Barbarians on Capitol Hill?
Private Equity and Government Contractors

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Abstract

We examine how private equity (PE) ownership affects competitive dynamics and their implications for product-market outcomes using U.S. government procurement as a laboratory. Using a stacked difference-in-differences design combined with propensity score matching, we find that PE-backed government contractors secure more contracts through investment growth and market expansion. However, this expansion crowds out competitors, increases market concentration, and does not lead to improved procurement performance; instead, PE-backed firms experience higher procurement delivery delays and cost overruns, leading to greater public expenditures. These adverse performance effects are concentrated among politically connected PE owners, consistent with rent extraction through enhanced bargaining power.

Keywords: Private Equity; Government Procurement.

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1 Introduction

Private equity (PE) firms have become increasingly prominent investors, raising more than $3 trillion in capital in the United States between 2014 and 2024 (PitchBook Data, Inc., 2025). Their core business model entails identifying undervalued or under-performing companies, acquiring controlling stakes, implementing strategic and operational improvements, and ultimately exiting these investments at a premium. Although prior research shows that PE buyouts can significantly improve firm value (e.g., Kaplan, 1989; Boucly et al., 2011; Davis et al., 2014), debate persists regarding how PE ownership affects competitive dynamics and the welfare of broader stakeholder groups, including employees and customers.

The competitive consequences of PE expansion depend critically on market structure. In competitive markets with low entry barriers, PE expansion tends to intensify rivalry, prompting incumbents to invest in maintaining market share (Jensen, 1986; Bernstein et al., 2017; Aldatmaz and Brown, 2020; Truong and Walz, 2024), thereby generating positive spillovers among peers and potentially improving customer outcomes. However, in markets characterized by significant structural frictions, PE entry can instead erode competitive discipline, increase market concentration, and shift bargaining power toward dominant firms (Dixit and Stiglitz, 1977; Baron and Myerson, 1982; Laffont and Tirole, 1993). Specifically, when incumbents face substantial barriers to scaling, such as capital constraints, regulatory compliance burdens, or relationship-specific investments, they may be unable to respond effectively to a competitor's expansion, allowing PE-backed firms to extract surplus from customers.

This paper examines how PE ownership reshapes competition and product-market outcomes in one such frictional setting: U.S. government procurement. These markets are characterized by high project complexity, substantial entry barriers, limited supplier capacity, and relatively stable product demand (Kang and Miller, 2022; Cox et al., 2024). With government procurement accounting for up to 15% of U.S. GDP annually, changes in competition within these markets carry first-order implications for efficiency and public spending. In addition, beyond their importance for the delivery of public goods, these markets are also significant for corporations. Almost one in ten publicly listed firms identify the federal government as a

major customer, and for these contractors, government sales account, on average, for nearly a quarter of their total revenue (Hasan et al., 2026).

Several features make government contractors attractive acquisition targets for PE investors.[1] Federal contracts offer stable, long-duration cash flows backed by sovereign credit, providing the predictable revenue base needed to service acquisition debt over typical PE holding periods. Furthermore, the structural incompleteness of government contracts creates systematic opportunities for value extraction through post-award renegotiation. PE investors may be especially well positioned to exploit these opportunities because they are more likely than other investors to possess political connections (Faccio and Hsu, 2017), which can strengthen bargaining power with government agencies and mitigate enforcement frictions. As PE firms increasingly expand into public-sector industries such as defense, healthcare, and infrastructure (Mahoney et al., 2022; Liu, 2022; Howell et al., 2022), understanding how their ownership reshapes market structure and the allocation of government contracts is critical for evaluating the broader competitive consequences of PE activity.

Our analysis develops around a central argument linking PE ownership to product-market outcomes in markets with significant structural frictions, proceeding in several steps. First, we predict that PE ownership relaxes financial and organizational constraints, enabling acquired government contractors to secure more government contracts. Next, because competitors face the same structural frictions that PE ownership helps acquired government contractors overcome, competitive responses are limited, leading to the displacement of non-PE competitors and increased market concentration. Finally, the resulting shift in market structure weakens competitive discipline and enables PE-backed contractors to extract rents through post-award contract renegotiation.

To advance our research, we collect information on the universe of government contractors and document a substantial number of PE buyouts in this space over the years. Between 2006 and 2021, we identify 1,223 PE acquisitions of government contractors. When mapped to firm- and establishment-level identifiers, these deals correspond to 1,256 parent firms and

[1]Roughly 30% of PE funds in our sample hold at least one government contractor, and for those that do, such deals account for approximately 40% of their acquisitions.

2,678 establishments[2], as some transactions involve multiple affiliated firms and operating locations. These deals span a wide range of industries, but are more prevalent in highly concentrated and knowledge-intensive sectors. Furthermore, PE firms are significantly less likely to acquire businesses owned by women, minorities, or small enterprises, entities that typically benefit from preferential treatment in government contracting, suggesting that PE ownership may erode these policy-driven advantages.

To account for systematic differences between PE-acquired and non-PE-acquired government contractors, we match PE-acquired government contractors to non-PE-acquired government contractors using propensity score matching based on a comprehensive set of establishment-level observable characteristics, including the level and growth of government contract awards. This ensures that we compare contractors with similar observable characteristics, procurement scale, and trajectory prior to acquisition, thus mitigating concerns that PE selectively targets firms already on an upward procurement path. In addition, to address potential endogeneity arising from staggered treatment timing across establishments (e.g., De Chaisemartin and d'Haultfoeuille, 2020; Baker et al., 2022), we implement a stacked difference-in-differences design on the matched sample (Wing et al., 2024), which re-centers each treatment event and compares treated units only to never-treated matched controls within a common event window.

Using this identification strategy, we first examine corporate-level effects of PE ownership. Consistent with our first hypothesis, we find that PE-backed establishments secure a significantly higher volume of government contracts. The effect is economically meaningful, corresponding to a roughly 43% increase in the value of awarded contracts. Supporting a causal interpretation, an event-study analysis shows no significant differences in the outcome variable in the years preceding the acquisition, suggesting that the parallel trends assumption underlying the validity of our identification strategy is satisfied, and shows persistent positive effects following the acquisition. In addition, a placebo test based on withdrawn PE deals and a comparable control group shows no significant effects, further alleviating concerns about PE anticipatory behavior or selection-driven trends.

[2]Throughout the paper, the terms "government contractor" and "establishment" are used interchangeably and refer to establishments rather than parent firms.

A plausible explanation is that PE-backed establishments win more procurement contracts by streamlining operations. Our evidence is inconsistent with this interpretation. Instead, procurement gains are accompanied by meaningful business-level expansion. Specifically, PE-acquired establishments exhibit significant increases in employment and investment, suggesting that these firms grow into their contracts rather than scale down to win them. Importantly, using an ex-ante establishment-level measure of default risk (the PAYDEX score), we find no evidence that PE buyouts deteriorate corporate financial health, despite their well-documented association with substantial increases in leverage that could otherwise amplify financial fragility.

Contrary to much of the prior literature, which argues that post-buyout performance is driven by cost-cutting and that PE ownership can lead to leverage-induced financial distress, our results align with Boucly et al. (2011), who show that leveraged buyouts can enhance firm value by fostering expansion rather than downsizing. In addition, in line with this hypothesis and consistent with the findings of Fracassi et al. (2022), we also show that these establishments expand into new procurement markets, entering new geographic areas and product segments.

After documenting the substantial expansion of these establishments, we use this setting to examine how a shock to a competitor's capacity affects competitive dynamics (Schumpeter, 1942). Unlike prior studies that document competitive responses through increased investment (e.g., Jensen, 1986; Lerner et al., 2011; Aldatmaz and Brown, 2020; Truong and Walz, 2024) and consistent with our second hypothesis, we find no evidence that direct competitors increase their investment activities following PE entry. This muted response likely reflects a relatively stable government demand, as well as structural frictions in government procurement markets, where expansion requires large fixed investments, relationship-specific investments, and contract-specific capabilities that limit competitors' ability to scale operations rapidly. In contrast, PE ownership relaxes these constraints for treated establishments, but not for their competitors, which are further adversely affected by the loss of procurement contracts. As a result, PE-backed establishments systematically expand their share of procurement activity, leading to a pronounced increase in market concentration.

While we document substantial growth among PE-backed establishments, it remains unclear whether this expansion translates into improved procurement performance. In markets that are already highly concentrated, such expansion can weaken competitive pressure and increase contractors' bargaining leverage in dealings with the government (Dixit and Stiglitz, 1977; Baron and Myerson, 1982). Under these conditions, PE owners may be able to secure more favorable contract modifications or shift costs through financial and contractual restructuring, thereby extracting value without necessarily improving efficiency (Krueger, 1974; Eaton et al., 2020; Lu et al., 2021).

To investigate this trade-off, we examine how PE ownership affects product market outcomes by analyzing the characteristics of government contracts awarded to PE-backed establishments and assessing their impact on procurement performance. In particular, we consider alternative measures of project complexity, such as the initial contract value, the initial contract duration, and an indicator variable for cost-plus contracts. Furthermore, we follow the approach of prior studies (e.g., Emery and Faccio, 2025; Spenkuch et al., 2023), and use several proxies for procurement performance and costs, including the number of contract modifications, the total dollar amount of renegotiations, the cost overrun ratio, and delivery delays.

