Regulating Corporate Criminal Sanctions: Federal Guidelines and the Sentencing of Public Firms
Author(s): Cindy R. Alexander, Jennifer Arlen, Mark A. Cohen
Published by: The University of Chicago Press
Stable URL: http://www.jstor.org/stable/725797
Accessed: 16/09/2008 08:50

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at http://www.jstor.org/page/info/about/policies/terms.jsp. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at http://www.jstor.org/action/showPublisher?publisherCode=ucpress.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

JSTOR is a not-for-profit organization founded in 1995 to build trusted digital archives for scholarship. We work with the scholarly community to preserve their work and the materials they rely upon, and to build a common research platform that promotes the discovery and use of these resources. For more information about JSTOR, please contact support@jstor.org.
REGULATING CORPORATE CRIMINAL SANCTIONS: FEDERAL GUIDELINES AND THE SENTENCING OF PUBLIC FIRMS*

CINDY R. ALEXANDER, U.S. Department of Justice

JENNIFER ARLEN, University of Southern California Law School

and

MARK A. COHEN
Vanderbilt University

ABSTRACT

Federal Sentencing Guidelines Governing Organizations purport to constrain judicial discretion over corporate criminal penalties. We investigate the effect on courts’ sentencing decisions using pre- and post-Guidelines data, including evidence on cases and penalties that the Guidelines do not completely control. We find that fines and total penalties are higher than they were previously. Evidence that fines increased more in Guidelines-constrained cases than elsewhere suggests the effort to constrain judicial discretion has had a direct effect. Evidence of higher total penalties, even in cases not directly constrained by the Guidelines, suggests that judges may have cooperated with the policy of imposing higher fines and total sanctions, although not to the extent that the Guidelines prescribe. Our findings are inconsistent with the basic attitudinal model from the political science literature. We explore other forces that may be at work.

* Helpful comments from Michael Block, Linda Cohen, Frank Easterbrook, Richard Gruner, Dan Klerman, Marc Miller, Mark Ramseyer, Steve Solow, Matt Spitzer, Eric Talley, Chuck Weisselberg, an anonymous referee, and participants at the conference “Penalties: Public and Private” held at the University of Chicago Law School, the 1998 annual meeting of the American Law and Economics Association, and at faculty seminars at Northwestern University Law School and Stanford Law School are gratefully acknowledged. In addition, we thank Heather Banuelos, John Beer, David Carter, Ty Cotrill, Gena Durham, Jose Mari-ano Espinosa, Casey Fleck, Gabriela Garcia, Laura Greco, Carol Gilchrist, Davina Kohanza-deh, Marissa Lee, David Pierce, Jason Robertson, Glenn Sober, Michael Solidum, Shane Tseng, and Ling Yang for excellent research assistance. Cindy Alexander gratefully acknowledges support from the Victor Kramer Fellowship at the University of Chicago for this research. Jennifer Arlen would like to thank the National Science Foundation (grant SBR 973081) and the University of Southern California Law School for financial support. Mark Cohen acknowledges support from the Dean’s Fund for Summer Research, Owen Graduate School of Management, Vanderbilt University. This paper does not necessarily represent the views of either the National Science Foundation or the U.S. Department of Justice.

[Journal of Law and Economics, vol. XLII (April 1999)]
© 1999 by The University of Chicago. All rights reserved. 0022-2186/99/4201-0015$01.50
In 1991, the U.S. Sentencing Commission (hereinafter Commission) promulgated sentencing guidelines for organizations convicted of federal crimes (hereinafter the Guidelines). Prior to the Guidelines, federal judges had nearly complete discretion over criminal fines and other nonfine sanctions, within the broad minimum and maximum penalties prescribed by relevant statutes. The Guidelines were intended to standardize and to substantially increase the penalties that corporations receive for crime.

This paper investigates whether criminal fines and total monetary sanctions are higher for cases sentenced under the Guidelines than they were previously. It also examines whether changes in sentences are directly attributable to the legal constraint imposed by the Guidelines as opposed to other forces. Our empirical analysis focuses on public corporations convicted of crimes in federal court and yields three basic findings. First, both criminal fines and total sanctions imposed on public corporations through the federal courts tend to be higher in cases constrained by the Guidelines than they were in the pre-Guidelines era.

Second, the increase in total sanctions is not confined to cases in which judges were directly constrained by the Guidelines. We find no significant difference between total monetary sanctions in Guidelines-constrained cases and those in post-Guidelines cases to which the Guidelines do not explicitly apply. Judges appear to have imposed higher total sanctions, even where not required to do so. This raises questions about whether the Guidelines caused judges to impose higher sanctions than they otherwise would have imposed and, if they did, why total penalties are also higher in unconstrained cases.

Third, the constraint imposed by the Guidelines appears to have affected the allocation of the total penalty between fine and nonfine sanctions. Unlike total sanctions, criminal fines have significantly increased only in cases that were constrained by the Guidelines. Since judges have retained more discretion over nonfine sanctions than over criminal fines, they may have partially traded off nonfine sanctions for the Guidelines-mandated fine increase.

The outline of the paper is as follows. Section I provides an institutional overview of the Guidelines, explaining how they are designed to affect fines and total sanctions. Section II presents our approach to investigating the effect of the Guidelines in the context of a simple agency model in which the Commission (principal) seeks to regulate the sentencing decisions of judges (agent). Section III describes the data. Section IV presents our main empirical findings. Section V discusses these findings in the context of the theory presented in Section II and considers alternative interpretations of the data. Section VI provides some concluding remarks.
I. ORGANIZATIONAL SENTENCING GUIDELINES

Prior to 1984, corporate criminal defendants were, in principle, subject to the same penalties as natural persons. As a result, fines were relatively low. Criminal fines and total pecuniary sanctions rarely equaled—much less exceeded—the losses caused by crime. Sixty percent of the fines imposed on corporations were less than $10,000; the average fine was about $46,000. In 1984 and 1987, Congress enacted statutes designed to increase corporate criminal sanctions by increasing statutory maximum penalties. Although corporate fines increased, they generally remained less than the loss estimated to have been caused by the offense—particularly if the loss was large.

Concluding that corporate criminal penalties were too low, the Commission drafted Guidelines to govern the sentencing of organizations convicted of federal crimes. Congress adopted these Guidelines, which became effective November 1, 1991. The Guidelines purport to constrain judges' discretion over criminal fines, nonfine criminal sanctions (such as restitution), and nonmonetary sanctions (such as probation). They are also intended to increase both fine and nonfine criminal sanctions imposed on corporations. A district court judge may depart from the Guidelines only in certain statutorily prescribed circumstances, and a decision to depart is appealable by either party.

1 10 William Mead Fletcher, Fletcher Cyclopedia of the Law of Private Corporations, § 4946 (1986). If penalty for the crime was limited to death or imprisonment, the corporation could not be indicted for the crime (supra).


4 Cohen, supra note 2, at 258–61. The median “fine multiple” (fine divided by monetary loss) imposed prior to the 1984 fine act was 0.12. The median fine multiple increased to 0.15 for post-1984 fine act cases. The “total sanction multiple” (total monetary sanction divided by monetary losses) imposed prior to the 1984 fine act was 0.44. After enactment of the 1984 fine act, this multiple increased to 1.0—just equal to the loss caused by the offense. However, the total sanction multiple for larger crimes (over $100,000 in loss) was less than 1 (supra).

Under the Guidelines, the criminal fine is determined by multiplying a “base fine” by a multiplier that is intended to reflect the firm’s level of “culpability.” The base fine equals the greater of (i) the Guidelines-prescribed minimum base fine, (ii) the organization’s pecuniary gain from having committed the offense, and, under some circumstance, (iii) the pecuniary loss from the offense.\(^6\) The multiplier is an increasing function of the firm’s “culpability score,” which depends on “aggravating” and “mitigating” factors. The Guidelines are structured so that the culpability score may be higher for larger firms. Thus, larger firms have the potential for larger multipliers.\(^7\)

The culpability score determines the multiplier range, which in turn helps set minimum and maximum fine amounts. The judge is required to select a fine from within that range. A Commission report published when the Guidelines were released predicted that the median fine would rise to 1.8 times its pre-Guidelines level.\(^8\) Another study predicted that the median post-Guidelines fine would be increased to between 5.5 and 11 times the pre-Guidelines level, with antitrust fines increasing even more, to between 9.5 and 18 times their pre-Guideline level.\(^9\)

The Guidelines also were intended to increase the nonfine monetary sanctions imposed on corporations. For example, the Guidelines generally mandate that judges impose a criminal “restitution” order (in addition to any criminal fine), requiring the offender to pay for the victim’s crime-related losses.\(^10\) Restitution is mandated for all federal offenses except where the court “determines that the complication and prolongation of the sentencing process resulting from the fashioning of a restitution requirement outweighs the need to provide restitution.” In so doing, the Guidelines appear to have reduced—but not eliminated—judicial discretion to withhold restitution.\(^11\) Nonetheless, judges retain more discretion over the amount of


\(^7\) For example, a firm with 5,000 or more employees faces a multiple that is at least twice as large as a firm with fewer than 10 employees when the crime was committed by or tolerated by a high-level manager. Guidelines § 8C2.5.


