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# Government procurement and changes in firm transparency

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## Abstract:

The government requires its suppliers to have certain internal information processes to reduce uncertainty about their ability to fulfill their commitments. I argue that these requirements improve suppliers' internal information, which leads to better external reporting. Using a dataset of U.S. government contracts, I find a positive relation between government contract awards and firms' external reporting quality. Consistent with procurement-related requirements driving this relation, I find that firms improve their external reporting when they begin contracting with the government, and that the magnitude of the improvement varies predictably with contract characteristics imposing greater requirements on contractors' internal information processes. Finally, I use the establishment of the Cost Accounting Standards Board in 1970 as a shock to contractors' internal information requirements, and find greater improvements in external reporting among firms subject to the CASB. Overall, these results suggest that the government as a customer contributes to shaping firms' information environments.

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## 1. Introduction

Information asymmetry between government agencies and their suppliers creates uncertainty about the ability of suppliers to fulfill their commitments. For example, agencies require information to assess whether the supplier has the financial resources to deliver the goods and services specified in the contract and provide services or spare parts on an ongoing basis. To reduce the costs associated with this information asymmetry, the U.S. federal government requires prospective and existing suppliers to have certain financial attributes and internal information systems—particularly those suppliers that represent an influential portion of its purchases. Building on prior literature, I predict that, to the extent that these requirements improve suppliers' internal information processes, government procurement will lead to higher quality external reporting.

I investigate this prediction using a comprehensive dataset of over \$7 trillion in U.S. government contracts awarded between 2000 and 2016.<sup>1</sup> These contracts provide a powerful setting to examine how customer requirements on internal information processes relate to the supplier's information environment for several reasons. First, these contracts represent a substantial component of the U.S. economy. On average, the U.S. government awards over \$400 billion in contracts each year; it is the single largest buyer of goods and services in the country. As a result, its requirements impact many suppliers. Second, the U.S. government's requirements and verification procedures are extensive and far more detailed than financial audits performed by external auditors (DCAA, 2012). These procedures are formalized by the Federal Acquisition Regulations (FARs), which include specific requirements pertaining to contractors' internal information processes. For example, prior to awarding a contract, the government determines whether a prospective contractor has adequate financial resources and the necessary organization, accounting

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<sup>1</sup> The Federal Funding Accountability and Transparency Act of 2006 mandates the U.S. government to publicly disclose detailed information on its transactions with organizations receiving federal funds. These data are available in the Federal Procurement Data System—Next Generation database (FPDS—NG) at [www.USAspending.gov](http://www.USAspending.gov). The initial site went live in 2007 and provides data starting in fiscal year 2000.

systems, and accounting and operational controls to perform the contract (e.g., Feldman and Keyes, 2011). For some contracts, the government continues to monitor financial and operational compliance and performance. More importantly, unlike for customers in the private sector, data on U.S. government contracts are publicly available, enabling market participants (and researchers) to infer the scope and focus of the requirements on suppliers, which vary with contract size and characteristics.<sup>2</sup>

I argue that government requirements on contractors' internal information processes (i.e., the implementation and monitoring of certain internal information systems) improve their external reporting environment. This prediction relies on the joint hypothesis that (1) government requirements improve firms' internal information and (2) higher quality internal information leads to better external reporting. With regard to the first link, I argue that contractors improve their internal information processes to satisfy the requirements imposed by the FARs, resulting in an increase in quality. In other words, customer demand justifies the implementation of costly systems that improve the internal information environment and might otherwise not be cost effective. With regard to the second link, theoretical and empirical research suggests a positive relation between the quality of the firm's internal information processes and external reporting environment: as managers gain access to higher quality internal information, this information should manifest itself in improved external reporting (e.g., Verrecchia, 1990; Zimmerman, 2013).<sup>3</sup> Consequently, if government requirements improve the production of internal information (e.g., by requiring accounting systems that more extensively track and project costs), then they should be associated with better external reporting.

On the other hand, government procurement requirements need not result in an improved external information environment. Institutional theories suggest that firms adopt externally imposed management

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<sup>2</sup> One added benefit of these data is their availability for all contract amounts. In contrast, the Compustat segment files only provide data for customers that represent over 10% of annual firm sales.

<sup>3</sup> For example, firms with internal control weaknesses tend to generate lower quality management forecasts, as managers rely on erroneous internal reports (Feng, Li, and McVay, 2009). For further examples, see Doyle, Ge, and McVay (2007); Ashbaugh-Skaife, Collins, Kinney, and LaFond (2008); Dornates, Li, Peters, and Richardson (2013); and Ittner and Michels (2017).

accounting systems (i.e., ones that do not emerge from internal needs) in a superficial manner—particularly those dependent on government funding (e.g., Scott, 1987; Geiger and Ittner, 1996; Sandholtz, 2012). Without substantive integration of these systems into their internal activities, contractors may make little use of them for internal purposes and find their information environment unchanged. The government may also not be effective or timely in its evaluation and monitoring of contractors, as a recent backlog of contractor audits and evidence of audit deficiencies by the Defense Contracting Audit Agency (DCAA) suggest (e.g., GAO, 2009; Francis, 2013). In addition, even if systems are integrated into contractors' internal activities, they might be contract-specific, as opposed to firm-wide, and not applicable to external reporting in any meaningful way.

I test my prediction using two attributes of the firm's external reporting environment. First, I use the quality of voluntary disclosure, measured by the existence of a management forecast over the fiscal year and the number of forecasts provided (e.g., Shroff, Sun, White, and Zhang, 2013). Consistent with disclosure theory (e.g., Verrecchia, 1990), I expect managers with better internal information to increase voluntary disclosure (e.g., the likelihood, frequency, scope of their forecasts, or a combination of these). That is, improvements in procurement-imposed internal information processes likely manifest in improved projections of costs and revenues. Contractors are thus more likely to produce management forecasts, and those forecasts are likely to be more frequent.

Second, I use the speed of a firm's earnings announcement release after fiscal year-end. Gallemore and Labro (2015) argue that the speed of the earnings release reflects the firm's ability to efficiently integrate information and discuss how firms that improve their information acquisition typically accelerate the closing of their books. If government contracts result in improved internal information systems, I would also expect accelerated releases of earnings announcements.

I measure the extent of internal information process requirements on firms using the existence and size of government contracts, relative to the firm's total sales. These variables allow me to examine

whether having a government contract *itself* has implications for the firm's external reporting environment, and whether the firm's external reporting environment varies with the fraction of the firm's sales made to the government.<sup>4</sup> Consistent with my prediction, I find a positive association between the existence and size of government contracts and the subsequent quality of contractors' external reporting environment, after controlling for a host of potential confounders.

Although this association provides initial evidence of my prediction, it is subject to many potential identification concerns. For example, the government may select firms with certain unobservable attributes correlated with external reporting practices (e.g., high quality management), or firms may improve their external reporting quality to increase their chances of winning a contract. Contract awards may also increase the stability of firms' earnings and cash flows and change their external reporting attributes. To reduce such concerns, I use the establishment of the Cost Accounting Standards Board (CASB) to study the effect of a change in the largest defense contractors' internal information requirements on their external reporting environment. In 1970, Congress established the CASB for the purpose of promulgating a set of uniform Cost Accounting Standards (CAS) for defense contractors, marking a significant increase in the requirements on their internal information processes.<sup>5</sup> The advantage of this analysis is that it exploits time-series variation in the requirements on *well-established* government contractors, which helps alleviate concerns that my results are driven by differences between contractors and noncontractors or potential confounders related to the award of a contract.

Employing a difference-in-differences design, I examine changes in the quality of the external information environment of top 100 defense contractors around the establishment of the CASB. Because the data on voluntary disclosure and earnings release dates are not readily available for this period, I use a measure of illiquidity to proxy for external reporting quality, employing the proportion of zero return

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<sup>4</sup> My results are very similar when using the unscaled dollar amount obligated by the government, which represents an alternative measure of contract size from the government's perspective.

<sup>5</sup> All national defense contractors with contracts in excess of \$100,000 were required to comply with the CASB's regulations.

trading days in a given fiscal year (e.g., Lang, Lins, and Maffett, 2012). Consistent with my prediction, I find a decrease in illiquidity for the top defense contractors after the establishment of the CASB, relative to a control group of other firms in the same industry. Specifically, I find a persistent drop in illiquidity after 1972—when the first two CAS became effective—and no discernible difference in illiquidity between the treatment and control groups prior to the establishment of the CASB.

I perform several additional analyses in an effort to tighten the link between government contract awards and changes in firms' external reporting environment and corroborate the internal information improvement mechanism. I begin by narrowing my focus to first-time government contractors. In contrast to established contractors, these firms likely experience the strongest effects from procurement-related requirements and should have significant time-series variation in their information environments. This setting also allows me to track first-time contractors over time to observe *when* the quality of their information environment changes, relative to the year of the initial award. Firms might begin adjusting their reporting environment (a) during—or perhaps even in anticipation of—the government's pre-award evaluations, (b) when they are awarded the contract, or (c) afterward.

Using a difference-in-differences design, I find that the quality of external reporting improves when firms begin contracting with the government. Specifically, the improvements appear in the year after the initial contract award and seem persistent, while there are no discernible differences in external reporting quality between first-time contractors and the control group prior to the contract award. Observing within-firm improvements in the quality of the information environment around the initial contract award reduces concerns that my results are driven by an omitted firm-specific factor, as opposed to the contract award.

I next examine whether the association between government contracts and external reporting varies predictably with contract characteristics that directly influence the extent of the government's internal information requirements on contractors. These cross-sectional tests help provide corroborating evidence on the internal information mechanism linking contract awards to improvements in external reporting and

reduce concerns that an omitted factor or alternative channel is driving my results. Within my sample of government contractors, I find that the association between the size of the award and subsequent voluntary disclosure varies with several contract characteristics that influence the extent of internal information requirements: (1) whether the contractor has cost-reimbursement contracts; (2) whether the contractor must adopt CAS; (3) whether the contractor must provide cost or pricing data; (4) whether the contractor provides goods and services not available on commercial markets (e.g., missiles), as noncommercial items are subject to greater government scrutiny than commercial ones (e.g., photocopiers); and (5) contract duration. The evidence is consistent with more extensive requirements on internal information processes being an impetus for my results.

Overall, this paper takes a first step in understanding the interaction between government-mandated internal information systems and firms' external reporting practices. Although I employ several distinct tests to triangulate my results, each of these tests is predicated on a number of assumptions and subject to identification concerns, and I caution the reader to be mindful of these limitations when drawing inferences from the results.

Collectively, my results suggest that the government as a customer helps shape the firm's external reporting environment. To the extent that the oversight practices used by the government resemble those used in other settings, my results may generalize beyond the government sector.<sup>6</sup> In this regard, this study contributes to a growing literature on the role of non-investor stakeholders, such as supply chain participants, in shaping the firm's information environment. One stream of papers studies how customers' and suppliers' demand for financial accounting information to assess firms' underlying economic performance influences reporting quality.<sup>7</sup> A different stream focuses on how specific supplier monitoring

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<sup>6</sup> For example, cost-plus contracts in the construction industry typically require supplier cost audits (see [http://content.aia.org/sites/default/files/2017-07/A102\\_2017\\_sample2.pdf](http://content.aia.org/sites/default/files/2017-07/A102_2017_sample2.pdf) for an example); and licensing agreements in the entertainment industry typically require revenue audits (Kim-Gina, 2018).

<sup>7</sup> For example, Hui, Klasa, and Yeung (2012) suggest that firms cater to their customers' or suppliers' demand for greater accounting conservatism by recognizing more timely losses. See also Bowen, Ducharme, and Shores (1995), Raman and Shahrur (2008), and Costello (2013).



mechanisms improve firms' operating performance (e.g., through information sharing, supplier audits, or supplier certification).<sup>8</sup> My study integrates these two literatures by examining how supplier oversight mechanisms requiring the implementation and monitoring of internal information processes, rather than the demand for financial accounting information, relates to their external reporting environment.

This paper also contributes to the literature linking firms' internal information and external reporting. In contrast to the textbook view that internal information requirements should be distinct from those necessary for external reporting (e.g., Kaplan and Atkinson, 1998), a recent stream of literature shows that firms' internal and external reporting processes are closely aligned.<sup>9</sup> My paper adds to this literature by suggesting that improvements to internal information processes can be associated with better external reporting.

Finally, my paper adds to the broader literature on the implications of government oversight for firms' financial reporting. While the effects of direct regulatory oversight on reporting are well studied, less is understood about indirect channels through which government requirements might also affect financial reporting practices. A recent study by Hanlon, Hoopes, and Shroff (2014) suggests that monitoring by the tax authority helps improve reporting quality. Although, in some cases, an IRS audit may include an examination of the firm's internal controls and other processes related to financial reporting, in the procurement setting, such monitoring procedures are far more extensive, and audit rates far more frequent.<sup>10</sup> Government procurement thus arguably represents a powerful setting to examine the influence of government oversight on firms' financial reporting.

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<sup>8</sup> See, e.g., Ittner, Larcker, Nagar, and Rajan (1999); Caglio and Ditillo (2008); and Anderson and Dekker (2009).

<sup>9</sup> See e.g., Dichev, Graham, Harvey, and Rajgopal (2013); Gallempore and Labro (2015); Ittner and Michels (2017); and Shroff (2017).

<sup>10</sup> See the Internal Revenue Manual (e.g., IRM 4.10.3) for specific IRS audit protocol, and data on audit rates at <https://trac.syr.edu/tracirs/highlights/current/>. Over the past two decades, IRS audit rates were between 20%–40% for the largest firms (total assets exceeding \$250 million) and much lower for smaller firms. In contrast, virtually every government contractor undergoes some form of review either by a contracting officer, the DCAA, or both. See section 2 for further details.

## **2. Background and predictions**

### *2.1 Institutional background*

U.S. government procurement begins when an agency decides to purchase a product or service. To help ensure that agencies obtain the best value with taxpayers' money, the Federal Acquisition Regulations (FARs) codify policies and procedures for each stage of this process. The agency's contracting officer (CO) first posts a request for proposal on the Federal Business Opportunities website, and prospective contractors submit their offers. In addition to evaluating the offers, FAR 9.104 requires the CO to determine whether a prospective contractor meets a number of "responsibility" criteria, including access to adequate financial resources to perform the contract (FAR 9.104-1(a)) as well as the necessary organization, experience, accounting and operational controls, and technical skills, or the ability to obtain them (FAR 9.104-1(e)). FAR 9.105 requires the CO to obtain information and document that the prospective contractor meets these standards. For example, the CO performs pre-award surveys to evaluate prospective contractors' financial and technical capabilities and accounting systems; the latter must be sufficiently detailed to estimate, accumulate, and allocate the type of cost information required by the contract. After the award, the CO continues to monitor contractors to ensure that these requirements continue to be met (e.g., by performing an annual financial condition risk assessment).