Using a stacked sample of procurement contracts awarded to our matched establishments, we find no statistically significant differences in the complexity of contracts awarded to PE-backed establishments. However, consistent with our hypothesis, we do find that PE-backed contractors exhibit significantly higher rates of contract renegotiation, larger ex post cost adjustments, and delivery delays. These effects are economically meaningful. For example, government procurement cost overruns increase by approximately 1.3%, corresponding to an additional $13,000 in government spending for every million dollars awarded. Furthermore, consistent with the rent-extraction hypothesis, we find that these adverse effects, particularly regarding renegotiation, are more pronounced when PE owners possess political connections. Such connections have been shown to strengthen bargaining leverage and reduce enforcement frictions (Krueger, 1974; Brogaard et al., 2021). In addition, a placebo test based on withdrawn PE deals shows no significant effects on procurement performance outcomes again,

further alleviating concerns about selection-driven endogeneity concerns.

Our results show that, in markets with structural frictions, PE ownership generates real growth for acquired firms, but this expansion crowds out competitors and facilitates rent extraction rather than efficiency gains, leading to worse product-market outcomes. We do not find evidence for alternative explanations, such as financial distress or operational strain. However, an important caveat in interpreting our results is that PE ownership is not randomly assigned. PE funds may target government contractors precisely because they anticipate latent growth opportunities not captured by our matching covariates. Following the standard approach in this literature (e.g., Fracassi et al., 2022; Gao et al., 2025; Gornall et al., 2025), we address this concern through a comprehensive matching procedure and a battery of robustness tests, including event-study analyses that reveal no differential pre-trends and placebo tests based on withdrawn PE deals that show no significant effects. Importantly, the direction of the potential selection bias is itself informative. While selection into promising targets could account for the expansion in contract volume and establishment-level performance, it cannot explain why this expansion is accompanied by a deterioration in procurement performance, particularly among establishments acquired by politically connected PE owners.

Previous literature and contribution. Our paper contributes to the literature on the effects of PE ownership on corporate performance and its broader economic implications. A large body of research documents that PE buyouts can improve firm performance (Kaplan, 1989; Boucly et al., 2011; Davis et al., 2014) through several channels, including the relaxation of financial constraints (Boucly et al., 2011), the introduction of managerial expertise and operational efficiency (Davis et al., 2014; Bloom et al., 2015; Bernstein and Sheen, 2016; Agrawal and Tambe, 2016), and the renegotiation or breach of implicit contracts with stakeholders (Shleifer and Summers, 1988; Eaton et al., 2020).

Because these mechanisms operate differently across institutional settings, the evidence on how PE ownership affects stakeholders is mixed. Some studies document adverse outcomes, such as lower employee satisfaction (Gornall et al., 2025), higher patient mortality in nursing homes (Gupta et al., 2024), and deteriorations in service quality in opaque or

heavily subsidized industries (Eaton et al., 2020). Other work, however, emphasizes that PE-induced efficiency gains can benefit customers (e.g., Bernstein and Sheen, 2016; Fracassi et al., 2022) and that short-term performance incentives need not conflict with long-run outcomes or product quality (Lerner et al., 2011; Howell et al., 2022).

Our paper advances this literature by shifting the focus from within-firm outcomes to product-market competition and equilibrium market structure.[3] Using government procurement as a novel and policy-relevant laboratory, we document that PE ownership substantially benefits treated contractors through large and persistent expansions in employment, investment, and entry into new procurement markets, with no evidence of increased financial distress. Interestingly, this growth is not driven by cost-cutting, distinguishing our results from much of the prior literature.

More importantly, we exploit PE buyouts as exogenous shocks to firms' organizational and financial capacity to study how asymmetric adjustments across firms reshape competitive dynamics. We show that competitors, operating in procurement markets characterized by high entry barriers, project-specific capabilities, and contractual frictions, are unable to respond effectively to the expansion of PE-backed establishments. As a result, the gains we document come at the expense of competitors, leading to systematic crowd-out, increased concentration, and a deterioration in procurement performance. In this sense, our findings speak directly to theories of market power and rent extraction (e.g., Dixit and Stiglitz, 1977; Baron and Myerson, 1982): even in the presence of strong real expansion, weakened competitive discipline allows PE-backed contractors to appropriate surplus without corresponding improvements in efficiency or service quality.

Our paper also contributes to the literature on competition and public procurement, which offers nuanced and sometimes conflicting predictions. Although increased entry can reduce managerial slack and procurement costs (e.g., Matsa, 2011; Coviello and Mariniello, 2014), Carril and Duggan (2020) find no evidence that consolidation increases acquisition costs by exploiting variation from exposure to M&A deals across product markets. We differ from

[3]For this reason, our paper also relates to prior literature that examines whether peer firms respond to PE entry, primarily documenting positive spillover effects (e.g., Lerner et al., 2011; Aldatmaz and Brown, 2020; Truong and Walz, 2024).

this work in both our setting and our mechanism. Rather than studying consolidation per se, we show that PE ownership enables establishments to expand capacity and bargaining power within existing procurement markets, with effects that materialize during contract execution rather than contract award.

Specifically, our results demonstrate that PE-backed contractors do not extract rents merely by altering market structure or bidding behavior. Instead, they leverage enhanced organizational capabilities and political connections to renegotiate contracts ex post, resulting in more frequent renegotiations, higher cost overruns, and delivery delays. This contractual channel helps explain why procurement costs rise despite no observable increase in contract complexity or decline in supplier quality. To the best of our knowledge, only Fazio and Zaldokas (2025) study how ownership structures among government contractors affect procurement outcomes; they show that shared ownership facilitates collusive bidding, whereas we document rent extraction arising from post-award renegotiation through the expansion of PE-backed establishments.

Finally, by highlighting the role of political connections in amplifying renegotiation and rent extraction, our paper connects to work on political influence in procurement. Emery and Faccio (2025) show that firms hiring former regulators are more likely to receive procurement contracts and to renegotiate them ex post, while Brogaard et al. (2021) document strategic low bidding followed by renegotiation around political turnover. We complement these studies by showing that PE ownership magnifies these dynamics by simultaneously increasing firms' scale, bargaining leverage, and ability to exploit contractual incompleteness.

2 Conceptual and institutional frameworks

A large body of theoretical and empirical work predicts that firm expansion enhances competition and benefits buyers. In competitive markets, growth disciplines incumbent firms, reduces costs, and compels suppliers to offer higher-quality products at lower prices (Schumpeter, 1942; Jensen, 1986). Empirical evidence from large industrial plant openings supports this efficiency-based view: new plant entry generates substantial productivity spillovers for

incumbent firms (Greenstone et al., 2010), and these gains propagate across regions through multi-plant firm networks (Giroud et al., 2024). In these settings, positive spillover effects operate primarily through higher competitive pressure, knowledge diffusion, and input complementarities, raising productivity both locally and globally. Similarly, PE ownership has been shown to improve operational efficiency and to relax financial constraints, enabling affected firms to expand in ways expected to benefit downstream customers (Kaplan, 1989; Boucly et al., 2011; Bernstein and Sheen, 2016; Fracassi et al., 2022).

This prediction, however, rests on an assumption that competitive discipline is maintained. When markets are characterized by significant frictions, expansion can instead harm buyers. Specifically, if rivals cannot respond to a competitor's capacity increase due to asymmetric adjustment costs, and contracts are incomplete, an expanding firm can accumulate market power and exploit it at the expense of the buyer rather than passing efficiency gains through (Baron and Myerson, 1982; Laffont and Tirole, 1993). In such settings, growth strengthens the seller's bargaining position without generating commensurate improvements in services, precisely the conditions under which rent extraction becomes feasible.

We bring this theoretical tension to the data by studying PE acquisitions of U.S. government contractors, a setting in which competitive frictions are clearly defined and contract-level outcomes are directly observable. Our overarching argument proceeds in several logically connected steps, each generating a testable hypothesis that maps onto a distinct part of our empirical analysis.

Step 1: PE ownership triggers real expansion

PE sponsors bring capital, managerial expertise, relationship-specific investments, and strategic coordination to portfolio firms (Boucly et al., 2011; Davis et al., 2014; Bloom et al., 2015). These resources are particularly consequential for government contractors, who must scale by overcoming several binding constraints, including substantial upfront fixed costs, relationship-specific investments with contracting agencies, and agency evaluation criteria that reward demonstrated organizational capacity and past performance (Bajari et al., 2014; Kang and Miller, 2022). PE ownership can therefore enable acquired contractors to bid on a wider

range of procurement opportunities and ultimately secure more contracts.

H1 (Expansion): *PE-backed establishments secure significantly higher dollar amounts of government contracts after acquisition.*

Step 2: The reaction of competitors

Whether this expansion benefits or harms buyers depends critically on the competitors' ability to respond. In competitive markets with low entry barriers, a rival's growth spurs incumbents to invest in maintaining market share, generating positive spillovers (Jensen, 1986; Aldatmaz and Brown, 2020; Truong and Walz, 2024). However, government procurement markets exhibit severe structural frictions that limit competitors' ability to respond symmetrically. According to our calculations, almost 60% of government contractors deliver only a single specific product to the government. Furthermore, nearly 44% of the federal procurement budget is spent on contracts receiving a single bid, and even when competition is solicited, the average number of bidders is only 1.64 (Kang and Miller, 2022). Scaling in these markets requires substantial fixed investments and contract- and relationship-specific capabilities that incumbents cannot replicate quickly.

