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Alford, Laura C.; Hansen, Stephen C.; Hermis, Judith M.

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Predicting Federal Contractor Misconduct

Laura C. Alford, Assistant Professor
Graduate School of Defense Management
Naval Postgraduate School
555 Dyer Road – IN 216, Monterey, CA 93943
Laura.alford@nps.edu
831-656-3951

Stephen C. Hansen, Assistant Professor
School of Business
University of Southern Maine
517 Luther Bonney Hall,
Stephen.c.hansen@maine.edu
207-780-4032

Judith M. Hermis, Assistant Professor
Graduate School of Defense Management
Naval Postgraduate School
555 Dyer Road – IN 218, Monterey, CA 93943
jmhermis@nps.edu
831-656-3419

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Abstract

Each year, the United States Federal government procures goods and services in an amount that exceeds three percent of the nation's gross domestic product. Federal acquisitions are subject to binding legislative guidance, including the expansive Federal Acquisition Regulations and agency-specific supplements. In addition, contracting firms face oversight from a variety of executive sub-agencies, all of whom monitor ongoing and *ex post* performance. Uncle Sam enjoys virtually unlimited power to reclaim previously disbursed revenues, to debar (or ban) misbehaving contractors from future government business, and to imprison and fine contracting miscreants. Despite the unique nature of the business environment and the monetary importance of Federal contracting, prior literature generally ignores the determinants of contractor misconduct. Whether and to what extent firm characteristics predict a range of misbehavior, covering a span from minor statutory violations to fraud commission, is the subject of this paper. We exploit a hybrid research design that combines both within- and between-sample elements and document a consistent association between certain contractor characteristics and misconduct commission and severity. We also find that artifacts of the awarding agency display a predictable relationship with contractor misconduct, underscoring the complex institutional setting in which contractor deviancy occurs.

“Procurement fraud includes, but is not limited to, cost and labor mischarging, defective pricing, price fixing, bid rigging, and defective and counterfeit parts. The potential damage...extends well beyond financial losses¹.“

1.0 Introduction

Imagine walking into your local superstore. You need bread, milk, and toilet paper. The store is out of these items, so you pay for them in exchange for an I.O.U. Now imagine that instead of consumables, you were purchasing services, and rather than \$30, this purchase cost \$2.7 million. Except you never received the goods. This is the situation in which the U.S. Department of Defense (DoD) recently found itself. A contractor, Michael Kitrel, was charged with conspiracy to commit larceny using government money. Between 2014 and 2019, Kitrel defrauded the DoD of over \$2 million dollars in a scheme that involved establishing shell companies to sell the government non-existent goods and services. Although this example is a fabulously extravagant display of misconduct, deviant contractor behavior is a frequent occurrence in the Federal contracting milieu.

Apart from the natural intrigue all humans feel when learning of other parties’ foibles and follies, what is the value of studying Federal government procurement contract misbehavior? In 2017, the Federal government’s procurement activities amounted to more than three percent of the nation’s gross domestic product; the U.S. government contract awards contracts with a total value \$400 billion annually (Heese and Cavazos, 2019). The sheer quantity of money changing hands and the volume of requisitions suggest that contractors have ample opportunity to cut corners, both illegally and extra-legally. Anecdotal evidence suggests the extra-legal avenue of

¹ Inspector General, U.S. Department of Defense, Semiannual Report to Congress (2018)

misbehavior is rapidly expanding². Hard evidence supports this assertion. According to a 2018 report from the Department of Defense (DOD), the DOD executed nearly 16 million contracts totaling \$334 billion between 2013 and 2017 and had criminal convictions during that period that resulted in recovery of \$792 million from fines, penalties, restitution, and forfeiture of property³. Despite the magnitude of the issue, contractor misconduct is relatively underexplored in scholarly literature⁴.

In this paper, we study the characteristics of those firms who receive procurement contracts from the U.S. Federal government and empirically assess the firm-specific characteristics that affect the firm's propensity to commit procurement misbehavior. Using a sample of instances of misconduct ranging from relatively minor statutory violations up to and including outright fraud (such as the Kitrel case), we find that certain characteristics of the contracting firm are consistently associated with the propensity to commit different types of misbehavior⁵. These characteristics predict not only the probability of a contractor infraction but also are associated with misconduct severity. We exploit a within- and between-subjects research design that uses deviant firms as their own control. Using a long time-series panel reduces some of the concerns endemic to these model specifications and also mitigates the potential that unobservable, correlated omitted variables drive our reported results.

Interestingly, we find that not only firm characteristics but also the awarding agencies themselves are predictably associated with the commission of procurement misconduct. The prevalence of both customer and provider level predictors for misbehavior hint at the rich

² The source for this anecdote is a Senior Manager specializing in government contractors at a Big 4 firm.

³ Office of the Under Secretary of Defense for Acquisition and Sustainment. December, 2018. Report to Congress Section 889 of the FY 2018 NDAA Report on Defense Contracting Fraud.

⁴ Heese and Cavazos (2019) is a recent exception. We discuss their findings in Section 2.2.

⁵ Misbehavior falls into one of 15 classifications listed in Table 1.

institutional setting surrounding government requisitions. Our results help illuminate the previously underexplored world of government contracts.

Our manuscript builds on the rich literature on the determinants and consequences of firm misbehavior. Prior research focuses on financial reporting misbehavior. For example, firm characteristics are a consistent and economically meaningful predictor of financial misbehavior ranging from earnings management to internal control issues and outright securities fraud (e.g., Jones, 1991; Bell and Carcello, 2000; Gunny, 2010; Dechow et al., 2011; and Donelson et al., 2017). Additionally, this stream of research investigates characteristics of the auditor and other enforcement bodies, such as the Securities and Exchange Commission, and finds that factors as divergent as auditor risk exposure, auditor specialization, and regulator workload affect the probability of firm-level misbehavior (e.g., Gunny and Hermis, 2020; Correia, 2014; Blankley et al., 2012; Hogan and Wilkins 2008). Taken together, the results in prior literature demonstrate that, subject to sufficiently high capital market pressures and a sufficiently low probability of being caught, firms will manipulate their reported numbers. Although it is theoretically likely that firms will behave in a similar fashion when conducting their business with major customers, prior literature is silent on that issue. Our paper seeks to address this gap in a setting where misbehavior ranges from minor statutory violations to egregious misconduct like the Kitrel example.