Contract types are grouped into two broad categories: fixed price and cost reimbursement (FAR 16.101). In fixed-price contracts, the contractor provides a product or service to the government at a fixed price that is not adjustable to incurred costs and bears full responsibility for the performance costs and resulting profits or losses. FAR 16.202 deems that this form of contract is suitable when the CO can establish fair and reasonable prices at the outset, to avoid potential renegotiations by the contractor. For example, a fixed-price contract is used when there is adequate price competition or there are reasonable price comparisons (FAR 16.202-2(a,b)), when available cost or pricing data provides realistic estimates of the probable costs of performance (FAR 16.202-2(c)), or when performance uncertainties can be

identified and reasonable estimates of their cost impact can be made (FAR 16.202-2(d)). Providing these estimates requires the accounting system to validate determinations of costs already incurred and support estimates of future costs (e.g., provide data supporting projections of business prospects and related operations costs, unit-cost trends such as those associated with labor efficiency, etc. (FAR 2.1)).

In cost-reimbursement contracts, revenue equals the contractor's incurred cost of production plus a fixed fee or profit margin. These contracts typically establish an estimate of total cost as a ceiling that the contractor must not exceed (FAR 16.301-1). Prior to awarding the contract, the CO must obtain reasonable assurance that efficient methods and effective cost controls are being used and that the accounting system can determine costs applicable to the contract (e.g., can accurately track costs, segregate direct and indirect costs, and allocate costs to their cost objects) (FAR 16.301-3). During contract performance, the contractor bills the government for incurred costs, which are reviewed prior to issuing payment. The CO must determine whether the costs are accurate, allowable, allocable to the contract, and in compliance with applicable cost principles (e.g., government-mandated CAS). This process typically includes an in-depth analysis of each cost item and may necessitate an audit of the underlying processes (e.g., billing, accounts payable, labor timekeeping, etc.).

Importantly, the procedures the government performs to ensure that contractors meet these requirements are much more extensive and detailed than financial audits performed by external auditors or other government monitors (e.g., the tax authority). The DCAA supports COs from all government agencies in their procurement decisions, as needed, and audits a substantial amount of incurred contractor costs (e.g., in fiscal year 2017, the DCAA audited \$281 billion in incurred costs (DCAA, 2018)). The DCAA's general audit interests are threefold: (a) identify and evaluate all activities that either contribute to, or have an impact on, proposed or incurred costs of government contracts; (b) evaluate contractors' financial policies, procedures, and internal controls; and (c) perform audits that identify opportunities for contractors to reduce or avoid costs (i.e., operations audits) (DCAA, 2012). Although some of these audit

interests resemble those performed by external auditors (e.g., internal control audits), DCAA audits tend to be broader and focus on account balances and cost elements that pertain to the contract in much greater detail (Ahadiat and Ehrenreich, 1996).<sup>11</sup> In short, virtually every contractor is subject to a review of the internal information processes described above, either by the CO, the DCAA, or both.

## 2.2 *Empirical predictions*

### 2.2.1 *Government contracting and the external reporting environment*

I predict that government procurement is positively associated with the quality of contractors' external reporting environment. This prediction relies on two arguments. First, the extensive requirements imposed on contractors' internal information processes by the FARs, as described in section 2.1, likely improve the quality of these processes. Contractors may (i) implement systems they did not have or enhance existing systems (either after the contract award or in anticipation of it), (ii) undergo increased monitoring of these systems, or both. Importantly, this argument assumes that contractors are willing to undergo such changes to their internal information processes to comply with customer requirements, and that these would otherwise not be deemed cost effective. This assumption seems reasonable, as the literature suggests that firms tend to implement management accounting standards more deeply when customers care about implementation or conduct more frequent inspections (e.g., Christmann and Taylor, 2006). Compliance with the FARs is key for government contractors, as inadequacies could result in withheld billed receivables and the suspension of payments, contract termination, and suspension from doing business with the government (FAR 9.4).

Second, to the extent that improvements in contractors' internal information are relevant to external reporting, I argue that such improvements will manifest themselves in higher quality external reporting. The literature suggests that firms' processes used for internal decision-making closely relate to those used

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<sup>11</sup> Similarly, although, in some cases, an IRS audit might entail a review of internal controls, inspection of physical assets, and interviews with employees (IRM 4.10.3), the IRS does not have requirements pertaining to the existence of specific internal information processes.

for external reporting. For example, Hemmer and Labro (2008) provide analytical evidence of a link between financial accounting rules and management accounting systems. Dichev, Graham, Harvey, and Rajgopal (2013) survey managers and find that over 80% assert that there is “a tight link between internal and external reporting” (p. 10). Several papers examine specific attributes of internal information processes, such as the implementation of enterprise systems or risk-based forecasting and planning, and find that they are related to higher quality external reporting (e.g., Dornates, Li, Peters, and Richardson, 2013; Ittner and Michels, 2017). Of particular relevance to this argument, Corollary 1 of Verrecchia (1990) predicts that an increase in the quality of the manager’s private information will result in improved external reporting through more voluntary disclosure. Specifically, if the market observes that firms are endowed with better information, it exerts more pressure on managers to provide voluntary disclosure by discounting the firm’s price more heavily if information is withheld. As government contract awards are publicly observable, I argue that the market expects improvements in contractors’ internal information systems to result from their compliance with the FARs, resulting in improved external reporting.

The FARs require government contractors to collect and produce internal information that likely improves their external reporting quality. For example, an accounting system that better tracks costs and allocates them to cost objects is likely to produce information that more accurately reflects the economics of the contractors’ underlying transactions (e.g., more accurate inventory and cost of goods sold accounts, both at the segment and aggregate levels). In addition, contractors’ accounting systems must provide estimates of future performance and cost projections, for example, by estimating total future costs in support of cost-reimbursement contracts and providing cost or pricing data in support of fixed-price contracts.<sup>12</sup> Such estimates will likely aid management in forecasting earnings and other aggregate accounting numbers. More generally, detailed audits of internal controls and accounting systems underlying incurred and estimated costs (e.g., billing, accounts payable, labor timekeeping, etc.) also

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<sup>12</sup> See sections 2.1 and 2.2.2 for further details.

enhance the quality of internal information processes, which are useful in producing numbers for external reporting.

On the other hand, there are several reasons the government's requirements might not be related to their contractors' information environments. First, institutional theories argue that firms tend to adopt management accounting systems imposed by external forces, such as legislative mandates or customers, in a superficial fashion, without substantive integration into their daily activities. Although firms gain legitimacy by implementing the systems, they may make little use of them internally (e.g., Bromley and Powell, 2012; Sandholtz, 2012; Angst, Block, D'Arcy and Kelley, 2017). In particular, Scott (1987) argues that management accounting systems imposed by government organizations on subordinate units that depend on their funding tend to be implemented superficially, consistent with the findings in several studies (e.g., Geiger and Ittner, 1996; Cavaluzzo and Ittner, 2004). These procedures might thus merely represent an administrative burden.

It is also possible that the government's procedures are not effective or timely in evaluating and monitoring contractors' information processes. In recent years, the government has built up a substantial backlog of contractor audits, suggesting that it might not be performing required procedures (e.g., Francis, 2013), and the U.S. Government Accountability Office has published several reports highlighting deficiencies in DCAA audits, such as compromise of auditor independence, insufficient audit testing, and inadequate planning and supervision (e.g., GAO, 2009). Finally, even if the government's evaluations and monitoring are effective and these systems are deeply integrated into contractors' internal activities, improvements in some dimensions of internal information systems might not necessarily affect external reporting. Unlike financial audits, the scope of government audits tends to be *contract*-specific, as opposed to firm-wide, and their objective is not to assess the quality of external reporting.

Another consideration is that government-imposed costing requirements could divert resources from other—perhaps more useful—internal systems. In particular, the FARs designate certain costs as

“unallowable”; they cannot be included in cost estimates or contract cost reimbursements. These include public relations and advertising costs, bad debts, contingencies, lobbying and political costs, among others (FAR 31.205). If contractors tailor their costing systems to the regulatory standards required for reimbursement at the expense of more accurate costing systems, this could harm their measurement of performance (e.g., Kaplan and Porter, 2011).<sup>13</sup>

### *2.2.2 Contractual characteristics and internal information requirements*

In this section, I discuss five specific contract characteristics that impose more extensive requirements on contractors’ internal information processes and increase the likelihood of heightened scrutiny by the government. As vendors tend to implement management accounting standards more deeply when customers conduct more frequent inspections (Christmann and Taylor, 2006), I predict a stronger association between government procurement and external reporting quality for suppliers with contracts that have any of these characteristics.

#### *2.2.2.1 Cost-plus vs. fixed-price contracts*

As discussed in section 2.1, contract pricing terms fall into two basic categories: fixed-price and cost-reimbursement (also referred to as “cost-plus”) contracts.<sup>14</sup> Cost-reimbursement contracts provide the contractor with incentives to manipulate reported costs through cost inflation or cost shifting, which typically leads the government to impose greater requirements on their internal information processes (e.g., Rogerson, 1992; Chen and Gunny, 2014).<sup>15</sup>

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<sup>13</sup> By way of example, this problem is particularly acute in healthcare, where providers largely structure their costing processes around Medicare’s cost-plus reimbursement system, as opposed to their actual resource usage. According to Kaplan and Porter (2011), this results in “an almost complete lack of understanding of how much it costs to deliver patient care, much less how those cost compare to the outcomes achieved” (p. 48).

<sup>14</sup> Contracts range on a spectrum between these two categories, from firm fixed price, fixed price incentive, cost plus incentive to pure cost plus. (Very few contracts are pure cost reimbursement contracts.) Incentive-type contracts can provide additional incentive to rein in costs below a certain threshold (e.g., a fixed price incentive contract specifies a target cost that, if achieved, increases the contract price up to a ceiling). I group all contracts in these two categories for the purpose of my analyses.

<sup>15</sup> In support of this point, the DCAA’s 2014 report to Congress states that the agency prioritizes audits of contracts considered “high risk,” such as “circumstances where there may be less incentive to control costs such as on cost-type contracts” (DCAA, 2015, p.7).

### *2.2.2.2 Compliance with Cost Accounting Standards*

Certain contractors must comply with Cost Accounting Standards (CAS), a set of 19 government-specific accounting rules designed to achieve uniformity and consistency in their cost accounting practices. These standards control how costs are measured, accumulated, and allocated to a final cost object and are far more detailed than cost accounting guidance provided by GAAP.<sup>16</sup> Depending on the amount and type of contract award, a contractor could be subject to full CAS coverage (required to follow all 19 standards), or modified coverage (required to follow only a subset of four standards, including standards on consistency, the cost accounting period, and accounting for costs that are unallowable under the FARs). Some contractors are exempt from CAS requirements altogether (e.g., sealed-bid contracts, negotiated contracts under \$500,000, etc.). Contractors subject to CAS coverage must formally document and disclose their cost accounting practices in detail and are expected to follow the disclosed practices consistently. The CO evaluates whether the disclosure statement adequately describes the contractor's cost accounting practices, whether the practices comply with the CAS, and whether they are followed consistently.

### *2.2.2.3 Compliance with the provision of cost or pricing data*

In certain circumstances, contractors must submit cost or pricing data along with their price proposal and certify that the data are accurate, complete, and current through a "Certificate of Current Cost or Pricing Data." This requirement applies to contracts exceeding \$700,000. However, when the contract falls below this threshold, the CO can still request cost or pricing data (without a certification) if they are necessary to establish a fair and reasonable price (FAR 15.4). The CO and DCAA then review

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<sup>16</sup> For example, CAS 401 requires accounting systems to estimate and accumulate costs in the same manner to avoid that a contractor estimates costs using one method (generating low costs) and then allocates costs using a different one (generating high costs). CAS 402 requires consistency in allocating costs incurred for a same purpose to avoid double counting (e.g., to avoid that cost items are allocated directly to a cost object and also included in indirect cost pools allocated to the same cost object). CAS 403 establishes criteria for the allocation of home office expenses to various segments. CAS 410 establishes criteria for the allocation of business unit general and administrative expenses to final cost objects. CAS 418 provides guidance for the consistent determination of direct and indirect costs. In contrast, GAAP does not directly address any of these issues.



the data and any necessary supporting schedules and documentation to establish their accuracy.

#### *2.2.2.4 Procurement of commercial items*

Commercial items are products of a type customarily used for nongovernment purposes and offered to the general public or services offered to the government and the general public contemporaneously under similar terms and conditions (e.g., office equipment, janitorial services, etc.). Such products and services are subject to the discipline of the marketplace, reducing the need for processes to help achieve competitive prices and efficient production. The FARs include a set of simplified and streamlined acquisition procedures for commercial items, including the usage of only fixed price methods and the reliance on the contractor's quality assurance system as a substitute for government inspection and testing (FAR 12). For many of these contracts, the FARs encourage simplified methods of contractor evaluation limited to technical capability, price, and past performance. Moreover, such contracts are generally exempt from Cost Accounting Standards (CAS) and from providing cost or pricing data to the contracting officer (FAR 12.2).

#### *2.2.2.5 Contract duration*

Finally, I examine contract duration. Longer contracts represent a greater commitment by government agencies and typically consume more government resources. I thus expect longer contracts to impose heightened procurement-related requirements on contractors' internal information processes.

### **3. Sample**

My sample begins in October 1999, when data on federal procurement becomes available on the Federal Procurement Data System–Next Generation database (FPDS–NG) (available at [www.USAspending.gov](http://www.USAspending.gov)), and ends in September 2016 (spanning government fiscal years 2000–2016, which run from October 1 through September 30). The database includes all contracts that are awarded

by the U.S. government and that exceed an individual transaction value of \$3,000.<sup>17</sup> Many firms have multiple contracts that span several years. Consistent with prior research using these data (e.g., Mills, Nutter, and Schwab, 2013; Goldman, Rocholl, and So, 2013), I use a firm's aggregate contract award amount for each fiscal year. I merge federal contract data from FPDS–NG with the CRSP/Compustat population by the name of the vendor's parent company, using a fuzzy matching algorithm. I then manually inspect each match and delete any inaccurate matches. This yields a sample of 79,383 firm-year observations, of which 23,182 are firm-years with government contract awards, representing 3,108 firms.<sup>18</sup>

Table 1, Panel A, provides details about yearly aggregate government contract awards on the FPDS–NG by year. Between 2000 and 2016, the government awarded on average \$421 billion in contracts per year. About 26% of this amount represents cost reimbursement contracts, 20% is subject to CAS and requires that contractors provide cost or pricing data to government agents, 81% represents contracts for non-commercial products or services, and 50% has an average duration of over a year. Panel B provides details about my sample of government-contract awards merged with the CRSP/Compustat population. The sample represents about 40% of the total contract value, and the distribution of contract characteristics resembles that in Panel A.<sup>19</sup> Panel C details the industry composition of my sample. The dominant industry is manufacturing, representing nearly 50% of all government contractors in my sample, followed by business equipment (25%). Both of these industries have a relatively high proportion of cost reimbursement contracts (36% and 24%, respectively), contracts requiring the adoption of CAS (32% and

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<sup>17</sup> A “contract” is any number of transactions between the government and the contractor, which includes the initial “contract award,” any subsequent “modifications” (e.g., an exercise of an option to modify the contract), or a “purchase order” pertaining to the contract.

