Reexamining the Cost of Corporate Criminal Prosecutions

By: Jason R. Pierce

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Abstract:

Agency theory foments the expectation that corporate criminal prosecutions mitigate crime by inducing firms to self-regulate. Whether this bears out in reality remains a topic of contentious debate. Although the U.S. government began prosecuting firms over a century ago, insufficient empirical evidence exists to determine how the costs of prosecutions actually affect firms. Moreover, the limited empirical record tells a surprising and somewhat confusing story. Scholars of management and related disciplines have consistently found that criminal convictions have negligible impacts on shareholder wealth despite theoretical expectations to the contrary. To explain these surprising findings and better understand how firms experience the costs of prosecutions, I apply agency theory to the criminal prosecution process and propose that each legally defined action in that process communicates unique information regarding potential and actual agency costs (i.e., sanctions). I also propose that formal convictions appear to elicit no reaction from principals because firm responses to early events in the prosecution process, what I call "conviction harbingers," foretell unfavorable verdicts and sanctions well before courts make them official. Findings derived from a sample of 177 cases largely confirm my expectations by showing that prosecutions cause firm value to decline nearly 11%. In addition to exceeding previous estimates by a factor of three, this amount exceeds direct fines by a factor of five (i.e., shareholders lost more than $5 of wealth for each dollar of sanctions). I conclude by outlining implications of these findings for agency theory, corporate governance, policy, and practice.

Keyword: corporate crime | event study | agency theory | corporate governance

Article:

FIRST RULE—The evil of the punishment must be made to exceed the advantage of the offense.

(Bentham, 1864/1908: 325)

BP PLC agreed to accept criminal responsibility for the 2010 Deepwater Horizon disaster that killed 11 workers and to pay $4.5 billion in fines and restitution. . . . BP will plead guilty to 11

felony counts of "seaman's manslaughter" . . . [and] . . . to one felony count of obstruction of Congress . . . [for] . . . false information it gave about the rate that oil was leaking from the well. . . . The settlement was announced after the New York Stock Exchange began trading. Shares of BP rose 14 cents. (Fowler, 2012)

For over a century, regulators have prosecuted firms like BP for the illegal acts of their employees. Lawmakers and law enforcers persist with this practice on the basis of the expectation that inflicting financial penalties on firms, or better said, their owners, will motivate self-regulation (Khanna, 1996; Macey, 1991). Although this reasoning rests solidly on the same logic as theories of agency and corporate governance, scholars have yet to produce empirical evidence that imposing agency costs in the form of financial and reputational penalties diminishes corporate crime, or even whether it should (i.e., whether the costs of crime sufficiently exceed the cost of preventing it; Becker & Stigler, 1974). Rather, scholars of management and related quantitative disciplines have consistently found indifferent or even positive reactions to criminal convictions, contrary to what agency theory would predict (e.g., Davidson & Worrell, 1988; Karpoff & Lott, 1993).

According to agency theory, principals (i.e., shareholders) suffer costs as a result of misalignment between their interests and those of their agents (i.e., managers). As applied to publicly traded firms, agency theorists have argued and shown that shareholders suffer losses because of potential and, even more so, actual agency costs like criminal sanctions (Alexander & Cohen, 1999; Campbell, Campbell, Sirmon, Bierman, & Tuggle, 2012). Consistent findings that shareholders respond indifferently to criminal convictions are therefore unexpected because criminal convictions impose direct agency costs (e.g., sanctions) associated with prosecutions, whereas allegations, to which shareholders do respond negatively, communicate only the potential for those costs. These unexpected results remain unexplained and leave questions as to whether issues with theory or data underlie them (Einstein, 1934). To address these questions, I consider the entire criminal prosecution process and how each step in it can impose agency costs.

Considering each step in the prosecution process overcomes a key limitation of previous research. Until now, scholars have treated prosecutions as two singular events—allegations and convictions. In reality, however, the prosecution process involves several uniquely defined legal actions. To better characterize the effect prosecutions have on firm valuations, I apply agency theory to each of these actions. This approach leads me to hypothesize that each action triggers changes in firm valuations by providing principals new information regarding potential or actual agency costs (cf. Campbell et al., 2012). I also posit that formal convictions appear to elicit no reaction from principals because firm responses to early events in the prosecution process, what I call "conviction harbingers," often foretell unfavorable verdicts and sanctions well before courts make them official. Data from a sample of 177 corporate criminal cases largely validate my expectations. Moreover, the findings show that the cost of corporate crime to shareholders is more than three times larger than suggested in previous research, which implies that a substantial proportion of these agency costs has thus far escaped measurement.

Valid measurement of agency costs has long been a challenge for researchers, particularly in contexts defined by law (Ang, Cole, & Lin, 2000; Orland, 1979). By more accurately measuring agency costs imposed by criminal prosecutions, the present research contributes to understanding

both corporate crime and agency theory in three ways. First, confirming predictions made by applying agency theory to a legal context defends agency theory against growing skepticism about its predictive validity and calls to reconceptualize it (e.g., Lan & Heracleous, 2010; Pepper & Gore, 2015). Second, finding that agency costs imposed by prosecutions occur over several critical events, not just one, extends agency theory by suggesting that dispersion over time, like dispersion of ownership, complicates their measurement (Ang et al.; Schulze, Lubatkin, & Dino, 2003). Amortizing agency costs this way, moreover, may undermine the very shareholder responses (i.e., corporate governance) criminal prosecutions are supposed to induce. Such a reality would explain why corporate crime persists despite sanctions that now regularly exceed the gross domestic products of small nations. Third, showing that shareholders bear the bulk, if not all, of the costs for criminal convictions supports the shareholder primacy view in agency theory (Campbell et al., 2012) rather than alternative views (Chassagnon & Hollandts, 2014). In this regard, the present research also makes a step towards resolving longstanding debates among legal scholars regarding the normative validity of prosecuting firm owners instead of or in addition to their malfeasant agents (Arlen, 1994; O'Leary, 2007). Providing new insights into how criminal prosecutions affect those principals brings us closer to understanding how they actually work (cf. DiMento, Geis, & Gelfand, 2000: 3).

Theoretical Backdrop, Empirical Context, and Hypotheses

Agency Theory and the Economics of Corporate Crime and Punishment
Agency theory serves as a useful paradigm to understand the economics of corporate crime because it often results from and creates conflicts of interests between principals and their agents. According to agency theory, two problems naturally occur in relationships between principals and agents. The first is the classic agency problem that "arises when (a) the desires or goals of the principal and agent conflict and (b) it is difficult or expensive for the principal to verify what the agent is actually doing"; the second is "the problem of risk sharing that arises when the principal and agent have different attitudes toward risk" (Eisenhardt, 1989: 58). The causes and consequences of corporate crime revolve around both problems.

Corporate crime as an agency problem

In economic terms, corporate crime becomes more likely as its expected benefit exceeds its expected cost (i.e., punishment if detected multiplied by the probability thereof; Becker, 1968). From this perspective, corporate crime emerges as an unanticipated consequence of common attempts to mitigate the aforementioned principal-agent problems. Such approaches can *inadvertently* increase the expected benefit and decrease the expected costs of engaging in crime for agents (see Alexander & Cohen, 1999, for a more formalized explanation). For instance, outcome-based contracts as a means to mitigate the behavior-verification problem (Eisenhardt, 1989) can increase the expected benefits of crime by incentivizing agents to use whatever tactics necessary, including illegal ones, to achieve performance goals (Ordóñez, Schweitzer, Galinsky, & Bazerman, 2009). Conversely, contractual clauses intended to mitigate agents' (i.e., managers') presumed aversion to risk (Eisenhardt) can decrease the expected costs of crime, particularly when they indemnify agents against sanctions for criminal activity (Margulies, 2006; Mullin & Snyder, 2010; Orland, 1979). In sum, attempts to resolve classic agency problems may unintentionally induce another: corporate crime. Although criminal

activities can certainly advance principals' material goals, it constitutes an agency problem if those activities conflict with principals' moral desires or risk preferences or become detected (Eisenhardt). Detection, in particular, leads to agency costs.

Agency costs as a deterrent to corporate crime

Prosecutions are the mechanism through which corporate crime imposes agency costs (Alexander & Cohen, 1999). Most objectively, these agency costs include direct (e.g., criminal sanctions) and indirect (e.g., legal fees, time and energy spent responding to charges) burdens on accused firms. However, prosecutions also have less objective but equally important reputational consequences (Greve, Palmer, & Pozner, 2010). These penalties matter tremendously because nonmanaging principals and other outside stakeholders rely on reputations (Roberts & Dowling, 2002), among other signals and information, to manage the risk of doing business with firms and their managers (Akerlof, 1970; Milgrom, 1981). Prosecutions undermine reputations by providing a significant negative signal that managers of accused firms are either careless or malfeasant. Either possibility makes such firms less desirable business partners as a result of increased perceived risk (Barnett, 2007; Godfrey, Merrill, & Hansen, 2009) and transaction costs (Jones, 1995).

In normative adherence to the principles of agency theory (Garoupa, 2000; Jensen & Meckling, 1976), regulators impose material and reputational penalties on firms to transfer the cost of monitoring and enforcement to them (Miceli & Segerson, 2007). Although the threat of sufficiently high costs should motivate members of collectives to monitor and regulate one another in theory (Dalton, Hitt, Certo, & Dalton, 2007; Khanna, 1996), such motivation will occur only if the bearers feel and understand those costs. Consistent with this outlook, findings by Alexander and Cohen (1999) showed that managers work harder to ensure regulatory compliance (i.e., through corporate governance; Schnatterly, 2003) when they stand to bear the costs of criminal liability and, conversely, that moral hazards exist when others do. By extension, therefore, nonmanaging principals can manage agency costs only to the extent that they understand and can measure those costs.

