7 Corporate criminal liability: theory and evidence

*Jennifer Arlen**

1. INTRODUCTION

Corporations are subject to a host of laws that criminalize acts that are potentially profitable for the firm but harm society. Some of these laws, such as those prohibiting securities and health care fraud, criminalize intentional wrongdoing. Others, such as many environmental regulations, use criminal law to encourage firms to invest in measures to prevent harms that otherwise would naturally occur as part of their operations. Almost all of these laws are enforced through a combination of individual and corporate liability imposed on people who commit the wrong. The central policy question facing enforcement authorities is how to structure individual and corporate civil and criminal sanctions to optimally deter such crimes.

This chapter employs economic analysis to examine the optimal structure of individual and corporate criminal liability for corporate crimes.[1] It shows that, in order to optimally deter corporate crime, the state generally needs to impose both individual and corporate criminal liability. It also shows that, for most important crimes, the optimal structure of corporate liability differs from classic optimal individual criminal liability for purely individual crimes, as expressed in Becker (1968).[2] Optimal corporate liability also differs in structure from optimal corporate liability considered in the classic economic models of corporate vicarious liability (Kornhauser 1982; Sykes 1984; Polinsky and Shavell 1993).

Pure individual crimes generally involve an individual seeking to benefit from imposing harm on a third party. The central goal of individual liability is to deter all crimes which impose social costs greater than the benefit of the crime. Individual criminal liability can achieve this goal by imposing sanctions directly on the individual wrongdoer whose expected cost equals the social cost of crime. When individual actors have limited assets, the state may need to spend resources on detection or on non-monetary sanctions such as prison (Becker 1968).

Corporate crimes differ from these simple individual crimes because they involve an additional actor, the firm, which can intervene to deter (or encourage) crime both *ex ante* and *ex post*.[3] Firms can deter crime *ex ante* by adopting measures that lower the expected benefit of crime to employees or increase the direct costs of its commission. Corporations have direct control over the expected benefit of crime – control that even the state does not have – because the wrongdoers generally benefit from corporate crimes indirectly, through the compensation and other benefits they obtain from actions that increase the firm's profits. Firms thus are uniquely positioned to intervene *ex ante* to deter crime through their ability to structure compensation and promotion policies so as to make crime less profitable. Firms also can intervene *ex ante* in other ways that increase the direct costs of committing crimes, interventions we refer to as "prevention measures" (Arlen and Kraakman 1997). Corporations also can help deter crime by intervening to

increase the probability that the government detects and sanctions wrongdoers. Firms can do this by undertaking *ex ante* monitoring, *ex post* investigation, and cooperation to increase the probability that the government detects the wrong, identifies the individuals responsible, and obtains the evidence needed to convict them. We refer to interventions that increase the probability of sanction as "policing measures" (Arlen and Kraakman 1997).

Corporations not only can deter crime, but they generally are the most cost-effective providers of many vital forms of prevention and policing. This implies that, in the case of corporate crime, the state has an extra instrument available to it when (as is usually the case) it cannot rely entirely on maximal individual monetary sanctions (with minimal enforcement) (Becker 1968). In the corporate context, the state can, and generally should, deter crime by inducing firms to undertake optimal prevention and policing measures. To achieve this goal, the state usually must impose corporate liability structured to induce both optimal corporate policing and prevention (Arlen and Kraakman 1997).[4]

In contrast with individual liability, the state cannot induce optimal corporate behavior by holding the firm criminally liable whenever a crime occurs, subject to a fine of *F*. Thus, the state cannot use strict corporate *respondeat superior* liability (with a fixed penalty) to optimally deter corporate crime (Arlen 1994; Arlen and Kraakman 1997). Firms held strictly liable for employee wrongdoing will invest in optimal prevention when the expected sanction equals the social cost of the crime.[5] Yet the state cannot use strict corporate liability with a fixed fine to produce an equilibrium where the firm undertakes optimal prevention and policing because the fixed sanction that induces optimal prevention would not induce optimal policing. Strict corporate liability is inefficient because under this rule a firm that undertakes effective policing increases its own expected liability by helping the government detect and sanction wrongdoing. Strict corporate liability thus imposes a private cost on firms that police that exceeds the social cost of policing. Thus, it cannot simultaneously induce optimal prevention and policing. Indeed, *respondeat superior* may deter corporate policing under some circumstances (Arlen 1994; Arlen and Kraakman 1997).[6]

To induce corporate policing, the government should employ a "duty-based" regime under which firms are obligated to undertake optimal monitoring, self-reporting, and cooperation, and are subject to a special sanction for violating any one (and each) of these duties (Arlen 1994). Firms that satisfy all policing duties should escape criminal sanction. Nevertheless, they generally should face "residual" civil liability designed to ensure that they adopt optimal prevention measures (Arlen and Kraakman 1997) – unless market forces ensure the firm internalizes the social cost of employees' wrongs.

This chapter then examines whether the current US enforcement practice is consistent with optimal corporate liability, focusing on four distinctive features of US corporate criminal enforcement. First, the United States imposes criminal liability on both individual wrongdoers and their corporate employers. Second, although corporations formally are subject to strict corporate liability for employees' crimes, the Department of Justice (DOJ) regularly exempts firms from indictment if they self-report wrongdoing and/or cooperate with government efforts to convict individual wrongdoers. Third, firms that report and cooperate nevertheless are subject to some form of expected monetary sanction, whether imposed by the DOJ or civil enforcement authorities. Finally, firms

avoiding conviction increasingly are subject to monetary and non-monetary sanctions; the latter include mandates requiring firms to adopt government-approved compliance programs, corporate governance reforms, and corporate monitors. This chapter shows that each of these features is consistent with optimal corporate liability when liability is needed to induce both corporate prevention and policing.[7]

The chapter is organized as follows. Section 2 discusses the current structure of individual and corporate criminal liability for business crimes. It also presents empirical evidence on federal criminal enforcement, including evidence on the effect of the DOJ's leniency program on sanctions imposed on publicly-held firms. Section 3 summarizes the traditional economic model of corporate crime, which applies in a perfect world where the state can optimally deter crime without spending resources on enforcement. Section 4 examines optimal deterrence when the state cannot optimally deter wrongs without incurring marginal expenditures on enforcement, and shows that in this situation a state seeking to optimally deter crimes by large firms needs to induce corporate prevention and policing. Section 5 shows why, in this situation, the state generally must impose both individual and corporate liability. Section 6 examines the optimal structure of corporate criminal liability and shows that the government cannot rely on strict corporate liability to induce optimal corporate policing, but instead must employ a duty-based corporate criminal liability regime under which firms avoid liability if they self-report and fully cooperate. Section 7 explains why the state must couple duty-based liability for suboptimal policing with residual strict corporate liability, and considers the situations where this liability can be reduced or eliminated. Sections 6 and 7 also compare the existing enforcement regime with an optimal system. Section 8 considers briefly the choice between corporate criminal and civil liability.

2. CORPORATE CRIMINAL ENFORCEMENT IN THE UNITED STATES

The United States has an unusual approach to corporate criminal liability which differs from the approach taken by most other countries. The five most important features of the current system, particularly as applied to publicly-held firms, are: (1) joint individual and corporate liability for business crimes; (2) strict *de jure* corporate criminal and civil liability for crimes by employees committed in the scope of employment; (3) substantial corporate criminal penalties; (4) duty-based *de facto* criminal liability, under which firms can avoid criminal indictment or conviction by assisting federal enforcement efforts; and (5) prosecutors' use of deferred and non-prosecution agreements to impose monetary sanctions and structural reforms on firms that avoid conviction (DPAs and NPAs, respectively). This section describes these features of the US system and presents recent evidence on the federal corporate criminal enforcement practice.

2.1 *De Jure* Individual and Corporate Criminal Liability for Corporate Crimes

Under US law, both corporations and individual wrongdoers are potentially criminally liable for corporate crimes committed in the scope of employment. Any employee who commits a crime can be held criminally liable, even if the firm is also convicted.

Table 7.1 Organizations sentenced under the Organizational Sentencing Guidelines[8]

Fiscal year (Oct. 1–Sept. 30)	*2006*	*2007*	*2008*	*2009*
Total organizations convicted	217	197	199	177
Public firms	4	7	3	14
Closely-held/Private	135	127	58	35
Partnerships	7	4	28	41
Sole proprietorships	10	3	38	45
Other	9	6	7	6
Missing data on firm type	52	50	65	36

Moreover, individuals can be liable even if they commit the crime in their agency capacity in order to benefit the firm, or were following orders, as long as they had the requisite *mens rea*. Prior to the 1990s, prosecutors often focused on convicting corporations for corporate crimes while individuals escaped conviction (Cohen, (1991) at 268).[9] Today, the DOJ encourages prosecutors to focus on obtaining individual convictions.[10]

Corporations can be held strictly criminally liable for crimes by employees committed in the scope of employment through the doctrine of criminal *respondeat superior*.[11] The firm can be held criminally liable so long as the employee committed the crime in the scope of employment ostensibly to benefit the firm;[12] it also faces civil *respondeat superior* liability. The scope of corporate *respondeat superior* liability in the United States is very broad – significantly broader than the scope of corporate liability in other jurisdictions.[13] In the United States, corporations can be criminally liable for crimes committed by all of their employees in the scope of employment; liability is not limited to wrongs of senior management.[14] Moreover, firms can be held criminally liable even when senior management ordered employees not to commit any crimes.[15] Similarly, the fact that a firm adopted and maintained an effective compliance program, self-reported detected wrongdoing, and fully cooperated with federal authorities' efforts to investigate wrongdoing is not a defense to *de jure* corporate criminal liability.[16]

2.2 Corporate Sanctions

Corporations convicted of federal crimes can be subject to substantial penalties, including criminal fines, other criminal monetary sanctions (such as restitution and remediation), non-monetary criminal penalties, collateral penalties tied to conviction (including the loss of business licenses), civil and administrative sanctions imposed by the government, private civil liability, and, in some cases, reputational penalties.

2.2.1 Criminal fines

Corporations convicted of federal crimes face substantially larger monetary sanctions than they did 20 years ago. In the mid-1980s, average and median fines imposed on firms convicted of a federal crime were $108,000 and $10,000, respectively (Cohen (1996) at 401). By contrast, in 2006–2008, the average fine imposed on an organization convicted of a federal crime ranged from $5.7 to $17.3 million.

By contrast, the median organizational criminal fine is quite small (Table 7.2).[17]

Table 7.2 Organizations sentenced under the Organizational Sentencing Guidelines[18] *(dollars in thousands)*

Fiscal year (Oct. 1–Sept. 30)	*2006*	*2007*	*2008*	*2009*
Total organizations convicted	217	197	199	177
Guilty plea	91%	85%	91%	96%
Mean fine	$5890	$7329	$5736	$17,293
Median fine	$50	$132	$60	$119
Firm unable to pay entire fine	42%	33%	37%	43%
Compliance program ordered	20%	24%	6%	5%

Notes: Mean and median fines are based on the subset of convictions with non-zero fines for which data was available. The percentages are based on convictions where we have data.

Table 7.3 Sanctions imposed on corporations (public and private)[19] *(dollars in thousands)*

Fiscal year (Oct. 1–Sept. 30)	*2006*	*2007*	*2008*	*2009*
Total corporate convictions	139	134	61	49
Median fine	$138	$1145	$375	$1800
Corporation unable to pay entire fine	57 56%	50 55%	17 40%	14 34%

Notes: Median fines and percentages are based on the subset of convictions sentenced under the Organizational Guidelines with non-zero fines and where the data was available on fines and firm type.

Nevertheless, criminal fines often exceed the firm's ability to pay because most convicted corporations are small and/or thinly capitalized. Thus, more than one-third of all convicted organizations do not have sufficient assets to pay the entire criminal fine imposed. Most convicted *corporations* also are small.[20] Many (and in some years most) convicted corporations also are unable to pay the entire fine imposed (Table 7.3).

Publicly-held firms face substantially larger mean and median fines than those imposed on firms generally. Reforms adopted in the mid-1980s and early 1990s, including the Organizational Sentencing Guidelines, had a large impact on sanctions imposed on publicly-held firms. A comparison of fines imposed on publicly-held corporations immediately before and after (and under) the Organizational Sentencing Guidelines found that mean and median criminal fines imposed on publicly-held corporations went from $1.9 million and $633,000, respectively, in the years prior to the Organizational Guidelines to $19 million and $3 million, respectively, for firms sentenced under the Organizational Guidelines in the years immediately after their adoption (1996 dollars) (Alexander, Arlen, and Cohen 1999a). More recently, the Sentencing Commission's data suggests that average criminal fines imposed on publicly-held firms are lower than they were in the early 1990s (see Table 7.4). Yet this is the result of changes in enforcement practices. Today, publicly-held firms usually are sanctioned for employees' crimes without a formal criminal conviction through the use of DPAs and NPAs, as is discussed below. These sanctions are not included in the Sentencing Commission's data. Annual

Table 7.4 Publicly-held firms sentenced under the Organizational Sentencing Guidelines[21] *(dollars in thousands)*

Fiscal year (Oct. 1–Sept. 30)	*2006*	*2007*	*2008*	*2009*
Total convictions	4	7	3	14
Mean fine	$114	$29,564	$300	$9451
Median fine	$88	$1070	$300	$1500
Firm cannot pay entire fine	1	0	1	3
Compliance program ordered	33%	29%	33%	10%

Notes: Mean, median fines, and percentages are based on the subset of convictions with non-zero fines and data available on firm type and fines. Other percentages are based on convictions where we have data.

mean sanctions imposed by the DOJ through those agreements range from $1.1 million to $46 million (Arlen and Kahan 2012; see Table 7.5). These DOJ-imposed penalties provide a good measure of the expected "criminal" penalty for larger firms.

2.2.2 Additional criminal and civil sanctions

In addition to criminal fines, convicted corporations often are subject to additional penalties, including non-fine criminal penalties (such as restitution, remediation, and community service payments), government-imposed civil penalties, administrative sanctions, and state-imposed penalties. They also can face private civil liability. These additional penalties can be significant. For example, publicly-held firms sentenced after the adoption of the Organizational Sentencing Guidelines faced an average total sanction of more than $49 million. This average total sanction exceeded the mean criminal fine by more than $30 million (1996 dollars) (Alexander, Arlen, and Cohen (1999a) at 410).[22]

Convicted firms also can be subject to non-monetary sanctions.[23] Non-monetary penalties normally take the form of corporate probation, which prohibits the firm from committing another criminal violation and enhances the firm's sanctions if it does. Probation orders also can be used to impose additional non-monetary sanctions, such as a court-mandated compliance program or adverse publicity. Finally, convicted firms also may face serious collateral penalties, generally imposed through administrative regulations. These penalties include loss of licenses and orders precluding the firm from contracting with certain agencies, such as Health and Human Services or the Defense Department, for some period of time (Cohen (1996) at 409). For firms in some industries, the collateral penalties may be more damaging than the monetary penalties.

2.2.3 Reputational and market penalties

Convicted corporations also may suffer a reputational penalty that reduces firm value. The claim is that customers, lenders, shareholders, and other market participants may be less likely to deal with a "criminal" firm on favorable terms. The firm's stock price falls as a result of the market's anticipation that it will earn less revenue, have higher costs, and/or face a market that does not give full weight to any positive financial information (Karpoff and Lott 1993).

Three important features of the reputational penalty are worth noting. First, firms do not always bear a reputational penalty as a result of employee wrongdoing. Market

participants react negatively to some crimes but not others. Second, evidence suggests that the penalty is triggered when the market receives credible information that the crime occurred. Formal conviction does not appear to be necessary. Finally, while the initial market sanction appears to act as a kind of strict corporate liability for employee wrongdoing, it does appear that there are steps firms can take to reduce the reputational penalty.

Economic theory suggests that market participants should have a negative view of firms that commit some crimes but not others. Specifically, parties that contract with a firm can be expected to respond negatively to news that the firm committed a crime that harms them or other contracting parties, such as fraud. But contracting parties have little reason to fear harm from a firm that commits other types of wrongs, such as environmental harms that injure third parties (Karpoff and Lott 1993; Alexander 1999). Evidence appears to support this hypothesis. Studies find that corporate market value declines sharply on news that the government is investigating a firm for fraud, or has instituted proceeding against it, and that the decline exceeds the amount properly attributable to the sanctions imposed and also to the earnings restatement and/or loss of criminal profits (Karpoff and Lott 1993; see Karpoff *et al.* 2008a). By contrast, firms do not suffer a market sanction when they are either sanctioned for regulatory violations involving non-contracting third-parties (Karpoff and Lott 1993) or convicted of an environmental violation (Karpoff *et al.* 2005). Consistent with theory, the evidence also reveals that markets penalize firms for corporate crime even when the firm is not convicted. Market players respond negatively to credible evidence of fraud (such as evidence that a government agency is pursuing a civil enforcement action against the firm) even when the firm is not subject to a criminal investigation (Karpoff and Lott 1993; Alexander 1999; Karpoff *et al.* 2008a).

Although the evidence supports the hypothesis that firms with certain types of detected wrongdoing are subject to a market penalty, the magnitude of the penalty may be less than some studies have suggested. Empirical measures of reputational penalties tend to obtain the reputational penalty by comparing stock price movements following the announcement of a crime with the adjustment that would result from the financial penalties eventually imposed on the firm as well as the adjustment justified by the magnitude of the crime. This measure overstates the reputational sanction in several situations. First, it overstates the reputational penalty when the financial cost of the formal penalties imposed on the firm exceeds the costs of the monetary sanctions reported publicly. For example, firms indicted or convicted of certain crimes, such as fraud, face substantial collateral consequences, such as delicensing or an inability to contract with the federal government (Alexander 1999; Baer (2008a) at 1062 and n. 145). Any analysis that does not incorporate these sanctions into the expected government-imposed penalty will obtain an artificially high measure of the reputational penalty (Alexander 1999).

Beyond this, studies that measure the reputational penalty based on initial stock price reaction to news of the crime will over-estimate the reputational penalty in situations where information about one crime provides a strong signal that the firm either is in serious financial trouble or likely committed other crimes. For example, disclosed securities fraud often signals that the firm is in serious financial trouble since many securities frauds are committed by managers who fear they are in a last period because the firm is in financial trouble (Arlen and Carney 1992; see Karpoff *et al.* 2008a (finding that many

firms with financial misstatements delisted or went bankrupt during the enforcement period)). Given this, market participants should discount the share price by more than is justified by the magnitude of the disclosed fraud alone in anticipation of future bad news relating to past conduct (e.g., additional earnings restatements or additional criminal conduct). Under many reputational studies, this additional discount is categorized as a market penalty if the firm neither later restates earnings nor is found liable for another crime even though it might simply reflect uncertainty about the magnitude of the wrong at the time the news first reaches the market.

Finally, firms under investigation for certain crimes may experience a decline in future earnings – unrelated to any reputational penalty – as they abandon profitable activities, beyond those specifically under investigation, that are either illegal or potentially illegal. The anticipation of these lost profits should depress share price but these lost profits are not a reputational penalty.[24] Nevertheless, while the magnitude of the claimed market penalty likely exceeds the true market penalty for many firms, the market does penalize firms for committing certain types of crimes (e.g., fraud), especially if the crime is announced by a credible source, such as a government agency.

2.3 *De Facto* Scope of Corporate Criminal Liability

Although all firms are formally subject to strict *respondeat superior* liability for their employees' crimes, this rule is not the actual *de facto* regime that is applied in practice for some firms. In particular, while closely-held firms generally are held strictly criminally liable for employees' crimes (especially when the crime is committed by owner-managers), in practice larger firms (those characterized by a separation of ownership and day-to-day management) are not held strictly criminally liable for their employees' crimes. Instead, the *de facto* regime governing larger firms closely approximates a "duty-based" liability regime under which the government expects firms to assist in its enforcement efforts by monitoring for crime, self-reporting, and cooperating with the government's efforts to prosecute individual wrongdoers, and reserves criminal liability for firms that do not satisfy any of these duties (at least for certain crimes).[25]

In 1999, the DOJ formally adopted a policy governing corporate criminal liability under which corporations can avoid criminal liability for employees' crimes by engaging in particular types of good corporate conduct, such as self-reporting the wrong or cooperating with federal enforcement efforts. This change in the corporate liability regime was not adopted through an act of Congress. Instead, then-Deputy Attorney General Eric Holder initiated the new policy by issuing guidelines to federal prosecutors on when prosecutors should indict corporations for employees' crimes committed during the scope of employment. The Holder memo encouraged prosecutors to focus on convicting the individuals responsible for the crime.[26] The Holder memo also recognized that prosecutors can best detect and prosecute individuals if firms help detect, report, and investigate crimes and that firms may be reluctant to help prosecutors if they are held strictly liable for their employees' crimes.[27] Accordingly, the Holder memo encouraged prosecutors not to indict firms for employees' crimes if the firm had engaged in particular good acts, such as (1) adopting and maintaining a compliance program, (2) self-reporting the wrong promptly, and/or (3) fully cooperating with the federal investigation.[28] The Holder memo in effect replaced strict corporate liability with a quasi "duty-based" corporate liability

regime by encouraging prosecutors not to impose corporate criminal liability for firms that adopted an effective compliance program, promptly reported detected wrongdoing, and/or fully cooperated with federal authorities.[29]

The current policy governing corporate prosecution retains the core structure of the Holder memo, but introduced some modifications. In particular, the Holder memo treated the decision not to indict as, in effect, criminal amnesty for firms engaging in desired conduct. Firms that were not indicted thus generally left the prosecutors' jurisdiction,[30] although they could be, and often were, subject to government-imposed civil and administrative sanctions. This changed in 2003 when then-Deputy Attorney General Larry Thompson issued his memo to prosecutors governing corporate liability. The Thompson memo encouraged prosecutors to insist that firms adopt "effective" compliance programs. It also encouraged them to exert more authority over firms eligible for non-prosecution through the use of DPAs and NPAs, which require the firm to comply with a series of conditions to avoid indictment or prosecution.[31] From 2003–2010, federal prosecutors entered into at least 163 D/NPAs.