While PE ownership relaxes these constraints for acquired firms through access to capital and organizational resources, competitors operating without such backing face the same barriers and cannot respond symmetrically. If these frictions are sufficiently severe, the expansion of PE-backed firms should come at the direct expense of competitors, leading to a reallocation of procurement contracts from non-PE to PE-backed establishments and an increase in market concentration.

H2 (Competitive Displacement): *Competitors of PE-backed establishments experience declines in procurement awards following PE entry, do not increase their investment activities in response, and lose market share, resulting in higher concentration in procurement markets.*

Step 3: Market power enables rent extraction

The competitive displacement documented above creates the conditions for rent extraction. When PE-backed contractors expand into markets already highly concentrated, their growth weakens competitive pressure and increases their bargaining leverage in dealings with the government (Dixit and Stiglitz, 1977; Baron and Myerson, 1982). As a matter of fact, government contracts are inherently incomplete and heavily renegotiated: approximately 55% of all obligated contract dollars flow through modifications rather than initial awards, and final prices routinely exceed initial base prices by around 8% (Kang and Miller, 2022). Under these conditions, PE owners can leverage their strengthened bargaining position to extract surplus through renegotiation, without necessarily improving delivery performance. More specifically, if deterioration arises from improved bargaining power, it should manifest itself in the execution phase of contracts, through more frequent renegotiations, larger cost overruns, and delivery delays, while the initial characteristics of awarded contracts remain unchanged. This concern is particularly salient given the well-documented tendency of PE owners to breach implicit contracts with stakeholders in pursuit of higher returns (Shleifer and Summers, 1988; Eaton et al., 2020).

H3 (Rent Extraction): *PE-backed establishments exhibit worse procurement performance, more frequent contract modifications, higher cost overruns, and greater delivery delays, consistent with the use of enhanced bargaining power to extract surplus from the government.*

Step 4: Political connections amplify rent extraction

The rent extraction mechanism is expected to be especially pronounced when PE owners possess political connections, which strengthen bargaining leverage and reduce enforcement frictions, making renegotiation both easier to initiate and harder for the government to resist (Krueger, 1974; Brogaard et al., 2021). PE firms are more likely to have political connections (Faccio et al., 2006), and such connections have been shown to enhance firms' bargaining power in government procurement and to facilitate rent extraction through renegotiation.

If political connections amplify the bargaining channel specifically, then the deterioration in procurement performance, particularly through renegotiation and cost escalation, should be concentrated among establishments acquired by politically connected PE firms. Non-connected PE firms, lacking this bargaining advantage, may instead rely on less direct channels such as contract extensions.

H4 (Political Amplification): *The adverse effects on procurement performance are more pronounced when PE owners are politically connected, with connected firms driving renegotiation and cost overruns, and non-connected firms relying more on contract extensions.*

Together, these four hypotheses form a single, logically connected argument: PE ownership generates real expansion (**H1**), but structural frictions prevent competitors from responding, leading to competitive displacement and rising concentration (**H2**). This shift in market structure enables PE-backed contractors to extract rents through post-award renegotiation rather than deliver efficiency gains (**H3**), and political connections further amplify this rent extraction channel (**H4**). We exploit PE acquisitions as plausibly exogenous shocks to establishments' organizational and financial capacity and test each link in this chain using the identification strategy described in the next section.

3 Data and variables

We provide a brief description of the main variables we use and the corresponding data sources. More detailed information is available in Appendix A.

Government procurement contracts. We gather comprehensive information on federal government contracts from USAspending. Detailed data have been available since the enactment of the Federal Funding Accountability and Transparency Act (FFATA) in 2006. This law was designed to enhance transparency in government spending, and the database includes records dating back to 2001 (e.g., Brogaard et al., 2021).[4]

[4]While data for previous years are available, they are significantly limited in scope.

The database provides detailed information on all transactions related to U.S. federal procurement activities. It is important to note that a single contract may consist of multiple transactions, as some awards involve multiple payments or modifications over time. From here, we extract information on all establishments that won at least one government contract, referred to as government contractors. Our unit of analysis in this paper is the establishment, since not all establishments within a corporation are government contractors, and each establishment may differ in operations and product markets from the others.

We aggregate information on the total value of distinct government transactions at the establishment-year level to measure the total dollar amount of contracts awarded to each establishment over time. In addition, we use granular data on each contract modification to capture the dollar value of renegotiation activities and identify delivery delays.

Establishment level database. To obtain information on each establishment, we merge the data from USAspending with the National Establishment Time Series (NETS) database, as both databases use the same establishment identifier, the DUNS number.[5]

The NETS database contains information on the universe of establishments in the U.S. that belong to both private and public firms. This source also provides information on establishments' annual sales and employee counts.[6] We also use the PAYDEX score, a business credit score issued by Dun & Bradstreet, to evaluate the impact of PE deals on establishments' default risk. This measure objectively assesses financial health by reflecting their payment behavior, and it is extensively used by creditors, suppliers, and financial institutions to evaluate credit risk. Furthermore, this score predicts future short-term default risk and business failure (Chava et al., 2023). Finally, the NETS database also provides information on the establishments' locations and industries.

[5]Notably, the establishment identifier used for reporting establishment-level information in the procurement database changed after 2021 to the Unique Entity Identifier (UEI), limiting our ability to extend the analysis beyond this period.

[6]While the NETS database provides broad coverage and detailed establishment-level information, it presents some limitations. In particular, employment data are partly based on model-based estimates rather than directly reported figures, especially for smaller or single-unit establishments. As discussed in Barnatchez et al. (2017), these estimates can introduce significant measurement errors.

PE deals. To identify PE targets, we obtain data on PE deals from Capital IQ. Following prior literature, we focus on deals in the North America region whose buyers are Private Equity or Venture Capital firms, and that are classified as either Leveraged Buy-out (LBO), Management Buy-out (MBO) or Going-Private transactions (Axelson et al., 2013).

This initial search yields a sample of 12,424 deals from 2006 to 2021.[7] Next, we merge this dataset with our establishment-level data by fuzzy matching the names of the target companies with the headquarters names of the establishments. For targets involved in multiple acquisitions, we retain only the first transaction to ensure clean treatment identification. By doing so, we identify 1,223 deals involving government contractors as targets.

Figure 1 shows the number of PE acquisitions of government contractors over time (both the number of deals and the number of establishments involved). We find a significant number of deals each year that we can exploit in our empirical analysis. Figure 2 displays PE acquisitions of government contractors across industries, classified by the two-digit NAICS code. Manufacturing is the most heavily targeted sector, accounting for the largest share of deals, followed by Professional, Scientific, and Technical Services, and Wholesale Trade. This distribution highlights the concentration of PE acquisitions in capital- and knowledge-intensive industries that are closely tied to government procurement.

[Insert Figures 1 and 2 here]

Table OA2 reports the distribution of deal characteristics for both the full sample of PE transactions from Capital IQ and the subset involving government contractors. The two distributions are broadly comparable, with all normalized differences below conventional thresholds of +/- 0.25 (Imbens and Wooldridge, 2009), indicating limited selection on observables. In both samples, the vast majority of transactions are leveraged buyouts, while platform deals, management-related transactions, and corporate divestitures occur at similar frequencies. Some modest differences emerge: matched deals are larger on average, more likely to be platform and management-related transactions, and less likely to be cross-border or franchise acquisitions. Nevertheless, these differences are economically small, suggesting

[7] We focus on PE deals starting from 2006 to allow for a five-year pre-treatment window to construct matching covariates using USAspending data, which are available starting in 2001.

that PE funds do not adopt a fundamentally different acquisition strategy when targeting government contractors, and that the matched sample remains representative of the broader PE deal universe.[8]

4 Identification strategy

4.1 Which government contractors do PE funds target?

We investigate the characteristics of PE targets. Specifically, we identify establishments acquired through a PE deal in each year and compare their average characteristics with those of establishments that were never acquired. We then report, in Panel A of Table 1, the summary statistics for the treated and control groups, together with their normalized differences. Again, following Imbens and Wooldridge (2009), the two groups are considered similar if the normalized differences lie within +/- 0.25.

Statistics suggest that government contractors acquired by PE are, on average, larger in terms of both annual revenue and employee count. In addition, PE firms are less likely to acquire small, women-owned, or minority-owned businesses. Although these firms benefit from preferential treatment in government contracting, PE participation can compromise these advantages. In general, these differences are problematic for estimating the causal effect of PE ownership on corporate performance, as they indicate substantial selection bias in the treatment group.

To address this selection issue, our identification strategy follows the prior literature (e.g., Fracassi et al., 2022; Gao et al., 2025). We use propensity scores estimated from a logit regression that includes all these establishments' characteristics, as well as sector-, state- and year-fixed effects, to match government contractors involved in PE deals with comparable non-PE-backed contractors (Rosenbaum and Rubin, 1983). Specifically, for each cohort (year), we implement one-to-five nearest-neighbor matching with a caliper of 0.2 times the standard deviation of the logit of the estimated propensity score (e.g., Rubin and Thomas, 2000;

[8]Deal type categories are not mutually exclusive, as a single transaction can be classified under multiple types.

Austin, 2011). As shown in Panel B of Table 1, the matched treated and control groups are well balanced across all observable characteristics after the matching procedure.

