

Crime and Punishment: Corporate Criminal Prosecution and Corporate Misconduct

Syrena Shirley*

November 2023

Abstract

In this paper, I use variation in the government's approach to settling prosecutions of corporate crime to examine federal prosecutors' role in deterring corporate misconduct. Federal prosecutors can settle criminal prosecutions with a conviction using guilty pleas or without a conviction by using deferred or non-prosecution agreements (DPAs) to require remedial changes. I find evidence of a negative association between prosecutions settled using DPAs and future criminal conduct punished by the DOJ and accounting misconduct punished by the SEC. However, in conflict with assertions of corporate reform through settlement via DPAs, I find evidence that DPA firms are more likely to have future regulatory violations relative to firms with convictions using guilty plea. Meanwhile firms that plead guilty of financial crimes have a higher likelihood of internal control weaknesses after settling prosecutions relative to DPA firms. My study provides insights into whether prosecutorial discretion over settling criminal cases is effective in deterring corporate misconduct.

* This paper is based on my dissertation at The Pennsylvania State University and has benefited greatly from the invaluable feedback of my dissertation committee - Karl Muller (Chair), Sam Bonsall, Henock Louis and David Haushalter. I thank seminar participants at George Mason University, Georgetown University, Harvard Business School, The Pennsylvania State University, The University of Texas at El Paso, and University of Pennsylvania Wharton School. I am also grateful for insights provided by an Acting United States Attorney, a former Assistant United States Attorney, a Professor of Law and a Clinical Assistant Professor of Business Law.

1. Introduction

In recent years, federal prosecutors from the U.S. Department of Justice (DOJ) have been heavily criticized for using deferred or non-prosecution agreements (hereafter DPAs) to settle criminal cases against corporations.¹ With DPAs, companies avoid criminal conviction for some of the most egregious corporate crimes, ranging from accounting, securities, banking, wire, pharmaceutical and health-care fraud to bribery, money laundering and violations of the Foreign Corrupt Practices Act (FCPA). The alternative is for the DOJ, as the only entity with the power to use criminal law, to convict corporations by using guilty pleas.^{2,3} However, despite complaints that DPAs are weak and ineffective punishment, the DOJ makes strong claims of changing corporate behavior and culture by using DPAs to resolve criminal cases. In this study, I empirically examine this claim to help understand the influence of federal prosecutors in reforming corporations. Specifically, I examine differences in the impact of prosecutions settled with convictions using guilty pleas and without conviction using DPAs on the likelihood of future corporate misconduct.

Since the early 2000s, in lieu of the traditional approach of convicting corporations, federal prosecutors frequently negotiate DPAs with defendant corporations. For example, in 2019, though Walmart admitted to violations of the FCPA, it avoided criminal conviction by agreeing to the terms of a DPA with federal prosecutors.⁴ Instead of conviction, prosecutors require remedial measures and extended oversight during a probationary period using DPAs. Remedial measures often include but are not limited to creation of and changes to compliance programs, appointment of a compliance director and addition of or changes to board members. In addition, prosecutors often require that corporations hire an independent monitor to provide periodic reports regarding the corporation's compliance with the law during the probationary period.⁵ Despite these required changes, DPAs are often considered weak and ineffective punishment since the DOJ fails to convict. Therefore, the prevalence of DPAs such as Walmart's has incited criticism from members

¹ This study focuses on prosecution of corporations (i.e., corporate entities), regardless of whether individuals in the corporation are prosecuted for the same crime.

² Since guilty pleas result in a conviction, I use the terms guilty pleas and convictions interchangeably in this paper.

³ Though trial is an option, most cases settle before going to trial. Trials are rare.

⁴ By signing a non-prosecution agreement with a three-year probationary term, the criminal charges would be dropped if, in 2022, prosecutors determine that Walmart has met all the terms of the agreement. In addition, Walmart agreed to pay \$137 million. See [Walmart Reaches Agreements with the DOJ and the SEC to Resolve Their FCPA Investigations](#)

⁵ See Gallo et al., 2023 and Files et al., 2022 for studies about the role of independent monitors.

of Congress, the American Bar Association, business groups, journalists, and academics (Eisinger, 2017; Garrett, 2016; Soltes, 2016; United States Government Accountability Office, 2009). However, despite increased attention to corporate legal enforcement amid criticisms of the DOJ, especially following recent corporate scandals, there is little empirical evidence regarding the effects of the settlement vehicles employed by federal prosecutors on future corporate behavior. Therefore, this study examines the differing impacts of prosecutions settled without conviction via DPAs and with conviction through guilty pleas on future corporate misconduct.

The DOJ's goal is to use corporate criminal liability to change managerial behavior and deter "criminally bad management" (Lund & Sarin, 2021). Federal prosecutors have a challenging job as recent estimates are that corporate fraud, in particular, cost companies about \$830b in 2021 (about a 1.6% reduction in equity value annually) (Dyck et al., 2023). However, while both guilty pleas and DPAs result in substantial monetary penalties for prosecuted corporations, it is unclear whether there are systematic differences in corporate misconduct following prosecution.⁶ On the one hand, guilty pleas, because they involve a conviction (i.e., a criminal record), may be associated with more severe reputational costs, providing stronger motivation for corporate reform. Possible reputational costs of criminal convictions include loss of business contracts, clients and licenses and unfavorable changes in relationships with third parties, such as suppliers, lenders or the U.S. Government (Arlen & Alexander, 2018; Heese & Perez-Cavazos, 2019).⁷ Proponents of guilty pleas believe federal prosecutors should use their full prosecutorial powers to convict. The costs of conviction will induce corporations to respond to prosecution by making meaningful (voluntary) changes to corporate policies and structures that will deter future misconduct. On the other hand, significant corporate changes may not be made since federal prosecutors generally do not dictate specific remedial measures with guilty pleas.

In contrast to guilty pleas, DPAs may have a stronger effect on corporate behavior, due to the required remedial measures and extended oversight from monitors during the probationary period. Arguments in favor of the use of DPAs suggest that prosecuted firms will institute required governance and compliance changes that will help to deter misconduct. Alternatively, DPAs may

⁶ The average penalties associated with these prosecution settlements is \$80M.

⁷ A conviction can cripple businesses such as financial institutions or pharmaceutical companies, companies that depend heavily on government contracts and companies in certain other regulated industries.

be construed as less severe punishment since they avoid the possible reputational costs of conviction. Whether prosecuted firms view and respond differently to settling criminal cases with federal prosecutors using DPAs and guilty pleas is an empirical question.

Relying on data on U.S. publicly traded companies that settle federal criminal prosecutions from 2003–2018, I examine differences in the impact of prosecutions settled with conviction (guilty pleas) and without conviction (DPAs) on future misconduct using generalized difference-in-differences models. Specifically, I examine the likelihood of future (1) crimes prosecuted by the DOJ (recidivism), (2) enforcement actions brought by federal, state, and local regulatory agencies, and regulators, (3) accounting misconduct in SEC Accounting and Auditing Enforcement Releases (AAERs), (4) restatements due to fraud, irregularity, or SEC involvement and 5) material weaknesses in internal controls (ICW). To distinguish crimes that have clear monetary impact I also consider the nature of crime by limiting analyses to prosecution of financial crimes.

My results show that settling prosecutions using DPAs deters some types of future misconduct. DPA firms are less likely to be prosecuted for criminal conduct following their first prosecution, i.e., they are less likely to be repeat criminal offenders. DPA firms are also less likely to be subject to financial reporting enforcement actions issued by the SEC (AAERs). Since I do not find similar results for guilty plea firms, this lower likelihood of misconduct is plausibly the result of the required remedial changes that DPA firms are generally required to make with settling prosecutions. Contrary to federal prosecutor’s views that settlement using DPAs is a force of positive change, I find that DPA firms are more likely to violate federal, state and local regulations after settling criminal prosecutions. When limiting my analyses to prosecutions of financial crimes, both DPA and guilty plea firms are more likely to restate their financial statements in future years after settling prosecutions with federal prosecutors. However, firms convicted through guilty pleas for financial crimes, relative to DPA firms, are more likely to have internal control weaknesses post-prosecution. Collectively, my results suggest that prosecuted corporations engage in their own cost-benefit analysis and may not always view the threat of criminal prosecutions as costly enough to warrant sweeping changes to deter future misconduct upon settling with the DOJ.