\(^10\) The Guidelines also authorize other nonfine sanctions, such as imposing a “remedial” order requiring a convicted organization to remedy the harm caused by the offense and to eliminate or reduce the risk that the offense will cause future harm. The Guidelines also greatly expand the use of probation. Probation is imposed in addition to a criminal fine and may take a variety of forms. See generally Richard Gruner, Corporate Crime and Sentencing (1997).

\(^11\) Guidelines § 8B1.1(b); Gruner, supra note 10, at 12.006–12.007.
restitution to award than they do with criminal fines. Restitution is based on the pecuniary losses traceable to the crime. Thus, judges have considerable latitude to determine restitution amounts through their ability to determine the magnitude of the loss. By contrast, the existence of a predetermined minimum fine table limits judicial discretion over criminal fines.

The Guidelines only apply to federal crimes that are committed after or continue past November 1, 1991. The fine provisions of the Guidelines do not apply to most environmental, wildlife, food, drug, agricultural, safety, or export control violations, although judges are free to adopt them in spirit. By contrast, the nonfine provisions apply to all federal crimes that continue past November 1, 1991.

Antitrust fines are constrained by the Guidelines. Although antitrust violations were subject to sentencing guidelines in 1987, the 1991 Guidelines superseded—and changed—the earlier guidelines governing antitrust offenses. The changes imposed by the 1991 guidelines purport to reduce judicial discretion over antitrust fines and have changed sentencing rules in ways that appear likely to increase criminal fines for antitrust violations.

II. THEORY AND EMPIRICAL METHOD

We examine the extent to which corporate criminal penalties changed under the 1991 Guidelines. We also test the proposition that the Guidelines

---

12 The Guidelines only apply to criminal conduct committed on or after November 1, 1991, even though Congress apparently intended them to apply to all crimes sentenced after this date. See Nagel & Swenson, supra note 5, at 208. The U.S. Department of Justice issued a memorandum to all federal prosecutors stating that the Organizational Sentencing Guidelines were to be applied only to offenses committed on or after November 1, 1991, and were not to be applied retroactively, regardless of whether the application of the Guidelines would have a potentially adverse or advantageous effect on the defendant. See Roger Haines, Jr., Kevin Cole, & Jennifer Woll, Federal Sentencing Guidelines Handbook (1992).

13 Gruner, supra note 10, at 8.007–8.008. Nevertheless, such offenses may be sentenced under the Guidelines if the crime also involved conduct that is covered by the Guidelines, such as fraud.

14 The 1991 Guidelines potentially increase fines for antitrust cases in a variety of ways. First, the 1987 Antitrust Guidelines specified that the fine should range from 20 percent to 50 percent of the volume of commerce involved, but not less than $100,000. See 1987 Guidelines § 2R1.1(c). By contrast, the 1991 Guidelines presume that victims' losses are 20 percent of the volume of commerce affected by the antitrust offense for purposes of determining the base fine. This amount is then multiplied by the multiplier based on the culpability score. Since the 1991 Guidelines allow for multiples of three to four times the base fine, a firm could face a fine of 60–80 percent of the volume of commerce—higher than previously allowed under the 1987 Guidelines. The 1991 Guidelines also establish a minimum fine multiple of 75 percent of the base fine and provide for other increases in potential antitrust fines. See Gruner, supra note 10, at 8.013–8.014. An additional factor in the case of antitrust crimes is the fact that Congress increased the statutory maximum fine for antitrust violations from $1 million to $10 million per count in November 1990.
have imposed a binding constraint on judicial decisions. Since the Guidelines constitute an unprecedented effort by the federal government to regulate the sentencing decisions of judges, we use a simple agency model of regulation to guide our empirical inquiry. That is, we seek evidence of a conflict between the incentives of judges and those of the Commission, which could limit the Guidelines’ effectiveness.\textsuperscript{15}

\textbf{A. Framework for Analysis: Regulation in a Simple Agency Model}

Our empirical investigation is guided by models of regulation that characterize the regulator as principal and the regulated party as agent.\textsuperscript{16} In the present application, the Commission (principal) attempts to influence the behavior of judges or courts (agents) through the issuance of sentencing Guidelines. In this context, the Guidelines are characterized as placing a new constraint on each self-interested judge’s decision as to what criminal fine and total penalty to impose. Consistent with agency cost models generally, we assume that judges and the Commission have conflicting incentives. Specifically, we assume that judges prefer lower sanctions than those required by the Guidelines.\textsuperscript{17}

The Guidelines seek to resolve this incentive conflict by restricting judicial discretion in favor of higher penalties. However, under assumptions of asymmetric information, the Guidelines cannot completely control sentencing practice. In particular, the Guidelines exert less complete control over nonfine sanctions than over criminal fines. This suggests that judges respond to the Guidelines by raising criminal fines and total penalties, but only where explicitly required to do so. Thus, to compensate for higher

\textsuperscript{15} In focusing on changes in judicial behavior, we recognize that other parties, such as prosecutors, can also affect the sentence. For example, in plea negotiations, the Guidelines may influence the sentence by affecting prosecutors’ and defendants’ beliefs about what sentence the judge will approve under the Guidelines both if there is a plea and if the case goes to trial. From this perspective, our results may provide insight into how prosecutors have responded to the Guidelines, for example, by shedding light on whether the Guidelines have affected fines differently from total sanctions.


\textsuperscript{17} We base this assumption on the observation that judges, when free to exercise discretion over sentencing, imposed lower sanctions than the Commission hoped to have imposed under the Guidelines. See text accompanying notes 1–9 supra. See Richard Posner, The Economic Analysis of Law 581–84 (5th ed. 1998), for a useful discussion of judicial behavior.
fines, judges may exploit the incompleteness of the Guidelines by reducing nonfine penalties. This would limit the Guidelines’ effect on total sanctions.

This stylized characterization of how the Guidelines affect sentencing practice has several testable implications. First, criminal fines and total penalties are expected to be higher in Guidelines-constrained cases than they were before the Guidelines took effect. Second, after 1991, criminal fines and total penalties are expected to be higher in Guidelines-constrained cases than in other cases. Finally, the increase in criminal fines is expected to exceed the increase in total sanctions. These implications constitute a judicial “resistance” hypothesis of how criminal fines and total sanctions have changed under the Guidelines.

The resistance hypothesis is consistent with the “attitudinal model” of judicial behavior that has dominated the political science literature and received attention in the legal literature. In this context, judicial decisions are generally assumed to be driven by preferences, based on personal background, that are fixed over time. In the model’s most basic form, sentencing judges have fixed preferences concerning case-specific outcomes, and decide each case independently, within legal constraints. Thus, as the Guidelines require judges to deviate from their past, preferred sentencing practice by imposing higher penalties, judges are predicted to adjust their sentencing decisions only when legally required to do so. Accordingly, in testing the resistance hypothesis, we also investigate the relevance of the basic attitudinal model to corporate sentencing.

---

18 This model posits that judges decide cases in accordance with their own values and policy preferences, unconstrained by “strategic” considerations. See generally Lee Epstein & Jack Knight, The Choice Justices Make, at xii (1998) (discussing this model); Edward Rubin & Malcolm Freeley, Creating Legal Doctrine, 69 S. Cal. L. Rev. 1989, 1994 (1996). The attitudinal model has been applied mainly to the study of the Supreme Court; see, for example, Jeffrey Segal & Harold Spaeth, The Supreme Court and the Attitudinal Model (1993). See also Richard Posner, What Do Judges and Justices Maximize? (The Same Thing Everybody Else Does), 3 Sup. Ct. Econ. Rev. 1, 4–7, 28 (1993) (concluding that judges are likely to be primarily concerned with imposing their policy preferences).