[Insert Table 1 here]

4.2 Threats to identification

We use this matched sample in staggered difference-in-differences specifications to examine whether PE-backed establishments expand after the ownership change, how their competitors respond, and whether PE ownership affects procurement performance. Although we follow the standard approach in studies of PE ownership (e.g., Fracassi et al., 2022; Gao et al., 2025; Gornall et al., 2025), matching on observables cannot fully rule out selection on unobservable characteristics. The most natural concern is that PE funds target government contractors because they anticipate latent growth opportunities that are not captured by our matching covariates.

Several features of our research design help mitigate this concern. First, our analysis is conducted entirely within the universe of government contractors. Both treated and control establishments have the capacity to compete for and win federal procurement contracts prior to the PE acquisition. This restriction substantially narrows the scope for unobserved heterogeneity. Moreover, our unit of analysis is the establishment rather than the firm, providing a finer and more homogeneous level of comparison than is typical in the PE literature, where treated and control units may differ along many unobserved dimensions related to their broader business activities. Second, our matching procedure includes both the level and growth of government contract awards among the covariates, ensuring that we compare contractors with similar procurement scale and trajectory prior to acquisition. This directly addresses the concern that PE selectively targets establishments already on an upward path. Third, we estimate dynamic event-study specifications and find no evidence of differential pre-trends across our outcome variables, suggesting that treated and control establishments were on comparable trajectories before the acquisition. Fourth, we conduct placebo tests using PE transactions that were announced but subsequently withdrawn. If our results are

driven by the types of establishments that PE funds target rather than by the consequences of PE ownership itself, we expect similar effects for these pseudo-treated establishments.

5 The expansion of PE-backed establishments

5.1 PE-ownership and government contracts

After constructing the final matched sample, we build a stacked panel dataset covering five years before and after each PE deal, with the post-treatment window matching the average holding period of PE funds (Kaplan and Strömberg, 2009). Using a stacked difference-in-differences design, we then examine performance differences between PE-backed government contractors and their matched non-PE-backed counterparts. Specifically, we estimate the following Equation:

$$\text{Government Awards}_{i,t,c} = \beta(\text{Treated}_i \times \text{Post}_t) + \omega_{i,c} + \phi_{c,\tau} + \lambda_{c,\tau,j} + \delta_{c,\tau,s} + \epsilon_{i,t,c} \qquad (1)$$

In this setting, Government Awards refers to the dollar amount of contracts awarded to establishment i at time t within cohort c.[9] To account for the high frequency of zero values and the presence of negative observations, which may arise from discounts, scope reductions, de-obligations, or downward price adjustments, we apply the Inverse Hyperbolic Sine (IHS) transformation to the award amounts.[10] Treated is a binary indicator equal to one if an establishment is acquired by PE, and zero otherwise. Post is an indicator variable that equals one in the PE deal year and all subsequent years for the acquired establishments, and zero otherwise.

The model also includes establishment–cohort fixed effects ($\omega_{i,c}$), cohort-by-event-time fixed effects ($\phi_{c,\tau}$), as well as industry- and state-by-cohort-by-event-time fixed effects ($\lambda_{c,\tau,j}$

[9] We use the terms "award" and "contract" interchangeably to refer to a federal procurement agreement under which an establishment provides goods or services to the U.S. federal government in exchange for payment.

[10] As noted by Carroll et al. (2003), the IHS transformation is particularly advantageous in this context, as it handles non-positive values while approximating the natural logarithm for larger values.

and $\delta_{c,\tau,s}$). This set of controls allows us to account for establishment time-invariant characteristics, as well as for dynamic changes in government procurement demand across cohorts, industries, and geographic locations. Furthermore, we account for heteroskedasticity in the error term and cluster the standard errors at the parent-firm level, the level at which treatment is assigned (e.g., Bertrand et al., 2004; Abadie et al., 2023). The main coefficient of interest is β, which captures the average change in government awards for treated establishments following a PE acquisition relative to matched controls.

Estimation results are reported in Table 2. Across specifications, we find that the coefficient of interest is consistently positive and statistically significant. The effect is also economically meaningful. In particular, according to our main specification reported in Column (3), we find that PE acquisition is associated with an approximately 43% increase in the total dollar value of government awards received by an establishment. These magnitudes indicate a substantial improvement in procurement gains relative to comparable non-PE establishments.

[Insert Table 2 here]

Our identification strategy combines a stacked difference-in-differences design with propensity score matching to improve the comparability of treated and control establishments. However, identification may be compromised if PE–backed establishments differ from non-PE establishments along unobservable dimensions that influence performance dynamics even in the absence of the treatment. Therefore, to further assess the validity of our empirical strategy, we estimate a dynamic difference-in-differences specification following Equation (2), which interacts the treatment indicator (Treated) with event-time indicators relative to the acquisition year (Relative Time), while retaining the same set of fixed effects included in Equation (1).

$$\begin{aligned} \text{Government Awards}_{i,t,c} = & \sum_{\tau=-5,\, \tau\neq-1}^{5} \beta_\tau \left(\text{Treated}_i \times \{\text{Relative Time}_{i,t} = \tau\}\right) \\ & + \omega_{i,c} + \phi_{c,\tau} + \lambda_{c,\tau,j} + \delta_{c,\tau,s} + \epsilon_{i,t,c} \end{aligned} \tag{2}$$

Figure 3 plots the estimated coefficients, using the year prior to acquisition as the ref-

erence period (t=-1). Importantly, we find no evidence of differential pre-trends before PE involvement, as none of the pre-treatment coefficients is statistically significant. In contrast, the post-acquisition coefficients indicate positive and persistent effects. These results support the parallel trends assumption underlying our empirical design and the robustness of our main finding.

[Insert Figure 3 here]

Our results are also robust to alternative measures of government awards. As reported in Tables OA3 and OA4, the findings hold when awards are measured in levels and when using the natural logarithm of the outcome variable. Under the log specification, PE-backed establishments receive approximately $58,000 more in awards per year, corresponding to a 35% increase. The results are also robust to alternative clustering choices (Table OA5); in addition to clustering at the parent-firm level, our conclusions remain unchanged when clustering at the establishment, county, or industry levels. Furthermore, we conduct a placebo test using 27 PE transactions that were announced but subsequently withdrawn between 2006 and 2021, representing 166 establishments. We designate the announcement years as pseudo-treatment dates and perform exact matching between these establishments and never-targeted government contractors.[11] Our baseline estimations on this matched sample, reported in Table OA6, show no statistically significant effect of PE on government awards for pseudo-treated establishments in our preferred specification. This lack of a placebo effect mitigates concerns regarding anticipatory behavior, differential pre-trends, or selection on unobservables, thereby reinforcing the conclusion that our main results are driven by completed PE acquisitions.

[11] The matching is again based on the NAICS2 industry, state, and the full set of covariates used in the primary analysis (see Table 1). However, due to the limited number of pseudo-treated observations, we discretize continuous covariates into terciles prior to matching to maintain common support and address potential sparsity. Consequently, the placebo analysis uses cell-based exact matching rather than propensity score matching, as the small sample size prevents the logit model used to compute the score from converging reliably.

5.2 Mechanisms

Our results show that PE ownership significantly increases the dollar value of government contracts awarded to treated establishments. From a theoretical perspective, this increase can arise through two distinct channels. The first channel is efficiency-driven cost reduction. PE owners may improve operational efficiency, streamline processes, or renegotiate input costs, enabling establishments to submit more competitive bids. The second channel is capacity-driven expansion. Rather than primarily reducing costs, PE ownership may relax financial and organizational constraints, allowing establishments to invest, hire, upgrade technology, and enter new procurement markets. In this case, firms secure more contracts by expanding their operational footprint and bidding capacity, not necessarily because they offer lower prices. We investigate these competing mechanisms in the remainder of this subsection.

PE ownership and investments. To better understand how PE acquisitions affect the investment behavior of government contractors, we re-estimate Equation (1) using two proxies for corporate investment as outcome variables.

Because direct measures of capital investment are unavailable at the establishment level, we rely on indicators that capture both operational expansion and capital deepening. For the former, we proxy operational expansion using the natural logarithm of employment from the NETS database. Regarding the latter, we proxy capital deepening with establishment-level information technology (IT) expenditures. Specifically, we collect information on IT spending on hardware, software, and related services for over 6.7 million establishments from 2010 to 2020, and merge it with our government contractors data.[12]

IT investment is particularly relevant for government contractors, as compliance with procurement requirements, cybersecurity standards, and contract management systems relies heavily on technological infrastructure. Taken together, employment and IT spending capture complementary dimensions of investment: labor expansion and technological capital deepening, providing a comprehensive view of how PE ownership affects establishment-level investment behavior.

[12]These data are from the Harte–Hanks Market Intelligence Computer Intelligence Technology database, previously used by Bloom et al. (2016).

The results are reported in Table 3. We find economically meaningful increases along both dimensions. In Panel A, we show that establishments acquired by PE experience, on average, a 7.3% increase in employment relative to comparable non-PE establishments. Turning to technological investment in Panel B, we examine both total IT spending and its composition across IT infrastructure and IT services. Following the Information Systems literature, IT infrastructure captures investments in the firm's technological backbone, while IT services reflect expenditures supporting day-to-day operations (Ravichandran et al., 2009). We find a substantial rise in IT-related expenditures across the board following PE acquisition. Total IT spending increases by approximately 37%, with comparable increases in IT infrastructure (about 35%) and IT services (about 35%).