My study contributes to the debates regarding whether it matters how federal prosecutors settle corporate criminal prosecutions and whether and how corporations should be held criminally

liable for corporate misconduct (Alexander & Cohen, 1999; Arlen & Alexander, 2018; Arlen & Kahan, 2017; Garrett, 2007; Kaal & Lacine, 2014). Descriptive evidence shows that federal prosecutors had repeated interactions with several of the firms prosecuted for some of the most egregious corporate crimes, such as JPMorgan and Baker Hughes (Garrett, 2016; Lund & Sarin, 2021). For example, Lund & Sarin (2021) provide descriptive evidence of repeated corporate misconduct by prosecuted firms in the financial industry and an overall increasing trend in corporate crimes. They capture crimes using data from the Financial Crimes Enforcement Network (FinCEN) Suspicious Activity Reports (SARs), consumer complaints made to the Consumer Financial Protection Bureau (CFPB), and whistleblower complaints made to the Securities and Exchange Commission (SEC). Though descriptive analyses show that most repeat offenders settle prosecutions using DPAs, in multivariate analyses, I provide evidence of a deterrent benefit achieved by using DPAs, relative to guilty pleas, for some misconduct measures (criminal conduct and AAERs). However, the deterrence benefits of DPAs does not extend to regulatory violations.

My study examines whether the DOJ's enforcement priorities of forgoing convictions by using DPAs rather than obtaining convictions through guilty pleas affect corporate policies and managerial behavior (Lund & Sarin, 2021; Roychowdhury & Srinivasan, 2019). My study complements Garrett et al. (2019), who find higher CEO turnover in the prosecution year for prosecuted firms but no evidence of CEOs of prosecuted firms receiving pay cuts. My study looks within the prosecuted firms to understand differences in how federal prosecutors resolve the criminal cases. My study also complements recent work examining the appointment of independent monitors. Gallo et al., 2023 shows that firms under a monitorship have less regulatory violations during their probationary period but the level of violations increases after the probationary period. I confirm this finding as I show that on average DPA firms are more likely to have regulatory violations after settling criminal prosecutions. Files et al. (2022) provides evidence that third parties such as investors and auditors view independent monitors as a benefit to firms (lower audit fees and improved financial reporting credibility).

Lastly, my study contributes to an emerging literature exploring varying aspects of public law enforcement. Nguyen (2021) finds a significant increase in white-collar crime when the Federal Bureau of Investigation prioritized counterterrorism following the September 11, 2001 attacks. Focused on civil cases involving violations of the False Claims Act (FCA), Heese et al.

(2020) show that corporate responses may differ when the DOJ pursues a corporate fraud case, relative to private enforcement by whistleblowers without the DOJ. Additional studies focus on determinants and consequences of FCPA violations and enforcement (Christensen et al., 2019; Karpoff et al., 2017).

The debate on whether and how corporations should be held criminally liable for corporate misconduct remains contentious. My study provides important insights into the effectiveness of the DOJ prosecution settlement decisions on deterring future corporate misconduct. The efficacy of the DOJ's efforts to deter misconduct should be of interest to federal prosecutors, enforcement agencies, regulators, corporate managers and academics.

2. Background

Public enforcement of laws and regulations is necessary to mitigate costly and disruptive criminal conduct within publicly traded firms and for the efficient functioning of capital markets. However, federal prosecutors face a challenging task of bringing justice on behalf of the government while considering the impact on stakeholders, such as employees, investors, and the society. Only federal prosecutors, as members of the United States Department of Justice (DOJ), can bring federal criminal charges against a corporation with alleged criminal conduct.⁸ Cases brought by the DOJ represent punishment of the most serious alleged criminal violations. It is up to the prosecutors to determine whether prosecution is warranted and, if so, whether to resolve cases by proceeding to trial or settling. Through guilty pleas and DPAs both the government and the corporation avoid the costs of trial.

The early 2000s saw a dramatic shift in the government's approach to settling prosecutions of criminal cases. Prosecutors were empowered to seek to reform corporations using DPAs rather than convict corporations through a guilty plea. Former Deputy Attorney General Larry D. Thompson is noted to have officially endorsed and encouraged prosecutors to use DPAs in a 2003

⁸ The role of the DOJ differs from that of the SEC and other government agencies. The DOJ represents an enforcement approach, while the SEC represents a regulatory approach. The SEC regulates stock exchanges, corporate disclosures and trading and uses civil law, fines and sanctions to rein in noncompliance. The SEC's powers are limited since it can only bring civil charges against a company.

memo (hereafter “The Thompson memo”).⁹ The Thompson memo states that “the revisions [referring to the revised Principles of Federal Prosecution of Business Organizations] also address the efficacy of the corporate governance mechanisms in place within a corporation, to ensure that these measures are truly effective rather than mere paper programs” (US DOJ, 2003). Legal scholars view the empowerment of prosecutors as pivotal for federal corporate criminal enforcement policy. This has been termed “structural reform prosecution” since it represents a significant change in prosecutors’ role as “federal prosecutors have stepped far outside of their traditional role of obtaining convictions, and, in doing so, seek to reshape the governance of leading corporations, public entities, and ultimately entire industries” (Garrett, 2007). Examining the DOJ is important, given strong assumptions that prosecuting corporate entities impacts corporate behavior because of possible severe and direct consequences of prosecution.

Through DPAs, companies can avoid conviction for corporate crime by agreeing to the terms outlined in the agreements.¹⁰ Prosecutors forgo conviction by requiring companies to make remedial changes as a part of the settlement. Remedial measures often include but are not limited to creation of and changes to compliance programs, appointment of a compliance director and addition of or changes to board members. Additionally, prosecutors often require corporations to appoint an independent monitor who provides periodic reports regarding the corporation’s compliance with the law during the probationary period. Within the probationary period, the government retains the right to press charges if there is a breach of the terms of the agreement. A sanctioned firm must satisfy the terms of the DPA during the probationary period for the agreement's non-conviction stipulation to hold.

Guilty pleas differ from DPAs in several ways. First, guilty pleas represent outright conviction of corporations for criminal conduct. Second, guilty pleas are less likely to require an independent monitor or have a probationary period as part of the settlement. Therefore, with guilty pleas, once the case is settled there is no further obligation to prosecutors and no extended scrutiny.

⁹ DPAs are not new. However, since their creation in 1914, the DOJ first executed corporate DPAs in the 1990s.

¹⁰ Though deferred and non-prosecution agreements are considered collectively in this study because of their similarities, they have some slight differences. Deferred prosecution agreements ultimately involve the courts as they must be filed in federal court and be approved by a federal judge. Meanwhile non-prosecution agreements are an agreement between prosecutors and the defendant and do not involve the courts. Though no formal charges are filed with non-prosecution agreements, the negotiated agreement outlines the charges that would have been filed if charges were to be filed.

Third, guilty pleas are always filed with the courts. Still, whether firms plead guilty or avoid conviction, their settlement includes hefty monetary penalties.

3. Hypothesis Development

Theory on the economics of crime requires consideration of the nature of punishment (here DPAs or guilty pleas as settlement options) to determine the optimal enforcement of crime (Becker, 1968; Lund & Sarin, 2021). Factors that may impact federal prosecutors' effect on corporations include the reputational consequences, compliance costs and enforcement intensity associated with the methods of settling corporate criminal prosecutions. Corporate responses to settlement with federal prosecutors via a DPA or a guilty plea may differ as firms conduct their own cost-benefit analyses.

There are varying views on the possible reputational costs associated with guilty pleas and DPAs. With guilty pleas, possible reputational costs of conviction include loss of business contracts, clients, licenses, and unfavorable changes in relationships with third parties, such as suppliers and lenders (Arlen & Alexander, 2018; Heese & Perez-Cavazos, 2019). A conviction can cripple businesses such as financial institutions or pharmaceutical companies, companies that depend heavily on government contracts and companies in certain other regulated industries. The severe risk of driving companies out of business is considered the biggest threat to corporations that are convicted of criminal conduct. This is the popular corporate death penalty argument famous from the Arthur Andersen indictment and conviction. However, Markoff (2013) provides evidence that contradicts the outcry that corporations will fail if the government uses the full force of its prosecutorial powers to convict companies. Studying the fate of corporations following conviction, Markoff (2013) finds that none of the defendant companies was put out of business following the convictions executed between 2001 and 2010. Still corporations may avoid any possibility of these reputational costs by eschewing conviction and agreeing to terms in DPAs.

Despite the opposing views on reputational costs, Arlen & Alexander (2018) argue that there should be no difference in the effect of the punishment and reputational costs of prosecutions settled via DPAs and guilty pleas. Rather, factors such as the nature of the firm and the crime, the firm's pre-existing internal governance structure and the firm's actions following the crime affect the reputational cost. In a similar vein, Lanny Breuer, former assistant attorney general, stated that

(in many ways) DPAs have “the same punitive, deterrent, and rehabilitative effect as a guilty plea” (US DOJ, 2012).

Though DPAs may avoid some reputational costs of conviction, they involve dictated changes to corporate compliance structures which can be a significant financial cost and resource drain. For example, related to its 2019 non-prosecution agreement, Walmart Inc, estimated that compliance enhancements and internal investigations cost the company over \$900M. Despite the potential burdensome compliance costs, critics of DPAs view them as a slap on the wrist. Eisinger (2017) describes DPAs as “stage-managed, rather than punitive.” If firms view the compliance and reputational costs imposed by guilty pleas and DPAs differently, then the corporate response to punishment may vary with the settlement of prosecutions.