<sup>18</sup> Because many firms in my sample have subsidiaries that contract with the government, many contracts represent a negligible percentage of the parent firm's sales, accounting for the highly right-skewed distribution in Table 2, Panel B. On the one hand, if a parent has subsidiaries that make substantive changes to their internal information processes, this could reflect improvements in the parent's consolidated financial statements, even if their sales to the government are small, relative to the parent's total revenue. On the other hand, if subsidiaries' sales are negligible, relative to those of the parent, it is unclear to what extent they will influence the consolidated financial statements in the first place. Thus it is unclear which cutoff is appropriate, and I opted to include all government contracts in my analysis to avoid making a judgement call on this point.

<sup>19</sup> Note that my data ends with government fiscal year 2016, on September 30, 2016. Consequently, my sample of firms with fiscal years 2016 is limited to firms with fiscal year-end dates between June 30 and September 30, 2016.

42%), contracts requiring the provision of cost or pricing data (29% and 39%), and noncommercial contracts (88% and 95%). These industries also tend to have more contracts with a duration of over one year (55% and 73%, respectively).

#### 4. Research design and results

##### 4.1 Government contracting and the information environment

I begin by examining the association between government contracting and the firm's external reporting environment. I use two distinct measures of contracting. First, I use *Contract*, an indicator variable equal to one if the firm has a nonzero amount of federal dollars obligated through contract awards in year  $t$  and zero otherwise. Using an indicator variable allows assessment of whether having a government contract *itself* has implications for the firm's external reporting environment. Second, I use  $\$Contract/Sales$ , a continuous measure of contract award size, relative to the firm's sales. I expect the government's internal information requirements to vary with  $\$Contract/Sales$  for two reasons. First, the extent of these requirements is related to the dollar amount obligated by the government. Second, the extent of the contractor's compliance with government-imposed changes to its internal information processes—and any resulting spillovers on the firm as a whole—likely varies with the importance of the contract from the contractor's perspective.<sup>20</sup> Because  $\$Contract/Sales$  is heavily right-skewed (see Table 2, Panel B), I transform the variable into quintile ranks scaled to range from 0 to 1.<sup>21</sup> This transformation has the advantage of being robust to both outliers and nonlinearities and eases the interpretation of the results (i.e., the estimated regression coefficient measures the change in the dependent variable when moving from the bottom quintile to the top quintile of contract size, *ceteris paribus*).

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<sup>20</sup> An alternative measure of contract size is to use the unscaled total amount obligated by the government (*DollarsObligated*), which directly measures the importance of the contract from the government's perspective (e.g., Duguay, Rauter and Samuels, 2019). My results are robust to using this alternative measure adjusted for inflation (untabulated).

<sup>21</sup> Consistent with prior studies (e.g., Mills, Nutter and Schwab, 2013), government contractors have an average annual contract value of about 5% of sales, and the distribution of this variable is heavily right-skewed, with a median of 0.1%, and a rapid increase in the top decile, from 5% at the 90<sup>th</sup> percentile to 77% at the 99<sup>th</sup> percentile. Contractors' average amount of annual federal dollars obligated is \$124 million, with a median of about \$628,000. My results are also robust to using the natural logarithm of one plus  $\$Contract/Sales$  as an alternative measure (untabulated).

Because firms' internal information processes are unobservable, my research design warrants measures of external reporting quality that relate as closely to internal information as possible. First, I use two measures of voluntary disclosure. Consistent with disclosure theory, if the market observes that firms are endowed with higher quality information (e.g., by observing the award of a government contract, resulting in mandatory compliance with the FARs), it exerts more pressure on managers to provide voluntary disclosure, and managers will disclose more. To adhere closely to this prediction, I use the existence of management forecasts (*VolDisc*) and the number of forecasts issued over the fiscal year (*VolDisc\_Freq*) as measures of external reporting quality.<sup>22</sup> Arguably, these measures relate closely to the quality of firms' internal information processes as required by the FARs. For example, improved cost projections and pricing data are likely to facilitate the production of management forecasts, and forecasts are likely to be more frequent and greater in scope.<sup>23</sup> To capture voluntary disclosure broadly, I include all available forecast items that the firm issued over the fiscal year, including quarterly and annual EPS, EBITDA, operating profit, sales, capex, etc.<sup>24</sup>

Second, I use the speed of a firm's earnings release, measured as the number of days between the earnings announcement and the fiscal year-end, divided by 365 and multiplied by -1 (*Speed*). Gallemore and Labro (2015) argue that the speed of the earnings release reflects the firms' ability to quickly and efficiently integrate information and discuss how firms that receive professional advice on how to improve their information acquisition typically increase the speed at which they close their books. Many consulting firms help contractors implement DCAA-compliant accounting and ERP systems to generate the information required by government agencies. If government contracts result in improved internal

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<sup>22</sup> My results are also robust to using the natural logarithm of one plus *VolDisc\_Freq* as the dependent variable (untabulated).

<sup>23</sup> Consistent with the predictions of Verrecchia (1990), my results are also robust to using the likelihood and frequency of bad news forecasts, defined as management forecasts that fall short of the prevailing analyst consensus (untabulated).

<sup>24</sup> Although IBES Guidance data does not include measures of firms' cost forecasts, cost estimates can arguably be inferred if the firm provides both earnings and sales forecasts. I find that my results are robust to using the likelihood that the firm provides both an earnings and sales forecast over the fiscal year as an alternative dependent variable, consistent with the firm also increasing its cost forecasts (untabulated).

information systems, then I would also expect an acceleration in the firm's release of earnings announcements.

I examine the relation between government contracting and the quality of the firm's external reporting by estimating OLS regressions of the form:

$$Reporting_{t+1} = \alpha_0 + \alpha_1 Contracting_t + \theta_n Controls_t + \varepsilon_t, \quad (1)$$

where *Contracting* is one of two measures of government contracting defined above, *Controls* is a vector of control variables listed and defined in Appendix A, and *Reporting* is one of three measures of the firm's external reporting quality defined above. Note that I measure *Reporting* in the year after the contract award ( $t+1$ ), which is the latest point at which I expect the firm's reporting environment to adjust as a result. See Appendix A for all variable definitions. I also include year and industry fixed effects in all my specifications to control for common shocks that might impact both contract awards and firms' information environment (e.g., defense spending) and industry practices unrelated to the government's internal information requirements. Throughout all my analyses, I cluster standard errors by firm and winsorize all continuous variables at the top and bottom percentile.

Table 2, Panel A, presents descriptive statistics for my variables. About 47% of firm-years in my sample provide a management forecast, and average forecast frequency is about 4.8. The average *Speed* of a firm's earnings announcement release is  $-0.14$ , about 51 days after year-end ( $0.14 \times 365 = 51.1$ ). Descriptive statistics for the control variables show that my sample firms have a mean (median) return on assets of  $-0.04$  (0.02), a mean (median) leverage ratio of 0.22 (0.17), a mean (median) market-to-book ratio of 5.4 (3.6), and mean (median) sales growth of 0.15 (0.07). Approximately 31% of firm-years in my sample report a loss, and the average (median) annual buy-and-hold return is about 11.5% (5.1%) over the fiscal year. Panel B provides descriptive statistics for my sample of government contractors. Notably, firms in this sample tend to be larger, better performing, have lower return volatility, lower sales growth, and lower growth opportunities, which underscores the need to control for these variables in my tests.

Table 3, Panel A, presents results from estimating equation (1). My measure of government contracting is *Contract* in columns (1), (3), and (5), and  $\$Contract/Sales$  in columns (2), (4), and (6). I find positive and significant coefficients on *Contract* across all specifications, indicating that the quality of external reporting for firms that contract with the government is significantly higher, relative to firms that do not. Specifically, contractors are about 6.4% more likely to issue a management forecast, issue about one additional forecast over the fiscal year, and release earnings about two days earlier ( $0.005 \times 365 = 1.825$ ). I also find positive and significant coefficients on  $\$Contract/Sales$  across all specifications, indicating that the same results apply to variations in contract size: firms with a larger percentage of sales to the government have higher quality external reporting. Specifically, firms in the top quintile of  $\$Contract/Sales$  are about 9% more likely to issue a forecast, issue about 1.6 additional forecasts, and release earnings about two days earlier relative to firms in the bottom quintile, without government contract awards.

To examine to what extent my results are driven by firms with the largest contract awards, relative to revenue, I also perform these tests for each quartile of  $\$Contract/Sales > 0$ , relative to the benchmark group of  $\$Contract/Sales = 0$ . Specifically, I run the same specification as in Panel A, except that I replace  $\$Contract/Sales$  with binary indicator variables equal to one for firm-years within each quartile of  $\$Contract/Sales > 0$  ( $\$Contract/Sales\_Q1 - \$Contract/Sales\_Q4$ ). My results appear in Table 3, Panel B. With the exception of the specification using *Speed* as the dependent variable, where the coefficient on  $\$Contract/Sales\_Q4$  is not significantly different from the coefficient on  $\$Contract/Sales\_Q1$ , the coefficients on all other quartiles are monotonically increasing, and significantly greater than  $\$Contract/Sales\_Q1$ . These results are consistent with the notion that external reporting quality is increasing in the firm's exposure to government contracting.

Although these baseline results are consistent with my prediction, they are also subject to certain limitations. In particular, firms that contract with the government may have higher external reporting

quality for a variety of reasons, other than changes in their internal information processes. For example, the government may select firms with certain unobservable attributes correlated with external reporting practices (e.g., high quality management), or contract awards may increase the stability in firms' earnings and cash flows and change these practices. Similarly, contractors may simply improve their external reporting directly to signal their financial stability, which is also one of the requirements for a contract. My remaining tests aim to reduce some of these concerns and provide corroborating evidence of my prediction.

#### 4.2 *Difference-in-differences analysis using first-time contract awards*

In this section, I begin addressing some of these concerns by narrowing my focus to firms that first begin contracting with the government. In contrast to established contractors, firms that begin a contracting relationship likely experience the strongest effects from the government's requirements and should have significant time-series variation in their information environment. A design exploiting this time-series variation allows me to examine the timing of the association between the initial contract award and improvements in the information environment.<sup>25</sup>

I identify first-time contractors (treatment firms) as firms that receive an initial contract award in my sample. To avoid including firms that have had contract awards outside of my sample window, I require that a firm have at least two years without any federal dollars obligated prior to assigning it to the treatment group. Moreover, to ensure that the contract award represents a sufficiently material amount to warrant detectable changes in the firm's information environment, I further restrict the sample to firms with a cumulative  $\$Contract/Sales$  greater or equal to 0.5% of sales over the time-series available in my sample.<sup>26</sup> I use propensity-score matching to form one-to-one matched-pairs by estimating a propensity

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<sup>25</sup> To illustrate this point, the serial autocorrelation of my treatment variables drops significantly for my sample of first-time contractors, relative to my total sample of contractors, as expected. For my total sample, the first-order, second-order, and third-order autocorrelation in  $\$Contract/Sales$  (*Contract*) is 0.89 (0.85), 0.86 (0.81), and 0.83 (0.76), respectively. For my sample of first-time contractors, these numbers are 0.48 (0.64), 0.33 (0.46), and 0.21 (0.28), respectively.

<sup>26</sup> Restricting the sample of first-time contractors to those with nonnegligible contract amounts increases confidence that the sample captures contractors that adjust their information processes to accommodate the government's needs, and that those

score in the year prior to the treatment firm's initial contract award as a function of the control variables in equation (1). I then match each treatment firm to a corresponding control firm, with replacement, on the propensity score, fiscal year, and industry and estimate the following difference-in-differences regression.

$$Reporting_{t+1} = \alpha_0 + \alpha_1 Treated \times Post + \alpha_2 Post + \theta_n Controls_t + \gamma + \delta + \varepsilon_t, \quad (2)$$

where *Reporting* is one of my three measures of external reporting, *Treated* is a binary indicator variable equal to one for treatment firms, and zero for control firms, *Post* is a binary indicator variable equal to one for fiscal years ended in the first year of the contract award, and *Controls* is the vector of control variables used in equation (1). In addition to control variables, I include year and firm fixed effects, which absorb the main effect on *Treated* in the model.

I estimate equation (2) over a period of three years prior to and three years after the contract award, for a total of seven years. It is unclear precisely when firms begin changing their reporting environment, relative to their initial contract award. For example, they might begin adjusting their reporting environment in anticipation of the government's evaluation procedures (e.g., during, or perhaps even several years before, the negotiation), at the time they are awarded the contract or thereafter (e.g., when they become subject to incurred cost audits). To illuminate the timing of this effect, I also examine trends in external reporting quality around the initial contract award.

Table 4 presents my results. Panel A presents tests for covariate balance between the treatment and control firms. With the exception of average *SalesGrowth*, which is marginally greater for the treatment firms (mean difference = 0.123; *p*-value = 0.08), all other mean and median differences are not statistically significant, suggesting that my treatment and control samples are similar, and increases confidence that any differential change in external reporting for the treatment firms is not driven by pre-existing

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changes will manifest themselves in external reporting. As expected, my results become weaker in both magnitude and significance when I also include first-time contractors below this threshold in my sample (untabulated).



differences between contractors and noncontractors.<sup>27</sup> Panel B presents results from the difference-in-differences regressions. Across all specifications (with and without linear control variables), the coefficient ( $\alpha_1$ ) is positive and statistically significant, suggesting that the external reporting quality of first-time contractors improves after the contract award, relative to otherwise similar firms.

I next examine differences in external reporting quality between the treated and control firms by year around the time of the initial contract award. Specifically, I estimate the same specifications as in columns (1), (3), and (5), except that I interact *Treated* with every year, relative to the year of the initial award, omitting year  $t-3$  (the benchmark). I illustrate these results in Figure 1. For all three measures of external reporting quality, I find that the difference-in-differences becomes significant in year  $t$  and remains fairly persistent through  $t+3$ . Importantly, differences in external reporting quality between the treatment and control firms are not statistically significant in the pre-period leading to the initial award, suggesting that the improvements coincide with the award, as predicted.

Although this test reduces the concern that my results are driven by pre-existing differences between contractors and noncontractors, as captured by my covariates, the concern remains that the contract award might drive changes in external reporting other than through contractors' changes to their internal information processes. For example, the award represents a stream of revenues throughout the duration of the contract as well as a greater potential for receiving future contracts (e.g., Goldman, Rocholl, and So, 2013). It may also represent a more persistent stream of future earnings (Cohen and Li, 2016). A contract award is thus arguably good news, which may be related to greater and more timely disclosure (e.g., Verrecchia, 1983).<sup>28</sup> Although some of these factors are likely captured by the controls

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<sup>27</sup> A potential concern is that firms that first begin contracting with the government could be much younger, relative to other firms, and thus improve their external reporting quality more in the post period. I find that the difference in firm age between my treatment and control firms is not significantly different from zero (mean difference = -0.260; p-value = 0.769), and my results are robust to including firm age as an additional control variable (untabulated).

