min}$, might just as well equal zero. Accordingly, the additional administrative costs associated with mitigation provisions of calculating both $F^{\max}$ and $F^{\min}$ cannot be justified by enforcement concerns. More important, employing mitigation provisions instead of negligence liability increases the risk that corporations will be judgment-proof because, assuming $F^{\min} > 0$, the maximum fine—the fine imposed on a corporation which fails to take due care—under a mitigation provision exceeds the maximum fine under a negligence rule. The greater the maximum fine, however, the greater the likelihood that it will exceed the firm's assets. Should the firm be insolvent with respect to the maximum fine, criminal liability will not induce efficient enforcement. This risk of firm insolvency can be minimized by setting $F^{\min}$ equal to zero: in other words, by employing negligence liability.

Although the residual liability associated with mitigation rules is not necessary in order to induce efficient enforcement, this is not necessarily the only goal of corporate criminal liability. Some scholars have suggested that a proper goal of criminal liability is to induce efficient activity levels by forcing corporations to internalize the expected cost of crime

associated with their activities, thereby leading to efficient product markets.[86] Mitigation rules are capable of inducing both efficient enforcement and efficient activity levels; negligence rules are not. Negligence liability rules cannot serve both goals because efficient firms avoid all liability for their agents' crimes.[87] Mitigation rules, by contrast, can achieve both goals because efficient firms are liable nevertheless. This expected liability will affect the firms' product prices and, thus, their activity levels.

Inducing both efficient enforcement and efficient activity levels requires a different mitigation rule from that established by the sentencing guidelines, however.[88] To induce efficient activity levels, the expected criminal liability imposed on a firm which incurs efficient enforcement costs must equal the net social cost of the crime—in other words, $F^{\min} = h/p^*$. To induce efficient enforcement, the additional sanction for failing to take due care (that is, the amount of mitigation) must be such that the firm maximizes profits by taking due care. Given our example, this implies that

$$F^{\max} = (8/7)(h/p^*) + F^n. \tag{17}$$

Mitigation rules will not induce either efficient enforcement or efficient activity levels, however, if the firm is insolvent with respect to the maximum fine, $F^{\max}$. If the firm's assets are less than the maximum fine, mitigation rules will not induce efficient enforcement because the difference between $F^{\max}$ and $F^{\min}$ will not be sufficient to induce such expenditures. Consequently, the firm will not take due care and will be subject to a fine of W (its assets), not h/p^*. Thus activity levels also will not be efficient. Negligence liability, accordingly, is preferable to mitigation provisions whenever (i) civil liability is an effective means of inducing efficient activity levels, so that criminal liability need only be concerned with efficient enforcement,[89] or (ii) efficient mitigation provisions present

[86] Polinsky & Shavell, *supra* note 8; Segerson & Tietenberg, *supra* note 8.

[87] See Shavell, *supra* note 30.

[88] Compare the factors considered in the efficient fine described below with those that determine the amount of mitigation under the Sentencing Guidelines. See U.S. Sentencing Comm'n, *supra* note 23, §§ 8C2.6–8C2.8.

[89] Criminal liability should be employed to regulate activity levels only if civil liability is not better able to do so. Civil liability may be better able to regulate activity levels because it permits for a more accurate determination of the harm caused, based on evidence presented by the victims themselves, rather than evidence presented by prosecutors of their estimate of the harm. Moreover, civil liability allows cases to be brought as harms actually arise, which is particularly important if the defendant's act may have caused latent injuries. The present analysis does not examine the distinctions between criminal and civil liability, however and, indeed, equates F with the total sanction imposed on the firm. See note 40 *supra*.

a serious risk of firm insolvency. This latter concern is likely to be significant whenever h is very large or when the probability of detection is very small—as is likely to be the case with government procurement fraud, illegal dumping of hazardous waste, and perhaps securities fraud.[90]

B. Corporate Use Privilege

Some corporate managers have responded to concerns about the effects of strict vicarious liability by arguing that corporations should be granted a privilege for information obtained through internal audits.[91] One possible approach would be to adopt a modified "evidentiary privilege" rule—akin to use immunity—which prohibits prosecutors from using voluntarily prepared corporate records against the corporations,[92] while allowing such records to be used to prosecute wrongful agents.[93] Such a privilege would remove the distortions created by pure strict vicarious liability because increased corporate enforcement expenditures would not increase the corporation's probability of being found liable: the corporation's expected liability per crime will equal $p^{\varnothing}F^{i}$ no matter what the firm does, where $p^{\varnothing}$ is the probability of detection absent corporate enforcement and F^{i} is the corporate fine under this privilege/immunity rule.[94] Moreover, under this rule it is relatively easy to induce both efficient enforcement and efficient activity levels—at least in theory. Since under the rule the firm's expected liability per crime invariably equals $p^{\varnothing}F^{i}$, a fine equal to $h/p^{\varnothing}$—$20h$ in our example—will internalize to the firm the social costs of crime, thereby producing both efficient enforcement and efficient activity levels.

