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Working Paper No. 141

**DEFENSE PROCUREMENT FRAUD,
PENALTIES, & CONTRACTOR INFLUENCE**

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Defense Procurement Fraud, Penalties, and Contractor Influence

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Defense Procurement Fraud, Penalties, and Contractor Influence

Abstract

Press reports of procurement fraud investigations, indictments, and suspensions are associated with significantly negative average abnormal returns in the stocks of affected firms. Abnormal stock returns are significantly less negative, however, for firms ranking among the Top 100 defense contractors than for unranked contractors, even after controlling for firm size, the fraud's characteristics, and the firm's recidivism. Abnormal returns are positively related to the change in a firm's subsequent award of government contracts. This change in a firm's future government contract revenue stream is in turn negative for unranked firms and not significantly different from zero for Top 100 contractors. The results indicate that unranked contractors are penalized heavily for procurement frauds, experiencing both a decline in market value and a subsequent loss in government-derived revenues. Influential contractors, in contrast, are penalized lightly.

Defense Procurement Fraud, Penalties, and Contractor Influence

I. Introduction

Military procurement is big business: from 1981 - 1995 procurement of military equipment and services by the U.S. Department of Defense (DOD) consumed 26% of total defense outlays and 1.43% of Gross National Product. Procurement also is rife with contracting and agency problems. Purchases are dictated and overseen by the U.S. Congress, but are carried out largely by contracting officers within the DOD. For innovation and product development, the DOD relies upon defense contractors, who opportunistically can hold-up products, shift contracts, and reallocate costs. The contractors also are exposed to hold-up problems. They make large project-specific research and capital investments, but frequently have only a single purchaser for their products -- the DOD.

Congress has attempted to manage these incentive problems by establishing what Kovacic (1990) describes as the nation's most elaborate regulatory system. The Federal Acquisition Regulation and the corresponding DOD Supplement, which guide weapons acquisition, "consist of over eighteen hundred pages of rules governing profit policy, accounting standards, ethical requirements, bidding, competition, warranties, and a host of other matters" (Kovacic 1990, p. 105).¹ These rules, and the penalties for violating them, have undergone significant and frequent changes since 1982. The most important changes established new offices to investigate defense contract frauds, introduced criminal penalties for such frauds, and increased the penalties. Sugawara (1990) reports that, during this period, the numbers of government fraud investigations and prosecutions increased markedly.

In this paper we examine the market and legal penalties imposed on firms suspected or accused of procurement fraud. We find that, on average, firms investigated for procurement fraud suffer economically and statistically significant market value losses. The mean two-day

¹For a description of the military procurement process and the underlying regulatory and incentive issues, see Rogerson (1994), Greenberger (1984), Ashford (1985), Valente (1988), Wartzman (1991), Venzryk (1993), and Carley (1996).

announcement period abnormal stock return associated with initial press announcements of a real or alleged fraud is -1.41%. The losses, however, vary significantly across firms. Firms ranked among the Top 100 military suppliers, and whom presumably exercise influence within the DOD, have significantly higher (i.e., less negative) mean abnormal returns than do unranked firms. These results hold even after controlling for firm size, fraud characteristics, the firm's recidivism, and the percentage of the firm's revenue obtained from government contracts.

Firms face stiff fines for procurement fraud, equal on average to 1.42% of the market value of the firm's stock. Announcement period abnormal stock returns, however, are not significantly related to the size of any documentable court-imposed fines. Instead, the stock value losses are related to the subsequent decrease in the percentage of the firm's revenues that derive from government contracts. This decrease, in turn, is relatively large for unranked contractors.

This paper is organized as follows. In section II we describe the defense contracting and oversight process. Section III summarizes three competing views regarding the size of the effective penalties for procurement fraud. Sections IV and V describe the data and methods used to test these views, and sections VI through IX report our results. Section X concludes.

II. Defense procurement monitoring and fraud punishment

To encourage entry, innovation, and competition in the design and production of military equipment, DOD contracts are priced to include quasi-rents to contract awardees (Rogerson 1989). Once a contract is awarded, however, much uncertainty remains over production costs and ultimate demand. Even though contracts typically specify prices, contract prices commonly are subjected to a process of almost continual renegotiation and revision. It is the perception that contractors can extract abnormal profits at this stage of the process that motivates many of the DOD's procurement rules. Throughout the period of contract award and production, suppliers are required to provide to the DOD detailed information on inputs, costs, pricing, and quality control, as required by the Federal Acquisition Regulation (FAR) and the DOD's FAR Supplement.

Procurement fraud occurs with any violation of these regulations. Acts that can trigger fraud

investigations include falsifying accounting documents, falsifying test results, charging personal expenses to government contracts, submission of invoices that include false claims, bribery, defective pricing of proposals submitted to the government to obtain additional government contracts, fraudulent accounting classification processes, intentional mischarging or misallocation of costs, and product substitution.

A total of seven different agencies monitor defense contractors to assure compliance with DOD regulations. Many cases that grow into fraud investigations are triggered by audits of contractors' cost accounting records by the DOD's Defense Contract Audit Agency (DCAA). Additional investigations are prompted by the DOD's Office of Inspector General, which was established in 1982, or by employee lawsuits encouraged by the DOD's whistle-blower hotline, established in 1983. Once fraud is suspected, the Department of Justice conducts its own investigation, which, if warranted, leads to an indictment. A special Department of Justice investigative team, devoted solely to military procurement cases, was established in 1982.

Fraud investigations are resolved through a guilty plea, formal determinations of guilt, acquittals, or settlements in which the contractor admits no guilt. Punishment can occur before the guilt or innocence of the contractor is determined. The DOD can temporarily suspend a contractor from receiving government contracts, bidding on contracts, or subcontracting with another government supplier until the investigation is completed. In addition, payments for partially completed work can be reduced or stopped. If the contractor is convicted or pleads guilty, the government can recover all mischarged costs. The payment of fines and penalties, as well as restitution to the government for any mischarged costs, usually coincides with a guilty plea, settlement, or formal finding of guilt. At that time, the DOD can formally debar the contractor from doing business with the government for a period not to exceed three years. A suspension or debarment can apply to the entire company or to selected divisions. Typically, suspensions are imposed when a company is formally charged with crimes. Debarments are imposed less frequently, and then typically only after a conviction.

III. Competing views about procurement fraud penalties

Procurement fraud attracts enormous attention from the media, members of Congress, and regulators. There are competing views, however, about whether such monitoring disciplines and therefore deters procurement frauds.

The wrist-slap hypothesis: One view holds that penalties are too small to discipline and deter fraud, even when the penalties appear to be large. In 1988, for example, Sundstrand Corporation agreed to pay a total of \$115 million to settle charges of mischarging on government contracts (Valente 1988). Only \$1.02 million of this amount, however, represented fines and reimbursement of the investigation's cost. The remainder -- \$113.98 million -- was for restitution and damages. Suppose this remainder is a measure of the cost of Sundstrand's fraud. Efficient penalties require that the expected penalty equals the cost of the fraud (Becker 1968). Under this criterion, a \$1.02 million total fine for a \$113.98 million fraud is efficient only if the *ex ante* probability that Sundstrand would be caught was 99% (= \$113.98 million/\$115 million). Few people would argue that *ex ante* probabilities of catching and convicting procurement fraud are so high.

