Why "Good" Corporate Governance Can Exacerbate Corporate Misconduct

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Abstract

This paper investigates the interplay between standard corporate governance mechanisms, which focus on the relations among shareholders, directors, and managers, i.e., *internal* governance, and the many laws governing the relation between the corporation and its stakeholders, and the enforcement mechanisms of these laws, which constitute *external* governance. We show that if external enforcement is weak, standard internal governance mechanisms considered "good" corporate governance, which align managers with corporations and their shareholders, can exacerbate corporate misconduct and societal harm. We develop a model that explores how enforcement at both the corporate level and the manager interacts with performance-based managerial compensation, insurance of directors and officers, and voluntary compliance programs. We show that resolving internal agency within the firm can exacerbate the agency conflict between corporations and society. Our results have important policy implications pertaining to both external and internal governance mechanisms. Our analysis underscores the pressing need to enhance external corporate governance mechanisms. Among other things, we show that rewarding corporations generously for "cooperation" with law enforcement can bring about more corporate misconduct, and that we should examine placing constraints on corporations' ability to shield executives from liability.

1 Introduction

Corporate Governance is generally framed in the law and finance literature as a means of addressing problems among shareholders, directors and executives, which can be viewed as mostly *internal*. In terms of the legal framework, they correspond to the workings of corporate law and securities laws that mandate such things as corporate disclosure and roles related to voting, board structure and the like. In this standard approach, "better" internal governance practices — which might include performance-based compensation, independent boards, audited financial statements, and active shareholder oversight — improve firm value by better aligning the incentives of individual acting on behalf of the corporations with corporate purpose, typically taken to

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be increasing the value of shares. This approach at least implicitly assumes that *external* corporate governance mechanisms, i.e., the laws and regulations governing the corporation's relations with all other stakeholders and society as a whole are sufficiently effective to ensure what is good for the corporation and its shareholders is also good for society.

If external governance is effective, a "transitivity argument" suggests that two separate alignment processes will combine to protect society. External governance addresses the potential conflicts of interest between corporations and society, whereas internal governance aligns the preferences of managers and others acting on behalf of the corporation and those of the corporation. If external governance works perfectly, then improving internal governance improves social welfare as well. The appeal of the transitivity argument lies in its potential to harmonize the internal dynamics of corporate governance with broader societal objectives. If the rule of law forces corporations to account for external costs, then resolving internal manager-shareholder agency conflicts will result in behavior that benefits society as a whole, or, at the very least, does no harm.

In discussing what they termed "The [U.S.] Corporate Governance Machine," Lund and Pollman (2021) summarize the standard approach to corporate governance and the implicit assumption behind it by saying in reference to the focus on aligning boards and managers with the share price: "According to this theory, focusing management attention on shareholder wealth would best maximize corporate value and also social welfare, as other bodies of law could regulate corporate externalities that would harm the public." In other words, other bodies of law should control corporate externalities so that corporate governance can deal fully with the set of agency issues within the corporation and particularly among shareholders, directors and managers.

Yet the real world offers much evidence that external governance often falls short, allowing corporations to profit at the expense of non-shareholder stakeholders and while causing harm to society. For one, certain laws are lacking or are poorly designed and based on flawed analyses of the trade offs involved. There are distortions in tax laws, for example, including tax subsidies that favor debt over equity for corporations and sometimes for mortgages. Inadequate banking regulations in most jurisdictions permit banks to borrow excessively and to hide the extent of risk they take and expose others to in their disclosures and regulatory filings. (See Admati and Hellwig (2024) for an extensive discussion and citations on these issues.) We can also infer that external corporate governance fails society from the demands by many that corporations — through their investors and leaders — take on goals that go beyond measured profits and share prices and also capture Environmental, Social and Governance (ESG) goals. Such demands signal widespread recognition that that voluntary, extra-legal initiatives are needed to compensate for weak governmental oversight. In short, the emphasis on ESG reflects a collective frustration with external (governmental) governance mechanisms that fail to ensure corporations act in ways that benefit society and are held accountable when they do not.

Laws obviously evolve in political contexts, but whatever laws are written, they are meaningless without enforcement mechanisms. In this context, a legitimate question is whether the numerous laws corporations and their agents must comply with, including laws banning fraud or money laundering or those setting safety standards for their products, are properly enforced. Corporate scandals and many billions in fines are routinely in the news. Misconduct often persists invisibly for years and is sometimes uncovered only when harms become visible or when the corporation files for bankruptcy.

The issues of law enforcement in the corporate context can be illustrated in the cases of Purdue Pharmaceutical and Boeing in the US. Both corporations ultimately pleaded guilty for crimes and paid large fines. Purdue Pharma is now in bankruptcy. In both cases the harm

the corporations caused went far beyond financial consequences and included deaths (from drug overdoses in the case of Purdue and from multiple plane crashes in the case of Boeing). In both cases, law enforcement was ineffective and slow, allowing risk and harms to persist both in the context of regulatory standards and in response to clear signs of problems that ultimately led to significantly more harms.[1]

There is indeed a growing consensus among legal scholars that external governance of corporations is fundamentally inadequate (Garrett, 2014; Eisinger, 2017; Coffee Jr, 2020; Rakoff, 2021; Taub, 2020; Baer, 2023). There are many reasons for this. The state often uses formulas, such as those given in the United States Sentencing Guidelines, to calculate fines, even though the formulas don't reliably account for either the social harm or the corporate benefits attributable to misconduct (Alexander and Cohen, 2015). When contemplating a large penalty, prosecutors and government agencies sometimes reduce liability because of concerns about the potential collateral consequences of imposing liability commensurate with the misconduct (Atkinson, 2023*a*). In other cases, statutory caps on penalties prevent sanctions from being set high enough, for example PG&E paid the statutory maximum fine of only $3.4 million for 84 counts of involuntary manslaughter (only $41,667 per lost life!). In many cases, firms can profit when the state does not sufficiently adjust fines for the time value of money to account for the lag between misconduct and the ultimate penalty (Shapira and Zingales, 2023; Atkinson, 2023*b*). Moreover, the US Supreme Court has narrowed pathways to corporate liability in recent years (Pollman, 2021). When private enforcement occurs, it will not generally achieve the optimal level and cannot substitute for public enforcement for the simple reason that private enforcers do not take into account positive externalities created by their suits (Polinsky, 1980; McAfee, Mialon and Mialon, 2008).

In this paper we take gaps in external governance of corporations seriously and focus on issues related to enforcement. The laws themselves, and the political economy of writing and implementing them, are of course critically important, but enforcement issues are fundamental as well. Specifically, we analyze the interaction between a corporation's internal governance and the external enforcement mechanisms in the context of a model that allows us to capture some of the richness of the multiple agency conflicts at the heart of the broader governance challenge. The main contribution of our paper is a positive theory of of the interaction between internal corporate governance and law enforcement in the corporate context.

We explore more specifically how performance-based compensation, indemnification and insurance for directors and managers, and reliance on voluntary compliance programs and similar actions by corporations for which they may be rewarded by reduced fines interact with one another and affect the ultimate outcomes. Our analysis includes both enforcement actions aimed at the corporation and enforcement actions aimed at the manager. We show that when corporations aim to optimize internal governance mechanisms, taking into account realistically imperfect external enforcement, "good" internal governance that aligns managers' incentives with those of

[1]For detail description of the Purdue misconduct see Meier (2018), Posner (2021), and Keefe (2021). On some of the legal issues around the 2007 litigation against Purdue and some of its executives, see Baer (2020). The bankruptcy settlement of the corporation was recently struck down in the US Supreme Court because of the attempts by the Sackler family to receive release from litigation through the corporate bankruptcy. and is now in limbo. SEe, e.g., "Supreme Court Jeopardizes Opioid Deal, Rejecting Protections for Sacklers," Abbie VanSickle, *New York Times*, June 27, 2024. On the Boeing's misconduct, including the failures of the Federal Aviation Authority to enforce its own regulations, see Robison (2022). Coffee (2022) provides a scathing review of the 2021 Deferred Prosecution Agreement the company signed with the Department of Justice. In 2024, Boeing pleaded guilty in a revisit of the case, see "Boeing Agrees to Plead Guilty to Felony in Deal With Justice Department," Eileen Sullivan and Danielle Kaye, *New York Times*, July 8, 2024. In both these cases, no corporate leaders suffered major consequences, and the corporations, or insurance, paid all legal expenses (including for shareholder suit in Delaware in the case of Boeing).

the corporation and its shareholders can backfire by and exacerbate corporate misconduct and social harm.

To see the basic intuition, assume that misconduct is profitable for the corporation even when fines are possibly imposed when the misconduct is detected. To ensure that the manager continues to engage in the profitable yet socially harmful misconduct, the corporation may need to raise the manager's equity-based compensation. Once the corporation re-optimizes managerial compensation in light of the external enforcement mechanisms, increasing the corporate fines has only a marginal effect on misconduct, and in some cases increased fines have no effect at all. That is because paying slightly more to offset the effect of the fine on managerial compensation can still result in higher profits and share price. The deterrent effect of the fine on misconduct is therefore small and at times non existent.

If external governance involves liability imposed directly on the manager if the manager can be implicated in misconduct, deterrence of corporate misconduct might theoretically be achieved at a lower overall cost relative to the use of a corporate-level fine. However, we show that if misconduct is profitable for the corporation, it can neutralize the deterrent effect by increasing the manager's equity stake and generally compensating the manager for the managerial-level liability, which undoes the deterrent effect even in cases where managerial-level liability would be sufficient to deter misconduct. Moreover, corporations typically provide insurance and indemnification to managers and directors, which help shield them from any liability. We show that focusing on individual-level liability may in fact exacerbate corporate misconduct when the internal governance mechanisms are adjusted in response to external governance.