Comparing this privilege approach to the negligence-based approaches discussed above reveals that it has many advantages over either of these other rules. Unlike negligence liability, strict liability with a privilege is capable of inducing both efficient enforcement and efficient activity lev-

[90] The precise magnitude of the social costs resulting from securities fraud is a matter of considerable debate.

[91] See Moses & Lambert, *supra* note 46.

[92] This rule—which is referred to here as a "privilege"—is broader than standard immunity and privilege rules in that it would prohibit the use of any information created by the corporation against it. The corporation could still be prosecuted based on other information, however. Moreover, unlike a standard privilege, the firm would still have to disclose the information to the government.

[93] To be effective, this privilege must extend to civil cases as well.

[94] This conclusion may not hold if the crime involves an agent's failure to take care. In this situation, agents will demand compensation for expected criminal liability in the form of higher wages. Accordingly, to the extent that corporate enforcement efforts increase its agents' expected criminal liability, it will in turn increase the corporation's expected costs.

els. Moreover, unlike negligence and mitigation approaches, this solution does not require courts to calculate efficient enforcement. In addition, the efficient fine is remarkably simple to calculate—at least when compared to the efficient fines associated with any of the other corporate criminal liability rules discussed in the present analysis. The central problem with the privilege approach is firm insolvency. If the probability of detection absent voluntary corporate enforcement expenditures is very low, the efficient fine will be extraordinarily large and will likely exceed the available assets of most, if not all, corporations. In this case, the privilege rule will not result in either efficient enforcement or efficient activity levels.

C. Summary

The preceding brief analysis of three alternative corporate criminal liability rules reveals that each rule may be better able to induce efficient enforcement than is the current regime of pure strict liability. The preceding comparison of the three alternatives reveals that negligence liability is preferable to either mitigation provisions or "privilege" rules if firm insolvency is a serious concern. Accordingly, negligence liability may be preferable for serious environmental crimes, significant government procurement fraud, and perhaps also fraud on securities markets. When firm insolvency is not a serious concern—in that the net social cost of crime to others, h, is relatively small and the probability of detection is large—either mitigation provisions or vicarious liability with a corporate "privilege" may be superior to negligence liability because both rules are capable of inducing both efficient enforcement and efficient activity levels. The privilege approach is preferable to a mitigation rule when determining efficient enforcement would impose high administrative costs on courts and $p^{\varnothing}$ is sufficiently large that firm insolvency is not a serious issue. A mitigation approach (significantly different from that of the sentencing commission) is preferable otherwise. Further analysis is needed to determine other factors affecting the efficiency of these rules.

VI

The conventional wisdom that the strict vicarious criminal liability necessarily reduces corporate crime even when fines are relatively fixed, and is efficient when the corporate fine equals the social cost of crime divided by the efficient probability of detection, is not correct once proper account is taken of the impact of liability on firms' enforcement expenditures. The present, more complete analysis of corporate criminal liability, reveals that in certain circumstances imposing pure strict vicarious liabil-

ity on firms will not increase corporate enforcement expenditures and may even reduce these expenditures. Moreover, when efficiency is possible, the efficient fixed fine exceeds h/p^* and thus exceeds the fine that induces efficient activity levels. Alternative efficient variable fine rules are available in theory but would impose extraordinarily high information burdens on courts.

The difficulty of promoting efficient behavior by employing a rule of pure vicarious criminal liability suggests that alternative corporate criminal liability rules should be considered. Three possible approaches are mitigation provisions, a negligence rule, and a modified evidentiary privilege for corporate information. Examination of these solutions reveals that the approach taken by the U.S. Sentencing Commission—vicarious liability with fine mitigation—is by no means the best alternative. Indeed, for many important crimes, negligence liability probably is the superior rule. In other situations, a privilege rule often will be preferable to mitigation provisions.

Considerably more analysis is needed on the effect of criminal sanctions on firms' enforcement efforts, however. Special consideration must be given to the effect of vicarious criminal liability on enforcement by publicly held corporations—which are characterized by a separation of ownership and control. In addition, the alternatives to strict vicarious liability—particularly privilege and negligence rules—should be analyzed in more detail. This additional analysis should precede any additional efforts to reform laws governing corporate criminal liability, such as the sentencing commission's current effort to implement sentencing guidelines for environmental crimes. Similar analysis should accompany a reevaluation of corporate liability for various regulatory offenses. Finally, the present analysis indicates that the effect of civil vicarious liability on corporations should be reexamined.