[Insert Table 3 here]

Entry into new procurement markets. PE ownership may influence the performance of government contractors by facilitating expansion into new products and geographic markets (Fracassi et al., 2022). To examine this channel, we test whether PE-backed establishments expand their footprint across procurement markets following acquisition.

We measure procurement market entry as the number of distinct county–industry procurement markets in which an establishment holds active government contracts, and use this measure as the outcome variable in Equation (1). To separately assess expansion along sectoral and geographic dimensions, we also construct two additional outcomes: the number of distinct (two-digit NAICS) industries and the number of distinct counties in which an establishment has received government contracts. Since these outcomes are count variables, we use Poisson regressions to estimate the coefficients of interest (Cohn et al., 2022).

The results are reported in Table 4. We find strong evidence that PE ownership leads to meaningful market expansion. PE-backed establishments increase the number of procurement markets they participate in by approximately 11%. Columns (2) and (3), which separately examine expansion across product and geographic dimensions, show positive and statistically significant effects along both margins. These findings indicate that PE ownership facilitates

a broader procurement footprint, consistent with an expansion strategy rather than a narrow focus on existing contracts.

[Insert Table 4 here]

Financial health. Prior work indicates that PE ownership can weaken firms' financial conditions, largely because buyouts are typically financed with substantial leverage. In particular, Kaplan and Stein (1993) document that the heavy use of debt during the late-1980s LBO boom was associated with a wave of subsequent defaults. In a related vein, Axelson et al. (2013) show that leverage in PE transactions rises when credit conditions are loose, and that more highly levered deals are linked to higher purchase prices and lower fund performance. However, whether leverage-intensive buyouts ultimately translate into elevated default risk and financial distress costs depends, in part, on how PE sponsors oversee and restructure portfolio firms.

To test this hypothesis, we examine the effect of PE acquisitions on establishments' financial condition using the PAYDEX score as the outcome variable, and re-estimate Equation (1). The results are reported in Table 5. Across all specifications, the estimated coefficients are negative (ranging from -0.214 to -0.231), but statistically insignificant. This evidence indicates that, despite substantial post-acquisition expansion, PE ownership does not lead to a deterioration in establishments' short-term financial health.

[Insert Table 5 here]

6 Competition dynamics in procurement markets

Competitors and government awards. We examine how PE acquisitions affect establishments that compete directly with PE-backed government contractors. To do so, we estimate the following Equation:

$$\text{Government Awards}_{i,t,c} = \beta(\text{Competitor}_i \times \text{Post}_t) + \omega_{i,c} + \phi_{c,\tau} + \lambda_{c,\tau,j} + \delta_{c,\tau,s} + \epsilon_{i,t,c} \quad (3)$$

In this setting, Competitor is an indicator variable that identifies rival establishments, defined as establishments operating in the same county and industry (NAICS2) as a PE-backed establishment but that are never acquired by PE.[13] We estimate this specification using the same set of fixed effects as in Equation (1). In an additional specification, we augment Equation (3) by adding the main interaction term used in our previous empirical analyses, (Treated×Post). This analysis allows us to assess whether the gains documented for PE-backed establishments come at the expense of their competitors, thereby shedding light on broader market dynamics following a buyout.

The results in Table 6 show that while PE-backed establishments experience substantial gains in government awards, their competitors experience significant declines following the buyout. Specifically, the coefficient of the interaction term suggests that the total dollar value of contracts awarded to competing establishments decreases by approximately 22%, as reported in Column (2).

[Insert Table 6 here]

To further evaluate this result, we estimate the dynamic effects for competitors and report the results in Figure 4. On one hand, the estimates reveal no statistically significant effects prior to treatment, supporting the parallel trends assumption. On the other hand, we document negative and long-lasting effects in the post-treatment period. Overall, these negative, statistically significant effects indicate a meaningful reallocation of procurement opportunities from non-PE to PE-backed firms.

[Insert Figure 4 here]

[13] Geographic proximity plays an important role in government procurement markets, as firms located closer to project sites face lower bidding and execution costs and are therefore more likely to participate and win procurement auctions (Bajari et al., 2014). Defining markets at the county–industry level allows us to capture establishments that plausibly compete for the same contracts while preserving sufficient variation in the data.

Competitors' response to competition. We examine whether competitors respond to increased competition by expanding their investment, as suggested by the prior literature (e.g., Aldatmaz and Brown, 2020; Truong and Walz, 2024). To do so, we re-estimate Equation (3), using our investment proxies as outcome variables, and report the results of the augmented specification in Table 7.

The coefficients of interest in Columns (1) and (2) are not statistically significant. This result indicates that competing establishments do not increase their investments in response to PE entry. Consistent with this finding, the results in Columns (3)–(5), which use alternative expansion proxies as outcomes, show no changes in competitors' product or geographic market portfolios.

This muted response across investment and expansion activities likely reflects structural frictions in government procurement markets. Expansion in these markets typically requires large fixed investments and contract-specific capabilities, which limit competitors' ability to scale rapidly. While PE ownership relaxes these constraints for treated establishments, competitors face tighter conditions and are further adversely affected by the loss of procurement contracts.

[Insert Table 7 here]

Corporate market power. Given the reduced success of competitors and the increased success of PE-backed establishments, we test and quantify the rise in market power among the latter. We proxy market power by an establishment's share of contracts won in the relevant procurement market and use it as the outcome variable of interest in Equation (1).

The results in Table 8 indicate that PE-backed establishments gain substantial market share following acquisition. The estimated coefficients imply an increase of approximately 2.1 percentage points, corresponding to about a 30% increase relative to the average value of the outcome variable. This pattern is consistent with the view that PE ownership strengthens bidding capabilities and bargaining power, enabling treated establishments to capture a larger share of procurement activity.

Figure OA1 complements these results by confirming that the increase in market share emerges gradually in the post-acquisition period, with no evidence of differential pre-trends. Moreover, the dynamic effects are more pronounced when market share is defined at finer industry levels (i.e. NAICS4 and NAICS6), suggesting that PE-backed establishments strengthen their competitive position most strongly within narrowly defined procurement markets.

Taken together with the market-entry results from Table 4 and competitor results from Table 6, the evidence points to a combination of extensive-margin expansion across procurement markets and intensive-margin consolidation within specific product niches among PE-backed firms.

[Insert Table 8 here]

7 Procurement performance

Although PE-backed establishments experience notable post-acquisition growth, it is unclear from a theoretical perspective whether this expansion or the associated increase in investment yields better procurement outcomes. Indeed, when these firms move into markets that are already highly concentrated, their entry may weaken competition and introduce inefficiencies. More specifically, in such settings, PE owners can leverage their strengthened bargaining position to extract rents rather than enhance operational efficiency (Eaton et al., 2020; Lu et al., 2021).

To better understand these dynamics, we analyze the types of contracts won by PE-backed establishments and examine how PE ownership affects procurement performance at the contract level. To do so, we construct a stacked contract-level panel by linking government contracts to the matched establishments in our main establishment-level dataset. Contracts are defined by their earliest observed transaction, and relevant information from all subsequent transactions is aggregated at the contract level to retain both initial and final contract characteristics. We exclude contracts with negative total values, yielding a final sample of 3,067,157 contracts. We report the summary statistics for the full sample, as well

as separately for the treated and control groups, in Table 9.

[Insert Table 9 here]

Selection into procurement contracts. We first investigate the types of government contracts that the establishments of PE-owned firms win. Using our contract-level database, we estimate the following Equation:

$$\begin{aligned}\text{Contract Outcome}_{i,k,t,c} = \beta\big(\text{Treated}_i \times \text{Post}_t\big) + \omega_{i,c} + \phi_{c,\tau} + \lambda_{c,\tau,j} + \delta_{c,\tau,s} \\ + \eta_{c,\tau,a} + \kappa_{\text{type}(k)} + \pi_{\text{price}(k)} + \varepsilon_{i,k,t,c},\end{aligned} \tag{4}$$

In this setting, Contract Outcome captures alternative proxies for the complexity and length of the awarded contract k, including the initial (IHS) dollar amount of the contract won, the initial length of the contract, and whether it is a cost-plus contract. Furthermore, to isolate within-establishment changes in the characteristics of contracts won after PE acquisition, we include an extensive set of establishment-level fixed effects as in Equation (1), with the addition of cohort-by-event-time-by-agency fixed effects ($\eta_{c,\tau,a}$) to account for differential procurement trends across contracting agencies over time. Finally, we control for the awarded contract's structure by including award-type fixed effects ($\kappa_{\text{type}(k)}$) and pricing-type fixed effects ($\pi_{\text{price}(k)}$)[14].

We report the results in Table 10. Notably, none of the coefficients of interest are statistically significant, suggesting that, after being acquired by PE, treated establishments do not underbid to win contracts or do not systematically select into more complex or challenging contracts, despite their increased investment and expansion.

[Insert Table 10 here]

The effect on procurement performance. We next investigate the procurement performance of affected establishments. Specifically, we estimate Equation (4) using a set of alternative outcome variables that capture different dimensions of procurement performance.

[14] Award types include Purchase Orders (PO), Delivery Orders (DO), Blanket Purchase Agreements (BPA) Calls and Definitive Contracts. Pricing types include fixed-price and cost-plus.