Given the challenge of imposing civil or criminal liability on corporations and their executives due to the resources needed, collateral harm on innocent people, or political consideration for corporate misconduct, and in an effort to prevent misconduct in the first place, governments have increasingly sought to deputize corporations into policing themselves through the adoption of voluntary compliance programs. If effective, these programs should increase the probability of detecting misconduct. In exchange for adopting compliance programs, governments offer substantial reductions when misconduct does occur.

If compliance programs deter misconduct in which the corporation itself is a victim, such as embezzlement, these programs are optimal for the corporation independent of how authorities treat them. The question is whether compliance programs aimed at detecting violations of laws aimed at protecting other stakeholders can help deter misconduct. Perhaps counterintuitively, we show that providing corporations with "cooperation credits" that substantially reduce their fines and penalties when they put in place compliance programs (e.g., to increase the probability of detecting misconduct) or for coming forward to admit misconduct (effectively increasing the detection probability to 1) may in fact *lower* the expected fines associated with corporate misconduct, and perversely *increase misconduct and reduce social welfare.*

Key to this result is the voluntary nature of these compliance programs, i.e., the fact that corporations themselves design them and choose whether to use them as part of their strategy dealing with enforcers. Corporations will only choose to put in place compliance programs or to come forward to admit misconduct if the discount they receive is large enough, in which case the fine becomes "cost of doing business" and has little or no deterrence. Similarly, if the corporation receives substantial discount for providing information about individuals of its choice, the outcome may not promote deterrence but simply enable corporations to reduce their own fine by throwing someone, often a low level employee, "under the proverbial bus." These observations call into questions the prevailing policies in the US when it comes to corporate law enforcement.

The remainder of the paper is structured as follows. We begin in the next section with a

review of the relevant literature, highlighting the challenges of law enforcement in the corporate context. In Section 3 we develop our formal model and demonstrate how, if external corporate governance is ineffective, improvements in internal governance mechanisms may harm societal welfare. Section 4 considers uncertain enforcement and the role of compliance programs in deterring (or exacerbating) corporate misconduct. Section 5 offers concluding remarks.

2 Related Literature

The vast corporate governance literature is almost exclusively focused on internal governance that pertains to relations among shareholders, directors, and corporate managers. Implicit in this focus is the notion that contracts, markets, and laws, are sufficient to govern the relations between the corporation and other stakeholders, including society as a whole. A common assumption is that corporations are, and should be managed to benefit shareholders, treating shareholders as the owners of the corporations and viewing the main governance challenge as aligning managers' preferences with shareholders, particularly when they are dispersed. Even studies of "external corporate governance" such as those cited in Braun and Mueller (2024) focus on the role of outsiders such as auditors, analysts and the media and on misconduct related to shareholder rights such as accounting fraud. They rarely analyze laws relevant to other stakeholders and to their external enforcement mechanisms.

Bebchuk and Weisbach (2010) summarize the state of the corporate governance literature as of 2010, citing papers on seven key topics: shareholders, boards of directors, executive compensation, controlling shareholders, cross-border investing, international comparisons, and politics.[2] Most relevant to our paper is the topic of executive compensation, where we assume, consistent with the optimal contracting approach, that executives' compensation contracts are designed by the board (representing shareholders) to maximize shareholder value as measured by the value of shares.[3]

Admati (2017) notes that the financialized corporate governance that attempts to align managers and shareholders can lead to societal harm if the laws and their enforcement work poorly. In a related essay written in response to the question "what has gone wrong with capitalism and how to fix it" Admati (2021) argues that the forces of capitalism, including financialized corporate government, have acted to undermine democracies, thus leading to distortions in laws and their enforcement. Corporate power in politics and law might renter corporations and their leaders to being effectively above the law.[4]

Misconduct and law enforcement are often ignored in the corporate governance literature because, as Raz (2022) points out, corporate law specifies that corporations must pursue *lawful* profits. If external governance is ineffective, however, corporations might be able, and tempted, to act unlawfully, and corporate law seems to be weak as an enforcement tool. Whereas corporate law imposes duties of care and loyalty on directors and officers, directors almost never actually bear liability for misconduct either because they can point to a "good enough" compliance program or because insurance companies corporations had purchased, or the corporations themselves, pay any settlements (Black, Cheffins and Klausner, 2005).[5]

[2]When Bebchuk and Weisbach (2010) discuss politics, their focus is also on issues of investor protection that pertain to internal corporate governance.

[3]Bebchuk and Weisbach (2010) discuss what they refer to as the "managerial power view." Shareholders, of course, can themselves be harmed by managerial actions, such as accounting fraud or embezzlement. We do not deal with such cases specifically, implicitly assuming that corporations are sufficiently able to control such conflicts.

[4]For a discussion of the relevant forces, see Chapter 17 of Admati and Hellwig (2024) entitled "Above the Law.

[5]Shapira (2024) discusses the evolution of the *Caremark* doctrine that enables derivative lawsuits in Delaware

Our paper also relates closely to the optimal deterrence literature in law and economics. A large theoretical literature examines how to optimally structure legal sanctions so as to deter wrongdoing (Becker, 1968; Polinsky and Shavell, 2007). In its most basic form, this optimal deterrence framework explores how authorities should set fines and other sanctions at the level that forces an individual or corporation to internalize the social harm of its actions, thus aligning the public and private incentives. In the corporate context, the fundamental questions include whether to impose liability on the manager or the corporation Kornhauser (1982); Polinsky and Shavell (1993); Argenton and van Damme (2014); Deng, Goldman and Kahl (2021), and the effects of strict versus duty-based liability regimes (Newman and Wright, 1990; Arlen, 1994; Arlen and Kraakman, 1997). While optimal deterrence models help explain the effects of various policies, they are fundamentally normative theories about what should be done rather than positive theories that help explain the world as it is.

Abundant empirical evidence demonstrates that corporate misconduct is neither rare nor confined to a few high-profile fraud scandals. Successfully detecting fraud is difficult (Dyck, Morse and Zingales, 2010), and Dyck, Morse and Zingales (2024) estimate that only a third of frauds among large publicly traded firms are ever detected, and that the total cost of fraud among these firms is $830 billion per year. Rudman et al. (2009) estimate the cost of fraud in the healthcare industry to be between $100 billion and $170 billion per year. The Economic Policy Institute estimated in 2017 that U.S. workers lose over $8 billion per year to wage theft—the largest form of theft committed in the United States.[6] Atkinson (2023*b*) estimates that the largest violations of the Clean Air Act are profitable for firms even after paying fines. Karpoff, Lee and Vendrzyk (1999) show that important—and well-connected—defense contractors receive much lower sanctions than less important ones following procurement fraud. Arecent survey experiment finds that banks are only marginally sensitive to the risk that clients are using their accounts for illicit purposes (Findley, Nielson and Sharman, 2024).

Misconduct is, of course, committed by the actions of individuals within the corporation. At the individual level, civil liability is limited and it is extremely rare for the government to prosecute executives for corporate misconduct (Eisinger, 2017; Rakoff, 2021; Buell, 2024). Efendi, Srivastava and Swanson (2007) shows that CEOs with in-the-money options are more likely to misreport earnings. Raghunandan (2021) finds evidence that firms use wage theft as a form of earnings management. The career effects of misconduct by individuals is mixed with Egan, Matvos and Seru (2019) finding that financial advisors found to have committed misconduct find employment relatively easily elsewhere, whereas Lel (2024) finds CEOs of firms subject to Environmental Protection Agency enforcements experience a decline in labor market opportunities.

Our paper takes as given that, for various legal, political, and institutional reasons, deterrence is often suboptimal. That is, instead of prescribing exactly how to achieve optimal sanctions, we show how a rational corporation responds to suboptimal sanctions and adjusts its internal governance (ie. compensation, indemnification, compliance) to exploit these inefficiencies. In this sense, our theory is a positive rather than normative theory.

Our discussion of compliance programs in Section 4 relates to the optimal deterrence literature on settlements and self reporting. Polinsky and Rubinfeld (1988) discuss how settlements can undermine deterrence, and Kaplow and Shavell (1994) show the benefits of including self reporting

courts. In the unusual case of Boeing, for example, the Delaware Chancery Court approved a $237.5 million settlement in March 2022 to end a stockholders' derivative litigation relating to Boeing's oversight of the 737 MAX's design and development, all of which was paid by the insurance company. See `https://casetext.com/case/in-re-the-boeing-co-derivative-litig`

[6] https://www.epi.org/publication/employers-steal-billions-from-workers-paychecks-each-year/

in an optimal deterrence regime. Arlen (1994); Arlen and Kraakman (1997) conclude that the optimal liability regime is one where firms are held strictly liable for employees' actions, but where the government offers substantial leniency or discounts for those firms that adopt compliance programs, self-report, and fully cooperate. Importantly all of these results are within the universe of *optimal deterrence*. That is, they explore the role of compliance programs, settlements, and self reporting as part of an optimal regime. We show that when the enforcement regime is already suboptimal, the introduction of these mechanisms can make matters strictly worse.

3 Model and Results

3.1 Model Setup

We formally analyze the strategic interactions among three key actors, the Corporation, its Manager, and the Government, which taken together determine corporate activities that affect societal welfare. The Government sets external enforcement policies, including fines for harmful corporate activities that can be levied against the corporation and its manager. The Corporation designs the compensation contract for its Manager to maximize shareholder profits net of any fines paid by the corporation. The Manager chooses levels of corporate activities based on the compensation contract and personal cost of effort.