Borrowing from theoretical work, I consider enforcement intensity as related to the prosecutors’ budget (financial, time and resources in this case) associated with pursuing and settling prosecutions (Ewert & Wagenhofer, 2019). Specifically, in resolving corporate criminal cases enforcement intensity varies with federal prosecutors’ involvement in corporate dealings and operations after settling prosecutions. During the investigation period, the government’s presence doesn’t differ based on the method it will use to settle the prosecution. However, upon settlement with a guilty plea, prosecutors generally do not have continued involvement with the defendant once the case is settled and closed. This differs for DPAs. During the probationary period for DPAs (where the case remains open), prosecutors continue to monitor the company and often use an independent monitor. Gallo et al. (2023) shows that firms under the watchful eye of corporate monitors have less regulatory violations during their probationary period however, the level of violations increases after the probationary period ends. The variation in enforcement intensity through extended oversight during probation may impact defendant firms’ cost benefit analysis of criminal activity differently.

3.1 Future misconduct

By imposing corporate criminal liability against publicly traded companies, the DOJ seeks to increase the development of effective systems and processes to monitor corporate activities. Punishing the corporation shifts the corporation’s incentives to instill monitoring and delegation structures to minimize or eliminate costly efforts of management to commit crime (Alexander,

1999; Fischel & Sykes, 1996). Generally, with DPAs federal prosecutors specify required governance and compliance changes instead of convicting companies. The DOJ asserts that DPAs have a tremendous impact on corporate culture and behavior. According to Lanny Breuer, 2012 assistant attorney general, DPAs have “truly transformative effect on particular companies and, more generally, on corporate culture across the globe” (US DOJ, 2012). Following this belief, leads to predictions that an improved corporate environment should affect decisions to engage in misconduct and decisions to design or have internal systems in place to detect misconduct. Therefore, given the corporate changes required by DPAs, misconduct should be lower. However, this may not be the case as settlement using DPAs may be considered weaker enforcement since corporations avoid the costs associated with convictions through guilty pleas. In such a scenario, corporations might not perceive the cost of crime as substantial enough to deter future misconduct. In the presence of alleged criminal conduct, it is not clear whether removing the threat of criminal conviction from the settlement table (by using DPAs) deters firms from engaging in future misconduct.

Alternatively, with guilty pleas, federal prosecutors convict companies with the expectation that companies will voluntarily make meaningful changes to deter future misconduct. If guilty pleas are viewed as stronger enforcement, then it is possible that conviction through guilty pleas will have a greater deterrence effect, reducing the likelihood of future misconduct relative to DPAs. However, if conviction is not considered strong enforcement, it is possible even pleading guilty may not curb future misconduct. As firms weigh the potential costs associated with prosecution against the benefits of deterring misconduct, systematic differences in corporate responses might emerge between firms that enter guilty pleas and those that execute DPAs.

It is unclear whether corporations perceive the settlement methods of using DPAs and guilty pleas differently as they work to close investigations with the DOJ. Therefore, I formulate my hypothesis, in the null form, as outlined below.

H1: There is no difference in future misconduct for firms that execute DPAs but avoid conviction and firms that are convicted by the DOJ through guilty pleas.

4. Sample Selection and Descriptive Statistics

4.1 Sample Selection

I obtain data on firms that are prosecuted for corporate crimes by the DOJ from The Corporate Prosecution Registry (CPR) (Garrett & Ashley, 2020).¹¹ I consider only prosecutions of U.S. public companies through 2018.¹² First, I use the flag for U.S. public company provided in the database and manually obtain the ticker symbols as most ticker symbols are not included. Foreign companies listed on U.S. exchanges via American depository receipt are excluded from my sample. Next, I link each entity's ticker to the corresponding company gvkey from Compustat. This process eliminates some entities with tickers that do not have a matching gvkey in Compustat and some entities for which I could not find tickers or other public company identification. Following this process produced a sample of 212 DPAs and guilty pleas for entities subject to federal organizational prosecutions in the United States from 2001 through 2018 (Table 1). Criminal investigations that result in acquittal, declination, or dismissal are excluded from my sample. Some companies do not merge with Compustat because Compustat coverage ends prior to execution of the agreement. This is possible due to companies merging and being acquired, delisting or going out of business. For example, Markoff (2013) provides evidence that some companies that were prosecuted between 2001 and 2010 went out of business or were merged with another company.

Of the 212 corporate prosecution settlement agreements, 22 companies had multiple agreements, with 2 companies executing three agreements and 2 companies executing four agreements from 2001 to 2018. For example, JPMorgan executed 4 agreements with the DOJ between 2001 and 2018. As discussed later, my analyses are based on the first prosecution for companies with multiple prosecutions.

¹¹ This database is a comprehensive sample of federal organizational prosecutions in the United States. My data is based on files downloaded on February 15, 2019.

¹² Not all studies that use data from the Corporate Prosecution Registry limit their analyses to U.S. publicly traded companies. The inclusion of nonpublic companies and foreign companies may contribute to differences in sample size when compared to my sample.

Figure 1 provides evidence of the increased reliance on DPAs. Between 2001 and 2018, on average, more DPAs were executed relative to guilty pleas. There is an average of 5 guilty pleas executed per year, relative to an average of 7 DPAs.

Criminal prosecutions vary by industry. Panel C of Table 1 summarizes the frequency of prosecutions by industry. Most prosecutions are in the manufacturing industry (103), finance, insurance, and real estate industry (33), and the services industry (19). This seems to support allegations of enforcement targeted to specific industries (Markoff, 2013; Eckstein, 2018).

Crimes prosecuted by the DOJ vary in nature. Table 1 panel D summarizes the frequency of prosecutions based on the type of crime charged. FCPA violations and fraud violations are the most frequent with 43 and 39 prosecutions, respectively. Of the fraud category, 2 are accounting fraud, and 12 are securities fraud. Environmental fraud is also common with 34 prosecution agreements. With respect to the type of prosecution agreement, FCPA violations are more frequently prosecuted via DPA. Accounting and securities fraud cases are mostly settled using DPA. On the contrary, guilty pleas are more common for environmental violations and food/pharmaceutical crimes.

The creators of the CPR database went through an extensive process of obtaining the source documents, including agreements executed by the DOJ and press releases. Where available, I manually examine supporting documents for each prosecution case to identify the corresponding period of the criminal conduct. This data is used in tests of recidivism, discussed later.

My empirical tests are conducted for the years 2003–2018. The sample period begins in 2003, the post-SOX era, to ensure that sample firms are subject to similar regulatory environment. Empirical tests employ only prosecutions that were settled between 2003 and 2016. Therefore, I end my sample period in 2018 to provide at least 2 years of observations following the latest prosecutions in the sample. This allows time for offenses to be investigated and punished.

In addition to the criminal conduct prosecuted by the DOJ, I use data from several additional sources to measure corporate misconduct. From the Good Jobs First Violations Tracker (VT) database I obtain enforcement data from federal, state, and local regulatory agencies, and federal and state courts. From Audit Analytics (AA) database I obtain data on (1) SEC Accounting and Auditing Enforcement Releases (AAERs), (2) severe restatements due to fraud, irregularities, misrepresentations, or that involve the SEC, and (3) internal control weaknesses (ICW).

Lack of transparency is a limitation in this setting. Prosecutors do not publicize the factors that lead to decisions not to pursue charges against a corporation. Therefore, my sample excludes corporations with alleged corporate misconduct but no charges by the DOJ. Corporate crimes may go undetected and therefore unpunished. Firms with undetected crime are also not in my sample.

4.2 Descriptive Statistics

In this section, I provide univariate analyses of key variables for firms prosecuted by the DOJ. I examine general firm and financial performance characteristics along with the corporate governance characteristics later used in the multivariate regression analyses.

4.2.1 Firms prosecuted by the DOJ

Panel A of Table 2 presents the mean differences between firms that execute DPA and firms that execute guilty pleas with the DOJ. Within firms prosecuted by the DOJ, larger firms (based on total assets) are more likely to enter DPAs. In comparing financial performance, relative to guilty plea firms, firms that execute DPAs have more variation in their returns and greater stock turnover. In untabulated univariate results using corporate governance measures, I find that firms that execute DPAs differ significantly from guilty plea firms in terms of the independence of the board members, with a higher percentage of inside directors (i.e., less independent). However, firms that execute DPAs are less likely to have the CEO and chairman of the board positions combined. CEO and board chairman duality may be one of the factors that prosecutors evaluate to determine the settlement of a prosecution. This was evidenced by prosecutors requiring Bristol Myers Squibb to separate the CEO and board chairman positions as part of the agreement to defer prosecution in 2005.