Measuring the agency costs of corporate criminal prosecutions

The unobservable nature of most agency costs, like those imposed by criminal prosecutions, makes them difficult, if not impossible, to measure directly (Ang et al., 2000). Thus, researchers often use inferential methods or proxy measures, like changes in shareholder wealth (i.e., stock performance), to measure agency costs. Changes in shareholder wealth provide a salient and valid proxy because shareholders, as principals, are sensitive to both potential and actual agency costs (Campbell et al., 2012). A number of researchers have used this approach to measure the costs of criminal prosecutions and consistently have found, as expected, a decrease in shareholder value consequent to criminal prosecution (Margolis, Elfenbein, & Walsh, 2009). Closer inspection of these results, however, reveals a surprising pattern.

Although criminal accusations consistently diminish shareholder wealth, convictions appear to have no impact on it. For instance, Davidson and colleagues (Davidson & Worrell, 1988; Davidson, Worrell, & Lee, 1994) found significant declines in stock performance

associated with allegations (–0.87%, $p < .001$) and indictments (e.g., for bribery; –4.25%, $p < .001$) but not convictions. Similarly, Skantz, Cloninger, and Strickland (1990), Karpoff and Lott (1993), Reichert, Lockett, and Rao (1996), and Karpoff, Lee, and Vendrzyk (1999) all found that accusation-related events had negative impacts on stock performance but convictions did not. The apparent lack of reaction to convictions seems surprising in light of the expectations that theories of agency (Jensen & Meckling, 1976) and efficient markets (Fama, 1970) as well as the normative presumption of innocence (Husak, 2014) would set. Nevertheless, researchers now either aggregate prosecution events into a single category (e.g., Alexander, 1999) or ignore conviction events altogether (e.g., Murphy, Shrieves, & Tibbs, 2009; Tibbs, Harrell, & Shrieves, 2011).

Researchers have offered two explanations for these surprising, yet consistent, results: (1) markets reliably anticipate case outcomes (Reichert et al., 1996) or (2) other, unidentified events inform the market of impending verdicts (Karpoff & Lott, 1993). Either explanation is potentially valid. The former remains tenable because accused firms ultimately plead guilty in 90% of cases (Apel, 1995; Cohen, 1991), whereas the latter is more consistent with the efficient market hypothesis (Fama, 1970). Because researchers have yet to confirm either, ambiguity remains regarding how criminal prosecutions affect firms. I resolve this ambiguity by more thoroughly accounting for the criminal prosecution process and applying agency theory to it.

Agency Costs Imposed by the Corporate Criminal Prosecution Process

The criminal justice process follows a predefined sequence that culminates in the condemnation or vindication of the accused.[1] Understanding how this process affects firms and their owners requires careful consideration of how it unfolds over time and what its component steps communicate. As with all irresponsible and undesirable managerial behavior, suspicion and evidence of criminal acts made public during these steps inform shareholders of unwelcome risk (Barnett, 2007; Godfrey et al., 2009) and the potential for material consequences (i.e., diminished future cash flows; McWilliams & Siegel, 1997). Consistent with this understanding, results obtained by Murphy and colleagues demonstrated how increased systematic risk created by "uncertainty regarding . . . future legal sanctions, possible restructuring costs, executive turnover, or changes in the terms of trade with customers or suppliers" (2009: 56) explains why allegations of crime diminish shareholder wealth. Despite the strength of these findings, when allegations actually occur and why convictions appear to have no impact on stock performance remains uncertain.

This uncertainty persists because researchers typically treat criminal prosecutions as consisting of two general events—allegations and convictions—when, in reality, the process unfolds over two multistep phases: *the accusative phase* and *the adjudicative phase*. Although allegations and convictions do respectively occur in these phases, reducing them to one event each may oversimplify legal realities in ways that hide the full impact of prosecutions on firms (cf. Cohen, 1988; Geis & DiMento, 2001; Orland, 1979). As illustrated in Figure 1, each phase involves at least three critical events that reveal new information about the potential culpability of an accused firm. These events provide insight into managers' (i.e., agents') otherwise unobservable behavior (Eisenhardt, 1989) and agency costs associated with them (i.e., expected criminal sanctions; cf. Becker & Stigler, 1974). In the remainder of this section, therefore, I examine each

of these critical events more thoroughly by explaining their purposes and predicting, on the basis of agency theory, how the information they reveal affects shareholder wealth.
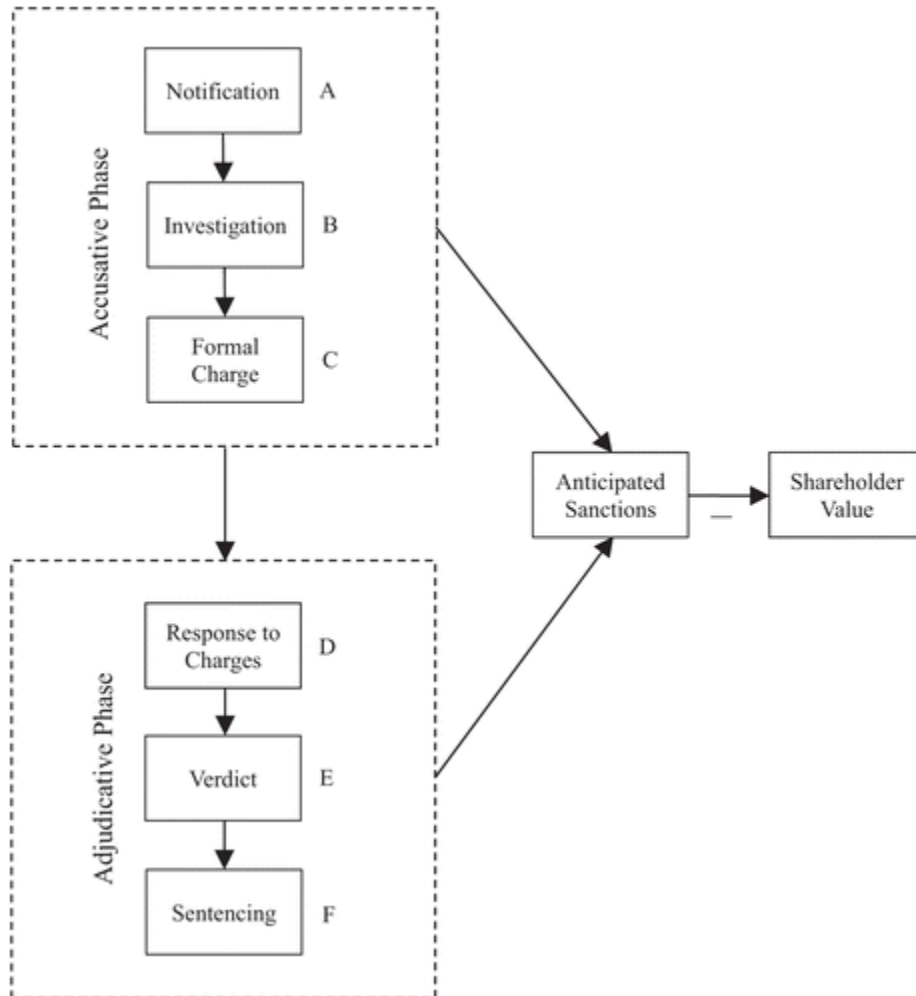

Figure 1 The Criminal Prosecution Process and Shareholder Value

Accusative events, agency costs, and shareholder value

In the accusative phase, law enforcement agencies receive and assess criminal accusations to determine whether there is sufficient evidence to pursue a conviction in court. The accusative phase includes three critical events: *notifications, investigations*, and *formal charges*. To extend the precision of previous efforts, I propose that allegations are affirmed when these events are first announced by the media as each event informs shareholders of the potential for criminal convictions and associated sanctions.

Notifications, labeled A in Figure 1, initiate the criminal prosecution process. Notifications occur when victims, witnesses, regulatory agents, or perpetrating firms themselves notify law enforcement agencies that wrongdoing has occurred. By providing the first signal that malfeasance may have occurred, notifications inform shareholders that the potential for convictions and sanctions exists. If law enforcers deem notifications credible, they investigate

the alleged crimes by interviewing witnesses and suspects as well as collecting material evidence. News of these investigations, labeled B in Figure 1, reaffirms the potential for criminal convictions and sanctions by signaling that notifications merit the dedication of scarce law enforcement resources to resolve them (Becker & Stigler, 1974). Upon conclusion, law enforcement agencies submit the results of investigations to prosecutors, typically district or U.S. attorneys who, in turn, decide whether to pursue formal charges. Depending on the jurisdiction, accused firms are formally charged either when prosecutors file the charges or when grand juries—independent bodies of ordinary citizens (i.e., grand jurors)—determine that sufficient evidence exists to convict the accused and return an indictment.[2] In either case, formal charges, labeled C in Figure 1, further affirm the legitimacy of the original accusation (i.e., at notification) and the potential for convictions and sanctions.

In contrast to previous approaches, therefore, this more fine-grained understanding of the accusative phase suggests that criminal allegations come not in one but three forms. Each form—notification, investigation, and formal charges—provides information regarding the probability of conviction and associated sanctions. Given that shareholders account for potential and real agency costs in stock valuations (Campbell et al., 2012), shareholder wealth should vary in proportion to expected sanctions, that is, the product of the perceived probability of conviction and anticipated penalty if convicted (Becker, 1968). In sum,

- *Hypothesis 1a:* Notification events (A) lead to diminished stock performance due to increased probability of criminal conviction and expected sanctions.
- *Hypothesis 1b:* Investigation events (B) lead to diminished stock performance due to increased probability of criminal conviction and expected sanctions.
- *Hypothesis 1c:* Formal charge events (C) lead to diminished stock performance due to increased probability of criminal conviction and expected sanctions.