1. **Corporate Activities.** The corporation has two activities available, one that on net benefits society and the other which on net harms society. Its manager chooses the level of each activity, where x_b is the level chosen for the beneficial activity and x_h is the level set for the harmful activity. Because of resource constraints the activity levels must be chosen so that $x_b + x_h \leq 1$.

2. **Law Enforcement.** The Government specifies $\mathcal{F}$, a policy for imposing fines that in general will depend on x_h, the level of the harmful activity. The fine might be imposed on the corporation or the manager. In this section we assume that the government is able to detect that $x_h > 0$ with certainty. We relax this assumption in Section 4 when we discuss compliance programs that affect the probability of detection.

3. **Managerial Contract.** The Corporation offers a compensation contract to the Manager that has the form

$$Comp = S + \alpha \times \Pi_c, \tag{1}$$

   where $S \geq 0$ is a fixed salary, $\alpha \in [0, 1]$ is the profit-sharing parameter, and Π_c is corporate profits. The Corporation chooses S and α to maximize its expected profits, taking into account the enforcement policy $\mathcal{F}$.

4. **Manager's Effort Choice.** After accepting the contract, the Manager chooses activity levels (x_b, x_h) to maximize his own utility, which is given by

$$U_M(x_b, x_h) = Comp - \beta \times (x_b + x_h) - Fine_m, \tag{2}$$

   where $\beta \times (x_b + x_h)$ represents the disutility of effort with $\beta > 0$, and $Fine_m$ is the fine (if any) imposed on the manager based on the government's policies, $\mathcal{F}$.[7]

[7] If the imposition of the fine is uncertain, for example because the harmful activity is not detected, then $Fine_m$ can be interpreted as the expected value of the fine.

5. **Corporate Profits.** The Corporation seeks to maximize its net profit, which equals

$$\Pi_c(x_b, x_h) = \pi_b\sqrt{x_b} + \pi_h\sqrt{x_h} - Comp - Fine_c. \tag{3}$$

where $\pi_b\sqrt{x_b} + \pi_h\sqrt{x_h}$ is the component of profits earned from the corporation's activities with $\pi_h > 0$ and $\pi_b > 0$ and $Fine_c$ is the fine (if any) levied against the corporation. Note that the corporation confronts decreasing returns when it allocates more resources to either activity.[8]

6. **Societal Impact:** Social welfare is equal to

$$(x_b, x_h) = B\sqrt{x_b} - H\sqrt{x_h}, \tag{4}$$

where both B and H are positive. (For simplicity we do not include the manager's disutility of effort in $W(x_b, x_h)$ since it is assumed to be very small relative to the other benefits and harms. Note that since the disutility of effort is equal to $\beta \times (x_b + x_h)$ it only depends on the sum of the two activity levels and if resources are fully deployed as will be optimal, the disutility of effort will not vary.)

This setup provides the foundation for analyzing how changes in the Government's enforcement policy, $\mathcal{F}$, and the Corporation's internal governance, $Comp$, interact, particularly when external enforcement is weak.

3.2 No External Enforcement

We first assume that there is no external enforcement: that is, setting $x_h > 0$ is not penalized by any laws, regulations, or fines although harmful to society. Because $H > \pi_h$, society is strictly worse off whenever the firm increases x_h.

Absent a compensation contract, the manager maximizes his utility by choosing $x_b = x_h = 0$. The corporation can solve this *internal* agency problem by making compensation depend on profits.

Proposition 1. *The manager will have the incentive to choose the levels of x_b and x_h that maximize the total profit attainable for the two activities if compensation is set optimally equal to a constant plus a fraction of the corporation's profits, .*

Proof: The total profit maximization problem is

$$\max_{x_b, x_h} (\pi_b\sqrt{x_b} + \pi_h\sqrt{x_h}) \qquad \text{s.t.} \qquad x_b + x_h \leq 1, \tag{5}$$

and the profit maximizing levels are:

$$x_b^* = \frac{\pi_b^2}{\pi_b^2 + \pi_h^2}; \quad x_h^* = \frac{\pi_h^2}{\pi_b^2 + \pi_h^2}. \tag{6}$$

Given compensation $Comp = S + \alpha \times \left(\pi_b\sqrt{x_b} + \pi_h\sqrt{x_h}\right)$, the manager's utility maximization problem is:

[8] As in the case of the manager discussed in the previous footnote, if the fine is uncertain then $Fine_c$ can be interpreted as the expected value of the fine.

$$\max_{x_b,x_h} \left(S + \alpha \times (\pi_b\sqrt{x_b} + \pi\sqrt{x_h}) - \beta \times (x_b + x_h)\right) \quad \text{s.t.} \quad x_b + x_h \leq 1. \tag{7}$$

If α, the manager's share of total profits is set equal to $2\beta/\sqrt{\pi_b^2 + \pi_h^2}$, the manager's optimization problem becomes:

$$\max_{x_b,x_h} \left((1-\alpha)S + \frac{2\beta}{\sqrt{\pi_b^2 + \pi_h^2}} \times (\pi_b\sqrt{x_b} + \pi_h\sqrt{x_h}) - \beta \times (x_b + x_h) \right) \quad \text{s.t. } x_b + x_h \leq 1. \tag{8}$$

The first order conditions for an optimum are:

$$\frac{\beta\pi_b}{\sqrt{\pi_b^2 + \pi_h^2}} \times \frac{1}{\sqrt{x_b}} - \beta = 0 \implies x_b = \frac{\pi_b^2}{\pi_b^2 + \pi_h^2} = x_b^* \tag{9}$$

$$\frac{\beta\pi_h}{\sqrt{\pi_b^2 + \pi_h^2}} \times \frac{1}{\sqrt{x_h}} - \beta = 0 \implies x_h = \frac{\pi_h^2}{\pi_b^2 + \pi_h^2} = x_h^* \tag{10}$$

and so the manager's choices for x_b and x_h maximize the total corporate profits from the activities.

The proposition also holds if the maximization problem is to maximize profits *net* of what the manager receives through the profit sharing defined in his compensation contact as long as $\alpha < 1/2$. This is because shareholders' share of profits will be equal to:

$$(1-\alpha)\left(\frac{\alpha\pi_b^2}{2\beta} + \frac{\alpha\pi_h^2}{2\beta}\right) \tag{11}$$

which is increasing in α if $\alpha < 1/2$. This means that if $2\beta/\sqrt{\pi_b^2 + \pi_h^2} < 1/2$, shareholder profits will also be maximized. For that not to be case, β, the disutility of the manager's effort, must be extremely and unrealistically large, at least for most publicly traded corporations. ■

Absent external enforcement, the profit-maximizing levels of both activities are positive. Proposition 1 therefore underscores the challenge at the heart of our analysis: "good" internal governance, i.e., internal governance that fully aligns the manager with the corporation, ignores the social welfare effects of harmful activity. Specifically, whenever the marginal profits of activity 2 are greater than those of activity 1, the compensation contract gives the manager incentives to push more resources into the harmful activity. With no external governance, aligning managers with shareholders can amplify the harm to society that the corporation creates.

Numerical Example 1. Consider a simple numerical parametrization where $\pi_b = 4$, $\pi_h = 3$, $\beta = 0.01$, $B = 2$, and $H = 15$. In this case the profit-maximizing equity share is $\alpha = 0.004$, which leads to the optimal activity levels of $x_b^* = 0.64$ and $x_h^* = 0.36$. Corporate profits will be $\Pi_c = 5$, so the manager's take home pay will be $(0.004)(5) = 0.02$. This compensation more than offsets his disutility of effort which is $\beta \times (x_b^* + x_b^*) = 0.01 \times (0.64 + 0.36) = 0.01$.

From a social welfare perspective, the harm caused to third parties by the second activity is $H\sqrt{x_h} = 15\sqrt{0.36} = 9$. This is much greater than the profits the corporation

makes by engaging in this activity, which are $\pi_h\sqrt{x_h} = 3\sqrt{0.36} = 1.8$, and indeed is greater than total corporate profits of 5.

3.3 Internal Governance Responses to Corporate-Level Fines

There is a very simple solution to the problem of maximizing social welfare. If the government imposes a fine that is greater than the benefit to the corporation from the harmful activity, then the activity will be deterred, and social welfare will be maximized. However, there are many cases where fines are set below the level that leads to complete deterrence. Our focus in this section is how internal corporate governance changes in response to suboptimal deterrence.

Suppose the external authority may fine the corporation and that the size of the fine may depend on the level of x_h (which for now we assume is observable). We will consider two types of fines. One is a fixed fine that is imposed whenever the corporation sets $x_h > \psi$, where ψ is some threshold greater than or equal to zero. The other is a fine that increases in the level of the profits the corporation gains from the harmful activity. First consider the fixed fine:

Proposition 2. *If a fixed fine of F_c is imposed on the corporation whenever $x_h > \psi$, either the corporation sets the level of the harmful activity equal to ψ or sets it equal to the profit maximizing level it would choose with no fine. In every case there is a compensation contract that gives the manager the incentive to do what is optimal for the corporation.*

Proof: Let $\Pi^* = \pi_b\sqrt{x_b^*} + \pi_h\sqrt{x_h^*}$ where x_b^* and x_h^* are given in (6) and are the values that maximize total profit when there are no fines. Let $\Pi^\psi = \pi_b\sqrt{1-\psi} + \pi_h\sqrt{\psi}$, which is equal to the profits realized when the harmful activity is set at the threshold that does not lead to a fine and the level of the beneficial activity is set equal to $1 - \Upsilon$. There are three cases to consider:

Case 1: $x_h^* \leq \psi$

Case 2: $x_h^* > \psi$ and $\Pi^* - \Pi^\psi > F_c$

Case 3: $x_h^* > \psi$ and $\Pi^* - \Pi^\psi \leq F_c$

In case 1 the optimal level of the harmful activity falls below the threshold for a fine so the corporation will obviously choose that level. In case 2, the optimal level is above the threshold for a fine, but the corporation makes higher profits even after paying the fine than what it would if it set $x_h = \psi$ and avoided the fine. So again the corporation will chose the same level of the harmful activity as it would without a fine. In case 3 the fine is large enough to make $\Pi^* - F_c$, the maximum profits that can be attained by setting $x_h = x_h^*$ and paying the fine, smaller than the profit that can be attained when $x_h = \psi$ and no fine is imposed.