Even firms that are suspended or debarred from military contracts frequently appear to suffer little penalty. The Boeing Company was disciplined for mishandling DOD planning documents in 1989 by having its Washington, D.C. area office debarred. Since the office did not manufacture anything, the action was portrayed in the press as symbolic only, and was regarded by financial analysts as having no material effect (Wartzman 1989). In another example, a division of Northrop Corporation was suspended in July 1989, but during the suspension the division nonetheless received five prime contracts and 161 subcontracts (Wartzman 1991). In a highly publicized case, General Dynamics Corporation was suspended from bidding for contracts in 1985. The day the suspension against two of its divisions was lifted, however, the firm received new contracts worth \$892.2 million (Carrington 1985). Soon afterward, the Pentagon pushed through a backlog of additional contracts for the firm (The Wall Street Journal 1987).

Two factors frequently are cited as reasons fraud penalties allegedly are small. The first is

that the DOD is reluctant to discipline defense contractors who often are sole suppliers of critical products (e.g., see Ashford (1985), Payne (1985), and Wartzman (1991)). The second is that government monitors lack sufficient resources and skills to impose significant penalties on defense contractors. "They're outmatched by the defense contractors," according to former DOD Inspector General Joseph Sherick (Dwyer 1986). Even suspensions and debarments might have little effect, because the penalized firms can start new companies or be hired as subcontractors. "For all intents and purposes, nobody ever monitors to see if [a contractor is] living up to the debarment" (Howard Cox, DOD deputy assistant inspector general, quoted in White 1986).

The deterrent hypothesis: A competing view holds that the penalties for procurement fraud are, in fact, large and represent a substantial deterrent to such fraud. Certainly, the creation of the DOD's Inspector General's office, the advent of whistle-blower lawsuits, and the new Justice Department investigative team all have created the impression that procurement frauds have been prosecuted vigorously since 1983. Fossedal (1986) and Kovacic (1992) argue that, partly as a result, fraud penalties are now too large, and that they inefficiently increase suppliers' costs and decrease competition among military suppliers.²

The influential contractor hypothesis: We propose yet a third view, that the DOD's fraud oversight system transfers wealth to influential defense contractors by imposing large effective penalties primarily on non-influential contractors. This view is implied by Leitzel's (1992) arguments that the DOD is best characterized as a regulator captured by private contractor interests.³

As noted by Peltzman (1976) and Haddock and Macey (1987), a captive regulator rarely has

²Previous research suggests that penalties for procurement fraud might be significant. Karpoff and Lott (1993) report large and statistically significant market value losses for a sample of 27 firms alleged to have committed a total of 40 frauds -- including military procurement frauds -- against the government.

³Leitzel (1992) argues that many aspects of defense procurement, such as the tendency for contracts to be distributed among a stable group of leading defense suppliers, are explained by the captured regulator view. Chesshyre (1985) argues that defense procurement is characterized by "... collusion between the 53,000 Pentagon officers and civilians charged with procurement responsibilities and the 170,000 suppliers." Ashford (1985) claims that "... the military-industrial complex creates political constituencies that make captives of congressmen, public officials, and labor unions." As another example, Smith (1989) argues that defense spending serves the interests of an "Iron Triangle" consisting of the Pentagon, defense contractors, and members of Congress with visible military spending in their districts.

free rein to transfer wealth to members of the regulated industry. Other interests constrain the transfer, subject to monitoring and transaction costs. In the defense industry, for example, Leitzel (1992, p. 51) argues that: "Blatant mishandling [by the DOD] of its job as an agent for the public welfare will result in increased Congressional, executive, and media attention. . . . the DOD can only act in the interests of defense contractors to the degree that it escapes meaningful scrutiny".

According to this view, the discovery of fraud triggers additional media attention and increases the possibility of new Congressional inquiries. Such actions tend to lower the total budget available to defense contractors. Taken as a whole, firms in the industry are hurt by the revelation of fraud and are aided by the appearance of a well-functioning system to deter fraud. DOD-initiated penalties for procurement fraud therefore are an essential part of a self-policing mechanism that maximizes total transfers to the defense sector.⁴

The influential contractor hypothesis is an extension of this captured regulator view. We conjecture that the DOD acts in the interests not of all defense contractors, but primarily a smaller number of influential contractors. Previous research demonstrates that regulations in captured industries frequently are used to transfer wealth among competing firms in the same industry (e.g., Libecap and Johnson (1982)). Typically, the regulatory process transfers wealth toward politically influential producers and away from other producers (e.g., Karpoff (1987)). When applied to defense contracting, this implies that procurement fraud penalties will be imposed primarily upon defense contractors with little clout within the DOD. Influential contractors, in contrast, will be subjected to smaller penalties. The imposition of penalties provides the appearance of an effective self-policing system, while maximizing the rents earned by influential firms.

IV. Data

We test the three competing views by measuring the penalties imposed on firms suspected or convicted of committing procurement fraud from 1983 through 1995.⁵ To identify such firms,

⁴Kovacic (1992) also argues that penalties for procurement violations help safeguard the defense budget: "Enacting new statutory safeguards against fraud, waste, and abuse is one way to reassure the public that revelations of corruption or blundering do not warrant abandonment of or draconian cuts in important expenditure programs" (p. 33).

we conducted a Dow Jones News Retrieval Service search using the following key words: investigate, allege, indict, convict, suspend, penalty, or settle, in conjunction with the words: contract, subcontract, procurement, government, defense, justice, army, navy, air force, and pentagon. The search yielded a sample from 98 publicly traded corporations.

From 1983 - 1995 these 98 companies were the subjects of 396 press announcements covering 249 separate cases of (alleged) procurement fraud. As reported in Table 1, the announcements group into six categories: investigations, indictments, suspensions, settlements, guilt, and acquittals. Panel A reports the distribution of the first public announcements for our 249 fraud cases by category and year. These announcements include 143 investigations, 35 indictments, 15 suspensions, and 56 resolutions. The resolution announcements, in turn, include 40 settlements, 13 announcements of guilt, and 3 acquittals. The most announcements in a single year occurred in 1988, although the sample does not cluster by year.

Many of the fraud cases received coverage in follow-up news articles. Panel B of Table 1 tallies the number of follow-up articles that introduced substantially new information about a previously reported fraud case. In this tally, we ignore duplicate announcements that fall into the same category. For example, we ignore follow-up announcements that a firm was under investigation, but count the first follow-up announcement that the firm was indicted. A total of 105 cases were the subjects of a second announcement category. Of these, 20 reported that the firm had been indicted, 22 that the firm had been suspended, and 63 that the case was resolved. In addition, 36 cases were the topics of a third type of press announcement, and 6 the subject of a fourth type of announcement.

A disproportionate number of fraud cases involve large firms. The right-hand side of Table 2 depicts the distribution of sample firms across size-based deciles. Size is measured as the market value of equity at the end of the year before the first fraud-related announcement, computed using CRSP data. Only 10 of the 98 firms implicated in fraud cases fall in the lowest three size-based

⁵Sugawara (1990) reports that, before 1983, relatively few firms were prosecuted for procurement fraud. This changed in 1982 and 1983 with the creation of the DOD's Inspector General's office, the Department of Justice's team of defense procurement investigators, and the DOD's whistle-blower hotline.

deciles, while 81 are in the top three deciles. The distribution of alleged fraud cases is weighted even more heavily toward large firms, because such firms as General Dynamics and General Electric are represented more than once in the sample.