<sup>28</sup> However, note that the effect of more persistent earnings on voluntary disclosure is theoretically ambiguous. Increased future earnings persistence can either result in *reduced* voluntary disclosure, because investors' uncertainty about earnings is lower, or *increased* voluntary disclosure, because managers can better forecast earnings (e.g., Verrecchia, 1990).

included in my regressions, the concern remains that my models omit other correlated variables of this nature.

#### 4.3 *Cross-sectional variation in characteristics with greater internal information requirements*

The purpose of this section is to provide corroborating evidence on the mechanism linking procurement-related requirements on contractors' internal information processes to their external reporting quality. I examine whether, within the sample of government contractors, the quality of their external reporting varies predictably with contract characteristics that directly influence the scope and extent of the government's internal information requirements: (1) *CostPlus*, a binary indicator variable for whether the firm has a cost reimbursement contract; (2) *CAS*, a binary indicator variable equal to one if the firm has a contract subject to the CAS; (3) *CPData*, a binary indicator variable equal to one if the firm has a contract requiring the provision of cost or pricing data to the government; (4) *NonComm*, a binary indicator variable equal to one if the firm has a contract to provide noncommercial goods and services; and (5) *Duration*, measured as the average annual length of all contracts signed during the fiscal year, weighted by contract dollar amount, where annual length is the contract completion date minus signed date, divided by 365.

I also construct an index (*Index*) combining these measures, using principal component analysis. Appendix B presents the results from this analysis. The principal component output shows that only a single factor has an eigenvalue greater than one, and this factor explains 43.2% of the variation in these measures. The correlation matrix shows that all contract characteristics are fairly highly correlated with the index and with each other, which suggests that these factors capture a common underlying economic construct.

Within the sample of firm-years with government contracts, I estimate how the association between  $\$Contract/Sales$  and measures of external reporting quality varies with these contract characteristics in the following model.

$$\begin{aligned}
 \text{Reporting}_{t+1} = & \alpha_0 + \alpha_1 \$\text{Contract}/\text{Sales} \times \text{Index} + \alpha_2 \$\text{Contract}/\text{Sales} + \alpha_3 \text{Index} \\
 & + \theta_n \text{Controls}_t + \gamma + \delta + \varepsilon_t,
 \end{aligned} \tag{3}$$

where *Reporting* is one of my three measures of external reporting, *Index* is as defined above, and *Controls* is the vector of control variables used in equation (1). In addition to control variables, I include year fixed effects as well as industry or firm fixed effects in the model.

Results appear in Table 5. Panel A presents results from examining the univariate association between contract characteristics and the quality of contractors' information environment. The panel shows that firms with contracts that have any of the characteristics with greater internal information requirements have significantly higher external reporting quality. Such firms are about 4% to 14% more likely to issue a management forecast, provide between one to three additional forecasts over a given year, and issue earnings roughly two to four days earlier, depending on the characteristic. These results provide initial evidence that firms with greater government scrutiny have higher quality information environments.

Panel B presents results from the cross-sectional regressions in equation (3). When using *VolDisc* and *VolDisc\_Freq* as the dependent variable,  $\alpha_1$  is positive and significant in all specifications, suggesting that the relation between contract awards and external reporting quality is increasing in the government's internal information requirements. However, the relation between *Speed* and external reporting does not seem to vary with *Index*. In Panel C, I examine these cross-sectional associations for each individual contract characteristic. Each of the five characteristics appears to drive one or several specifications having *VolDisc* or *VolDisc\_Freq* as the dependent variable. The relation between *Contract/Sales* and *Speed* is also significantly greater for firms that have *CostPlus* contracts (when including year and firm fixed effects). Collectively, these results are consistent with procurement-related requirements on contractors' internal information processes being a mechanism behind higher quality external reporting.

## 5. Additional analyses

### 5.1 *Establishment of the Cost Accounting Standards Board*

A potential concern with the above analyses is that the award of a government contract itself captures omitted factors correlated with external reporting quality, leading to self-selection, reverse causality, and other identification concerns. In this section, I aim to reduce these concerns by using the establishment of the Cost Accounting Standards Board (CASB) as a shock to the largest defense contractors' internal information requirements, and assessing its effect on their external reporting.

In the late 1960s, congressional hearings raised concerns over firms making excessive profits on defense contracts through cost manipulation. Prior to the establishment of the CASB, the Armed Services Procurement Act relied on GAAP to evaluate contractors' cost accounting practices, which arguably offered contractors discretion to select methods that overstated costs for reimbursement. In August 1970, Congress passed a statute establishing the CASB for the purpose of promulgating cost accounting standards (CAS) designed to achieve uniformity and consistency in the cost accounting principles followed by defense contractors in estimating, accumulating, and reporting costs under federal contracts.<sup>29</sup> All national defense contractors with contracts in excess of \$100,000 had to comply. The defense industry was widely opposed to a uniform set of cost accounting standards. Defense contractors incurred a net decline in shareholder wealth over the two years of congressional hearings preceding the establishment of the CASB, consistent with the market viewing it as a deterrent to contractors' ability to extract excessive reimbursements from the government (Pownall, 1986).

The CASB promulgated its first two CAS on July 1, 1972 (CAS 401 and CAS 402). At the same time, the CASB also mandated that large defense contractors provide a "disclosure statement," detailing how they allocate costs to verify contractors' compliance with the CAS, and ensure that the cost allocation

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<sup>29</sup> Public Law 91-379, an amendment to the Defense Production Act of 1950.

methods are followed consistently for all covered contracts (CASB, 1973).<sup>30</sup> By 1980, the CASB had promulgated a total of 19 CAS stating the principles for the measurement, allocation, and assignment of various cost subjects.

To identify firms affected by the establishment of the CASB, I refer to the list of top 100 contractors published by the Department of Defense in 1970. Seventy-two of these firms have the required CRSP/Compustat data for my analysis and represent my treatment group. I use any remaining firms in the CRSP/Compustat population that belong to the same SIC two-digit industries as my control group (2,097 firms). The data on which of these firms are also government contractors are not readily available, so there are certainly other government contractors in my control group. However, this likely works against the likelihood of finding my predicted results. Given the limitations in data availability during the period used in this analysis (the data on voluntary disclosure and earnings announcement dates are not readily available in this period), I use a measure of illiquidity to proxy for the quality of the information environment. Market-based measures of illiquidity encompass all sources of public information and represent an ex-post proxy for the firm's overall quality of public information (e.g., Balakrishnan, Core, and Verdi, 2014).

I measure illiquidity using the proportion of zero return trading days in a given fiscal year (*Illiquidity*) (e.g., Lang, Lins, and Maffett, 2012). Days without price movements typically reflect infrequent trading—a manifestation of greater illiquidity. Using this measure is advantageous because stock prices are readily available in the period of the CASB establishment.<sup>31</sup> I estimate the following difference-in-differences regression.

$$Illiquidity_{t+1} = \beta_0 + \beta_1 TopDefense \times Post + \theta_n Controls_t + \gamma + \delta + \varepsilon_t, \quad (4)$$

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<sup>30</sup> The primary objective of the disclosure statement is to clearly describe the cost accounting practices the contractor intends to follow (i.e., define which costs will be charged directly to contracts, the methods used to make such charges, the methods of distinguishing direct costs from indirect costs, and the basis for allocating indirect costs to contracts) (CASB, 1999).

<sup>31</sup> My results are also robust to using the proportion of zero volume trading days as an alternative dependent variable (untabulated). My results are also robust to using the Amihud (2002) measure of illiquidity (calculated as the natural logarithm of one plus the average annual absolute value of returns scaled by dollar volume) (untabulated), although sparse availability of volume data during this period reduces the sample by about 20%.

where *TopDefense* is a binary indicator variable equal to one for firms in the treatment group and zero for firms in the control group, and *Post* is a binary indicator variable equal to one for fiscal years equal to or greater than 1970. *Controls* is a vector including the control variables defined in equation (1), except for *NAnalysts* and *NInstit*, which are not readily available during this period. I also include year and firm fixed effects in the model, which absorb the main effects on *Treated* and *Post*. The coefficient  $\beta_1$  estimates the within-firm difference in the quality of the information environment for contractors after the establishment of the CASB, relative to other firms in the same industries. I estimate this model over six years prior to and six years after the CASB establishment (fiscal years 1964–1976). I use a relatively long window because it is unclear whether the establishment of the CASB itself in 1970 had an immediate effect on contractors, or whether the effect manifests itself after the promulgation of the first CAS in 1972. To illuminate the timing of any effect of the CASB on contractors' information environment, I also examine trends in *Illiquidity* around this event.

My results appear in Table 6. Panel A presents descriptive statistics. Firms in my treatment group are significantly larger, with greater growth opportunities, lower return volatility, and a lower percentage of zero return trading days. Panel B presents results from estimating the difference-in-differences regressions. Column (1) presents results from estimating the model in equation (4) in a larger sample without including control variables, and column (2) presents results after including controls. In both specifications, the difference-in-differences coefficient ( $\beta_1$ ) is negative and statistically significant, indicating that within-firm differences in the number of zero-return trading days are significantly lower for top defense contractors after the establishment of the CASB.

Next, I examine trends in *Illiquidity* in the years surrounding the establishment of the CASB. I estimate the same specification as in column (1) of Panel B, except that I interact *TopDefense* with every year from 1967 to 1976, using the prior period's average (1964–1966) as the benchmark. I illustrate these results in Figure 2. The figure shows that differences in *Illiquidity* between treatment and control groups

appear in 1973, immediately after the promulgation of the first CAS, and that these differences persist through 1976. Importantly, there appear to be no significant differences in external reporting quality between the treatment and control groups in the period before the establishment of the CASB, consistent with the parallel trends assumption.

Although these results provide corroborating evidence of my prediction, the promulgation of the CAS coincided with several events in 1972–1973 surrounding the Vietnam war that likely resolved some uncertainty regarding defense contractors' prospects (e.g., draft peace accord of October 1972 between Vietnam and the United States and Paris Peace Accords of January 1973). I cannot rule out that these concurrent events (at least in part) contribute to my results, which should thus be interpreted with caution.

## 5.2 *Changes in the information environment after the discontinuance of government contracting*

My collective results suggest that procurement-related requirements on contractors' internal information processes are associated with improvements in external reporting. However, it isn't clear whether these improvements stem from (i) the implementation or enhancement of internal information systems, (ii) stronger monitoring of them, or both. In an attempt to disentangle these two channels, I examine changes in the information environment of contractors that end their relationship with the government. I expect that the implementation or enhancement of internal information systems would lead to somewhat permanent changes in external reporting quality, as firms likely incur the bulk of the costs upon implementation, and it may thus be cost-effective to keep these systems in place. On the other hand, if the effect comes predominantly from the government's ongoing monitoring, then I would expect external reporting to decline and revert to its pre-existing levels, once the contracting relationship ends.

My analysis mirrors my tests using first-time contractors (section 4.2, Table 4), except that I identify treatment firms as those that discontinue contracting with the government in my sample. My results appear in Table 7. The covariate balance in Panel A shows no significant differences in covariate means and medians between my treatment and control groups, suggesting they are similar along key dimensions of

the information environment in the year preceding the treatment firms' last year of contracting. Panel B presents results from the difference-in-differences regressions. Across all specifications, the coefficient on *Treated x Post* is not significantly different from zero, suggesting that any improvements in the information environment resulting from procurement-related requirements stem primarily from the implementation of better internal information processes, as opposed to the government's ongoing monitoring. However,  $\alpha_1$  is negative when using *VolDisc\_Freq* as the dependent variable in columns (3) and (4). Although not statistically significant at conventional levels ( $t$ -stats =  $-1.28$  and  $-1.37$ , respectively), the sample size is markedly smaller, relative my previous analyses (1,486 observations), which is suggestive of low power. Thus, these results do not conclusively rule out the monitoring channel, and should generally be interpreted with caution.<sup>32</sup>

### 5.3 Robustness to alternative measures of external reporting quality

Management forecast accuracy is an alternative measure of external reporting quality that is arguably also closely related to firms' internal information processes (e.g., Gallemore and Labro, 2015). In Table 8, I show that my main results are robust to using this measure as the dependent variable. I measure *Accuracy* using the absolute value of management's last available estimate of earnings per share before fiscal year-end minus the firm's actual earnings per share, divided by the stock price at the end of the year and multiplied by negative one. This measure is conditional on the issuance of an earnings forecast, reducing the sample to 18,117 observations. In columns (1) and (2) of Table 8, I estimate the same specification as in Table 3, except that I replace the dependent variable with *Accuracy*, and find that the coefficients on *Contract* and  $\$Contract/Sales$  are positive and strongly significant, as predicted.

As discussed in section 5.1, market-based measures of illiquidity encompass all sources of public information and are useful ex-post proxies for the firm's overall information environment quality.

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<sup>32</sup> Note that this test is subject to the same caveats as the test using contract starters, as discussed in section 4.2 (i.e., the results could be driven by changes in firm fundamentals subsequent to the discontinuance of a contract that are omitted from my controls and correlated with changes in external reporting).



Although illiquidity represents the market's interpretation of the firm's information environment and is thus arguably more removed from its internal processes (unlike supply-side measures such as voluntary disclosure), these measures have the added advantage of capturing any improvements to the firm's information as perceived by market participants. That is, even if a contractor's internal information processes are of sufficient quality and do not need any improvement, a government audit can increase their quality as perceived by investors and other stakeholders. In columns (3) and (4) of Table 8, I estimate the same specification as in Table 3, except that I replace the dependent variable with *Illiquidity* (as defined in section 5.1 and Table 6) and find that the coefficients on both measures of government contracting are negative and strongly significant, consistent with my prediction.

## **6. Conclusion**

I examine the association between customer internal information requirements and the firm's external reporting environment, using U.S. government contracts. The Federal Acquisition Regulations require contractors to have certain financial attributes and internal information processes. I argue that these requirements help improve contractors' internal information, and that these improvements manifest themselves in better external reporting. I test my prediction using various research designs and employing multiple measures of procurement-related requirements and external reporting. I find that both the existence and size of government contracts are positively associated with the quality of firms' voluntary disclosure and the speed of their earnings releases. I also find higher levels of external reporting quality for firms that begin contracting with the government for the first time, relative to an otherwise similar control group.

I also focus on specific oversight mechanisms and examine contract characteristics directly related to the extent of internal information requirements and find that the association between the size of government contract awards and the quality of firms' external reporting environment increases with these characteristics. I further examine the effect of one of these mechanisms, compliance with cost accounting

standards, on the quality of the information environment by using the establishment of the Cost Accounting Standards Board in 1970. I find that the information environment improved significantly for top military contractors subject to CASB-related requirements, relative to other firms in the same industries.