To give the manager incentives to do what maximizes profits, it is clear that in cases 1 and 2 the same compensation contract can be used as when there are no fines levied, i.e,. *comp* is equal to S plus α times corporate profits (offset by any payment of fine) where $\alpha = 2\beta/\sqrt{\pi_b^2 + \pi_h^2}$. (It may be necessary to adjust the value of S in case 2 to ensure that the manager's compensation is worth at least his outside opportunity since profits are diminished by the fine.) In case 3 the compensation contract must be adjusted so the manager has the incentive to set $x_b = 1 - \psi$ since the harmful activity will be capped at $x_h = \psi$.

This means that α must be set so that the following first order condition for a maximum holds:

$$\frac{\alpha\pi_b}{2\sqrt{1-\psi}} - \beta = 0 \quad \Rightarrow \quad \alpha = \frac{2\beta\sqrt{1-\psi}}{\pi_b} \tag{12}$$

Thus in every case the manager can be motivated to maximize profits. ■

Proposition 2 shows that a fixed fine can be completely ineffective in reducing the level of the harmful activity. In case 1 the fine is not at all relevant given the threshold ψ is higher than the level of x_h that is optimal for the corporation. In case 2 the corporation simply treats the fine as a cost of doing business and does nothing to change the level of the harmful activity. Only in case 3 does the fine have an effect in reducing harm. Clearly it would be optimal from a social welfare perspective to set the fine very high and set ψ equal to zero, but the actual practice can fall far short of that.

We now turn to the case where the fine is proportional to the corporation's profits derived from the harmful activity and the harm that is done. We assume that the corporate fine is equal to $f_c \times \sqrt{x_h}$.[9]

Proposition 3. *If the fine is equal to $f_c \times \sqrt{x_h}$, the scale of the harm will be reduced if $0 < f_c < \pi_h$, and the harm will be eliminated if $\pi_h \leq f_c$. The manager will be motivated to make decisions to maximize profits net of fines with a simple change in the compensation contract.*

Proof: The fine transforms the corporation's profit maximization problem into:

$$\max_{x_b, x_h} \left(\pi_b\sqrt{x_b} + (\pi_h - f_c)\sqrt{x_h}\right) \qquad \text{s.t.} \qquad x_b + x_h \leq 1 \tag{13}$$

For any level of fine the solution is

$$x_b^* = \frac{\pi_b^2}{\pi_b^2 + \left(\max\left(\pi_h - f_c, 0\right)\right)^2}; \quad x_h^* = \frac{\left(\max\left(\pi_h - f_c, 0\right)\right)^2}{\pi_b^2 + \left(\max\left(\pi_h - f_c, 0\right)\right)^2} \tag{14}$$

For $f_c \geq \pi_h$, we have $x_b^* = 1$ and $x_h^* = 0$. Otherwise, we have $x_h^* > 0$ and the harmful activity is not fully deterred. If the fraction of the profits the manager receives in his compensation is adjusted to

$$\alpha = \frac{2\beta}{\sqrt{\pi_b^2 + \left(\max\left(\pi_h - f_c, 0\right)\right)^2}} \tag{15}$$

the manager will have the incentive to choose the optimal levels in (14). ■

If the fine is set equal to the harm so that $f_c = h$, then we clearly get the first best outcome since $h > \pi_h$, but note that to get the first best outcome it is sufficient for the fine be equal to the firm's profits from the harmful activity, since this completely deters the firm from engaging in the harmful activity. Given complete deterrence in this idealized setting, there will be no need to compensate for any harm, since no harm will ever occur. Obviously in the real world we don't have anything close to complete deterrence. There are many potential reasons for this, but it seems quite likely that in many cases the corporate fines that are actually imposed are such that f_c is less than π_h. In this case the fines are again viewed as a cost of doing business and the company chooses activity levels

[9] Another interpretation of this fine is that it is fixed at some level as in the first case but the probabiliy of the fine being imposed is literarly related to the level of profits the corporation realizes.

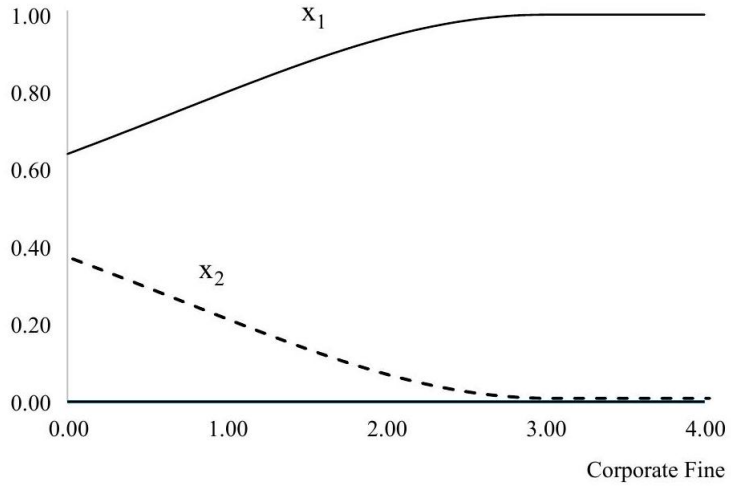


Figure 1: **Choice of activity levels as a function of fine rate.** This figure shows how the equilibrium choice of the beneficial and harmful activities as a function of a variable fine rate for the parametrization $\pi_b = 4$, $\pi_h = 3$, $\beta = 0.01$, $B = 2$, and $H = 15$.

$$x_b^* = \frac{\pi_b^2}{\pi_b^2 + (\pi_h - f_c)^2} < 1; \quad x_h^* = \frac{(\pi_h - f_c)^2}{\pi_b^2 + (\pi_h - f_c)^2} > 0 \tag{16}$$

This situation, when the fine is set equal to $f_c \times \sqrt{x_h}$, can be simply illustrated in the context of the parametrization given in Numerical Example 1 above, as shown in Figure 1 and Figure 2. In Figure 1 we see that as the fine is increased from zero, the firm will cut back on the harmful activity and increase the nonharmful activity since the fine reduces its profitability of misconduct. But only when the fine equals or exceeds the profitability of the harmful activity ($f_c \geq \pi_h$) will the firm desist. Figure 2 shows the effects of the fine on total profits and social welfare.

Importantly, in both the case of fixed fines (Proposition 2) and variable fines (Proposition 3), the corporation is adjusting managerial compensation, α, when fines change in order to induce the manager to choose the profit-maximizing effort levels. An increased fine decreases the corporation's profits for a given level of efforts, and thereby decreases the manager's equity-based pay. Because the fine is effectively a tax on the manager's effort, he will generally reduce effort in response to an increase in the fine level. The corporation then needs to increase the manager's equity compensation in order to compensate for this tax.

To see this more clearly, recall that given the numerical parametrization in Numerical Example 1, the corporation set the manager's equity based pay at $\alpha = 0.004$. This is captured in Row (B) of Table 1. Now consider the introduction of a variable fine, $f_c = 0.4$. If the corporation leaves the manager's contract unchanged, then the outcome is captured in Row (C). The fine lowers the profitability of the harmful action, and therefore decreases the manager's equity-based compensation. Given the "tax" of the fine, the manager's privately optimal response is to reduce the harmful activity from 0.36 to 0.26. This in turn reduces corporate profits and social harm. However, now that there is a fine in place, setting equity based pay at $\alpha = 0.004$ is too low, because the corporation is no longer compensating the manager enough for the disutility of effort. By increasing the manager's equity based pay to 0.0042 (Row (D)), the manager once again chooses the profit-maximizing level of effort. Doing so increases corporate profits *and* increases social harm.

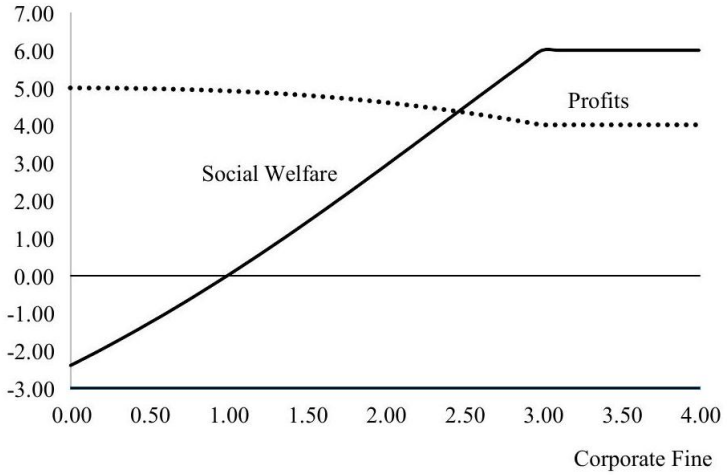


Figure 2: **Profits and Social Welfare as a function of fine rate.** This figure shows the equilibrium level of profits and social welfare as a function of a variable fine rate for the parametrization $\pi_b = 4$, $\pi_h = 3$, $\beta = 0.01$, $B = 2$, and $H = 15$.