These measures include the number of contract modifications, the total dollar amount renegotiated, the cost overrun ratio, and delivery delays. More precisely, Modifications is defined as the number of transactions incurred per award (inclusive of the initial transaction), and is normalized using the log-transformation. Renegotiation measures the difference between the final and initial award amounts. Cost Overrun is defined as the renegotiated amount scaled by the initial award value. Both Renegotiation and Cost Overrun are normalized using the IHS transformation to account for negative values. Finally, Extension is an indicator equal to one if the final completion date exceeds the completion date specified in the initial award, and zero otherwise. In addition, in all specifications, we control for the initial award amount and the initial contract duration to account for baseline differences in contract size and scope that may independently affect procurement performance.

We report the results in Table 11. The estimates indicate a significant deterioration in procurement performance following PE acquisition. Contracts executed by PE-backed establishments exhibit an approximately 3% increase in the number of modifications and a 15% rise in the value of renegotiations, corresponding to an average increase of approximately $600 per contract. This implies larger ex post adjustments to the originally awarded amounts. Consistently, we also find a statistically significant 1.3 percentage-point increase in the cost overrun ratio; this implies an average increase of $351 per contract relative to the initial cost. Finally, we also document a 1.3 percentage-point increase in the probability of delivery delays, corresponding to almost a 26% increase relative to the average.

[Insert Table 11 here]

To better assess these results and their validity, we estimate the dynamic effects for each procurement performance proxy. As shown in Figure 5, the parallel trends assumption appears to hold for all the different specifications, as none of the coefficients are statistically significant prior to the event. In contrast, the post-event coefficients are generally positive and statistically significant. In addition, the effect is persistent over the holding period.

Finally, following the same matching approach used for the results in Table OA6, Table OA7 reports contract-level estimates of Equation (4) using the matched sample in which

withdrawn PE acquisitions serve as placebo treatments. Specifically, Pseudo Treated is a binary indicator equal to one for contracts awarded to establishments whose parent firms were subject to an announced but subsequently cancelled PE acquisition, and zero for contracts awarded to matched establishments that were never targeted. The coefficients of interest are statistically insignificant. These null results reinforce the conclusion that our primary findings are driven by completed PE acquisitions rather than by inherent firm characteristics or selection bias.

Taken together, these findings suggest that while PE-backed contractors expand their presence in government procurement markets, they also engage in more frequent and costly renegotiations and experience higher delivery delays, resulting in increased government spending per project.

[Insert Figure 5 here]

Extraction of rents. To explore the mechanisms driving these results, we test the hypothesis that PE-backed firms leverage their enhanced bargaining power to extract rents in concentrated markets, rather than to improve operational efficiency.

To test this hypothesis, we draw on prior literature showing that PE firms are more likely to have political connections (Faccio and Hsu, 2017). Such connections have been shown to enhance firms' bargaining power in government procurement and to facilitate rent extraction (Krueger, 1974; Brogaard et al., 2021). More specifically, we classify treated establishments based on the political activity of their acquiring PE firm.

Using lobbying expenditure data from OpenSecrets,[15] we follow Faccio and Hsu (2017) and identify whether a PE firm has engaged in federal lobbying activities. We define a PE firm as politically connected if it reports positive lobbying expenditures in any year, and non-connected otherwise. We then partition treated establishments into two mutually exclusive groups: those acquired by politically connected PE firms (PE Connected) and those acquired by non-connected PE firms (PE Not Connected). This classification allows us to examine heterogeneity in post-acquisition outcomes based on the political engagement of PE funds.

[15]More information is available in the following website: `https://www.opensecrets.org/`.

We separately interact PE Connected and PE Not Connected with the Post indicator in Equation (4), and report the results in Table 12. We document substantial heterogeneity in procurement performance depending on whether PE ownership is politically connected. In particular, whereas the effects on renegotiation and cost overrun are driven primarily by politically connected PE firms, extensions are more pronounced among PE-backed establishments without political connections.

Our findings suggest that political connections shape how PE-backed establishments interact with government agencies after contract award: politically connected PE firms appear to extract value through renegotiation and cost escalation, whereas non-connected PE firms rely more on contract continuation and incremental adjustments.

[Insert Table 12 here]

Alternative explanations: operational strain and learning-by-doing. Given that we document a significantly higher number of contracts won by PE-backed establishments, two potential explanations for the deterioration in procurement performance merit careful consideration. The first is operational strain, in which firms expand their contract portfolios faster than their operational capacity can keep pace. The second is learning-by-doing: as PE-backed establishments expand into new geographic and product markets, they may face transitional execution challenges in unfamiliar procurement environments, generating temporary performance shortfalls unrelated to rent extraction. Both hypotheses predict that the deterioration in procurement outcomes reflects genuine execution difficulties rather than strategic bargaining behavior. However, several features of our results are difficult to reconcile with either interpretation.

The first feature is simultaneous investment expansion and stable financial health. As documented in our empirical analysis, PE-backed establishments experience meaningful increases in both employment and IT investment following acquisition, with no statistically significant deterioration in PAYDEX scores. This pattern is inconsistent with the view that these firms are overextended or resource-constrained. If firms were expanding beyond their

operational capacity, we would expect to observe signs of financial stress or a failure to scale inputs alongside output commitments.

The second feature is that a learning-by-doing mechanism generates the clear prediction that performance deterioration should be most acute in the period immediately following acquisition, when the firm is least familiar with its new procurement environments, and should attenuate over time as it accumulates experience. The dynamic estimates reported in Figure 5, however, are not consistent with this pattern. The effects on renegotiation, cost overruns, and delivery delays emerge gradually and persist, or even intensify, through five years after acquisition. This trajectory is inconsistent with a transient learning curve, but aligns naturally with a bargaining-power mechanism, where the deterioration reflects an equilibrium outcome of enhanced market position that strengthens as the firm consolidates its competitive advantage.

Third, both the operational strain and learning-by-doing hypotheses predict that performance deterioration should be most pronounced for contracts that are hardest to execute. To test this prediction, we examine whether the treatment effect varies with a proxy for execution difficulty: the contract's initial duration. Longer contracts impose greater coordination demands, require sustained resource commitments, and are more exposed to execution risk, making them a natural setting in which capacity constraints or learning costs should bind most tightly. Specifically, we interact this variable with the Post and Treated indicators in Equation (4), and report the results in Table OA8.

The estimated triple-interaction coefficients are negative throughout and statistically significant for contract modifications and delivery extensions. These results stand in direct contrast to the predictions of both alternative hypotheses, which imply that deterioration in procurement outcomes should be more pronounced when establishments are executing longer and more demanding contracts. Instead, our estimates indicate that the post-acquisition deterioration in procurement performance is attenuated rather than amplified in precisely those settings where capacity constraints and learning costs should be most apparent.[16]

[16]In unreported results, we also do not find differential effects depending on project complexity when using alternative proxies, such as whether the procurement project involves the delivery of simple goods or IT services.

Taken together, these several pieces of evidence (the simultaneous expansion in investment and the absence of increased financial distress, the persistence of dynamic effects, the attenuation for more complex contracts, and the concentration among politically connected acquirers) point consistently away from operational or learning-based explanations and toward the strategic use of enhanced bargaining power to extract surplus through post-award renegotiation.

8 Conclusions

A substantial body of finance literature suggests that PE firms can significantly improve corporate performance (Boucly et al., 2011; Bernstein and Sheen, 2016; Bloom et al., 2015). However, it remains unclear how they achieve these improvements and what the consequences are for different stakeholder groups, including their competitors, employees, and customers. This paper examines how PE ownership affects competition dynamics and product market outcomes by focusing on government contractors and using government procurement as a laboratory.

We show that PE ownership triggers large and persistent real expansion among government contractors. PE-backed establishments increase investment, employment, and participation across procurement markets, and secure substantially more government contracts, without any detectable deterioration in financial health. These gains, however, are not benign from a competitive perspective. The expansion of PE-backed firms systematically displaces competitors, increases market concentration, and weakens competitive discipline.

Consistent with theories of market power and rent extraction, this shift in market structure is accompanied by a significant deterioration in procurement performance, reflected in more frequent and costly contract renegotiations, higher cost overruns, and greater delivery delays. Together, these findings imply that while PE ownership generates strong real corporate growth, it also reshapes competition, allowing dominant contractors to appropriate surplus from the government, with first-order consequences for efficiency and public spending.