Standard conditions include payment of monetary penalties (e.g., to the DOJ, other federal authorities or state authorities) (Arlen and Kahan 2012), and corporate acceptance of a description of the wrong sufficient to establish the firm's criminal liability (Garrett 2007). Prosecutors also regularly use these agreements to impose non-monetary performance mandates on the firm. For example, most agreements require firms to adopt prosecutor-approved compliance programs (Garrett 2007; Arlen and Kahan 2012). Many also require firms to appoint an outside corporate monitor who reports to federal authorities (Garrett 2007; Khanna and Dickinson 2007). Some require firms to make other structural changes, including changes to the structure or composition of management or boards of directors, as well as to business practices (Garrett 2007; Arlen and Kahan 2012). These conditions transform corporate criminal liability into a form of duty-based monetary criminal liability coupled with prosecutorial authority to engage in firm-specific regulation of corporate practices relating to deterring and investigating corporate crime (Arlen and Kahan 2012).

The formal conditions governing leniency are quite broad and could potentially apply to all firms in many circumstances.[32] Conversations with prosecutors and the available evidence suggest that a firm's willingness to cooperate with federal prosecutors is the most important factor in determining whether a firm avoids prosecution. This hypothesis would predict that almost all firms with a DPA or NPA would have cooperated with authorities and that few firms convicted will have cooperated (since cooperating firms get leniency). If we examine the Sentencing Commission's data on convictions we see that few publicly-held firms sentenced under the Organizational Guidelines received credit for cooperation; convicted firms also rarely self-reported crime (Table 7.6).[33] By contrast, almost all firms that escape conviction by agreeing to a DPA or NPA cooperated with federal authorities (Arlen and Kahan 2012) (Table 7.5).

Theory and evidence also suggest that the DOJ's non-prosecution policy affects firms where the owners are not directly involved in day-to-day management (e.g., publicly-held firms) more than owner-managed closely-held firms. Firms generally are not eligible for non-prosecution unless they fully cooperate with federal authorities to bring the individuals responsible for the crime to justice. Often managers are potentially liable for the crime. In such cases, owner-managed closely-held firms can be expected to forgo the offer

Table 7.5 Federal criminal DPAs and NPAs[34] (dollars in millions)

Year	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*	*2010*
Total	5	9	14	20	39	19	19	38
Publicly-held	4	8	10	15	27	13	16	33
Mean DOJ Penalty	$6	$16	$12	$26	$8	$17	$1	$46
Mean total monetary penalty	$60	$116	$155	$137	$51	$14	$149	$126
Compliance program	3 (60%)	7 (80%)	9 (65%)	9 (45%)	23 (60%)	15 (80%)	11 (60%)	27 (70%)
Monitor mandated	3 (60%)	6 (65%)	7 (50%)	6 (25%)	13 (35%)	6 (30%)	2 (10%)	11 (30%)

Source: Arlen and Kahan 2012.

Table 7.6 Self-reporting and cooperation by corporations sentenced under the Organizational Sentencing Guidelines[35]

Fiscal year (Oct.–Sept.)	*2003*	*2004*	*2005*	*2006*	*2007*	*2008*	*2009*
Accept responsibility and cooperate (all corporations)	35	20	19	27	22	9	5
Self-reported crime	1	2	1	1	2	0	1
Public firms that accepted responsibility/cooperated	0	1	0	1	2	1	3
Public firm self-reporting	0	0	0	0	0	0	1

Notes: Based on a subset of the cases where the data was available.

of corporate leniency in order to protect their owner/managers. By contrast, publicly-held firms face strong pressure to delegate the leniency decision to outside directors, who in turn face strong pressure to cooperate in return for leniency, even when senior managers are implicated. Consistent with this hypothesis, we find that approximately 142 publicly-held firms were convicted in the five years following the adoption of the Organizational Guidelines (Alexander, Arlen, and Cohen (1999a) at 408). By contrast, since 2003, only a handful of publicly-held firms were convicted according to the Sentencing Commission's data (Table 7.4), yet 126 publicly-held firms were subject to DPAs and NPAs (Arlen and Kahan 2012). This suggests that when the DOJ sanctions a publicly-held firm for a corporate crime it now tends to do so through a DPA and NPA and closely-held owner-managed firms rarely avoid prosecution through these agreements.[36]

2.4 Summary

Accordingly, US corporate criminal enforcement policy has several core features: first, joint individual and corporate liability for employee crimes committed in the scope of employment; second, strict *respondeat superior* liability for owner-managed firms; third, "duty-based" corporate criminal liability (generally coupled with strict civil liability)

for larger non-owner managed firms; and fourth, prosecutors' use of DPAs and NPAs to impose firm-specific mandates on firms potentially eligible for conviction, including government-mandated compliance programs, corporate monitors, and reforms to the composition or structure of management or boards. A central question for the economic analysis of corporate crime is whether these features are consistent with optimal deterrence. This chapter considers each of these in turn.

3. LIABILITY FOR CORPORATE CRIME IN THE CLASSIC MODEL

This section presents the classic economic analysis of corporate liability for crime, focusing on the optimal individual and corporate liability in a "perfect world" in which (i) corporations and employees have no wealth constraints; (ii) sanctions can be costlessly imposed; (iii) all parties (including courts) are rational and fully informed; (iv) firms and employees engage in costless contracting; and (v) the probability that the government sanctions a committed crime is positive ($P > 0$) even if it does not spend marginal resources on enforcement.[37] We analyze this case, in which the state need not spend money on enforcement, to provide a foundation for the analysis of corporate liability under the more realistic assumption that optimal deterrence requires marginal enforcement expenditures.[38]

This section shows that, in this perfect world, the government can optimally deter corporate crime using a simple regime of strict criminal liability, with liability imposed on either individual wrongdoers or the firm. Accordingly, under the assumptions of this model, there is no economic justification for the current practice of imposing joint individual and corporate liability, composite duty-based corporate liability, and non-monetary structural reform, as these corporate sanctions are either unnecessary (in the former case) or welfare reducing (in the latter two).

3.1 Optimal Individual Deterrence in the Simple Model

Corporate crimes involve wrongdoing by an employee acting in the scope of employment. The crime may be intentional or accidental. For our purposes, an employee commits an intentional crime when he knowingly decides to commit a crime. By contrast, accidental crimes can occur when an employee engages in a lawful activity that creates a risk of a negative outcome (e.g., environmental harm) that has been criminalized, and where employee care-taking reduces the risk of a violation but does not eliminate it. In either case, both the employee and the firm can affect the probability that a crime occurs, the former doing so directly and the latter only indirectly. The central economic issue is to determine what individual and corporate liability rules provide optimal incentives to both individual wrongdoers and their corporate employers.

To address these issues, we begin by discussing the classic model of individual criminal liability when there is no corporate employer (and no need to spend additional resources to obtain a conviction). It is useful to start with this framework because economic theory implies that corporate crimes are really crimes committed by individuals who happen to be working for firms.[39] Thus, employees only commit intentional crimes when the benefit

of the crime exceeds the expected cost (Becker 1968). Similarly, they only allow accidental crimes to happen when the cost of the additional precautions needed to prevent the crime exceed the expected benefit of precaution (Segerson and Tietenberg 1992; Polinsky and Shavell 1993). This implies that to induce the optimal amount of crime (or its prevention) society needs to use the tools available to it to ensure that individual wrongdoers want to avoid suboptimal crimes.

Individual criminal liability is a particularly effective mechanism for deterring individuals from committing crimes. To determine the optimal level of individual criminal liability we must first determine the optimal level of crime. To do this, we first consider individual liability for intentional crimes through the use of a simple model.

3.1.1 Intentional crimes

The standard model of intentional crimes considers a perfectly informed, rational, risk-neutral individual who can commit a crime which gives him a benefit of b (which is also a social benefit), but imposes a social cost on society of H. In most cases, society is better off when the crime does not happen, $H > b$. Social welfare is maximized when individuals refrain from any crime where the social cost of the crime, H, exceeds the social benefit of the crime (given here by b). Society gains, however, when individuals commit crimes where the social benefit exceeds the social cost of the crime: $b > H$ (Becker 1968).[40]

Society cannot rely on individuals to make optimal decisions regarding crime because individuals act in their own self-interest. Thus, individuals will commit a crime whenever the private benefit of the crime, given by b, exceeds the expected cost of crime. Given this, society will be burdened by too many crimes if it does not impose criminal liability on wrongdoers. Individuals maximize their own welfare. Thus, absent liability, they will commit all crimes which provide them a positive benefit, without regard for the social cost ($b > 0$) (Becker 1968).

Society can deter socially harmful crimes by imposing a criminal fine, f, that ensures that wrongdoers face expected liability equal to the harm they cause, H. In this situation, wrongdoers (who only commit crimes when the benefit of crime exceeds the expected sanctions) will in turn only commit crimes when the benefit of crime exceeds the social cost of crime, H. Thus, they will eschew socially costly crimes ($b \leq H$), but will continue to commit crimes which benefit society ($b > H$). This implies that, when the state always detects and sanctions crime, the optimal fine, f^*, equals H. In general, the state cannot detect and sanction all crimes; instead the probability of crime being detected and sanctioned in given by, P, which is less than 1. In this case, each wrongdoer faces an expected sanction equal to Pf. To optimally deter crime, this expected sanction must equal the social cost of crime to society, H, which in turn implies that the optimal individual fine is given by:[41]

$$f^* = \frac{H}{P} \tag{1}$$

(Becker 1968).

The preceding discussion assumed that P is fixed. In reality, the probability of sanction is not fixed. Instead, the state can increase the probability that wrongs are detected and sanctioned by spending resources on enforcement, E: i.e., $P'(E) > 0$. The higher the probability of sanction, the lower the optimal fine. Questions thus arise about whether

the state should increase enforcement expenditures in order to lower the sanction. In a seminal article, Gary Becker showed that the state minimizes the cost of deterring crime by minimizing enforcement costs, as long as individuals are not wealth constrained, sanctioning costs are zero and individuals are risk neutral (Becker 1968). Given this, under these circumstances, it is efficient for the state to minimize costs by spending as little as possible on enforcement, $\underline{E}$, and then impose a fine equal to:

$$f^* = \frac{H}{P(\underline{E})} \tag{2}$$

In those situations where the state can still detect wrongs without any marginal enforcement expenditures ($E = 0$), the optimal sanction equals $H/P(0)$, which far exceeds the social cost of the crime, H (Becker 1968). So long as the state can feasibly impose this sanction, there is no need for anyone, the state or the firm, to spend resources on enforcement.

3.1.2 Unintentional crimes

The classic economic analysis of unintentional (or accidental) crimes yields similar results. To see this, consider the situation where each individual engages in an activity that may cause a crime that imposes social costs of H, the probability of which, $p(e)$, depends on the individual's level of effort to avoid the crime, e, which the individual undertakes at cost $c(e)$. In this situation, social welfare is maximized when individuals invest in the level of effort to prevent crime that minimizes the expected total social cost of crime and its prevention, as given by:[42]

$$c(e) + p(e)H \tag{3}$$

(Segerson and Tietenberg 1992; Polinsky and Shavell 1993). Absent liability, individuals will not invest optimally in crime prevention because they will minimize their own costs, $c(e)$, without considering the cost of crime to others. The state can induce optimal effort by holding risk neutral individuals strictly liable for crimes subject to an expected sanction equal to the social cost of crime. In this case, the expected sanction is given by $Pp(e)f$ and the expected social cost of crime is given by $p(e)H$. Accordingly, the optimal sanction f equals $H/P(E)$, just as in the case of intentional crimes (Polinsky and Shavell (1993) at 254; Kornhauser 1982; Sykes 1984).[43] Also, as in the case of intentional crimes, when individuals are risk neutral and can pay the optimal fine, monetary sanctions are costless to impose, and enforcement is costly, then the optimal enforcement strategy is to minimize enforcement while setting the fine equal to $H/P(0)$, where $P(0)$ is the probability of sanction when enforcement is minimized at $\underline{E}$ (Becker 1968).

3.2 Optimal Deterrence in the Simple Model when Wrongdoers Work for Firms

We now expand the model to consider corporate crime: defined as crimes committed by employees in the scope of their employment with some intent to benefit the firm. Corporate crimes differ from purely individual crimes because corporations affect the social costs and benefits of crime as potential inducers, or enforcers of crime and, in some cases, victims of corporate crimes.[44] Firms can induce crimes because they directly

control the compensation, promotion, and retention policies that often determine the degree to which employees benefit from crimes committed in the scope of employment. Firms are potential enforcers because they can intervene to help the government detect and investigate crime and identify and convict individual wrongdoers (Arlen 1994; Arlen and Kraakman 1997). Firms are potential victims of crime to the extent that crimes committed for an ostensible short-run gain in fact harm the firm in the long-run (as when managers use crime to hide their poor performance from shareholders) (Arlen and Carney 1992).

As this section shows, these differences can affect both the individual sanction and the optimal scope of corporate liability for employees' crimes. The extent to which these differences matter, however, depends on the type of firm: owner-managed or not. It also depends on whether we remain within the simple model. As we shall see, when we remain in the simple model, the firm's ability to spend resources to deter crime has no effect on the optimal individual sanction or the structure of liability, because the state optimally deters crime (at lowest cost) through individual liability alone, without any expenditure on enforcement or prevention. Corporate intervention and liability become essential to optimal deterrence only once we explore the more realistic situation where the state cannot optimally deter crime by imposing an individual sanction of $H/P(0)$.

3.2.1 Crimes by owner-managers of closely-held firms

Corporate crimes can be divided into two categories. The first are crimes where individual wrongdoers are truly acting on behalf of the firm, in that the individual committing (or orchestrating) the crime only benefits if the firm benefits, both in the short and long run, and also fully suffers any liability costs (including those imposed on the firm) proportionate with his share of the benefit. The second category is crimes committed for private benefit, often at the long-run expense of the firm.

Crimes by owner-managers of closely-held firms generally fall into the first category. Owner-managers tend to commit corporate crimes to increase the firm's profits and benefit from the crime only through the effect of the crime on the value of their shares. In this situation, the social benefit of crime is given by the benefit of the crime to the firm, b. The individual wrongdoer's private benefit of crime equals his equity share in the firm's benefit, as given by αb, where α is the portion of the firm that he owns.

In this situation, as before, the state maximizes social welfare by using liability to ensure that wrongdoers do not benefit from socially costly crimes. The state should impose a sanction of H/P on the individual wrongdoer whenever private contracting between owners would ensure that he commits a crime whenever the firm as a whole benefits. When there is no contracting over benefits between owners, then optimal expected individual sanction equals αH, which implies that the optimal fine equals $\alpha H/P$.

The state also can use corporate liability to optimally deter crime. In this context, corporate liability directly deters crimes by eliminating the benefit to the firm of socially costs crimes. This directly eliminates the benefit to individual wrongdoers of committing a socially costly crime. Accordingly, in this context, the state can optimally deter crime by imposing strict *respondeat superior* liability on the firm for crimes by its owner-managers, accompanied by a fine equal to H/P. This ensures that neither the firm nor its owners benefit from any crime for which the social benefit of crime is less than the social

cost of the crime. Observe that, in this context, there is no need for joint individual and corporate liability, because either form of liability is sufficient to eliminate the wrongdoer's incentive to commit socially harmful crimes.[45]

Moreover, in the case of crimes by controlling owner-managers, the state need not adjust the corporate liability rule to induce firms to help detect or investigate crimes (even if enforcement is needed) because controlling owner-managers will not help convict themselves. Moreover, in this context, we need not consider the firm's ability to reduce incentives to commit the crime because the state can use corporate or individual liability to eliminate the expected benefit of socially costly crimes.

3.2.2 Crimes by employees of publicly-held firms

The story is quite different when crimes are committed by employees who are not controlling owners and managers of the firm, as is the case with managers and other employees of publicly-held firms. In this situation, the private benefit of crime often differs from both the corporate benefit of crime (if any) and the social benefit of crime. In addition, in this context firms can materially affect wrongdoers' expected benefit of crime and the expected cost of liability (a consideration we explore in full in section 4).

When crimes are committed by employees of publicly-held firms, the private benefit of crime to individual wrongdoers rarely equals the social benefit of the crime. Nor is it equal (or proportionately equal) to the benefit of crime to the firm, given by *B*. Corporate crimes generally directly benefit the firm (at least in the short run), for example through higher revenues, lower costs, or higher share price (a benefit we denote, *B*). This benefit is the social benefit of crime. Yet individual wrongdoers (including managers) of publicly-held firms do not obtain a substantial portion of this benefit directly because they rarely own a substantial share of the firm. Instead, individual wrongdoers expect to benefit indirectly, through the increase in compensation, job security, or job status resulting from actions that benefit the firm. These benefits need not be proportionately tied to the firm's benefit. Indeed, wrongdoers can obtain a long-run expected benefit from crime even when the firm does not. For example, managers benefit from crimes that enable them to avert termination by making the firm appear financially healthier than it is, even when the firm itself does not obtain a long-run expected benefit once one takes account of (1) the cost to shareholders of mistakenly retaining managers that they should have fired, and (2) the expected cost of the reputational penalty that the firm will bear should the wrong be detected (Arlen and Carney 1992; see Karpoff *et al.* 2008a).[46]

In this situation, we must adjust the individual sanction. A sanction that ensures that an individual wrongdoer expects to bear the full social cost of crime will not optimally deter wrongdoing when the individual benefit of crime does not equal the social benefit of crime. Thus, we must adjust the sanction to account for the difference between the social benefit of crime and the private benefit of crime. In addition, we may need to adjust the social cost of crime to reflect any net costs imposed by the crime on the firm, H_c. The state need not do this, however, if the firm sanctions its employees privately. This implies that the state should impose a sanction equal to $(H + H_c)/P$, unless the firm sanctions its employees.[47]

Corporate crime by publicly-held firms also differs from owner-manager crime and purely individual crimes because they involve firms that can, and will, intervene to deter

crime, either by reducing the benefit to wrongdoers of crime or increasing its expected cost, or both. Corporations can directly affect the benefit to employees of corporate crime because most non-owner employees only benefit from corporate crimes indirectly through the expectation that they will obtain increased compensation, promotion, or job retention – expected benefits which are in the firm's control (Arlen and Kraakman 1997; see Arlen and Carney 1992). Corporations also can affect the direct benefit of crime through measures that make crimes more difficult (costly) to commit either *ex ante* or *ex post* (for example, by sanctioning wrongful employees). These interventions that reduce the net benefit of crime (without affecting the probability of sanction) are referred to here as "prevention measures" (Arlen and Kraakman 1997; see Kornhauser 1982; Sykes 1984; Polinsky and Shavell 1993). Corporations also can increase the expected sanctions associated with crime by helping the government detect and sanction the wrong (Arlen 1994; Arlen and Kraakman 1997). These interventions, referred to here as "policing" measures, include (i) *ex ante* monitoring to increase the probability of detection; (ii) *ex post* investigation of suspected wrongdoing; (iii) self-reporting of wrongs to government authorities; and (iv) fully cooperating with the government's efforts to obtain the information needed to identify and convict the individuals responsible for the wrong (Arlen 1994; Arlen and Kraakman 1997). Corporations also can affect the expected social cost of crime, H, through their control over their own activity levels (Polinsky and Shavell 1993; Arlen and Kraakman 1997), as well as their control over the scope of authority granted to their employees.