19 Thus, judges’ preferences about sentencing policy are reflected in pre-Guidelines sentencing practices. It is important to remember that the Guidelines did not change the statutory maximum fines. Judges could have imposed the fines mandated by the Guidelines prior to the Guidelines’ introduction but chose not to. The “attitudinal” model also assumes that judges are fully informed about their preferred outcomes and thus do not change their policy conclusions when a new law is enacted. In an alternative version of the model, judges might be assumed to have fixed preferences over relative sanction levels. The impact of proportionality concerns depends on whether judges compare crimes committed contemporaneously or sentenced contemporaneously. If the latter, judges could be expected to increase both fines and total sanctions in unconstrained cases, to reflect the increases mandated by the Guidelines.

20 The judicial resistance hypothesis might appear to imply judges should ignore the Guidelines entirely. Yet judges are bound to apply the Guidelines, and they may be reversed by an upper court if they do not follow them. The hypothesis of judicial resistance in the unconstrained cases also is consistent with the framework presented in Jennifer Reinganum,
B. Alternative Theories of Judges and Legal Rules

Of course, judges might not respond to efforts to regulate corporate penalties in the way other parties are expected to respond to regulation. Indeed, the question of what model best explains judicial decision making has been the focus of considerable debate. This debate has produced numerous models of judicial behavior. Since these models have not been fully developed in the context of judicial response to sentencing guidelines, we do not join that debate. However, these models do suggest reasons judges might not resist the Guidelines.

Two hypotheses compete with the resistance hypothesis. One is that sentencing practice has remained unchanged under the Sentencing Guidelines. The other is that sentencing practice has changed but that this change is not limited to Guidelines-constrained sentencing decisions. Under the latter "cooperation" hypothesis, judges increase criminal fines and total penalties even where not explicitly required to do so.

The cooperation hypothesis is consistent with strategic models of judicial behavior that have arisen as leading alternatives to the attitudinal model. The strategic model holds that judges are sophisticated actors who realize that their ability to achieve their goals depends on the preferences and expected actions of others, such as the Commission and Congress, and act strategically to avoid undesirable reactions. Strategic judges might choose to implement the Guidelines even when not legally required to do so in order to please the Commission or Congress, for example to dissuade them from implementing additional undesirable reforms.

The cooperation hypothesis can also be supported by various dynamic models of judicial behavior. For example, the Guidelines might reflect so-


cial norms concerning corporate sentencing policy. The extreme version of this social norms hypothesis is that the Guidelines perfectly reflect these changing attitudes, which judges also share and thus would have implemented even without the Guidelines. In this situation, judges would impose higher fines and total sanctions after the Guidelines are imposed even in unconstrained cases. Alternatively, individual judges may have imperfect information about what constitutes the best decision in cases that come before them. If the Guidelines provide judges with useful information about corporate sentencing decisions, judges might increase fines and total sanctions in unconstrained cases as well.

C. Empirical Method

Our choice of data is partly driven by our interest in the competing theories of judicial resistance and judicial cooperation. Thus, we are interested not only in whether judges imposed higher criminal fines and total sanctions when constrained by the Guidelines, but also in whether judges changed their behavior when not legally constrained.

The U.S. Sentencing Commission has published two distinct sets of data on organizations sentenced for federal crimes, both of which are available through Inter-University Consortium for Policy and Social Research (hereinafter ICPSR). The first data set covers pre-Guidelines cases from January 1, 1988, to June 30, 1990. The second covers only cases sentenced under the Guidelines, beginning in November 1991.

Given our research objectives, we concluded that the ICPSR data are unsuitable for our purposes. First, the Commission’s post-Guidelines data was obtained through a different selection process than its data on pre-Guidelines penalties. The Appendix provides further details on these different se-


lection methods. Second, the Commission has acknowledged in recent annual reports to Congress that the post-Guidelines ICPSR data are neither comprehensive nor representative. Indeed, our own analysis suggests these data are not representative because they exclude some firms that paid large monetary sanctions. This limits their usefulness for making pre- versus post-Guidelines comparisons on the magnitude of sanctions.\textsuperscript{26} Finally, the post-Guidelines ICPSR data do not include unconstrained cases sentenced after November 1991. Given our interest in whether the Guidelines are a binding constraint on judges and in whether judges adopt the Guidelines even when not legally obligated to do so, these unconstrained cases are important.

We therefore constructed a new data set, consisting of all criminal offenses for which public corporations were sentenced through the federal courts during the 1988–96 period. We focused on public corporations in order to avoid biases that might otherwise arise in obtaining information on convictions of private firms, many of which might not be publicly reported. Focusing on publicly held firms also enabled us to be more confident about obtaining information on both fine and nonfine sanctions. For example, public firms are required to report material criminal and civil sanctions and private damages in their Securities and Exchange Commission (SEC) filings. After determining that a firm had been subject to a criminal fine, we also were able to search the SEC filings for information on other penalties stemming from the criminal conduct. Finally, focusing on publicly held firms enabled us to focus on those cases where the Guidelines are most likely to have a constraining effect, since the Guidelines are predicted to have the greatest effect on sentences imposed on relatively large firms.

We compared our data set with the ICPSR data to further test our conclusion that the post-Guidelines ICPSR data set is incomplete and not representative of all cases, even in its treatment of publicly held firms. The ICPSR data set contains only seven Guidelines-constrained sentences of publicly held firms, whereas we found 34. The median Guidelines-constrained fine for the seven publicly held firms in the ICPSR data was $70,000, considerably less than the $3.1 million median Guidelines-constrained fine in our data. Similarly, the median ICPSR Guidelines-constrained total sanction is only $492,000, compared to $4.4 million in our data.

III. Data

We compiled data on public corporations sentenced for crimes in the federal courts over the 1988–96 period. We collected data on both criminal

\textsuperscript{26} This finding is important enough to be stated here so that future researchers will proceed with caution before drawing inferences from those data.
fines and nonfine penalties. The nonfine penalties included nonfine criminal sanctions (such as restitution), civil penalties, administrative penalties, and private civil damages resulting from the offense.

A. Sample Selection

Data were obtained from a wide range of public sources, including ICPSR, the Wall Street Journal Index, Corporate Crime Reporter, and a keyword search on the Lexis/Nexis database and Westlaw. We also searched sources that were less likely to be sensitive to the size of the fine such as the Department of Justice Alert database, SEC 10-K filings, and Antitrust Trade and Regulation Reporter. We determined whether each corporation was publicly traded on the sentencing date using the Directory of Corporate Affiliations and other sources in some cases. A business unit was deemed public if it was publicly traded or if 50 percent or more of its stock was owned by a firm listed on a public exchange.

Our search located 243 sentences of public firms between 1988 and 1996, compared to only 80 appearing in the ICPSR data for that period. We attempted to match each case we identified with a case in the ICPSR data, using variables in the ICPSR data such as month and year of sentence, type of crime, district court that imposed the sentence, and whether the firm was insolvent. We could positively identify matches for only 21 of the 66 cases in the pre-Guidelines ICPSR data and seven of the 14 cases in the post-Guidelines data set. Thus, most (45 out of 52) of the unidentified ICPSR cases are from the pre-Guideline era. Given concerns about different sampling processes in the pre- and post-Guidelines ICPSR data sets, we have not included these unmatched cases in the sample presented here in order to preserve consistency in sample selection. Qualitatively similar results to what we report are obtained, however, if the unmatched cases are included.

B. Defining the Variables

Table 1 describes the key variables. In order to investigate the changes in sentencing practice under the Guidelines, we divided the sample into

---

27 This search strategy is similar to, yet somewhat more extensive than, what has been followed in previous research. See, for example, Cindy R. Alexander & Mark A. Cohen, New Evidence on the Origins of Corporate Crime, 17 Managerial & Decision Econ. 421 (1996). See also Jonathan Karpoff & John R. Lott, Jr., The Reputational Penalty Firms Bear from Committing Fraud, 36 J. Law & Econ. 757 (1993), which searched the Wall Street Journal Index to obtain a sample of allegations of corporate fraud.