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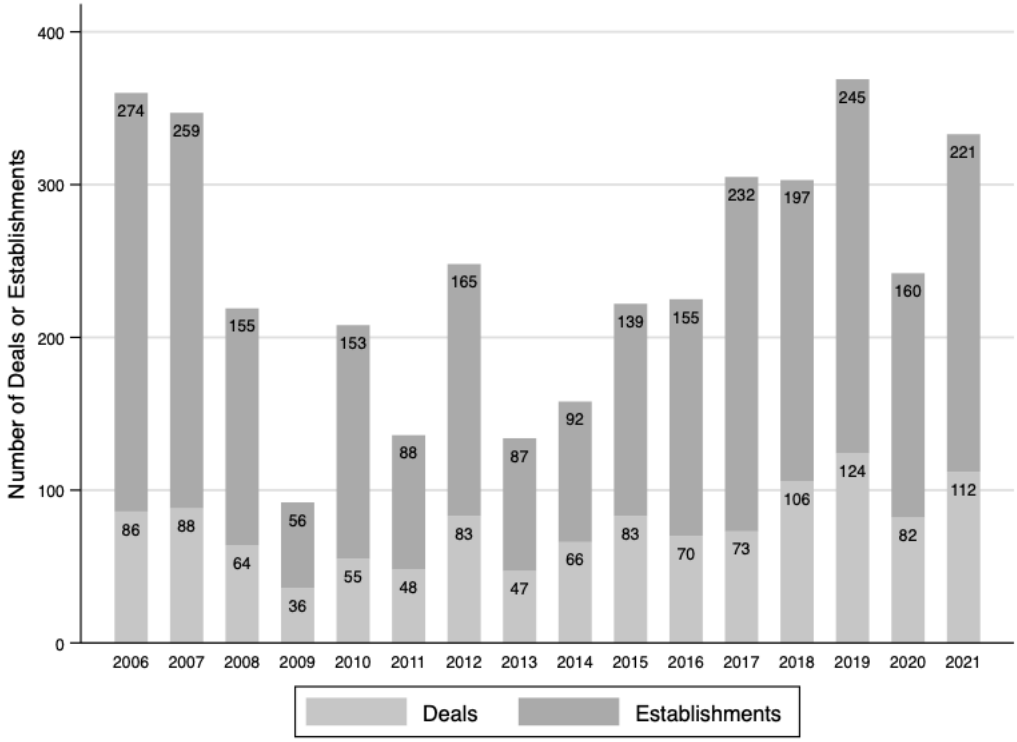
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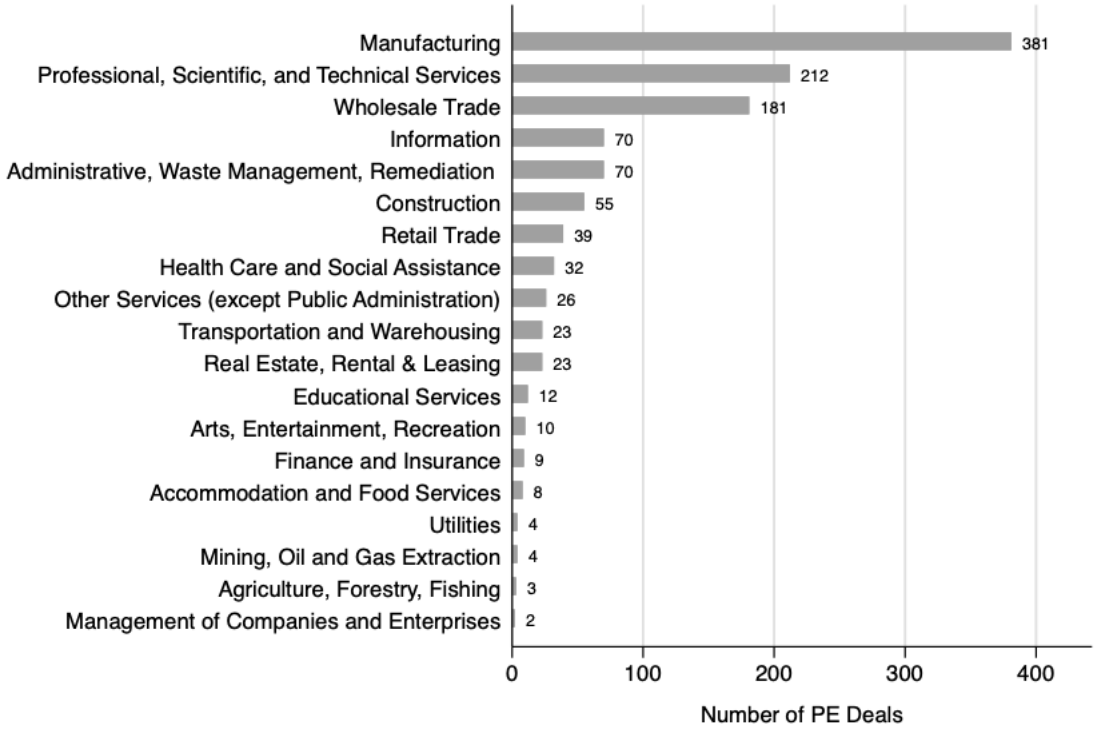
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Figure 1: **Private Equity Acquisitions of Government Contractors Over Time**



Notes: Figure 1 presents Private Equity (PE) acquisitions of government contractors from 2006–2021, measured by both the number of deals and the number of establishments acquired.

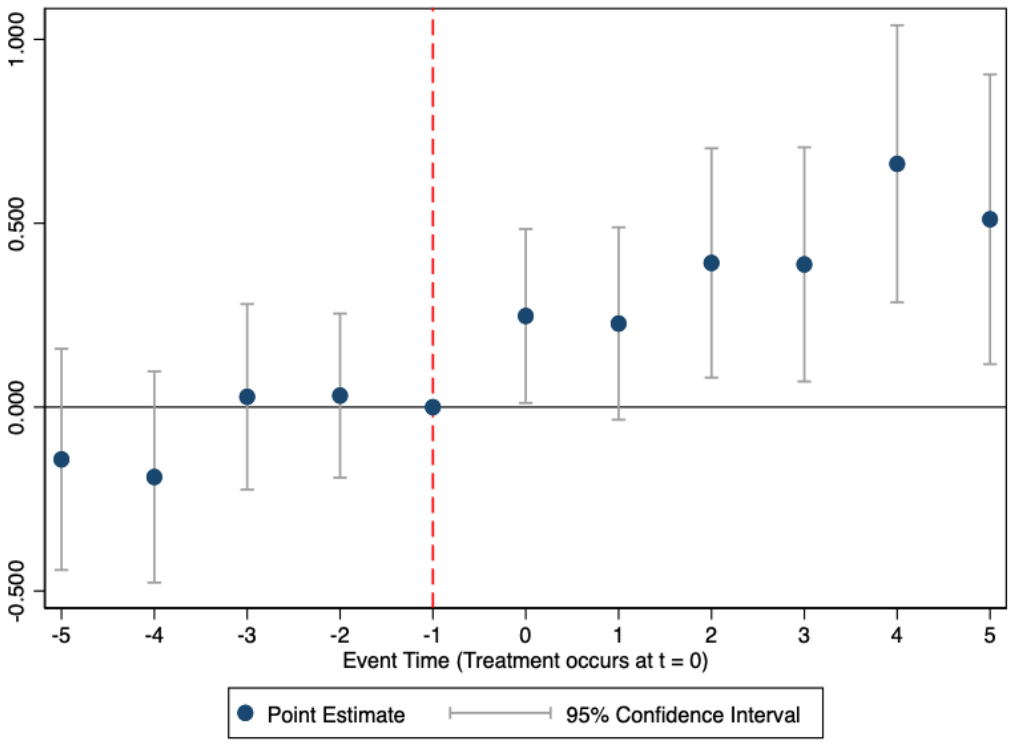
Figure 2: **Private Equity Acquisitions of Government Contractors By Industries**



Notes: Figure 2 displays the Private Equity (PE) acquisitions of government contractors across industries (NAICS2) over the period 2006–2021.

Figure 3: **Private Equity and Government Awards - Dynamics Effects**

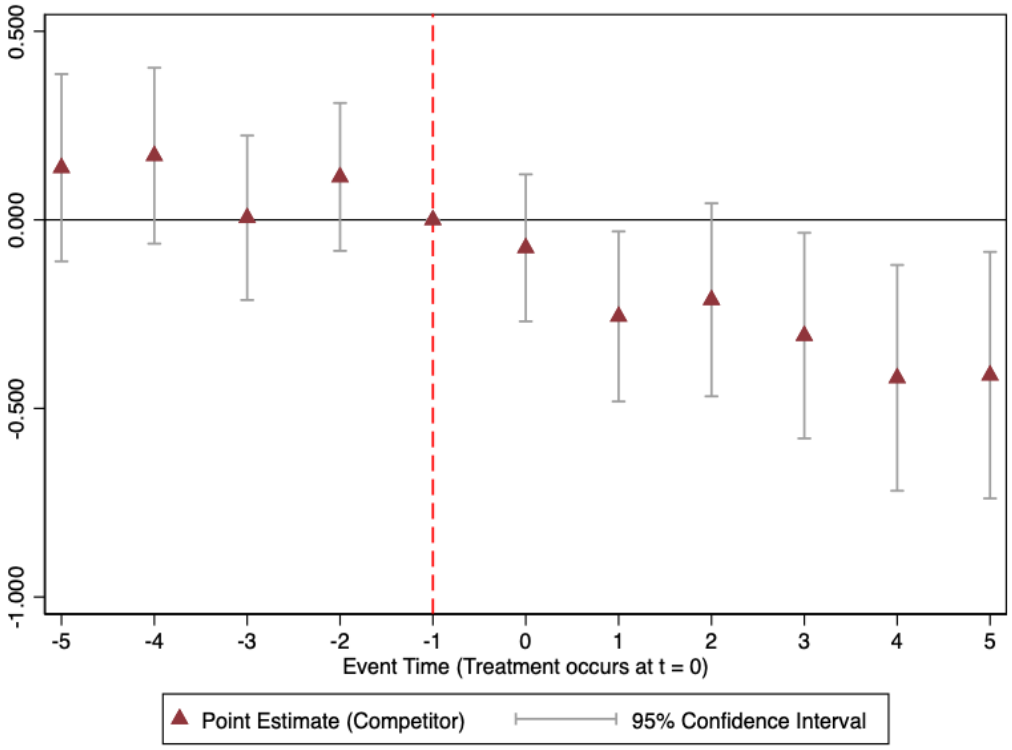
Figure 3 displays the dynamic effects of Private Equity (PE) buyouts on establishments' government awards amount. *Awards Amount(IHS)* is the dollar amount of government awards won by an establishment in a given year, normalized using IHS transformation. The x-axis represents years relative to the PE acquisition year (t=0), with negative values indicating pre-treatment periods and positive values indicating post-treatment periods. The y-axis shows estimated coefficients relative to the year prior to treatment (t=-1), which is normalized to zero.