2.0 Background and Literature Review

2.1 Federal contracting overview

The Federal contracting process is initiated with the issuance of a Request for Proposal (RFP), a document that describes the nature of the goods and services the government wishes to

purchase. Contractors who wish to bid on an RFP submit full proposals that include information such as price estimates, technical expertise, and a description of prior performance on similar government and commercial contracts. A government official, known as the Contracting Officer or CO, will award the contract in accordance with relevant regulation and according to the terms stated in the RFP. For contracts that are not required (either by the RFP or because of regulation) to be awarded to the lowest cost bidder, award decisions are generally based on a combination of technical proficiency, bid price, and performance history on similar government contracts. Statutory regulations heavily influence the contract award process. The Federal Acquisition Regulation (FAR) forms the primary statutory basis for contract awards; the FAR is supplemented by agency-specific regulations, such as the Defense Federal Acquisition Regulation (DFAR) for the Department of Defense.

After the contract is awarded, the CO monitors the contractor's ongoing performance. The FAR and supplemental regulations govern not only the award process, but also post-award performance. For example, contractors working on contracts in excess of \$750,000 are required to comply with the Cost Accounting Standards (CAS), which govern how the contractor prepares incurred cost submissions to submit to the government for cost reimbursement. The corpus of contracting law contains a number of proscribed behaviors, ranging from minor technical violations such as submitting costs without sufficient supporting documentation to instances of outright fraud, such as invoicing the government for services that were never provided. Penalties for violating the statutes surrounding contracting range from minor fines and revenue forfeitures to criminal proceedings and imprisonment.

Given misbehavior of sufficient severity, contractors can be debarred, meaning the Federal government will no longer do business with them. In practice, the procuring agency can and

often does petition for a debarment exception that allows the award of a contract to a debarred contractor. Data on debarments is not publicly-available, but an industry expert with whom we spoke said debarments and subsequent exceptions are not unheard of.

Having dispensed with this brief overview of the contracting process, we now turn our attention to reviewing prior research.

2.2 Literature Review

We build on the ample prior literature related to the determinants and consequences of financial reporting misconduct. Extant literature finds that firms exhibit a higher propensity to engage in instances of misbehavior varying from relatively minor infractions (such as accruals management) to fraudulent financial reporting when capital market pressures incentivize them to do so. For example, Jones (1991) reports in her seminal study that firms duck down earnings via downward accruals management when undergoing import relief investigations. Sloan (1996) finds that the market consistently misprices accruals relative to cash flows, giving firms a strong incentive and opportunity to manage earnings to benchmarks using accruals manipulation. In addition to accruals manipulation, firms engage in real earnings management via discretionary expenditures such as research and development and advertising expenses and also shift operating income expenses to non-core income to meet the market's earnings expectations (Gunny, 2010; McVay, 2006). Cross-sectional research demonstrates that earnings volatility is more pronounced for fiscal year earnings than for alternate 12-month periods ending in quarters one, two, or three of the fiscal year, consistent with widescale prevalence of within GAAP earnings management (Gunny et al., 2013).

With regard to fraudulent violations of securities law, characteristics of both registrants and regulators predict the likelihood of fraud and the probability of fraud detection. Firm

qualities such as size, financial distress, operational complexity, and the presence of alternative monitoring mechanisms (such as strong corporate governance) are predictably associated with financial reporting fraud (e.g., Dechow et al., 2011). The greater the intensity of capital market pressures facing the firm, the higher the likelihood of fraud commission and the greater the fraud severity (e.g., Wang, 2013; Files et al., 2014).

Not only firm specific factors but also characteristics of regulators impact financial reporting misconduct. Gunny and Hermis (2020) report that the busier the U.S. Securities and Exchange Commission (SEC) is around the filing date of the firm's Annual Report on Form 10-K, the less likely that firm is to receive a comment letter. DeFond et al. (2018) extends this result to the setting of SEC enforcement actions and reports that Big 4 auditors whose offices are geographically proximate to the location of the SEC are more likely to issue negative audit opinions when the audit client has received prior attention from the regulator. Independent of SEC regulatory activities, auditors and boards of directors both provide less stringent regulatory oversight during busy periods (e.g., Lopez and Peters, 2012; Fich and Shivdasani, 2012). Taken together, these results suggest that regulatory resource constraints interact with registrants' incentives to affect financial reporting misconduct.

Due to the opacity of Federal government contracting, research into the occurrence and consequences of contractor misconduct is relatively rare. However, several recent papers partially illuminate the setting of procurement contracts at the Federal level. Cohen and Li (2020) report that firms for whom the U.S. government is a major customer face reduced demands in uncertainty, which allows these firms to reap efficiency gains from customer-specific investments. This result builds on research in the private sector, which reports that having a major commercial customer leads to similar organizational improvements as supplier firms build

economies of scale and knowledge efficiencies from investing in a primary customer (Patatoukas, 2012).

Given the importance of the government's business to firms and the deleterious nature of repercussions, it remains an open empirical question whether, on average, contractors will engage in procurement misbehavior if given the opportunity and motive to do so. Suppliers of proprietary and unique goods and services (such as major weapons platforms) exhibit strong bargaining power because the government cannot easily replace supplier A with supplier B if supplier A behaves deviously (e.g., Mills et al., 2013). The opacity of the contracting environment exacerbates agency problems, enhancing the potential for deviant contractor behavior (e.g., DeSouza, 1985 and Schapper et al., 2006). As discussed in Section 2.1, the threat of debarment is not an unequivocal negative from the contractor's perspective, particularly if the contractor is the sole supplier of the good or service in question. Heese and Cavazos (2019) study the setting of fraud allegations against contractors and find that the government continues to procure the majority of goods and services from accused contractors subsequent to fraud accusations. However, the government does change the monitoring mechanisms embedded in the contract in an apparent attempt to constrain subsequent fraud on the part of contractors.

Ours is the first study to examine cross-sectional determinants of procurement misconduct. We differ from prior literature in several ways. First, the FAR specifies 15 categories of misconduct that cover a spectrum from minor to extreme with regard to the extent of the contractor's misbehavior. While instances of fraud are uniquely entrancing, we know little about the setting surrounding the commission of less severe (but still illegal) instances of misconduct. Our results extend knowledge in this area by documenting contractor characteristics associated with misconduct commission *across all 15 categories*. Secondly, we control for

characteristics of the awarding agency and the contracts themselves. Hansen and Hermis (2020) find that certain Federal agencies and the nature of the contract are predictably associated with contractor outputs. Related studies largely ignore these inputs, allowing us to draw finer conclusions regarding the interaction of contractor, agency, and contract characteristics on the commission of misconduct. Finally, we use firms as their own control, mitigating concerns that unobservable contractor characteristics contaminate our results. To the extent that a within-sample research design removes variation of interest, reported parameters represent a conservative estimate of the association between our independent variables and contractor misbehavior.