28 Additional pre-Guidelines-era cases were taken from the earlier data sets used by Alexander & Cohen, supra note 27; and Cindy R. Alexander & Mark A. Cohen, Why Do Corporations Become Criminals? Ownership, Hidden Actions, and Crime as an Agency Cost, 5 J. Corp. Fin. 1 (1999), which followed a similar search strategy.
### TABLE 1
LIST OF VARIABLES

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>GUIDE</td>
<td>Dummy variable equal to one for cases to which the Guidelines apply, that is, those involving crimes that continued past November 1, 1991, excluding environmental, wildlife, food, drug and agricultural offenses and safety and export control violations</td>
</tr>
<tr>
<td>ERA</td>
<td>Dummy variable equal to one for all cases sentenced after November 1, 1991, regardless of whether or not their crimes continued past that date. Thus, ERA consists of both Guidelines cases and cases unconstrained by the Guidelines if they were sentenced after November 1, 1991</td>
</tr>
<tr>
<td>Criminal fine</td>
<td>Criminal fine imposed by sentencing court (adjusted for any amount suspended)</td>
</tr>
<tr>
<td>Total sanction</td>
<td>Total criminal and civil sanctions, including the criminal fine; other sanctions awarded in the criminal proceeding, such as restitutuion, remedial orders, forfeiture, disgorgement, special assessment; as well as civil penalties and all private civil actions arising from the crime</td>
</tr>
<tr>
<td>Individuals convicted</td>
<td>Dummy variable equal to one if individual wrongdoers were convicted in related cases (not necessarily from the convicted firm, but clearly in a related case)</td>
</tr>
<tr>
<td>Years of crime</td>
<td>Number of years during which the crime occurred</td>
</tr>
<tr>
<td>Years to sentence</td>
<td>Number of years from end of criminal activity to year of sentence</td>
</tr>
<tr>
<td>Post-1984 Fine Act</td>
<td>Dummy variable equal to one if the crime occurred after December 31, 1984. Crimes that did not continue past that date were subject to maximum fine provisions that were subsequently relaxed</td>
</tr>
<tr>
<td>Foreign corporation</td>
<td>Dummy variable equal to one if parent company is based outside the United States and traded on foreign stock exchanges</td>
</tr>
<tr>
<td>Bankrupt company</td>
<td>Dummy variable equal to one if company responsible for paying criminal fine is either insolvent or under bankruptcy protection. Note that in some instances, this might be true even though the parent company is not insolvent</td>
</tr>
</tbody>
</table>

three groups, according to whether the offense was sentenced after the Guidelines took effect and whether the sentencing judge was required to follow Guidelines-prescribed sentencing rules governing fines. The pre-Guidelines cases (GUIDE = 0) include all corporate criminal sentences imposed after January 1, 1988, and prior to November 1, 1991. "Guidelines" cases (GUIDE = 1) include all corporate criminal sentences that were constrained by the fine provisions of the Guidelines. This category includes all crimes whose criminal conduct continued after November 1, 1991, except environmental, safety, wildlife, food, drug, and agricultural offenses, and export violations. The Guidelines-era cases (ERA = 1) include all sen-
sentences imposed after November 1, 1991, whether or not they were legally constrained by the fine provisions of the Guidelines.

In our multivariate analysis of the data, we control for offense and offender characteristics and for legal factors that might affect the sentence.\textsuperscript{29} We coded variables for the number of years the crime continued and the length of time it took prosecutors to obtain a conviction from the ending date of the crime. We also coded the type of crime, whether an individual was also convicted along with the corporation, whether the corporation was solvent at the time of sentencing, and whether it was a foreign company. Finally, we included dummy variables for pre-1984 Fine Act cases and those sentenced under the 1987 antitrust Guidelines.

C. Summary Statistics

Table 2 presents initial statistics comparing pre-Guidelines and post-Guidelines penalties. It characterizes the 243 criminal cases in our data according to the type of crime and the conditions under which sentencing occurred. As shown, about 40 percent (101 out of 243) are pre-Guidelines cases. The other 60 percent were sentenced after the Guidelines took effect. One hundred and five of the 142 Guidelines-era cases are “unconstrained” in that they involve criminal conduct ending before November 1, 1991, or involve offenses that are not covered by the fine provisions of the Guidelines (for example, environmental, food and drug, wildlife, safety, export violations). The remaining 34 post-Guidelines offenses were sentenced under the Guidelines’ fine provisions (hereinafter “Guidelines constrained”).\textsuperscript{30}

1. Types of Crimes. Table 2 shows that fraud constitutes the single largest source of convicted wrongdoing by publicly held firms, accounting for 27 percent of all convictions. This is consistent with previous analyses of criminal convictions by public and private firms. Although fraud constitutes 38 percent of the pre-Guidelines convictions, it comprises only 20 per-

\textsuperscript{29} To the extent possible given the availability of data, we replicated the empirical specifications of the penalty function estimated by previous studies such as Cohen, supra note 2; and Mark A. Cohen, Theories of Punishment and Empirical Trends in Corporate Criminal Sanctions, 17 Managerial & Decision Econ. 399 (1996).

\textsuperscript{30} We cannot determine the date of the end of criminal conduct in three cases out of the 149 that were sentenced after November 1, 1991. Thus, although those three cases are “Guidelines-era” cases, we do not know if they were “Guidelines constrained” or “Guidelines exempt.” Note that one could consider an additional 18 cases of environmental, wildlife, export, or food and drug violations to be Guidelines constrained, since the nonfine provisions (including restitution and other monetary sanctions) are applicable to these offenses if they occurred after November 1, 1991. Although not reported this way, all results in this paper are robust to these different definitions.
TABLE 2
TYPES OF CRIME: NUMBER OF FEDERAL CRIMINAL SENTENCES OF PUBLIC CORPORATIONS, 1988–96

<table>
<thead>
<tr>
<th>Crime Categories</th>
<th>Pre-Guidelines</th>
<th></th>
<th>Guidelined Era</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>%</td>
<td>Unconstrained</td>
<td>Number</td>
<td>%</td>
<td>Constrained</td>
</tr>
<tr>
<td>Antitrust</td>
<td>25</td>
<td>24.8</td>
<td>22</td>
<td>20.9</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Environmental</td>
<td>18</td>
<td>17.8</td>
<td>31</td>
<td>29.5</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Fraud</td>
<td>38</td>
<td>37.6</td>
<td>19</td>
<td>18.1</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Campaign donations</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1.9</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Export violations</td>
<td>3</td>
<td>3.0</td>
<td>6</td>
<td>5.7</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Foreign bribery</td>
<td>3</td>
<td>3.0</td>
<td>2</td>
<td>1.9</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Food and drug</td>
<td>7</td>
<td>6.9</td>
<td>10</td>
<td>9.5</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Import violations</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0.9</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Safety</td>
<td>3</td>
<td>3.0</td>
<td>3</td>
<td>2.9</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Tax</td>
<td>2</td>
<td>2.0</td>
<td>2</td>
<td>1.9</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Wildlife</td>
<td>1</td>
<td>1.0</td>
<td>2</td>
<td>1.9</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>1</td>
<td>1.0</td>
<td>5</td>
<td>4.8</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>101</td>
<td>100</td>
<td>105</td>
<td>100</td>
<td>105</td>
<td>34</td>
</tr>
</tbody>
</table>

^a We could not identify whether three cases sentenced after November 1, 1991, fall within the Guidelines based on the date of the crime’s occurrence. Thus, the subtotal for “Guidelines era” is greater than the sum of “constrained” and “unconstrained.”
TABLE 3
NUMBER OF FEDERAL CRIMINAL SENTENCES OF PUBLIC CORPORATIONS,
BY YEAR OF SENTENCE

<table>
<thead>
<tr>
<th>YEAR</th>
<th>Pre-Guidelines</th>
<th>Guidelines Era</th>
<th>Subtotal</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Constrained</td>
<td>Unconstrained</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1988</td>
<td>19</td>
<td>0</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>1989</td>
<td>27</td>
<td>0</td>
<td>0</td>
<td>27</td>
</tr>
<tr>
<td>1990</td>
<td>29</td>
<td>0</td>
<td>0</td>
<td>29</td>
</tr>
<tr>
<td>1991</td>
<td>26</td>
<td>0</td>
<td>2</td>
<td>28</td>
</tr>
<tr>
<td>1992</td>
<td>0</td>
<td>0</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>1993</td>
<td>0</td>
<td>3</td>
<td>28</td>
<td>32a</td>
</tr>
<tr>
<td>1994</td>
<td>0</td>
<td>11</td>
<td>17</td>
<td>28</td>
</tr>
<tr>
<td>1995</td>
<td>0</td>
<td>10</td>
<td>21</td>
<td>31</td>
</tr>
<tr>
<td>1996</td>
<td>0</td>
<td>10</td>
<td>8</td>
<td>20a</td>
</tr>
<tr>
<td>Total</td>
<td>101</td>
<td>34</td>
<td>105</td>
<td>142</td>
</tr>
</tbody>
</table>

*a We could not identify whether three cases sentenced after November 1, 1991, fall within the Guidelines based on the date of the crime occurrence. Thus, the subtotal for “Guidelines era” is greater than the sum of “constrained” and “unconstrained.”

percent of the post-Guidelines cases and 24 percent of the Guidelines-constrained cases.