We speculate that the sample is weighted toward large firms for several reasons. Large firms may be heavily represented among military suppliers. Large firms presumably have more projects than smaller firms, and thus more opportunities for fraudulent actions. Large firms may be targeted for investigation at a high rate, perhaps because investigators develop specialized knowledge of a small number of large firms or because investigations of large firms yield high rewards to regulators. Large firms may be characterized by agency problems that encourage more fraudulent activities than in small firms. Another possibility is that the news services carried on the Dow Jones News Retrieval Service, from which our sample is drawn, may focus on fraud cases primarily among larger firms.

As illustrated in Table 2, the sample also is clustered among industries typically associated with defense contracting. Using SIC classifications from Standard and Poor's Compustat database, 70 (71%) of the sample firms have SIC codes from 35 to 38, representing industries in machinery and computer equipment, electronic and electrical equipment, transportation equipment, and measurement instruments. The clustering by fraud cases is more extreme, as many firms with multiple fraud cases fall in these four industries. For example, 12 of the 26 firms in the transportation equipment industry (SIC = 37) have more than three fraud cases, including such aerospace firms as Boeing, Northrop, and General Dynamics.

V. Empirical methods

Our sample displays size-based clustering. To calculate abnormal stock returns, we use the size-matched portfolio approach suggested by Dimson and Marsh (1986) and confirmed by Kothari and Wasley (1989) to be well-suited to these conditions. In tests not reported, we also calculated abnormal returns using market model estimates. The results are qualitatively identical to those reported below, indicating that the empirical results are not sensitive to the estimation

procedure.

For each year 1983 - 1995, we group stocks listed on the CRSP tapes into deciles based on market equity value. For each fraud event in the sample we measure the firm's market value of equity as of the end of the preceding year. The market capitalization of firms in which fraud events occur in more than one year is calculated separately for each year. Firm i 's daily abnormal return, $AR_{i,t}$, is the firm's continuously compounded return on day t , $R_{i,t}$, minus the continuously compounded return for the equally-weighted portfolio of firms in the matched decile, $R_{s(i),t}$, where $s(i)$ is firm i 's size-based decile:

$$AR_{i,t} = R_{i,t} - R_{s(i),t} \quad (1)$$

Cumulative abnormal returns for firm i from days t_1 through t_2 are calculated as:

$$CAR_{t_1,t_2}^i = \sum_{t=t_1}^{t_2} AR_{i,t} \quad (2)$$

For hypotheses tests involving event windows that are uniform across N firms (e.g., two-day announcement windows), we calculate the mean cumulative abnormal return:

$$\overline{CAR}_{t_1,t_2} = \frac{1}{N} \sum_{i=1}^N CAR_{t_1,t_2}^i \quad (3)$$

Under the null hypothesis that the abnormal returns are distributed independently with mean zero, the following test statistic has a t -distribution with $N-1$ degrees of freedom:

$$\tau = \frac{\overline{CAR}_{t_1,t_2}}{s(\overline{CAR}_{t_1,t_2})} \sqrt{N} \quad (4)$$

where $s(\overline{CAR}_{t_1,t_2}) = \sqrt{\frac{1}{N-1} \sum_{i=1}^N (CAR_{t_1,t_2}^i - \overline{CAR}_{t_1,t_2})^2}$ is the standard deviation of the cumulated abnormal returns.

We report the results of the (nonparametric) generalized sign test, the properties of which are described by Cowan (1992). The firm's pre-event 250-day estimation interval, $t_1 = -280$ through $t_2 = -31$, is used to construct the standard of comparison for this test.

VI. Empirical results

Table 3 reports the average abnormal two-day stock returns ($\overline{CAR}_{-1,0}$) for all 396 announcements in our sample period, partitioned by type of announcement. The mean abnormal return for all 249 initial announcements, reported at the bottom of column 1, is -1.41% with a p-value of .001. The median abnormal return is -0.79%, and only 36% of the announcements are associated with a positive abnormal return. These results indicate that, on average, the initial press announcement of a real or alleged fraud is associated with a statistically significant decrease in the firm's stock price.

The size of the average stock price reaction depends on the announcement type. For 143 of the 249 cases in the first column, the initial press announcement indicates that a defense contractor was under investigation for procurement fraud by the DOD, the Department of Justice, a Congressional committee, or through a "whistle-blower" lawsuit. For these cases the mean abnormal return is -1.64% with a p-value less than .001. The mean abnormal return for the 35 initial announcements that the Department of Justice filed formal indictments or civil lawsuits, or had joined a "whistle-blower" lawsuit, is -1.70% with a p-value less than .001. And for the 15 cases in which the initial announcement was of a suspension, the mean abnormal return is -4.49% with a p-value less than .001. The median values and sign test results demonstrate that the results are not due to outliers. These results indicate that investigation, indictment, or suspension announcements are associated with statistically significant decreases in the values of the affected companies.

In contrast, the abnormal returns for initial press announcements of resolutions -- which include out-of-court settlements, guilty pleas or findings, and acquittals -- are not significantly different from zero. One interpretation of this result is that news about these alleged frauds was conveyed to investors and reflected in stock prices before the resolution announcements. That is, market prices reflect unbiased expectations about the value consequences of the alleged fraud based on information that is available before the fraud charges are resolved.

The second column of Table 3 reports the average abnormal returns to all 147 follow-up press announcements about our 249 fraud cases. We label these *subsequent* announcements. Even though these are not the first press stories about the fraud events, subsequent announcements regarding fraud indictments or firm suspensions are associated with statistically significant negative abnormal returns. Thus, news of an indictment or suspension conveys information to investors, on average, over and above that reflected in the initial press announcement. The results indicate that the valuation consequences of a fraud investigation, indictment, and suspension are cumulative, with additional value losses associated with each type of announcement. (Although not reported in the table, the mean abnormal return to suspension announcements that follow both investigation and indictment announcements also is negative and statistically significant.) As is the case with initial press announcements, subsequent announcements about a fraud resolution (settlement, guilty finding, or acquittal) are associated with small and statistically insignificant average abnormal stock returns.

Overall, the Table 3 results indicate that the average stock return is negative for announcements that a firm is being investigated, indicted, or suspended for fraud. The announcement effects are statistically significant when the announcement is the first public news about the fraud *and also* when a fraud investigation had previously been announced.

The market value losses are economically significant. Translated into dollar terms, the median market value loss for all 249 initial press announcements is \$5.03 million. The median loss is \$9.21 million for initial investigation announcements, \$5.07 million for initial announcements about indictments, \$8.09 million for initial suspension announcements, and \$1.05

million for initial announcements about resolutions.

VII. Cross-sectional determinants of abnormal returns

VII.A. Abnormal returns for Top 100 versus unranked defense contractors

Our finding that public announcements of (alleged) fraud are associated with large and statistically significant stock price declines is inconsistent with wrist-slap hypothesis, which holds that the average penalty for defense fraud is negligible. In this section we report on tests designed to distinguish between the deterrent and influential contractor hypotheses.