These findings suggest that the government's oversight of its suppliers' internal information is quite extensive, potentially raising concerns regarding the consequences of recently proposed budget cuts. The DCAA has struggled with an incurred cost audit backlog over the past two decades, resulting in reduced savings on claims from suppliers. The 2016 defense authorization act prohibited the DCAA from providing audit support to nondefense agencies, and the more recent 2017 hiring freeze further suppressed its efforts to decrease the audit backlog. Such budget cuts are likely to impair the efficiency of the procurement process (e.g., Maucione, 2017).

Collectively, my results suggest that customers play a role in shaping the firm's external reporting environment. Although my study focuses on government contracts, many of the oversight practices used by the government resemble those used in other settings. For example, certain industries use contracts requiring supplier cost audits (e.g., contracts with target cost-incentive fees in the construction industry), or revenue audits (e.g., license agreements in the entertainment industry). To the extent that such procedures influence suppliers' internal information processes, I expect my results to generalize beyond the government sector.

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## Appendix A. Variable definitions

### Measures of government contract awards

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<i>DollarsObligated</i>	Total federal dollars obligated to a firm (“dollars obligated” from the Federal Procurement Data System available at <a href="http://USAspending.gov">USAspending.gov</a> ) over the fiscal year.
<i>\$Contract/Sales</i>	<i>DollarsObligated</i> scaled by sales at fiscal year-end.
<i>Contract</i>	Binary indicator variable equal to one if <i>DollarsObligated</i> is nonmissing.

### Measures of the reporting environment

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<i>VolDisc</i>	Binary indicator variable equal to one if the firm issued a management forecast over the fiscal year.
<i>VolDisc_Freq</i>	Number of management forecasts issued over the fiscal year.
<i>Speed</i>	Number of days between the earnings announcement date and the end of the fiscal year, divided by 365 and multiplied by negative one.
<i>Illiquidity</i>	Proportion of zero-return trading days over the fiscal year.

### Control variables

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<i>Size</i>	Natural logarithm of market value of equity.
<i>Leverage</i>	Long-term debt plus short-term debt, scaled by total assets.
<i>MTB</i>	Market value of equity divided by book value of equity.
<i>SalesGrowth</i>	End of fiscal year sales minus beginning of fiscal year sales, divided by beginning of fiscal year sales.
<i>ROA</i>	Return on assets, measured as income before extraordinary items scaled by total assets.
<i>Loss</i>	Binary indicator variable equal to one if income before extraordinary items is negative and zero otherwise.
<i>Returns</i>	Buy-and-hold return over the fiscal year.
<i>σReturns</i>	Standard deviation of monthly returns over the fiscal year.
<i>SpecialItems</i>	Special items scaled by total assets.
<i>BigN</i>	Binary indicator variable equal to one if the firm is audited by a Big N auditor over the fiscal year.
<i>NAnalysts</i>	Number of analysts with one-year-ahead earnings forecasts as of the end of the fiscal year.
<i>NInstit</i>	Number of institutional investors as of the end of the fiscal year.

### Variables used in cross-sectional tests

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<i>Index</i>	Index constructed as the first principal component of <i>CPData</i> , <i>CAS</i> , <i>CostPlus</i> , <i>NonComm</i> , and <i>Duration</i> .
<i>CPData</i>	Binary indicator variable equal to one if the firm is required to provide cost or pricing data to the government.
<i>CAS</i>	Binary indicator variable equal to one if the firm is subject to cost accounting standards, pursuant to FAR 30.
<i>CostPlus</i>	Binary indicator variable equal to one if the firm has “cost reimbursement” contracts as defined by FAR 16.3.
<i>NonComm</i>	Binary indicator variable equal to one if the firm provides goods or services that are not subject to commercial item acquisition procedures, pursuant to FAR 12.
<i>Duration</i>	Average annual length of all contracts signed during the fiscal year, weighted by contract dollar amount, where annual length is the contract completion date minus signed date, divided by 365.

## Appendix B. Principal component analysis of contract characteristics with greater internal information requirements

Panel A presents the output from the principal component analysis used to construct the index of procurement-related internal information requirements (*Index*). I construct the index as the first principal component of five contract characteristics associated with greater internal information requirements: *CostPlus*, *CAS*, *CPData*, *NonComm* and *Duration*. Panel B presents correlations between the index and its five components.

*Panel A. Principal component output*

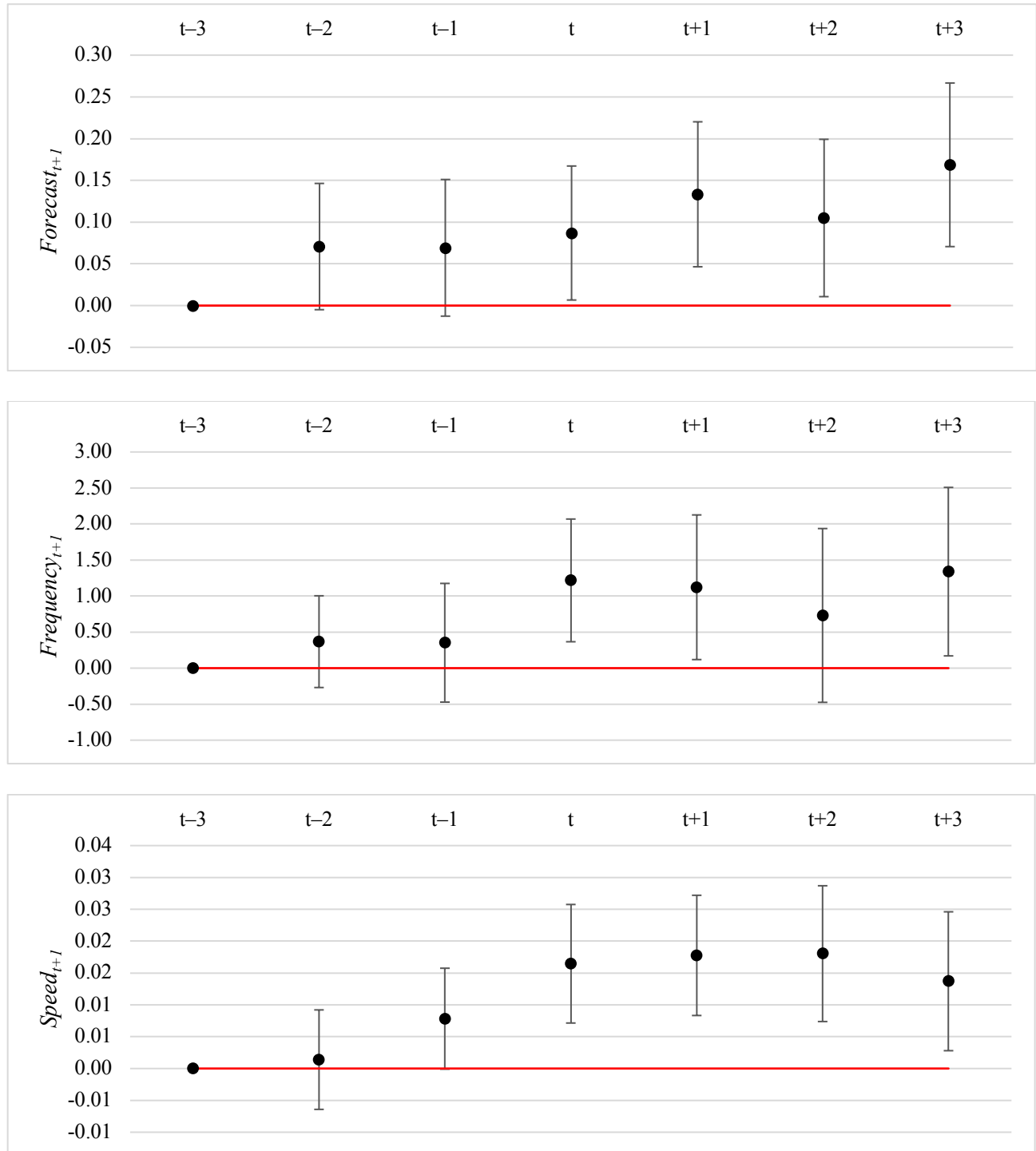
Factor	Eigenvalue	Proportion of the variation explained	Cumulative Proportion of the variation explained	Contract Characteristics	First Principal Component Weights
1 <sup>st</sup>	2.158	0.432	0.432	<i>CostPlus</i>	0.365
2 <sup>nd</sup>	0.975	0.195	0.627	<i>CAS</i>	0.371
3 <sup>rd</sup>	0.899	0.180	0.807	<i>CPData</i>	0.375
4 <sup>th</sup>	0.528	0.106	0.912	<i>NonComm</i>	0.204
5 <sup>th</sup>	0.440	0.088	1.000	<i>Duration</i>	0.101

*Panel B. Correlation matrix*

	<i>Index</i>	<i>CostPlus</i>	<i>CAS</i>	<i>CPData</i>	<i>NonComm</i>	<i>Duration</i>
<i>Index</i>	1.000					
<i>CostPlus</i>	0.790	1.000				
<i>CAS</i>	0.803	0.478	1.000			
<i>CPData</i>	0.811	0.489	0.559	1.000		
<i>NonComm</i>	0.442	0.258	0.171	0.194	1.000	
<i>Duration</i>	0.327	0.242	0.225	0.204	0.123	1.000

**Figure 1. Trends in the external information environment around first-time contract awards**

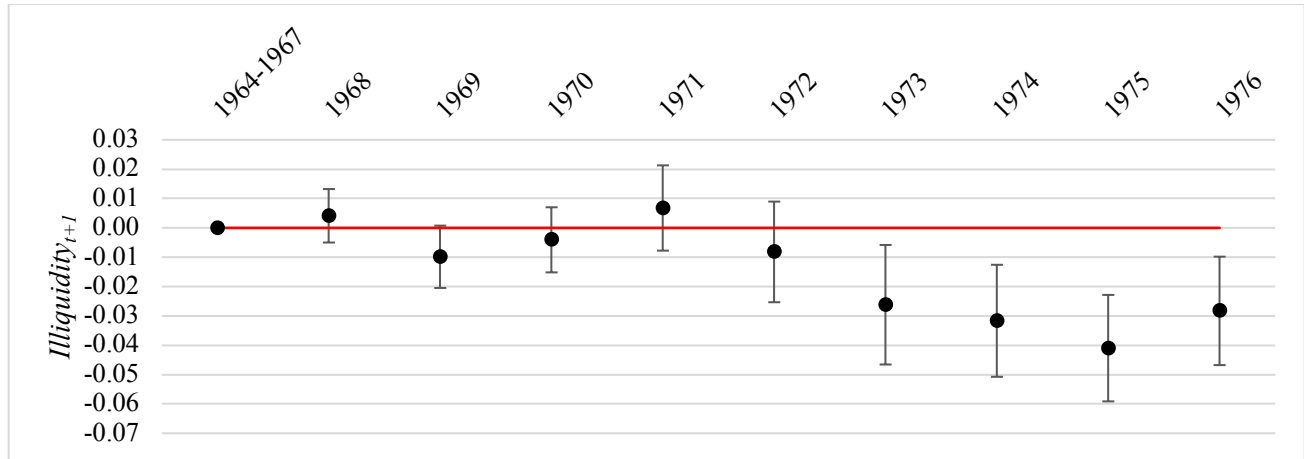
This figure plots trends in the external reporting environment around firms' first contract awards. Specifically, this figure presents the difference-in-differences in *Forecast*, *Frequency*, and *Speed* between first-time contractors and a matched sample of otherwise similar firms, as estimated in Table 4, for every year relative  $t-3$  (the benchmark), where  $t$  represents the year that the contract is initially awarded. The bars represent 90% confidence intervals. All variables are defined in Appendix A.





**Figure 2. Trend in the external information environment around the establishment of the Cost Accounting Standards Board**

This figure plots trends in firms' external reporting environment around the establishment of the Cost Accounting Standards Board in 1970. Specifically, this figure presents the difference-in-differences in *Illiquidity* between the top 100 defense contractors and other firms in the same industries, as estimated in Table 6, for every year relative to the pre-period (1964–1967). The bars represent 90% confidence intervals. All variables are defined in Appendix A.



**Table 1. U.S. government contract awards**

This table presents descriptive statistics for U.S. government contract awards for government fiscal years 2000 through 2016 (i.e., October 1, 1999–September 30, 2016). The table presents the total value of contract awards by year (in billions of dollars), the total number of contracts, the share of value awarded subject to cost reimbursement pricing (*CostPlus*), the share of value awarded subject to cost accounting standards (*CAS*), the share of value awarded subject to the requirement to provide cost or pricing data (*CPData*), the share of value awarded not subject to commercial items acquisition procedures (*NonComm*), and the share of value by contract duration (*Duration*). Panel A presents descriptive statistics by government fiscal year for the entire sample of U.S. government contracts downloaded from USAspending.gov. Panel B presents descriptive statistics by firm fiscal year for the sample of *CRSP/Compustat* contracts used in the analysis. Panel C presents the distribution of the sample of *CRSP/Compustat* contracts used in the analysis by industry, using the Fama-French 12 industry classification.