3.0 Data and Sample Selection

Our sample is drawn from three sources: The Project on Government Oversight Federal Contractor Misconduct Database (POGO FCMD), the Compustat North America Fundamentals Annual File, and the procurement contract awards database found at [usaspending.gov](https://www.usaspending.gov). Our goal was to form a sample of publicly-traded U.S. Federal government contractors between 2008 and 2016, including firm-years with and without POGO-identified misconduct⁶.

The sample formation broadly involved the following three steps: 1. Identifying contractors with at least one instance of procurement contract misconduct during the sample period; 2. Intersecting misconduct firms with data from Compustat, and, 3. Collecting data on total government contracts and characteristics of the largest contract from [usaspending.gov](https://www.usaspending.gov).

⁶ We started the sample in 2008 because that is the first year for which [usaspending.gov](https://www.usaspending.gov) data is available. Our sample concludes in 2016 because we calculate misconduct commission in a rolling three-year window with the last window ending in 2019.

We began by collecting an initial sample of all contractors in POGO FCMD between 2008 and 2019. POGO is a non-partisan organization committed to transparency at all levels of the Federal government. The FCMD "...is a compilation of misconduct...committed by the top federal government contractors from 1995 to the present." POGO FCMD data is drawn from numerous sources, including government press releases and reports, court documents and pleadings, and Freedom of Information Act (FOIA) requests. FCMD further stratifies misconduct into 15 categories, which we present in Table 1 Panel A⁷.

Table 1 about here.

The 15 categories of contractor misconduct that POGO FCMD identifies can be further stratified into subcategories of government specific misconduct and general misconduct. Government specific misconduct comprises misbehavior that displays a clear conceptual connection to the underlying construct of procurement contract fraud. Examples of government specific misconduct include government contract fraud, cost and labor mispricing, and poor contract performance. We also identify a subset of POGO FCMD contractors who engage in what we term general misconduct; this is misbehavior that violates statutory standards imposed on government contractors, but the violation need not share a strong theoretical connection to activities that fall under the purview of procurement fraud. Examples of general misconduct include labor, environment, and human rights related issues. Table 1, Panel A shows that POGO FCMD includes 496 contractors with 1,273 instances of misbehavior between 2008 and 2016, of

⁷ See <https://www.contractormisconduct.org/>.

which 436 (837) instances related to government specific (general) misconduct, including 224 (272) contractors.

To form a panel of firm-years, we begin with the 496 misconduct contractors described in Table 1 Panel A. We then multiply 496 by nine (the number of years in the sample period) to obtain a list of 4,464 contractor-years (i.e., firm-years) between 2008 and 2016. Because of the expansion to nine years, our sample now includes observations with no misconduct. For each of the 4,496 firm years generated by the previous step, we then manually match the contractor-year to a firm-year in Compustat. This step is critical because not all misbehaving contractors included in POGO FCMD are publicly traded. Eliminating privately held contractors leaves an intermediate sample of 764 firm-years. We then drop firm-years with incomplete Compustat data necessary to calculate our control variables (including prospective, or forward-looking controls), leaving 334 firm-years.

To calculate controls related to government contract characteristics, we searched usaspending.gov for all contracts awarded to each parent company and subsidiary for the 334 remaining observations. For each firm-year, we hand-collected the dollar value of government contracts awarded as well as the Federal government agency and contract type for the largest contract award from usaspending.gov⁸. After eliminating firm-years missing critical usaspending.gov data as well as eliminating outliers (such as firms with negative government sales), we had a final sample of 301 firm-years, including 194 misconduct-years and 107 non-misconduct years,

⁸ [Usaspending.gov](http://usaspending.gov) is maintained by the Department of Treasury's Bureau of Fiscal Services. Since 2000, the U.S. government has disclosed contract-level information including total value, contractor, and granting agency for contracts greater than \$25,000. There is a time delay between the contract award date and the reporting date in usaspending.gov. The Department of Defense (DoD) enjoys a longer reporting lag than other Federal agencies for national security reasons, and classified contracts or contracts whose public reporting might jeopardize security are not reported. The Contracting Officer (CO), or government employee responsible for contract administration, is responsible for reporting contract updates (known as modifications) to usaspending.gov.

comprised of 40 unique publicly-traded contractors. The sample selection is documented in Table 2.

Table 2 about here

4.0 Research Design

We are investigating what firm-specific characteristics predict the commission of contractor-related misconduct. A critical element of this approach is our choice of endogenous variable for misconduct.⁹ Our primary endogenous variables are binary variables that we set equal to one if firm i committed at least one instance of government specific (general) misconduct in a three-year window around the 10-K filing date for year t , otherwise zero.¹⁰ These are concurrent and prospective variables. For instance, if a firm has misconduct in 2018, then the misconduct variable will be one for years 2016, 2017, and 2018. There are two flavors of binary variables, government specific misconduct (*Misconduct_govt_binary*) and general misconduct (*Misconduct_gen_binary*). Table 1, Panel B shows that $110/301 = 37\%$ ($157/301 = 52\%$) of our sample has a non-zero government specific (general) misconduct variable.

⁹ Data on the dollar value impact of misconduct instances is arguably a stronger measure of the underlying construct of severity. Unfortunately, such data is not available.

¹⁰ We chose to use a three-year window to capture the commission of various misbehaviors because POGO does not match misconduct detection dates to the corresponding fiscal year in which the misconduct occurred. For example, if POGO reports that firm ABC committed labor related misconduct in 2010, it is possible the misconduct could be attributable to work undertaken by ABC in 2010 or pertaining to an earlier fiscal year. It is not uncommon for firms to be awarded a federal contract for which work will not start until a later fiscal year, so misconduct in (for example) 2010, could relate to a contract that was previously awarded but for which substantial work has not yet commenced. Finally, the Federal departments that enforce the statutory requirements around government contract award, execution, and post-performance monitoring (such as the Defense Contract Audit Agency) face a substantial backlog. Based on these factors and related research in SEC enforcement, we use a three-year rolling window to capture the commission of contractor misbehavior (e.g., Bozanic et al., 2017).