Antitrust and environmental offenses are two other significant sources of convictions in our data, comprising 26 percent and 20 percent of all cases, respectively. Antitrust sentences rose from 25 percent of the pre-Guidelines cases to 27 percent of cases sentenced during the post-Guidelines era and 47 percent of cases sentenced under the Guidelines. The percentage of crimes involving environmental offenses rose slightly from 18 percent to 22 percent in the post-Guidelines era. This rise in the number of antitrust and environmental cases is somewhat surprising since during this period both the Antitrust Division and the Environmental Protection Agency announced policies that appear designed to shield firms from criminal prosecution in certain situations. These included policies of not seeking criminal charges against firms that take appropriate steps to deter, report, and correct wrongdoing.

2. Number of Crimes. Table 3 reports the number of corporate con-

31 This increase could reflect greater enforcement efforts, however. On the announced policies, see, for example, U.S. Environmental Protection Agency, Final Statement, Incentives for Self-Policing: Discovery, Disclosure, Correction and Prevention of Violations, 60 Fed. Reg. 66,706 (December 22, 1995); Antitrust Division, U.S. Department of Justice, Corporate Leniency Policy (August 10, 1993), 328 Trade Reg. Rep 20,649–21 ¶ 13,113 (August 16, 1994). Firms are still subject to substantial civil penalties. Moreover, some federal prosecutors have refrained from prosecuting firms with good compliance programs, reporting, and postoffense reforms. See Gruner, supra note 10, at 14.007–14.010.
victions by year. As shown in the last column, it appears that there were similar numbers of corporate criminal convictions before and after the Guidelines went into effect. The 101 sentences imposed from 1988 through November 1, 1991, represent an average sentencing rate of 2.2 per month, compared to 2.3 per month for the 142 firms sentenced between November 1, 1991, and 1996.

The absence of an increase in the rate at which corporations have been sentenced for federal crime is inconsistent with the past prediction that prosecutors would respond to higher Guidelines-based penalties by seeking more frequent prosecution of federal crimes. It is possible that any increase in prosecutions has been offset by a decrease in criminal activity resulting from the Guidelines’ deterrent effect. Increased penalties under the Guidelines may have deterred wrongdoing. Deterrence could also have been enhanced by Guidelines provisions designed to encourage firms to detect and report wrongdoing and to cooperate with prosecutors. In that case, one would expect crimes to have been detected and prosecuted more rapidly than they were before. Yet the duration of crime in our data has not fallen, which suggests that these provisions may have had little effect on detection and reporting.

It is also possible that many cases that previously would have been prosecuted criminally now receive civil or administrative penalties. Such a change could have been caused by the changed policies on exercise of prosecutorial discretion, announced by the Environmental Protection Agency, the Antitrust Division of the Justice Department, and the Department of Defense since 1991. Yet the number of environmental and antitrust offenses has not changed significantly over time. This suggests either that the new policies have not shifted cases from the criminal to the civil system or that these policies, while effective, have been accompanied by an offsetting increase in enforcement efforts.

IV. Evidence

This section presents our main empirical findings. We begin with simple statistics, comparing pre-versus post-Guidelines fines and total sanctions.

32 Gruner, supra note 10, at 8.019.
33 To test the proposition, a multiple regression model was estimated where the dependent variable was the number of years during which the crime was ongoing. Control variables were included for the type of crime and the other variables shown in Table 1. The coefficient on GUIDE (Guidelines-constrained cases) was −0.57 (p < .36), and the coefficient on ERA (Guidelines era) was −0.57 (p = .43). Adjusted $R^2$ for the model was 0.14.
34 This is consistent with predictions of Jennifer Arlen & Reinier Kraakman, Controlling Corporate Misconduct: An Analysis of Corporate Liability Regimes, 72 N.Y.U. L. Rev. 687, 745–52 (1997).
35 See note 31 supra.
Then we turn to the evidence on whether the Guidelines imposed a significant binding constraint on sentencing practice, based on a multivariate analysis of the data.

A. Are Guidelines-Constrained Penalties Higher?

To provide initial univariate statistics on the comparison between pre- and post-Guideline penalties, we exclude post-Guideline sentences that were not legally constrained by the Guidelines' fine provisions from the analysis presented in this subsection. The results appear below for criminal fines and total sanctions.

1. Criminal Fines. As shown in Table 4, criminal fines are significantly higher in Guidelines-constrained cases than they were previously. The mean criminal fine imposed on a publicly held firm increased from $1.9 million pre-Guidelines to $19.1 million under the Guidelines ($p < .10$). This represents a 10-fold increase. The median fine increased almost fivefold (from $633$ thousand to $3.10$ million). These increases exceed those predicted by the Commission but are within the range predicted by others.

As further evidence on the overall increase in fines, we examined the percentage of fines that exceed $1 million (in 1996 dollars). This percentage increased from 37 percent to 59 percent ($p < .01$). The percentage of fines that were relatively small—$50,000 or less—decreased from 15 percent to 5 percent ($p < .05$).

2. Total Sanctions. The total pecuniary sanction (hereinafter "total sanction") includes the criminal fine and a variety of nonfine penalties, such as restitution, disgorgement, remedial orders, forfeiture, assessments, and compensation to the government for its expenses in enforcing probation, plus all pecuniary civil penalties and private liability. Table 4 shows that total pecuniary sanctions have generally increased. The median total sanction increased from $1.6 million to $4.4 million ($p = .27$). Although the mean total sanction decreased from $115.0$ million to $49.3$ million,

36 Although a significant part of this increase is attributable to a dramatic increase in the maximum observed fine (from $28.8$ million to $340$ million), when we omit the maximum sanction, the mean sanction in Guidelines-constrained cases is still significantly higher than the mean sanction in the pre-Guidelines cases.

37 This increase in the median sanction is different from zero at $p < .01$, based on a Mann-Whitney U-test.

38 We exclude from the scope of our study one important part of the "total sanction" to firms convicted of crimes: the pecuniary value of nonmonetary sanctions such as reputation loss. See generally Karoff & Lott, supra note 27; and Cindy R. Alexander, On the Nature of the Reputational Penalty for Corporate Crime, J. Law & Econ, in this issue, at 489.
### TABLE 4

**Comparison of Pre-November 1991 to Guidelines-Constrained Pecuniary Sanctions Imposed on Public Corporations, 1988–96**

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean ($)</th>
<th>Minimum ($)</th>
<th>25th Percentile ($)</th>
<th>Median ($)</th>
<th>75th Percentile ($)</th>
<th>Maximum ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fine:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-November 1991</td>
<td>99</td>
<td>1,918,309+</td>
<td>...</td>
<td>150,057</td>
<td>632,661**</td>
<td>1,326,289</td>
<td>28,799,559</td>
</tr>
<tr>
<td>Guidelines</td>
<td>34</td>
<td>19,050,717+</td>
<td>...</td>
<td>159,653</td>
<td>3,095,460**</td>
<td>10,073,819</td>
<td>340,000,000</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-November 1991</td>
<td>101</td>
<td>114,985,458a</td>
<td>...</td>
<td>585,783</td>
<td>1,612,775</td>
<td>6,903,869</td>
<td>10,281,442,731a</td>
</tr>
<tr>
<td>Guidelines</td>
<td>34</td>
<td>49,261,188</td>
<td>847</td>
<td>243,036</td>
<td>4,427,608</td>
<td>26,839,566</td>
<td>646,233,198</td>
</tr>
</tbody>
</table>

**Note.**—All dollars updated to 1996.

* Includes $10.3 billion total sanction for Exxon Valdez. If that case were excluded, the mean pre-Guidelines total sanction would be $13.3 million and the difference between pre- and post-Guidelines total sanctions would be significant at \( p < .08 \). The next highest pre-1991 total sanction was $342 million.

* The difference between pre-Guideline and Guideline-constrained penalty is significant at \( p = .10 \).

** Significant at \( p = .01 \).
when one outlier is excluded the mean total sanction increases from $13.3 million to $49.3 million—a nearly fourfold increase \((p = .08)\).^39

**B. Source of the Increase: Are the Guidelines Constraining?**

Although simple univariate statistics indicate that both fines and total sanctions tend to be higher in Guidelines-constrained cases than they were before the Guidelines took effect, we are interested in two additional issues that call for multivariate analysis of the data. The first is whether this increase is explained by changes in the types of cases sentenced in the pre-Guidelines versus post-Guidelines eras. The second concerns whether penalties have increased by greater amounts in constrained cases and the extent to which sentencing practices have changed even where the Guidelines do not explicitly apply. This second question is relevant to whether the Guidelines imposed a binding constraint on judges’ sentencing decisions.