4.2.2 DOJ prosecuted firms vs. non-prosecuted firms

A prosecuted firm is distinguished from other publicly traded firms (non-prosecuted firms) according to whether it has been prosecuted of a federal crime – as indicated by a guilty plea or a DPA with the DOJ. In panel B of Table 2, I compare the mean of several variables for firms prosecuted by the DOJ, relative to firms that have not been prosecuted (based on Compustat). Not all the findings of the characteristics of prosecuted firms comport with previous theoretical predictions, common beliefs, or intuition. For example, Macey (1991) theorizes that large firms

will have less organizational crime. In stark contrast to this view, I find that prosecuted firms are larger than firms that were not prosecuted (based on both total assets and market value of equity). Macey (1991) argues that corporate managers may commit crime to boost corporate revenues and profits. Following this premise would lead to predictions of less profitability and weaker return performance for prosecuted firms. I do find that prosecuted firms experience lower sales growth, on average, which may pressure them to engage in criminal activity to bolster performance. However, though prosecuted firms have less active stock trading (turnover), they do not have significantly different return performance, relative to non-prosecuted firms. In fact, prosecuted firms have more stable returns on average as captured by lower return skewness and standard deviation of returns.

A company's culture may encourage crime (Macey, 1991). Corporate governance structures can provide insights into a firm's culture. Relative to the broader population of non-prosecuted firms, prosecuted firms have more independent boards (lower percentage of inside directors). In addition, prosecuted firms are less likely to have the CEO serve in a dual capacity as the chairman of the board of directors.

5. Research Design

Firms subject to criminal prosecution probably also differ from other firms on several unobservable dimensions. Therefore, comparing firms subject to criminal prosecution to those not subject to criminal prosecution may capture the effect of these unobservable differences, rather than the effect of criminal prosecution. To address this potential endogeneity concern, my analyses are limited to firms subject to DOJ investigations and subsequent prosecution.

I also attempt to mitigate potential endogeneity concerns by using the variation in execution dates of the prosecution agreements signed by each defendant firm within an industry. I use a generalized difference-in-differences design, similar to Bertrand and Mullainathan (2003) and Armstrong et al. (2012), to compare changes in the outcomes of interest around the execution of a settlement agreement for firms affected by a particular type of settlement agreement, i.e., DPA and

guilty pleas.¹³ The generalized difference-in-differences design is equivalent to a staggered changes analysis where the treatment is not clustered around a particular time, which prevents a time explanation driving results. Overall, this design helps rule out arguments regarding confounding effects or other unobservable differences. The first difference is the change in the misconduct measures. My research design entails estimating the following equation to test the hypotheses discussed above.

$$Y_{it} = \alpha_t + \alpha_i + \beta_1 Post_DPA_{it} + \beta_2 Post_GuiltyPlea_{it} + \delta Controls_{it} + \varepsilon_{it} \quad (1)$$

In equation 1, i indexes firms and t indexes time, Y_{it} is the dependent variable of interest (future misconduct or corporate governance measures), α_t and α_i are year and firm fixed effects, $Controls_{it}$ are control variables. $Post_DPA_{it}$ is an indicator variable that equals one starting in year t if the firm has been prosecuted via a DPA (settlement without conviction) in year t and zero otherwise, and $Post_GuiltyPlea_{it}$ is an indicator variable that equals one starting in year t if the firm has executed a guilty plea (settlement with conviction) in year t and zero otherwise. The first agreement is used for firms that settle multiple prosecutions during the sample period. Firm fixed effects allow me to evaluate the effect of DOJ prosecution within firm, while controlling for all unobserved time invariant omitted variables. Year fixed effects control for common trends in market conditions, including macroeconomic shocks such as the financial crisis. I report estimates based on standard errors clustered by firm. All continuous variables are winsorized at the top and bottom one percent.

In equation 1, my estimate of the DPAs' effect is β_1 and the estimate of guilty pleas' effect is β_2 . To examine differences in effects for DPAs, relative to guilty pleas (i.e., whether the method of prosecution matters), I test whether the β_1 and β_2 coefficients are statistically significantly different (i.e., $\beta_1 - \beta_2 \neq 0$). Therefore, I am interested in the individual β coefficients and the difference between the two β coefficients. This design achieves two goals. First, it helps answer whether the heavily criticized DPAs affect corporate behavior. Second, this design helps answer whether DPA firms differ from guilty plea firms in how they respond to settling prosecutions with the federal government.

¹³ Armstrong et al. (2012) and Bertrand & Mullainathan (2003) provide detailed discussion of the generalized difference-in-differences design exploiting staggered implementation of anti-takeover laws by states.

I use several variables as measures of future misconduct. I begin by examining the likelihood of recidivism i.e., repeated criminal conduct prosecuted by the DOJ (*DOJ_crime*). Like Lund & Sarin (2021), I define a recidivist as a publicly traded company with two or more federal corporate prosecutions during my sample period. In tests of *DOJ_crime*, I exclude agreements where I cannot determine the misconduct period. This was due to unavailable or incomplete settlement agreements.

Though firms' future misconduct may not rise to the attention of federal prosecutors, it is possible to be the subject of enforcement actions brought by state and federal regulatory agencies and regulators. Therefore, next, I examine the likelihood of regulatory violations (*Violations*), being the subject of a SEC AAER (*AAER*) and having restatements due to fraud, irregularity, or SEC involvement (*Restatement*). Lastly, given that internal controls are a crucial mechanism for preventing corporate misconduct, I also examine the likelihood of material weaknesses in internal controls (*ICW*). For tests of criminal conduct, AAERs, restatements, and ICW I use the year associated with the infraction as the dependent variable. However, since the misconduct year is not identified in the Violations Tracker database, I consider the misconduct year to be 2 years prior to the year the violation case is resolved.^{14, 15}

Controls for the misconduct tests are based on research on litigation risk, since I am interested in the likelihood of future misconduct that is investigated and punished by the different authorities, including federal prosecutors. Kim & Skinner (2012) find that including firm characteristics, such as size, growth and stock volatility along with the commonly used industry measures, increases the predictive ability of ex ante litigation risk. *HighRiskIndustry* captures firms in the biotech, computer, electronics and retail industries that research has shown are at risk for litigation (Francis et al., 1994). Kim & Skinner (2012) show that larger (*TotalAssets*) and more profitable (*SalesGrowth*) firms are more likely to be sued. Greater levels of stock volatility (*ReturnStdDev*), declining stock price (*Return*) and higher stock turnover (*Turnover*) are also shown to predict litigation risk.

¹⁴ I exclude federal criminal cases resolved by DPAs and guilty pleas from this sample from the VT database.

¹⁵ Considering the breadth of agencies covered by the VT database, the length of time between the date a violation takes place and the date the penalty is announced varies. To adjust for this shortcoming of the available data, I use the corporate prosecutions, AAERs and restatements to estimate an average of 2-4 years between the end of the misconduct period and the punishment of the misconduct.

A limitation of this study is that since the determinants of the prosecutors' choice of settlement options are not made public, firms with DPAs and guilty pleas may have unobservable differences that may be captured rather than the effect of the type of prosecution agreement. Therefore, my study examines associations between the settlement of prosecutions and the dependent variables examined after the prosecutions and does not speak to the outcomes as a direct consequence of the prosecution.

6. Empirical Results

Within firms that are prosecuted by the DOJ, I examine whether firms executing DPAs are less likely to engage in future misconduct post-prosecution compared to those entering guilty pleas. Column 1 of Table 3 presents the results of the effects of settling federal prosecutions on future criminal conduct prosecuted by the DOJ. This analysis speaks to whether federal prosecution settlement methods deter repeated criminal conduct (i.e., curb recidivism). I find strong evidence that, on average, firms that execute DPAs are less likely to be the subject of criminal prosecutions after their first prosecution by the DOJ. This suggests that settling prosecution via DPAs provides some deterrence benefits and reduces future crimes prosecuted by the DOJ. In stark contrast, I do not find similar results for firms that execute guilty pleas. These findings are confirmed using a sample of only firms prosecuted for financial crimes (Column 2 of Table 3).

Since not all misdeeds are subject to federal prosecution, I examine whether DPA firms are less likely to have future misconduct outside of federal prosecutors' purview. Relative to guilty plea firms, I find evidence that DPA firms are less likely to be the subject of SEC AAERs for alleged accounting misconduct after settling their first prosecution (Table 4 columns 1 and 2). However, DPA firms are more likely to violate federal, state, and local regulations after settling federal prosecution without conviction (Table 5, column 1). These AAER and regulatory violations findings are confirmed using a sample of only firms prosecuted for financial crimes (Column 2 of Table 4 and 5). Finding increased regulatory violations on average after settlement using DPAs is in line with Gallo et al. (2023). Within the sample of DPA firms they studied, they find that firms with independent monitors experience an increase in regulatory violations after monitorship ends.