Each year, the DOD's Washington Headquarters Services Directorate for Information Operations and Reports publishes the 100 Companies Receiving the Largest Dollar Volume of Prime Contract Awards. We use a company's placement in this publication to indicate the firm's influence within the DOD. A firm's presence in the Top 100 list attests to the firm's success in obtaining defense contract awards, which implies that the firm produces specialized goods and services of unique importance to the DOD. These characteristics imply that Top 100 firms have substantial influence within the DOD. Under the influential contractor hypothesis, these firms are least likely to be subjected to substantial fraud penalties.

Of our 98 sample firms, 36 were ranked Top 100 firms before their fraud investigations. These firms combine for a total of 185 of the 249 fraud investigations in our sample. The remaining 64 events relate to unranked firms. Table 4 reports average initial announcement abnormal returns for the ranked and unranked contractors subsamples. Averaging across all types of initial press announcements, the mean abnormal return for ranked firms is -0.38% with a p-value of .098. For unranked firms, the mean abnormal return is -4.41% with a p-value of .008. Thus, while Top 100 contractors' average abnormal return is negative, it is only marginally significant and is significantly less negative than that for unranked contractors. The difference in mean abnormal returns is 4.03% with a p-value of .009. Average abnormal returns also are significantly less negative for Top 100 contractors when investigation, indictment, and suspension announcements are examined separately.

VII.B. Cross-sectional differences in announcement period abnormal returns

The results in Table 4 indicate that fraud announcement average abnormal returns are substantially higher for ranked Top 100 firms than for unranked firms. In this section we investigate several possible reasons for this difference by estimating cross-sectional OLS regressions using as the dependent variable each firm's two-day initial announcement abnormal stock return. A dummy variable ($D(\text{Top } 100)$) is used to identify whether a firm ranks among the Top 100 defense contractors at the time of its fraud announcement. The influential contractor hypothesis holds that the fraud penalty is smaller for influential firms, implying that the coefficient for $D(\text{Top } 100)$ should be positive.

To control for other effects on abnormal returns, we include the following regressors:

- Firm size, measured as the natural log of the sum of the market value of equity and book value of debt at year-end before the year of the fraud announcement. Firm size is included to control for the fact that many Top 100 defense contractors are large firms. If abnormal returns are positively related to firm size, we mistakenly could attribute the size effect to Top 100 status.
- %Gov, which is the percent of the firm's total revenue derived from government contracts in the fiscal year immediately preceding the year of the fraud announcement. Data are collected from proxy statements and the National Automated Accounting Research System (NAARS). We conjecture that a firm's exposure to the risk of harsh penalties for committing procurement fraud is positively related to its dependence on government contracts. Thus, the government-generated share of a firm's revenues should be negatively related to the abnormal return at the time of a fraud-related announcement.
- $\Delta\%Gov$, which is the change in %Gov measured from the fiscal year before the initial fraud announcement through the second year after the announcement year. This variable measures the extent to which the abnormal return is correlated with the subsequent change in the percent of the firm's total revenue derived from government contracts.
- Dummy variables that identify the nature of the initial fraud announcement. We include dummies for indictments, suspensions, and resolutions (which include settlements, guilt findings, and

acquittals).

- The firm's debt-equity ratio, measured as the book value of debt at the end of the fiscal year immediately preceding the fraud year, divided by the sum of the book value of preferred stock plus the market value of equity at the end of the prior year. We include the debt-equity ratio for two reasons. First, it controls for any systematic effect of firm leverage on the abnormal return. Second, it serves as a rough measure of the firm's proximity to financial distress. In one case in our sample involving Genisco Technology Corp., the court-imposed penalty was adjusted downward because the firm was close to bankruptcy.⁶ If such adjustments are both common and anticipated by investors, the abnormal stock return will be positively related to the firm's proximity to financial distress.

The results of the cross-sectional OLS regression are reported as Model 1 in Table 5. To aid in making inferences, we report two p-values. The first is computed using the ordinary least squares standard error, and the second uses the standard error corrected for heteroskedasticity using the procedure introduced by White (1980). The results indicate that firm size is not significantly related to the abnormal return. The coefficient on %Gov is negative with a p-value less than 0.10, consistent with the proposition that the abnormal stock return is negatively related to a contractors' dependence on government contracts. The coefficient on $\Delta\%$ Gov is positive, although its p-value increases from .019 to .276 when White-corrected standard errors are computed. This provides statistically weak evidence that the market value loss is positively related to the subsequent drop in the percentage of the firm's revenues from government contracts. There is statistically weak evidence that announcements of firm suspensions are associated with bigger losses in stock values, and statistically significant evidence that resolution announcements are positively related to the abnormal stock return. The debt-equity ratio also is positively related to the abnormal stock return, consistent with the conjecture that the expected legal penalties are lower for firms with high financial leverage.

⁶See "Genisco Agrees to Pay \$725,000 to Resolve U.S. Contracts Suit," The Wall Street Journal, October 10, 1988. The U.S. attorney assigned to the case stated that, "The company would be fined only about one-tenth of the maximum fine possible . . . because of its 'financial predicament.'"

The coefficient for D(Top 100) is positive and statistically significant with a p-value of 0.005 using OLS standard errors and 0.010 using White-corrected standard errors. This result is consistent with the results in Table 4, indicating that firms ranked among the Top 100 defense contractors have significantly less negative announcement period abnormal stock returns. Even after controlling for characteristics of the firm and the fraud, ranked contractors experience smaller market penalties than do unranked contractors.⁷

VII.C. Effects of the fraud characteristics

We also examined whether abnormal returns are related to characteristics of the fraud, by classifying all fraud cases using three additional dummy variables:

- D(intent) is set equal to one if the fraud is judged to be intentional. Intentional frauds include mischarging, bribery, falsifying test results, and submitting false claims or invoices. Such actions are intentional in the sense that at least one of the contractor's managers knowingly and willfully perpetuated the fraud. As Cohen (1991) reports, many penalty structures, including the current federal sentencing guidelines, impose larger penalties for frauds that are determined to be committed with managers' intent. This implies that the announcement-period market value losses will be relatively high for such frauds, i.e., that the coefficient on this variable will be negative.

- D(tangible) is set equal to one for frauds involving such tangible products as electronic equipment, aerospace products, aircraft and aircraft engines, ships, construction, weapons systems, miscellaneous equipment and components, and missiles. Other frauds involve such intangible products as research and development, computer software, data processing, engineering, security systems, and miscellaneous professional and technical services. The characteristics of intangible products may be harder to specify contractually, and the performance on such contracts are relatively difficult to monitor. Therefore, the size of the expected penalty for frauds dealing with intangible products may differ from those relating to tangible products.

- D(harmful) is set equal to one for frauds involving testing and quality control procedures,

⁷In sensitivity tests, we partitioned the D(Top 100) dummy variable into Top 100 quintile dummies, one each for firms ranked among the top 20 contractors, the next 20, and so forth. The coefficients are not monotonic in the quintile groupings, and generally are not significantly different among quintile groupings.

and for product substitution charges. We conjecture that such frauds are most likely to risk product failure and loss of life. As an example, in 1991 Aydin Corp. was charged with falsifying test results for a U.S. Army radio that was used in the 1991 U.S.- Iraq war. Other examples include a 1991 case in which General Motors' Hughes Aircraft division was charged with falsifying tests of electronic circuits used in aircraft and missiles, and a 1994 case in which Rohr Inc. admitted improperly testing certain parts that attach engines to the wings of Air Force C-5 transport planes.