To answer our research question, we draw on the rich literature regarding the predictors and cofactors associated with financial reporting misconduct (e.g., Bao et al., 2020; Bell and Carcello, 2000; and Dechow et al., 2011). Our research design is inspired by Donelson et al. (2017), who measure the impact of internal control weaknesses on financial reporting fraud¹¹. We supplement their model with variables found in Hansen and Hermis (2020), who find that certain controls for government contracting-specific behavior predict contractor-level outcomes. These controls include total government sales, the awarding agency on the contract, and whether the contract is for goods and services or research and development work. Our baseline logit model is specified as follows:

$$\begin{aligned}
& \Pr(\text{Govt_Specific_Misconduct}/\text{General_Misconduct}) = \\
& \beta_0 + \beta_1 \text{Ln_Marketcap}_{i,t} + \beta_2 \text{AggregateLoss}_{i,t} + \beta_3 \text{Ln_Segments}_{i,t} + \beta_4 \text{Foreign_Cur}_{i,t} \\
& + \beta_5 \text{Ext_Sales_Growth}_{i,t} + \beta_6 \text{Merger}_{i,t} + \beta_7 \text{Restructure}_{i,t} + \beta_8 \text{FScore}_{i,t} + \beta_9 \text{Ln_GovSales}_{i,t} \\
& + \beta_{10} \text{TopAgency}_{i,t} + \beta_{11} \text{Gov_Service}_{i,t} + \beta_{12} \text{Gov_RD}_{i,t} + \beta_{13} \text{Year}_t + e_{i,t} \quad (1)
\end{aligned}$$

A brief overview of all variables in equation (1) follows¹². The variable *Govt_Specific_Misconduct* (*General_Misconduct*) is a binary outcome variable equal to one if contractor *i* committed government specific (general) misconduct in a three-year window around the 10-K filing date for year *t*, otherwise zero. *Ln_Marketcap* is the natural logarithm of market capitalization; *AggregateLoss* is an indicator variable equal to one if the total of income before extraordinary items for firm *i* in years *t* and *t-1* sum to less than zero, zero otherwise.

¹¹ Donelson et al. included controls for Big 4 auditor, auditor resignations, and internal control weaknesses. We eliminated these from our model because all of our sample firms used Big 4 auditors, there were no auditor resignations, and fewer than three percent of firms in the final sample experienced any weakness related to internal controls over financial reporting.

¹² Appendix A contains full definitions of all variables.

Ln_Segments is the natural logarithm of operating and geographic segments; *ForeignCur* is a binary variable equal to one if firm *i* has a non-zero foreign currency translation adjustment, otherwise zero. *Ext_Sales_Growth* equals one if the year-over-year adjusted sales growth for firm *i* falls into the top quintile for that three-digit NAICS industry-year. *Merger* is equal to one if the firm has a non-zero acquisition expense, else *Merger* equals zero. *Restructure* is the aggregate restructuring charges for firm *i* in years *t* and *t-1*, scaled by firm *i*'s market capitalization. *F-Score* is the predicted probability of financial reporting fraud using the model found in Dechow et al. (2011), divided by the unconditional financial reporting fraud rate of 0.0037 found in the same paper; *LnGovSales* is the natural logarithm of firm *i*'s government sales, *TopAgency* is a series of indicator variables for the awarding agency of firm *i*'s largest government contract in year *t*, and *GovService(GovRD)* are indicators equal to one if firm *i*'s largest government contract in year *t* was for services (research and development), otherwise zero. *Year* are yearly dummies.

To accurately capture the determinants of contractor misbehavior, we must match treatment (misbehaving) firm-years with a control group of government contractor firms¹³. Specifically, our approach is driven by the relative scarcity of publicly traded government contractors not mentioned in POGO FCMD. Few government contractors are reported in Compustat (relative to the universe of all contractors), and those few are already well represented in our sample, leaving a scarcity of out-of-sample contractors to serve as well-behaved controls.

¹³ The institutional features of government contracting, such as the prevalence of one major customer and the preponderance of associated regulations, renders contractors substantially different from non-contractors. For this reason, using non-contractors in the control group would not appropriately capture observable and unobservable variation in firm-level characteristics.

Our approach is to start with the Universe of contractors in POGO FCMD and then narrow the list to those with both Compustat and usaspending.gov data¹⁴. Our data collection and analysis generates a set of firm data both with and without specified misconduct (see Table 1, Panel B). The post-collection universe contains three types of firms: firms with no misconduct for all years they are in the sample, firms with misconduct for every year they are in the sample, and firms who sometimes have misconduct and sometimes do not (See Table 1, Panel C). We use a blend of both between- and within-subject experimental design that includes each of these three groups. Firms who sometimes have misconduct use the firm as its own control. The spell of no-misconduct controls for the spell of misconduct. Using the firm as its own control theoretically holds constant unobservable but important determinants of the propensity to engage in contracting misconduct. Firms who have no misconduct serve as controls for firms who always have misconduct.

As a robustness test, we investigate a finer version of our binary endogenous variables. Prior research finds that even among misbehaving firms, the severity and extent of misconduct varies widely (e.g., Gunny and Hermis, 2020 and Correia, 2014). We therefore parse the commission of either government specific or general misconduct into finer categories based on the number of occurrences of misconduct recorded in POGO for firm i in a three-year period around year t . Specifically, we create the trinary variable *Misconduct_govt_trinary* (*Misconduct_gen_trinary*) that is equal to zero if firm i committed no misconduct in the three

¹⁴ Like many studies where the outcome variable is not fully observable, our research design faces the challenge of partial observability. We can safely assume that firms in POGO FCMD misbehaved, but it is unclear whether firms not in POGO were well behaved or engaged in misconduct but the misconduct was undetected. Ignoring partial observability can bias estimators in many empirical specifications (Poirier, 1980). However, barring systematic bias in the omission of misbehavior instances from POGO FCMD, the partial observability problem is more likely to add noise than directional bias (either for or against finding a statistically significant result).

year window; one if firm i committed only one instance of government specific (general) misconduct in the three-year window, and equal to two if firm i committed two or more instances of government specific (general) misconduct in the three-year window. Measuring the number of misconduct occurrences this way allows us to draw finer conclusions about the factors driving the commission of occasional misbehavior versus the determinants of persistently deviant contract-related conduct. Table 1, Panel D contains the data on our trinary variable.

5.0 Results

5.1 Descriptive statistics

Table 1, Panel A describes instances of general and government specific misconduct identified in POGO FCMD between 2008 and 2019¹⁵. Panel A shows that 74 contractors committed 165 instances of government specific misconduct during this time frame, and 100 firms committed 356 occurrences of general misconduct. Misbehavior examples identified total to 174 contractors committing 521 instances of POGO-identified contractor misconduct. Due to significant overlap among the commission of both general and government specific misconduct within a firm-year, the final sample of contractor misbehavior included in empirical analyses contains 40 unique contractors who committed 194 instances of misconduct.

The differing regulatory environments and procurement requirements among Federal government agencies naturally raises the question of whether certain Federal agencies are likely to experience a higher propensity towards contractor misbehavior. To address this question, we

¹⁵ The sample period ends in 2016, but we measure misconduct in a three-year window.

reported the number of government specific and general misconduct instances attributable to contracts from each Federal agency in our final sample for the entire misconduct window. These frequencies are reported in Figure 1.