Exploring market anticipation of case resolutions

The foregoing predictions that the three separate accusative-phase events each affect stock performance naturally lead to questions regarding the relations between these effects. Although no theory or evidence, to my knowledge, provides for specific predictions in this respect, the relations between market reactions to accusative events are relevant to Reichert et al.'s (1996)conjecture that the market anticipates case outcomes. If the market anticipates and ignores convictions, then it must reliably account for them earlier in the prosecution process. Systematic anticipation should then be evidenced by dependence between market reactions to the various steps in the prosecution process. Such dependence would manifest itself in one of two plausible, but opposite, ways. The market would either (1) respond with extreme pessimism to allegations, reacting strongest to initial criminal accusations (i.e., notifications) and decreasingly so to subsequent events (i.e., investigations and formal charges), or (2) respond with cautious pessimism, reacting weakest to initial accusations and increasingly negatively with the succession of each accusative event. Consequently, formal charges would systematically elicit either the weakest or the strongest market responses. Either scenario would demonstrate that the market ignores convictions because it would have already accounted for them in its reactions to accusative events. These alternative possibilities provide for two competing hypotheses:

- *Hypothesis 2:* Accusative-phase events (A, B, and C) have decreasingly negative impacts on stock performance.
- *Hypothesis 3:* Accusative-phase events (A, B, and C) have increasingly negative impacts on stock performance.

Disconfirming both hypotheses would imply independence between reactions to accusation-phase events (i.e., that markets do not anticipate convictions during the accusative phase).

Adjudicative events, agency costs, and shareholder value

In the adjudicative stage, an independent judiciary hears criminal charges and allows the prosecution and defense (i.e., the accused) to present their respective cases. The former enters criminal charges and evidence, whereas the latter can respond by accepting or refuting them. This phase continues until the court reaches a verdict and, if applicable, sentences the accused. Like the accusative phase, three critical events occur during the adjudicative phase—*conviction harbingers, convictions*, and *sentencing*—that communicate distinct and important information to shareholders.

I define conviction harbingers (labeled D in Figure 1) as the earliest response to a criminal allegation that makes conviction and sanctions nearly certain. Conviction harbingers, as such, constitute the "unknown events" that Karpoff and Lott (1993) suspected inform the market of impending verdicts and penalties. Although not defined by law, I base conviction harbingers in three legal realities. First, accused firms always respond to informal (i.e., notifications or investigations) and formal charges in some way. The former elicits public assumptions of responsibility, proclamations of innocence, or silence, whereas the latter requires (normally during a procedure called an *arraignment*[3]) the accused to plead guilty, not guilty, or no contest.[4]Second, half of these potential responses—accepting charges or refusing to fight them—virtually guarantee conviction and sanctions. Third, 90% of formally charged firms ultimately take responsibility for criminal charges (Apel, 1995; Cohen, 1991).

Conviction harbingers come in three common forms. In many cases, prosecutors or accused firms (e.g., Reuters, 1997) announce an impending or finalized plea-bargain agreement signaling that the accused will enter a guilty plea in court. Although less direct, other accused firms announce by way of filings with Securities and Exchange Commission that they have taken a charge against earnings to account for legal costs, including sanctions. Finally, coconspiring employees or firms can remove the possibility of a successful legal defense by pleading guilty before the accused firm does (e.g., Sniffen, 1998). Such admissions not only virtually guarantee conviction in prisoner-dilemma fashion but also often provide concrete bases for anticipating and estimating costs of convictions (e.g., coconspirators' negotiated sanctions, charges against earnings, and settlements). In accordance with recent extensions of agency theory (Campbell et al., 2012), shareholder sensitivity to these virtually certain agency costs (i.e., expected sanctions) should manifest in stock performance leading to diminished shareholder wealth.

- *Hypothesis 4:* Conviction harbingers (D) lead to diminished stock performance by increasing expected sanctions, that is, by making criminal convictions virtually certain and associated sanctions estimable.

The next two critical events in the adjudicative phase are dependent. Verdicts refer to the final disposition of the case, whereas sentences refer to court-mandated punishments. Verdicts come in two types—the court either convicts and declares the accused guilty or acquits and finds the accused not guilty. Convictions (labeled E in Figure 1) occur when judges formally accept a plea of guilty or no contest, whereas acquittals and convictions can occur on the basis of the decision of judges or juries[5] at the conclusion of a trial. Sentencing (labeled F in Figure 1) occurs only following convictions. Courts impose sentences either immediately following (i.e., during the same hearing as) convictions or in separate hearings days or weeks later. Although conviction harbingers should enable shareholders to anticipate convictions and, to some extent, sentences, they do not occur in every case. Absent such an event, unanticipated convictions should provide new information to shareholders and induce the same change in shareholder wealth as conviction harbingers do, and for the same reasons.

- *Hypothesis 5:* Unanticipated convictions (E) lead to diminished stock performance by increasing expected sanctions, that is, by making criminal convictions certain and the associated sanctions known or estimable.

New questions

The foregoing still fails to account for anticipated convictions (i.e., those preceded by conviction harbingers) and sentences. Although previous findings suggest that these events have no impact on stock performance, other possibilities remain. For instance, if courts regularly reduce sanctions negotiated during plea bargaining, stock prices may rise as a result of the difference between the anticipated and actual sanctions. In the absence of theoretical and empirical precedents, I treat these possibilities as open research questions:

- *Research Question 1:* How do anticipated formal convictions (E) affect stock performance?
- *Research Question 2:* How does criminal sentencing (F) affect stock performance?
- *Research Question 3:* Do differences between anticipated and actual sanctions explain the impact of conviction-related events (E and F) on stock performance?

Method

To test my hypotheses, I conducted event studies for each event in the prosecution process. Event-study methods enable measuring the effects of unanticipated events (e.g., CEO turnover, layoffs, plant closures, changes in legislation) on stock prices and are powerful for examining the relationship between firms' social and financial performance because (1) they constitute quasi-experiments by estimating the difference between actual and expected performance had the events *not* occurred and (2) these differences are less easily manipulated by managers than strictly accounting-based measures of profit (McWilliams & Siegel, 1997).

To conduct my event studies, I adopted the 10-step process outlined by McWilliams and Siegel (1997: 652). The opening two sections of the present study accomplish their 1st, 2nd, and 9th steps: (1) "define an event that provides new information to the market," (2) "outline a theory that justifies a financial response to this new information," and (9) "outline a theory that explains

the cross-sectional variation in abnormal returns" (652). The rest of this section explains my implementation of the remaining steps except for the 10th one. Their 10th step is to include the sample in an appendix. Given its size, I have opted to make my sample available upon request.

Firm and Event Identification

The third step in an event study is to "identify a set of firms that experience [the] event and identify the event dates" (McWilliams & Siegel, 1997: 652). To do so, trained assistants and I searched the Factiva database for news of corporate criminal prosecutions published between the implementations of the Federal Sentencing Guidelines for Organizations in 1991 (Dalton, Metzger, & Hill, 1994) and the Sarbanes-Oxley Act of 2002. We retained only those cases involving corporations whose shares traded publicly in the United States. I validated this process by confirming it returned all the cases in the *Corporate Crime Reporter*'s "Top 100 Corporate Criminals of the Decade" (Mokhiber, 1999). At least two members of the data-collection team then reconstructed case timelines by searching for news of notification (labeled A in Figure 1), investigation (B), formal charge (C), conviction harbinger (D), conviction (E), and sentencing (F) events. I compared the results of each person and resolved discrepancies by checking the records against the actual news reports. The initial sample included 280 cases.

To ensure the validity of my sample and results, I removed 68 cases that involved only civil violations (see Orland, 1979). I also dropped 31 cases that had less than US$100,000 in sanctions, as such small penalties suggest minor crimes and negligible effects on shareholder wealth (Cohen, 1991; Karpoff et al., 1999; Lott, 1996). Finally, I eliminated 4 cases in which the firms had declared bankruptcy because the consequences of their legal infractions would likely both be overshadowed by their imminent failures or deferred by the courts. The resultant final sample included 177 cases yielding 40 notification events (A), 92 investigation events (B), 51 formal charges (C), 76 conviction harbingers (D), 169 convictions (E), and 41 sentencing events (F). Unexpectedly, I found the media reported anticipated formal charges (i.e., that an indictment was expected, but not finalized) in 26 cases. I included these events (C) as well.

Event-Window Specification

The fourth step is to "choose an appropriate event window and justify its length" (McWilliams & Siegel, 1997: 652). The event window is the time period during which the market reaction is expected to have occurred. As a slight departure from the standard 2-day window that starts the day of the event and ends the next, we specified windows that began the day of the event and ended the *first* day it was announced in a major news outlet (e.g., the *Wall Street Journal*, the *New York Times*). Although first reports did often occur the following day, we found cases in which they occurred the same day or lagged by several days. To further ensure precision, we confirmed that dates and days of the week in articles matched. When they did not, we studied the articles more closely or compared with others to confirm the correct date.