*Panel A. U.S. government contract awards*

Government Fiscal Year	Contract value (\$ billions)	Number of contracts	<i>CostPlus</i> (% of value)	<i>CAS</i> (% of value)	<i>CPData</i> (% of value)	<i>NonComm</i> (% of value)	<i>Duration</i> > 1 year (% of value)
2000	206	594,574	0.24	0.02	0.22	0.86	0.51
2001	223	641,969	0.25	0.09	0.20	0.83	0.52
2002	264	830,361	0.22	0.10	0.20	0.81	0.51
2003	325	1,183,238	0.23	0.15	0.20	0.82	0.50
2004	339	1,997,099	0.23	0.18	0.23	0.84	0.50
2005	390	2,918,378	0.24	0.13	0.13	0.90	0.45
2006	430	3,792,822	0.25	0.15	0.09	0.87	0.47
2007	469	4,107,291	0.27	0.19	0.16	0.82	0.52
2008	540	4,500,387	0.27	0.19	0.16	0.82	0.51
2009	540	3,490,967	0.30	0.23	0.15	0.81	0.49
2010	559	3,532,784	0.23	0.27	0.17	0.76	0.45
2011	538	3,398,114	0.26	0.26	0.25	0.78	0.49
2012	520	3,120,004	0.25	0.26	0.24	0.77	0.51
2013	463	2,507,805	0.26	0.29	0.24	0.76	0.51
2014	445	2,521,275	0.28	0.27	0.23	0.75	0.48
2015	438	4,360,396	0.28	0.27	0.23	0.75	0.51
2016	474	4,808,498	0.28	0.29	0.24	0.76	0.52
Mean	421	2,841,527	0.26	0.20	0.20	0.81	0.50
Sum	7,163	48,305,962					

**Table 1. U.S. government contract awards (cont'd)**

*Panel B. CRSP/Compustat sample of U.S. government contract awards*

Firm Fiscal Year	Contract value (\$ billions)	% of total contract value (Panel A)	Number of contracts	% of total contracts (Panel A)	<i>CostPlus</i> (% of value)	<i>CAS</i> (% of value)	<i>CPData</i> (% of value)	<i>NonComm</i> (% of value)	<i>Duration</i> > 1 year (% of value)
2000	78	0.38	99,225	0.17	0.18	0.06	0.33	0.87	0.64
2001	89	0.40	132,455	0.21	0.17	0.17	0.31	0.85	0.60
2002	121	0.46	169,698	0.20	0.15	0.21	0.37	0.87	0.62
2003	136	0.42	268,637	0.23	0.17	0.27	0.36	0.84	0.62
2004	145	0.43	404,930	0.20	0.20	0.30	0.32	0.89	0.61
2005	141	0.36	587,367	0.20	0.22	0.22	0.17	0.92	0.57
2006	203	0.47	853,325	0.22	0.25	0.29	0.21	0.91	0.65
2007	204	0.43	1,044,611	0.25	0.28	0.29	0.24	0.86	0.60
2008	246	0.46	1,093,473	0.24	0.31	0.29	0.23	0.87	0.56
2009	219	0.41	898,940	0.26	0.32	0.31	0.23	0.85	0.55
2010	233	0.42	881,357	0.25	0.26	0.41	0.31	0.85	0.56
2011	228	0.42	812,499	0.24	0.28	0.38	0.36	0.85	0.57
2012	242	0.47	713,120	0.23	0.26	0.44	0.35	0.84	0.60
2013	188	0.41	583,615	0.23	0.28	0.44	0.34	0.83	0.55
2014	194	0.44	727,958	0.29	0.30	0.46	0.33	0.83	0.57
2015	185	0.42	1,365,283	0.31	0.30	0.44	0.34	0.82	0.57
2016	18	0.04	695,710	0.14	0.22	0.26	0.27	0.80	0.48
Mean	169	0.39	666,600	0.22	0.24	0.31	0.30	0.86	0.58
Sum	2,869		11,332,203						

**Table 1. U.S. government contract awards (cont'd)**

*Panel C. Distribution by industry*

Industry	Contract value (\$ billions)	% of sample contract value (Panel B)	Number of contracts	% of sample contracts (Panel B)	% <i>CostPlus</i>	% <i>CAS</i>	% <i>CPData</i>	% <i>NonComm</i>	% <i>Duration</i> > 1 year
Business Equipment	704	0.25	2,014,573	0.18	0.357	0.322	0.290	0.878	0.553
Chemicals	7	0.00	148,682	0.01	0.122	0.023	0.025	0.365	0.190
Consumer Durables	59	0.02	330,641	0.03	0.014	0.133	0.295	0.810	0.480
Energy	64	0.02	29,407	0.00	0.011	0.008	0.002	0.152	0.651
Healthcare	59	0.02	722,187	0.06	0.074	0.051	0.034	0.312	0.248
Manufacturing	1,394	0.49	2,305,463	0.20	0.238	0.415	0.387	0.945	0.729
Finance	107	0.04	115,144	0.01	0.720	0.833	0.169	0.960	0.324
Consumer Non-Durables	20	0.01	105,179	0.01	0.010	0.001	0.001	0.358	0.020
Other	293	0.10	778,453	0.07	0.246	0.180	0.228	0.897	0.438
Retail	114	0.04	4,310,475	0.38	0.003	0.013	0.006	0.379	0.066
Telecom	29	0.01	391,651	0.03	0.113	0.044	0.041	0.577	0.462
Utilities	18	0.01	80,348	0.01	0.068	0.012	0.005	0.663	0.483
Sum	2,869	1.000	11,332,203	1.000					

**Table 2. Descriptive statistics**

This table presents descriptive statistics for the variables used in the analysis. Panel A provides descriptive statistics for my full sample. Panel B provides descriptive statistics for my sample of government contractors and shows differences in firm characteristics between my sample of contractors and noncontractors. All variables are defined in Appendix A.

*Panel A: Descriptive statistics*

Variable	Observations	Mean	Std	25th	Median	75th
<i>Measures of reporting</i>						
<i>VolDisc</i>	79,383	0.469	0.499	0.000	0.000	1.000
<i>VolDisc_Freq</i>	79,383	4.785	7.835	0.000	0.000	7.000
<i>Speed</i>	79,383	-0.142	0.065	-0.181	-0.132	-0.090
<i>Control variables</i>						
<i>Size</i>	79,383	6.042	2.199	4.421	5.995	7.548
<i>Leverage</i>	79,383	0.222	0.220	0.029	0.168	0.346
<i>MTB</i>	79,383	5.426	8.283	2.196	3.636	6.858
<i>SalesGrowth</i>	79,383	0.149	0.492	-0.041	0.067	0.206
<i>ROA</i>	79,383	-0.038	0.245	-0.023	0.017	0.061
<i>Loss</i>	79,383	0.314	0.464	0.000	0.000	1.000
<i>Returns</i>	79,383	0.115	0.600	-0.236	0.051	0.334
<i><math>\sigma</math>Returns</i>	79,383	0.136	0.095	0.071	0.109	0.169
<i>SpecialItems</i>	79,383	-0.018	0.067	-0.009	0.000	0.000
<i>BigN</i>	79,383	0.720	0.449	0.000	1.000	1.000
<i>NAnalysts</i>	79,383	4.921	6.171	0.000	2.000	7.000
<i>NInstit</i>	79,383	120.141	156.443	19.000	70.000	152.000

**Table 2. Descriptive statistics (cont'd)**

*Panel B: Sample of government contractors*

*Contract size measures*

	Obs.	Mean	Std	5 <sup>th</sup>	10th	25th	Med.	75th	90th	95th	99th
<i>\$Contract/Sales (%)</i>	23,182	5.501	126.383	0.000	0.000	0.008	0.104	0.803	4.949	17.517	77.089
<i>DollarsObligated</i> (in millions)	23,182	124.000	1,240.000	0.000	0.006	0.056	0.628	6.727	48.300	192.000	2,320.000

*Contract characteristics*

	Obs.	Mean	Std	25th	Med.	75th
<i>Index</i>	22,051	0.087	1.022	-0.426	-0.371	0.486
<i>CPData</i>	23,182	0.165	0.371	0.000	0.000	0.000
<i>CAS</i>	23,182	0.124	0.330	0.000	0.000	0.000
<i>CostPlus</i>	23,182	0.252	0.434	0.000	0.000	1.000
<i>NonComm</i>	23,182	0.807	0.395	1.000	1.000	1.000
<i>Duration</i>	22,051	0.782	0.993	0.164	0.515	0.976

*Firm characteristics*

Variable	Sample of contractors (N = 23,182)			Sample of non-contractors (N = 56,201)			Diff. in Means	<i>p</i> -value	Diff. in Medians	<i>p</i> -value
	Mean	Std	Median	Mean	Std	Median				
<i>VolDisc</i>	0.643	0.479	1.000	0.398	0.489	0.000	0.246	< [0.01]	1.000	< [0.01]
<i>VolDisc_Freq</i>	7.445	9.072	4.000	3.688	6.974	0.000	3.756	< [0.01]	4.000	< [0.01]
<i>Speed</i>	-0.131	0.056	-0.123	-0.146	0.068	-0.137	0.015	< [0.01]	0.014	< [0.01]
<i>Size</i>	6.837	2.210	6.875	5.714	2.108	5.641	1.123	< [0.01]	1.234	< [0.01]
<i>Leverage</i>	0.227	0.207	0.196	0.220	0.225	0.156	0.008	[0.08]	0.041	< [0.01]
<i>MTB</i>	4.750	7.711	3.528	5.705	8.492	3.703	-0.955	< [0.01]	-0.175	< [0.01]
<i>SalesGrowth</i>	0.115	0.360	0.067	0.163	0.536	0.067	-0.049	< [0.01]	0.000	[0.97]
<i>ROA</i>	-0.009	0.199	0.033	-0.050	0.260	0.012	0.041	< [0.01]	0.021	< [0.01]
<i>Loss</i>	0.264	0.441	0.000	0.334	0.472	0.000	-0.070	< [0.01]	0.000	NA
<i>Returns</i>	0.128	0.545	0.074	0.109	0.621	0.041	0.018	< [0.01]	0.034	< [0.01]
<i>σReturns</i>	0.123	0.083	0.100	0.141	0.099	0.113	-0.018	< [0.01]	-0.012	< [0.01]
<i>SpecialItems</i>	-0.018	0.063	-0.001	-0.018	0.068	0.000	0.000	[0.60]	-0.001	< [0.01]
<i>BigN</i>	0.825	0.380	1.000	0.677	0.468	1.000	0.148	< [0.01]	0.000	NA
<i>NAnalysts</i>	6.711	6.968	4.000	4.183	5.647	2.000	2.528	< [0.01]	2.000	< [0.01]
<i>NInstit</i>	186.607	200.808	124.000	92.725	123.950	52.000	93.882	< [0.01]	72.000	< [0.01]

**Table 3. Government contracting and the information environment**

This table presents results from estimating the association between government contracting and the firm's information environment. In Panel A, Columns (1), (3), and (5) measure government contracting, using an indicator variable for whether a contract was awarded (*Contract*). Columns (2), (4), and (6) measure government contracting, using the size of the award, relative to firm sales ( $\$Contract/Sales$ ), transformed into quintile ranks scaled to range from 0 to 1. Panel B uses the same specification as in columns (2), (4), and (6) of Panel A, except that I replace  $\$Contract/Sales$  with binary indicator variables equal to one for firm-years within each quartile of  $\$Contract/Sales > 0$  ( $\$Contract/Sales\_Q1 - \$Contract/Sales\_Q4$ ), where the omitted group represents firm-years with  $\$Contract/Sales = 0$ . All other variables are defined in Appendix A. *t*-statistics appear in parentheses and are based on standard errors clustered by firm. \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively.

*Panel A: Association between government contracting and firms' external reporting*

Variable	Pred. sign	<i>VolDisc<sub>t+1</sub></i>		<i>VolDisc Freq<sub>t+1</sub></i>		<i>Speed<sub>t+1</sub></i>	
		(1)	(2)	(3)	(4)	(5)	(6)
<i>Contract</i>	+	0.064*** (7.72)		0.959*** (6.31)		0.005*** (4.98)	
$\$Contract/Sales$	+		0.091*** (7.69)		1.596*** (6.97)		0.005*** (3.81)
Control variables							
<i>Size<sub>t</sub></i>		0.009*** (3.09)	0.010*** (3.38)	-0.032 (-0.81)	-0.020 (-0.52)	0.008*** (17.35)	0.008*** (17.52)
<i>Leverage<sub>t</sub></i>		0.082*** (5.08)	0.084*** (5.25)	1.395*** (5.29)	1.430*** (5.43)	-0.018*** (-9.00)	-0.018*** (-8.91)
<i>MTB<sub>t</sub></i>		-0.001** (-2.40)	-0.001** (-2.39)	-0.000 (-0.01)	0.000 (0.02)	-0.0001** (-2.46)	-0.0001** (-2.47)
<i>SalesGrowth<sub>t</sub></i>		0.001 (0.27)	0.001 (0.24)	0.081* (1.88)	0.083* (1.94)	-0.003*** (-6.89)	-0.003*** (-6.95)
<i>ROA<sub>t</sub></i>		0.196*** (16.49)	0.197*** (16.64)	2.402*** (14.78)	2.422*** (14.96)	0.014*** (7.83)	0.014*** (7.89)
<i>Loss<sub>t</sub></i>		-0.023*** (-3.97)	-0.023*** (-3.90)	-0.648*** (-6.89)	-0.640*** (-6.81)	-0.008*** (-9.55)	-0.008*** (-9.54)
<i>Returns<sub>t</sub></i>		0.028*** (9.26)	0.028*** (9.17)	0.623*** (14.01)	0.619*** (13.90)	0.003*** (6.10)	0.003*** (6.06)
$\sigma Returnst$		0.026 (0.99)	0.028 (1.05)	-3.537*** (-9.70)	-3.473*** (-9.56)	-0.032*** (-7.94)	-0.033*** (-7.98)
<i>SpecialItems</i>		-0.364*** (-11.46)	-0.367*** (-11.58)	-4.668*** (-10.40)	-4.716*** (-10.52)	-0.011** (-2.31)	-0.011** (-2.38)
<i>BigN</i>		0.087*** (10.66)	0.087*** (10.71)	1.079*** (8.65)	1.086*** (8.70)	0.019*** (17.94)	0.019*** (17.95)
<i>NAnalysts</i>		0.031*** (36.57)	0.031*** (36.76)	0.446*** (29.44)	0.447*** (29.65)	0.001*** (16.32)	0.001*** (16.33)
<i>NInstit</i>		-0.00008** (-2.26)	-0.00007** (-2.17)	0.002** (2.12)	0.002** (2.10)	0.00002*** (4.71)	0.00002*** (4.87)
Year Effects		Yes	Yes	Yes	Yes	Yes	Yes
Industry Effects		Yes	Yes	Yes	Yes	Yes	Yes
Observations		79,383	79,383	79,383	79,383	79,383	79,383
R <sup>2</sup> (%)		34.0	34.0	34.3	34.4	39.8	39.8

**Table 3. Government contracting and the information environment (cont'd)**

*Panel B: Quartiles of contract size*

Variable	Pred. sign	<i>VolDisc</i> <sub><i>t+1</i></sub>	<i>VolDisc Freq</i> <sub><i>t+1</i></sub>	<i>Speed</i> <sub><i>t+1</i></sub>
		(1)	(2)	(3)
<i>\$Contract/Sales_Q1</i>	+	0.026** (2.38)	0.151 (0.73)	0.003*** (2.86)
<i>\$Contract/Sales_Q2</i>	+	0.073*** (6.33)	1.001*** (4.48)	0.006*** (4.60)
<i>\$Contract/Sales_Q3</i>	+	0.072*** (6.03)	1.064*** (4.43)	0.007*** (5.19)
<i>\$Contract/Sales_Q4</i>	+	0.085*** (6.41)	1.674*** (6.24)	0.003* (1.68)
<i>p-value: Q2 – Q1</i>		<0.01	<0.01	0.06
<i>p-value: Q3 – Q1</i>		<0.01	<0.01	0.02
<i>p-value: Q4 – Q1</i>		<0.01	<0.01	0.68
Control variables		Yes	Yes	Yes
Year Effects		Yes	Yes	Yes
Industry Effects		Yes	Yes	Yes
Observations		79,383	79,383	79,383
R <sup>2</sup> (%)		34.1	34.5	39.8



**Table 4. Difference-in-differences analysis using first-time contractors**

This table presents results from examining the relation between government contract awards and the external reporting environment for a sample of firms that first begin contracting with the government, relative to a propensity-score matched sample of otherwise similar firms that do not contract with the government. I match firms in the year prior to the initial contract award on the basis of the control variables presented in Table 3, fiscal year, and industry. Panel A presents the covariate balance. Specifically, this table presents cross-sample differences in covariates for the firms that first begin contracting with the government (*Treatment Firms*) and their propensity-score matched sample counterparts (*Control Firms*). The differences are measured in the year prior to the contract start year. *p*-values (two-tailed) test for differences between means and medians and appear in brackets. Panel B presents results from using a difference-in-differences design to estimate the effect of government contracting on the firm’s external reporting environment. *Treated* is a binary indicator variable equal to one for first-time government contractors and zero for the matched control firms. *Post* is an indicator variable equal to one for fiscal years starting in the year of the initial contract award and zero otherwise. My analysis spans a window of three years prior to and three years after the firm begins contracting (for a total of seven years). All variables are as defined in Appendix A. For parsimony I do not tabulate coefficients on control variables. *t*-statistics appear in parentheses and are based on standard errors clustered by firm. \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively.