Figure 1 about here

As we can see in Figure 1, the relative occurrence of government and general misconduct varies greatly from agency to agency. The varying budgets and nature of procurements attributable to different agencies is the most likely explanation for this result¹⁶.

Table 3 reports descriptive statistics for the full sample of 301 observations for 40 unique firms. Our sample contains firms which are comparatively large in both the stock market (median $Ln_Marketcap$ is 10.441) and in government contracting (median $Ln_Govsales$ is 7.5292). One other control variable is work discussing. The F-score is a measure of the probability of securities fraud and is scaled so that a firm with a score of 1.0 has the median probability of committing fraud. Our sample is unusual in that the highest value of F-score in our sample is an untabulated 0.98, which means that every observation in our sample has below median probability of securities fraud.

5.2 Main results

Table 4 reports the results of estimating equation (1) using three specifications of the dependent variable: government specific binary misconduct, general binary misconduct, and any

¹⁶For example, the Department of Health and Human Services (HHS) is the largest Federal agency by spending, responsible for 27.5% of aggregate expenditures in fiscal year 2020 ([usaspending.gov](https://www.usaspending.gov)).

(either general or government specific) binary misconduct. For all three specifications in Table 4, the coefficients on contractor size (*Ln_Marketcap*), operational complexity (proxied by *Restructure*), and the extent of the firm's total sales to the government (*Ln_Govsales*) display consistent and statistically significant explanatory power with regard to contractor misconduct. The coefficients for *Ln_Marketcap* and *Ln_Govsales* are both positively significant, consistent with larger firms and firms who engage in more government sales displaying a higher propensity to engage in procurement misbehavior.

The coefficient on *Restructure* is significantly negative in Table 4, suggesting that firms with a greater degree of operational complexity, represented by the presence of non-zero restructuring charges, have a lower propensity to exhibit procurement misconduct. The negative association between *Restructure* and misconduct is initially puzzling. However, to the extent that contractors with opaque operating environments are already subject to greater contract oversight due to the complexity of their operational milieu, the negative coefficient on *Restructure* reported in all three specifications of equation (1) reported in Table 4 are unsurprising¹⁷. The presence of strong oversight mechanisms plausibly explains the persistent, negative and significant coefficients on *DHS* and *DoD* also displayed in Table 4. To the extent that strong monitors reduce a contractor's *ex ante* likelihood of engaging in misconduct, contractors who work for agencies with high bargaining power face incentives to comply with applicable rules and regulations throughout the entire contracting process.

¹⁷ Federal contractors face a significant burden to comply with statutory guidance around government procurements, including the Federal Acquisition Regulation (FAR), agency-specific FAR supplements, and the Cost Accounting Standards (CAS). Additionally, the government retains the right to review contract performance on an as-needed or *ex post* basis and can require the return of previously disbursed revenues. The regulatory and institutional environment surrounding government procurement activities collectively form an oversight function with regard to the behavior of contractor firms.

Table 5 Panel A estimates a multinomial logit version of equation (1) using our trinary government specific misconduct dependent variable. The results reported in Table 5 Panel A are largely identical to those in Table 4, with the addition of *GSA* (the Government Services Administration) as a consistent factor predicting a lower likelihood of both relative mild (zero to one occurrences) and more severe (two or more occurrences) of misconduct. For the sake of parsimony, we will avoid a detailed discussion of coefficients reported in Table 5 Panel A. Taken together, both specifications of equation (1) presented in this table suggest that larger and more government-focused contractors are more likely to engage in misconduct, while firms whose business centers around Federal agencies with strong purchasing power (and, by extension, powerful oversight mechanisms) face a reduced incentive to misbehave. Finally, Table 5 Panel B reports the joint test of coefficient equality between the two versions of equation (1) reported in Panel A. We are able to reject the null hypothesis of the equivalence of the coefficient of *Ln_Govsales* in both specifications estimated in Panel A of this table. The rejection of the null hypothesis is intuitively appealing and consistent with the prediction that the extent of the contractor's total sales to the Federal government is a critical predictor of not only the propensity to engage in misconduct, but also the severity of misconduct.

Finally, we estimate equation (1) using the trinary specification of general misconduct stratified by misconduct severity, similar to the regressions on trinary government specific misconduct described above. These results are reported in Table 6 Panel A and largely imitate those presented in Table 4 and Table 5 Panel A, with the notable exception that *Ln_Govsales* is only significant in the most egregious cases of general misconduct, while the same cofactor is not statistically significant for less severe instances of misbehavior. Similar to Table 5 Panel B,

Table 6 Panel B allows us to reject the null hypothesis of coefficient equality on *Ln_Govsales* between low and high severity cases of government misconduct.

Taken together, the results in Tables 4, 5, and 6 suggest that firm size, extent of government business, and awarding agency consistently and significantly impact the commission of government specific and general contractor misconduct. Given the reduced budgets and ballooning requirements of Federal agencies, the ability to efficiently focus oversight on contractors with the highest *ex ante* probability of misbehavior will allow the government to maximize the value and efficiency of each dollar of marginal revenue. These results should be of interest to policy makers responsible for setting priorities with regard to procurement oversight mechanisms and resource allocations.

5.3 Limitations of results

As discussed in Section 3.0, we use a blended research design with both with-in and between-subject controls. Overall, our data collection began with firms who exhibited misconduct and ended with firms who had no misconduct, firms who always had misconduct, and firms who had spells with and without misconduct.

Our discussion of limitations will initially focus on the groups of firms with spells with and without misconduct. For those firms, each firm is its own control. In technical parlance, this is known as a within-subjects experimental design. The within-subjects design we used is significantly advantageous because it removes across-subject (i.e., cross-sectional) variation, providing a more powerful statistical test and reassurance that unobservable firm-specific artifacts drive our empirical results.

However, this same research design suffers from several confounding effects. Firstly, the practice effect suggests that treated subjects learn from receiving the treatment over time and acquire information and knowledge that alter their relationship with the treatment in the future. In our setting, this could manifest as firms misbehaving once, getting caught, and then either not misbehaving or misbehaving in such a way that they do not get caught. Such practice effects and attendant knowledge acquisition are artifacts of the firm's information environment, and these unobservable firm effects are mitigated to the extent possible by the use of each firm as its own control.

Within-subject designs may also suffer from carryover effects that occur when the effect of treatment n for firm i persists and contaminates the delivery of subsequent treatments to that same firm. In our case, firms who engage in several instances of misconduct, either simultaneously or in rapid succession, could face lingering operational and financial pressures that contribute to or arise from the treatment, contaminating inferences drawn from subsequent analyses on that firm. To the extent that our sample firms misbehave but their misconduct is detected, carryover effects are more likely to introduce noise and are unlikely to systematically bias our empirical results. Additionally, Greenwald (1976) suggests that carryover effects can be reduced by separating the treatments in time. As long as the treatment (i.e., misconduct) does not impose permanent effects, the use of a long time-series panel helps reduce these concerns. In other words, as long as contractors are not permanently, inalterably, and radically deviant, using an eight-year panel should be significant to mitigate carryover threats¹⁸.