The results from including these three regressors are reported as Model 2 in Table 5. None of the coefficients from Model 1 is materially affected by the inclusion of these three variables. Abnormal stock returns are not significantly related to D(Intent) or D(Harmful), but are positively related to D(tangible). One interpretation of this result is that frauds involving hard-to-monitor products and services trigger relatively high penalties. In unreported tests, we also entered as regressors interaction terms involving D(intent), D(tangible), and D(harmful). None of the interaction term coefficients, however, are statistically significant.

VII.D. The effects of repeat offenses on abnormal returns

As reported in Tables 1 and 2, many firms appear more than once in our sample, indicating that they are subjected to repeat investigations for different frauds. Most of these firms are ranked Top 100 defense contractors. It is possible that market penalties for repeat offenders are relatively small simply because investors anticipate that the firms will be subjects of fraud investigations. If so, we mistakenly could be confusing such partial anticipation for a Top 100 effect.

To test this conjecture, we reestimate the cross-sectional regression including three additional dummy variables that reflect a firm's recidivism. The first variable, D(repeat1), has a value of one if the firm previously was the subject of one fraud investigation during our sample period. D(repeat2) has a value of one if the firm previously was the subject of two investigations, and D(repeat3) has a value of one if the firm previously was the subject of three or more investigations.

Our dummy variables do not reflect fraud investigations that occurred before 1983. As reported, however, fraud investigations were rare before 1983.

The results including the three repeat offender dummy variables are reported as Model 3 in Table 5. None of the repeat offender dummy variable coefficients are significantly different from zero, and all other coefficients are similar to their values in the first regression. These results indicate that the announcement period abnormal returns are not significantly smaller for firms that are repeat offenders.

VII.E. Effects of the penalties imposed

The results from Models 1 - 3 in Table 5 indicate that Top 100 defense contractors have significantly higher average abnormal stock returns than do unranked firms, even after controlling for characteristics of the firm and fraud. In this section we investigate whether these results reflect a tendency for courts and regulators to impose smaller fines and penalties on ranked than on unranked contractors. We collected information on criminal fines, repayment of investigation costs, civil claims paid, and restitution and damages paid by the firm from the Dow Jones News Retrieval Service, The Wall Street Journal, and The Bureau of National Affairs, Inc.'s Federal Contract Reports. We were able to obtain data for 126 of our 249 cases. Ninety-one of these cases involve ranked contractors, and 35 involve unranked firms.

Data on the penalties for ranked and unranked contractors are reported in Table 6. On average, ranked firms paid higher fines, investigation costs, civil claims, and restitution and damages than did unranked firms. The mean total payment for the 91 cases involving ranked contractors is \$15.522 million, compared to a mean total payment of \$4.637 million for the 35 cases involving unranked firms, a difference that is statistically significant at the 1% level.

Ranked contractors, however, are larger than unranked contractors. Total payments for ranked contractors, while absolutely larger, average only 0.89% of the market value of firm equity, compared to 2.81% for unranked contractors. This suggests that unranked contractors experience lower abnormal stock returns partly because their court-imposed penalties are expected to be

relatively large compared to their market values.

To examine this conjecture further, we estimated a cross-sectional regression using the abnormal stock return as the dependent variable and including the ratio of total payments to the market value of equity (%Penalty) as an additional regressor. The results are reported as Model 4 in Table 5. The coefficient for the %Penalty variable is negative (-0.124), but is not significantly different from zero. This indicates that abnormal returns are not significantly correlated with the penalties eventually imposed on firms. The magnitude and significance of the coefficients for D(Top 100), %Gov, $\Delta\%$ Gov, and the debt-equity ratio all decrease in magnitude compared to Models 1 - 3 in Table 5. In tests not reported, however, we find that the smaller coefficients and decreased significance result primarily from restricting the sample to the 126 cases in which penalty information exists. For these 126 cases, the magnitudes and statistical significance of the coefficients for D(Top 100), %Gov, $\Delta\%$ Gov, and the debt-equity ratio all are reduced even when the %Penalty variable is excluded.

VIII. Additional evidence on the penalties imposed

VIII.A. Relation of the legal penalty to the fraud size

The fact that restitution, damages and civil claim payments are larger for Top 100 contractors than for unranked contractors indicates that ranked contractors tend to commit relatively costly frauds. In Panel B of Table 6, we report the ratio of the cost of the frauds to the total court-imposed payments made by penalized firms. To measure the fraud's cost, we use (i) restitution and damages paid, and (ii) restitution and damages plus civil claims paid. The mean ratio of restitution and damages to total payments for Top 100 contractors is 0.25. This ratio is insignificantly different from the mean ratio of 0.30 for unranked contractors. Results are similar when we use the sum of restitution and damages plus civil claims paid in the numerator. The mean ratio of this estimate of the fraud's cost to total payments is 0.78 for Top 100 firms, compared to 0.79 for unranked firms.

These results indicate that, on average, Top 100 and unranked firms face roughly equal

explicit legal penalties relative to the costs of their frauds. That is, unranked firms do not face higher legal penalties relative to the costs of their crimes, indicating that unranked firms' lower abnormal returns are not attributable to unusually harsh legal penalties.

VIII.B. Reasons for firms' losses in subsequent government revenues

The mean value of $\Delta\%Gov$ for firms in our sample is -1.09. This indicates that, on average, firms in our sample experienced a decrease of 1.09 points in the percent of their revenue derived from government contracts. Ranked contractors, however, experienced virtually no change at all. The mean decrease for Top 100 firms is 0.22 percentage points and is statistically insignificant. The mean decrease for unranked contractors is 3.50 percentage points. This is significantly different from zero *and* from the Top 100 contractors' decrease at the .001 level.

Table 7 reports the results of two OLS multivariate regressions that further reveal the factors that contribute to the loss in government revenue. In each regression, the dependent variable is $\Delta\%Gov$, which is the (signed) change in the percentage of the firm's revenues that derive from government contracts.

The results for Model 1 indicate that $\Delta\%Gov$ is relatively large for ranked Top 100 firms, consistent with our univariate findings. In addition, the coefficients for $D(\text{repeat}2)$ and $D(\text{repeat}3)$ both are negative and statistically significant, indicating that the loss in government contract revenue is particularly large for multiple offenders. The other variables in Model 1 are not significantly related to the change in government contract revenue.

Model 2 includes a new variable equal to the product of $D(\text{Top } 100)$ and $\%Gov$. The coefficient for this variable is positive (.075) and statistically significant (p-value = .023 using White-corrected standard errors). The coefficient for $\%Gov$ is negative (-.060) and statistically significant (p-value = .044). The coefficient for $D(\text{Top } 100)$ remains positive, but is smaller and less statistically significant than in Model 1.

These results indicate that ranked and unranked contractors have different experiences obtaining government contracts following a fraud event. Ranked contractors' government contract

revenues increase compared to those for unranked contractors. Furthermore, this increase is positively related to the share of the ranked contractor's revenues that derives from government contracts. For unranked contractors, in contrast, government-derived revenues decrease, and the decrease is larger for firms that rely heavily on such revenues. These results indicate that Top 100 contractors that have the most government contract revenue are penalized the least in the subsequent award of contracts. Unranked contractors that rely heavily on government contract revenue are penalized heavily. We infer that unranked contractors experience relatively large market value losses because they are expected to -- and do -- subsequently lose government contracts.

VIII.C. Do Top 100 contractors lose future defense contracts?