In tests of financial restatements, I find that firms that settle prosecutions of financial crimes using guilty pleas are more likely to experience severe restatements of their financial statements in future years following settling criminal prosecution (Table 6, column 2). These firms have a higher likelihood of restatements due to frauds, irregularities or misrepresentations or SEC involvement in the restatement process. Focusing on financial firms, I find both DPA and guilty plea firms have a higher likelihood of financial restatements after settling prosecution. Further tests of financial crimes in Table 7's tests of internal control weaknesses, show that firms convicted through guilty pleas, relative to DPA firms, are more likely to have internal control weaknesses post-prosecution. It is possible that I do not find similar results for DPA firms since DPAs include extensive remedial measures focused on improving the compliance and governance environment. Collectively my results provide limited evidence of DPAs providing a deterrence benefit relative to guilty plea firms.

Examining differences in effects for DPAs, relative to guilty pleas (i.e., whether the method of prosecution matters), I find that the β_1 and β_2 coefficients in equation (1) are statistically significantly different in some tests. These results support possible differences in firms' responses to DPAs and guilty pleas. Specifically, I find evidence of differences related to future federal criminal conduct in a sample of prosecutions of all crime types. In samples limited to financial crimes, I find evidence of differences for DPA and guilty plea firms in tests of AAERs and internal control weaknesses.

7. Additional Analyses

7.1 Financial Crimes

The nature of alleged crime may impact how firms respond to prosecutions. For example, prosecutions of environmental violations may be considered different from allegations of securities fraud by corporate leaders. Crimes that have clear monetary impacts or that reveal weaknesses in firm's internal controls may draw greater attention from management and the board. It is therefore reasonable to ask whether the effect of the settlement of prosecutions on corporate crime is concentrated among firms prosecuted for financial crimes. Using equation 1, I conduct separate analyses of prosecutions of financial crimes for prosecuted. For the purposes of this study,

financial crimes include bribery, accounting, general and securities fraud, kickbacks, money laundering and violations of the Antitrust, Bank Secrecy and Foreign Corrupt Practices Acts. Prosecutions of financial crimes account for 52% of the crimes prosecuted in my sample. Limiting analyses to only financial crimes is in line with accounting studies of corporate misconduct, which often focus on financial crimes. Examples of these studies include Christensen et al., (2019), Karpoff et al., (2017) and Kedia & Rajgopal, (2011).

Panel D of Table 1 shows that prosecutions of financial crime are predominantly settled with DPAs (84%). Column 2 of Tables 3 through 7 provide results of the main multivariate analyses limited to prosecutions of financial crimes. As discussed earlier, limiting the analyses to financial crimes confirms results related to *DOJ_crime*, *RegulatoryViolation* and *AAER*. However, some notable differences in the results when focused on financial crimes appear with tests of *Restatement* and *ICW*. Only prosecuted firms that are convicted for financial crimes have higher likelihood of material weaknesses in internal controls following the settlement of the prosecution. This decline in internal controls after conviction may indicate the need for specific required governance and compliance changes along with conviction. Also, focused on financial crimes, the results show that both DPA and guilty plea firms experience a higher likelihood of restatements after settling prosecutions.

7.2 Jurisdictions

The Southern District of New York (SDNY) has a reputation for being fierce in prosecuting corporations. According to Eisinger (2017), “the office specializes in the most complex and difficult criminal cases,” and it has been called the “sovereign” district by many insiders. The jurisdiction that prosecutes a crime may affect how corporations respond. Considering the reputation of the SDNY leads to predictions of a decreased probability of recidivism for firms prosecuted in the SDNY. From the sample prosecutions, 13 were settled in the SDNY. However, 12 of these prosecutions were settled using DPAs, and only one was settled using guilty pleas. To examine the role of stricter jurisdictions, such as the SDNY, I interact *Post_DPA* with *SDNY*. *SDNY* equals one if the jurisdiction for a prosecution is the SDNY and zero otherwise.

The results in column 1 of Table 8 provide evidence that the jurisdiction may affect how prosecuted firms respond to settlements. Specifically, the incremental effect of SDNY on

prosecutions settled using DPAs is statistically significant and indicative of more prosecutions. This result may suggest that the aggressiveness of SDNY prosecutors yields more prosecutions of repeat offenders, and these prosecutions are predominantly settled with DPAs.

7.3 Terms of DPAs

Since federal prosecutors make customized requirements with DPAs, settlements using DPAs vary in the terms each agreement contains. Therefore, I further investigate whether some of the most commonly used requirements provide incremental deterrence benefits. Requirements in DPAs most often include the appointment of a compliance overseer, creation or modification of existing compliance programs or engagement of an independent monitor. The key provisions in each agreement may vary across prosecutors and prosecutors' offices.

Panel B of Table 1 summarizes remedial measures that prosecutors often include with DPAs. Eighty-eight DPAs require the creation of/modifications to compliance programs, 19 agreements require the appointment of a compliance overseer, and 36 agreements require that prosecuted firms appoint an independent monitor.

It is not clear whether or how these individual provisions impact corporate behavior. Using the recidivism model, I examine the impact of the remedial measures often associated with DPAs. I interact *Post_DPA* with indicators for requirements to appoint compliance overseers (*ComplianceOverseer*), create or modify existing compliance programs (*ComplianceProgram*) and engage an independent monitor (*IndependentMonitor*). Columns 2 to 4 of Table 8 provide results of the effect of these terms of the DPAs. Though these terms are often the focus of debates related to the use of DPAs, I do not find significant evidence of an incremental effect of compliance overseers, compliance programs or independent monitors. The interaction terms are generally insignificant. My main inferences remain unchanged when the interaction terms are included.¹⁶

¹⁶ In tests of the effect of compliance program requirements, the main effect of *Post_DPA* remains negative but is not statistically significant.

8. Conclusion

Though the government expends significant resources (financial, time, staffing) on investigations and prosecutions, corporate crime remains a major concern for the DOJ. This concern is amplified as federal prosecutors have repeated interactions with several of the firms prosecuted. Prior studies provide descriptive evidence that most repeat offenders settle prosecutions using DPAs. This has been taken as broad evidence that DPAs are ineffective. However, in multivariate analyses, I provide some evidence of a deterrent benefit achieved by using DPAs, relative to convictions through guilty pleas. Specifically, DPA firms are less likely to have future misconduct punished by the DOJ and SEC (prosecutions and AAERs). This is plausibly the result of the structured changes that federal prosecutors require DPA firms, but not guilty plea firms, to make as part of the settlement. However, DPA firms are still more likely to experience other kinds of misconduct that may not be elevated to the DOJ or SEC. For example, DPA firms are more likely to have regulatory violations. Collectively, my results show that settling criminal prosecutions using DPAs, rather than guilty pleas, can deter major misdeeds, those covered by the DOJ or SEC, but not necessarily reduce regulatory violations.

As capital markets continue to grapple with the consequences of corporate crime and federal prosecutors punish bad actors, it is important to assess the effects of the variations of punishment. By explicitly examining the role that law enforcement plays as a governance mechanism within corporations, the results of this study should be of interest to federal prosecutors as they deliberate about the increased criminalization of corporate behavior.

REFERENCES

- Alexander, C. R. (1999). On the Nature of the Reputational Penalty for Corporate Crime: Evidence. *Journal of Law & Economics*, 42(April), 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), 1–34.
- Arlen, J., & Alexander, C. R. (2018). Chapter 4: Does conviction matter? The reputational and collateral effects of corporate crime. In *Research Handbook on Corporate Crime and Financial Misdealing* (pp. 87–148).
- Arlen, J., & Kahan, M. (2017). Corporate Governance Regulation Through Non-Prosecution. *The University of Chicago Law Review*, 323–388.
- Becker, G. S. (1968). Crime and Punishment: An Economic Approach. *Journal of Political Economy*, 76(2), 169–217.
- Bertrand, M., & Mullainathan, S. (2003). Enjoying the Quiet Life? Corporate Governance and Managerial Preferences. *Journal of Political Economy*, 111(5), 1043–1075.
- Christensen, H. B., Maffett, M. G., & Rauter, T. (2019). Policeman for the World: U.S. Enforcement of Foreign Corruption Regulation and Corporate Investment Policies. *Working Paper*.
- Dyck, A., Morse, A., & Zingales, L. (2023). How pervasive is corporate fraud? *Review of Accounting Studies*.
- Eisinger, J. (2017). *The Chickenshit Club: Why the Justice Department Fails to Prosecute Executives*. Simon & Schuster.
- Ewert, R., & Wagenhofer, A. (2019). Effects of Increasing Enforcement on Financial Reporting Quality and Audit Quality. *Journal of Accounting Research*, 57(1), 121–168.
- Files, R. L., Martin, G. S., & Sun, Y. (2022). Forced Remediation: The Use of Corporate Monitors in Sanctions for Misconduct. *Working Paper*.
- Fischel, D. R., & Sykes, A. O. (1996). Corporate Crime. *The Journal of Legal Studies*, 25(2), 319–349.
- Francis, J., Philbrick, D., & Schipper, K. (1994). Shareholder Litigation and Corporate Disclosures. *Journal of Accounting Research*, 32(2), 137.
- Gallo, L. A., Lynch, K. V., & Tomy, R. (2023). Out of Site, Out of Mind? The Role of the Government-Appointed Corporate Monitor. *Journal of Accounting Research*.