Case	**Equity Given to Manager**	**Good Activity**	**Misconduct**	**Manager's Pay**	**Profits**	**Social Harm**
(A) No Fine	0%	0	0	0	0	0
(B) No Fine with Equity Adjustment	0.40%	0.64	0.36	.02	5.00	9.00
(C) Fine of 0.4; With No Equity Adjustment	0.40%	0.64	0.26	0.0182	4.53	7.65
(D) Fine of 0.4; With Equity Adjustment	0.42%	0.70	0.30	0.020034	4.77	8.17

Table 1: **The Effect of Variable Corporate Fines**. This table assumes the following numerical parametrization: $\pi_b = 4$, $\pi_h = 3$, $\beta = 0.01$, $B = 2$, and $H = 15$. Each row illustrates an outcome for a given fine and pay structure. Rows (A) and (C) are cases where the manager's pay is set sub-optimally, and Rows (C) and (D) illustrate the corporation's optimal equity adjustment to the given fine structure.

This point is important, because it illustrates the interaction between frictions in external corporate governance and internal corporate governance considerations that affect managerial compensation. It is not simply the case that managerial compensation might incidentally give the manager incentives to engage in misconduct. Rather, when external enforcement is inadequate, the managerial contract that is chosen optimally to align the manager with the corporation is adjusted to further undermine the impact of the fine, making external governance even more ineffective than it might otherwise appear and decreasing social welfare further.

In both the case of the fixed fine and the variable fine, the optimal equity-based compensation is weakly increasing in the fine. For the case where the fine is equal to $f_c \times \sqrt{x_h}$, Figure 3 shows the additional harm created by this upward adjustment of α in the context of the parametrization from Numerical Example 1. Figure 3 shows that as the fine increases from 0 to π_h, the firm adjusts α upward from 0.4% to 0.5% to address the internal governance problem. This results in more harm done than would be the case had the firm kept α at 0.4%, the optimal value when no fine is imposed. While the fine tends to reduce harm (but only eliminates it when the rate of the fine f_c

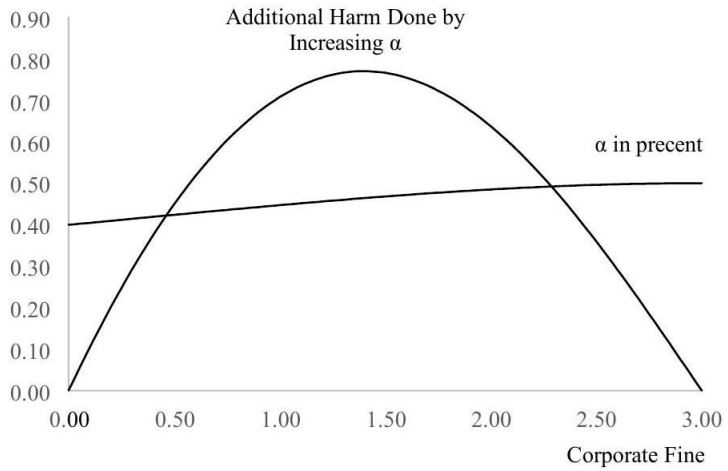


Figure 3: **Additional Harm as a function of increasing the profit percentage.** The figure plots the optimal equity-based pay and the additional harm done by increasing equity-based pay as a function of the corporate fine for $\pi_b = 4$, $\pi_h = 3$, $\beta = 0.01$, $B = 2$, and $H = 15$.

equals or exceeds π_h), the internal governance actions taken to align the manager's interest with the shareholders tend to reduce the reduction in harm relative to what would occur without the change in compensation. Whenever $f_c < \pi_h$, both shareholder interests and managerial decisions will not be aligned with the interests of society at large.

3.4 Internal Governance Responses to Managerial Fines

As mentioned above, imposing a sufficiently high fine on the corporation to make the misconduct unprofitable may not be possible or even desirable *ex post*. In those cases, the government may have another tool at its disposal, namely imposing penalties directly on the manager.[10] Indeed, as we have discussed, the Department of Justice has repeatedly emphasized their intentions to increase individual-level liability for corporate misconduct.

We now consider the effectiveness of fines imposed directly on the manager rather than on the corporation. As we did for corporate fines, we will consider both fixed fines and fines that vary with the level of harmful activity. (To keep things simple, for this section when specifying the compensation of the manager, we will ignore the constant term S, since this has no material effect on the analysis. As before it may be necessary to adjust S to make sure that total compensation is not less in value than the manager's best outside opportunity.)

We start with the fixed fine. The following proposition shows that unless the fine is quite large, the fine will do nothing to reduce the level of the harmful activity.

Proposition 4. *Assume that a fixed fine of F_m is directly imposed on the manager whenever x_h is set above ψ. Let $\bar{\alpha} = 2\beta/\sqrt{\pi_b^2 + \pi_h^2}$, the level of α that maximizes profits when there is no fine. There are three possibilities when the fixed fine is imposed: (1) the fine will have no effect on the choice of x_h with $\alpha = \bar{\alpha}$; (2) the corporation can nullify the effect of the fine the choice of x_h by increasing α above $\bar{\alpha}$ (3) the fine is so large that it cannot be nullified by increasing α.*

Proof: The manager's maximization problem when facing the fixed fine is:

[10] Imposing a fine on the manager would require connecting him directly to the misconduct, which may be difficult in a complex organization. We discuss the challenge of enforcement actions against corporate managers later.

$$\max_{x_b,x_h} (\alpha \times (\pi_b\sqrt{x_b} + \pi_h\sqrt{x_h}) - F_m \times I_{x_h>\psi} - \beta \times (x_b + x_h))$$
$$\text{s.t. } x_b + x_h \leq 1 \tag{17}$$

where $I_{x_h>\psi}$ is the indicator function, which is equal to 1 when $x_h > \psi$ and is 0 otherwise. First, assume that $\alpha = \bar{\alpha}$, and let $x_b^* = \pi_b^2/\left(\pi_b^2 + \pi_h^2\right)$ and $x_h^* = \pi_h^2/\left(\pi_b^2 + \pi_h^2\right)$, which are the optimal choices when there is no fine. Finally, let

$$U^* = \bar{\alpha} \times \left(\pi_b\sqrt{x_b^*} + \pi_h\sqrt{x_h^*}\right) - F_m \times I_{x_h^*>\psi} - \beta \times (x_b^* + x_h^*) \tag{18}$$
$$U^\psi = \bar{\alpha} \times \left(\pi_b\sqrt{x_b^*} + \pi_h\sqrt{\psi}\right) - \beta \times (x_b^* + \psi) \tag{19}$$

U^* is the manager's utility when the activity levels are set equal to the optimal levels without a fine and a fine is paid if $x_h^* > \psi$. U^ψ is the manager's utility when $x_b = x_b^*$ and x_h is set equal to ψ, so that no fine is incurred. (Note that when $x_h = \psi$, it is still optimal for the manager to set x_b equal to x_b^*.) As with the fixed fine on the firm, we have three cases to consider.

Case 1: $x_h^* \leq \psi$

Case 2: $x_h^* > \psi$ but $U^* \geq U^\psi$

Case 3: $x_h^* > \psi$ and $U^* < U^\psi$

In both cases 1 and 2, the fixed fine has absolutely no effect on the manager's choice of the harmful activity level. Only in case 3 is there potentially an effect. When case 3 would occur, it is possible for the corporation to set $\alpha > \bar{\alpha}$ so that the manager will chose $x_h = x_h^*$ instead $x_h^* = \psi$. The minimum level of α that will change the manager's choice of x_h from x_h^* to ψ, call it α^{adj}, solves the following equation:

$$\begin{aligned}\alpha^{adj} \times \left(\pi_b\sqrt{x_b^*} + \pi_h\sqrt{x_h^*}\right) - F_m - \beta \times (x_b^* + x_h^*) \\ = \alpha^{adj} \times \left(\pi_b\sqrt{x_b^*} + \pi_h\sqrt{\psi}\right) \\ - \beta \times (x_b^* + \psi)\end{aligned}$$

$$\alpha^{adj} = \frac{F_m + \beta \times (x_h^* - \psi)}{\pi_h\left(\sqrt{x_h^*} - \sqrt{\psi}\right)}. \tag{20}$$

Note that whenever Case 3 occurs, $\alpha^{adj} > 2\beta/\sqrt{\pi_b^2 + \pi_h^2} = \bar{\alpha}$. Since α^{adj} must be less than 1, this requires that $F_m \leq \pi_h\left(\sqrt{x_h^*} - \sqrt{\psi}\right) - \beta \times (x_h^* - \psi)$. If the level of the fine exceeds that, it cannot be nullified by a change in the level of α. ■

Proposition 4 shows the limitations of a fixed fine on the manager in reducing harm just as proposition 2 shows the limitations of a fixed fine on the corporation in reducing the level of harm.

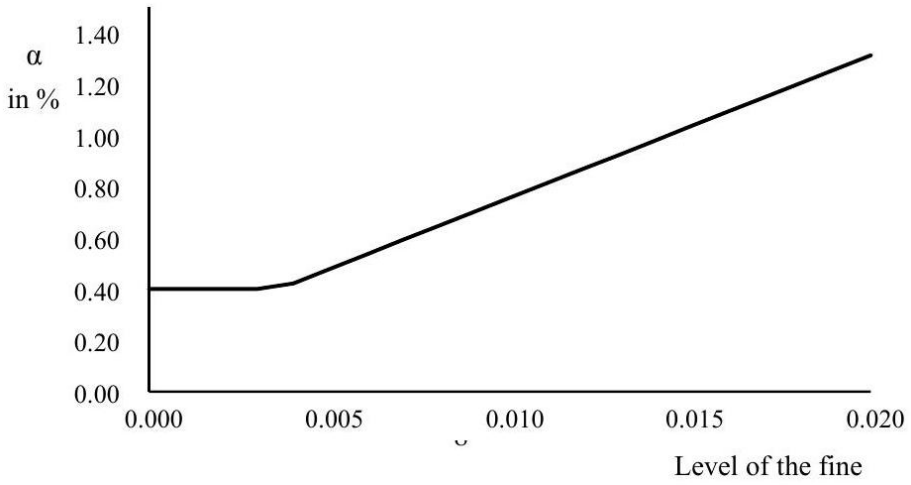


Figure 4: **Optimal Compensation as a Function of a Fixed Manager-Level Fine**. This plots the optimal managerial compensation as a function of a fixed-level managerial fine for the parametrization $\pi_b = 4$, $\pi_h = 3$, $\beta = 0.01$, $B = 2$, and $H = 15$.