For ranked contractors, we have evidence not only on the firms' reliance on government contracts, but also on their awards of new defense procurement contracts. Thirty-six of our sample firms ranked in the Top 100 in the year before their first fraud press announcement. By the end of our sample period in 1995, eight of these firms dropped from the Top 100 rankings, in most cases because they were acquired by other firms. Of the remaining 28 firms, 13 ranked lower than their pre-investigation rankings, but 14 *increased* in rank. Among these 28 firms, the mean change in rank was positive, +0.9. These results indicate that, on average, Top 100 firms continued to receive defense contracts at roughly the same relative levels as before their fraud investigations. This finding is consistent with our evidence that ranked firms do not experience either large stock value declines or declines in their total government-derived revenues.

IX. Effects of the U.S. Sentencing Commission Criminal Penalty Guidelines

On November 1, 1991 the United States Sentencing Commission's Corporate Penalty Guidelines became law. The Guidelines increased substantially the criminal penalties for many federal crimes, including defense procurement fraud. Block and Lott (1991), for example, estimate that the expected criminal penalties for most crimes increased by 20-fold or more.

Table 8 reports on tests that examine the effects of the Sentencing Guidelines on the losses associated with fraud announcements. For all types of initial press announcements, the mean two-day abnormal stock return is essentially the same for those dated before and after November 1, 1991. For new investigations, however, the mean abnormal stock return is significantly more negative after the Sentencing Guidelines took effect. For the 21 new investigation announcements dated after November 1, 1991, the mean abnormal return is -4.42%, compared to the mean of -1.16 for announcements dated before then. The difference in means is 3.26%, and is statistically significant at the .01 level. Announcements of new fraud investigations therefore are associated with larger percentage market value declines after the sentencing guidelines were implemented than before.

We estimated several cross-sectional regressions that further examine the effect of the Sentencing Commission's guidelines. In each, the dependent variable is the two-day announcement period abnormal stock return. The regressions include dummy variables and their interactions for ranked Top 100 status, whether the announcement reports a new fraud investigation, and whether the announcement was made after the Sentencing Commission's Guidelines took effect. Consistent with the results in Table 8, the (unreported) results indicate that investigation announcements are associated with larger stock price declines particularly after the USSC Guidelines took effect. Furthermore, the larger losses after the USSC guidelines are concentrated among unranked contractors. Thus, press reports of new procurement fraud investigations are associated with larger stock price declines after the USSC Guidelines took effect, but primarily among unranked contractors.

X. Conclusions

Defense procurement, which consumes approximately 1.43% of the United States' gross national product, is conducted under extensive regulation and bureaucratic monitoring. The Department of Defense (DOD) and Department of Justice, for example, each have specialized departments to monitor defense contractors and investigate possible frauds.

Despite such efforts, little is known about the extent to which firms accused of procurement fraud suffer actual penalties. We find that the initial press announcement of a fraud investigation is associated with an average abnormal return of -1.64%. The average abnormal return when the initial announcement is of a fraud indictment is -1.70%, and for a suspension it is -4.49%. All of these estimates are statistically significant. These results imply that, on average, firms investigated, indicted, or suspended for fraud experience significantly negative abnormal returns. We also find that, on average, firms suffer additional negative abnormal returns upon follow-up indictment or suspension announcements about previously publicized fraud cases.

The abnormal returns, however, are not uniform across firms. Abnormal returns for firms ranking among the Top 100 defense contractors, and whom presumably have substantial influence within the Department of Defense, are significantly less negative than those for unranked contractors, even after controlling for firm size, the fraud's characteristics, and the firm's recidivism. Firms' market value losses are not significantly related to the size of any documentable court-imposed penalties. Instead, the market value losses are related to the subsequent decrease in the percent of the firm's revenues that derive from government contracts. This decrease, in turn, is relatively large for unranked contractors.

We also find that announcements of procurement fraud investigations are associated with significantly more negative abnormal stock returns after the 1991 adoption of the U.S. Sentencing Commission's criminal penalty guidelines for organizations. The higher losses, however, concentrate among unranked contractors, and are not evident among influential contractors.

The conclusion that emerges from these results is that influential contractors tend to be penalized lightly for procurement fraud, while other contractors are penalized heavily. The differential penalties, however, are not evident in fines or restitution paid. Rather, they reflect a difference in the firms' abilities to procure future government contracts. Influential firms suffer little or no decrease in their contract revenues, while other firms have large decreases.

Overall, these results support the view that the regulation of procurement fraud works to transfer wealth toward influential defense contractors. This view, which we label the influential

contractor hypothesis, is consistent with anecdotal evidence used variously to argue that fraud penalties are too small or too large. For example, news accounts that such contractors as Boeing, General Dynamics, and Northrop suffer few real costs even when subjected to large apparent penalties are consistent with our finding that the abnormal stock returns suffered by Top 100 contractors are close to zero. Arguments such as that by Fossedal (1986), claiming that procurement fraud penalties are so large as to deter some marginal firms from competing in the defense market, are consistent with our finding that unranked contractors' abnormal stock returns are significantly negative.

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Table 1
Defense procurement fraud sample

Distribution of initial and subsequent announcements related to 249 cases of alleged defense procurement fraud for 98 firms between 1983 and 1995. Observations are grouped by type and year of announcement. Panel A reports on the initial announcements pertaining to the 249 cases. Panel B reports on the sequence of 147 subsequent announcements about these 249 cases. Investigations include announcements of investigations by the Department of Defense, Department of Justice, Congressional committees, or a whistle-blower lawsuit filed against the contractor. Indictments include formal indictments or civil suits brought by the Department of Justice, or an announcement that the Department of Justice would join a whistle-blower lawsuit. Suspensions are punitive actions taken by the Department of Defense before the fraud case is resolved. Such actions include suspension of the contractor from bidding on new contracts, halting or reducing payments to the contractor, or rejecting deliveries from the contractor. Settlements are out-of-court negotiated settlements with the Department of Justice in which the contractor does not admit guilt. Guilt announcements are of formal verdicts or guilty pleas entered by the contractor. Acquittal announcements are of formal verdicts of innocence or decisions by the Department of Justice to drop the case.

Year	Investigations	Indictments	Suspensions	Resolution announcements:			Total
				Settlement	Guilt	Acquittal	
<i>Panel A: Initial announcements</i>							
1983	7	0	0	0	1	0	8
1984	11	2	2	1	0	0	16
1985	21	4	3	2	1	1	32
1986	16	1	1	0	0	0	18
1987	7	5	1	1	3	0	17
1988	26	4	8	5	0	0	43
1989	16	3	0	4	0	1	24
1990	16	4	0	5	4	0	29
1991	2	2	0	4	1	0	9
1992	7	3	0	2	1	0	13
1993	7	1	0	6	1	1	16
1994	3	4	0	4	1	0	12
1995	4	2	0	6	0	0	12
Total	143	35	15	40	13	3	249
<i>Panel B: Subsequent announcements</i>							
Second	-	20	22	30	19	14	105
Third	-	-	8	7	14	7	36
Fourth	-	-	-	2	4	0	6
Total	-	20	30	39	37	21	147
<i>Panel C: Total initial and subsequent announcements</i>							
Total	143	55	45	79	50	24	396

Table 2

Distribution of 249 cases by industry, number of cases and firm size for 98 firms implicated in one or more procurement fraud cases between 1983 and 1995. Standard Industrial Classification (SIC) codes are as defined by Compustat at the fiscal year end preceding the firm's first case. Each firm's decile is determined by matching its pre-announcement size (year-end market value of equity) to the corresponding decile of all NYSE/AMEX or all OTC firms on the CRSP database.