¹⁸ Within-subjects designs may also face sensitization, which is when the individual or firm learns from the treatment and predicts the outcome of the experiment. This is more of a concern in experimental research, so we do not consider it here.

Our sample also contains firms which always committed misconduct and those who never committed misconduct. This portion of our sample exhibits across-subject variation which increases the noise in our estimation. However, there is one compensating factor. In order for a firm to be in our sample they must have shown up in POGO as having committed misconduct during 2008 – 2016. For firms with no misconduct in our sample, the misconduct year(s) dropped due to missing data. So those observations with no misconduct have had misconduct in our sample period but not in our sample.

Rather than using our approach, we could have chosen an out-of-sample design by forming a control based on something akin to propensity score matching¹⁹. We chose not to pursue this course of action because few government contractors are publicly traded, with data reported in Compustat, and those few who do have Compustat data are already included in our sample. Speaking plainly, we did not have sufficient data to construct an out-of-sample control group. Taken together, the limitations on our chosen research design do not subsume the validity or robustness of our empirical results. We have dealt with them to the extent possible, but we recommend some caution when interpreting results. Of course, further research will be a most welcome development to solidify our understanding of the predictors of procurement misconduct.

6.0 Conclusion

This paper examines the characteristics of the firms and agencies associated with federal contracting misconduct. Using the POGO database together with detailed contract-specific

¹⁹ See Armstrong et al. 2010.

information, we find that firm size, extent of government business, and awarding agency consistently and significantly impact the commission of government specific and general contractor misconduct.

Our study contributes to both the corporate fraud and contracting literatures. It expands the literature on corporate fraud by identifying firm traits that are associated with the commission of federal contracting misconduct. It contributes to the contracting misconduct by providing evidence that there are agency specific characteristics that may be conducive to a misconduct-friendly environment.

The worldwide coronavirus pandemic is likely to exert significant budgetary pressures at all levels of the government, forcing agencies to more diligently maximize the value obtained for each dollar of procurements. As the government contends with these fiscal pressures, it behooves policy makers to understand the conditions under which business partners are likely to misbehave so they can proactively monitor the most likely miscreants.

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Appendix A. Variable Definitions

Variable	Definition
<i>Misconduct_govt_binary</i>	An indicator variable equal to 1 if firm <i>i</i> committed government specific misconduct (government contract fraud, ethics, cost/labor mischarge, defective pricing, or poor contract performance) within three years of the 10-K filing date for year <i>t</i> , otherwise 0. (POGO FCMD)
<i>Misconduct_gen_binary</i>	An indicator variable equal to 1 if firm <i>i</i> committed general misconduct (import/export, intellectual property, labor, environmental, human rights, securities, tax, antitrust, or health) within three years of the 10-K filing date for year <i>t</i> , otherwise 0. (POGO FCMD)
<i>Misconduct_govt_trinary</i>	An indicator variable equal to 1 if firm <i>i</i> committed one instance of government specific misconduct within three years of the 10-K filing date for year <i>t</i> ; equal to 2 if firm <i>i</i> committed more than one reported government specific misconduct within three years of the 10-K filing date for year <i>t</i> ; otherwise 0. (POGO FCMD)
<i>Misconduct_gen_trinary</i>	An indicator variable equal to 1 if firm <i>i</i> committed one instance of general misconduct three years of the 10-K filing date for year <i>t</i> ; equal to 2 if firm <i>i</i> committed instance general misconduct within three years of the 10-K filing date (plus seven days of the firm's audited financial statements) for year <i>t</i> ; otherwise 0. (POGO FCMD)
<i>Ln_Marketcap</i>	The natural logarithm of market capitalization, (Compustat: PRCC F * CSHO)
<i>Aggregate_Loss</i>	An indicator variable equal to 1 if the total of income before extraordinary items in years <i>t</i> and <i>t-1</i> sum to less than zero otherwise 0. (Compustat: IB _t +IB _{t-1} < 0)
<i>Ln_Segments</i>	The natural logarithm of the number of operating and geographic segments. (Compustat)
<i>Foreign_Cur</i>	An indicator variable equal to 1 if the firm has a non-zero foreign currency translation adjustment, otherwise 0. (Compustat: FCA)
<i>Ext_Sales_Growth</i>	An indicator variable equal to 1 if the year-over-year three digit Naics industry-adjusted sales growth falls into the top quintile for the industry-year, otherwise 0. (Compustat: SALE)
<i>Merger</i>	An indicator equal to 1 if firm <i>i</i> has non-zero acquisition expenses in year <i>t</i> , otherwise 0. (Compustat: AQP)
<i>Restructure</i>	Firm <i>i</i> 's aggregate restructuring charge (Compustat: RCP * -1) in years <i>t</i> and <i>t-1</i> scaled by market capitalization in year <i>t</i> . (Compustat: CSHO * PRCC F)
<i>Fscore</i>	The predicted probability from Model (1) of Dechow et al. (2011) divided by the unconditional fraud rate of 0.0037 in Dechow et al. (2011).

<i>Ln_Govsales</i>	The natural logarithm of the total value of all government contracts signed by firm <i>i</i> in year <i>t</i> (usaspending.gov)
<i>GovService</i>	An indicator variable equal to 1 if firm <i>i</i> 's largest government contract in year <i>t</i> is for a service, otherwise 0. (usaspending.gov)
<i>GovRD</i>	An indicator variable equal to 1 if firm <i>i</i> 's largest government contract for year <i>t</i> is for research and development, otherwise 0. (usaspending.gov)
<i>DoJ</i>	An indicator variable equal to 1 the awarding agency for firm <i>i</i> 's largest government contract in year <i>t</i> is the U.S. Department of Justice, otherwise 0. (usaspending.gov)
<i>GSA</i>	An indicator variable equal to 1 the awarding agency for firm <i>i</i> 's largest government contract in year <i>t</i> is the U.S. General Services Administration, otherwise 0. (usaspending.gov)
<i>DHS</i>	An indicator variable equal to 1 the awarding agency for firm <i>i</i> 's largest government contract in year <i>t</i> is the U.S. Department of Homeland Security, otherwise 0. (usaspending.gov)
<i>HHS</i>	An indicator variable equal to 1 the awarding agency for firm <i>i</i> 's largest government contract in year <i>t</i> is the U.S. Department of Health and Human Services, otherwise 0. (usaspending.gov)
<i>DoE</i>	An indicator variable equal to 1 the awarding agency for firm <i>i</i> 's largest government contract in year <i>t</i> is the U.S. Department of Education, otherwise 0. (usaspending.gov)
<i>DoD</i>	An indicator variable equal to 1 the awarding agency for firm <i>i</i> 's largest government contract in year <i>t</i> is the U.S. Department of Defense, otherwise 0. (usaspending.gov)