One might be concerned that in the corporation (and its shareholders) will not want to adjust α upward to α^{adj} since this is costly for the shareholders. For realistic parameters this will not be a concern.Consider again the parameters from Numerical Example 1. Figure 4 below gives the α that must be set for the manager to set $x_h = x_h^*$ for a range of levels of the F_m assuming that $\psi = 0$, which means that the manager is fined for any value of x_h above zero.

In Figure 4 the fine ranges from 0 to 0.02 . Recall that the manager's utility is 0.01 when there is no fine, so at the upper range of what is shown the fine is quite substantial. As the figure shows, for low levels of the fine, α can be set to the level it would be without a fine, 0.4%. Once the fine increases the level of $0.04, \alpha$ needs to be adjusted upward to motivate the manager to set $x_h = x_h^*$ and incur the fine. Even at the highest level shown, the adjustment is not that significant. One can show that relative to what the shareholders have in value when there is no fine, they are almost 35% better off if they adjust α even when accounting for the smaller share of the profits. It should be noted, however, that α must be increased much more when $x_h^* - \psi$ is small. That is because the increase in profits is not that large when x_h is increased from ψ to x_h^* and the fine is incurred. This means that a larger share of that increase must be given to the manager to create incentives to incur the fine.

We now examine what happens when a variable fine equal to $f_m\sqrt{x_h}$ is levied on the manager. As stated in Proposition 5, as long as the fine is not too large, the corporation can adjust the manager's compensation to partially offset the effects of the fine so that the manager chooses a higher level of the profitable but harmful activity.

Proposition 5. *If the fine on the manager is equal to $f_m \times \sqrt{x_h}$ and f_m is not too large, the firm will find it optimal to adjust the manager's compensation to provide incentives to the manager to increase the level of the harmful activity.*

Proof: With the existence of the fine, the manager's profit maximization problem becomes:

$$\max_{x_b, x_h} (\alpha \times (\pi_b\sqrt{x_b} + \pi_h\sqrt{x_h}) - f_m\sqrt{x_h} - \beta \times (x_b + x_h))$$
$$\text{s.t.} \quad x_b + x_h \leq 1 \tag{21}$$

The first order conditions for the maximization problem and the maximizing values of x_b and x_h are:

$$\begin{aligned} \frac{\alpha\pi_b}{2\sqrt{x_b}} - \beta = 0 \quad &\Rightarrow \quad x_b^* = \left(\frac{\alpha\pi_b}{2\beta}\right)^2 \\ \frac{\max\left(\alpha\pi_h - f_m, 0\right)}{2\sqrt{x_h}} - \beta = 0 \quad &\Rightarrow \quad x_h^* = \left(\frac{\max\left(\alpha\pi_h - f_m, 0\right)}{2\beta}\right)^2 \end{aligned} \tag{22}$$

The firm maximizes profits when α is set so that $x_b + x_h = 1$. This requires that

$$\alpha^{\text{adjusted}} = \frac{\pi_h f_m + \left(4\beta^2\left(\pi_b^2 + \pi_h^2\right) - \pi_b^2 f_m^2\right)^{1/2}}{\pi_b^2 + \pi_h^2} \tag{23}$$

This solution for α^{adjusted} only applies if it satisfies $\alpha^{\text{adjusted}} \times \pi_h > f_m$. When this is violated, the optimal solution is for the corporation is to set $\alpha = 2\beta/\pi_b$, in which case the manager will choose $x_b = 1$ and $x_h = 0$.

Over the range where $\alpha^{\text{adjusted}} \times \pi_h > f_m$, α^{adjusted} will be higher than the α that the firm sets when there is no fine, which means that the adjustment leads to more harmful activity than would be the case without the adjustment, since as can be seen in (22), x_h^* is increasing in α. This means that the fine causes an adjustment in the manager's compensation that increases the level of the harmful activity beyond what it would be if no adjustment were made. ■

The intuition behind Proposition 5 is that when a fine of $f_m\sqrt{x_h}$ is imposed on the manager, the harmful activity becomes less rewarding. The manager does cut back on the harmful activity, but at the level of α that the firm establishes when there is no fine, the manager does not have the incentive to increase x_b to the point where the chosen activity levels sum to one. The manager needs a bigger fraction of the profits to motivate the profit-maximizing choices. The firm therefore increases α which in turn increases the attractiveness of the harmful activity and therefore increases the level x_h that is chosen. Figure 5, which is based on the parameters given in Numerical Example 1, illustrates this.

By imposing a fine directly on the manager, a much smaller fine can be used to deter corporate misconduct. When a fine is imposed on the corporation, only a fraction α flows through to affect the manager, whereas a managerial fine is imposed entirely on the manager and can potentially have a much stronger effect on his incentives.

In all our analysis on fines levied against the manager we have assumed that the corporation can only respond by changing the equity component of the manager's compensation. It would often be more efficient and less costly for the corporation to respond by committing to pay the full amount of any fines imposed on the manager, which would motivate to make the same choices that would be made without any fines. Indeed, managerial contracts routinely include insurance and indemnification (Schwab and Thomas, 2006).[11] Whereas it is not generally possible to insure managers against criminal charges, firms can—and regularly do—insure and indemnify managers against civil liability, and in some cases help them defend against criminal liability directly or indirectly. That is, indemnification effectively turns a managerial fine into a a very small corporate fine. This illustrates again our general point: if external governance is imperfect,

[11] For example Alphabet has "entered into an indemnification agreement with each of our directors and executive officers. The indemnification agreements, our certificate of incorporation, and bylaws require us to indemnify our directors and executive officers to the fullest extent permitted by Delaware law."

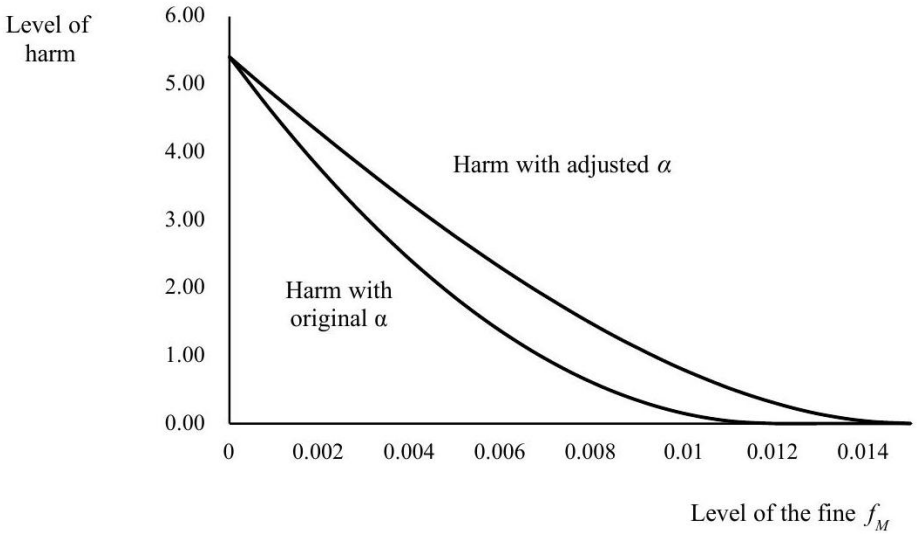


Figure 5: **Harm as a Function of a Variable Manager Fine and Equity Adjustment.** The plot shows the level of harm for a given level of a fine for both the original level of $\alpha = 0.002$ and for the optimal level of α for the parametrization $\pi_b = 4$, $\pi_h = 3$, $\beta = 0.01$, $B = 2$, and $H = 15$. This shows that the increase in managerial compensation leads to greater levels of harm.

internal governance may be designed to exploit those imperfections and often in ways that are not all that costly.[12]

From an applied perspective, the use of indemnification as an internal governance mechanism to exploit external governance failures is incredibly important. The Department of Justice, in particular, has emphasized an increased focus on individual-level liability.[13] From a narrow reading of the above propositions, this focus seems appropriate. That is, by imposing liability directly on the manager, the government can achieve the same amount of deterrence for a much lower fine. However, this ignores the possibility of indemnification and insurance.

To see this more clearly, suppose that the government is considering imposing a corporate fine, f_c, or a managerial fine, f_m, where $f_m < f_c$. Absent insurance and indemnification, which is the better option will depend on the levels of the fines along with a wide variety of other factors including managerial compensation, the disutility of effort, and the profitability of both the beneficial and harmful actions. For a given set of parameter values, either could be better from a social welfare perspective. However, it is also true that for any corporate-level fine, f_c, there exists some manager-level fine $f_m \leq f_c$ that achieves at least as good of an outcome. If it is more feasible to impose the smaller fine on the manager than the larger fine on the corporation,

[12]It is important to note, of course, that insurance and indemnification also serve the important role of protecting managers and directors from frivolous lawsuits. Under Delaware Corporate Law, coverage must exclude "deliberate criminal or deliberate fraudulent act" or "knowing violation of law," DGCL 145(g). However, this exclusion only applies when the loss is established by a "final, non-appealable adjudication in the underlying proceeding in respect of the claim."