Recidivism Rate: # of Cases Per Firm					2-digit SIC Code	Total Firms	Size-based Deciles									
One	Two	Three	>Three	Total Cases			Larger firms							Smaller firms		
						10	9	8	7	6	5	4	3	2	1	
1				1	15	1							1			
1				1	20	1	1									
1				1	25	1							1			
1	1			3	28	2	1	1								
1				1	30	1	1									
2	1			4	33	3			1				1			
3	1		1	10	34	5	3	2								
3	5	1	2	26	35	11	9	1					1			
13	1	1	2	45	36	17	20	1	1			2			2	
11	3	1	11	102	37	26	17	4	1	1	2		1			
7	3	3	3	38	38	16	8		2	2	2				2	
	1			2	48	1	1									
2				2	49	2				1	1					
3				3	50	3		1	1		1					
	1			2	61	1	1									
3	1			5	73	4	1	2			1					
3				3	87	3	1				1		1			
55	18	6	19	249		98	65	9	7	6	5	4	2	6	4	0

Two-digit SIC definitions:

- | | |
|-------------------------------------------------|--------------------------------------------------|
| 15 = Building Construction | 37 = Transportation Equipment |
| 20 = Food and Kindred Products | 38 = Measurement Instruments |
| 25 = Furniture and Fixtures | 48 = Communications |
| 28 = Chemicals and Allied Products | 49 = Electric, Gas, and Sanitary Services |
| 30 = Rubbers and Miscellaneous Plastic Products | 50 = Durable Goods - Wholesale |
| 33 = Primary Metal Industries | 61 = Non-depository Credit Institutions |
| 34 = Fabricated Metals | 73 = Business Services |
| 35 = Machinery and Computer Equipment | 87 = Engineering and Management Related Services |
| 36 = Electronic and Electrical Equipment | |

Table 3

Size-adjusted cumulative abnormal returns associated with announcements pertaining to cases of defense procurement fraud categorized by announcement type and timing

Average abnormal stock returns associated with 396 announcements for 98 firms suspected of military procurement fraud between 1983 and 1995. Each cell reports the mean and median (in parentheses) abnormal return, the proportion of positive abnormal returns, and the number of announcements in that category. Superscripts indicate the significance levels associated with t-tests and generalized sign tests. Events are grouped by announcement type and according to whether the announcement was the initial or a subsequent public revelation of potential fraud. Abnormal returns are measured relative to a benchmark index determined by the firm's market value of equity as described in Dimson and Marsh (1986) and Kothari and Wasley (1991).

Type of press announcement	Initial announcements	Subsequent announcements	All announcements
Investigations	-1.64% ^{***} (-1.01%) 34% ^{***} n=143	—	-1.64% ^{***} (-1.01%) 34% ^{***} n=143
Indictment filed	-1.70% ^{***} (-1.37%) 34% n=35	-4.34% ^{***} (-1.78%) 20% ^{**} n=20	-2.66% ^{***} (-1.69%) 29% ^{***} n=55
Bidding or payments suspended	-4.49% ^{***} (-2.37%) 27% ^{**} n=15	-2.37% ^{***} (-1.53%) 23% ^{***} n=30	-3.18% ^{***} (-1.88%) 24% ^{***} n=45
Resolutions:			
Settlement	-0.46% (-0.27%) 38% n=40	1.34% (0.50%) 64% n=39	0.42% (0.02%) 51% n=79
Guilt finding	2.21% (0.53%) 54% n=13	0.21% (0.24%) 59% n=37	0.73% (0.24%) 58% n=50
Acquittal	1.02% (1.55%) 67% n=3	0.53% (0.02%) 57% n=21	0.59% (0.11%) 58% n=24
All announcements	-1.41% ^{***} (-0.79%) 36% ^{***} n=249	-0.58% ^{**} (-0.12%) 48% n=147	-1.11% ^{***} (-0.59%) 40% ^{***} n=396

*, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively, based on a two-tailed test.

Table 4

Size-adjusted cumulative abnormal returns associated with announcements pertaining to cases of defense procurement fraud categorized by contractor prominence

Average abnormal stock returns associated with 249 initial announcements for 98 firms suspected of military procurement fraud between 1983 and 1995. Each cell reports the mean and median (in parentheses) abnormal return, the proportion of positive abnormal returns, and the number of announcements in that category. Averages are grouped by announcement type and according to whether the targeted firm was among the Department of Defense's Top 100 Contractors and by announcement type. Abnormal returns are measured relative to a benchmark index determined by the firm's market value of equity as described in Dimson and Marsh (1986) and Kothari and Wasley (1991).

Announcement types:	Contractor prominence		Difference in means
	Top 100 contractors	Unranked contractors	
Investigations	-0.39% (-0.66%) 38%* n=112	-6.16%*** (-4.45%) 29%** n=31	5.77%***
Indictment filed	-0.87%*** (-0.81%) 30% n=23	-3.29%*** (-3.86%) 42% n=12	2.42%**
Bidding or payments suspended	-1.37% (-0.92%) 36% n=11	-14.11%*** (-7.72%) 0%* n=4	12.74%**
Resolutions (including settlements, guilt findings, and acquittals)	-0.22% (-0.18%) 46%* n=39	-0.26% (0.25%) 35% n=17	-0.04%
All announcements	-0.38%* (-0.53%) 38%** n=185	-4.41%*** (-3.36%) 28%*** n=64	4.03%***

*, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively, based on a two-tailed test.

Table 5:
Determinants of the cross-section of abnormal returns

Ordinary least squares estimates of the relations between abnormal returns associated with initial announcements of defense procurement fraud and characteristics of the fraud. D(Top 100) is a dummy variable for firms listed among the top 100 recipients of defense contracts. Firm size is the natural logarithm of the sum of the market value of equity and book value of debt. %Gov is the percent of the firm's revenue received from government contracts. D(indictment), D(suspension), and D(resolution) are dummy variables that identify the announcement type. D(intent) is a dummy variable with a value of one if the fraud involves mischarging, overcharging, bribery, falsified test results, or submission of false claims and invoices. D(repeat1), D(repeat2), and D(repeat3) are dummy variables that reflect the contractor's recidivism, having values of one if the firm previously was the subject of one, two, or more fraud investigations. The left-hand number in each bracket is the p-value from using OLS estimators for the standard error; the right-hand number is the p-value using White-corrected standard errors.