Table 5 presents our main results on whether Guidelines-constrained penalties are higher than the unconstrained penalties imposed during the Guidelines era. We regress the sizes of fines and total sanctions on two dummy variables—GUIDE (equal to one if the 1991 Guidelines apply to the individual case) and ERA (equal to one if the sentence was imposed after November 1991 regardless of whether or not the Guidelines applied). Log-transformed values of the penalty variables are employed because they fit the data best.

In addition to the two key variables of interest, we controlled for various offense and offender characteristics to capture crime severity and other legal factors that might affect the sentencing decision. (See Table 1 for definitions.) We also controlled for whether sentences were imposed under the 1987 Antitrust Guidelines.

Although variables indicating crime type capture some of the variation in crime severity, we sought data that would permit us to control for severity more directly. On the basis of prior empirical literature establishing the relationship between monetary loss and criminal penalties, we sought evidence on the magnitude of the loss caused by each crime.\(^40\) Unfortunately, although the ICPSR data include loss estimates in pre-Guidelines cases, no

---

39 This comparison of means excludes a single ‘‘outlier’’ associated with the Exxon Valdez case, a multibillion-dollar sanction that is more than 15 times higher than the next largest total sanction. The robust tendency for total penalties to be higher under the Guidelines is reflected in the finding that the mean sanction is higher under the Guidelines if this single observation is omitted and that the log-transformed mean total sanction is higher for the full sample at \(p < .01\).

40 Previous studies that have used monetary loss as a proxy for crime severity include Cohen, supra note 2; and Cohen, supra note 29.
TABLE 5
REGRESSION ANALYSIS OF CHANGE IN CRIMINAL FINES IMPOSED ON PUBLIC CORPORATIONS SENTENCED TO FEDERAL CRIMES, 1988–96

<table>
<thead>
<tr>
<th></th>
<th>DEPENDENT VARIABLE: ln(Inflation-Adjusted Criminal Fine)</th>
<th></th>
<th>DEPENDENT VARIABLE: ln(Inflation-Adjusted Total Sanction)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>p-Values</td>
<td>Coefficient</td>
</tr>
<tr>
<td>GUIDE</td>
<td>1.44</td>
<td>.05*</td>
<td>.50</td>
</tr>
<tr>
<td>ERA</td>
<td>.30</td>
<td>.58</td>
<td>.76</td>
</tr>
<tr>
<td>Constant</td>
<td>8.96</td>
<td>.00**</td>
<td>10.56</td>
</tr>
<tr>
<td>Type of crime:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antitrust</td>
<td>2.61</td>
<td>.02*</td>
<td>1.64</td>
</tr>
<tr>
<td>Antitrust post-1987</td>
<td>−.68</td>
<td>.19</td>
<td>−.55</td>
</tr>
<tr>
<td>Environmental</td>
<td>1.82</td>
<td>.10*</td>
<td>1.25</td>
</tr>
<tr>
<td>Fraud</td>
<td>1.78</td>
<td>.10*</td>
<td>2.79</td>
</tr>
<tr>
<td>Campaign contributions</td>
<td>.24</td>
<td>.81</td>
<td>−1.19</td>
</tr>
<tr>
<td>Export violations</td>
<td>−.04</td>
<td>.98</td>
<td>−.99</td>
</tr>
<tr>
<td>Foreign bribery</td>
<td>2.60</td>
<td>.05*</td>
<td>1.27</td>
</tr>
<tr>
<td>Food and drug</td>
<td>2.08</td>
<td>.07*</td>
<td>.81</td>
</tr>
<tr>
<td>Import violation</td>
<td>−6.01</td>
<td>.18</td>
<td>−2.62</td>
</tr>
<tr>
<td>Safety</td>
<td>2.22</td>
<td>.07*</td>
<td>1.03</td>
</tr>
<tr>
<td>Tax</td>
<td>−.61</td>
<td>.83</td>
<td>1.95</td>
</tr>
<tr>
<td>Wildlife</td>
<td>−.91</td>
<td>.51</td>
<td>−2.78</td>
</tr>
<tr>
<td>Other control variables:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Individual convicted</td>
<td>.68</td>
<td>.07*</td>
<td>.56</td>
</tr>
<tr>
<td>Years to sentence</td>
<td>.09</td>
<td>.55</td>
<td>−.01</td>
</tr>
<tr>
<td>Years of crimes</td>
<td>.10</td>
<td>.00**</td>
<td>.09</td>
</tr>
<tr>
<td>Post-1984 Fine Act</td>
<td>1.47</td>
<td>.01*</td>
<td>1.79</td>
</tr>
<tr>
<td>Foreign corporation</td>
<td>.08</td>
<td>.89</td>
<td>−.09</td>
</tr>
<tr>
<td>Bankrupt company</td>
<td>−1.32</td>
<td>.06*</td>
<td>−1.74</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>.177</td>
<td></td>
<td>.274</td>
</tr>
<tr>
<td>N</td>
<td>229</td>
<td></td>
<td>231</td>
</tr>
</tbody>
</table>

NOTE. — p-Values estimated using robust standard errors.
* Significant at $p = .10$.
* Significant at $p = .05$.
** Significant at $p = .01$.

such data exist on post-Guidelines cases. Further, in our data set we uncovered only 31 out of 243 cases (13 percent) where we could estimate monetary loss. Only five of those cases are constrained by the Guidelines.

We rejected the idea of constructing loss estimates by examining restitution awards. While in theory restitution should equal the victim's loss, actual restitution awards do not necessarily do so.\(^{41}\) More important, the

\(^{41}\) In many cases voluntary and/or court-ordered restitution bear little relationship to actual losses, other than the fact that they are positively correlated with each other. For example, one company in our sample (Damon Clinical Laboratories) paid a $35.2 million fine and $83.7 in a civil settlement that might be considered "restitution." However, this case involved an alleged overcharge of $39.7 million. If the $83.7 million figure is used as a proxy
Guidelines substantially changed the rules governing restitution awards so that judges are more likely to award restitution than previously. Finally, the post-Guidelines measures of restitution that are recorded in the ICPSR data set differ from pre-Guidelines measures in systematic ways that likely make the post-Guidelines’ measure higher.42

Accordingly, we searched for a reasonable proxy for loss to include as a control variable. We collected data on crime duration—the difference between the start of the crime and when it was ended. All else equal, one would expect a crime to impose higher losses the longer it lasts. To test this hypothesis, we regressed the natural log of pecuniary loss on the number of years the crime was committed, as well as on a set of control variables (for example, type of crime and the other control variables used in Table 5). The coefficient on crime duration is positive and significant ($p < .06$). Thus, in the multiple regressions reported in Table 5, we used crime duration in addition to crime type and other variables to proxy for loss. We found that this variable was positive and significant in explaining both fines and total sanctions. This supports use of the “crime duration” variable as a proxy for crime severity in addition to variables indicating the type of crime. Although not a perfect proxy for loss, crime duration is less likely than restitution to be correlated with the Guidelines variable.

The first column of Table 5 reports the results for fines. The coefficient on GUIDE is positive and significant at $p = .05$. Of most interest is that the coefficient on GUIDE is significant and nearly five times the magnitude of the coefficient on the ERA variable. This is consistent with the judicial resistance hypothesis, since it indicates that fines tended to increase considerably more if constrained by the Guidelines than if not so constrained.

Also in the first column of Table 5, we show the coefficient on ERA is for loss, this case would involve a fine that is less than half the loss. In reality, the company was fined an amount just about equal to the loss, and the total sanction ($119 million) was about three times the loss. Another company in the ICPSR data set reportedly paid a $7 million fine and $2,914,529 in restitution. We have identified this case as being ABC Home Health Care, which was required to pay that amount in restitution despite the fact that the government alleged at trial that the fraud involved “more than $1 million in losses,” and an earlier General Accounting Office report indicated losses of approximately $850,000. See U.S. General Accounting Office, Allegations against ABC Home Health Care, GAO/OSI-95-17. If restitution were used as a proxy for loss in this case, it would dramatically overestimate the loss and hence underestimate the “multiple” of loss implied by the fine.