Although firms can intervene in many ways to deter corporate crime, most of these interventions are not part of an optimal enforcement strategy as long as we remain within the simple model. In the simple model, the state can optimally deter individual wrongdoers, at minimal cost, by holding individual wrongdoers liable for any crimes they commit, subject to an expected penalty (Pf) equal to the harm caused (H). The state gains nothing from inducing the firm to spend unnecessary resources to reduce the benefit of crime or increase the probability of sanction. Indeed, any such corporate intervention only increases the social cost of deterrence relative to a world in which the state relies entirely on individual liability. In this model, corporate intervention is only welfare enhancing when the state does not impose individual criminal liability, and even then, the state only benefits from one form of corporate prevention: the imposition by the firm of sanctions on individuals who commit corporate crime. Accordingly, in this model, the state can optimally deter crime through *either* individual liability or optimal corporate sanctions provided that the social costs of sanctioning are the same whether sanctions are imposed by the state or the firm (see Kornhauser 1982; Sykes 1984; Polinsky and Shavell 1993).

In some cases, a state seeking to maximize social welfare must be concerned about one additional aspect of corporate behavior: corporate activity levels. In some situations (e.g., accidental crimes), corporate operations give rise to a positive risk of welfare-reducing crime even when individuals face optimal sanctions. In many of these situations, the expected social cost of these "unavoidable" crimes is higher the greater the firm's activity level. For example, the expected cost of environmental harm often is greater the more a firm produces because increased production generally increases the probability of an accidental violation and/or the magnitude of the violation. In this situation, a state seeking to maximize social welfare must not only optimally deter crime,

but also must ensure that firms' activity levels are optimal. Thus, firms should engage in the level of activity that would maximize their profits if they internalized all the social benefits and bore all the social costs (including expected crime costs) of their activities. Moreover, when the state imposes corporate liability, it can rely on strict *respondeat superior* liability (Polinsky and Shavell 1993).

Accordingly, in the simple model, the economic analysis of corporate crime is very similar to the economic analysis of purely individual crime. In both cases, the core goal is to induce individuals to refrain from all social welfare reducing crimes, and the state can optimally deter through individual liability alone. Moreover, in this context, corporate liability is needed only when the state does not impose individual liability, and then only to induce the firm to act as a perfect substitute for the state by sanctioning its own employees. The only genuine divergence between the individual and corporate context in the simple model is that in the corporate context the state also needs to ensure that firms' activity levels are optimal whenever corporate activity levels affect the expected social cost of crime.

3.3 Is Corporate Liability Necessary: The Neutrality Principle

This section considers whether there is any justification for joint individual and corporate liability assuming that we remain in the simple model. Specifically, we consider whether a state needs to use both individual and corporate liability to achieve its two core efficiency goals under the simple model: imposing optimal sanctions on individual wrongdoers and inducing optimal corporate activity levels. We show that in this context, the state can optimally deter crime through either individual or corporate liability and thus does not need to employ joint individual liability and corporate liability. Moreover, as long as the social cost of public and private sanctions are the same, the state is indifferent (neutral) between individual and corporate liability (Kornhauser 1982; Sykes 1984; Segerson and Tietenberg 1992; Polinsky and Shavell 1993).[48] This result (that the state can optimally deter through either individual or corporate liability) is known as the neutrality principle.

The neutrality principle can be demonstrated using the following simple analysis. Consider a firm that has one employee who makes one unit of the product each time he works. The product is valued by consumers and sold in a competitive market. The benefit to society of the last unit produced equals the marginal consumer's willingness to pay for the product. Although the product does benefit society, its production imposes a social cost in the form of a risk of a crime, which imposes a social cost of H. The probability of the accident, $p(e)$, depends on the employee's effort to avoid the accident, given by e; effort is unobservable. The cost to the employee of this effort is given by $c(e)$. Given that the market is competitive, the product price equals the marginal cost to the firm of making the product, which includes both the direct cost of crime prevention, wages, and the firm's expected liability (if any).

Social welfare is maximized when (i) the employee takes the level of effort that minimizes the social cost of crime and its prevention, $c(e) + p(e)H$ and (ii) the firm only produces a unit when the total social expected cost of the product, as given here by $c(e) + p(e)H$, equals or exceeds the benefit to the marginal consumer of that product. We know that employees will take due care if they bear the full social cost of crime. Corporate

activity level (production levels) is efficient when firms bear the full social marginal cost of each unit produced, including costs associated with crime and its prevention, $c(e) + p(e)H$. Activity levels are optimal in this circumstance because firms will incorporate these costs into product prices. The firm thus will be unable to sell the product if its social cost of production (including crime costs) exceeds consumers' willingness to pay (see Shavell, 1980).

We now show that the state can both optimally deter crime and induce optimal activity levels through either individual or corporate liability, so long as the sanction equals H/P, where P is the (exogenously given) probability that wrongs are detected and sanctioned (Kornhauser 1982; Sykes 1984; Segerson and Tietenberg 1992; Polinsky and Shavell 1993).[49] Consider first individual liability. We know from section 3.1.2 that if the state imposes individual liability (with f = H/P), potential wrongdoers will invest optimally in effort to avert the crime because they will invest in the effort that minimizes $c(e) + p(e)Pf = c(e) + p(e)H$. Optimal individual liability also induces optimal activity levels because firms internalize the expected cost of accidental crime and its prevention, even when only employees are held liable, because each firm must pay wages that compensate employees for their expected effort costs and their expected liability (when effort is optimal). Wages must compensate employees for these costs because both effort and liability for accidental crime (when effort is optimal) constitute costs to the employee of working for the firm. Thus, even when only individuals are liable, firms bear the expected cost of both effort and crime through their obligation to pay wages equal to their employees' expected costs when they act optimally: $c(e^*) + p(e^*)H$. Accordingly, activity levels are optimal (Kornhauser 1982; Sykes 1984; Segerson and Tietenberg 1992; Polinsky and Shavell 1993).[50]

Now consider corporate liability. Corporate liability also can induce optimal activity levels and optimal effort by employees if the firm faces a sanction of H/P. Under corporate liability, firms bear the cost of expected effort and criminal liability *ex ante* through wages (as we will see). Firms operating in competitive markets will seek to minimize these costs in order to reduce the product price. To do this, the firm will intervene to induce its employees to invest optimally in effort. It can do this by imposing a sanction equal to H/P on each employee who commits a crime (section 3.1.2). Thus, corporate liability induces optimal employee effort. Corporate liability also will induce optimal activity levels, even when firms shift the *ex post* sanction to employees. As with individual liability, firms must pay wages to each employee equal to the employee's expected effort costs and his expected liability when they invest optimally in effort. Thus, the firm internalizes both expected effort and expected liability through its wages payments (Kornhauser 1982; Sykes 1984; Segerson and Tietenberg 1992; Polinsky and Shavell 1993). Thus, both corporate and individual liability optimally deter crime and induce optimal activity levels in the simple model.

3.4 Summary

The simple model yields several conclusions relevant to the debate over corporate liability, at least in those situations where the assumptions of this model apply. First, in this context, the state can have simple goals. Social welfare is maximized when the state seeks to optimally deter individual wrongdoers and induce optimal corporate activity levels.

The state need not induce firms to deter crime through policing or prevention because the state can optimally deter crime using individual liability. Second, the state can both optimally deter wrongdoing and induce optimal activity levels using either individual liability or corporate liability, so long as the expected sanction equals the social cost of the crime. The two forms of liability are complete substitutes in this model. Moreover, the state need not, and indeed should not, impose both forms of liability if doing so entails any additional cost. Finally, should the state employ corporate liability, it can use strict *respondeat superior* liability, as this induces both optimal sanctioning by firms and optimal activity levels.

This analysis might seem to suggest that US law governing corporate enforcement is inefficient because we currently impose both individual and corporate liability and use duty-based liability intended to induce corporate policing. This simple analysis does not in fact undermine the validity of the current system because it only applies when the core assumptions of the simple model are satisfied. Specifically (1) the state and the firm each can impose optimal sanctions on wrongdoers at zero marginal cost because employees have unlimited wealth and $P(\underline{E})$ is positive; (2) firms and employees contract costlessly; (3) labor markets ensure that firms bear their employees' expected costs of working for the firm (including liability); and (4) all parties are perfectly informed about the expected costs and benefits of each other's actions. In practice, these assumptions are rarely, if ever, satisfied in the corporate context. Of particular importance, for any important corporate crime, employees rarely have sufficient assets to pay the sanction that is optimal when neither the state nor the firm incurs marginal enforcement costs, $H/P(0)$. This dramatically changes the analysis because once the state cannot optimally deter crimes unless resources are spent to deter crime, a state seeking to maximize social welfare must use the most cost-effective tools available to it. These tools tend to include the prevention and policing measures under firms' control. Accordingly, this seemingly minor modification transforms the state's goals from inducing optimal behavior by individual wrongdoers and optimal corporate activity levels, to include the additional goals of inducing optimal corporate prevention and optimal corporate policing. As we shall see, satisfying these goals materially alters the analysis of optimal corporate liability, rendering invalid the conclusions that joint liability is unnecessary, that the neutrality rule holds, and that the state can use strict corporate liability to deter crime (Arlen 1994; Arlen and Kraakman 1997).

4. CORPORATE LIABILITY BEYOND THE SIMPLE MODEL

In most cases, employees have limited assets and thus the state cannot optimally deter crime unless someone, the state and/or the firm, spends resources on prevention and enforcement. Often, the firm is the least cost provider of prevention, detection, and initial investigation. This expands the goals of liability and in turn alters its optimal structure.

This section identifies the purposes of corporate liability in those situations when optimal deterrence requires expenditures on prevention and enforcement. It explains why firms must play a greater role in deterring crime when employees have limited assets and, in turn, why this expands the goals of criminal liability. Section 5 shows that, in this

situation the neutrality principle, does not hold. Section 6 shows that strict *respondeat superior* corporate liability is inefficient (Arlen and Kraakman 1997; see Arlen 1994).

4.1 When Does Optimal Deterrence Require Prevention and Policing?

Corporations do not have a vital deterrence role to play in the simple model because this model assumes that the state can optimally deter crime at zero marginal cost by imposing liability directly on individual wrongdoers, as long as the sanction equals $H/P(0)$, where $P(0)$ is the probability that a wrongdoer will be detected and sanctioned when no one undertakes any *ex ante* or *ex post* policing (Becker 1968). The state gains nothing from inducing corporate prevention or policing.

In the real world, however, states cannot costlessly optimally deter corporate crime through monetary sanctions alone. Individuals wrongdoers usually do not have sufficient wealth to pay the fine that is optimal when enforcement costs are minimized, $f = H/P(0)$.[51] Individuals committing corporate crimes are particularly likely to be unable to pay the optimal negligible-enforcement fine because the social cost of corporate crimes tends to be high and the probability of sanction (absent enforcement) is very low. The social cost of organizational crimes tends to be high because individuals committing crimes through large firms often reach (and harm) far more people than they would if acting alone.[52] The low-enforcement probability of sanction is low (and thus the sanction multiplier, $1/P$, is high) because corporate crimes often are hard to detect and prove. Many corporate crimes (such as frauds) do not cause obvious harms and thus can remain undetected for years, even indefinitely.[53] In addition, absent expenditures on enforcement, the state often cannot determine which individuals were responsible for the crime because often so many people are directly or indirectly involved in committing the harmful act (Arlen and Kraakman 1997; Buell 2006). Moreover, the state often cannot establish the requisite *mens rea* absent expenditures to investigate the crime. Thus, absent enforcement, the probability of sanction often will be so small that the optimal zero-enforcement sanction, $H/P(0)$, is infeasible. Thus, the state cannot optimally deter corporate crime through individual liability with a monetary sanction equal to $H/P(0)$ and a probability of sanction equal to $P(0)$.

It might seem that the state can optimally use the threat of imprisonment to remedy the asset insufficiency problem, without resorting to prevention or policing expenditures. This is not generally the case. First, when the optimal low-enforcement sanction, $H/P(0)$, is very high, the state may be unable to impose sufficient imprisonment to ensure that the sanction equals $H/P(0)$. For, even when the state can impose life in prison, the duration of this penalty is limited by the defendant's age and health. The maximum duration of imprisonment for many corporate crimes is lower than many street crimes because corporate wrongdoers tend to be substantially older.[54]

Beyond this, even when the state can use prison to impose a sanction of $H/P(0)$, it often is not optimal for it to do so. First, this approach creates marginal deterrence concerns if the state employs long prison terms for non-violent offenses (with a low probability of sanction), leaving it little room for sanction enhancement for violent offences. Second, imprisonment is very costly; the costs can be especially high in corporate crime cases. The social costs of prison include the direct cost of incarceration, the cost of removing an otherwise productive individual from society, and the *ex ante* social costs of threatening

risk averse individuals with imprisonment for crimes they cannot be confident of avoiding. Imprisonment (and the low-enforcement/high sanction strategy in general) imposes particularly large social costs when employees are risk averse and face a risk of being found criminally liable even when they behave optimally (as can occur when employees can violate the law unintentionally).[55] In this case, the *threat* of criminal liability imposes costs on *each* risk averse employee even if he never commits a crime. Thus, the larger the sanction imposed on wrongdoers, the larger the social cost associated with deterrence. The state often can lower the social cost of enforcement, without sacrificing deterrence, by lowering the magnitude of the monetary sanction while using other mechanisms to deter crime (Polinsky and Shavell 1979; Polinsky and Shavell 1992). These alternative measures include "prevention measures" that reduce the benefit of crime or increase the direct cost of its commission and "policing measures" that increase the expected cost of crime by increasing the likelihood that wrongdoing is detected and sanctioned (Arlen and Kraakman 1997).[56]

4.2 How Corporations Can Deter Crime

In the case of corporate crime, firms often are the most cost-effective providers of many (if not most) forms of prevention and policing (at least in the context of wrongdoing by non-owner/managers) (Arlen and Kraakman 1997; see Arlen 1994). Indeed, corporations are unusually well positioned to help deter corporate crime because they can affect (1) the benefit individuals obtain from a crime, *b,* as well as the *ex ante* direct costs of committing the crime (Arlen and Kraakman 1997; see Kraakman 1986); (2) the likelihood that the crime will be detected and the wrongdoer sanctioned for his crimes, $P(E)$ (Arlen 1994; Arlen and Kraakman 1997); and (3) the magnitude of the sanction imposed, f (Kornhauser 1982; Sykes 1984; Polinsky and Shavell 1993; Arlen and Kraakman 1997).[57] Moreover, firms often can intervene to prevent crime and enhance its probability of sanction more effectively than can the state acting alone (Arlen and Kraakman 1997). Because these claims for corporate intervention rest on the assertion that corporate prevention and policing often is more cost-effective than pure state enforcement measures, we now consider these mechanisms in more detail, focusing on prevention and policing by larger firms.[58]

4.2.1 Corporate prevention

Corporations can deter crime by reducing the direct benefit to employees of committing crime or making crimes more costly to commit.

Corporations can make it harder for its employees to commit crimes through policies that increase the number of people the perpetrator would need to involve to accomplish the crime. Firms also can increase the cost of crime by creating a genuine corporate culture of legal compliance that imposes either direct psychological costs on those who commit crimes or increase the likelihood that fellow employees will report suspected wrongdoing (Tyler and Blader (2005) at 1153; Conley and O'Barr 1997).

Corporations can reduce the expected benefit of corporate crime by altering their compensation, promotion, and retention policies. As previously explained, the direct effect of corporate crimes generally falls on the firm, which benefits (at least in the short run) from the effect of crime on corporate profits, sales or reported earnings. Non-owner employees

derive little direct gain from this effect. Instead, employees benefit from crime through the operation of corporate employment and retention policies, which may confer an increase in compensation or job security when the firm (or the employee's division) has good results. Of course, this reveals that firms directly influence the degree to which their employees can expect to benefit from crime. In turn, firms can reduce the employees' expected benefits of corporate crime by altering their compensation, promotion, and tenure policies (Arlen and Kraakman 1997).

For example, many corporate crimes (such as securities fraud) confer apparent short-run benefits on the firm, and yet harm the firm in the long run (Macey 1991; Arlen and Carney 1992; Arlen and Kraakman 1997). Compensation policies that tie employee rewards to short-run results encourage such crimes because employees can benefit from committing such crimes (and can leave before the firm suffers any long-run costs). By contrast, firms that tie employee welfare to long-run performance measures deter such crimes that impose a long-run cost on the firm, even if there is a short-run benefit.[59] When it is socially costly to invest in the resources needed to detect and sanction corporate crime, it often will be more socially cost-effective for the firm to restructure its compensation policies to reduce employees' incentives to commit crime, rather than to rely entirely on *ex post* sanctions (Arlen and Kraakman 1997).

In some cases, firms' pursuit of profit is sufficient to induce firms to structure employee compensation optimally. Yet in many other situations, firms may benefit from using high-powered short-run compensation policies to increase employee productivity, even when this is suboptimal because it creates an excessive risk of corporate crime.[60] Corporate liability can deter this practice by forcing firms to internalize the social costs of crime, thereby giving them an incentive to deter crime.

Given that firms generally have better information than the state on the expected social costs and benefits of prevention,[61] the state often can most effectively induce optimal corporate prevention by using strict corporate liability (with optimal sanctions) to ensure that firms bear the full expected cost of their employees' crimes. Firms subject to this liability will adopt the prevention measures that minimize both their expected costs and total social costs. This liability need not (and probably should not) be criminal (Arlen and Kraakman 1997) (see section 7).

4.2.2 Corporate policing

Corporations also can deter crime by implementing policing measures that increase the probability that the government detects crimes, identifies the individual wrongdoers, and obtains sufficient evidence to sanction them. Policing deters by increasing the expected cost to individuals of government sanctions for crime, *Pf* (Arlen 1994).[62] Firms can intervene in a variety of ways to increase the probability that wrongdoers are criminally sanctioned. They can adopt *ex ante* monitoring programs (compliance programs) designed to both detect crime and collect evidence to obtain a conviction (Arlen 1994; Arlen and Kraakman 1997). They also can intervene *ex post*, after a wrong is committed, to investigate suspicious activities, report detected crimes, and cooperate with the government effort to identify and convict the individual wrongdoers (Arlen and Kraakman 1997).

The social costs of enforcement often are lower when firms assist the state by undertaking corporate policing because firms generally are the lowest marginal cost providers of many types of *ex ante* and *ex post* policing. Large corporations can monitor for crime

more effectively and at lower marginal cost than can the state. Firms, in the daily course of operations, already collect and assess massive amounts of information regarding their own operations. As much of its existing information can be used to detect wrongdoing, the marginal cost to the firm of adopting an optimal compliance program often is lower than the marginal cost to the state of a similar program (Arlen (1994) at 839–40). Corporations also are better able to analyze the information obtained because they have expertise concerning their own operations. They can use this expertise to identify areas of opportunity for crime and distinguish normal activities from activities associated with criminal conduct.[63]

In addition, firms often can intervene *ex post* to investigate suspected wrongdoing more cost-effectively than can the state on its own.[64] First, whereas the state must spend resources to determine who to interview, firms know their own chains of authority and have better information on the character of their employees (Arlen and Kraakman (1997) at 691–93, 699; see Buell 2007).[65] Thus, they can more cost-effectively determine with whom to speak and can better identify the individuals responsible for crimes. Firms also know their own operations and are better able to distinguish legitimate from illegitimate activities. Finally, firms often can obtain evidence of wrongdoing (including documents, emails, and employee interviews) at lower cost than the state because they know where to look, what to look for, and can access information and employees (e.g., foreign-based employees) more effectively than can the state (Arlen and Kraakman 1997).

Accordingly, unlike in the context of purely individual crimes where it generally is appropriate to treat the state as the primary enforcement authority, in the corporate crime context optimal deterrence generally requires the intervention of a second enforcer in addition to the state – the firm. Thus, when we move beyond the simple model, we see that in order to optimally deter corporate crime the state must not only attempt to deter individual wrongdoers directly and induce optimal corporate prevention, it also must induce firms to adopt optimal policing measures, in the form of corporate monitoring, investigation, self-reporting and cooperation with authorities to identify and prosecute the individuals responsible for the crime. To achieve this goal, the state needs to induce firms to implement all policing measures where the social cost of the policing is less than or equal to the social benefit as measured by the benefit to society of the wrongs deterred by the corporate policing (or threat thereof) (Arlen and Kraakman 1997).[66] As we will see, this goal alters the optimal structure of corporate liability (Arlen 1994).