Figure 1. Misconducts by Government Agency by Fiscal Year

Agency	# Obs	Type of Misconduct	No Misconduct	One Misconduct	Two or More Misconducts
DoJ	9	Govt specific	7	1	1
		General	5	3	1
GSA	13	Govt specific	10	2	1
		General	4	6	3
DHS	15	Govt specific	10	4	1
		General	6	6	3
HHS	35	Govt specific	21	12	2
		General	8	8	19
DoE	7	Govt specific	3	2	2
		General	1	4	2
DoD	193	Govt specific	125	47	21
		General	107	39	47

Table 1. Program on Government Oversight Misconduct Data 2008-2019*

Panel A. Data on Misconduct

	Initial Contractor s	Instance s	Sample Contractor s	Instance s
Government Specific				
Govt Contract Fraud	104	250	30	88
Ethics	49	79	19	34
Cost/Labor Mischarge	21	26	8	14
Defective Pricing	4	4	3	3
Poor Contract Perf	46	77	14	26
Total Government Specific	224	436	74	165
General				
Import/Export	15	19	6	6
Intellectual Property	12	21	3	5
Labor	100	402	28	144
Environment	34	124	16	65
Human Rights	1	2	1	1
Securities	31	63	11	15
Tax	4	5	3	3
Antitrust	35	75	14	33
Health	40	126	18	84
Total General	272	837	100	356
Total All	496	1273	174	521

*We have excluded the category "other".

There is significant overlap between sample contractors. There are only 40 individual contractors in our final sample. There is also a significant overlap in instances occurring in a year. There are only 194 misconduct observations in our final sample.

Panel B. Sample Yearly Observations by Misconduct Type, N = 301

	No General Misconduct	General Misconduct	Total	
No Gov specific Misconduct	107	84	191	Panel C. Sample
Gov specific Misconduct	37	73	110	
Total	144	157	301	

Panel C. Yearly Observations by Category, N =301

	No Misconduct	Mixed	Always Misconduct
Government Specific	83	173	45
General	130	150	21

Panel D. Trinary Misconduct, N = 301

	0 misconducts in a 3 year window	1 misconduct in a 3 year window	2+ misconducts in a 3 year window
General Misconduct	85	74	142
Gov specific Misconduct	104	119	78

Table 2. Sample Creation

	Reduction	Remaining
Pogo firms for 2008 – 2016 (496 x 9)		4,464
Less		
Not on Compustat	3,700	764
Missing Compustat Items	427	337
Missing Usaspending.gov items	21	316
Oultiers (Ex. negative gov sales)	15	301
Final Sample		301 (40 firms)

Table 3. Descriptive Statistics (N = 301)

Variable	Mean	Std Deviation	25th	50th	75th
Independent Variables					
<i>Misconduct_govt_binary</i>	0.6545	0.4763	0	1	1
<i>Misconduct_gen_binary</i>	0.7176	0.4509	0	1	1
<i>Misconduct_govt_trinary</i>	0.9136	0.7740	0	1	2
<i>Misconduct_gen_trinary</i>	1.1894	0.8489	0	1	2
Dependent Variables					
<i>Ln_Marketcap</i>	10.043	1.9894	8.4359	10.441	11.692
<i>Aggregate_Loss</i>	0.0332	0.1795	0	0	0
<i>Ln_segments</i>	2.1755	0.4454	1.9459	2.1972	2.4849
<i>Foreign_Cur</i>	0.2259	0.4189	0	0	0
<i>Ext_Sales_Growth</i>	0.0532	0.2247	0	0	0
<i>Merger</i>	0.0631	0.2436	0	0	0
<i>Restructure</i>	0.0104	0.0460	0	0	0.0071
<i>Fscore</i>	0.4783	0.1795	0.3324	0.4925	0.6091
<i>Ln_Govsales</i>	7.5313	2.5448	6.1139	7.5292	9.0833
<i>GovService</i>	0.0299	0.1706	0	0	0
<i>GovRD</i>	0.1694	0.3757	0	0	0
<i>DoJ</i>	0.0299	0.1706	0	0	0
<i>GSA</i>	0.0432	0.2036	0	0	0
<i>DHS</i>	0.0498	0.2180	0	0	0
<i>HHS</i>	0.1163	0.3211	0	0	0
<i>DoE</i>	0.0233	0.1510	0	0	0
<i>DoD</i>	0.6412	0.4804	0	1	1

Table 4. Logit Results for Binary Endogenous Variables (N = 301)

	Government Specific Binary, 1 = Misconduct	General Binary, 1 = Misconduct	Any Misconduct Binary, 1 = Misconduct
	Coefficient (z score)	Coefficient (z score)	Coefficient (z score)
<i>Ln_marketcap</i>	0.3330*** (0.002)	0.2872*** (0.004)	0.1966* (0.080)
<i>Ag_loss</i>	0.2518 (0.776)	1.4716 (0.159)	0.4149 (0.698)
<i>Ln_seg</i>	0.7757** (0.031)	0.5884* (0.100)	0.4932 (0.242)
<i>Foreigncurrency</i>	0.4155 (0.285)	-0.3401 (0.388)	0.5609 (0.315)
<i>Ext_Sales_Grow</i>	-0.5490 (0.426)	-0.0083 (0.990)	-0.0088 (0.991)
<i>Merger</i>	-0.6616 (0.321)	0.1942 (0.756)	-1.0389 (0.123)
<i>Restructure</i>	-18.999* (0.077)	-10.606* (0.081)	-15.172* (0.078)
<i>Fscore</i>	0.9169 (0.407)	-2.2634** (0.021)	-1.5019 (0.207)
<i>Ln_Govsales</i>	0.3303*** (0.000)	0.2016*** (0.003)	0.3309*** (0.000)
<i>Gov_service</i>	0.2013 (0.823)	0.1272 (0.891)	-0.2209 (0.856)
<i>Gov_RD</i>	-0.0209 (0.961)	-0.4158 (0.318)	-0.8213* (0.095)
<i>DoJ</i>	-0.3389 (0.763)	-	-
<i>GSA</i>	-3.3560*** (0.000)	-0.1356 (0.885)	-1.4143 (0.179)
<i>DHS</i>	-2.2399** (0.012)	-1.4619* (0.056)	-2.1261** (0.038)
<i>HHS</i>	-1.189 (0.128)	0.9774 (0.274)	0.6777 (0.585)
<i>DoE</i>	-1.677 (0.143)	-	-
<i>DoD</i>	-1.994*** (0.003)	-1.0166** (0.027)	-1.6354** (0.014)
Pseudo R2	0.2325	0.2109	0.2452
N	301	301	301

Yearly dummies included. *DoJ* and *DoE* perfectly predict outcomes for *General*, *Binary* and *Any Misconduct*, *Binary* and are excluded.