42 Although the pre-Guidelines ICPSR had separate variables for court-ordered restitution and voluntary restitution, the post-Guidelines ICPSR data on restitution include “the value of any damage award that resulted from civil litigation,,” which was specifically excluded in the pre-Guidelines ICPSR variables of interest. Thus, the post-Guidelines measure of restitution might include settlements with government agencies that would not have been included in the pre-Guidelines ICPSR data. Using restitution as a proxy for harm would thus tend to mask any increase in post-Guidelines penalties that actually occurred.
positive, which suggests criminal fines tend to be higher in the post-Guide-
line era, even after the direct effect of the Guidelines is taken into account. 
However, this finding is not statistically significant \( p = .58 \).\(^{43}\)

Turning to total sanctions, Table 5 shows that both ERA and GUIDE have positive coefficients, although the coefficient on GUIDE is not sig-
nificantly different from zero by conventional standards \( p = .37 \). This 
finding, which is robust across alternative specifications,\(^{44}\) suggests there is 
no discernible difference between total sanctions in constrained and uncon-
strained cases sentenced after the Guidelines took effect. This is consistent 
with our observation that the Guidelines less completely constrain nonfine 
sanctions than criminal fines. The positive coefficient on ERA \( p = .05 \) 
indicates that total sanctions have risen significantly even after controlling 
for the Guidelines’ potential effect. That is, total penalties appear to have 
risen even where the Guidelines do not explicitly apply. Qualitatively simi-
lar results are generated by expanding the definition of Guideline-
constrained cases to include cases governed by the nonfine provisions of 
the Guidelines (even if the fine provisions do not apply).

To summarize, the analysis of data on criminal fines and total sanctions 
supports three basic findings. First, total penalties are significantly higher 
during the Guidelines era than previously, even after taking changes in case 
mix and proxies for crime severity into account. Second, the Guidelines ap-
pear to have influenced sentencing practice by placing a binding constraint 
upon judges’ sentencing decisions. That is, fines have increased by greater 
amounts in cases that are constrained by the Guidelines than in cases that 
are not constrained. Total penalties are not significantly higher in con-
strained than in unconstrained cases. Recalling that the Guidelines more 
completely constrain fines than nonfine penalties, this is consistent with the 
view that judges responded to the imposition of a binding constraint on 
criminal fines by setting nonfine sanctions below what they would have

\(^{43}\) The five observations in which no criminal fine was paid have the largest standard errors 
of prediction in the fine model of Table 5. The coefficient on GUIDE and its reported statisti-
cal significance are robust to alternative treatments of these observations, with the coefficient 
estimate varying within 2 percent of its reported value when a Tobit specification is used or 
when the observations are dropped from the sample altogether. The coefficient on ERA is 
similarly robust to use of the Tobit specification, yet increases and becomes statistically sig-
ificant when these observations are dropped, consistent with the observation that three of 
the five are post-Guideline unconstrained cases. Reported findings are also robust to the addi-
tion of interaction terms to allow the coefficient on GUIDE to vary according to whether a 
case involves an antitrust violation. In a reduced data set eliminating antitrust, environmental 
and Food and Drug Administration cases, the significance of the GUIDE variable decreases 
substantially.

\(^{44}\) For example, it persists regardless whether the dependent variables is the log-trans-
formed or raw measure of the total sanction. It persists in logit analysis of the data in which 
the dependent variable is one if the total sanction in a case exceeds the median value.
been otherwise. Third, the direct effect of the Guidelines does not account for all of the observed increase in total sanctions. This suggests that judges may have cooperated with the Guideline’s policy of imposing higher total sanctions, even though not in the form (and possibly not to the extent) prescribed. It is inconsistent with the basic attitudinal model discussed in Section II. It suggests that forces beyond just the constraining effects of the Guidelines are at work.

To illustrate the practical significance of our findings, Table 6 shows the predicted values from the regression equations specified in Table 5. The first row, labeled “pre-Guidelines,” was produced by multiplying the coefficient of each variable by its sample mean, while ERA and GUIDE are set to zero. This represents the predicted fine ($368,890) and total sanction ($1,140,631) in pre-Guidelines cases. The second row, labeled “Guidelines constrained,” sets GUIDE = 1 but ERA = 0. It represents a hypothetical case constrained by the Guidelines but occurring in the pre-Guidelines era. It is reported here to illustrate the independent effects of the Guidelines versus the time period. Thus, if the Guidelines had been implemented during the pre-Guidelines era, fines are predicted to have increased to $1,560,025 and total sanctions to $1.9 million. Compare this result to the third row, “Guidelines-era/unconstrained,” which sets GUIDE = 0 and ERA = 1. The average fine in the unconstrained cases in the post-Guidelines era is estimated to be $495,650—higher than pre-Guidelines, but lower than Guidelines-constrained cases. On the other hand, total sanctions—$2.5 million—are higher than either pre-Guidelines or Guidelines constrained. Finally, the last row, “Guidelines-era/constrained,” sets both GUIDE and ERA equal to one in order to illustrate the joint effect of the Guidelines rules and the time period. Guidelines-constrained fines are estimated to be higher than unconstrained fines in the post-Guidelines era. This also holds for total sanctions although with very limited statistical significance, as we have shown.

### Table 6

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Fines ($)</th>
<th>Total Sanction ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Guidelines</td>
<td>368,890</td>
<td>1,140,631</td>
</tr>
<tr>
<td>Guidelines constrained</td>
<td>1,560,025</td>
<td>1,886,337</td>
</tr>
<tr>
<td>Guidelines-era/unconstrained</td>
<td>495,650</td>
<td>2,452,081</td>
</tr>
<tr>
<td>Guidelines-era/constrained</td>
<td>2,096,088</td>
<td>4,055,167</td>
</tr>
</tbody>
</table>

**Note.**—In order to isolate the effects of the Guidelines, “Guidelines constrained” assumes ERA = 0.
V. Discussion

The main empirical findings of this paper are that (1) public corporations pay substantially higher criminal fines and total sanctions for federal crimes under the Organizational Sentencing Guidelines than they did previously, (2) total sanctions for public corporations tend to be higher even where the Guidelines do not explicitly restrict the exercise of judicial discretion, and (3) criminal fines for public corporations—but not total sanctions—appear to have risen more in Guidelines-constrained than in unconstrained cases. We briefly explore possible explanations for each of these results. We also explore the extent to which our findings are consistent with competing theories of judicial behavior.

Criminal Fines and Total Sanctions Are Substantially Higher. The finding that criminal fines and total sanctions are substantially higher under the sentencing Guidelines than they were before has several alternative explanations. Since we do not have a direct measure of monetary loss (crime severity), our results are based on an assumption that omitted indicators of average loss have not substantially changed since the Guidelines were introduced. If firms sentenced for federal crimes are now committing more serious crimes, this could partly explain our result. However, any increase in monetary loss would have to be associated with something other than a change in the mix of crime types or the duration of the crime, both of which are controlled for in our regressions.

Judges Have Increased Total Sanctions Even When Not Legally Constrained by Guidelines. This finding is somewhat surprising, especially in light of the controversy that surrounded the Sentencing Commission’s initial decision to make the Guidelines mandatory (and judges’ opposition to that decision). It is possible that the observed increase can be explained by changes in the mix of crimes that may have occurred over time. Yet we have controlled for crime mix and other factors. Thus, we are left with two interpretations for the increase in total sanctions: either (1) something other than the Guidelines has caused total penalties to rise, or (2) judges have chosen to apply the Guidelines even where not explicitly required to do so; that is, they have cooperated with the intent of the Guidelines to raise total penalties.

The finding that penalties have risen even where the Guidelines do not explicitly constrain judicial decisions is not explained by the basic attitudinal model of judicial behavior discussed in Section II, in which judges’ preferences about sentences are fixed over time.\textsuperscript{45} Instead, our finding is

\textsuperscript{45} It is possible, however, that judges’ preferences have not changed but that an exogenous shock to the legal system has caused them to change their sentencing behavior in order to better comport with their sentencing preferences. For example, a Guidelines-enforced in-
consistent with alternative theories of judicial behavior—such as those based upon strategic behavior, learning models, and social norms. For example, judges might have increased all penalties to dissuade Congress from passing laws that will ultimately make judges worse off. Alternatively, judges might have updated their beliefs about the appropriate level of sanctions either by learning from the Guidelines or by incorporating newly revealed social norms into their sentencing decisions.46

Criminal Fines Have Risen More in Constrained than Unconstrained Cases. This finding suggests that the Guidelines constrained judges to impose higher fines than they would have imposed otherwise. The absence of a similar finding on total penalties suggests that the Guidelines have not similarly constrained total penalties. For example, it is possible that judges reduced nonfine sanctions relative to what they would have been otherwise to accommodate the higher fines, even while increasing total penalties across the board. This would account for the absence of a discernable difference between constrained and unconstrained total penalties in the post-Guidelines era. To further investigate this possibility, we examined the frequency with which nonfine sanctions are imposed in Guidelines-constrained cases as compared to cases that are not constrained by the Guidelines. In the post-Guidelines era, we find that a higher proportion of unconstrained cases have a nonfine sanction associated with them (65 percent versus 50 percent of constrained cases),47 although there is no statistically significant difference between their average magnitudes.48

VI. Conclusion

In 1991, the U.S. Sentencing Commission attempted to dramatically reduce judicial discretion in sentencing corporate criminals. During the time

increase in one criminal fine might cause judges to raise criminal fines out of concern for sentence uniformity. Yet this hypothesis—which also derives from the attitudinal model with preferences for proportionality—appears to be undercut by our finding that fines have not increased significantly in unconstrained cases.