- Garrett, B. L. (2007). Structural Reform Prosecution. *Virginia Law Review*, 93(4), 853–957.
- Garrett, B. L. (2016). *Too Big to Jail: How Prosecutors Compromise with Corporations*. Harvard University Press.
- Garrett, B. L., & Ashley, J. (2020). Corporate Prosecution Registry. *Duke University and University of Virginia School of Law*, at [Http://Lib.Law.Virginia.Edu/Garrett/Corporate-Prosecution-Registry/Index.Html](http://lib.law.virginia.edu/Garrett/Corporate-Prosecution-Registry/Index.Html).
<https://doi.org/http://lib.law.virginia.edu/Garrett/corporate-prosecution-registry/index.html>
- Garrett, B. L., Li, N., & Rajgopal, S. (2019). Do heads roll?: An empirical analysis of CEO turnover and pay when the corporation is federally prosecuted. *Journal of Law, Finance, and Accounting*, 4(2), 137–181.
- Heese, J., Krishnan, R., & Ramasubramanian, H. (2020). The Department of Justice as a gatekeeper in whistleblower-initiated corporate fraud enforcement: Drivers and consequences. *Journal of Accounting and Economics*.
- Heese, J., & Perez-Cavazos, G. (2019). Fraud Allegations and Government Contracting. *Journal of Accounting Research*, 57(3), 675–719. <https://onlinelibrary.wiley.com/doi/10.1111/1475-679X.12258>
- Kaal, W. A., & Lacine, T. (2014). The Effect of Deferred and Non-Prosecution Agreements on Corporate Governance: Evidence from 1993-2013. *The Business Lawyer*, 70.
- Karpoff, J. M., Lee, D. S., & Martin, G. S. (2017). Foreign Bribery: Incentives and Enforcement. *Working Paper*.
- Kedia, S., & Rajgopal, S. (2011). Do the SEC's enforcement preferences affect corporate misconduct? *Journal of Accounting and Economics*, 51(3), 259–278.
- Kim, I., & Skinner, D. J. (2012). Measuring securities litigation risk. *Journal of Accounting and Economics*, 53, 290–310.
- Lund, D. S., & Sarin, N. (2021). Corporate Crime and Punishment: An Empirical Study. *Texas Law Review*, 100(285).
- Macey, J. R. (1991). Agency Theory and the Criminal Liability of Organizations. *Boston University Law Review*, 71(2), 315–340.
- Markoff, G. (2013). Arthur Andersen and the Myth of the Corporate Death Penalty: Corporate Criminal Convictions in the Twenty-First Century. *University of Pennsylvania Journal of Business Law*, 15(3).
- Nguyen, T. (2021). The Effectiveness of White-Collar Crime Enforcement: Evidence from the War on Terror. *Journal of Accounting Research*, January.

Roychowdhury, S., & Srinivasan, S. (2019). The Role of Gatekeepers in Capital Markets. *Journal of Accounting Research*, 57(2), 295–322.

Soltes, E. F. (2016). *Why They Do It: Inside the Mind of the White-Collar Criminal*. Public Affairs.

United States Government Accountability Office. (2009). Corporate Crime: DOJ Has Taken Steps to Better Track Its Use of Deferred and Non- Prosecution Agreements, but Should Evaluate Effectiveness. In *GAO Report to Congressional Requesters* (Issue December).

US DOJ. (2003). *U.S. Department of Justice, Office of the Deputy Attorney General - Principles of Federal Prosecution of Business Organizations*.

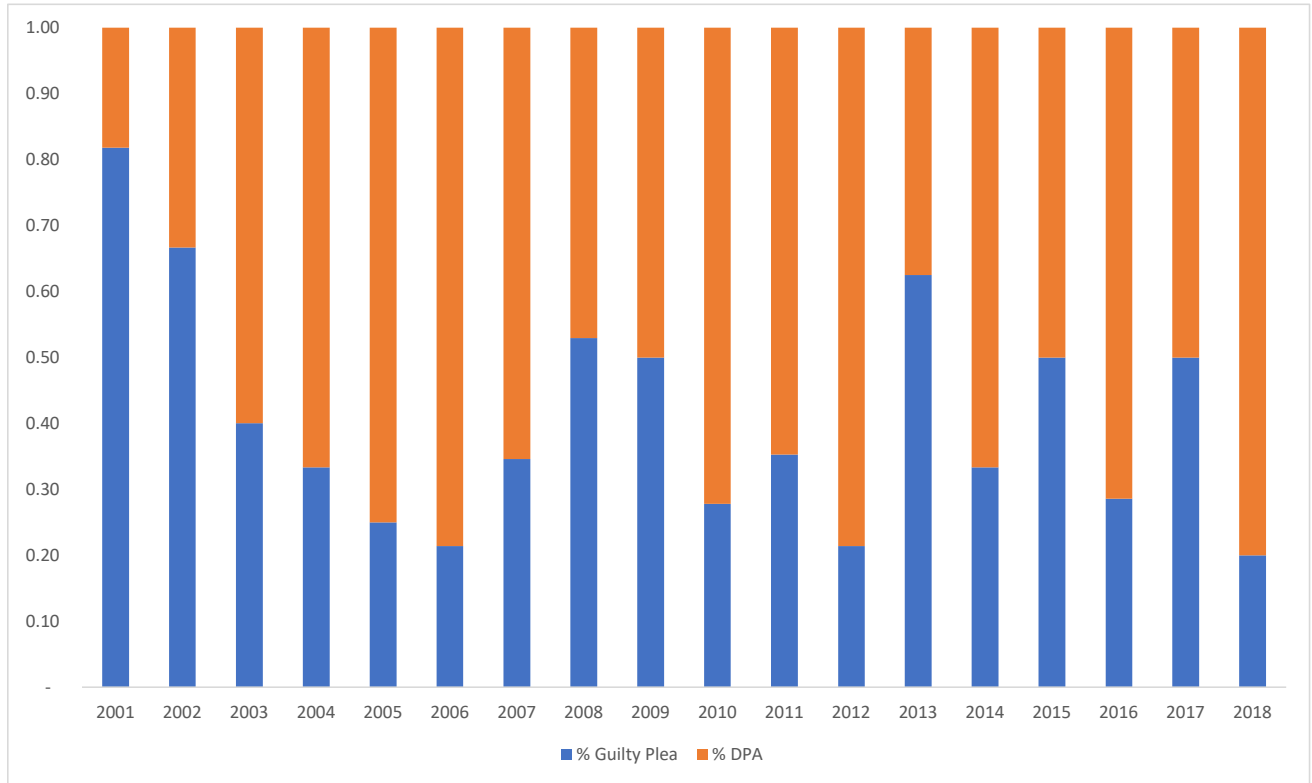
US DOJ. (2012). *Justice News: Assistant Attorney General Lanny A. Breuer Speaks at the New York City Bar Association*.

Appendix 1: Variable descriptions

Variable	Description
Variables of interest	
$POST_DPA_{it}$	An indicator variable that equals one starting in year t if firm i has been prosecuted via a DPA (settlement without conviction) in year t , and 0 otherwise. This is for equation 1. [Source: Compustat, CPR*]
$POST_GuiltyPlea_{it}$	An indicator variable that equals one starting in year t if firm i has executed a guilty plea (settlement with conviction) in year t , and 0 otherwise. This is for equation 1. [Source: Compustat, CPR]
Misconduct Models	
$AAER_t$	An indicator variable equal to one if the firm is named in an SEC AAER for financial reporting related enforcement actions related to misconduct that took place in year t , or zero otherwise. [Source: Audit Analytics]
DOJ_crime_t	An indicator variable equal to one if the firm was prosecuted by the DOJ for criminal conduct that took place in year t , and is zero otherwise. [Source: CPR]
$HighRiskIndustry_t$	An indicator variable that equals one if the firm operates in a high-litigation industry, and zero otherwise. High-litigation industries are biotechnology (SIC codes 2833–2836 and 8731–8734), computers (SIC codes 3570–3577 and 7370–7374), electronics (SIC codes 3600–3674), and retail (SIC codes 5200–5961). [Source: Compustat]
ICW_t	An indicator variable equal to one if the firm's internal controls are considered weak for year t , or zero otherwise. [Source: Audit Analytics]
$Restatement_t$	An indicator variable equal to one if the firm's financial statements for year t are restated due to fraud, irregularities, misrepresentations or SEC involvement, or zero otherwise. [Source: Audit Analytics]
$Return_{t-1}$	Market-adjusted 12-month stock return for fiscal year $t-1$. [Source: CRSP]
$ReturnSkewness_{t-1}$	Skewness of the firm's 12-month return for fiscal year $t-1$. [Source: CRSP]
$ReturnStdDev_{t-1}$	Standard deviation of the firm's 12-month return for year $t-1$. [Source: CRSP]
$SalesGrowth_{t-1}$	Year $t-1$ sales less year $t-2$ sales scaled by beginning of year $t-1$ total assets. [Source: Compustat]
$TotalAssets_{t-1}$	The natural logarithm of the firm's total assets as of the end of the fiscal year $t-1$. [Source: Compustat]
$Turnover_{t-1}$	Trading volume accumulated over the firm's 12-month period for fiscal year $t-1$. [Source: CRSP]
$RegulatoryViolation_{t-2}$	Two-year lag of an indicator variable that equals to one if the firm receives a regulatory sanction year t , or zero otherwise. [Source: ViolationsTracker]
Additional analyses	
$ComplianceOverseer$	An indicator variable equal to one if the DPA requires that the company appoint a compliance overseer, and zero otherwise. [Source: CPR]
$ComplianceProgram$	An indicator variable equal to one if the DPA requires that the company create or modify an existing compliance program, and zero otherwise. [Source: CPR]
$Independent Monitor$	An indicator variable equal to one if the DPA requires that the company engage an independent monitor, and zero otherwise. [Source: CPR]
$SDNY$	An indicator variable equal to one if the jurisdiction for a DPA is the Southern District of New York and zero otherwise. [Source: CPR]