4.2.3 Corporate sanctioning

Although we see that corporations can deter through ways not relevant in the simple model, firms also can deter crime by sanctioning individuals caught committing crimes. While corporate monetary sanctions often are simply substitutes for government-imposed sanctions, corporations can impose sanctions, such as termination, that differ in their consequences or cost from the sanctions the government imposes.[67] Moreover, firms may be able to impose higher expected sanctions on wealth-constrained employees than can the state because firms can sanction more frequently and thus with higher probability. The government can only sanction employee neglect that results in a crime. By contrast, firms may be able to sanction employees for conduct (such as suboptimal effort) that increases the probability of a crime, even if the crime does not occur. Where

employee neglect occurs more frequently than crime, corporate sanctions can increase deterrence because the expected sanction the firm can impose exceeds the expected sanction the government can impose when the feasible sanction is limited by employee wealth constraints (Kornhauser 1982; Sykes 1984; see Arlen and MacLeod 2005a).[68]

4.3 Optimal Deterrence of Corporate Crime

Accordingly, optimal deterrence of corporate crimes differs significantly from optimal deterrence of individual crimes once we move beyond the simple model. In the case of purely individual crimes, criminal liability serves a simple goal: provide optimal incentives to individuals to not commit crimes. By contrast, in the corporate context, the state must not only provide optimal incentives to potential individual wrongdoers, it also must provide optimal incentives to their corporate employers. Specifically, the state generally needs to use corporate liability to induce firms to undertake optimal prevention and policing because corporate prevention and policing generally is more cost-effective than the substitute measures the state would employ. This implies that the state must not only impose optimal individual sanctions and invest optimally in enforcement, it also must ensure that firms have optimal incentives to prevent wrongdoing, undertake optimal policing measures (monitoring, self-reporting, and cooperation), and optimally impose private sanctions (Arlen and Kraakman 1997). Activity levels also should be optimal (Polinsky and Shavell 1993; Arlen and Kraakman 1997).

To induce optimal corporate prevention the state often must impose liability that ensures that firms bear the expected social cost of their employees' crimes (see section 7). To induce optimal policing, the state must ensure that firms are better off when they police optimally than when they do not. Thus, firms must face higher expected costs if they do *not* police optimally than if they do, even though policing increases the probability that wrongdoing will be detected and sanctioned (Arlen and Kraakman 1997).[69] We now turn to the issue of whether the state must use corporate liability to achieve these goals or whether instead the state can continue to rely on individual liability to optimally deter corporate crime, as the neutrality principle would predict.

5. OPTIMALITY OF JOINT INDIVIDUAL AND CORPORATE LIABILITY

This section considers the question of whether the state needs to use both corporate and individual liability, assuming that the assumptions of the simple model do not hold, and that the state cannot optimally deter crime through low-enforcement/high-sanction individual liability ($f = H/P(0)$). We assume instead that, as in section 4, the state needs to spend resources on enforcement and induce firms to undertake optimal prevention and policing. This section shows that once we move beyond the simple model, the neutrality principle generally does not hold. To optimally deter crime the state generally needs to impose liability on both individuals and corporations. Thus, this section provides an economic justification for the current US practice of imposing liability for corporate crimes on both individuals and their corporate employers. Throughout this section, we assume that the employees do not have sufficient assets to pay the optimal low-enforcement-cost

fine of $H/P(0)$ and that optimal deterrence requires corporate expenditures on prevention and policing.

5.1 Need for Corporate Liability

Under the simple model, we saw that the state can induce firms and individuals to behave optimally through *either* individual liability or corporate liability. There is no need to use joint liability (Kornhauser 1982; Sykes 1984; Polinsky and Shavell 1993 (replicating this result in the corporate crime context); Arlen and MacLeod 2005a (extending the analysis to authority relationships)). Corporate liability is not needed under the simple model of accidental crime, even when the state needs to provide firms incentives to deter wrongdoing because, in this framework, individual liability can ensure that firms bear the full social cost of crime. This is because employees bear the full social cost of crime and firms' wage payments equal their employees' expected liability.

Individual liability only provides firms with optimal incentives if two conditions are met: (1) individual liability forces employees to bear the full expected cost of their crimes, even if firms under-invest in policing,[70] and (2) firms expect to bear the full expected cost of their employees' expected liability through *ex ante* wage payments (Kornhauser 1982; Sykes 1984; Polinsky and Shavell 1993). When we look beyond the simple model of accidental crimes to the context facing most large firms we see that these conditions rarely hold.

5.1.1 Employee asset insufficiency

The state cannot rely on individual liability to provide firms with optimal incentives unless employees face expected sanctions equal to the social cost of crime even when firms under-invest in policing. This implies that the state cannot rely entirely on individual liability to induce optimal corporate behavior if employees do not have sufficient assets to pay a fine of $H/P(E^*_g,0)$, where $P(E^*_g,0)$ is the probability of sanction when the state engages in optimal enforcement but the firm does not undertake any policing.[71]

Under pure individual liability, firms may not behave optimally when their employees have insufficient assets to pay the optimal low-enforcement fine because firms only have incentives to deter crime to the extent that they bear the social cost of crime through wage payments. Since firms only need to compensate employees for liability costs their employees expect to incur, firms' expected wage payments will be less than the social cost of crime when employees cannot pay the optimal sanction when the firm under-invests in policing. Given this, the private benefit to the firm of increasing its policing to the optimal level is less than the social benefit of the crimes deterred. Similarly, in this situation, the firm also does not obtain the full social benefit of prevention either. Thus, the firm will not invest optimally in deterrence measures such as prevention and policing (Arlen 1994; Arlen and Kraakman 1997).[72] Activity levels also will be inefficient (Polinsky and Shavell 1993; Arlen and Kraakman 1997).

Note that if employees do not have sufficient assets to pay the optimal sanction when firms do not police optimally, the state may be unable to rely on individual liability to induce optimal firm behavior even when employees have sufficient assets to bear the optimal sanction when firms police optimally. To see this, consider the situation where employee wealth just equals the optimal sanction when firms police optimally

($H/P(E^*)$). Now assume that optimal policing triples the probability of sanction compared to the situation where the firm does not police, and that employees subject to optimal policing exert optimal effort to deter the crime (thereby decreasing the probability of crime to $p(e^*)$). The social benefit of policing is the resulting decrease in the probability of crime multiplied by the social cost of crime, H. Yet the private benefit to the firm of policing is less than this. The firm does not obtain the full social benefit of the crimes deterred because its expected costs per crime would have been less than H had it not policed optimally (because employees are asset constrained). Moreover, the firm incurs a private cost of policing in this situation: when the firm increases its employees' expected sanction per crime by increasing the probability of sanction, it also increases the wages it must pay them for each crime committed. Accordingly, the firm has suboptimal incentives to police. Moreover, when the magnitude of the per-crime expected sanction enhancement effect exceeds the deterrence benefit to the firm of the crimes deterred by policing, a firm subject to only individual liability may not police at all. As a result, neither employees nor the firm bear optimal expected sanctions and both behave suboptimally.

In these situations, the state cannot optimally deter crime through individual liability. In order to provide firms with optimal incentives to undertake prevention and policing, the state must impose liability directly on firms (Arlen and Kraakman 1997; see Kornhauser 1982; Sykes 1984). Thus, states seeking to optimally deter most significant corporate crimes need to impose liability directly on firms, since these crimes generally impose high social costs (relative to agents' wealth) and have a low probability of sanction (absent corporate intervention).

5.1.2 Intentional wrongdoing by employees of large firms

In addition, the state cannot rely on individual liability to provide firms with optimal incentives if firms do not internalize their employees' expected liability costs through wage payments or otherwise.[73] This implies that corporate liability may be needed for willful misconduct, when the standard of liability is sufficiently clear that employees can costlessly avoid the risk of liability by not intentionally committing a crime. Firms will not compensate employees for liability associated with these crimes because employees can avoid the risk of liability by not doing the illegal act (which we assume that the firm would prefer not be committed). Given this, these crimes are not an intrinsic cost of working for the firm and employees will be willing to work for the firm even if they do not receive any wage compensation for expected liability for acts that they should not commit (and can costlessly avoid). Corporations will only compensate employees for the risk of liability for willful crimes resulting from court error. Thus, whenever optimal deterrence of intentional crimes requires corporate intervention,[74] the state will often need to impose liability directly on firms.

5.1.3 Summary

Accordingly, we see that corporate liability is an essential component of an optimal deterrence regime whenever employees are asset constrained. Corporate liability is particularly important in the case of intentional wrongdoing. Moreover, we see that in these situations corporate liability is needed even when firms face the same constraints as the state in sanctioning employees because it is needed to induce firms to take other actions,

such as prevention and policing, which reduce employees' expected benefit or increase their expected cost of wrongdoing.[75]

5.2 When is Individual Liability Necessary?

This section examines whether individual liability is needed even when corporations are liable for their employees' crimes. Contrary to the neutrality result of the simple model, this part shows that individual liability often is needed to supplement corporate liability because the state often cannot rely on firms to impose optimal sanctions on employees. Thus, to ensure that individuals face optimal sanctions (given wealth constraints) the state needs to impose liability on them directly. Pure corporate liability can be inadequate in the case of both closely-held firms and publicly-held firms.

Corporate liability will not induce firms to impose optimal sanctions on individual wrongdoers when firms do not bear the full social cost of crime because the optimal sanction exceeds the firm's ability to pay (Kraakman 1984). This problem is particularly likely to arise with closely-held firms and smaller publicly-held firms. Large publicly-held firms may fail to impose optimal sanctions on wrongdoers because of agency costs, contracting inefficiencies, and other problems. Firms also cannot impose optimal sanctions when the optimal individual sanction exceeds the maximum feasible sanction that the firm can impose; individual liability will be superior when the state can impose a higher sanction than the firm. When any of these problems is present, the state can improve social welfare by imposing individual liability in addition to corporate liability.

5.2.1 Corporate asset insufficiency

Corporate liability provides optimal individual deterrence when firms bear optimal liability and firms (and those who control them) have optimal incentives to sanction individual wrongdoers. Corporate liability will not induce firms to impose optimal sanctions on individuals if firms have (or can be made to have) insufficient assets to pay the optimal corporate sanction. Corporate asset insufficiency is an important consideration given that many organizations (33–43%) and corporations (34–56%) are unable to pay the criminal fines imposed on them (see Tables 7.2 and 7.3), even though current fines tend to be less than optimal.[76] Many more firms could be rendered unable to pay optimal fines if owners were so inclined, as many would be under pure corporate liability (see below).

Under corporate liability, firms use sanctions to induce employees to invest in the level of effort, e, that minimizes effort costs plus the firm's expected liability costs, $c(e) + p(e)PF$, where here F is the feasible sanction. If the firm is asset constrained, then PF is less than the social cost of crime, H. In this case, the firm does not want employees to invest in optimal effort (given a crime cost of H) but would prefer that they invest in suboptimal effort. The firm can achieve this by imposing a suboptimal sanction on employees (Kornhauser 1982; Kraakman 1984; Sykes 1984). Accordingly, in this situation the state must impose liability directly on individuals.

Individual liability serves another purpose beyond simply ensuring that individual wrongdoers bear optimal sanctions when firms do not have sufficient assets to pay the optimal sanction: it enhances the deterrent effect of corporate liability by eliminating the incentives produced by pure corporate liability to under-capitalize the firm (Kraakman

1984). Under pure corporate liability, firms are harmed by crime only to the extent that they can pay the sanction imposed. As a result, under pure corporate liability, corporate owners (especially of closely-held firms)[77] can reduce the firm's expected costs by keeping their firms thinly capitalized. Individual liability reduces firms' incentives to engage in strategic judgment proofing. First, once employees are directly liable for wrongs, firms bear the expected cost of crime through *ex ante* wage payments; owners must ensure that the firm can make these payments on an ongoing basis and cannot avoid this portion of its expected liability through strategic judgment proofing. Second, the threat of individual liability also deters managers from engaging in strategic judgment proofing if managers risk being held criminally liable and managers' expected costs are lower if the firm is solvent than if it is not. This can occur when the firm pays its employees' litigation costs if it is solvent. In such situations, managers facing a threat of individual liability will endeavor to keep the firm solvent in order to reduce their own expected liability (Kraakman 1984; see Kornhauser 1982). Accordingly, joint individual and corporate liability reduces the benefit of strategic judgment proofing, thereby enhancing the effectiveness of corporate liability (Kraakman 1984; see Arlen and MacLeod 2005b).

5.2.2 Agency costs and other causes of corporate sanction insufficiency

Individual liability often is essential when firms cannot be relied upon to impose sanctions on individual wrongdoers because of agency costs and other problems.

Agency costs are particularly likely to result in firms imposing suboptimal sanctions when the corporation is characterized by a separation of ownership and control, and corporate managers either committed or were complicit in the crime. Absent active shareholder oversight, these managers may be able to ensure that the board decides not to pursue sanctions against individual wrongdoers (Arlen and Kahan 2012; see also Arlen and Carney 1992 (discussing securities fraud)).[78] Individual liability can be used to remedy this agency cost problem by ensuring that individual wrongdoers are sanctioned. It also can facilitate shareholder oversight of managers and the board by publicly identifying those responsible for the crime.

Corporations also may fail to impose optimal sanctions because they are unable to do so. This argues for individual liability when the state can impose higher sanctions than the firm. Corporations cannot optimally deter crime (when the state can) when the optimal sanction includes non-monetary sanctions such as imprisonment because employees have limited assets. The state also can impose a larger monetary penalty than firms can because individuals can use bankruptcy laws to obtain protection from corporate sanctions. In this situation, the state can increase social welfare by using individual liability (Segerson and Tietenberg 1992; Polinsky and Shavell 1993).

5.3 Summary

Accordingly, we see that, contrary to the predictions of the simple model, optimal deterrence of corporate crime generally requires the use of *both* individual and corporate liability. Corporate liability is needed when employees cannot pay the sanction needed to optimally deter crime when firms do not police optimally. The argument for corporate liability is strongest in the case of intentional crimes because individual liability will not provide firms with any incentive to deter those intentional crimes that employees can

costlessly avoid. Individual liability is needed to ensure that individual wrongdoers face the full consequences of their crimes in those situations where the firm cannot be relied upon to optimally sanction employees. Suboptimal sanctioning may result from corporate asset insufficiency, agency costs, or other problems. Smaller firms are especially likely to have insufficient assets to pay the optimal fine (Tables 7.2 and 7.3); larger ones are likely to be plagued by agency costs. Thus, we see that, when we move outside the simple model, economic analysis provides support for the current US practice of imposing potential criminal liability on both individuals and their corporate employers.

6. WHY CORPORATE CRIMINAL LIABILITY MUST BE DUTY-BASED

Sections 4 and 5 show that in order to optimally deter corporate crime, the state generally needs firms to undertake optimal prevention and policing (*ex ante* and *ex post*) (Arlen 1994; Arlen and Kraakman 1997). Firm activity levels also should be reduced to reflect the social cost of crime when crime is one of the social costs of producing the product (Segerson and Tietenberg 1992; Polinsky and Shavell 1993; Arlen and Kraakman 1997). Moreover, the state generally needs to impose corporate liability for employees' crimes in order to achieve these goals.

This section addresses the question of how the state should structure corporate liability to induce optimal corporate policing and prevention. More specifically, can the state achieve these goals by following the prescription of the simple model that we impose strict *respondeat superior* liability? We also examine whether corporate liability is unnecessary when market forces ensure that firms bear the full social cost of employee misconduct, as the simple model predicts.

This section begins our analysis by focusing on how to structure corporate liability to induce optimal corporate policing. It shows that the state cannot optimally rely on strict corporate vicarious liability with a fixed sanction[79] to induce both optimal policing and optimal prevention (Arlen 1994; Arlen and Kraakman 1997). When strict corporate liability is structured to induce optimal prevention it fails to induce optimal policing because firms that police optimally do not obtain a benefit from policing equal to the benefit to society of the crimes deterred (the deterrence effect). The benefit to a firm of policing is lower than this because, under *respondeat superior*, firms that police bear an inefficient cost in the form of enhanced expected liability for the crimes that the firm does not deter (Arlen 1994). Indeed, strict corporate liability fails to induce optimal corporate investment in both *ex ante* monitoring (Arlen 1994) and *ex post* policing (Arlen and Kraakman 1997).

The section shows that the state can induce optimal *ex ante* and *ex post* policing by subjecting firms to a "duty-based" corporate liability regime. Under this regime, firms that engage in optimal policing are not held criminally liable for their employees' crimes;[80] by contrast, firms that fail to police optimally are subject to a criminal sanction that ensures that firms face higher expected costs when they do not police optimally, even though failing to police reduces the probability that wrongdoing is detected and sanctioned (Arlen and Kraakman 1997). Moreover, this section shows that the state must employ duty-based liability to induce optimal policing even when firms are hit with

a market sanction when crime is detected. Indeed, under plausible assumptions, the possibility of a market sanction enhances the need for duty-based liability because market sanctions can dissuade firms from undertaking efforts to detect and report crime in the absence of duty-based corporate liability. This section thus provides an economic justification for the current US practice of enabling firms to avoid formal criminal conviction by engaging in *ex post* policing (self-reporting and cooperating).[81] This section also notes reforms that could improve the current system.

6.1 Why Strict Corporate Liability Cannot Induce Optimal Corporate Policing

This part shows that the state cannot use strict corporate liability with a fixed fine to induce firms to engage optimally in either *ex ante* monitoring (Arlen 1994) or *ex post* policing (such as self-reporting and cooperation) (Arlen and Kraakman 1997) when the state also uses corporate liability to induce optimal corporate prevention. To establish this, we assume that the state sets the corporate fine equal to H/P^*, where P^* is the probability of sanction when policing is optimal. This is the sanction needed to induce optimal prevention if policing is efficient.[82] We now consider whether this sanction also can induce an equilibrium in which firms do policing optimally.

6.1.1 *Ex ante* monitoring

In order to show that there does not exist a single fixed fine that enables the state to induce both optimal policing and optimal prevention when firms are held strictly liable for all employee crimes (through *respondeat superior*), we show that firms will not engage in optimal policing if required to pay a sanction of H/P^* for each crime that the state is able to detect and sanction.

Corporate policing (such as monitoring) deters crimes by increasing the probability that crimes will be detected, thereby increasing wrongdoers' expected sanction (Pf). Corporate policing is optimal when firms invest in any policing measure for which the direct social cost of policing (as measured by the cost to the firm of the investment in policing) is less than or equal to the social benefit of policing, as measured by the social benefit of the crimes deterred. This social benefit equals the social cost of crime (H) multiplied by the expected number of crimes deterred.

It might at first seem that firms held liable through *respondeat superior* liability (and subject to a fine equal to the expected cost of crime when policing is optimal (H/P^*)) should police optimally. After all, firms already bear the direct cost of policing and this sanction ensures that firms obtain a benefit of H from each crime deterred (the deterrence benefit). This conclusion is not correct. Strict *respondeat superior* liability is not efficient because the benefit to the firm of policing is less than the social benefit of the crimes deterred. This is because, under *respondeat superior* liability, policing is a double-edged sword. It deters some crimes, to the firm's benefit. But it also increases the probability of sanction for the crimes that are committed. This increases the firm's expected liability for these crimes (the liability enhancement effect) (Arlen 1994; Arlen and Kraakman 1997). Accordingly, when strict liability imposes the fixed sanction needed to induce optimal prevention, the firm's marginal benefit of policing is less than the social benefit of policing. Instead, it equals the benefit to society of each crime deterred (H) *minus* the cost to the firm of the resulting increase in its expected liability

for all undeterred crimes. As a result, firms have too little incentive to invest in policing. Indeed, if the liability enhancement penalty of policing exceeds the deterrence benefit, strict corporate liability actually deters policing rather than encouraging it (Arlen 1994; see Arlen and Kraakman 1997).

Formal analysis We can prove this formally. Consider a firm that employs risk neutral agents to do an act that presents them with an opportunity to commit an intentional crime. For simplicity, we assume that the crime confers a benefit of b on the wrongdoer that varies across employees and is unobservable *ex ante*. Let $z(b)$ be the probability density function of gains among individuals. The benefit of the crime can be verified *ex post*. The crime imposes a social cost of H. It is assumed that, for all employees, the benefit of the crime is less than the social cost and thus the socially optimal level of crime is zero. We assume that labor markets are competitive; we also assume that the worker's reservation utility is normalized to zero. Thus, the firm pays each worker a wage of w equal to zero.[83]

The government imposes both individual and corporate liability for crimes. Under individual liability, each wrongdoer pays a sanction s if he commits a crime. The sanction is imposed with probability $P(M)$, where M is the corporation's investment in observable *ex ante* monitoring, which the firm undertakes at cost $c(M)$. It is assumed that $P'(M) > 0$, $P''(M) < 0$, $c'(M) > 0$ and $c''(M) > 0$. We assume that employees do not have sufficient wealth to pay the optimal sanction and that the maximum feasible individual sanction (given wealth constraints and other limitations) is $\hat{s}$, which is less than $b/P(M^*)$ for some agents, where M^* is the optimal level of corporate monitoring.[84]

The corporate sanction is given by F.[85] We also assume that the state wants to induce optimal activity levels and prevention, and thus imposes a fine equal to the social cost of crime divided by the expected probability of sanction. We can determine whether strict liability can induce optimal prevention, activity levels, and policing by assessing whether a firm subject to a fixed sanction of $H/P(M^*) = H/P^*$ (as is needed to induce optimal prevention) engages in optimal policing, as would be necessary for an efficient equilibrium to exist.