*Panel A. Covariate balance*

Variable	Treatment Firms		Control Firms		Diff. in means	<i>p</i> -value	Diff. in medians	<i>p</i> -value
	Mean	Median	Mean	Median				
<i>Size</i>	5.002	5.147	5.107	5.094	-0.105	[0.50]	0.053	[0.80]
<i>Lev</i>	0.176	0.093	0.150	0.064	0.027	[0.14]	0.029	[0.16]
<i>MTB</i>	5.512	3.371	4.837	3.211	0.676	[0.38]	0.160	[0.52]
<i>SalesGrowth</i>	0.330	0.076	0.207	0.082	0.123	[0.08]	-0.005	[0.87]
<i>ROA</i>	-0.180	-0.027	-0.151	-0.025	-0.029	[0.35]	-0.001	[0.91]
<i>Loss</i>	0.542	1.000	0.551	1.000	-0.009	[0.83]	0.000	NA
<i>Returns</i>	0.168	-0.012	0.182	0.002	-0.015	[0.83]	-0.014	[0.85]
<i>σReturns</i>	0.187	0.158	0.175	0.157	0.012	[0.18]	0.001	[0.95]
<i>SpecialItems</i>	-0.021	0.000	-0.018	0.000	-0.003	[0.67]	0.000	NA
<i>BigN</i>	0.761	1.000	0.808	1.000	-0.046	[0.20]	0.000	NA
<i>NAnalysts</i>	3.159	2.000	3.479	2.000	-0.320	[0.40]	0.000	NA
<i>NInstit</i>	61.170	39.000	63.038	37.000	-1.867	[0.80]	2.000	[0.66]

**Table 4. Difference-in-differences analysis using first-time contractors (cont'd)**

*Panel B. Difference-in-differences regressions*

Variable	Pred. sign	<i>VolDisc<sub>t+1</sub></i>		<i>VolDisc Freq<sub>t+1</sub></i>		<i>Speed<sub>t+1</sub></i>	
		(1)	(2)	(3)	(4)	(5)	(6)
<i>Treated x Post</i>	+	0.066** (2.22)	0.058** (2.02)	0.849** (1.99)	0.776* (1.93)	0.013*** (3.61)	0.011*** (3.30)
<i>Post</i>		-0.016 (-0.61)	-0.006 (-0.21)	-0.668** (-2.00)	-0.510 (-1.57)	-0.013*** (-4.09)	-0.011*** (-3.73)
Control variables							
<i>Size<sub>t</sub></i>			0.033** (1.98)		-0.071 (-0.29)		0.007*** (3.63)
<i>Leverage<sub>t</sub></i>			0.070 (1.04)		3.099*** (3.42)		0.000 (0.03)
<i>MTB<sub>t</sub></i>			0.001 (1.17)		0.016* (1.82)		-0.000 (-0.82)
<i>SalesGrowth<sub>t</sub></i>			0.009 (0.94)		-0.184 (-1.36)		-0.001 (-1.23)
<i>ROA<sub>t</sub></i>			0.101** (2.56)		1.287*** (2.63)		0.012** (2.19)
<i>Loss<sub>t</sub></i>			-0.042** (-2.00)		-0.760** (-2.29)		-0.006** (-2.37)
<i>Returns<sub>t</sub></i>			-0.001 (-0.11)		0.240* (1.95)		0.001 (0.92)
<i>σReturns<sub>t</sub></i>			-0.116 (-1.24)		-3.051** (-2.49)		0.004 (0.40)
<i>SpecialItems</i>			-0.184* (-1.72)		-1.517 (-1.54)		0.013 (0.84)
<i>BigN</i>			0.052 (1.61)		0.557* (1.88)		0.007 (1.45)
<i>NAnalysts</i>			0.006 (1.48)		0.076 (0.82)		0.001 (1.26)
<i>NInstit</i>			0.001** (2.13)		0.032*** (5.20)		0.000 (0.31)
Year Effects		Yes	Yes	Yes	Yes	Yes	Yes
Firm Effects		Yes	Yes	Yes	Yes	Yes	Yes
Observations		3,006	3,006	3,006	3,006	3,006	3,006
R <sup>2</sup> (%)		68.5	69.5	74.8	76.5	76.0	77.3

**Table 5. Cross-sectional analysis: Contract characteristics with greater internal information requirements**

This table presents results from examining whether, within the sample of government contract awards, the relation between contract size and the external reporting environment varies with measures associated with greater government scrutiny. Panel A presents univariate differences in external reporting quality between firms with and without contract characteristics imposing greater internal information requirements (*CostPlus*, *CAS*, *CPData*, *NonComm*, and *Duration*). Panel B presents results from cross-sectional regressions. I follow the specifications in Table 3, except that I narrow my sample to firms with government contracts and interact  $\$Contract/Sales$  with *Index*.  $\$Contract/Sales$  is transformed into quintile ranks scaled to range from 0 to 1. Columns (1), (3), and (5) present results including year and industry fixed effects. Columns (2), (4), and (6) present results including year and firm fixed effects. Panel C presents results from cross-sectional regressions using each individual contract characteristic. All variables are defined in Appendix A. For parsimony, I do not tabulate coefficients on control variables. *t*-statistics appear in parentheses and are based on standard errors clustered by firm. \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively.

*Panel A. Univariate cross-sectional analysis*

Variable	<i>VolDisc</i>	<i>VolDisc Freq</i>	<i>Speed</i>	N	
<i>CostPlus</i> = 1	0.709	8.959	-0.125	5,834	
<i>CostPlus</i> = 0	0.621	6.936	-0.134	17,347	
Diff.	0.088	2.023	0.009	23,181	Total
<i>p</i> -value	< [0.01]	< [0.01]	< [0.01]	0.252	% <i>CostPlus</i>
<i>CAS</i> = 1	0.764	10.387	-0.123	2,878	
<i>CAS</i> = 0	0.626	7.028	-0.133	20,303	
Diff.	0.138	3.359	0.010	23,181	Total
<i>p</i> -value	< [0.01]	< [0.01]	< [0.01]	0.124	% <i>CAS</i>
<i>CPData</i> = 1	0.737	9.445	-0.123	3,827	
<i>CPData</i> = 0	0.625	7.049	-0.133	19,354	
Diff.	0.112	2.396	0.010	23,181	Total
<i>p</i> -value	< [0.01]	< [0.01]	< [0.01]	0.165	% <i>CPData</i>
<i>NonComm</i> = 1	0.655	7.697	-0.130	4,479	
<i>NonComm</i> = 0	0.595	6.391	-0.137	18,702	
Diff.	0.060	1.306	0.007	23,181	Total
<i>p</i> -value	< [0.01]	< [0.01]	< [0.01]	0.193	% <i>NonComm</i>
<i>Duration</i> > p.50	0.664	7.870	-0.128	11,025	
<i>Duration</i> < p.50	0.629	7.167	-0.133	11,026	
Diff.	0.035	0.703	0.005	22,051	Total
<i>p</i> -value	[0.01]	[0.01]	< [0.01]	0.500	% <i>Duration</i> > p.50

**Table 5. Cross-sectional analysis: Contract characteristics with greater internal information requirements (cont'd)**

*Panel B. Cross-sectional regressions: Index of contract characteristics*

Variable	Pred. sign	<i>VolDisc<sub>t+1</sub></i>		<i>VolDisc Freq<sub>t+1</sub></i>		<i>Speed<sub>t+1</sub></i>	
		(1)	(2)	(3)	(4)	(5)	(6)
<i>\$Contract/Sales<sub>t</sub> x Index<sub>t</sub></i>	+	0.046*** (2.66)	0.022* (1.77)	1.107*** (2.91)	0.644** (2.57)	0.002 (1.26)	0.002 (1.08)
<i>\$Contract/Sales<sub>t</sub></i>		0.035* (1.80)	0.007 (0.49)	1.623*** (4.12)	0.716** (2.40)	-0.000 (-0.01)	0.003 (1.50)
<i>Index<sub>t</sub></i>		-0.023* (-1.71)	-0.011 (-1.19)	-0.742** (-2.47)	-0.453** (-2.57)	-0.003** (-2.14)	-0.000 (-0.23)
Control variables							
<i>Size<sub>t</sub></i>		-0.002 (-0.27)	0.064*** (8.70)	0.076 (0.80)	0.948*** (6.98)	0.009*** (12.85)	0.008*** (9.92)
<i>Leverage<sub>t</sub></i>		0.071** (2.24)	0.080*** (2.68)	2.122*** (3.42)	2.250*** (3.90)	-0.024*** (-7.15)	-0.008** (-2.18)
<i>MTB<sub>t</sub></i>		0.000 (0.56)	-0.000 (-0.11)	0.015 (1.50)	-0.009 (-1.47)	0.000 (0.17)	0.000 (0.50)
<i>SalesGrowth<sub>t</sub></i>		0.005 (0.57)	0.014* (1.74)	0.615*** (3.83)	0.340** (2.56)	-0.005*** (-4.39)	-0.001 (-1.56)
<i>ROA<sub>t</sub></i>		0.275*** (8.47)	0.121*** (3.43)	3.852*** (8.41)	1.281*** (2.80)	0.026*** (7.07)	0.015*** (3.92)
<i>Loss<sub>t</sub></i>		-0.000 (-0.03)	-0.005 (-0.61)	-0.534** (-2.45)	-0.659*** (-4.02)	-0.005*** (-3.84)	-0.006*** (-5.54)
<i>Returns<sub>t</sub></i>		0.030*** (4.62)	-0.010* (-1.76)	0.682*** (6.55)	0.155* (1.71)	0.001** (2.08)	0.000 (0.88)
<i>σReturns<sub>t</sub></i>		0.089 (1.45)	0.028 (0.56)	-4.717*** (-5.27)	-5.856*** (-7.13)	-0.006 (-0.83)	-0.007 (-1.34)
<i>SpecialItems</i>		-0.382*** (-5.34)	-0.079 (-1.22)	-7.454*** (-6.66)	-2.658*** (-2.73)	-0.009 (-1.02)	0.000 (0.01)
<i>BigN</i>		0.153*** (8.52)	-0.010 (-0.58)	2.742*** (8.77)	0.880*** (3.19)	0.020*** (10.62)	0.004** (2.29)
<i>NAnalysts</i>		0.032*** (22.73)	0.005*** (5.59)	0.527*** (21.22)	0.155*** (6.76)	0.001*** (9.36)	0.0004*** (3.56)
<i>NInstit</i>		-0.0002*** (-3.22)	-0.0002*** (-3.70)	-0.002 (-1.35)	0.000 (0.49)	0.00001** (2.26)	0.000 (0.39)
Year Effects		Yes	Yes	Yes	Yes	Yes	Yes
Industry Effects		Yes	No	Yes	No	Yes	No
Firm Effects		No	Yes	No	Yes	No	Yes
Observations		22,051	22,051	22,051	22,051	22,051	22,051
R <sup>2</sup> (%)		29.6	71.2	32.5	73.5	41.8	77.1

**Table 5. Cross-sectional analysis: Contract characteristics with greater internal information requirements (cont'd)**

*Panel C. Cross-sectional regressions: Individual contract characteristics*

Variable	Pred. sign	<i>VolDisc<sub>t+1</sub></i>		<i>VolDisc Freq<sub>t+1</sub></i>		<i>Speed<sub>t+1</sub></i>	
		(1)	(2)	(3)	(4)	(5)	(6)
<i>\$Contract/Sales<sub>t</sub> x CostPlus<sub>t</sub></i>	+	0.079** (2.24)	0.049** (2.19)	1.401** (2.07)	0.960** (2.24)	0.005 (1.41)	0.006** (2.53)
<i>\$Contract/Sales<sub>t</sub></i>		0.014 (0.74)	-0.010 (-0.74)	1.158*** (3.10)	0.225 (0.81)	-0.003 (-1.23)	0.001 (0.34)
<i>CostPlus<sub>t</sub></i>		-0.040 (-1.58)	-0.027* (-1.74)	-1.007** (-2.17)	-0.554* (-1.86)	-0.005* (-1.89)	-0.003 (-1.64)
Observations		23,181	23,182	23,181	23,182	23,181	23,182
R <sup>2</sup> (%)		0.292	0.708	0.322	0.733	0.418	0.771
<i>\$Contract/Sales<sub>t</sub> x CAS<sub>t</sub></i>	+	0.132** (2.45)	0.047 (1.22)	2.695** (2.17)	1.293* (1.86)	0.004 (0.72)	-0.001 (-0.20)
<i>\$Contract/Sales<sub>t</sub></i>		0.020 (1.16)	-0.003 (-0.22)	1.061*** (3.12)	0.339 (1.28)	-0.001 (-0.73)	0.002 (1.27)
<i>CAS<sub>t</sub></i>		-0.084* (-1.93)	-0.028 (-0.96)	-1.684 (-1.64)	-0.775 (-1.38)	-0.006 (-1.36)	0.002 (0.80)
Observations		23,181	23,182	23,181	23,182	23,181	23,182
R <sup>2</sup> (%)		0.292	0.708	0.323	0.733	0.418	0.771
<i>\$Contract/Sales<sub>t</sub> x CPData<sub>t</sub></i>	+	0.071* (1.66)	-0.029 (-1.00)	1.681* (1.94)	0.010 (0.02)	0.003 (0.66)	-0.001 (-0.30)
<i>\$Contract/Sales<sub>t</sub></i>		0.016 (0.89)	0.003 (0.24)	1.047*** (3.00)	0.481* (1.82)	-0.001 (-0.63)	0.002 (1.31)
<i>CPData<sub>t</sub></i>		-0.022 (-0.67)	0.025 (1.16)	-0.826 (-1.25)	-0.215 (-0.58)	-0.005 (-1.49)	0.002 (0.83)
Observations		23,181	23,182	23,181	23,182	23,181	23,182
R <sup>2</sup> (%)		0.292	0.708	0.323	0.733	0.418	0.771
<i>\$Contract/Sales<sub>t</sub> x NonComm<sub>t</sub></i>	+	0.092*** (2.98)	0.011 (0.47)	1.990*** (3.70)	0.460 (1.19)	-0.005 (-1.44)	-0.003 (-1.26)
<i>\$Contract/Sales<sub>t</sub></i>		-0.043 (-1.48)	-0.007 (-0.31)	-0.190 (-0.38)	0.088 (0.23)	0.003 (0.92)	0.005* (1.87)
<i>NonComm<sub>t</sub></i>		-0.021 (-1.52)	-0.006 (-0.57)	-0.802*** (-2.89)	-0.202 (-1.06)	-0.001 (-0.38)	0.001 (0.60)
Observations		23,181	23,182	23,181	23,182	23,181	23,182
R <sup>2</sup> (%)		0.292	0.708	0.323	0.733	0.418	0.771
<i>\$Contract/Sales<sub>t</sub> x Duration<sub>t</sub></i>	+	0.011 (0.90)	0.020** (2.53)	0.264 (1.00)	0.123 (0.77)	0.001 (0.89)	0.001 (1.10)
<i>\$Contract/Sales<sub>t</sub></i>		0.037* (1.85)	-0.011 (-0.72)	1.333*** (3.14)	0.458 (1.40)	-0.003 (-1.50)	0.002 (1.37)
<i>Duration<sub>t</sub></i>		-0.008 (-0.96)	-0.010** (-2.03)	-0.150 (-1.02)	-0.037 (-0.39)	-0.001 (-1.34)	-0.001** (-2.04)
Observations		22,051	22,051	22,051	22,051	22,051	22,051
R <sup>2</sup> (%)		0.295	0.712	0.324	0.734	0.417	0.771
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Year Effects		Yes	Yes	Yes	Yes	Yes	Yes
Industry Effects		Yes	No	Yes	No	Yes	No
Firm Effects		No	Yes	No	Yes	No	Yes