*Corporate Prosecution Registry

Exhibit 1: Ratio of DPAs and guilty pleas to total prosecutions by year



This exhibit displays the ratio of DPAs and guilty pleas to total prosecutions involving the US DOJ and US publicly traded companies between 2001 and 2018.

Table 1: Description of Prosecutions settled between 2001 and 2018

Panel A: Breakout by Prosecution type

Prosecution type	Frequency
DPA	127
Guilty Plea	85
Total Prosecution agreements	212

Panel B: Summary of requirements in DPA

Requirement	# agreements
Compliance overseer	19
Compliance program	88
Independent monitor	36
Independent outside directors on the board	3
Non-executive Board chairman	1

Panel C: Frequency of Prosecutions by industry

Industry	DPA	Guilty Plea	Total	Percent
Agriculture, Forestry, and Fishing	0	2	2	0.9
Mining	5	7	12	5.7
Construction	1	0	1	0.5
Manufacturing	57	46	103	48.6
Transportation & Public Utilities	7	11	18	8.5
Wholesale Trade	5	6	11	5.2
Retail Trade	6	4	10	4.7
Finance, Insurance, and Real Estate	29	4	33	15.6
Services	14	5	19	9.0
Other	3	0	3	1.4
Total	127	85	212	100.0

Table 1: Description of Prosecutions settled between 2001 and 2018 (continued)

Panel D: Frequency of Prosecutions by Primary Crime type

Primary Crime type	DPA	Guilty Plea	Total	Percent
<u>Financial Crime</u>				
Antitrust	3	6	9	4.3
Bank Secrecy Act	13	0	13	6.1
Bribery	2	0	2	0.9
FCPA	38	5	43	20.3
Fraud - Accounting	2	0	2	0.9
Fraud - General	15	4	19	9.0
Fraud - Securities	11	1	12	5.7
Kickbacks	9	1	10	4.7
Money Laundering	0	1	1	0.5
Total Financial Crime	93	18	111	52.4
<u>Non-Financial Crime</u>				
Controlled substances	3	0	3	1.4
Environmental	4	30	34	16.0
False Statements	1	2	3	1.4
Food/Pharmaceutical	8	19	27	12.7
Fraud - Health Care	4	2	6	2.8
Gambling	1	0	1	0.5
Immigration	2	0	2	0.9
Import / Export	6	2	8	3.8
Obstruction of Justice	0	1	1	0.5
OSHA	1	2	3	1.4
Other	4	3	7	3.3
Wildlife	0	6	6	2.8
Total Non-Financial Crime	34	67	101	47.7
Grand Total	127	85	212	100

Table 2: Descriptive Statistics

Panel A: Difference across means for firms prosecuted by DPA and guilty pleas					
VARIABLES	N	DPA Firms	N	Guilty Plea Firms	
<i>HighRiskIndustry</i>	1,210	0.20	567	0.20	
<i>Return</i>	900	0.04	438	0.05	
<i>ReturnSkewness</i>	892	0.06	437	0.10	
<i>ReturnStdDev</i>	894	0.10	437	0.09	***
<i>SalesGrowth</i>	1,189	0.06	566	0.06	
<i>TotalAssets (\$M)</i>	1,207	74,606	567	27,591	***
<i>Turnover</i>	896	2.59	438	2.27	**
General prosecution features					
<i>Monetary penalties (\$M)</i>	127	71.19	85	88.07	
<i>Parellel civil suit</i>	87	0.57	9	1.00	**
<i>Parellel regulatory action</i>	127	0.64	85	0.00	***
<i>Probation Length (months)</i>	109	28.28	84	23.50	*
<i>Prosecuted by SDNY</i>	127	0.09	85	0.01	**
<i>Securities Exchange Commission involved</i>	127	0.26	85	0.00	***

Panel A of Table 2 presents mean differences between DPA firms (not convicted) and guilty plea firms (convicted) for control variables. Panel A also presents mean differences in general prosecution features of DPAs and guilty plea agreements as obtained from the Corporate Prosecution Registry. See Appendix 1 for variable definitions. The symbols ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively. All continuous variables used in the regressions are winsorized at the top and bottom one percent.

Panel B: Difference across means for firms subject to DOJ prosecution and firms not subject to DOJ prosecution					
VARIABLES	N	Prosecuted firms	N	Compustat/CRSP firms	
<i>HighRiskIndustry</i>	1,777	0.20	120,529	0.22	*
<i>Return</i>	1,338	0.05	69,906	0.03	
<i>ReturnSkewness</i>	1,329	0.07	68,384	0.13	***
<i>ReturnStdDev</i>	1,331	0.09	68,843	0.11	***
<i>SalesGrowth</i>	1,755	0.07	82,880	0.09	**
<i>TotalAssets (\$M)</i>	1,774	26,135	94,106	3,432	***
<i>Turnover</i>	1,334	2.54	67,285	2.92	**

Panel B of Table 2 presents mean differences between firms prosecuted by the DOJ (using DPAs and guilty pleas) and firms not prosecuted by the DOJ during the sample period based on all firms in Compustat/CRSP. See Appendix 1 for variable definitions. The symbols ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively. All continuous variables used in the regressions are winsorized at the top and bottom one percent.

Table 3: The effect of the method of settling federal prosecutions on the likelihood of future criminal conduct (recidivism) for prosecuted firms

	All crimes	Financial Crimes only
	<i>DV = DOJ_crime</i>	<i>DV = DOJ_crime</i>
	(1)	(2)
<i>POST_DPA</i> _{<i>t</i>}	-0.14*** (-2.90)	-0.18*** (-3.06)
<i>POST_GuiltyPlea</i> _{<i>t</i>}	0.02 (0.36)	-0.21 (-1.05)
<i>HighRiskIndustry</i> _{<i>t-1</i>}	0.18*** (3.90)	0.33*** (4.04)
<i>Return</i> _{<i>t-1</i>}	0.03 (1.02)	0.03 (0.79)
<i>ReturnSkewness</i> _{<i>t-1</i>}	-0.00 (-0.10)	-0.02 (-0.97)
<i>ReturnStdDev</i> _{<i>t-1</i>}	-0.26 (-0.87)	-0.13 (-0.36)
<i>SalesGrowth</i> _{<i>t-1</i>}	0.08 (1.38)	-0.06 (-0.69)
<i>TotalAssets</i> _{<i>t-1</i>}	-0.07* (-1.86)	-0.08 (-1.37)
<i>Turnover</i> _{<i>t-1</i>}	0.01 (0.86)	-0.00 (-0.39)
	<u>P-values</u>	<u>P-values</u>
Test: <i>POST_DPA = POST_GuiltyPlea</i>	0.04	0.89
Observations	1,214	683
R-squared	0.33	0.42
Year FE	Yes	Yes
Firm FE	Yes	Yes

This table presents the results of a generalized difference-in-difference model that regresses the likelihood of criminal conduct subject to DOJ prosecution (*DOJ_crime*) on its potential determinants for prosecutions of all crime types in columns (1) and prosecutions of financial crimes only in columns (2). T-statistics are in parentheses. The symbols ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively. For all regressions, standard errors are clustered by firm. All continuous variables used in the regressions are winsorized at the top and bottom one percent. Refer to the Appendix 1 for variable definitions.