We first consider the socially optimal level of policing (assuming that individual employees are wealth constrained). Employees commit the crime whenever their gain, b, exceeds the expected feasible sanction, $P(M)\hat{s} < H$. This implies that social welfare is given by:[86]

$$\int_{P(M)\hat{s}}^{\infty} -Hz(b)d(b) - c(M) \tag{4}$$

where the integral shows the social cost of crimes committed by employees who derive a benefit of crime that exceeds the expected feasible sanction.

We can determine the optimal level of policing by differentiating with respect to M. We find that corporate monitoring is optimal when the firm invests in monitoring up to the point where the social marginal cost of monitoring, $c'(M)$, equals the marginal benefit to society of the additional crimes deterred:

$$c'(M) = H\, dZ(P(M)\hat{s})/dM \tag{5}$$

where H is the social benefit of each crime deterred, and $dZ(P(M)\hat{s})/dM$ is the expected number of crimes deterred by the marginal increase in monitoring.[87]

We now consider whether the firm will invest optimally in policing if it is held strictly liable for its employees' crimes, subject to a sanction of $H/P(M^*)$ for each crime committed.[88] Firms subject to this liability rule face expected costs of:[89]

$$\int_{P(M)\hat{s}}^{\infty} -P(M)Fz(b)d(b) - c(M) \tag{6}$$

Differentiating with respect to M, we see that the firm will select the level of monitoring at which the marginal cost of monitoring equals the marginal benefit of monitoring:

$$c'(M) = [P(M)F]dZ(P(M)\hat{s})/dM - \int_{P(M)\hat{s}}^{\infty} [P'(M)F]z(b)d(b) \tag{7}$$

Examining Equation (7), it is readily apparent that the firm will not invest optimally in monitoring when subject to the sanction that induces optimal prevention, $F = H/P(M^*)$. In this case, Equation (7) implies *respondeat superior* induces optimal policing only if Equation (8) is satisfied when the firm selects monitoring of M^*:

$$c'(M) = HdZ(P(M)\hat{s})/dM - \int_{P(M)\hat{s}}^{\infty} [P'(M)F]z(b)d(b) \tag{8}$$

Yet Equation (5) implies that this condition cannot be met. When the firm polices optimally, then the marginal cost of policing equals the deterrent effect of policing, $H\,dZ(P(M)\hat{s})/dM$. Thus, *respondeat superior* will not induce optimal policing unless the liability enhancement effect, as given by:

$$\int_{P(M)\hat{s}}^{\infty} [P'(M^*)F]z(b)d(b) \tag{9}$$

is equal to zero. Whenever it is positive, *respondeat superior* liability with a fixed fine designed to induce optimal prevention induces suboptimal policing. When the sanction is set to induce optimal prevention, the firm's private benefit of policing is less than the benefit to society of the crimes deterred and the firm will not police optimally. Indeed, if the liability enhancement effect exceeds the deterrent effect, strict corporate liability will cause the firm to refrain from policing altogether (Arlen 1994; Arlen and Kraakman 1997).

6.1.2 Post-crime policing and the credibility problem

To optimally deter crime, the state also has to induce optimal post-crime corporate policing, including *ex post* investigation of suspicious activities, reporting activities to the

authorities, and cooperating with the federal investigation. It cannot do so using strict *respondeat superior* liability with a fixed fine.

Strict corporate liability provides insufficient *ex ante* incentives for firms to want to commit to optimal policing *ex post* (should a crime be detected) for the same reason given above: the benefit to firms of policing is muted by the liability enhancement effect. Yet beyond this, strict liability also undermines firms' incentives to undertake policing *ex post*, should they actually detect a crime. This undermines the deterrent effect of *ex post* policing because, even if firms announce *ex ante* that they will aggressively pursue employees who commit crimes, employees will not believe them because they know that should the firm actually detect a crime, it will not want to report it and cooperate (Arlen and Kraakman 1997).

Consider now whether strict corporate liability with a fine of H/P^* will induce optimal investigation, reporting, or cooperation. Social welfare is maximized when policing minimizes the *ex ante* costs of crime and its enforcement. This implies that firms should invest in *ex post* policing until the marginal cost of policing equals the expected marginal benefit of *ex post* policing. Because, by definition, *ex post* policing occurs after employees decide whether to commit crimes, the social benefit of *ex post* policing is best measured by the benefit to society of the crimes deterred by employees' *expectations* concerning *ex post* policing in a Perfect Bayesian Equilibrium where these expectations are correct.

Strict corporate liability induces optimal corporate policing only if it ensures that firms both want to announce that they will engage in optimal policing *ex ante* (before the crime is detected) and want to actually implement the announced optimal policing measures *ex post*, once the crime is detected. Strict corporate liability does not satisfy the latter condition: firms held liable for their employees' crimes do not benefit optimally from actually undertaking the promised *ex post* policing.[90]

Society benefits from firms' investment in *ex post* policing to the extent that firms can credibly commit to report and cooperate with respect to detected crimes. When employees believe this threat, the threat deters crimes by increasing employees' expected sanction. Yet under *respondeat superior*, this threat is not credible. The firm's threat to report detected wrongdoing and cooperate is only credible if, after employees have heard (and responded to) the threat, a firm which detects a crime is better off reporting it to authorities, even when employees already expect it to do so (a Perfect Bayesian Equilibrium). But under *respondeat superior* liability this condition is not met. If a Perfect Bayesian Equilibrium exists with self-reporting, then in equilibrium employees expect firms to self-report. Given this, firms that detect wrongdoing obtain no added deterrence benefit by self-reporting, as employees already expect them to do so. Given this, a firm that self-reports wrongdoing that otherwise might go undetected simply increases its expected liability costs, without any deterrence benefit. As a result, firms will not self-report. Thus, such an equilibrium does not exist. Given this, firms cannot benefit from the *threat* to report wrongdoing (and cooperate) because rational employees will not believe that threat (Arlen and Kraakman 1997). Thus under *respondeat superior* there does not exist an equilibrium in which (i) employees expect firms to report detected wrongs and optimally cooperate, and (ii) firms actually report detected wrongs and optimally cooperate. Thus, strict corporate liability creates a credibility problem for firms by undermining their ability to deter crimes by threatening to report them and cooperate. Thus, traditional strict liability cannot be relied upon to induce an equilibrium where firms can

credibly and accurately threaten to engage in optimal post-crime policing (Arlen and Kraakman 1997).[91]

6.1.3 Summary

Thus, we see that the state cannot rely on traditional strict corporate liability to achieve two of the four central goals of optimal corporate deterrence: optimal corporate investment in *ex ante* policing (monitoring) and *ex post* policing (self-reporting, investigation, and cooperation). This suggests that the DOJ was correct to embrace a non-prosecution policy that represents an abandonment of strict *respondeat superior* corporate criminal liability, at least in those cases where optimal deterrence requires firms to monitor, investigate, self-report, and fully cooperate with government efforts to identify and convict. In situations where corporate liability cannot be relied upon to induce corporate policing (such as where owner/managers of closely-held firms are potentially criminally responsible for the wrong) then the government need not induce corporate policing. Thus, it can rely on strict corporate criminal liability, as it seems the DOJ may be doing currently with closely-held firms (see section 2).

6.2 Optimal Corporate Liability for Failure to Police Optimally

Although the state cannot use *respondeat superior* to induce optimal policing and prevention, it can induce optimal policing through "duty-based" sanctions that grant substantial mitigation (and, in some cases, exemption from corporate criminal liability) to firms that undertake optimal policing (specifically, that monitor optimally, self-report detected wrongdoing, and/or fully cooperate with the government's enforcement efforts). Specifically, in order to induce optimal behavior with respect to all forms of policing, the state needs to employ a multi-tiered duty-based sanction regime because firms make policing decisions sequentially (with monitoring preceding self-reporting, which in turn precedes cooperation). The state needs to ensure that, at each stage in the policing process, the firm is better off responding optimally (even if it failed to respond optimally in the prior period). This is particularly important with publicly-held firms because the firm might have failed to respond optimally initially because of agency costs, but later might be able to police optimally if detection of the crime produced a change in management. Thus, instead of using a single duty-based sanction that predicates mitigation on satisfaction of all policing duties, it is more effective to have a multi-tiered regime, where the firm benefits from acting optimally with respect to each independent type of policing: monitoring, self-reporting, and cooperation.

To induce optimal monitoring, the state should impose a duty to monitor optimally enforced by a penalty imposed on firms if they fail to monitor optimally, which firms can avoid by monitoring optimally (Arlen 1994). Firms with detected wrongdoing should face an additional special sanction if, *but only if*, they fail to self-report detected wrongdoing, and an additional, and very serious, sanction if, *but only if*, they fail to cooperate fully with the government's enforcement efforts. Firms that engage in optimal *ex ante* and *ex post* policing should avoid all of these sanctions for failure to satisfy their policing duties. If these sanctions are structured correctly, they will ensure that the firm wants to police optimally, even though policing increases the probability that wrongdoing is sanctioned (Arlen and Kraakman 1997).

This section demonstrates that multi-tiered liability can induce optimal policing – both *ex ante* monitoring and *ex post* reporting and cooperation. It also determines the optimal sanction for each duty violation. To do so, assumptions must be made about the magnitude of the residual sanction imposed on firms that satisfy all their policing duties by monitoring, investigating, self-reporting, and cooperating optimally. Consistent with the analysis in section 7, we assume that firms that satisfy all their policing duties nevertheless pay a monetary penalty (herein referred to as "residual liability") structured to induce optimal prevention. It is assumed that the residual sanction for any given crime magnitude is fixed *ex ante* and is given by *S*. It is implicitly assumed that this residual sanction is civil.

6.2.1 Optimal duty-based criminal sanction for suboptimal *ex post* policing

In order to ensure that firms police optimally *ex post* the state must implement a duty-based sanction such that any firm that detects a potential crime has higher expected profits if it engages in optimal *ex post* policing (including reporting) than if it does not, even though *ex post* policing may dramatically increase the probability that the crime is detected and the firm is sanctioned. Moreover, the state needs to ensure that an equilibrium can exist where (1) employees expect the firm to investigate, self-report, and cooperate should it detect a crime, and (2) each firm that detects a crime is better off if it self-reports and cooperates than if it does not, even when these actions guarantee that the firm will be sanctioned and provides no additional deterrence benefit (as employees already assume that the firm reports all detected wrongs).[92]

The state cannot ensure that firms benefit from self-reporting and cooperation unless firms that do not self-report and cooperate face a much higher sanction than those that do. The additional penalty imposed for failing to report and cooperate must ensure that the firm's *expected* liability for detected wrongdoing is lower if it self-reports and cooperates, even when post-crime policing guarantees that the firm will be sanctioned for a crime that the government otherwise might not detect (Arlen and Kraakman 1997). One effective way to do this is to offer firms leniency from criminal sanction if they report and cooperate, leaving them subject to a non-criminal penalty of *S* (*S* could be civil or imposed by DOJ through a DPA or NPA). By contrast, firms that do not report detected wrongdoing (or refuse to cooperate) should be subject to a criminal sanction (in addition to the civil penalty, *S*). The criminal penalty, *F*, should be sufficiently high that the firms' expected (probability-adjusted) sanction is lower if they report and cooperate than if they do not. When *ex post* policing is relatively low cost, the state can satisfy this condition by setting the fine imposed on firms that do not report and cooperate greater than or equal to the increase in the firm's expected residual sanction (*S*) if it self-reports and cooperates divided by the probability of sanction if it does not (Arlen and Kraakman 1997).

To see this, assume that the firm pays both fines and civil sanctions if it failed to report and cooperate ($F + S$), but only pays a sanction of *S* if it engages in optimal *ex post* policing. Assume further that the probability that the firm will be sanctioned if it does not cooperate is only 20% (yielding an expected sanction of $.2(S + F)$), and that the firm will definitely be sanctioned if it does report and cooperate (but will only have to pay *S*). In this case, the firm only benefits from *ex post* policing if the total sanction imposed on firms that do not report and cooperate ($S + F$) is at least five times higher than the sanction imposed on those who do. This implies that $F \geq (.8/.2)S = 4S$. By ensuring that firms

are better off *ex post* if they report and cooperate, the criminal fine promotes optimal deterrence by enabling firms to make credible *ex ante* threats to self-report, investigate, and cooperate (Arlen and Kraakman 1997).[93]

Formal analysis The preceding simple example assumed that post-crime policing is costless. We now derive more precise conditions for the optimal sanction assuming that the cost of cooperation is given by $C(R)$, where R is the level of *ex post* corporate policing (specifically, self-reporting and cooperation). We assume that the probability that the government detects and sanctions a crime that the firm has detected is given by $\Pi(M, R)$, where M is the level of *ex ante* corporate policing. As with the example above, it is assumed that reporting and cooperation guarantees that the state can sanction the firm. Given these assumptions, a firm with detected wrongdoing faces expected cost of $\Pi(M, 0)(F + S)$ if it does not self-report and cooperate and expected costs of $C(R) + S$ if it does. The firm will engage in optimal *ex post* policing and cooperation only if the criminal fine equals or exceeds the F such that:[94]

$$C(R^*) + S < \prod(M, 0)(S + F) \tag{10}$$

This implies that the optimal duty-based criminal fine equals or exceeds the F such that:

$$F = \frac{C(R^*) + (1 - \prod(M, 0))S}{\prod(M, 0)} \tag{11}$$

where $(1 - \Pi(M, 0))$ is the increase in the probability that the firm bears the residual sanction that results if the firm self-reports and cooperates.

Observe that the magnitude of the optimal fine needed to induce self-reporting and cooperation is higher the more the state benefits from these activities. Specifically, the optimal fine is larger the smaller is the probability that the state can detect the crime and sanction the firm if it does not report and cooperate.[95] The fine also is larger the greater the residual penalty imposed on firms that do report and cooperate. This suggests that when the government benefits enormously from corporate self-reporting and cooperation, and firms suffer enormously when criminal sanctions are imposed, then the state may need to reserve the threat of formal criminal conviction for firms that fail to self-report and cooperate (coupled with severe collateral consequences), and use civil penalties to induce optimal policing and prevention.

Effect of individual liability on the optimal corporate fine The question now arises whether the state should adjust the corporate fine downwards when it also sanctions individual wrongdoers for the crime, as is implied by analysis under the simple model (Shavell 1997). In the framework of the simple model, the corporate sanction should be reduced to reflect individual sanctions because feasible individual sanctions are perfect substitutes for corporate sanctions: both impose costs on firms, with firms bearing the cost of individual liability through wage payments (Shavell 1997).

The conclusion that the state should reduce the corporate fine to reflect individual fines does not hold in the case of corporate criminal penalties imposed on firms for failure to engage in optimal *ex post* policing with respect to detected crime. This is because, *ex*

post when a wrong is detected, the firm's expected costs and benefits of reporting are unaffected by individual sanctions (actual or expected). This is because firms do not bear the cost of individual sanctions directly, but instead bear these costs, *ex ante*, through their obligation to pay wages equal to employees' expected liability. Employee wage compensation is determined by contracts executed *ex ante*, based on employees' expectations about the firm's post-contractual actions (such as *ex post* policing); wages are not affected by the actions the firm actually takes post-contract.[96] Thus, *ex post* when the firm decides whether to report, it only considers the effect of policing on its own expected liability (and policing costs).[97] Accordingly, the optimal duty-based criminal penalty for failure to report and cooperate is independent of any individual sanctions imposed for corporate crime.[98]

6.2.2 Duty-based sanction for failure to monitor optimally

To optimally deter corporate crime, the state also needs to impose a duty-based sanction that induces optimal *ex ante* policing (monitoring). Specifically, the state needs to impose a sufficiently large sanction on firms that fail to adopt an effective compliance program to ensure that each firm's expected costs are lower if it monitors optimally than if it does not (Arlen 1994; Arlen and Kraakman 1997).

The state can induce optimal monitoring by imposing a duty-based sanction for failure to monitor, D, that ensures that the firm's expected costs are lower if it monitors optimally than if it does not – even though monitoring imposes direct costs on the firm, $c(M)$, and also increases the firms' expected civil liability for any crimes that its employees do commit. Thus, assuming that employees can observe monitoring *ex ante* and that the firm expects to report all detected wrongs (since the state otherwise will impose a fine of F) we see that the state can induce optimal monitoring by imposing a sanction on firms that fail to monitor, given by D, such that the firm's expected costs are lower if it monitors optimally than if it does not:[99]

$$\int_{P(m,R^*)\hat{s}}^{\infty} (P(m, R^*)(S + D) + \rho(m)C(R^*))\, z(b)d(b) + c(m) > \int_{P(M^*,R^*)\hat{s}}^{\infty} (P(M^*, R^*)(S) + \rho(M^*)C(R^*))\, z(b)d(b) + c(M^*) \quad (12)$$

where m denotes suboptimal monitoring, $\rho(M)$ is the probability that the firm detects a wrong if it monitors, and $C(R)$ is the cost to the firm of any *ex post* policing resulting from this detection. To facilitate analysis, we assume here that post-crime policing is costless and that any firm that fails to monitor optimally does not do so at all. This implies that D must be such that:

$$\int_{P(0)\hat{s}}^{\infty} (P(0)(S + D))\, z(b)d(b) > \int_{P(M^*)\hat{s}}^{\infty} (P(M^*)(S))\, z(b)d(b) + c(M^*) \quad (13)$$

where $P(M)$ is the probability of sanction, given M, assuming that the firm self-reports all detected wrongs.

Although Equation (13) is complicated, we can derive a simpler expression for damages that suffice to induce optimal monitoring. The definition of optimal monitoring implies that the cost of monitoring, $c(M^*)$, is less than the social benefit of the crimes deterred. This implies that, as long as $P(0)(S + D) \geq H$, then

$$\int_{P(0)\hat{s}}^{P(M^*)\hat{s}} (P(0)(S + D))\, z(b)\, d(b) \geq c(M^*) \tag{14}$$

This in turn implies that firms will monitor optimally as long as the penalty for failure to do so, D, at least equals the D such that, the firm's expected liability for crimes that would not be deterred by optimal policing is higher if it does not police optimally than if it does:[100]

$$\int_{P(M^*)\hat{s}}^{\infty} (P(0)(S + D))\, z(b)\, d(b) = \int_{P(M^*)\hat{s}}^{\infty} (P(M^*)D)\, z(b)\, d(b) \tag{15}$$

This implies that federal authorities can ensure that firms monitor optimally if the penalty imposed for failure to monitor equals or exceeds the D such that:

$$D = \frac{[P(M^*) - P(0)]S}{P(M^*)} \tag{16}$$

6.3 Corporate Liability in a World with Agency Costs

The preceding analysis reveals that corporate liability can provide firms with optimal incentives to monitor, self-report and cooperate if the government employs the multi-tiered duty-based regime described above. This sanctioning regime will induce optimal policing if firms select the policing regime that maximizes profits. Yet we know that firms may not make profit-maximizing decisions when those in control of the firm have incentives to take actions that deviate from those that benefit the firm. This is particularly likely when corporate governance is characterized by a separation of ownership and control, as is the case with publicly-held firms. Thus, the question arises whether duty-based liability can be expected to encourage corporate monitoring and *ex post* policing as applied to these firms.

Agency costs arise because the sanction for corporate crime falls on shareholders, not on managers. Optimal corporate sanctions provide shareholders with optimal incentives to want their managers to engage in optimal policing. But this may not be sufficient to induce managers to cause the firm to police optimally.

While agency costs are a serious problem for publicly-held firms, agency costs do not always undermine managers' incentives to induce optimal policing under a duty-based regime. It depends on whether agency costs afflict corporate policing decisions. Moreover, even when they do, a duty-based regime can reduce agency costs. When this is not the case, the government needs to employ additional mechanisms to ensure that firms

comply with their policing duties, such as using DPAs and NPAs to impose firm-specific policing duties on firms with detected wrongs and high agency costs, often coupled with a corporate monitor to ensure that managers comply with their duties (Arlen and Kahan 2012).