Variable	Model 1	Model 2	Model 3	Model 4
Intercept	-0.059 [.317, .577]	-0.055 [.367, .551]	-0.058 [.361, .627]	0.000 [.996, .998]
D(Top 100)	0.039*** [.005, .010]	0.041*** [.003, .005]	0.038** [.007, .013]	0.022 [.030, .127]
Firm size	0.001 [.737, .837]	0.000 [.996, .997]	0.001 [.782, .872]	-0.001 [.695, .819]
%Gov	-0.027* [.069, .092]	-0.034** [.023, .041]	-0.028 [.081, .121]	-0.020 [.151, .284]
Δ%Gov	0.124 [.019, .276]	0.106 [.042, .322]	0.125 [.021, .296]	0.064* [.124, .062]
D(indictment)	0.000 [.998, .997]	0.005 [.658, .587]	-0.000 [.984, .977]	0.002 [.859, .847]
D(suspension)	-0.031 [.071, .153]	-0.031 [.067, .117]	-0.030 [.076, .158]	-0.018 [.338, .352]
D(resolution)	0.018** [.071, .020]	0.014* [.156, .058]	0.019** [.066, .020]	0.017** [.019, .028]
Debt/equity	0.010 [.028, .118]	0.012* [.014, .089]	0.011 [.029, .145]	0.001 [.725, .683]
D(intent)		-0.009 [.244, .277]		
D(tangible)		0.028** [.011, .017]		
D(harmful)		-0.011 [.313, .398]		
D(repeat1)			0.008 [.482, .448]	
D(repeat2)			0.003 [.824, .779]	
D(repeat3)			0.001 [.910, .912]	
%Penalty				-0.124 [.435, .404]
n	249	249	249	126
F-value	2.35	2.12	1.77	3.18
p-value	[0.019]	[0.020]	[0.061]	[0.002]
Adjusted R ²	0.137	0.155	0.128	0.117

*, **, and *** denote significance at the 0.01, 0.05, and 0.10 levels, respectively, based on a two-tailed test using the White-corrected standard errors.

Table 6

Fines and other court-imposed payments related to procurement frauds, and changes in government-derived revenues

Panel A reports mean and median values of fines and other payments made by firms relating to defense procurement frauds, 1983-95. Panel B reports on two measures of the ratio of the fraud's cost to court-imposed penalties. Data are from the Dow Jones News Retrieval Service, *The Wall Street Journal*, and the Bureau of National Affairs, Inc.'s *Federal Contract Reports*. Top 100 contractors are identified from the Department of Defense's annual publication, *100 Companies Receiving the Largest Dollar Volume of Prime Contract Awards*.

	Top 100 Contractors	Unranked Contractors	All Contractors
<i>Panel A</i>			
Fines paid			
Mean (\$1,000's)	2,669 ^{***}	1,141 ^{***}	2177
Median (\$1,000's)	1375	339	1000
Number of cases	40	19	59
Investigation costs repaid			
Mean (\$1,000's)	1,403*	750*	1,299
Median (\$1,000's)	3,500	750	786
Number of cases	21	4	25
Civil claims paid			
Mean (\$1,000's)	12,209 ^{***}	4,606 ^{***}	10,218
Median (\$1,000's)	3,625	840	3,000
Number of cases	62	22	84
Restitution and damages paid			
Mean (\$1,000's)	14,838 ^{***}	2,267 ^{***}	10,894
Median (\$1,000's)	3,500	1,350	1,800
Number of cases	35	16	51
Total payments			
Mean (\$1,000's)	15,522 ^{***}	4,637 ^{***}	12,499
Median (\$1,000's)	4,363	2,000	3,750
Number of cases	91	35	126
Total payments divided by firm value			
Mean	0.89% ^{***}	2.81% ^{***}	1.42%
Median	0.13%	1.23%	0.26%
Number of cases	91	35	126
<i>Panel B</i>			
Ratio of restitution and damages to total payments			
Mean (\$1,000's)	.25	.30	.26
Median (\$1,000's)	.00	.00	.00
Number of cases	91	35	126
Ratio of restitution, damages, and civil claims to total payments			
Mean (\$1,000's)	.78	.79	.78
Median (\$1,000's)	1.00	.98	1.00
Number of cases	91	35	126

*, **, and *** denote that the mean levels for ranked and unranked contractors differ significantly at the 0.10, 0.05, and 0.01 levels, respectively, based on a two-tailed test.

Table 7:
Determinants of the change in government revenues

The change in the percent of a firm's revenues that derive from government contracts ($\Delta\%Gov$) is the dependent variable. D(Top 100) is a dummy variable for firms ranked among the top 100 recipients of defense contracts. Firm size is the natural logarithm of the sum of the market value of equity and book value of debt. %Gov is the percent of the firm's revenue received from government contracts. Debt/equity is the ratio of the book value of debt to the sum of the book value of preferred stock plus the market value of common stock. D(repeat1), D(repeat2), and D(repeat3) are dummy variables that reflect the contractor's recidivism, having values of one if the firm previously was the subject of one, two, or more fraud investigations. The left-hand number in each bracket is the p-value from using OLS estimators for the standard error; the right-hand number is the p-value using White-corrected standard errors.

Variable	Model 1	Model 2
Intercept	-0.002 [.978, .974]	0.006 [.934, .920]
D(Top 100)	0.057*** [.000, .001]	0.029* [.168, .083]
Firm size	-0.002 [.679, .603]	-0.001 [.757, .701]
%Gov	-0.010 [.611, .495]	-.060** [.048, .044]
Debt/equity	0.006 [.307, .286]	0.007 [.210, .206]
D(repeat1)	-0.010 [.490, .461]	-0.007 [.620, .608]
D(repeat2)	-0.058*** [.002, .002]	-0.060*** [.001, .001]
D(repeat3)	-0.026** [.065, .027]	-0.028** [.050, .018]
%Gov x D(Top 100)		0.075** [.034, .023]
n	249	249
F-value	3.14	2.93
p-value	[0.003]	[0.004]
Adjusted R ²	0.063	0.076

*, **, and *** denote significance at the 0.10, 0.05, and 0.01 levels, respectively, based on a two-tailed test using the White-corrected standard errors.

Table 8
Effects of the U.S. Sentencing Commission's Criminal Penalty Guidelines

Two-day cumulative average abnormal stock returns associated with 249 initial announcements for 98 firms suspected of military procurement fraud between 1983 and 1995. Each cell reports the mean and median (in parentheses) abnormal return, the proportion of positive abnormal returns, and the number of announcements in that category. Abnormal returns are measured relative to a benchmark index determined by the firm's market value of equity as described in Dimson and Marsh (1986) and Kothari and Wasley (1991). Announcements are partitioned into two groups surrounding the November 1, 1991 implementation of the United States Sentencing Commission's federal sentencing guidelines for organizations, which increased criminal penalties for procurement frauds.

Announcement types:	Announcement date		Difference in means
	Before November 1991 Sentencing Commission Penalty Guidelines	After November 1991 Sentencing Commission Penalty Guidelines	
Investigations	-1.16% ^{***} (-0.92%) 36% ^{***} n=122	-4.42% ^{***} (-1.22%) 24% ^{**} n=21	3.26% ^{**}
Indictment filed	-2.39% ^{***} (-2.25%) 30% n=23	-0.37% ^{***} (-0.42%) 42% n=12	-2.02%
Bidding or payments suspended	-4.79% ^{***} (-2.37%) 27% ^{**} n=15	-- -- -- n=0	--
Resolutions (including settlements, guilt findings, and acquittals)	-0.23% (-0.32%) 32% [*] n=34	0.95% (0.43%) 59% n=22	-1.18%
All announcements	1.42% ^{***} (-0.99%) 34% ^{***} n=194	-1.39% ^{***} (-0.35%) 42% n=55	-0.03%

^{*}, ^{**}, and ^{***} denote significance at the 0.10, 0.05, and 0.01 levels, respectively, based on a two-tailed test.