Confounds

McWilliams and Siegel (1997) recommended identifying potential event confounds as a fifth step. Event confounds included any coinciding news that might artificially exaggerate or

suppress results by inducing another market reaction. To identify confounds, trained assistants searched for news about the firm for each event starting 1 day before the event window began and ending the last day thereof. I confirmed confounds and classified them by their expected impact: negative (e.g., negative earnings surprises, being sued), positive (e.g., acquiring new sources of revenue), or uncertain (e.g., countervailing confounds, reorganization, or merger or acquisition announcements). In summary, we identified 13 (2 negative, 6 positive, and 5 uncertain) confounds for notification events (A), 12 (1 negative, 5 positive, and 6 uncertain) for investigations (B), 6 (2 negative, 1 positive, and 3 uncertain) for anticipated charges (C), 14 (2 negative, 8 positive, and 4 uncertain) for formal charges (C), 23 (7 negative, 11 positive, and 5 uncertain) for conviction harbingers (D), 34 (3 negative, 18 positive, and 13 uncertain) for convictions (E), and 6 (1 negative, 3 positive, and 2 uncertain) for sentencing events (F).

Stock Performance

The sixth step is to "compute abnormal returns . . . and test their significance" (McWilliams & Siegel, 1997: 652). Abnormal returns refer to the unexpected change in the stock price during a trading day. For multiday windows, it is proper to summate them in cumulative abnormal returns (CARs; McWilliams & Siegel). I calculated CARs with Eventus 8.0 (Cowan, 2005) and used all but two default options: (1) I excluded dividends from the returns because they should be factored into stock prices (Davidson & Worrell, 1988), and (2) I used value-weighted indices, rather than equal weighted, to account for heterogeneity in my sample. I verified the robustness of my results by computing precision-weighted average abnormal returns (PWARs). PWARs provide more valid population estimates because each CAR is weighted inversely to its estimation-window variance (A. R. Cowan, personal communication, November 3, 2011).

I evaluated statistical significance four ways to compensate for common problems with event-study data (Binder, 1998). Patell's (1976) Z and the standardized cross-sectional Z (Boehmer, Musumeci, & Poulsen, 1991) established whether the average CAR was statistically different from 0. The former compensates for heteroskedasticity by standardizing the abnormal return, whereas the latter compensates for unequal variance between estimation and event time periods. Because increased variance associated with focal events, outliers, and thinly traded stocks can violate the assumptions underlying both Z tests, I also used the nonparametric generalized sign and rank tests, which are robust to such violations (Cowan, 1992).

Unlike most sign tests, which test against a 50-50 null hypothesis, the generalized sign test compares the proportion of positive returns associated with an event against the proportion of positive returns during a period not associated with the event (i.e., the estimation period). In contrast, the rank test treats estimation- and event-window returns as part of a common set and assigns ranks to each return (the lowest return has a rank of 1). The ranks of the event-window returns are then compared with the null hypothesis that the event-window-related ranks are equal to the average rank for the returns across both windows. These tests complement each other as the rank test is more powerful for detecting abnormal returns for short (1 or 2 days) event windows, whereas the generalized sign test is better specified for stocks traded on the NASDAQ; both tests are equally well suited for stocks traded on the New York Stock Exchange and the American Stock Exchange (Cowan, 1992).

Reporting the foregoing results and using bootstrap methods for small samples are the seventh and eighth steps, respectively. I present them in the Results section.
Econometric Validation

Completing Step 9 required econometric validation of my hypotheses. I validated Hypothesis 1 by confirming that change in systematic risk mediated the effects that accusative events have on stock performance (see Murphy et al., 2009). I validated Hypotheses 4 and 5 by confirming that estimated and actual sanctions respectively mediated the effects of prosecution events on market reactions. The quasi-experimental nature of event studies, however, required I use an abbreviated form of mediation analysis to complete validation of these hypotheses.

Because the independent variables in my study are invariant (i.e., it is impossible to consider a nonevent in this type of analysis), my mediation tests involved only one step. That step was to estimate regression models including the mediator and control variables as the independent variables and the abnormal returns as the dependent variables. I used weighted-least-squares (WLS) regression models using weights generated by Eventus. First, WLS allows for inclusion of all observations, including extreme ones, by adjusting for differences in population variances. The alternative would be to eliminate extreme observations on the basis of arbitrary cutoffs. As noted by McWilliams and Siegel (1997), doing so is undesirable because it may exclude relevant market reactions. Second, it adjusts all variables in the model, not just the dependent one. Researchers often standardized CARs, but this approach "is essentially performing only half of the [WLS] correction" (A. R. Cowan, personal communication, July 30, 2012).

I defined and measured change in firm risk and adjusted actual and anticipated sanctions as mediator variables and book-to-market ratio and change in quarterly return on assets (ROA) as control variables.

Change in firm risk

I explored whether criminal *notifications* (A), *investigations* (B), and *formal charges* (C) led to diminished stock performance, as predicted in Hypothesis 1, as a result of increased systematic risk. Like Murphy et al. (2009), I measured change in risk as the change in average standard deviations for daily stock returns over the 250-day periods ending 10 days before and starting 10 days after each event.

Adjusted actual and anticipated sanctions

Prosecutions impose direct material costs on firms when they result in sanctions (i.e., fines, reparations, and court costs). Although courts impose sanctions only after formal declaration of guilt, markets may anticipate their magnitude. Accusative-phase (A, B, and C) and conviction harbinger (D) events often facilitate anticipation by including analysts' estimates of, speculation regarding, or actual agreed upon settlements. To test my fourth and fifth hypotheses, therefore, my team and I recorded official sanctions imposed at formal conviction (E) or sentencing (F) as well as anticipated sanctions reported preceding those events. If the media reported more than one anticipated sanction, I used the one reported closest in time to the official sanction. To establish their relative per-share impact, I divided both anticipated and actual sanctions by

market capitalization the day before each event and log-transformed the quotients to correct for extreme right skew (Murphy et al., 2009).

Control variables

Following Murphy et al. (2009), I included book-to-market ratio and change in quarterly ROA as control variables for each event. I estimated book-to-market ratio as each firm's total assets less its total liabilities and preferred stock all divided by its market capitalization the day before the event. I estimated change in quarterly ROA as the difference between income divided by total assets the quarter of and the quarter before the event.

Results

Prior to testing my hypotheses, I explored how confounds might affect my findings. A disproportionate number of positive confounds as compared with negative confounds suggested the potential for bias. Of 106 identified confounds, 52 (49.06%) were positive, 18 were negative (16.98%), and 36 (33.96%) were uncertain. The difference between positive and negative confounds was statistically significant ($Z = 4.93$, $p < .001$). This pattern persisted across the events in the prosecution process with only anticipated charges having more negative (2) confounds than positive (1). These findings do not necessarily explain lack of market reaction to formal convictions (E), however. Formal convictions (E) had a proportion of positive confounds comparable to the other events, excepting anticipated charges (C), and the third lowest percentage of total confounds (20.12%) overall.

Next, I calculated the CARs and PWARs and tested the significance of the former. Overall, the significance of CARs increased and the difference between CARs and PWARs decreased when I excluded confounded events. Hence, I report only results with confounds excluded hereafter. As seen in Table 1, criminal prosecutions led stock performance to decline 1.47% overall. Consistent with previous studies, results showed that accusative (i.e., allegation) rather than conviction (E) events appear to drive this decline. The small difference between the overall CAR and the PWAR (–1.57%) as well as the consistency between parametric and nonparametric tests (Patell $Z = -12.08$, standardized cross-sectional $Z = -6.34$, generalized sign $Z = -5.23$, rank test $Z = -5.63$, all ps $< .001$) show these findings result from a general effect rather than extreme observations. Going forward, I mention only the traditional CARs and Patell Z statistics unless a notable discrepancy exists between the various statistics estimated.

Table 1 Criminal Prosecution Multiple Event Study

Event Type	Abnormal Return (%)	Precision Weighted (%)	N	Patell Z[a]	Standardized Cross-Sectional Z[a]	Generalized Sign Z	Rank Test Z
Notifications							
All	-6.29	-3.58	27	-8.84**	-2.91**	-2.64**	-.2.38*
No Disclosures	-6.29	-3.51	21	-.7.79**	-2.46**	-2.56*	-2.22*
Investigations							

First Announced	-3.70	-3.07	79	-10.72***	-6.01***	-3.94***	-4.76***
Formal Charges							
Anticipated	-3.31	-4.05	20	-7.79†	-2.11*	-1.58	-4.81***
Actual	-4.26	-2.60	37	-4.35***	-3.86***	-2.28*	-4.26***
Combined	-3.96	-2.63	54[b]	-7.92***	-3.23**	-2.48*	-6.24***
Conviction Harbingers							
First Announced	-2.14	-1.96	53	-5.83***	-3.23**	-3.22**	-3.66***
Convictions							
All	0.02	-0.01	135	-0.03	-0.03	-1.22	-2.77**
Anticipated	1.56	1.26	66	3.65***	3.02**	2.21*	-0.51
Unanticipated	-1.45	-1.12	69	-3.61***	-3.37***	-3.87***	-3.01**
Final Sentencing							
First Announced	6.40	0.43	35	0.93	0.68	0.43	1.95
Combined Overall	-1.47	-1.57	381	-12.08***	-6.34***	-5.23***	-5.63***

[a]Test statistics based on bootstrapped analyses for sample sizes smaller than 30.
[b]Excludes formal charges for three cases because anticipated charges were also announced.
†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

The respective event studies provide initial support of my main hypotheses. As predicted by Hypothesis 1a, notification events (A) induced significant abnormal returns. Considering that self-reports of wrongdoing might constitute conviction harbingers (i.e., confessing before being charged; D), I examined notification events with them included and excluded. The average CARs were identical (Ms = −6.29%, Patell Zs = −8.84 and −7.79, ps < .01). Consistent with Hypothesis 1b, results showed that announced criminal investigations (B) also had a negative impact on stock performance (M = −3.70%, Patell Z = −10.72, p < .001). I also found, in support of Hypothesis 1c, that both anticipated and actual formal charges (C) triggered declines in stock performance (Ms = −3.31% and −4.26%, Patell Zs = −7.79 and −4.35, ps < .10 and .001, respectively). The media reported both types of events in only three cases, so I combined results, including only the anticipated event when both were reported (M = -3.96%, Patell Z = -7.92, p < .001). In support of Hypothesis 4, conviction harbingers (D) led to diminished stock performance (M = -2.14%, Patell Z = -5.83, p < .001) and also appeared to influence the impact of conviction events (E). In confirmation of Hypothesis 5, unanticipated convictions (i.e., those not preceded by a harbinger event) led to negative abnormal returns (M = -1.45%, Patell Z = -3.61, p < .001).