First, we need to consider when the separation of ownership and control can be expected to undermine the state's ability to use corporate liability to induce optimal corporate policing. Although managers do not bear the full cost of corporate criminal liability, this does not imply that they never have optimal incentives to police under a duty-based regime. For while managers do not obtain the full benefit of policing, they also do not bear the full cost. These also generally fall disproportionately on the firm, and thus on shareholders. Accordingly, managers should police optimally as long as they have some ownership share of the firm, and their net benefit to policing is positive whenever the firm derives a net benefit from policing (Arlen and Kahan 2012).

Managerial agency costs can be expected to undermine managers' incentives to police, however, if policing imposes private costs on managers or if managers obtain private benefits from any crime committed (separate from the direct effect of the crime on the share price). Managers obtain private benefits from crimes when they expect to obtain a promotion, bonus, or other benefit as a result of the crime, as can occur when crime increases reported earnings and managers' compensation is tied to short-run earnings (Arlen and Kahan 2012).[101] Managers also can benefit from crimes, such as securities fraud, that hide poor firm performance, thereby protecting them from termination by causing shareholders to believe the firm is doing better than it is (Arlen and Carney 1992).

Agency costs also can undermine managers' incentives to ensure that the firm engages in optimal policing when policing imposes private costs on them. For example, compliance programs impose costs on managers when managers must spend additional effort on record-keeping or oversight.[102] Beyond this, managers who value autonomy and the ability to act independently also often suffer private costs if corporate compliance limits their autonomy. These private benefits of crime and costs of policing can undermine managers' incentives to adopt corporate policing (and prevention) measures, even when corporate liability is optimally structured (Arlen and Kahan 2012).

Although agency costs complicate the state's efforts to induce optimal corporate policing, the agency cost problem generally should be lower under duty-based corporate liability than under strict corporate liability. Agency costs are lower under duty-based liability because duty-based corporate liability both provides shareholders with credible information about whether managers caused the firm to police optimally and can help shareholders sanction managers who failed to do so because they were serving their own interests. First, optimal duty-based liability provides shareholders with better information about managers' policing efforts than they would get under strict corporate liability (or no liability) because shareholders cannot easily ascertain whether managers have adopted optimal policing measures. Even when shareholders know what policing program would be optimal, they rarely have enough information to determine whether managers genuinely implemented an effective program. As a result, managers can pursue their own interests at shareholders' expense. Shareholders have better information under optimal duty-based corporate liability because the government's decision to impose corporate liability for

failure to monitor, report or cooperate provides shareholders with direct and clear information about whether their managers engaged in optimal *ex ante* and *ex post* policing.[103]

Second, duty-based liability can improve shareholders' ability to sanction managers who fail to satisfy their policing duties in pursuit of private benefits. First, duty-based liability may facilitate shareholder oversight through traditional measures, such as proxy contests, to the extent that shareholders are more inclined to replace directors (and to pressure directors to replace management) who fail to satisfy their policing duties, especially when their breach subjects the firm to a higher corporate sanction.[104] In addition, over time, corporate duty-based sanctions may provide managers with a direct financial incentive to engage in optimal monitoring through a potential interaction with state fiduciary duty liability. Under Delaware law, directors face direct personal liability if they fail to act in good faith to ensure that the firm has an effective compliance program or if they fail (in bad faith) to respond effectively to evidence of wrongdoing. At present, this fiduciary duty is not particularly effective because, under Delaware law, directors can determine what constitutes the right level of corporate compliance, subject to Business Judgment Rule protection. They also presumptively enjoy Business Judgment Rule protection when determining whether a crime occurred (Arlen 2009). Duty-based federal liability could enhance the deterrent effect of state law should federal law provide clearer standards governing firms' policing duties – standards which managers could not knowingly fail to comply with in good faith without triggering fiduciary duty liability (Arlen and Kahan 2012).

Nevertheless, even though duty-based corporate liability is superior to strict corporate liability, the state will not be able to induce optimal corporate policing through duty-based monetary sanctions alone when agency costs affecting corporate policing are significant. In this situation, the government often can enhance social welfare by coupling duty-based corporate monetary sanctions with firm-specific structural reform mandates that require firms with detected wrongdoing (and high agency costs) to adopt specific optimal policing measures subject to ongoing government oversight (and the threat of government sanction should the firm fail to comply, even if no subsequent crime occurs) (Arlen and Kahan 2012).

6.4 Duty-based Liability for Crimes Imposing a Reputational Penalty

We now consider whether it is optimal for the state to impose duty-based corporate liability to induce corporate policing even when firms with detected crime are subject to a market-based (or reputational) penalty, as is the case with corporate fraud (see section 2.2.3). Analysis of corporate liability employing the simple model implies that corporate market sanctions for detected crime reduce or eliminate the need for corporate liability. This section shows that this conclusion does not hold for corporate liability that is imposed to induce corporate policing. Indeed, to the contrary: duty-based corporate liability may be more vital for efforts to induce corporate policing when firms with detected wrongdoing suffer substantial market sanctions than when they do not, holding constant other sanctions.

Duty-based liability is needed even when firms bear a market sanction for detected crime because the market sanction can actually deter firms from implementing effective

policing measures. Firms with certain types of detected wrongdoing (e.g., fraud) are subject to a market sanction, in the form of reduced willingness of consumers, creditors or shareholders to deal with the firm on favorable terms. Moreover the market appears to respond negatively to credible information that the firm has committed certain crimes regardless of whether the firm is formally sanctioned (see section 2.2.3). This reputational sanction operates as a form of strict corporate liability, and thus can undermine a firm's incentives to police, if the reputational penalty depends on the occurrence of the crime, and not on corporate policing. In this situation, firms do not get the full social benefit of policing that detects crimes because, in this situation, when a firm polices it increases the probability that the market will learn about the crime and punish the firm. As a result firms subject to a market penalty do not have optimal incentives to detect wrongdoing, for the same reasons discussed in section 6.1.

Nevertheless, to the extent that firms are subject to a fixed market sanction, the state must take this sanction into account in determining both the residual sanction governing prevention measures (S) and the duty-based sanctions. So long as the residual liability and market sanction combine to equal S, then all the conclusions above about the optimal duty-based sanction remain valid, however.

6.5 Summary and Assessment of the Existing Duty-based Corporate Regime

The goals and requirements of optimal corporate liability are materially different from those that emerge from the simple model. In most important cases, particularly involving large firms, corporate liability is needed to induce far more than optimal corporate sanctioning and activity levels. It also is needed to induce optimal corporate prevention and policing. This shift in goals to include corporate policing is important because it alters the structure of optimal corporate liability. The simple model finds that the state can rely on strict corporate *respondeat superior* liability (Segerson and Tietenberg 1992; Polinsky and Shavell 1993) and that corporate liability is not needed when the firm internalizes the social cost of crime through market sanctions. By contrast, the present analysis shows that when corporate liability is needed to induce optimal corporate policing, the state cannot rely on strict corporate liability with a fixed sanction. Instead, the state should subject firms to multi-tiered duty-based liability for failure to adopt optimal policing measures. Specifically, the state should impose one duty-based sanction if the firm failed to engage in optimal *ex ante* policing, D; another if the firm failed to self-report detected wrongdoing, F_1; and a third if the firm failed to cooperate fully with the government's effort to investigate and prosecute the crime, F_2 (Arlen and Kraakman 1997). Beyond this, we see that the state needs to impose duty-based sanctions even when firms are subject to market sanctions for detected wrongdoing.

The present analysis thus implies that the Department of Justice acted consistent with optimal deterrence when it adopted a formal policy of exempting firms that comply with particular policing duties from prosecution, in situations where firms can plausibly be expected to cooperate even if senior managers may be implicated (as with publicly-held firms). The apparent DOJ practice of predicating an agreement not to prosecute on the firm's willingness to fully cooperate also is consistent with optimal deterrence, as is the apparent practice of using sanctions (including civil sanctions)

imposed on non-convicted firms to regulate corporate monitoring and prevention. The imposition of firm-specific policing duties (and monitoring) on firms with detected wrongdoing also promotes optimal deterrence in certain circumstances (Arlen and Kahan 2012).

Nevertheless, while the existing system is closer to an optimal composite regime than the traditional system, reforms are still needed. First, in order to induce optimal policing, the state needs to employ a multi-tiered composite duty-based liability that clearly specifies that the firm is subject to three duties (*ex ante* monitoring, self-reporting of detected wrongs, and full cooperation), and provides clear guidance on the nature of these three duties and the sanctions for violating each. By contrast, current DOJ policy simply states that all three forms of policing are *relevant* to the decision of whether to exempt a firm from indictment and to the sanction imposed, but does not provide firms with either a right or the promise that they will avoid conviction if they undertake certain actions. Moreover, while the Sentencing Commission has provided some guidance on the requirements for "effective" monitoring (compliance), neither the DOJ nor federal civil authorities provide sufficiently clear guidance on the sanction enhancements firms can expect for breach of *ex ante* monitoring duties (or failure to self-report) should they avoid conviction by fully cooperating.[105] Finally, the current system for imposing firm-specific structural reforms on firms with detected criminal wrongdoing needs reform both in terms of which federal actor has authority to impose these sanctions, as well as the type of firms affected and the nature of the sanctions imposed (Arlen and Kahan 2012; see Garrett 2007).

7. RESIDUAL STRICT CORPORATE LIABILITY AND OPTIMAL PREVENTION

The preceding analysis provides economic support for a core feature of the current US system: the imposition of (quasi) duty-based sanctions whose magnitude is based on corporate policing. We now consider an additional core feature of the current system: the regular imposition of monetary sanctions on firms with detected wrongdoing, even when the firm had an effective compliance program, self-reported, and fully cooperated. This liability is often imposed either through government-imposed civil or administrative sanctions or through sanctions imposed by the DOJ pursuant to a DPA or NPA (Arlen and Kahan 2012). We refer to the sanction imposed on firms that satisfy all their policing duties as residual corporate liability.

This section examines the economic justifications for imposing residual strict corporate liability on firms that satisfied all their policing duties. Although some argue that firms should not be liable if they engage in optimal policing (Weissmann 2007), this section shows that this conclusion is incorrect in all but a few circumstances. Residual corporate liability generally is needed to induce firms to invest optimally in prevention measures (and activity levels). Moreover, the residual corporate sanction generally should be strict, not duty-based; it also generally should be civil and not criminal (Arlen and Kraakman 1997). Finally, this section identifies situations where the state should reduce, or eliminate, this residual corporate sanction to reflect either individual sanctions or market sanctions.

7.1 Optimal Residual Corporate Liability

To optimally deter corporate crime, the state generally needs to induce firms to adopt optimal prevention measures, in addition to optimal policing. Prevention measures are interventions that either reduce the direct benefit of crime to employees or increase its direct cost. Compensation policy design is a particularly important type of prevention measure.

To optimally deter crime, the state needs to induce firms to invest in the prevention measures that minimize the total cost of crime and its deterrence. Firms invest optimally in prevention when they select the prevention measures that maximize the net benefit of prevention, as given by the social benefit of the crimes deterred by prevention minus the social cost of prevention, where the latter generally is given by the direct and indirect cost to the firm of the prevention measure (including any effect on worker productivity). This is to say that prevention is optimal when firms increase it up to the point where the marginal cost to the firm of prevention equals the marginal benefit to the state of prevention, as given by the social benefit of using prevention to reduce the expected number of crimes (Arlen and Kraakman 1997).

Since firms bear the direct costs of prevention, the state can induce optimal prevention by ensuring that firms obtain the full social benefit of each crime deterred (and do not obtain any private transfer benefits from crime). The state can achieve this goal by imposing strict civil corporate liability on all firms that engage in optimal policing, and strict liability coupled with duty-based sanction enhancements on the others. This liability will induce optimal prevention as long as the expected sanction equals the total social cost of crime (Arlen and Kraakman 1997). For simplicity, here we denote the social cost of crime as H; where crime enforcement includes marginal crime-specific investments by the state or the firm in enforcement, these costs should be included in the measure of the social cost of crime (Polinsky and Shavell 1984).

Accordingly, in addition to imposing multi-tiered duty-based corporate sanctions, the state should impose residual strict corporate civil liability on firms with detected wrongdoing, with an expected sanction equal to all total social costs of crime that the firm does not otherwise bear through market forces. This implies that firms that engage in optimal policing should be subject to a residual sanction equal to

$$S^* = \frac{H}{P(M^*, R^*)} \tag{17}$$

where H is the social cost of the crime, and $P(M^*, R^*)$ is the probability of sanction if it engages in optimal *ex ante* and *ex post* policing. A firm subject to this sanction will bear both the full social cost of prevention and internalize the full social benefit; thus it will invest optimally in prevention (Arlen and Kraakman 1997). This sanction also induces optimal activity levels (Arlen and Kraakman 1997; Polinsky and Shavell 1993).[106]

Strict corporate liability is superior to duty-based liability as a method of regulating prevention when, as is usually the case, the firm has better information than does the state about the expected costs and benefits of prevention; the relative benefits of strict corporate liability are particularly great when the firm can (and should) employ a variety

of different types of prevention measures to deter a variety of different crimes (Arlen and Kraakman 1997).

7.2 Arguments for Modifying or Eliminating the Residual Civil Sanction

The conclusion that the state must impose expected residual corporate liability equal to the social cost of crime (plus any purely private transfer benefit to the firm of crime) must be adjusted to reflect employees' expected criminal liability in some situations, and the firm's expected market sanction for corporate crime in all situations.

7.2.1 Effect of individual liability on residual corporate liability

The optimal residual sanction must be reduced to reflect employees' *expected* individual liability in those situations where firms internalize their employees' expected sanctions, generally through additional *ex ante* compensation.[107] This adjustment must be made to ensure that the firm's *total* expected costs of crime (as determined by the *ex ante* wages it must pay to compensate employees for their expected liability and its expected *ex post* liability for crimes that occur) equals, but does not exceed, the social cost of crime (Polinsky and Shavell (1993) at 249; see Shavell 1997).[108]

This adjustment should only be made if two conditions are met, however. First, firms must bear the expected cost of their employees' expected liability through wage payments (or otherwise). As we saw earlier, this is likely to occur in the case of liability for accidental crimes. By contrast, firms will not compensate workers for their expected liability for suboptimal intentional crimes when (i) firms do not benefit from the crime; and (ii) employees can avoid criminal liability by not engaging in the undesired conduct. In this situation, employees who perform their jobs in the firm's best interests do not face any risk of criminal liability; thus, firms will not pay wages that reflect an employee's expected liability because this liability is not really a cost of employment. Accordingly, the state should not reduce the residual corporate sanction to reflect employees' expected liability for these crimes.

Second, even when the firm does pay wages to reflect its employees' expected liability, the state should not adjust the sanction unless corporate prevention measures are sufficiently visible to affect employees' expected liability, and thus wages. This implies that employees must have sufficiently good information about corporate prevention measures to correctly estimate their expected liability at the moment that they contract with the firm over wages. By contrast, when employees cannot observe corporate prevention *ex ante* when wages are set, then firms cannot reduce employees' *ex ante* expected liability (thereby reducing the firm's wage payments) by adopting optimal prevention measures. In this situation, the corporate sanction that induces optimal activity levels will diverge from the sanction that induces optimal prevention measures.

7.2.2 Effect of market penalties on optimal residual corporate liability

The state also should reduce the residual corporate sanction to the extent that the firm bears a long-run market sanction for detected wrongdoing. To induce optimal prevention, the firm must bear an expected sanction equal to the total social cost of crime (Arlen and Kraakman 1997), including crime-specific costs of enforcement (Block 1991). Accordingly, the state must adjust the residual sanction when the market automatically

imposes a long-run sanction on the firm, to ensure that the total sanction imposed is optimal. Accordingly, the state should set the residual sanction equal to the total social cost of crime, H, minus the long-term market sanction, θ, in those situations where the market and government sanctions are imposed with the same probability:[109]

$$S^* = \frac{H - \theta}{P(M^*, R^*)} \tag{18}$$

Securities fraud The preceding analysis explains why it is optimal for the state to employ composite duty-based liability to deter most crimes (Arlen and Kraakman 1997). In order to deter securities fraud (defined as intentional financial misstatements by managers of publicly-held firms) the state should employ only pure duty-based corporate liability, combined with individual liability, however (Arlen and Carney 1992). As previously discussed, most pure intentional financial misreporting[110] is committed by senior managers who are hoping to use the period of the fraud to hide bad news (Arlen and Carney 1992). This fraud directly harms shareholders by (i) distorting their trading decisions; (ii) causing them to retain suboptimal managers who otherwise likely would have been fired; and (iii) imposing on them the expected reputational sanction imposed on firms with detected financial misreporting.

Given that shareholders are the primary victims of securities fraud (Arlen and Carney 1992), it should come as no surprise that the market sanction for financial misreporting appears to be substantial (Karpoff *et al.* 2008a).[111] Moreover, this penalty falls on the same shareholders who would bear the burden of residual corporate liability for securities fraud – those who own the firm's shares at the moment the fraud is revealed.[112] To the extent that this sanction ensures that shareholders bear the full social cost of fraud, the state need not also impose residual liability on firms that engaged in optimal policing (Arlen and Carney 1992).[113] Accordingly, in the case of intentional financial misrepresentation by publicly-held firms traded in informationally efficient markets, the state likely can rely on market forces to provide shareholders with incentives to encourage managers to adopt prevention measures (Arlen and Carney 1992).[114] Moreover, imposing residual liability may undermine the state's ability to use duty-based sanctions to induce optimal policing, as firms that commit securities fraud often are asset constrained, as evidence suggests (Arlen and Carney 1992; Karpoff *et al*. 2008a). This is because the state may not be able to effectively threaten the firm with a duty-based sanction for failure to police optimally (e.g., cooperate) if the firm is already subject to a residual sanction that renders it insolvent. Thus, generally the best approach to securities fraud is to impose pure duty-based corporate liability on firms that fail their policing duties and individual liability on the managers responsible for the fraud (Arlen and Carney 1992).

7.3 Comparison with the Existing Regime

Accordingly, we see that in order to induce optimal prevention and activity levels, the state needs to subject firms that engage in optimal policing to significant civil residual liability designed to provide firms with optimal incentives to prevent wrongdoing and to induce optimal activity levels. This is consistent with the existing federal enforcement practice under which firms may be required to pay sanctions even if they engaged in

optimal *ex ante* and *ex post* policing. Nevertheless, current practice does not fit all the requirements of an optimal corporate liability system in that federal authorities have not adopted clear guidelines to ensure that civil regulators and the DOJ impose optimal residual sanctions on firms – sanctions that take full account of the variety of ways in which firms bear the social costs of crime.

8. CRIMINAL VS. CIVIL CORPORATE LIABILITY

The preceding analysis shows that the state can induce optimal policing through the use of a multi-tiered duty-based sanction. We now consider whether each of these sanctions should be criminal or whether it would be better for the state to employ government-imposed civil liability to regulate most forms of policing, reserving criminal liability for situations where firms fail to engage in the penultimate form of *ex post* policing: cooperation.

The economic analysis of corporate criminal versus civil liability is complicated because the core economic distinction for firms between these forms of liability is not well understood. In the individual context, criminal liability differs from civil liability in part because only the former entails a potential loss of liberty and certain civil rights (such as voting); it also is associated with a higher reputational penalty. These differences do not appear to apply to the corporate context. Potential criminal and civil corporate sanctions are remarkably similar in form (with an important difference discussed below) and can be made similar in magnitude. Moreover, the two actions may even impose similar market sanctions on the firm, at least when the action is brought by a government enforcement agency (Khanna 1996; see Alexander 1999).