[13]The "Yates memo" stated the Department of Justice's intention to increase the enforcement of individuals, `https://www.justice.gov/archives/dag/individual-accountability`. A recent summary of the approach to corporate enforcement by the Department of Justice, including cooperation credits, focus on compliance, and especially the search of individuals for enforcement actions, is provided in the October 23, 2024 speech by Principal Associate Deputy Attorney General Marshall Miller in the New York City Bar Association Compliance Institute `https://www.justice.gov/opa/speech/principal-associate-deputy-attorney-general-marshall-miller-delivers-remarks-new-york-0`

then the manager-level fine may be more appropriate, consistent with the Department of Justice's policies.

However, in the presence of indemnification imposing liability $f_m < f_c$ on the manager is worse than imposing liability f_c on the corporation. This straightforwardly follows, because indemnification turns a managerial-level fine into a corporate level fine. This illustrates the dangers of ignoring internal governance responses to external governance changes. If corporations are able to insure and indemnify their managers, then the increased focus on managerial fines may in fact reduce deterrence and exacerbate corporate misconduct.

Our discussion of indemnification assumes complete and certain indemnification. However, indemnification may also be tacit and ex post, such as in the case of paying executives more after the imposition of individual liability. The state also has the threat of criminal prosecution against the manager, which may even result in jail time. While increased pay could be used to compensate for this risk, indemnification is likely to be no longer available unless the corporation is able to prevent such prosecutions or provide legal support to help defend the manager and help create deniability. When setting internal governance policies, it is in the corporation's interest, to the extent it finds the misconduct profitable, to protect the manager from any legal consequences in order to realign the interests of the manager with the corporation. For example, Volkswagen paid prosecutors €9 million (about $10 million) to settle *criminal charges against two of its executives* for their role in the emissions scandal.[14] It is common for U.S. corporations to cover high-cost legal defense for executives and for executives can coordinate their defense strategies (Eisinger, 2017).

4 Voluntary Compliance Programs

We now extend the analysis to situations where the misconduct is not always observed, but where the corporation can voluntarily implement a compliance program that will increase the probability of detection. Voluntary compliance programs are a key component of the government's corporate misconduct policy. In exchange for an "effective" compliance program, the government can substantially reduce corporate fines.[15] If prosecutors are satisfied with a compliance program, then the United States Sentencing Guidelines allow a corporate fine to be reduced by as much as *95 percent*.[16] Profit-maximizing corporations therefore can choose a compliance program that weighs the costs of increased detection against the reduction in fines when misconduct is detected.

In this section we extend the model of Section 3 to take into account these programs. Our main result is that these programs, paradoxically, lead to increased harmful activity when external enforcement remains weak.

We incorporate uncertain detection and voluntary compliance programs by making the following changes to the model:

1. **Exogenous Baseline Detection**. Let $\bar{p}$ be the probability the Government detects and sanctions the harmful activity in the absence of any compliance program.

[14] Ewing, Jack. "Volkswagen Settles Emissions Charges Against 2 Managers," *New York Times*, May 20, 2020, https://www.nytimes.com/2020/05/20/business/volkswagen-emissions-charges.html?smid=url-share

[15] When looking at the effectiveness of a corporate compliance program, the DOJ considers whether a compliance program is well designed, is implemented in good faith, and whether it actually works. See `https://www.justice.gov/criminal/criminal-fraud/page/file/937501/dl`.

[16] `https://www.ussc.gov/sites/default/files/pdf/training/organizational-guidelines/ORGOVERVIEW.pdf`

2. **Choice of Compliance Program**. The corporation can voluntarily implement a compliance program that *increases* the detection probability from $\bar{p}$ to some level $p \in (\bar{p}, 1]$.

3. **Discounted Fine**. The government offers a discount of the fine from f_c to $f_c \cdot \big(1 - D(p - \bar{p})\big)$, where $D(\cdot)$ is a discount function increasing in $(p - \bar{p})$ when $p > \bar{p}$. We restrict our attention to variable fines.

Proposition 6. *Assume that the fine that will be imposed with no discount is equal to $f_c\sqrt{x_h}$ and that if the firm does not establish a compliance program, the probability of detection is equal to $\bar{p}$ with $0 < \bar{p} < 1$. If the firm voluntarily establishes a compliance program that increases p above $\bar{p}$, the rate of the fine will be discounted by $D\,(p - \bar{p})$, which is increasing in p. The compliance program will then either have no effect on the level of harm or will increase the level of harm.*

Proof: Because the Corporation voluntarily decides whether and how much to invest in a compliance program, the corporation in effect solves:

$$\max_{x_b,\, x_h,\, p} \; (\pi_b\sqrt{x_b} + \pi_h\sqrt{x_h}) \; - \; p \times (1 - D(p - \bar{p})) \times f_c\sqrt{x_h} \qquad \text{s.t.} \quad x_b + x_h \leq 1, \; p \geq \bar{p}. \tag{24}$$

Just as before, the Manager's compensation contract $Comp$ is set to induce the activity levels (x_b^*, x_h^*) the Corporation finds optimal.

Of course, a higher probability of detection p coupled with the original fine f_c would more effectively deter misconduct. However, the discount $D(p - \bar{p})$ lowers the fine imposed on the firm, and thus it may the firm's *expected* cost of misconduct. Define:

$$\Phi(p) \equiv p\big[1 - D(p - \bar{p})\big] \tag{25}$$

to be the *expected fine factor*, since taking into account of the discount the expected fine will be $\Phi(p) \times f_c$. For any given $x_h > 0$, the corporation maximizes (24) by minimizing the expected fine factor, $\Phi(p)$. This leads to two possibilities.

Case 1. Suppose that $\min_p \Phi(p) = \bar{p}$. That is, the expected fine factor for any possible level of p is never lower than $\bar{p}$, the exogenous probability of detection. This means that the discount received from choosing p is not large enough to offset the increased probability of detection, which in turn implies that

$$\pi_h - f_c\Phi(p) \leq \pi_h - \bar{p}f_c, \text{ for all } p \in [\bar{p}, 1]. \tag{26}$$

In this situation, the adoption of a compliance program weakly decreases the net return from the harmful activity. The corporation will therefore not adopt a compliance program in this situation, and the probability of detection will remain at $\bar{p}$.

Case 2. Suppose $\Phi(p)$ is minimized at $p^\star > \bar{p}$. In this case the compliance program is effective in providing an incentive for the corporation to take actions that increase the probability of detection. The expected fine factor is less than $\bar{p}$ because the discount in the fine more than outweighs the increased probability of detection. In the end this *increases* the profitability of the harmful activity since

$$\pi_h - \Phi(p^\star) \times f_c > \pi_h - \bar{p} \times f_c. \tag{27}$$

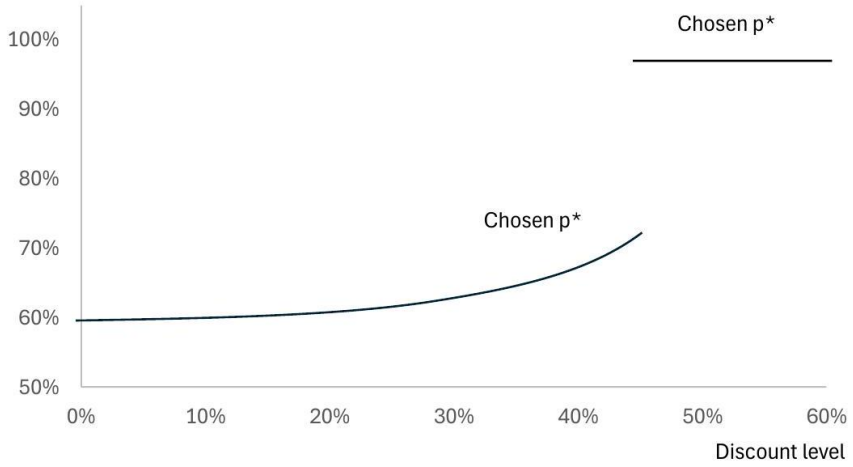


Figure 6: **Corporation's choice of detection as a function of the discount level.** The plot shows the corporation's optimal choice of the probability of detection (compliance program) as a function of the discount level offered for the parametrization $\pi_b = 4$, $\pi_h = 3$, $\beta = 0.01$, $B = 2$, and $H = 15$.

Thus in case 2 the voluntary compliance program *decreases* social welfare. ■

Proposition 6 shows that voluntary compliance programs either have no effect (case 1 above) or increase corporate misconduct (case 2 above). The key observation is that compliance programs have two countervailing effects. The increased probability of detection increases the expected cost to the corporation of engaging in misconduct while the discount decreases the expected cost to the corporation of engaging in misconduct. Because these programs are *voluntary*, the corporation will only adopt one when the decrease in the fine from having a compliance program outweighs the increase in probability, and therefore the offer of discounts for compliance programs weakly decreases social welfare.

Consider the parametrization of Numerical Example 1 and further assume that the maximum fine is $f_c = 2$, which is significantly less than $\pi_h = 3$. However, if the corporation puts in place a compliance program that increases the probability of detection to p above the base level $\bar{p}$ that would occur without a program, the fine will be discounted by a fraction equal to $D(p - \bar{p}) = d \times ((p - \bar{p}) / (1 - \bar{p}))^{1/2}$, where d is the maximum discount possible, which is achieved when p is 100%, i.e., full detection. In Figure 6 we assume $\bar{p} = 60\%$ and plot p^*, the chosen levels of p as d increases from 0% to 60%.