*** (**) [*] significant at the 1% (5%) [10%] level.

Table 5. Multinomial Logit Results for Trinary Govt Specific (N = 301)

Panel A. Estimation Results

	Outcome (1) versus (0)	Outcome (2) versus (0)
	Coefficient (z score)	Coefficient (z score)
<i>Ln_marketcap</i>	0.3081** (0.013)	0.3538*** (0.005)
<i>Ag_loss</i>	0.3738 (0.713)	-0.0310 (0.980)
<i>Ln_seg</i>	1.1972*** (0.005)	0.3893 (0.340)
<i>Foreigncurrency</i>	0.6505 (0.115)	-0.1673 (0.737)
<i>Ext_Sales_Grow</i>	-0.9959 (0.254)	-0.2060 (0.785)
<i>Merger</i>	-0.8470 (0.265)	-0.3659 (0.642)
<i>Restructure</i>	-21.109 (0.107)	-14.429 (0.242)
<i>Fscore</i>	0.3314 (0.790)	1.4540 (0.284)
<i>Ln_govsales</i>	0.2751*** (0.000)	0.4327*** (0.000)
<i>Gov_service</i>	-0.4833 (0.665)	0.6875 (0.474)
<i>Gov_RD</i>	-0.2020 (0.677)	0.2405 (0.625)
<i>DoJ</i>	-0.6733 (0.593)	0.1023 (0.937)
<i>GSA</i>	-3.3761*** (0.001)	-3.4857*** (0.009)
<i>DHS</i>	-2.9843*** (0.005)	-1.5000 (0.125)
<i>HHS</i>	-1.0358 (0.215)	-1.5763* (0.081)
<i>DoE</i>	-2.3800* (0.070)	-0.8500 (0.492)
<i>DoD</i>	-2.1285*** (0.003)	-1.8897*** (0.009)
Pseudo R2	0.2073	

N	301	
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Yearly dummies included.

*** (**) [*] significant at the 1% (5%) [10%] level

Panel B. Tests of Equality of Coefficients

	Outcome (2) – Outcome (1) = 0
	Coefficient (Prob > ChiSquare)
<i>Ln_marketcap</i>	0.0456 (0.730)
<i>Ag_loss</i>	-0.4047 (0.770)
<i>Ln_seg</i>	-0.8079** (0.050)
<i>Foreigncurrency</i>	-0.8178* (0.058)
<i>Ext_Sales_Grow</i>	0.7903 (0.332)
<i>Merger</i>	0.4811 (0.535)
<i>Restructure</i>	6.5796 (0.636)
<i>Fscore</i>	1.1226 (0.397)
<i>Ln_govsales</i>	0.1576** (0.047)
<i>Gov_service</i>	1.1707 (0.222)
<i>Gov_RD</i>	0.4425 (0.360)
<i>DoJ</i>	0.7755 (0.515)
<i>GSA</i>	-0.1097 (0.932)
<i>DHS</i>	1.4843 (0.109)
<i>HHS</i>	-0.5405 (0.444)

<i>DoE</i>	1.5299 (0.154)
<i>DoD</i>	0.2388 (0.6612)

Table 6. Multinomial Logit Results for Trinary General (N = 301)

	Outcome (1) versus (0)	Outcome (2) versus (0)
	Coefficient (z score)	Coefficient (z score)
<i>Ln_marketcap</i>	0.2556** (0.025)	0.4124*** (0.001)
<i>Ag_loss</i>	1.9166* (0.086)	0.8554 (0.512)
<i>Ln_seg</i>	-0.1783 (0.665)	1.2724*** (0.005)
<i>Foreigncurrency</i>	-0.1388 (0.769)	-0.3545 (0.409)
<i>Ext_Sales_Grow</i>	-0.5620 (0.494)	0.1796 (0.821)
<i>Merger</i>	0.4247 (0.550)	-0.0299 (0.970)
<i>Restructure</i>	-7.6571 (0.263)	-11.197 (0.269)
<i>Fscore</i>	0.5897 (0.638)	-3.195** (0.018)
<i>Ln_govsales</i>	0.0232 (0.777)	0.2946*** (0.000)
<i>Gov_service</i>	0.6673 (0.556)	0.1131 (0.915)
<i>Gov_RD</i>	-0.5802 (0.255)	-0.2378 (0.620)
<i>DoJ</i>	16.671 (0.985)	13.936 (0.988)
<i>GSA</i>	1.7857* (0.094)	-0.9211 (0.389)
<i>DHS</i>	0.7799 (0.410)	-2.2021** (0.020)
<i>HHS</i>	0.3355 (0.782)	1.5966* (0.094)
<i>DoE</i>	14.269 (0.984)	13.452 (0.985)
<i>DoD</i>	0.3913	-1.0948*

	(0.568)	(0.052)
Pseudo R2	0.2406	
N	301	

Yearly dummies included.

*** (**) [*] significant at the 1% (5%) [10%] level.

Panel B. Tests of Equality of Coefficients

	Outcome (2) – Outcome (1) = 0
	Coefficient (Prob > ChiSquare)
<i>Ln_marketcap</i>	0.1567 (0.219)
<i>Ag_loss</i>	-1.0611 (0.314)
<i>Ln_seg</i>	1.4508*** (0.002)
<i>Foreigncurrency</i>	-0.2157 (0.608)
<i>Ext_Sales_Grow</i>	0.7416 (0.422)
<i>Merger</i>	-0.4546 (0.559)
<i>Restructure</i>	-3.5400 (0.749)
<i>Fscore</i>	-3.7844*** (0.006)
<i>Ln_govsales</i>	0.2715*** (0.001)
<i>Gov_service</i>	-0.5542 (0.545)
<i>Gov_RD</i>	0.3423 (0.500)
<i>DoJ</i>	-2.7346** (0.019)
<i>GSA</i>	-2.7068*** (0.003)
<i>DHS</i>	-2.9820***

	(0.002)
<i>HHS</i>	1.2610 (0.208)
<i>DoE</i>	-0.8175 (0.473)
<i>DoD</i>	-1.486** (0.025)