Nevertheless, there are important differences between the two types of liability that exist in practice. First, there are important procedural differences, including a higher burden of proof in criminal cases and more powerful tools of investigation. Second, there are important substantive differences in the nature of the sanction imposed. Although at first corporate civil and criminal liability appear similar because they take the form of monetary sanctions (Khanna 1996; Fischel and Sykes 1996), criminal liability differs in that firms convicted (or indicted) for certain wrongs face the substantial threat of enormous collateral sanctions, such as debarment and de-licensing. These collateral sanctions enable the state to impose an enormous, ongoing sanction on the firm that can be the equivalent of a corporate death penalty. In addition, it appears that managers and employees of firms with detected wrongdoing may feel greater disutility if the firm is convicted of a crime than if the firm is subject to a purely monetary civil penalty (Khanna 1996), which suggests that the state can treat this sanction as a more serious sanction. Finally, under existing law, the firm faces higher potential total sanctions when convicted of a crime both because criminal fines are higher than civil penalties and because criminal fines can be imposed in addition to civil penalties.[115]

We now consider how the government can best structure a duty-based composite corporate liability regime to induce optimal corporate prevention, *ex ante* policing and *ex post* policing, assuming that criminal penalties are potentially more uncertain in their effect because of either collateral consequences, reputational penalties, or the effect on private actions.[116] The core requirements for optimal corporate liability is that the

government employ a form of residual liability that nevertheless enables it to impose feasible duty-based sanctions to induce *ex ante* monitoring and *ex post* reporting and cooperation. This implies that the state needs to employ sanctions for violations of policing duties that exceed the residual penalty and are sufficiently severe that the firm will want to self-report and cooperate. It also implies that the residual sanction must be such that the firm will not avoid self-reporting in order to avoid this sanction. This consideration argues in favor of criminal liability for failure to cooperate if criminal liability is much more costly for the firm than civil liability. Corporate criminal liability is a particularly effective tool for inducing reporting if crime imposes a reputational penalty on managers and directors, as they will thus have a direct incentive to take the actions needed to avoid triggering the sanction. This need to ensure that the duty-based penalty is much higher than the residual sanction argues against using formal criminal liability to impose the residual sanction whenever firms face serious collateral penalties or reputational penalties if convicted, regardless of the monetary sanction imposed. Thus, the state should consider using the threat of criminal liability to induce firms to self-report detected wrongdoing and cooperate; firms that self-report and cooperate could be exempt from formal criminal sanctions, if the state has authority to impose civil penalties.[117] The state should supplement criminal liability with duty-based composite civil liability, with a sanction enhancement for firms that fail to adopt an optimal monitoring program. These sanctions can be civil (or imposed through a DPA or NPA). In some cases, such as where agency costs are high, the state may need to subject firms with detected wrongdoing and seriously inadequate *ex ante* policing to a duty-based monetary sanction for failure to monitor coupled with a requirement that the firm adopt a government-approved compliance program (subject to oversight) (Arlen and Kahan 2012).

9. CONCLUSION

This chapter has shown that, in order to optimally deter corporate crime, the state cannot simply take the same approach as it does with individual criminal liability. This is especially true when corporate liability is needed to induce optimal corporate policing, prevention, and activity levels. Whereas the government can optimally deter purely individual crimes by imposing a fixed fine on wrongdoers for every crime they commit, the state cannot use strict corporate liability with a fixed fine to deter corporate crime, particularly by larger firms. Instead, the state should employ a multi-tiered duty-based composite regime that uses a combination of criminal and civil liability to induce optimal *ex ante* and *ex post* policing.

Comparing the optimal regime with existing US enforcement practice, we see that the DOJ's decision to abandon strict corporate liability in favor of a more duty-based regime is consistent with optimal deterrence. The apparent practice of offering leniency from prosecution to firms that fully cooperate, coupled with residual sanctions imposed on such firms, potentially enhances deterrence by increasing corporate cooperation while still providing firms with a financial incentive to prevent wrongdoing. Deterrence is further enhanced to the extent that federal authorities ensure that firms face higher sanctions if they did not engage in optimal *ex ante* policing or did not self-report detected wrongdoing.

Nevertheless, several facets of current practice potentially undermine the federal government's ability to use corporate liability to induce optimal corporate behavior. First, federal authorities should adopt a clear policy that, in cases where optimal deterrence requires corporate policing, prosecutors should predicate the decision of whether to grant leniency from prosecution on a firm's full cooperation. Firms must be more confident that cooperation will insulate them from criminal sanctions. Second, federal authorities should adopt clear guidelines governing the sanctions imposed on firms that do cooperate to ensure that firms face multi-tiered monetary sanctions. Specifically, the state must impose a clear duty to self-report and to adopt optimal *ex ante* monitoring, provide additional guidance on the nature of the monitoring duty, and impose substantially enhanced sanctions on any firm that breaches this duty. Effectuating this system would require both stronger policy directives from the DOJ and more coordination with civil authorities and states. Finally, and critically, optimal deterrence of corporate crime requires enhanced federal and state attention to ensure that individuals who commit corporate crimes expect to be subject to significant criminal penalties and to reforms that promote improved shareholder monitoring of managers.

Finally, in examining the requirements for optimal deterrence of corporate crime, we see the importance for law and economics of situation-specific analysis of legal rules. We see that individual criminal liability differs from optimal corporate criminal liability, and the nature of optimal corporate criminal liability depends on whether liability is directed at owner-managers of closely-held firms or larger publicly-held firms.

NOTES

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1. "Corporate crimes" are defined throughout this chapter as crimes to which corporate liability could attach under *respondeat superior*. Thus they are crimes committed in the scope of employment with some intent to benefit the firm. Crimes falling into this category include Foreign Corrupt Practices Act violations (involving payment to foreign officials designed to facilitate the firm's interests abroad), environmental and antitrust violations, fraud against the government (especially involving over-charging), and securities fraud involving materially misleading statements. White collar crimes that do not attempt to benefit the firm are not included in this definition.
2. This chapter focuses on the question of how to use corporate and individual liability to deter corporate crime, as defined by the legislature. It does not address the separate issue of what conduct should be subject to criminal liability.
3. Strictly speaking, each firm introduces a nexus of additional actors – shareholders, directors, officers, and employees – some of which often are victims of the crime in the long run (see section 3.2) and others of whom (managers) are potential enforcers. Both the harm caused by the crime and the incentive provided by corporate liability reach these actors through the firm. See section 6.3 (discussing agency costs in enforcement) and Arlen and Kahan (2012) (same).
4. See section 5 (explaining why the state usually must impose corporate liability in addition to individual liability).
5. See *infra* notes 41, 70 and 82.
6. The conclusion that strict corporate liability is inefficient stands in contrast with the conclusion of the classic model of vicarious liability that strict corporate liability is efficient (Segerson and Tietenberg 1992; Polinsky and Shavell 1993; see Kornhauser 1982). These analyses assume that the firm deters crime

primarily through monetary sanctions. They do not examine optimal liability when firms can help the state detect and investigate wrongs.

In addition, in contrast with prior analysis which finds that the state should reduce corporate sanctions to reflect expected individual liability paid (Polinsky and Shavell 1993), this chapter shows that the duty-based criminal sanction should not be reduced to reflect sanctions imposed on either individual wrongdoers or market sanctions.

7. The conclusion that these features are consistent with optimal corporate liability does not imply that current US law is efficient in all respects. For a discussion of the problems with the current US system see Arlen (2011); Arlen (2012); Arlen and Kahan (2012); Arlen and Kraakman (1997) at 742–52).
8. Data is from the US Sentencing Commission and is limited to convictions sentenced under the Organizational Guidelines that were reported to the Sentencing Commission. This data likely is incomplete. See Garrett (2011) (producing a data-set that shows that 125 publicly-held firms were convicted between 2001 and 2010, more than twice the number in the Sentencing Commission's data); see also Alexander, Arlen, and Cohen (2000) (finding that the Commission's Organizational Data for 1991–1996 was missing scores of cases).

   Table 7.1 reports the number of cases where the Commission does not have data on the type of organization convicted to highlight the magnitude of the omitted data in this dataset. Missing data is a particular problem to the extent that the omissions are not randomly distributed – a concern raised by prior analysis of the Organizational data (Alexander, Arlen, and Cohen 2000).
9. During the 1980s, most convicted firms were small, closely-held firms. Only 8% of the convicted firms had publicly traded stock (Cohen (1996) at 402). Convicting small closely-held firms can ensure that liability is imposed on owner-managers responsible for the crime when it is difficult to establish their direct personal complicity. Yet during the 1980s, prosecutors tended to focus on corporate convictions at the expense of individual convictions even in the case of publicly-held firms. Indeed, not a single individual was convicted in about half of the cases where a publicly-held firm was convicted (Cohen (1996) at 407). This practice is hard to defend in most cases.
10. See *infra* note 26.
11. See *New York Central and Hudson River Railroad Co. v. United States*, 212 U.S. 481 (1909) (establishing corporate criminal liability through the doctrine of *respondeat superior*).
12. Federal criminal law imposes a "benefit the firm" requirement for corporate liability, but this requirement is met even when the employee committed the crime primarily for his own benefit and only incidentally to benefit the firm (Arlen (2004) at 193–4; Weissmann (2007) at 1320).
13. By contrast, other countries generally restrict corporate criminal liability to crimes by senior managers or allow a formal good faith defense for firms which had an effective compliance program designed to prevent crime. See generally (Beale and Safwat (2005) at 155).
14. Corporations can be liable for crimes by lower level employees because both the acts and the *mens rea* of employees acting in the scope of employment are attributed to the firm. See e.g., *United States v. Dye Constr. Co*., 510 F.2d 78 (10th Cir. 1975); *Tex.-Okla. Express, Inc. v. United States*, 429 F.2d 100 (10th Cir. 1975); *Riss and Co. v. United States*, 262 F.2d 245 (8th Cir. 1958); *United States v. George F. Fish, Inc.*, 154 F.2d 798 (2d Cir. 1946).
15. See e.g., *United States v. Twentieth Century Fox Film Corp*., 882 F.2d 656, 660–1 (2d Cir. 1989); *United States v. Hilton Hotels Corp.*, 467 F.2d 1000, 1004 (9th Cir. 1973).
16. Firms that undertake certain acts of corporate policing may benefit from a reduction in the fine imposed under the Organizational Sentencing Guidelines, US Sentencing Commission, *Guidelines Manual*, ch. 8 (hereinafter "Organizational Guidelines"), but they remain criminally liable. Thus, they face the higher expected private civil sanctions, reputational penalties, and potentially ruinous collateral penalties that can attend a federal conviction.
17. Analysis of fines imposed prior to the Organizational Guidelines found that corporate fines are small relative to the harm caused (Cohen (1996) at 401 (estimating that median fines are approximately 12% of the harm caused)).
18. See *supra* note 8.
19. Care must be taken in considering these results because the Sentencing Commission's data does not provide information on organizational type for a large number of firms, many of which may be corporations.
20. Although most convicted firms are corporations, others are sole proprietorships, non-profit organizations, unions, government entities, partnerships, associations, and other non-corporate entities.
21. See *supra* note 8 (discussing limitations of the data). The category "publicly-held" is based on the subset of cases in the Sentencing Commission's data where we have data on firm type.
22. There is evidence that judges adjust criminal fines when non-fine monetary sanctions are high (Cohen (1996) at 406), and vice versa. For example, although the Organizational Guidelines required judges to impose higher fines than they otherwise would have, analysis of corporate sanctions imposed after

the Guidelines found no significant difference in the total sanctions imposed in cases where judges were bound by the Guidelines than in post-Guidelines cases where judges were not so constrained. This suggests a substitution between fine and non-fine sanctions (Alexander, Arlen and Cohen 1999a).

23. By contrast, judges rarely imposed probation or other non-monetary sanctions on convicted firms prior to the adoption of the Organizational Sentencing Guidelines (Cohen (1996) at 409).
24. These collateral sanctions are not properly viewed as a "reputational sanction" *resulting* from a conviction because the government often makes its business relationship decision prior to conviction and, moreover, often determines the extent of collateral sanction jointly with the settlement which determines the formal monetary sanction (Alexander 1999; for additional analysis see Karpoff *et al*. 1999).
25. The existing regime approximates a "duty-based" regime but does not precisely replicate it since firms are not entitled to exemption from prosecution for good behavior.
26. See Eric Holder, Deputy Attorney General, to the DOJ departments, Memorandum from Eric Holder, Deputy Attorney General, US Dep't of Justice, to Heads of Department Components and United States Attorneys (June 16, 1999) (noting that individual criminal liability "provides a strong deterrent against future corporate wrongdoing"); Thompson memo, *infra* note 31 (stating that "[b]ecause a corporation can act only through individuals, the imposition of individual criminal liability may provide the strongest deterrent against future corporate wrongdoing"); see generally First (2010).
27. See Holder memo, *supra* note 26. The Holder memo and its progeny govern most corporate crimes, but do not apply to all crimes, such as antitrust violations, which receive separate treatment. The economic support for the conclusion that strict corporate liability can deter corporate policing efforts can be found in Arlen (1994).
28. See Holder memo, *supra* note 26. To be precise, the Holder memo encouraged prosecutors to take a variety of factors into account in determining whether to prosecute, including whether the firm had an effective compliance program, self-reported the wrong, cooperated with the investigation, and accepted responsibility. In practice, prosecutors have focused on these considerations, paying particular attention to corporate cooperation and acceptance of responsibility.
29. The Holder memo is more of a true "duty-based" regime than the Organizational Guidelines (Arlen and Kraakman (1997) at 745–9). Under the Organizational Guidelines, firms that take certain policing measures can get their fines reduced, but in the case of larger firms they often do not receive enough mitigation to encourage effective policing (Arlen 2012). The Organizational Guidelines also contain many inefficient limitations on firms' abilities to get mitigation for policing (Arlen 2012; Arlen and Kraakman (1997) at 745–9). Moreover, firms eligible for mitigation remain subject to conviction, with the associated non-fine penalties, collateral consequences (in some cases), and increased expected private civil liability.
30. See *infra* note 31.
31. Prosecutors employed DPAs and NPAs prior to 2003. Nevertheless, federal prosecutors embraced the modern deferred prosecution approach, which includes the use of DPAs and NPAs to impose structural reforms, following the issuance of the "Thompson memo" by then Deputy-Attorney General Larry Thompson. Memorandum from Larry D. Thompson, Deputy Attorney General, US Dep't of Justice, to Heads of Department Components and United States Attorneys (January 20, 2003), available at www.justice.gov/dag/cftf/corporate_guidelines.htm. US Dep't of Justice, US Attorneys' Manual § 9-28.900 (Principles of Federal Prosecution of Business Organizations).
32. See *supra* note 31.
33. Thus, if we take into account the DOJ's lenience policy, and recognize that firms that self-report also cooperate, we realize that the low self-reporting rates of convicted corporations do not indicate, as some have suggested, "that it is rare for enterprises to self-report crimes" (Mullins and Snyder (2009) at 223). Instead, the low self-reporting rate of convicted firms is consistent with firms self-reporting wrongdoing under a DOJ policy of not convicting the firms that self-report and cooperate.
34. Table 7.5 is based on the D/NPAs that could be confirmed. This data was hand-collected and then compared with the DPAs/NPAs listed on Professor Brandon Garret's website at the University of Virginia Law School, available at http://lib.law.virginia.edu/Garrett/prosecution_agreements/home.suphp. His dataset includes the following DPA/NPAs which are not included here because he did not have the D/NPAs (or a press release) and we could not confirm them: Facility Group (2010), M.A. Angeliades (2010), Cosmetic Laboratories of America (2010), McSha Properties (2009), Unum (2008), Levlad (2008), RFK Institute (2008), Holy Spirit Organization (2007), Medicis (2006).

    The designation "publicly held" is based on the firm's status at the time of agreement, and include D/NPAs involving subsidiaries that are majority-owned by a publicly-held firm (50% or more).

    The term "DOJ Fine/Penalty" includes all sums described as a fine or penalty imposed by the DOJ. It excludes any guilty pleas by subsidiaries, unless expressly incorporated into the agreement as payable by the parent corporation. It also excludes restitution, disgorgement, and forfeiture.

    Means and medians are based on the total number of firms subject to DPAs/NPAs in each year. The total penalty includes any separate settlements with the government that were entered into at or around

the same time as the DPA/NPA, including DOJ Civil Division and the SEC settlements, but excludes any private civil settlements, such as class actions, even if incorporated into agreement.

All percentages are rounded to the nearest 5%.

35. See *supra* note 8. This Table is limited to public and private corporations and excludes non-profits, public entities, partnerships, and sole proprietorships. Data is based on the subset of cases where we have data on both firm type and whether the firm got credit for accepting responsibility or self-reporting.

    Acceptance of Responsibility code in the Sentencing Commission's data is an index that measures the degree to which the organization accepted responsibility for the offense conduct as measured by self-reporting of the offence, cooperation with the investigation, or acceptance of responsibility for the offence. See USSG 8C2.5(g) for more information.
36. Firms subject to DPAs and NPAs are only a subset of the firms potentially eligible for conviction that escaped conviction. Thus, this analysis understates the implications of the DOJ's non-prosecution policy for publicly-held firms and their subsidiaries.
37. This section and the next one follow the standard literature on corporate crime in assuming that corporate managers maximize fire profits. Thus, we assume that corporations undertake the policing and prevention measures that minimize the total expected costs of crime and its deterrence.
38. Accordingly, this analysis differs from Polinsky and Shavell (1984) which examines pure individual liability when optimal deterrence requires positive expenditures on enforcement. This chapter does not consider pure individual liability in this situation because, in the corporate crime context, whenever optimal marginal enforcement is positive, optimal deterrence will generally require corporate expenditures on enforcement. In this case, optimal deterrence will require the use of both corporate liability and individual liability.
39. Scholars discussing optimal deterrence in the purely individual crime context (street crimes) have challenged this rational actor approach on the grounds that criminals often are not in a rational frame of mind when they commit crimes, and thus are not optimally deterred by the threat of sanctions. This criticism may well be valid when applied to crimes of passion or crimes committed by addicts or the insane. Yet it does not seem valid in the corporate context (Block, Nold, and Sidak 1981, finding that increasing the probability or magnitude of the criminal sanction decreases the probability of antitrust violations); Paternoster and Simpson (1996). First, unlike most street crimes, corporate crimes generally are committed by people who are employed by a firm, often at a managerial level. The previous business success of most corporate criminals suggests that they are able to make deliberative decisions. Many perpetrators of corporate crimes serve in jobs in which they regularly compare immediate costs/gains against future uncertain rewards/costs (Baer (2008b) at 313). Moreover, unlike violent crimes, corporate crimes generally are not committed in the heat of passion, but are committed in a context where deliberation is possible – during the course of the business day, often over an extended period of time, by individuals who have full control of their mental faculties. Finally, perpetrators of corporate crimes are more vulnerable to sanctions. They often have substantial wealth and a valuable reputation that they could lose if convicted. Moreover, they have families who would be hurt. Finally, evidence suggests that corporate crimes are not committed by people living outside the law, but instead are committed by people who succumbed to financial temptation or career pressures (Paternoster and Simpson (1996) at 550; Sutherland 1949 (criminal sanctions can deter corporate crime because managers are well integrated into communities and churches and thus are especially vulnerable to the reputational cost of criminal conviction)).
40. When the legislature defines crimes optimally, this latter condition will rarely if ever be met.
41. This chapter does not thoroughly analyze individual liability, and thus does not consider the variety of reasons why optimal individual sanctions may deviate from H/P even when individuals are solvent. For example, the optimal sanction must be adjusted if wrongdoers are risk averse or the crime should be deterred completely (Hylton 2005). Moreover, when the state cannot optimally deter crime without spending resources on enforcement, then the optimal individual expected sanction is less than $P(E^*)H$, where E* is marginal enforcement expenditures because enforcement expenditures increase the social cost of deterring crime (Becker (1968) at 192; Polinsky and Shavell 1984; Block (1991) at 397–8; Polinsky and Shavell 1992; Polinsky and Shavell (2007) at 414).
42. A complete expression of the model should include marginal enforcement expenditures, as these are a component of social welfare. We simplify the exposition by setting enforcement expenditures to zero because, as we showed above, optimal enforcement is zero when fines are costless to impose and there are no wealth constraints.
43. For a discussion of optimal individual criminal liability when individuals are risk averse, see Polinsky and Shavell (1993) at 254.
44. See *supra* note 1 (defining corporate crimes).
45. We leave proof of this result for the subsequent section on the neutrality principle.
46. Thus, crimes by publicly-held firms are best characterized as an agency cost (Arlen and Carney 1992; Macey 1991; Paternoster and Simpson (1996) at 550). Consistent with the hypothesis that crimes by

publicly-held firms generally are agency costs that benefit individuals wrongdoers, not shareholders, empirical evidence finds that corporate crime is more likely the lower is management's percentage ownership stake in the firm (Alexander and Cohen 1999). Crime also is more likely the larger the firm (Alexander and Cohen 1996), the weaker the firm's internal controls (Baysinger 1991), and the greater the emphasis on short-term financial measures in setting compensation (Hill *et al*. 1992). See also Arlen and Carney 1992 (true securities fraud benefits managers at the expense of the firm's shareholders).