46 This requires that nonfine penalties be decided with knowledge of the criminal fines that have been paid, which is plausible. Both criminal and civil actions arising from federal corporate crime tend to be brought by the federal government and are typically settled. See Alexander, supra note 38.

47 Since 50 percent of Guideline-constrained cases have nonfine sanctions, we tested the hypothesis that observed frequency of nonfine sanctions in unconstrained cases is also 50 percent, assuming a binomial distribution. The hypothesis is rejected at \( p < .01 \). Logit analysis of the frequency of nonfine penalties was also performed, using specifications appearing in Table 5. Setting the dependent variable equal to one if a nonfine penalty was imposed (and zero otherwise) and controlling for ERA, we find that the coefficient on GUIDE is negative with \( p = .22 \). A Tobit specification with \( \ln(\text{nonfine penalty}) \) as the right-hand-side variable yields a similar finding.

48 This finding has implications for research on judicial behavior. For example, it suggests rejection of the extreme version of the social norms hypothesis under which the Guidelines
these new sentencing Guidelines were constraining judges, a significant number of corporations were also sentenced without this new legal constraint. This situation provides an interesting setting in which to explore competing theories of judicial behavior.

Our main empirical findings from data on public corporations sentenced for federal crime over the 1988–96 period are that (1) public corporations have paid substantially higher criminal fines and total sanctions for federal crimes under the Organizational Sentencing Guidelines than they had previously, (2) the increase in total penalties is not limited to cases in which judges are explicitly required to follow the Guidelines, and (3) criminal fines are significantly higher in Guidelines-constrained than in unconstrained cases.

This evidence supports two basic conclusions. First, the Guidelines appear to have imposed a binding constraint on the exercise of judicial discretion, which has caused an increase in criminal fines. Second, the binding constraint of the Guidelines does not alone account for observed increases in total sanctions. Other forces also appear to be at work, contributing to the observed increase.

The first of the two conclusions derives from evidence that fines have risen more in constrained than in unconstrained cases. This is consistent with a simple agency model in which judges’ preferences on fines differ from those of the Sentencing Commission. The evidence that fines have risen relative to total sanctions (and that there appears to be some substitution between fine and nonfine sanctions) is consistent with this model under the realistic assumption that the Guidelines have been more complete in regulating fines than in regulating nonfine sanctions, such as restitution. That is, judges may have reduced nonfine sanctions below what they would have been otherwise, thereby limiting the Guidelines’ overall effect on total sanctions.

Evidence that total sanctions have risen even in cases that are not Guidelines-constrained leads us to our second conclusion that forces other than the binding constraint of the Guidelines account for at least some of the penalty increase that has occurred. We have considered several alternative explanations for the increase that are not directly attributable to the Guidelines’ constraint. Judges may seek to cooperate with the Commission’s intent to raise total penalties yet have different preferences about the proper mix of criminal fines and other monetary sanctions (which generally go to victims) and may have used their discretion over nonfine sanctions to further those views. The evidence that total penalties are higher even in unconstrained...
strained cases is inconsistent with the basic attitudinal model from the political science literature and suggests that judges may be responding to social norms, may be acting strategically, or may have learned something from the Guidelines. Further development of both theory and evidence will be required before it is appropriate to draw any strong conclusions about how best to explain the observed change in sentencing practice.

The empirical findings of this paper are limited to publicly traded corporations. Yet there is no reason to think judges would react differently to a binding constraint governing the sentencing of privately held firms. The extent to which our results on the magnitude of the increase in sanctions generalize to cases involving privately held companies is unknown at this time and worthy of future research.

APPENDIX

Analysis of Official Sentencing Commission Data

In selecting data for this study, we investigated official data sets compiled by the U.S. Sentencing Commission and publicly disseminated through the ICPSR. The Commission data contain observations on penalties paid by both private and public corporations. Our study focuses on public corporations and does not employ Commission data on the convictions of private corporations. Moreover, the vast majority of observations in our sample were obtained from sources other than ICPSR. Indeed, the main findings of the paper go through when attention is limited to observations from non-ICPSR sources. However, we did obtain and evaluate the publicly available ICPSR data at an early stage in our study. Comparisons were made between those ICPSR data and the pre- and post-Guideline penalty data that were systematically and independently compiled for this project. Evidence from those comparisons sheds light on the properties of the ICPSR data, which may usefully guide future research. We present some of the findings from that inquiry here.

The ICPSR data comprise two distinct data sets. The first contains information on sentences imposed on public and private corporations under federal law over the January 1, 1988–June 30, 1990, period. The Sentencing Commission collected these data as part of an extensive effort to examine empirically the sentencing practices that the Guidelines would purport to change. To ensure complete reporting, the Commission's staff directly contacted each district court and made follow-up calls. The staff augmented this effort with a search of the database of the Administrative Office of the Courts.

The second data set covers sentences imposed after the Guidelines took effect. Following institution of the Guidelines, the Commission switched from a "research" mode to a "monitoring" mode. In this mode, the district courts continued to send data on penalties to the Commission staff. However, the staff did not make follow-up calls to ensure that those reports were complete. Nor did they search the database of the Administrative Office of the Courts. Thus, the pre- and post-Guide-

49 We thank Paula Desio and others at the Commission for helpful informal discussions of the Commission's post-Guideline data.
LINE data were selected through different processes. In addition, when it switched into the monitoring mode, the Commission focused entirely on Guideline-constrained sentencing decisions. After 1991, the staff ceased to obtain data on cases that were not sentenced under the Guidelines. This censoring of unconstrained cases further limits the data's usefulness in supporting inferences about how the Guidelines have affected corporate criminal sanctions.

In their 1996 annual report to Congress, the Commission acknowledged some of these concerns in noting that "all data collected and analyzed by the Commission reflect only reported populations (that is, guidelines cases for which appropriate documentation was forwarded to the Commission), and reporting problems specific to individual districts or offices may make generalizations to the district level problematic." As a result, an interagency working group studied their data collection method and followed up with a thorough collection effort of 1997 cases. Overall, they identified approximately 5,000 cases not sent by district courts to the Commission in 1997. An estimated 10 percent of Guideline-constrained cases had not been reported to the Commission.

Further evidence on the properties of the ICPSR data was obtained in the process of constructing the sample of federal corporate criminal penalties imposed on public corporations that is the focus of this paper. A substantial number of the cases we have identified could not be found in the ICPSR data. Although crimes in public corporations account for only 6 percent of the ICPSR cases, they account for 27 percent of criminal fines and 43 percent of total penalties in terms of dollar volume. Consistent with this, many of the missing cases involved fines of $1 million or more. Missing these cases could significantly affect any estimates of average sanctions.

We obtained further indications that large penalties tend to be censored from the post-Guideline ICPSR data by examining the full ICPSR sample. This includes 1,260 corporate sentences imposed in the 1988–96 period. The median fine (in constant 1996 dollars) was $30,011 for cases not subject to the Guidelines, compared to $14,821 in Guideline-constrained cases.

**BIBLIOGRAPHY**


---

50 U.S. Sentencing Commission, 1996 Annual Report to Congress 32 (1997). Although the Commission did not report on the extent to which organizational sanctions are excluded from their data, it was noted in the 1996 annual report that the ICPSR data set "does not include a highly publicized case involving a financial institution in which a $340 million criminal fine was imposed, nor a number of other organizational convictions and fines obtained as a result of negotiated plea agreements."


52 We also estimated a regression equation where the dependent variable is the natural log of the criminal fine, and included independent variables to account for the type of crime. The coefficient on the dummy variable representing a case where the Guidelines applied was negative and significant at \( p < .01 \), indicating that criminal fines were significantly lower under the Guidelines. Given the fact that the Guidelines were written with the intent to increase fines, this would be an important and curious result. However, we believe it is an artifact of the censoring of large penalties from the post-Guideline data.