The event-study results also inform Research Questions 1 and 2. With respect to the former, it appears that anticipated convictions (E) led to *positive* abnormal returns (M = 1.56%, Patell Z = 3.65, p < .001). Although it appears that sentencing events (F) also led to improved stock performance (M = 6.40%, Patell Z = 0.93, n.s.), the nonsignificant test statistics and substantially smaller PWAR (0.43%) suggest that these returns suffer from wide variance.

Next, I tested my competing explanations for how preconviction events may affect shareholder wealth. I examined whether there were any mean differences between the accusative-phase events (A, B, and C) that would suggest decreasing or increasing market reactions as predicted by Hypotheses 2 and 3, respectively. Although the mean for notification events (M = -6.29%, SD = 0.14) was more negative than the means for investigations (M = -3.70%, SD = 0.07) and formal charges (M = -3.96%, SD = 0.11), the differences were not significant, $F(2, 157)$ = 0.76, p = .468. Given that this test was conservative, I examined the differences between means for events that were and were not preceded by other announcements. I separated and recalculated the CARs for investigation, formal charge, and conviction events for which I found and did not find preceding announcements (i.e., investigation events with corresponding notification events, formal charges with corresponding notification or investigation events, etc.). As shown in Table 2, the general pattern of findings remained the same, and the means again were not significantly different in each case. Thus, these results confirm neither Hypothesis 2 nor Hypothesis 3.

Table 2 The Effect of Preceding Announcements

Event Type	Preceded	Abnormal Return (%)	Precision Weighted (%)	N	Patell Z^a	Standardized Cross-Sectional Z^a	Generalized Sign Z	Rank Test Z
Investigations	Yes	-5.74	-5.72	-6.28**	-6.28**	-4.30**	-3.57***	-4.23***
	No	-3.07	-6.74	-8.58***	-8.58***	-4.53***	-2.23*	-3.80***
Formal Charges	Yes	-3.00	-3.24	-7.23*	-7.23*	-2.26*	-1.37**	-5.15***
	No	-4.99	-2.77	-3.89**	-3.89**	-3.22**	-2.14*	-3.43***
Convictions	Yes	0.45	-1.41	0.34	0.34	0.27	-1.00	-3.43***
	No	-1.07	-0.60	-0.60	-0.60	-0.53	-0.70	0.16

[a]Significance levels based on bootstrapped analyses for sample sizes smaller than 30.
*p < .05.**p < .01.***p < .001.

Table 3 reports the descriptive statistics and biserial correlations for the variables needed to test my mediation hypotheses. Table 4 reports the WLS-estimated regression models for accusative-phase (A, B, and C) events. For each event, I estimated two models to determine whether the negative reactions to them were due to increased risk or actual sanctions. Consistent with Hypotheses 1a and 1b, results showed that increased risk explained negative declines in stock performance in response to notifications (β = -0.44, p = .055) and investigations (β = -0.28, p = .029). Because sanctions also explained some variance (βs = -0.59 and −0.33, ps = .047 and .017, respectively), I tested which explained more by standardizing all the variables, reestimating the regression models, and comparing the two coefficients in the new models. In both cases, change in risk was more influential (bs = -0.49 and −0.28) than final sanctions (bs = -0.25 and −0.25) but not significantly so (Fs = 1.29 and 0.03, ps = .272 and .875, respectively). Thus, it appears that both changes in risk and anticipation of sanctions explain the impact of notifications (A) and investigations (B) on shareholder wealth.

Table 3 Correlations and Descriptive Statistics

Variables	1	2	3	4	5	6	N	M	SD
Notifications									
1. Abnormal Return	—						27	–6.29%	0.14
2. Book-to-Market Ratio	–.32	—					24	0.28	0.20

	1	2	3	4	5	6	N	Mean	SD
3. Δ Quarterly ROA	.08	–.10	—				24	0.01	0.01
4. Δ Risk	–.88***	.01	.09	—			27	0.01	0.02
5. Sanctions	–.56**	.49*	–.17	.35†	—		24	1.88	1.88
6. Anticipated Sanctions	–.60*	.29	–.15	.32	.96	—	15	2.23	2.00
Investigations									
1. Abnormal Return	—						79	–3.70%	0.07
2. Book-to-Market Ratio	.07	—					68	0.31	0.41
3. Δ Quarterly ROA	.00	–.14	—				68	0.01	0.04
4. Δ Risk	.02	.08	–.46***	—			79	0.00	0.01
5. Sanctions	–.16	.25	–.30*	.23†	—		68	2.01	2.07
6. Anticipated Sanctions	–.06	.17	–.27	.19	.88***	—	36	2.61	2.02
Formal Charges									
1. Abnormal Return	—						54	–3.96%	0.11
2. Book-to-Market Ratio	–.63***	—					46	0.42	0.86
3. Δ Quarterly ROA	–.08	.00	—				46	0.00	0.06
4. Δ Risk	–.30*	.30*	.15	—			54	0.05	0.03
5. Sanctions	–.27 †	.41**	.16	.18	—		48	1.59	2.56
6. Anticipated Sanctions	–.46**	.46**	–.03	.18	.85***	—	36	1.95	2.37
Conviction Harbingers									
1. Abnormal Return	—						53	–2.14%	0.06
2. Book-to-Market Ratio	.03	—					48	0.24	0.58
3. Δ Quarterly ROA	.16	–.23	—				46	0.03	0.15
4. Δ Risk	–.23†	–.11	.10	—			53	0.00	0.01
5. Sanctions	–.08	.12	.17	–.11	—		49	1.89	2.05
6. Anticipated Sanctions	–.23	.12	.22	.08	.95***	—	31	2.30	2.24
Unanticipated Convictions									
1. Abnormal Return	—						69	–1.45%	0.09
2. Book-to-Market Ratio	–.17	—					54	0.91	8.77
3. Δ Quarterly ROA	.37**	.32*	—				51	0.01	0.05
4. Δ Risk	.57***	.70***	.33*	—			69	0.01	0.08
5. Sanctions	.10	.24	.14	.26*	—		64	0.90	2.58
6. Δ Sanctions	–.03	.63	.08	–.01	–.18	—	23	–0.05	1.33
Anticipated Convictions									
1. Abnormal Return	—						66	1.56%	0.05
2. Book-to-Market Ratio	.13	—					58	0.25	0.57

	1	2	3	4	5	6	N	Mean	SD
3. Δ Quarterly ROA	.02	–.02	—				58	–0.03	0.33
4. Δ Risk	–.46***	–.15	–.10	—			66	0.02	0.01
5. Sanctions	.13	.12	.20	.23†	—		66	1.88	2.41
6. Δ Sanctions	.07	.18	–.03	–.29†	–.08	—	42	–0.14	0.73
Sentencing									
1. Abnormal Return	—						35	6.40%	0.34
2. Book-to-Market Ratio	.06	—					26	0.09	0.59
3. Δ Quarterly ROA	–.12	.08	—				27	–0.01	0.05
4. Δ Risk	–.11	.05	.02	—			35	0.00	0.02
5. Sanctions	.54**	.48**	–.04	–.01	—		30	1.29	2.43
6. Δ Sanctions	.09	–.33	–.21	–.49*	.05	—	21	–0.51	1.21

Note: ROA = return on assets. †$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

Table 4 Explaining Abnormal Returns for Accusative-Phase Events

	Weighted-Least-Squares Regression Models							
	Notifications[a]		Investigations		Formal Charges[b]			
Independent Variables	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 3	Model 4
Intercept	–0.01	0.00	–0.02***	–0.02*	–0.01	–0.02†	–0.01	–0.00
Book-to-Market Ratio	–75.94	–1.57	–1.40	7.00	–20.25	12.01	–15.02	
Δ Quarterly ROA	0.14	0.04	–0.03	–0.07	0.00	0.05	–0.03	
Δ Risk	–3.30†	–3.44†	–1.39*	–1.52*	–1.81	–1.90	–3.47*	–3.70**
Adjusted Anticipated Sanctions							–0.02†	–0.02†
Adjusted Actual Sanctions		–0.01*		–0.01*		– 0.01***	0.00	0.01
R²	.29	.45	.08	.21	.07	.27	.40	.34
N	24	19	66	60	44	48	24	31
F	2.71†	2.86†	1.80	3.57*	0.96	3.91**	2.37†	4.60**

Note: ROA = return on assets. [a]Including disclosure events. [b]Combined anticipated and actual charges. †$p < .10$. *$p < .05$. ** $p < .01$. ***$p < .001$.

In contrast, only actual sanctions explained the impact of formal charges (C; $\beta = -0.50$, $p = .001$) on stock performance. Although their effect is not consistent with Hypothesis 1c, estimated liabilities may have influenced this outcome. Thirty-two (59.23%) of the 54 formal charge announcements included estimated sanctions, whereas only 5 (4.72%) of the preceding 106 allegation events did. Because final sanctions highly correlate with anticipated sanctions ($r = .67$, $p < .001$), I included anticipated sanctions in a third regression model to determine whether they explained the significant role of final sanctions in Model 2. Indeed, the coefficient for anticipated sanctions remained moderately significant, but the coefficient for total sanctions did not (βs = -0.64 and −0.16, ps = .079 and .651, respectively). Moreover, the coefficient for total risk became significant ($\beta = -0.43$, $p = .033$). Because of the low ratio of observations to variables, I estimated a fourth model that excluded the control variables. The pattern of results was identical except that the overall model was now significant ($F = 4.60$, $p = .010$) and the

coefficient for change in risk was more so (β = -0.46, p = .007), further validating support for Hypothesis 1c.