47. In this section, we focus on the total optimal sanction to be imposed on the individual wrongdoer, without differentiating whether the sanction is imposed by the state or the firm.
48. This conclusion, known as the neutrality principle, was developed in the context of civil liability, (Kornhauser 1982; Sykes 1984; Arlen and MacLeod 2005a (extending the analysis to authority relationships)), but holds as well for criminal liability (Segerson and Tietenberg 1992; Polinsky and Shavell 1993).
49. See *supra* notes 38 and 41.
50. Firms facing wage payments equal to the expected cost of crime have optimal incentives to invest in measures to deter crime. Thus, in this model, when the state imposes optimal individual liability, firms have optimal incentives to prevent crime. This implies that individual liability is sufficient to optimally deter crime, in this model.
51. Observe that asset insufficiency changes the goals of corporate liability whenever wrongdoers cannot pay the optimal zero-enforcement sanction, $H/P(0)$, even when wrongdoers do have sufficient wealth to pay a monetary sanction equal to $H/P(E^*)$, where E^* is optimal enforcement given employees' wealth constraints.
52. For example, an individual committing fraud through an organization often harms more people than he would if acting alone because the organizations extends his reach.
53. See (Dyck *et al*. 2010) (only 7% of corporate frauds detected at large companies between 1996 and 2004 were detected by the SEC; 13% were detected by non-financial market regulators).
54. Of course, the pecuniary and non-pecuniary cost of each month of imprisonment for a corporate wrongdoer may be higher.
55. Employees may be held criminally liable even when they behave optimally under a variety of circumstances. These include circumstances where (1) employees may commit crimes unintentionally and optimal effort to prevent crime does not eliminate the risk of a violation; (2) individual wrongdoers are imperfectly informed about which actions are criminal even when they invest optimally in information (see Arlen and MacLeod 2005a (presenting a similar model of tort)); or (3) judges err.
56. Wrongdoers are more sensitive to an increase in the probability of sanction than to an increase in the sanction magnitude (all else equal) if they are risk preferers or discount low probability events.
57. As previously noted, firms also affect the total social costs of crime through their control over their own activity levels (Polinsky and Shavell 1993; Arlen and Kraakman 1997) and their ability to affect the scope of each employee's authority to take actions that could be harmful.
58. In addition, optimal deterrence also requires that states induce firms to undertake optimal activity levels when firm activity levels affect the total expected social cost of crime, as explained in section 3.2 (Polinsky and Shavell 1993).
59. Studies show that employees (including officers) are more likely to commit certain crimes when their firms focus on short-term financial returns when evaluating the performance of a division or individual (Hill *et al*. 1992 (finding that EPA and OSHA violations are more likely when top managers focus on rate of return criteria in evaluating division performance); Cohen and Simpson 1997; see also Smith *et al*. 2007). To further exacerbate the problem, employees whose compensation is based on short-term results, and not long-term share value, obtain the full benefit of any boost in apparent profits linked to their crime, without sharing the long-run cost to the firm of any eventual sanction imposed on the firm.

    The observation that compensation policies affect the probability of crime reveals that executive compensation is not a purely private matter between executives and shareholders, as compensation policies that induce crime impose external costs on third parties. Whether this external cost of compensation policies warrants direct intervention in compensation depends on whether boards of directors can be induced to prefer compensation policies that maximize social welfare.
60. In most cases, an optimal compensation policy designed to balance the concerns of effort-inducement and crime-reduction would provide employees with lower-powered incentives than the policy that firms adopt when focused primarily on productivity.
61. In the case of compensation, the social cost of prevention includes the decreased productivity associated with a move from high-powered incentive compensation to a compensation regime focused on long-run measures of firm performance and less directly tied to individual employees' efforts.
62. Corporate actions that affect the probability that crimes are detected and individuals wrongdoers are convicted, P, are hereinafter referred to as policing measures (Arlen and Kraakman 1997).
63. One reason corporate policing is needed is that government enforcers detect few corporate crimes (or

at least few corporate frauds) on their own. Information on corporate wrongdoing tends to arise from within the firm (Dyck *et al*. (2010) at 2214 (finding that 20% of detected frauds were brought to light by the firm or its employees)).

64. For a discussion of why this may not be the case, see Baer (2009) at 988.
65. Identifying the perpetrators of corporate crimes can be particularly difficult because corporate crimes often involve actions by many people. Moreover, the person ultimately responsible for causing the crime to be committed often is not the person who committed the physical act that constitutes the crime.
66. When policing provides other benefits (e.g., reduced agency costs) these should be included in the social calculus as well.
67. In theory, firms can increase the effective sanction by paying super-compensatory wages. Super-compensatory wages increase employees' wealth, thereby increasing the potential sanction that the government can impose on criminal wrongdoers (Becker and Stigler 1974; Shavell 1997). Yet super-compensatory wages are a costly deterrence mechanism because, in order to deter crime through super-compensatory wages alone (without any expenditures on enforcement), each firm would need to pay sufficient wages to all potentially wrongful employees to give each employee actionable, after-tax, *post*-consumption, wealth of $H/P(0)$. This would be expensive and would distort labor markets. Super-compensatory wages also are ineffective against certain crimes, such as intentional misconduct and crimes resulting from managers' last period concerns. Employees who expect to engage in deliberate misconduct can reduce the monetary penalty imposed on them by consuming their super-compensatory wages or disbursing them to their heirs (see Becker and Stigler 1974; Eaton and White 1982; Dickens *et al*. (1989) at 343–4 (discussing why firms prefer enforcement to super-compensatory wages)). Super-compensatory wages also often are ineffective when employees commit the crime in the hope of preserving a job that they are likely to lose if they do not commit the crime (for example, many securities frauds (Arlen and Carney (1992) at 708–9)) because the high wage payments can enhance the employees' expected *benefit* from committing crimes that preserve their jobs.
68. For a discussion of how corporate monitoring can reduce the agent insolvency problem in the liability context see Kornhauser (1982); Sykes (1984); Arlen (1994); Arlen and Kraakman (1997); see generally, Milgrom and Roberts (1991).
69. The state cannot optimally regulate prevention solely through the use of *ex ante* regulatory mandates governing all optimal prevention measures because government authorities generally lack the expertise needed to determine optimal structure of all forms of prevention, especially those relating to internal compensation policies (Arlen and Kahan 2012). Moreover, ongoing verification of firms' actual prevention efforts is costly.
70. This is a simplification of the requirement. When optimal deterrence requires positive expenditures on enforcement, the optimal sanction generally will be less than H/P^* since the net social benefit of deterrence equals the social benefit of crimes deterred (H) minus the social cost of enforcement (Polinsky and Shavell 1984). We abstract from this additional complexity here because the asset insufficiency problem can be triggered when employees' wealth is less than $H/P(\underline{E})$ even if it is not less than the optimal fine if firms engage in optimal policing.
71. See *supra* note 70.
72. Beyond this, firms have an additional reason to under-invest in policing when workers are insolvent. A firm that credibly announces that it will aggressively detect and report crimes increases its employees' expected liability by increasing the probability of sanction. This increases the firm's expected wage payments, but may not deter many crimes if the benefit to employees of crime exceeds their expected sanction, given wealth constraints. Beyond this, policing will be suboptimal because the benefit to the firm of policing necessarily is less than the social benefit of policing when either (i) employees' expected sanction is less than the social cost of the harm caused because of wealth constraints, or (ii) firms' wage obligations in effect leave the firm strictly liable for employees' crime (see Arlen 1994).
73. Wrongdoers who control the management of the firm may be able to ensure that the firm compensates them for their actual or expected liability, directly or indirectly, even for intentional crimes.
74. Corporate intervention will not be needed, however, if employees have unlimited assets, which enables the state to optimally deter crime through individual liability alone (without marginal expenditures on enforcement). Thus, this intentional wrongdoing justification for corporate liability provides an additional justification for corporate liability when individual liability is not sufficient because employees do not have sufficient assets to pay the optimal fine.
75. Thus, it is not the case that asset insufficiency justifies corporate liability only if firms are better able to sanction workers than is the state, but not otherwise.
76. In a study done prior to the Organizational Guidelines, Mark Cohen found that the corporate criminal fine was less than the harm caused (and thus substantially less than H/P) (Cohen 1991). While the criminal fine rose after the adoption of the Organizational Sentencing Guidelines (Alexander, Arlen, and Cohen 1999a), expected sanctions appeared to stay below H/P, especially when the probability of sanction is relatively low.

77. Managers of publicly-held firms also can reduce the firm's expected liability by locating risky activities in thinly-capitalized, wholly-owned subsidiaries. These subsidiaries can pursue profitable activities that have an enhanced risk of crime, channeling the profit to the parent firm through dividends, while using thin capitalization of the subsidiary to minimize expected criminal sanctions. For evidence that firms locate certain liability-generating activities outside their legal boundaries, see, e.g., Rebitzer (1995) (showing how the petrochemical firms partly insulate themselves from liability for workplace accidents by hiring contract workers and assigning all training and supervision of these workers to off-site independent contractors less capable of regulating safety).
78. Managers can undermine corporate sanctioning if they either directly influence board decisions or have sufficient control over the information reaching the board to make sure directors conclude that sanctions would be inappropriate. Indeed, the senior manager may be able to ensure that the board concludes that no crime was committed if managers control how the internal investigation is conducted. Under corporate liability, shareholders may be unable to determine when the board is being passive incorrectly, if the deal between the firm and the government does not identify the individual wrongdoers. This information vacuum may permit the board to publicly justify its decision by asserting either that no crime was committed (and the firm just pleads guilty) or that no senior manager was responsible.
79. This analysis assumes that the state cannot feasibly implement a rule under which the corporate sanction equals $(\Pi + H)/(P(M,R))$, where $P(M,R)$ equals the actual probability of detection given the firm's actual investment in pre- and post-contractual policing (M and R respectively). If the state could employ a sanction that varies precisely with the probability of sanction then strict corporate liability would not create a liability enhancement effect and could be structured to induce optimal policing. This sanction would be very costly to implement as federal authorities would have to ensure that the fine varies precisely with all changes in M and R, adjusting the sanction to reflect how monitoring and post-crime policing affects the probability of sanction for that individual firm. For a discussion of the problems with sanction-adjusted strict vicarious liability, see Arlen and Kraakman (1997).
80. To be precise, the state need only reduce the sanction imposed (Arlen and Kraakman 1997). Nevertheless, non-indictment is preferred if the state can impose civil liability on the firm, especially if criminal liability is associated with substantial collateral consequences, market sanctions, or increased private civil liability.
81. Specifically, it is consistent with optimal deterrence to reduce the sanction imposed on firms that self-report and cooperate, for example, by agreeing not to indict or convict them, along with often subjecting them to lower penalties.
82. In order to induce optimal prevention, the state needs to ensure that firms bear the full social cost of each crime committed. This implies that firms must pay a sanction equal to the social cost of crime divided by the expected probability of sanction. Accordingly, in those situations where the state expects to induce optimal policing, the fixed penalty should equal the social cost of crime divided by the probability of sanction when state enforcement and corporate policing are optimal. This is H/P^*. See section 7.

    It should be noted that this statement of the optimal sanction is correct when prevention and policing are fixed costs and not marginal costs of crime, as is often the case with *ex ante* monitoring and many prevention measures. The optimal sanction must be adjusted when sanctions are needed to induce crime-specific measures that deter crime while increasing the marginal cost of each crime committed. This chapter does not explore this issue; it is addressed in the case of individual liability in Polinsky and Shavell (1984).
83. The firm does not compensate employees for any expected criminal liability because employees can work for the firm without any risk of liability if they act optimally and the firm does not want the crime committed if it is required to bear the social cost of crime. Thus, the firm need not (and will not) compensate employees for their expected criminal liability to induce employees to work for them.
84. We focus on the situation where employees are insolvent because we are considering the effect of strict corporate liability when optimal deterrence requires corporate monitoring, as is the case when employee asset insufficiency requires positive enforcement expenditures.
85. The firm bears the full sanction *ex post* and *ex ante* since the state appropriates all the collectable wealth of convicted agents.
86. Because the private gain is a pure transfer, matched by a cost to the firm, it should not constitute a social benefit of the crime.
87. Observe that when the marginal cost of monitoring is increasing, but the marginal benefit is constant or decreasing, then optimal monitoring, M^*, is less than the level needed to deter all suboptimal crimes, defined as crimes where the direct social cost of the crime equals or exceeds the social benefit. For a more general explanation of why it is not optimal to deter all socially costly crimes when optimal enforcement expenditures are positive, see Polinsky and Shavell (1984).
88. The next section shows that corporate liability induces firms to adopt optimal prevention measures and undertake optimal activity levels when sanctions ensure that the firm internalizes the expected social cost of employee wrongdoing.

89. To be precise, we should subtract wages of w and include a participation constraint. This is not necessary here, however, because we know that the participation constraint is satisfied at $w = 0$ as result of the following assumptions: (i) the benefit to individual workers of crime is unobservable; (ii) firms do not benefit from crime and so will not hire workers who accept a wage below their reservation utility (as this signals they expect to benefit from crime); and (iii) workers obtain zero reservation utility. Nevertheless, nothing would be changed were we to set the reservation utility at R and the wage at $w = R$. The incentive compatibility constraint requires that employees only commit crimes if they earn positive expected returns and is incorporated into Equation (6).
90. As it happens, firms also have suboptimal incentives to invest *ex ante* in their ability to engage in *ex post* policing for the reasons given in the prior discussion (Arlen and Kraakman 1997).
91. Moreover, traditional strict liability is not optimal even if we recognize that a firm might obtain a reputational deterrence benefit with its own employees from reporting and cooperating on crime. The reputation effect likely exists in some cases, but is muted when the penalty of detected wrongdoing is large and managers can fail to report detected wrongdoing without employees knowing. Moreover, even when there is a deterrence benefit, firms face suboptimal incentives to undertake post-crime policing because the private benefit to the firm of policing is less than the social benefit of policing to the extent post-crime policing increases the firm's expected liability. This implies that the perverse effects of strict corporate liability are most pronounced in the very situation where corporate policing is most needed: where corporate *ex post* policing substantially increases the probability that the government detects and sanctions the wrong.
92. See *infra* note 94 and accompanying text.
93. The state can both deter crime optimally while also relying on corporate reporting more easily than it can rely on individuals to self-report their own crimes. This is because the state can give the firm substantial credit for self-reporting without significant risk of undermining overall deterrence since the primary goal of criminal liability for corporate crimes is to sanction the individual, not the firm. Thus, this regime is not subject to the problems that have been identified with laws that sanction individuals for hiding information about their own crimes or for failure to self-report (Sanchirico 2006).
94. We are interested in devising a sanction that supports a Perfect Bayesian Equilibrium in which employees believe the firm will self-report and cooperate if it detects a crime, and the firm in fact maximizes its welfare by doing so should it detect a crime. Thus, we assume that employees' expected sanction is given by $P(M,E(R)) = P(M,R^*)$, where M is the actual and observable level of *ex ante* policing and $E(R)$ is employees' expectations regarding the firm's *ex post* policing should it detect a crime. Accordingly, we see that the expected amount of employee wrongdoing is independent of the firm's actual actions. What the state needs to do is to ensure that the sanction, F, is sufficiently large to ensure that, each time the firm detects a crime, its expected costs are lower if it self-reports and cooperates than if it does not.
95. Evidence suggests that evidence of fraud often reaches the government through the firm, its employees, or through media sources (which often obtain information from employees). Government authorities detect little fraud on their own (Dyck *et al*. 2010).
96. Moreover, this conclusion holds even when we consider the effect of firms' reporting decisions on future wage payments. Firms' actual reporting decisions should not affect, and thus should not be affected by, future wage payments if the duty-based sanction is optimally designed to support a Perfect Bayesian Equilibrium in which employees correctly believe that firms will always self-report and cooperate. Employee wage payments are predicated on employees' *expected* future liability given the beliefs about whether a firm that detects wrongdoing will self-report and cooperate. When liability is optimal, employees will expect firms to do so. *Ex post*, when the firm does detect and cooperate, this confirms employees' pre-existing beliefs, rather than altering them. Thus, once a firm detects a crime, it does not expect to bear any additional future wage payments should it report because employees' wages were set on the assumption that it will report. Nor can the firm obtain any reduction in wages in the future by not reporting because the firm cannot feasibly reveal to employees that it does not report detected wrongdoing without revealing this to the government as well. Thus, *ex post*, the firm's welfare with respect to the reporting decision is not affected by its wage payments. So, the duty-based sanction, F, is independent of the expected individual sanction.
97. As before, we assume that agents are insolvent with respect to the optimal (and actual) individual sanction and thus the firm does not employ a wage that depends on whether it reports any crime is committed.
98. This result stands in contrast to the conclusion of Shavell (1997) that corporate criminal sanctions should be reduced to reflect individual criminal liability. Shavell's analysis focused on strict corporate criminal liability. He did not consider the optimal relationship between individual and corporate liability when corporate criminal liability is restricted to duty-based criminal liability for failure to report.
99. The left-hand side of this equation assumes the state imposes an optimal residual sanction (see section 7). It is assumed that the state also imposes an additional duty-based sanction designed to induce optimal reporting.

100. This is not the minimum optimal sanction.
101. There is evidence that firms committing financial disclosure violations tend to have inside and outside directors who own proportionately less of the firm's stock than the boards of non-offending firms (Gerety and Lehn 1997; Beasley 1996). This suggests that shareholders can reduce the incidence of crime by ensuring that directors' compensation is tied to the long-run fate of the firm. Similarly, evidence that the incidence of corporate crime is higher the lower the stock ownership of directors and senior officers (Alexander and Cohen 1999) suggests that shareholders can also deter crime by tying senior officers' compensation to the long-run fate of the firm. In turn, this suggests that efforts to deter corporate crime may depend on whether state and federal laws facilitate shareholders influence over director and officer compensation.
102. Corporate policing also imposes private costs on managers if the managers have engaged in undetected wrongdoing that could be detected by improved policing (Baer 2008b).
103. Of course, it is difficult to ensure that the government establishes an optimal duty-based liability regime.
104. A study of the effect of SEC and DOJ enforcement actions (1978–2006) on individuals identified as responsible for financial misrepresentations sanctioned found that 93% lost their jobs by the end of the regulatory period (Karpoff *et al*. 2008b). There also is evidence that directors discipline CEOs for excessive earnings management even when there is no enforcement action (Hazarika *et al*. 2011).
105. By contrast, the Organizational Sentencing Guidelines provide precise guidance on the nature of effective compliance and precisely lay out the effect on the corporate sanction of ineffective compliance, reporting, and/or cooperation. Unfortunately, the Organizational Guidelines do not adequately encourage corporate policing (Arlen 2012). They also do not formally apply to firms that avoid conviction.
106. See *supra* note 70 (qualifying this conclusion). When corporate enforcement is costly, the amount of corporate enforcement induced by an optimal duty-based composite regime will not deter all suboptimal crimes if the sanction that agents can bear (given wealth constraints and other factors) is less than $H/P(M^*, R^*)$.
107. By contrast, the state should not reduce the duty-based sanction for *ex post* policing to reflect employees' expected liability, even when corporate wages internalize employees' *ex ante* expected liability (see section 6.2.1).
108. For a discussion of when and why firms can be expected to pay wages that reflect the cost of their employees expected individual liability see section 3.3 and Kornhauser (1982).
109. Although the residual sanction should be reduced to reflect the market sanction, the state should not reduce duty-based liability for *ex post* policing to reflect the market sanction. Indeed, duty-based liability may be even more important when market sanctions are substantial than when they are not. See section 6.4.
110. In other words, this section focuses on pure securities fraud done solely to influence share prices, which is the fraud that should be the focus of securities fraud actions, rather than frauds motivated by managers' desire to profit from insider trading, which are covered by laws governing insider trading.
111. See Karpoff *et al*. (2008a) (finding that a firm with detected securities fraud bears a market sanction of $2.71 for every dollar that it misleadingly inflates its market value, in addition to any losses associated with the market adjusting the price to reflect both the firm's true financial value and expected legal penalties).
112. These shareholders are hit with the incidence of corporate liability even when it is imposed after they sell because, at the moment fraud is revealed, the share price will fall to reflect both the news about the fraud and the firm's expected liability.
113. Moreover, the fact that some shareholders may expect that fraud has occurred and sell before it is revealed does not justify residual corporate liability. Residual corporate liability will not deter shareholders who expect to sell during the fraud from allowing it to occur because they will exit the firm before the residual sanction is imposed.
114. The present analysis focuses on optimal government-imposed corporate residual liability for securities fraud. The arguments against private civil corporate liability for securities fraud are stronger than those presented here, because allowing private civil corporate vicarious liability for securities fraud undermines the effectiveness of private liability against individual managers, because private litigants will not sanction these wrongdoers if allowed to obtain redress from the firm – redress which the firm's managers will be all too willing to allow in return for not being held liable themselves (Arlen and Carney 1992).
115. These are not the only distinctions between corporate criminal and civil liability. There also are important procedural differences between civil and criminal enforcement actions, including the grand jury (Khanna 1996).
116. This assumes that the reputational sanction associated with a criminal sanction is larger than that associated with a civil one, even if only indirectly through the reaction of the firm's managers and employees.
117. This analysis is focused on wrongdoing by publicly-held firms. The state may optimally employ residual corporate criminal liability for intentional crimes committed by controlling owner-managers of

closely-held firms as this provides the strongest deterrent to these crimes (along with individual liability) and there is little reason to expect that such firms will fully cooperate with the government's effort to convict their owner-managers.

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