Table 4: The effect of the method of settling federal prosecutions on the likelihood of financial reporting related enforcement actions by the SEC (AAERs)

	All crimes DV = AAER	Financial Crimes only DV = AAER
	(1)	(2)
<i>POST_DPA_t</i>	-0.08** (-2.16)	-0.10* (-1.78)
<i>POST_GuiltyPlea_t</i>	0.00 (0.06)	0.08 (1.30)
<i>HighRiskIndustry_{t-1}</i>	-0.01 (-0.13)	-0.17* (-1.69)
<i>Return_{t-1}</i>	-0.02 (-1.54)	-0.05** (-2.19)
<i>ReturnSkewness_{t-1}</i>	0.01 (0.99)	0.01 (0.60)
<i>ReturnStdDev_{t-1}</i>	-0.44** (-2.14)	-0.65** (-2.11)
<i>SalesGrowth_{t-1}</i>	0.07 (1.63)	0.11 (1.40)
<i>TotalAssets_{t-1}</i>	-0.00 (-0.08)	-0.02 (-0.25)
<i>Turnover_{t-1}</i>	-0.00 (-0.31)	0.00 (0.17)
	<u>P-values</u>	<u>P-values</u>
Test: <i>POST_DPA</i> = <i>POST_GuiltyPlea</i>	0.118	0.00
Observations	1,214	683
R-squared	0.07	0.10
Year FE	Yes	Yes
Firm FE	Yes	Yes

This table presents the results of a generalized difference-in-difference model that regresses the likelihood of financial reporting related enforcement actions by the SEC (AAERs) on its potential determinants for firms prosecuted of all crime types in columns (1) and firms prosecuted of financial crimes only in columns (2).

T-statistics are in parentheses. The symbols ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively. For all regressions, standard errors are clustered by firm. All continuous variables used in the regressions are winsorized at the top and bottom one percent. Refer to the Appendix 1 for variable definitions.

Table 5: The effect of the method of settling federal prosecutions on the likelihood of future regulatory violations for prosecuted firms

	All crimes DV = <i>Regulatory</i> <i>Violations</i>	Financial Crimes only DV = <i>Regulatory</i> <i>Violations</i>
	(1)	(2)
<i>POST_DPA</i> _{<i>t</i>}	0.07* (1.96)	0.09** (2.07)
<i>POST_GuiltyPlea</i> _{<i>t</i>}	-0.00 (-0.00)	0.15** (2.66)
<i>HighRiskIndustry</i> _{<i>t-1</i>}	-0.05 (-1.56)	-0.13 (-1.57)
<i>Return</i> _{<i>t-1</i>}	0.02 (1.10)	0.04 (1.50)
<i>ReturnSkewness</i> _{<i>t-1</i>}	-0.01 (-0.85)	-0.01 (-0.38)
<i>ReturnStdDev</i> _{<i>t-1</i>}	-0.05 (-0.19)	0.18 (0.44)
<i>SalesGrowth</i> _{<i>t-1</i>}	0.01 (0.32)	0.03 (0.30)
<i>TotalAssets</i> _{<i>t-1</i>}	0.00 (0.18)	0.03 (0.67)
<i>Turnover</i> _{<i>t-1</i>}	0.00 (0.06)	-0.01 (-0.44)
	<u>P-values</u>	<u>P-values</u>
Test: <i>POST_DPA</i> = <i>POST_GuiltyPlea</i>	0.117	0.310
Observations	1,214	683
R-squared	0.05	0.07
Year FE	Yes	Yes
Firm FE	Yes	Yes

This table presents the results of a generalized difference-in-difference model that regresses the likelihood of a regulatory violation on its potential determinants for firms prosecuted of all crime types in columns (1) and firms prosecuted of financial crimes only in columns (2).

T-statistics are in parentheses. The symbols ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively. For all regressions, standard errors are clustered by firm. All continuous variables used in the regressions are winsorized at the top and bottom one percent. Refer to the Appendix 1 for variable definitions.

Table 6: The effect of the method of settling federal prosecutions on the likelihood of restatements

	All crimes	Financial Crimes only
	DV = Restatement	DV = Restatement
	(1)	(2)
<i>POST_DPA_t</i>	0.03 (1.20)	0.08* (1.86)
<i>POST_GuiltyPlea_t</i>	0.06** (2.25)	0.10** (2.17)
<i>HighRiskIndustry_{t-1}</i>	-0.01 (-0.35)	-0.14** (-2.28)
<i>Return_{t-1}</i>	-0.01 (-1.64)	-0.02 (-1.58)
<i>ReturnSkewness_{t-1}</i>	-0.00 (-0.13)	-0.01 (-0.62)
<i>ReturnStdDev_{t-1}</i>	0.05 (0.23)	0.02 (0.05)
<i>SalesGrowth_{t-1}</i>	0.00 (0.30)	0.00 (0.14)
<i>TotalAssets_{t-1}</i>	0.01 (0.60)	0.04 (0.78)
<i>Turnover_{t-1}</i>	-0.00 (-1.33)	-0.00 (-0.72)
	<u>P-values</u>	<u>P-values</u>
Test: <i>POST_DPA</i> = <i>POST_GuiltyPlea</i>	0.310	0.440
Observations	1,214	683
R-squared	0.03	0.09
Year FE	Yes	Yes
Firm FE	Yes	Yes

This table presents the results of a generalized difference-in-difference model that regresses the likelihood of restating financial statements for year t on its potential determinants for firms prosecuted of all crime types in columns (1) and firms prosecuted of financial crimes only in columns (2). Analyses are limited to restatements due to fraud, irregularities or involve the SEC.

T-statistics are in parentheses. The symbols ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively. For all regressions, standard errors are clustered by firm. All continuous variables used in the regressions are winsorized at the top and bottom one percent. Refer to the Appendix 1 for variable definitions.

Table 7: The effect of the method of settling federal prosecutions on the likelihood of material internal control weaknesses

	All crimes DV = ICW (1)	Financial Crimes only DV = ICW (2)
<i>POST_DPA_t</i>	0.01 (0.34)	0.07 (1.45)
<i>POST_GuiltyPlea_t</i>	0.05 (1.51)	0.17*** (3.00)
<i>HighRiskIndustry_{t-1}</i>	-0.13*** (-2.88)	-0.19** (-2.59)
<i>Return_{t-1}</i>	-0.03 (-1.15)	-0.05 (-1.45)
<i>ReturnSkewness_{t-1}</i>	0.00 (0.35)	0.00 (0.25)
<i>ReturnStdDev_{t-1}</i>	-0.05 (-0.26)	-0.12 (-0.46)
<i>SalesGrowth_{t-1}</i>	0.06 (1.27)	0.05 (0.70)
<i>TotalAssets_{t-1}</i>	0.07* (1.94)	0.09 (1.52)
<i>Turnover_{t-1}</i>	0.00 (0.17)	0.01 (0.69)
	<u>P-values</u>	<u>P-values</u>
Test: <i>POST_DPA = POST_GuiltyPlea</i>	0.19	0.01
Observations	1,043	599
R-squared	0.07	0.11
Year FE	Yes	Yes
Firm FE	Yes	Yes

This table presents the results of a generalized difference-in-difference model that regresses the likelihood of having material weaknesses in internal controls for year t on its potential determinants for firms prosecuted of all crime types in columns (1) and (2) and firms prosecuted of financial crimes only in columns (2).

T-statistics are in parentheses. The symbols ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively. For all regressions, standard errors are clustered by firm. All continuous variables used in the regressions are winsorized at the top and bottom one percent. Refer to the Appendix 1 for variable definitions.

Table 8: The effect the jurisdiction of prosecutions and terms of DPA on recidivism

VARIABLES	DV = <i>DOJ_crime</i>			
	(1)	(2)	(3)	(4)
<i>POST_DPA_{it}</i>	-0.15*** (-2.99)	-0.15*** (-2.80)	-0.01 (-0.09)	-0.18*** (-3.18)
<i>POST_DPA_{it}</i> * <i>SDNY</i>	0.22* (1.76)			
<i>POST_DPA_{it}</i> * <i>ComplianceOverseer</i>		0.05 (0.55)		
<i>POST_DPA_{it}</i> * <i>ComplianceProgram</i>			-0.17 (-1.56)	
<i>POST_DPA_{it}</i> * <i>Independent Monitor</i>				0.13 (1.59)
Observations	1,214	1,214	1,214	1,214
R-squared	0.33	0.33	0.33	0.33
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes

Column (1) of this table presents results of the effect of prosecution jurisdiction (i.e. whether a firm is prosecuted in the Southern District of NY or not) in a generalized difference-in-difference model that regresses the likelihood of criminal conduct subject to DOJ prosecution (*DOJ_crime*) on its potential determinants for prosecutions of all crime types.

Columns (2) - (4) presents results of the effect of terms of DPA (i.e. requirements to appoint a compliance overseer, create or modify a compliance program or appoint an independent monitor) in a generalized difference-in-difference model that regresses the likelihood of criminal conduct subject to DOJ prosecution (*DOJ_crime*) on its potential determinants for prosecutions of all crime types.

T-statistics are in parentheses. The symbols ***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively. For all regressions, standard errors are clustered by firm. All continuous variables used in the regressions are winsorized at the top and bottom one percent. Control variables are the same as Table 3. Refer to the Appendix 1 for variable definitions.