Table 5 reports the results of regression analyses for the adjudicative-phase events (D, E, and F) controlling for book-to-market ratio and change in quarterly ROA. I estimated the variance explained by change in risk and either anticipated sanctions or actual sanctions as appropriate and the difference between them. Consistent with Hypothesis 4, results showed that anticipated sanctions significantly explained change in stock performance due to conviction harbingers (D), whereas actual sanctions did not (βs = -0.46 and 0.15, ps = .015 and .329, respectively). In contrast to and limited support of Hypothesis 5, actual sanctions moderately explained diminished stock performance in response to unanticipated convictions (E; βs = -0.26, p = .078).

Table 5 Explaining Criminal Abnormal Returns for Adjudicative-Phase Events

	Weighted-Least-Squares Regression Models							
	Conviction Harbinger		Unanticipated Conviction		Anticipated Conviction		Sentencing	
Independent Variables	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	0.00	-0.01	-0.01	-0.01	0.01	0.02*	0.00	0.00
Book-to-Market Ratio	3.73	-3.12	-1.24	-45.67	15.07†	10.50	9.85	2.49
Δ Quarterly ROA	-0.07	-0.10	0.14†	0.16	0.01	0.01	-0.11	-0.11
Δ Risk	-1.74	-1.19	-0.07	-0.68	-0.50	-1.07	-0.45	0.10
Adjusted Anticipated Sanctions	-0.01*							
Adjusted Actual Sanctions		0.00	0.00†					
Adjusted Δ Sanctions				0.00		-0.02†		-0.00
R^2	.42	.16	.13	.20	.07	.12	.14	.13
N	28	45	49	17	58	35	26	16
F	4.10*	1.92	1.70	0.77	1.36	1.03	1.23	0.41

Note: ROA = return on assets. †p < .10. *p < .05.

Finally, and in response to Research Question 3, the difference between actual and anticipated sanctions moderately explained the change in stock performance associated with anticipated convictions (E; β = -0.33, p = .079) but not unanticipated convictions (E) or sentencing events (F; βs = -0.07 and −0.19, ps = .804 and .552, respectively).

To put the significance of the foregoing findings into perspective, consider their implications for a hypothetical firm with a market capitalization of $1 billion. Using previous methods to estimate the impact on this firm's worth leads to the conclusion that the firm's value would decline 3.54% (the average impact of the accusative-phase events—notification, investigation, and formal charge; A, B, and C) to $965 million in response to criminal allegations and remain

unchanged after conviction. Use of the updated measurement approach proposed in the present research, in contrast, leads to the conclusion that the firm's value would decline 3.58% to $964 million in response to a notification event (A), another 3.07% to $935 million following the announcement of an investigation (B), 3.96% more to $896 million once formally charged (C), and, finally, another 1.96% to $880 million once the firm responds in a way that implies it will take responsibility (i.e., following the conviction harbinger; D). Even after one accounts for the unexpected favorable market response to anticipated convictions (E) that would cause firm value to go back up by 1.26% to $891 million, the overall loss in shareholder wealth is at least three times larger ($109 million vs. $35 million) than previous estimation methods would suggest.

Although not focal to the present research, the data also inform what others consider the "reputational penalty" of prosecutions (Greve et al., 2010). Reputational penalty refers to the shareholder losses that exceed direct financial penalties (i.e., sanctions). Estimating the total shareholder losses and subtracting the total direct fines thus gives the reputational penalty. In the present sample, the prosecution process led to a total loss of shareholder wealth of US$26.6 billion in response to US$4.96 billion of direct fines and other penalties. In sum, then, shareholders lost more than $5 of wealth for each $1 of direct fines.

Discussion

For over a century, regulators have prosecuted firms for corporate crimes on the basis of premises that underlie theories of agency and corporate governance. For nearly as long, scholars, lawyers, and politicians have debated the legitimacy of this practice (Arlen, 1994; Friedman, 1999; Khanna, 1996). Despite extensive attempts to inform this debate by a wide range of legal, economic, and organizational scholars, "no one knows how it really works because there is a dearth of empirical information about its effects" (DiMento et al., 2000: 3). As is common when attempting to understand agency costs, valid and accurate measurement has remained a major challenge (Ang et al., 2000; Campbell et al., 2012). I have addressed this challenge as it pertains to the cost of criminal prosecutions by accounting for the entire prosecution process and applying agency theory to it. This approach has facilitated better understanding of the agency costs that criminal prosecutions impose and, thus, resolving extant empirical ambiguities.

Until now, corporate-crime researchers have treated the prosecution process as two general events: allegations and convictions. This dichotomization led to consistent findings that the former regularly impose agency costs on shareholders but, counter to theoretical expectations, the latter do not. In contrast, I have shown that considering each step in the criminal prosecution facilitates a more thorough characterization of the agency costs prosecuted firms experience. Doing so has clarified previous findings in three regards. First, allegations come in three legally distinct types—notifications (A), investigations (B), and formal charges (C)—each of which has unique and independent impacts on shareholder wealth. Second, both conviction harbingers (D) and offsetting reactions to anticipated and unanticipated convictions (E) explain apparent market indifference to convictions. Third, and extending the work of Murphy et al. (2009), systematic risk gives way to anticipated sanctions as the factor explaining diminished shareholder wealth as criminal prosecutions unfold. Specifically, increased risk explains the impact of notification (A) and investigation (B) events on stock performance, whereas anticipated sanctions, actual

sanctions, and differences between them explain the impacts of formal charges (C), conviction harbingers (D), and unanticipated convictions (E).

Taken as a whole, the results herein validate Orland's (1979) concern that imprecise use of legal concepts would lead to misleading conclusions. Indeed, the present findings demonstrate that convictions do diminish shareholder wealth and that the overall cost of criminal prosecutions is much greater than previously thought. Although a perfectly precise estimation still remains out of reach, my findings suggest that the actual impact of prosecutions on stock performance could easily exceed 10%. Of these losses, 80% constitute what others have called reputational effects (i.e., the percentage of loss that exceeds the direct financial penalties imposed; Greve et al., 2010). All these outcomes have important implications for research, policy, and practice.

Implications for Research and Theory
Overall, the present results demonstrate that advancing understanding of corporate criminal prosecution requires properly accounting for the legal realities that influence all aspects of organizational functioning and applying agency theory to them. Validating this approach has more specific implications for agency theory as well as theoretical perspectives on corporate governance. It also highlights the important role that the government and media may play in corporate dynamics and performance.

Corporate criminal liability provides a unique and powerful context for validating agency theory and, more specifically, agency costs. Scholars have criticized agency theory because its key premise of homogeneity of shareholder interests often fails to hold as a result of differential prioritization of financial and social concerns (Goranova & Ryan, 2014). In the context of criminal prosecutions, however, these concerns overlap because convictions have negative implications for both financial and social performance. Consequently, all shareholders, albeit for potentially different underlying reasons, respond negatively to prosecutions. This reality enables the present findings to robustly defend agency theory from two additional criticisms. First, they demonstrate the explanatory and predictive validity that others have accused agency theory of lacking (Ghoshal, 2005; Perrow, 1986). Second, the fact that shareholders bear these costs reaffirms the traditional view that they, rather than other stakeholders (Chassagnon & Hollandts, 2014; Garoupa, 2000; Lan & Heracleous, 2010), are truly the principals of the firms.

According to theories of crime (Becker & Stigler, 1974), corporate governance (Dalton et al., 2007), and shareholder activism (Goranova & Ryan, 2014), the potential for sanctions to lead to actual deterrence depends on expected costs. Indeed, current enforcement strategies are predicated on this principle (Miceli & Segerson, 2007). By improving the measurement of the costs of criminal prosecutions and showing how temporal dispersion hides them, the present results reveal how systematic regulatory practices and policies intended to encourage corporate governance may actually undermine it. Determining whether this is so would require future researchers to do two things. First, they would need to assess how well shareholders and their representatives (e.g., directors) estimate the actual costs of criminal prosecutions. Second, they would need to identify the threshold those costs would have to reach to mobilize shareholders to take the necessary actions (i.e., by way of corporate governance) to avoid experiencing such costs again. Given the complexity of such dynamics, future researchers could make theoretical contributions by examining the roles of moderators, such as firm size, ownership concentrations,

investor type (individual vs. institutional), and risk profiles. Finally, there is a great need to study how the prosecution of corporate crime affects those who are actually responsible for it (i.e., managers; Pozner, 2008) and how those affected individuals respond to and influence the prosecution process.