**Table 6. Establishment of the Cost Accounting Standards Board**

This table presents results from estimating the effect of the establishment of the Cost Accounting Standards Board in 1970 on firms' external reporting environment. *TopDefense* is a binary indicator variable equal to one for firms among the top 100 military contractors in 1970 (treatment group) and zero for all other CRSP/Compustat firms in the same industries. *Post* is a binary indicator variable equal to one for fiscal years ended after 1970. *Illiquidity* is measured by the proportion of zero-return trading days over the fiscal year. All other variables are defined in Appendix A. Panel A presents descriptive statistics for all variables used in the analysis in the treatment and control groups. Panel B presents results for difference-in-differences regressions. Column (1) presents results from a specification including year and firm fixed effects. Column (2) presents results from a specification including year and firm fixed effects and control variables. My analysis spans fiscal years 1964–1976 and includes 72 treatment firms and 2,097 control firms. *t*-statistics appear in parentheses and are based on standard errors clustered by firm. \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively.

*Panel A. Descriptive statistics*

Variable	Treatment group ( <i>TopDefense</i> = 1)						Control group ( <i>TopDefense</i> = 0)					
	Obs.	Mean	Std	25th	Median	75th	Obs.	Mean	Std	25th	Median	75th
Measure of reporting												
<i>Illiquidity</i>	865	0.138	0.092	0.071	0.115	0.175	15,296	0.275	0.202	0.131	0.210	0.357
Control variables												
<i>Size</i>	801	6.104	1.600	5.033	6.191	7.334	13,203	3.602	1.818	2.247	3.396	4.835
<i>Leverage</i>	801	0.269	0.148	0.168	0.264	0.349	13,203	0.263	0.178	0.132	0.251	0.367
<i>MTB</i>	801	3.257	2.566	1.955	2.595	3.702	13,203	3.088	2.856	1.637	2.320	3.477
<i>SalesGrowth</i>	801	0.141	0.237	0.024	0.105	0.190	13,203	0.153	0.253	0.024	0.119	0.234
<i>ROA</i>	801	0.051	0.042	0.034	0.051	0.070	13,203	0.054	0.059	0.029	0.054	0.084
<i>Loss</i>	801	0.052	0.223	0.000	0.000	0.000	13,203	0.095	0.293	0.000	0.000	0.000
<i>Returns</i>	801	0.143	0.477	-0.166	0.081	0.388	13,203	0.117	0.560	-0.271	0.019	0.363
$\sigma$ <i>Returns</i>	801	0.102	0.047	0.068	0.093	0.128	13,203	0.130	0.063	0.086	0.118	0.160
<i>SpecialItems</i>	801	0.000	0.004	0.000	0.000	0.000	13,203	-0.001	0.006	0.000	0.000	0.000
<i>BigN</i>	801	0.245	0.430	0.000	0.000	0.000	13,203	0.323	0.468	0.000	0.000	1.000

**Table 6. Establishment of the Cost Accounting Standards Board (cont'd)**

<i>Panel B. Difference-in-differences regressions</i>			
Variable	Pred. sign	<i>Illiquidity<sub>t+1</sub></i>	
		(1)	(2)
<i>TopDefense x Post</i>	–	–0.015* (–1.81)	–0.013** (–2.19)
Control variables			
<i>Size<sub>t</sub></i>			–0.060*** (–28.69)
<i>Leverage<sub>t</sub></i>			0.016 (1.38)
<i>MTB<sub>t</sub></i>			0.000 (0.40)
<i>SalesGrowth<sub>t</sub></i>			–0.014*** (–4.24)
<i>ROA<sub>t</sub></i>			–0.060* (–1.86)
<i>Loss<sub>t</sub></i>			–0.003 (–0.77)
<i>Returns<sub>t</sub></i>			–0.015*** (–9.29)
<i>σReturns<sub>t</sub></i>			–0.033* (–1.86)
<i>SpecialItems</i>			–0.118 (–0.76)
<i>BigN</i>			–0.006 (–1.09)
Year Effects		Yes	Yes
Firm Effects		Yes	Yes
Observations		16,161	14,004
R <sup>2</sup> (%)		87.2	91.1

**Table 7. Changes in the information environment after contract discontinuance**

This table presents results from examining the relation between government contract awards and the external reporting environment for a sample of firms that discontinued contracting with the government, relative to a propensity-score matched sample of otherwise similar firms that do not contract with the government. I match firms in the year prior to the last year of contracting with the government on the basis of the control variables presented in Table 3, fiscal year, and industry. Panel A presents the covariate balance. Specifically, this table presents cross-sample differences in covariates for the firms that discontinue contracting with the government (*Treatment Firms*) and their propensity-score matched sample counterparts (*Control Firms*). The differences are measured in the year prior to the last year of contracting. *p*-values (two-tailed) tests for differences between means and medians and appear in brackets. Panel B presents results from using a difference-in-differences design to estimate the effect of the discontinuance of government contracting on the firm's external reporting environment. *Treated* is a binary indicator variable equal to one for firms that discontinue contracting with the government and zero for the matched control firms. *Post* is an indicator variable equal to one for fiscal years starting in the year of contract discontinuance and zero otherwise. My analysis spans a window of three years prior to and three years after the firm discontinues contracting (for a total of seven years). All variables are as defined in Appendix A. For parsimony I do not tabulate coefficients on control variables. *t*-statistics appear in parentheses and are based on standard errors clustered by firm. \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively.

*Panel A. Covariate balance*

Variable	Treatment Firms		Control Firms		Diff. in means	<i>p</i> -value	Diff. in medians	<i>p</i> -value
	Mean	Median	Mean	Median				
<i>Size</i>	5.710	5.880	5.732	5.608	-0.022	[0.94]	0.272	[0.51]
<i>Lev</i>	0.226	0.146	0.194	0.136	0.032	[0.26]	0.010	[0.82]
<i>MTB</i>	5.298	3.560	3.955	2.868	1.343	[0.12]	0.693	[0.10]
<i>SalesGrowth</i>	0.121	0.050	0.092	0.057	0.028	[0.64]	-0.007	[0.84]
<i>ROA</i>	-0.092	0.007	-0.053	0.013	-0.039	[0.24]	-0.006	[0.66]
<i>Loss</i>	0.445	0.000	0.403	0.000	0.042	[0.52]	0.000	NA
<i>Returns</i>	0.191	0.056	0.190	0.085	0.001	[0.99]	-0.029	[0.68]
<i>σReturns</i>	0.153	0.127	0.147	0.112	0.006	[0.63]	0.015	[0.23]
<i>SpecialItems</i>	-0.008	0.000	-0.015	0.000	0.007	[0.23]	0.000	NA
<i>BigN</i>	0.697	1.000	0.723	1.000	-0.025	[0.68]	0.000	NA
<i>NAnalysts</i>	4.353	2.000	3.378	2.000	0.975	[0.15]	0.000	NA
<i>NInstit</i>	116.983	65.000	109.294	69.000	7.689	[0.70]	-4.000	[0.79]



**Table 7. Changes in the information environment after contract discontinuance (cont'd)**

*Panel B. Difference-in-differences regressions*

Variable	Pred. sign	<i>VolDisc<sub>t+1</sub></i>		<i>VolDisc Freq<sub>t+1</sub></i>		<i>Speed<sub>t+1</sub></i>	
		(1)	(2)	(3)	(4)	(5)	(6)
<i>Treated x Post</i>	-/0	0.008 (0.21)	0.009 (0.23)	-0.649 (-1.28)	-0.719 (-1.37)	0.000 (0.09)	0.000 (0.01)
<i>Post</i>		-0.023 (-0.68)	-0.023 (-0.71)	0.055 (0.07)	0.153 (0.22)	-0.001 (-0.15)	0.000 (0.02)
Control variables							
<i>Size<sub>t</sub></i>			0.035 (1.35)		0.188 (0.57)		0.005* (1.70)
<i>Leverage<sub>t</sub></i>			0.032 (0.29)		-1.927 (-0.96)		-0.008 (-0.59)
<i>MTB<sub>t</sub></i>			0.000 (0.57)		-0.002 (-0.24)		-0.000 (-0.88)
<i>SalesGrowth<sub>t</sub></i>			0.022 (1.17)		-0.053 (-0.32)		0.000 (0.01)
<i>ROA<sub>t</sub></i>			0.092 (1.09)		0.985 (1.25)		0.011 (1.39)
<i>Loss<sub>t</sub></i>			0.006 (0.19)		0.066 (0.20)		-0.011*** (-3.21)
<i>Returns<sub>t</sub></i>			-0.028 (-1.52)		0.256 (1.11)		0.001 (0.63)
<i>σReturns<sub>t</sub></i>			0.088 (0.58)		0.631 (0.35)		-0.004 (-0.30)
<i>SpecialItems</i>			0.072 (0.43)		-1.888 (-0.89)		0.027 (1.24)
<i>BigN</i>			-0.030 (-0.50)		-0.436 (-0.77)		0.000 (0.08)
<i>NAnalysts</i>			-0.002 (-0.38)		0.079 (1.06)		0.001 (1.45)
<i>NInstit</i>			0.000 (1.14)		0.008 (1.36)		-0.000 (-0.77)
Year Effects		Yes	Yes	Yes	Yes	Yes	Yes
Firm Effects		Yes	Yes	Yes	Yes	Yes	Yes
Observations		1,486	1,486	1,486	1,486	1,486	1,486
R <sup>2</sup> (%)		75.5	75.9	82.1	82.5	78.4	79.5

**Table 8. Robustness to alternative dependent variables**

This table presents results from estimating the association between government contracting and the firm's information environment. I use the same specification as in Table 3, except that I replace my dependent variables with *Accuracy* in columns (1) and (2) and *Illiquidity* in columns (3) and (4). *Accuracy* is the absolute value of management's last available estimate of earnings per share before fiscal year-end minus the firm's actual earnings per share, divided by the stock price at the end of the year and multiplied by negative one. This measure is conditional on the issuance of an earnings forecast (sample of 18,117 observations). *Illiquidity* is the measure of illiquidity used in Table 6 (the proportion of zero-return trading days over the fiscal year). *\$Contract/Sales* is transformed into quintile ranks scaled to range from 0 to 1. All other variables are defined in Appendix A. *t*-statistics appear in parentheses and are based on standard errors clustered by firm. \*\*\*, \*\*, and \* denote statistical significance at the 0.01, 0.05, and 0.10 levels (two-tail), respectively.

Variable	<i>Accuracy</i> <sub><i>t</i>+1</sub>		<i>Illiquidity</i> <sub><i>t</i>+1</sub>	
	(1)	(2)	(3)	(4)
<i>Contract</i>	0.004*** (2.59)		-0.003*** (-5.79)	
<i>\$Contract/Sales</i>		0.006*** (2.65)		-0.005*** (-7.68)
Control variables				
<i>Size</i> <sub><i>t</i></sub>	0.009*** (6.49)	0.009*** (6.52)	-0.015*** (-57.56)	-0.015*** (-57.86)
<i>Leverage</i> <sub><i>t</i></sub>	-0.019*** (-3.49)	-0.019*** (-3.48)	0.005*** (4.81)	0.005*** (4.74)
<i>MTB</i> <sub><i>t</i></sub>	-0.000 (-0.65)	-0.000 (-0.63)	0.000 (0.42)	0.000 (0.39)
<i>SalesGrowth</i> <sub><i>t</i></sub>	-0.021*** (-4.53)	-0.021*** (-4.53)	-0.002*** (-5.35)	-0.002*** (-5.41)
<i>ROA</i> <sub><i>t</i></sub>	0.102*** (5.46)	0.102*** (5.47)	-0.005*** (-3.86)	-0.005*** (-3.90)
<i>Loss</i> <sub><i>t</i></sub>	-0.012*** (-3.03)	-0.012*** (-3.04)	0.006*** (13.28)	0.006*** (13.24)
<i>Returns</i> <sub><i>t</i></sub>	0.014*** (7.48)	0.014*** (7.46)	-0.002*** (-7.41)	-0.002*** (-7.36)
<i>σReturns</i> <sub><i>t</i></sub>	-0.118*** (-5.92)	-0.117*** (-5.90)	-0.057*** (-22.11)	-0.058*** (-22.23)
<i>SpecialItems</i>	-0.117*** (-3.64)	-0.118*** (-3.66)	0.016*** (5.18)	0.016*** (5.23)
<i>BigN</i>	0.013*** (2.83)	0.013*** (2.83)	-0.003*** (-4.43)	-0.003*** (-4.47)
<i>NAnalysts</i>	0.000 (0.52)	0.000 (0.58)	-0.0004*** (-8.53)	-0.0004*** (-8.65)
<i>NInstit</i>	-0.00005*** (-6.33)	-0.00005*** (-6.34)	0.00006*** (30.57)	0.00006*** (30.89)
Year Effects	Yes	Yes	Yes	Yes
Industry Effects	Yes	Yes	Yes	Yes
Observations	18,117	18,117	79,383	79,383
R <sup>2</sup> (%)	10.2	10.2	49.3	49.3