As can be seen in the Figure 6, if the discount rate is sufficiently high, the corporation would (if possible) increase the probability of detection to 100% to take full advantage of the full discount.[17] Obviously in practice this may not be possible, but note that that when the discount is substantial the firm will always prefer any ways available to it to create the semblance of high detection rates while keeping actual rates lower than what they appear.

Although in this example we are assuming that the compliance programs motivated by discounts in fines genuinely lead to significant improvements in the probability of detection, they perversely increase social harm since they are voluntary. The firm chooses whatever minimizes

[17] The discontinuity in Figure 6 occurs because there is a critical level of d, the maximum discount, where there are two levels of p that minimize the expected fine, one in the interior and one at $p = 100\%$. At a slightly higher level of d, the level of the expected fine at $p = 100\%$ is less than all interior levels of p and so the optimal p jumps to 100%.

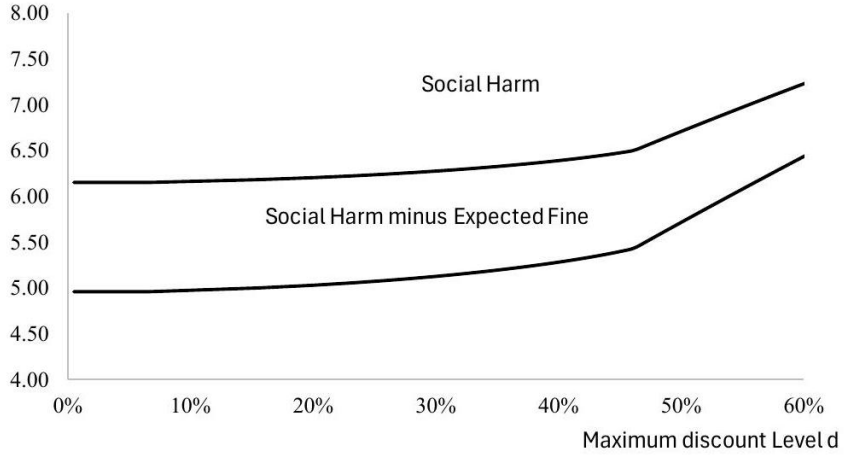


Figure 7: **Effect of Discounts on Harm.** The plot shows the harm and the harm minuse the expected fine as a function of the discount level offered for having a compliance program in place for the parametrization $\pi_b = 4$, $\pi_h = 3$, $\beta = 0.01$, $B = 2$, and $H = 15$.

expected fines to maximize profits obtainable from the harmful activity. This means, as shown in Figure 7, that voluntary compliance programs can increase social harm and will never reduce it. We also plot in Figure 7 the harm minus the expected fine, which increases even faster with the discount, since the expected fine is decreasing even as the harm is increasing. This potentially means that less is collected in fines that can partially offset the harm.

The point here is a simple one. Increasing the probability of detection will generally produce benefits, especially when there is a limit to the size of fines and severity of sanctions that can be imposed. However, in situations like the ones we are considering, where bad behavior benefits the corporation and its shareholders, motivating better detection by promising reductions in fines is quite likely to be counterproductive. It is better to mandate that the firm establish those programs that improve detection and directly sanction the firm if the programs are not put in place and that the programs are examined specifically in light of the specific law in question Arlen (1994). However, that is not generally the law,[18] and motivating better disclosure by reducing fines on actions taken that benefit shareholders in the absence of fines makes matters worse.

This illustrates a broader limitation of optimal deterrence models—particularly those related to self reporting and compliance (Kaplow and Shavell, 1994; Arlen, 1994). While such models identify the ideal enforcement regime under a given set of assumptions they do not imply that taking incremental steps toward the optimum will necessarily improve welfare. In fact, when only one part of the optimal regime is implemented—without simultaneously addressing all of the other reforms—non-monotonic effects may emerge, potentially worsening outcomes. Proposition 6 exemplifies this. Introducing discounts for compliance programs in isolation inadvertently reduces

[18]Whereas there are some mandatory compliance programs in the U.S., these mandates focus on fairly narrow areas and often leave much of the decision about the organization of the program to the corporation. For example, the Bank Secrecy Act requires that "each financial institution shall establish an anti-money laundering program," 1 U.S.C. § 5318(h)(1). The Securities and Exchange Commission (SEC) requires that investment companies "[a]dopt and implement written policies and procedures reasonably designed to prevent violation of the federal securities laws," SEC Rule 38a-1, 17 CFR 270.38a-1. The Dodd-Frank Act requires that futures commission merchants and swap dealers "designate an individual to serve as its Chief Compliance Officer." U.S.C. § 6d(d), § 6s(k)(1). How these mandates are interpreted and implemented and how well the implementation addresses the underlying reason for the rule may not receive much scrutiny.

the effective penalty for misconduct, thereby increasing the harmful activity rather than decreasing it. This analysis cautions against assuming that any move away from a poor deterrence regime toward the ideal will automatically yield social benefits.

Our discussion of compliance programs has focused on the manager rather than corporation. However, our results from the previous section show that the Corporation can, and will, adjust the Manager's compensation to align the Manager's decisions with the Corporation's profit calculations. If the firm finds that "good" compliance (i.e., a higher p and large discount) makes harmful activity cheaper, it can increase the Manager's profit-based pay α so the Manager chooses higher x_h. As with any external enforcement mechanism, the final outcome is determined by the firm's private trade-off between the cost of misconduct and the profitability of activity x_h. However, the result is clear: encouraging voluntary compliance programs through the use of discounts will not make matters better and can very well make matters worse.

5 Concluding Remarks

This paper has explored the interaction between external and internal corporate government mechanisms and the broad challenges of *societal* corporate governance. Societal governance involves all the rules that enable and constrain corporations and the individuals who act on corporations' behalf, and the enforcement of these rules. Our starting observation is that external governance seems ineffective in aligning corporations and their leaders with society's interests. We have focused on enforcement, which involves sanctions on corporations and individuals when corporations cause harm or break laws. If these sanctions are ineffective for deterring misconduct, we show that improvements to internal corporate governance can further undermine the potential benefit of external enforcement and exacerbate the problem of corporate misconduct and the resulting harm.

Addressing the misalignment between corporations and societal welfare requires a careful examination of both external and internal corporate governance mechanisms and their interactions. Better external governance requires more steps to prevent, detect, and penalize misconduct of all kinds. It involves both creating appropriate laws to prevent harm and protect stakeholders, through such things as safety standards akin to speed limits on roads, and liability rules when harm occurs or rules are violated. There are numerous laws that play a role and interact with one another. To give just one example, bankruptcy laws, which financial economists view as only concerning contractual obligations of corporations (particularly debt contracts to investors) are sometimes used in the US to settle massive tort claims or even violations of civil rights laws or laws against sexual harassment (see Jacoby (2024), reviewed in Admati (2025).) The issues are pertinent to research in corporate finance more broadly and goes much beyond traditional corporate governance research whose legal framework are based exclusively on corporate and securities laws.

To the extent that enforcement of various laws at the corporate level is difficult or too costly to implement, our analysis shows that imposing liability on managers may be desirable. However, managers often delegate the actions that constitute the misconduct to lower level employees, who are often not the appropriate target for law enforcement. Creating appropriate liability for leaders might require changing the legal bar of culpability for individuals who might be considered "responsible officers," who were in a position to prevent the harm or misconduct and failed to do so, and who benefited from it. Our results show that efforts to impose liability on managers must be coupled with rules aimed at preventing corporations from taking steps that undermine such external enforcement actions, including excessive use of insurance and indemnification of

executives and boards of directors.

Ultimately, laws and law enforcement mechanisms, which include such details as whistle blower protection laws to help detection, depend on political systems that ideally respond to the wishes of citizens in democracies. There has been significant public anger related to the fact that no executive was found liable for harms related to the 2007-2009 financial crisis, yet despite statements from authorities, this anger has not translated to significant changes in law enforcement practices in the corporate context. Academic research on these topics, in financial economics and in other parts of economics, law and the social sciences might help improve public discourse and ultimately policy.

We note that in some cases, the harm from corporate misconduct affects citizens in multiple jurisdictions. Corruption and poor rule of law in one nation can be exploited by corporations domiciled in other jurisdictions. The governments that can enforce laws to prevent these harms might lack the political will to do so, and their own citizens may be unaware of the harm or may have insufficient incentives or ability to demand better from their country's government and legal system. Money laundering, which enables kleptocracy, is a clear example of the problem. Harms due to crimes that cross national borders remain a challenge to the global legal system.[19]

In examining how the interaction between imperfect external governance and "good" internal governance of corporations can exacerbate corporate misconduct , we have used an agency framework, where individuals are motivated by monetary payoffs. We acknowledge that culture and norms can be important too and that people are not always solely motivated by financial returns. However, key decision makers in corporations face enormous pressure to increase "shareholder value" as reflected in the value of shares, and are given strong financial incentives to do so. Ultimately, the most reliable way to prevent social harm and align corporate interests with those of society comes down to designing external governance mechanisms that change the monetary incentives of key participants.

[19]See Findley, Neilson and Sharman (2020) on compliance with the rules, which is found to be relatively poorer in developed nations. Among the many money laundering scandals, the case of Danske, a Danish bank, which laundered about €200 billion of dirty money through a branch in Estonia for years until a whistleblower spoke up after retiring from his job in the company, is particularly striking. See Bjerregaard and Kirchmaier (2019) and "Danske Bank to Pay $2 Billion to Resolve Estonia Money-Laundering Probe," Dylan Tokar and Richard Vanderford, Wall Street Journal, December 13, 2022.

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