The present research also highlights the need to understand the roles of two ostensible stakeholder advocates—the media and the government—in firm performance. Both entities are powerful actors who exercise great influence over corporations and their fates (Greve et al., 2010). Management scholars should, thus, continue to develop their understanding of the relationships between the media and corporations (see Bednar, 2012; Westphal & Deephouse, 2011; Westphal, Park, McDonald, & Hayward, 2012), particularly in the context of corporate crime and prosecution thereof. They should similarly work to understand the relationship between regulators and firms. Greve et al. proposed a provocative research question that ties these themes together and could be addressed using the present methods:

> It would be interesting to investigate whether the state pursues offenders of intermediate size because they have fewer resources than large firms (and thus are easier to prosecute), but draw more media attention than small firms (and thus their defeat offers more promise to enhance enforcement officials' reputations). (83)

Implications for Policy and Practice

Federal and state governments collect billions in nontax revenues each year by prosecuting firms ostensibly to curb corporate crime. The present results affirm that a substantial portion of these funds comes directly out of the pockets of shareholders who have little to no influence over daily firm operations (cf. Fama, 1980). Unless it can be shown that these vicarious penalties effectively motivate corporate governance and legal compliance, my findings support beliefs that prosecuting firms constitutes further injustice in that it transfers the costs of convictions to innocent stockholders (principals) instead of their criminal agents (O'Leary, 2007). This potential injustice is further perpetuated in that, as a result of frequent changes of ownership, stockholders who "pay" for crimes are often not the same as those who benefited from them (Tibbs et al., 2011). Unless practitioners and policy makers eliminate moral hazards whereby managers can commit crimes and, sometimes literally, buy their way out of jail with company resources (see Appelman, 1990, for an example), trends in corporate crime are likely to persist.

Those with the greatest power to change this state of affairs, particularly managers and governments, have little incentive to do so. Managers currently gamble with stockholder resources to promote their own careers (Mishina, Dykes, Block, & Pollock, 2010). Government officials also play by contrived rules that favor their interests (Greve et al., 2010; Martin, 1998). Given the perverse incentives involved, internal corporate governance remains as the sole defense against the ills of corporate crime (Lange, 2008; Misangyi, Weaver, & Elms, 2008).

Corporate boards' composition, structure, and policies influence both financial and social performance (e.g., Schnatterly, 2003; Xie, Davidson, & DaDalt, 2003). Actively encouraging legal compliance, however, requires that directors remember that corporate crime occurs simply because it serves managers' interests (Harris & Bromiley, 2007; Mishina et al., 2010). Although

the most effective way to eliminate corporate crime would be to eliminate the perverse incentives that encourage it, doing so without inviting other undesirable agency problems is much easier said than done. Frey and Osterloh (2005) offered a thorough analysis of this challenge and general approaches to meeting it. On the basis of theories of motivation, they argued that fixed-pay compensation should promote more legally compliant behavior because pay-for-performance, the classic agency-problem fix, undermines the intrinsic desire to engage in prosocial behavior. In addition, they equated legal compliance with cooperation in social dilemmas. This analogy suggests the solution may lie even more in public accountability for individual actions (De Cremer, Snyder, & Dewitte, 2001). If so, boards should promote norms and hire managers that favor transparency and individual ownership of decisions, as self-monitoring and self-regulation depend on the identifiability of employees' actions. Otherwise, corporate prosecutions can offer no real solutions to the enforcement problem (Becker & Stigler, 1974; Miceli & Segerson, 2007).

Limitations and Future Directions

Integrating legal perspectives into organizational research (cf. Lan & Heracleous, 2010) enabled me to better characterize the impact of criminal prosecutions on stock performance. Readers can be confident in my results, as I accounted for critical issues limiting previous event studies (see McWilliams & Siegel, 1997). Of particular significance, I have shown that legally imprecise models may occlude important information, such as how *conviction harbingers* factor into stakeholder reactions to convictions. These are important advances given the popularity of event studies with organizational scholars, particularly for examining the impact of corporate social behavior on stock performance (Frooman, 1997; McWilliams & Siegel). Nevertheless, two notable factors limit the present research and need to be addressed.

First, my data set included a substantial number of cases overall but relatively few observations for some events (e.g., notifications and sentencing). Although small samples are of limited concern for the actual results of event-study analyses (McWilliams & Siegel, 1997), they did potentially limit statistical power and, thus, the number of variables I could use in the regression models that validated my results. This limitation restricted the potential for this study to make a larger contribution as substantial variance remains unexplained. Nevertheless, the purpose of those models, as prescribed by McWilliams and Siegel, was to legitimize the results of the event studies, which they did. Going forward, more insightful theorizing, rather than larger samples, may better enable future researchers to explain additional variance as well as why stakeholders appear to respond positively to anticipated convictions.

Second, some readers may find my data set to be somewhat dated given that more than a decade has passed since the latest event in my sample. Although less than optimal, such lag times between the events studied and publication are common in corporate-crime event studies (e.g., Murphy et al., 2009). Two other facts should further allay concerns about the age of my data. One is that it appears that the general approach of regulators towards corporate crime has changed little in the past several decades. I expect therefore that the overall relationships would hold for any time period before or since the 1990s. The other is that the time period I used at least somewhat overlaps previous studies. Otherwise, readers could speculate that changes in the environment explain my findings. Given that the Sarbanes-Oxley Act was a major overhaul of

corporate regulation, my study now provides an appropriate baseline for future scholars to examine whether and how this major reform affects the realities of corporate crime.

Conclusion

The present research provides better ways to measure the agency costs of corporate crime and to make sense out of what had previously been puzzling findings. In contrast to conclusions that convictions have no negative impact on stock price, the findings reported herein show that they do and that the overall cost of prosecutions is much larger than previously estimated. They also show that this impact occurs over several critical events during the prosecution process rather than one or two broadly defined ones. Given that unresolved puzzles surrounding previous results slow research efforts (Pfeffer, 2007), resolving those puzzles opens new paths for future researchers to take with this important topic. Indeed, I hope the present findings provoke further dialogue and effort towards producing real solutions for the problem of corporate crime.

Acknowledgements

Notes

1. I base my understanding of the criminal prosecution process on summaries published by Donald Dripps (2009) and the Offices of the United States Attorney (2014b).

2. The U.S. Supreme Court has determined that only the U.S. federal government must certify charges through a grand jury. Nevertheless, some states do as well (Offices of the United States Attorney, 2014a).

3. As described by the Offices of the United States Attorney (2015), an arraignment is a hearing during which the accused, now called the defendant, officially hears criminal charges and responds to them by entering a plea.

4. According to *Black's Law Dictionary*, a plea of no contest, or nolo contendere in Latin, expresses that "the accused will not contest the facts on which the charge is based as a criminal case plea." Although it results in the accused being found guilty by the court, it has the benefit of preventing civil litigants from using those verdicts as evidence in potential lawsuits (http://thelawdictionary.org/letter/n/page/28/).

5. The Sixth Amendment of the U.S. Constitution establishes that all criminal defendants have the right to have their cases decided by "an impartial jury." Nevertheless, defendants can waive this

right and opt to have a judge decide their case (also known as a bench trial). I refer to judges and juries collectively in this regard as the "court" or "courts."

References

Akerlof G. 1970. The market for lemons: Qualitative uncertainty and the market mechanism. Quarterly Journal of Economics, 84: 488-500.

Alexander C. R. 1999. On the nature of the reputational penalty for corporate crime: Evidence. Journal of Law and Economics, 42: 489-526.

Alexander C. R., Cohen M. A. 1999. Why do corporations become criminals? Ownership, hidden actions, and crime as an agency cost. Journal of Corporate Finance, 5: 1-34.

Ang J. S., Cole R. A., Lin J. W. 2000. Agency costs and ownership structure. Journal of Finance, 55: 81-106.

Apel A. 1995. Ethics violations: A change in guilt? Business Ethics, January/February: 14.

Appelman H. 1990. Kodak fined $2.15 million for environmental violations. Associated Press, April 5.

Arlen J. 1994. The potentially perverse effects of corporate criminal liability. Journal of Legal Studies, 23: 833-867.

Barnett M. L. 2007. Stakeholder influence capacity and the variability of financial returns to corporate social responsibility. Academy of Management Review, 32: 794-816.

Becker G. S. 1968. Crime and punishment: An economic approach. Journal of Political Economy, 76: 169-217.

Becker G. S., Stigler G. J. 1974. Law enforcement, malfeasance, and compensation of enforcers. Journal of Legal Studies, 3: 1-18.

Bednar M. K. 2012. Watchdog or lapdog? A behavioral view of the media as a corporate governance mechanism. Academy of Management Journal, 55: 131-150.

Bentham J. 1908. Theory of legislation (Hildreth R., Trans.). London: Trübner & Company. (Original work published 1864).

Binder J. 1998. The event study methodology since 1969. Review of Quantitative Finance and Accounting, 11: 111-137.

Boehmer E., Musumeci J., Poulsen A. B. 1991. Event-study methodology under conditions of event-induced variance. Journal of Financial Economics, 30: 253-272.

Campbell J. T., Campbell T. C., Sirmon D. G., Bierman L., Tuggle C. S. 2012. Shareholder influence over director nomination via proxy access: Implications for agency conflict and stakeholder value. Strategic Management Journal, 33: 1431-1451.

Chassagnon V., Hollandts X. 2014. Who are the owners of the firm: Shareholders, employees or no one?Journal of Institutional Economics, 10: 47-69.

Cohen M. A. 1988. Corporate crime and punishment: A study of social harm and sentencing practice in the federal courts, 1984-1987. American Criminal Law Review, 26: 605-660.

Cohen M. A. 1991. Corporate crime and punishment: An update on sentencing practice in the federal courts, 1988-1990. Boston University Law Review, 71: 247-280.

Cowan A. R. 1992. Nonparametric event study tests. Review of Quantitative Finance and Accounting, 2: 343-358.

Cowan A. R. 2005. Eventus (Version 8.0) [Software]. Ames, IA: Cowan Research LC.

Dalton D. R., Hitt M. A., Certo S. T., Dalton C. M. 2007. The fundamental agency problem and its mitigation. Academy of Management Annals, 1: 1-64.

Dalton D. R., Metzger M. B., Hill J. W. 1994. The "new" US Sentencing Commission guidelines: A wake-up call for corporate America. Academy of Management Executive, 8: 7-13.

Davidson W. N., Worrell D. L. 1988. The impact of announcements of corporate illegalities on shareholder returns. Academy of Management Journal, 31: 195-200.

Davidson W. N., Worrell D. L., Lee C. I. 1994. Stock market reactions to announced corporate illegalities. Journal of Business Ethics, 13: 979-987.

De Cremer D., Snyder M., Dewitte S. 2001. "The less I trust, the less I contribute (or not)?" The effects of trust, accountability and self-monitoring in social dilemmas. European Journal of Social Psychology, 31: 93-107.

DiMento J. F. C., Geis G., Gelfand J. M. 2000. Corporate criminal liability: A bibliography. Western State University Law Review, 28: 1-64.

Dripps D. 2009. Criminal justice process—Overview of the process, the investigatory process, the adjudicatory stage, the criminal trial, sentencing. http://law.jrank.org/pages/852/Criminal-Justice-Process.html. Accessed February 25, 2015.

Einstein A. 1934. On the method of theoretical physics. Philosophy of Science, 1: 163-169.

Eisenhardt K. M. 1989. Agency theory: An assessment and review. Academy of Management Review, 14: 57-74.

Fama E. F. 1970. Efficient capital markets: A review of theory and empirical work. Journal of Finance, 25: 383-417.

Fama E. F. 1980. Agency problems and the theory of the firm. Journal of Political Economy, 88: 288-307.

Fowler T. 2012. BP slapped with record fine; oil giant to pay $4.5 billion, plead guilty to criminal charges in 2010 gulf spill. Wall Street Journal, November 15.

Frey B. S., Osterloh M. 2005. Yes, managers should be paid like bureaucrats. Journal of Management Inquiry, 14: 96-111.

Friedman L. 1999. In defense of corporate criminal liability. Harvard Journal of Law & Public Policy, 23: 833-858.

Frooman J. 1997. Socially irresponsible and illegal behavior and shareholder wealth. Business & Society, 36: 221-249.

Garoupa N. 2000. Corporate criminal law and organization incentives: A managerial perspective. Managerial and Decision Economics, 21: 243-252.

Geis G., DiMento J. F. C. 2001. Empirical evidence and the legal doctrine of corporate criminal liability. American Journal of Criminal Law, 29: 342-375.

Ghoshal S. 2005. Bad management theories are destroying good management practices. Academy of Management Learning & Education, 4: 75-91.

Godfrey P. C., Merrill C. B., Hansen J. M. 2009. The relationship between corporate social responsibility and shareholder value: An empirical test of the risk management hypothesis. Strategic Management Journal, 30: 425-445.

Goranova M., Ryan L. V. 2014. Shareholder activism: A multidisciplinary review. Journal of Management, 40: 1230-1268.

Greve H., Palmer D., Pozner J. 2010. Organizations gone wild: The causes, processes, and consequences of organizational misconduct. Academy of Management Annals, 4: 53-107.

Harris J., Bromiley P. 2007. Incentives to cheat: The influence of executive compensation and firm performance on financial misrepresentation. Organization Science, 18: 350-367.

Husak D. 2014. Social engineering as an infringement of the presumption of innocence: The case of corporate criminality. Criminal Law and Philosophy, 8: 353-369.

Jensen M. C., Meckling W. H. 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure. Journal of Financial Economics, 3: 305-360.

Jones T. M. 1995. Instrumental stakeholder theory: A synthesis of ethics and economics. Academy of Management Review, 20: 404-437.

Karpoff J. M., Lee D. S., Vendrzyk V. P. 1999. Defense procurement fraud, penalties, and contractor influence. Journal of Political Economy, 107: 809-842.

Karpoff J., Lott J. R.Jr. 1993. The reputational penalty firms bear from committing criminal fraud. Journal of Law and Economics, 36: 757-803.

Khanna V. S. 1996. Corporate criminal liability: What purpose does it serve? Harvard Law Review, 109: 1477-1534.

Lan L. L., Heracleous L. 2010. Rethinking agency theory: The view from law. Academy of Management Review, 35: 294-314.

Lange D. 2008. A multidimensional conceptualization of organizational corruption control. Academy of Management Review, 33: 710-729.

Lott J. R. 1996. The level of optimal fines to prevent fraud when reputations exist and penalty clauses are unenforceable. Managerial and Decision Economics, 17: 363-380.

Macey J. R. 1991. Agency theory and the criminal liability of organizations. Boston University Law Review, 71: 315-340.

Margolis J. D., Elfenbein H. A., Walsh J. P. 2009. Does it pay to be good? A meta-analysis and redirection of research on the relationship between corporate social and financial performance. Cambridge, MA: Harvard Business School.

Margulies P. 2006. Legal hazard: Corporate crime, advancement of executives' defense costs, and the federal courts. University of California Davis Business Law Journal, 7: 55-124.

Martin S. P. 1998. Intracorporate conspiracies. Stanford Law Review, 50: 399-467.

McWilliams A., Siegel D. 1997. Event studies in management research: Theoretical and empirical issues. Academy of Management Journal, 40: 626-657.

Miceli T. J., Segerson K. 2007. Punishing the innocent along with the guilty: The economics of individual versus group punishment. Journal of Legal Studies, 36: 81-106.

Milgrom P. R. 1981. Good news and bad news: Representation theorems and applications. Bell Journal of Economics, 12: 380-391.

Misangyi V. F., Weaver G. R., Elms H. 2008. Ending corruption: The interplay among institutional logics, resources, and institutional entrepreneurs. Academy of Management Review, 33: 750-770.

Mishina Y., Dykes B. J., Block E. S., Pollock T. G. 2010. Why "good" firms do bad things: The effects of high aspirations, high expectations, and prominence on the incidence of corporate illegality. Academy of Management Journal, 53: 701-722.

Mokhiber R. 1999. Top 100 corporate criminals of the decade. Corporate Crime Reporter. http://www.corporatecrimereporter.com/top100.html. Accessed November 11, 2005.

Mullin W. P., Snyder C. M. 2010. Should firms be allowed to indemnify their employees for sanctions? Journal of Law, Economics, and Organization, 26: 30-53.

Murphy D. L., Shrieves R. E., Tibbs S. L. 2009. Understanding the penalties associated with corporate misconduct: An empirical examination of earnings and risk. Journal of Financial and Quantitative Analysis, 44: 55-83.

Offices of the United States Attorney. 2014a. Justice 101—Step 2: Charging. http://www.justice.gov/usao/justice101/steps/charging.html. Accessed May 16, 2014.

Offices of the United States Attorney. 2014b. Justice 101—Steps in the federal criminal process. http://www.justice.gov/usao/justice101/steps.html. Accessed May 16, 2014.

Offices of the United States Attorney. 2015. Criminal procedures. http://www.justice.gov/usao/mn/criminal_proc.html. Accessed February 10, 2015.

O'Leary H. E.Jr. 2007. Corporate criminal liability: Sensible jurisprudence or Kafkaesque absurdity. Criminal Justice, 22: 24-29.

Ordóñez L. D., Schweitzer M. E., Galinsky A. D., Bazerman M. H. 2009. Goals gone wild: The systematic side effects of overprescribing goal setting. Academy of Management Perspectives, 23(1): 6-16.

Orland L. 1979. Reflections on corporate crime: Law in search of theory and scholarship. American Criminal Law Review, 17: 501-520.

Patell J. M. 1976. Corporate forecasts of earnings per share and stock price behavior: Empirical tests. Journal of Accounting Research, 14: 246-276.

Pepper A., Gore J. 2015. Behavioral agency theory: New foundations for theorizing about executive compensation. Journal of Management, 41: 1045-1068.

Perrow C. 1986. Complex organizations. New York: Random House.

Pfeffer J. 2007. A modest proposal: How we might change the process and product of managerial research. Academy of Management Journal, 50: 1334-1345.

Pozner J. 2008. Stigma and settling up: An integrated approach to the consequences of organizational misconduct for organizational elites. Journal of Business Ethics, 80: 141-150.

Reichert A. K., Lockett M., Rao R. P. 1996. The impact of illegal business practice on shareholder returns. Financial Review, 31: 67-85.

Reuters. 1997. Tyson says plea lets it keep govt business. Reuters News, December 29.

Roberts P. W., Dowling G. R. 2002. Corporate reputation and sustained superior financial performance. Strategic Management Journal, 23: 1077-1093.

Schnatterly K. 2003. Increasing firm value through detection and prevention of white-collar crime. Strategic Management Journal, 24: 587-614.

Schulze W. S., Lubatkin M. H., Dino R. N. 2003. Exploring the agency consequences of ownership dispersion among the directors of private family firms. Academy of Management Journal, 46: 179-194.

Skantz T. R., Cloninger D. O., Strickland T. H. 1990. Price-fixing and shareholder returns: An empirical study. Financial Review, 25: 153-163.

Sniffen M. J. 1998. U.S. subsidiary agrees to pay $29 million price-fixing fine. Associated Press Newswires, February 23.

Tibbs S. L., Harrell D. L., Shrieves R. E. 2011. Do shareholders benefit from corporate misconduct? A long-run analysis. Journal of Empirical Legal Studies, 8: 449-476.

Westphal J. D., Deephouse D. L. 2011. Avoiding bad press: Interpersonal influence in relations between CEOs and journalists and the consequences for press reporting about firms and their leadership. Organization Science, 22: 1061-1086.

Westphal J. D., Park S. H., McDonald M. L., Hayward M. L. A. 2012. Helping other CEOs avoid bad press: Social exchange and impression management support among CEOs in communications with journalists. Administrative Science Quarterly, 57: 217-268.

Xie B., Davidson W. N.III, DaDalt P. J. 2003. Earnings management and corporate governance: The role of the board and the audit committee. Journal of Corporate Finance, 9: 295-316.