Awards Amount(IHS)

Figure 4: **Private Equity and Effects on Competitors - Dynamics Effects**

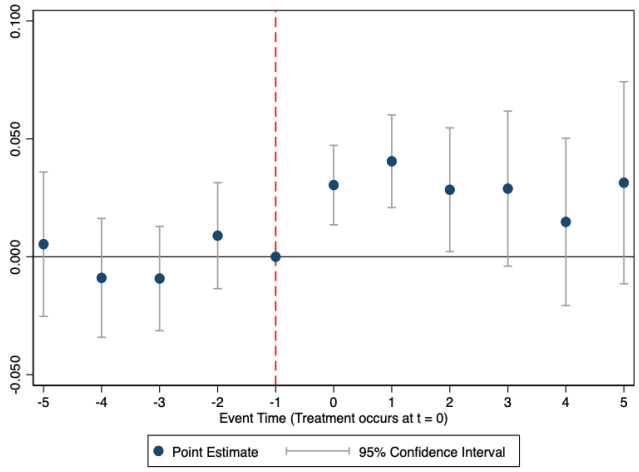
Figure 4 displays the dynamic effects of Private Equity (PE) buyouts on direct competitors of treated establishments. The key outcome variable is the dollar amount of government awards, *Awards Amount(IHS)*. *Competitor* is defined as an establishment located in the same county-NAICS2 market as a treated establishment but is never directly treated. The x-axis represents years relative to the PE acquisition year (t=0), with negative values indicating pre-treatment periods and positive values indicating post-treatment periods. The y-axis shows estimated coefficients relative to the year prior to treatment (t=-1), which is normalized to zero.



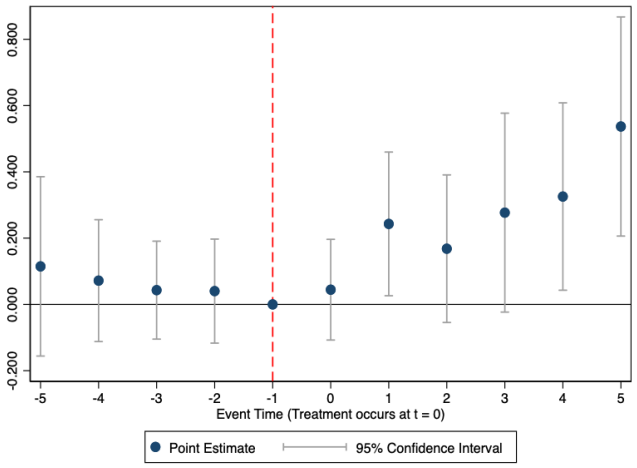
Awards Amount(IHS)

Figure 5: **Private Equity and Procurement Outcomes - Dynamics Effects**

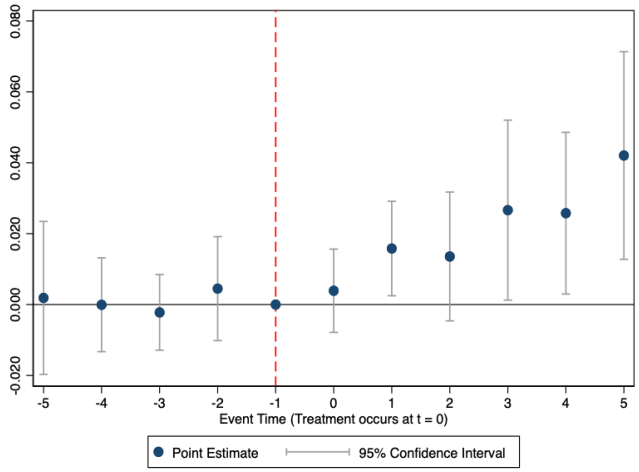
Figure 5 displays the dynamic effects of Private Equity (PE) buyouts on procurement contract outcomes to test the validity of our difference-in-differences identification strategy at the award level. *Modifications(Log)* is the log of the number of transactions incurred per award. *Renegotiation(IHS)* is the difference between the initial award and final award values, normalized using IHS transformation. *Cost Overrun(IHS)* is the renegotiated amount scaled by the initial award amount, normalized using IHS transformation. *Extension* equals 1 if the final completion date exceeds the completion date per the initial award, and 0 otherwise. The x-axis represents years relative to the PE acquisition year (t=0), with negative values indicating pre-treatment periods and positive values indicating post-treatment periods. The y-axis shows estimated coefficients relative to the year prior to treatment (t=-1), which is normalized to zero.



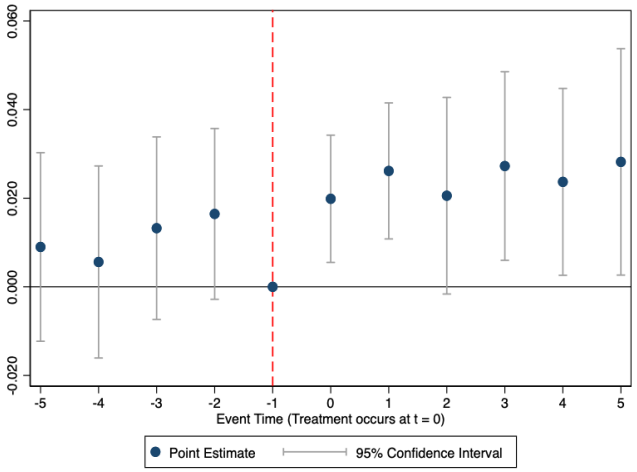
(a) Modifications (Log)



(b) Renegotiation (IHS)



(c) Cost Overrun (IHS)



(d) Extension (Dummy)

Table 1: **Differences Between PE and Non-PE Establishments**

Table 1 shows the balance between treatment and control groups before (Panel A) and after (Panel B) matching. Establishments are matched within the same treatment-year cohort using propensity scores with nearest-neighbor (1 to 5) matching. *Diff.* is the normalized difference: $(\bar{X}_T - \bar{X}_C)/\sqrt{(s_T^2 + s_C^2)/2}$. Variables are defined in Online Appendix A.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Panel A: Before Matching					*Panel B: After Matching*				
	Treated		Control			Treated		Control		
Variables	Mean	SD	Mean	SD	**Diff.**	Mean	SD	Mean	SD	**Diff.**
Log(Sales)	15.63	1.67	13.65	2.07	**1.05**	15.78	1.55	15.80	1.73	**-0.02**
Log(Employment)	3.75	1.43	2.13	1.61	**1.07**	3.84	1.32	3.87	1.46	**-0.02**
PAYDEX	72.04	7.76	72.48	10.26	**-0.05**	71.94	7.77	72.22	8.35	**-0.04**
Sales Growth	0.05	0.24	0.02	0.21	**0.14**	0.05	0.24	0.02	0.20	**0.13**
Employment Growth	0.02	0.18	0.01	0.16	**0.05**	0.02	0.18	0.00	0.14	**0.12**
Establishment Age	25.90	7.80	23.54	8.88	**0.28**	26.65	7.20	27.48	7.03	**-0.12**
Log(# Establishments)	1.43	1.40	0.30	0.95	**0.95**	1.30	1.32	1.13	1.64	**0.12**
Awards Amount(IHS)	4.41	6.37	3.04	5.50	**0.23**	4.55	6.42	4.51	6.45	**0.01**
Awards Growth(IHS)	0.07	4.75	-0.05	4.67	**0.02**	-0.00	4.77	-0.23	4.69	**0.05**
Market Share	0.06	0.19	0.05	0.20	**0.01**	0.06	0.20	0.05	0.18	**0.04**
Women Owned	0.08	0.28	0.21	0.41	**-0.35**	0.08	0.28	0.09	0.28	**-0.02**
Small Business	0.07	0.25	0.39	0.49	**-0.83**	0.04	0.20	0.03	0.18	**0.04**
Public	0.17	0.37	0.04	0.20	**0.41**	0.15	0.36	0.14	0.35	**0.03**
Minority Owned	0.03	0.17	0.12	0.33	**-0.36**	0.03	0.17	0.03	0.16	**0.02**
No. Establishments	N=2,678		N=5,831,196			N=2,326		N=10,957		
No. Firms	N=1,256		N=424,391			N=1,190		N=7,428		
No. Deals	N=1,223		N=0			N=1,164		N=0		

Table 2: **Private Equity and Government Awards**

Table 2 shows regression results from Equation (1). *Awards Amount(IHS)* is the total dollar value of government awards received by an establishment in a given year, normalized using inverse hyperbolic sine (IHS) transformation and winsorized at the 1st and 99th percentiles. Robust standard errors (in parentheses) are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)
Variables		Awards Amount(IHS)	
Treated × Post	0.391***	0.392***	0.428***
	(0.120)	(0.104)	(0.104)
Fixed Effects:			
Cohort × Establishment	Yes	Yes	Yes
Cohort × Event Time	Yes	Yes	Yes
Cohort × Event Time × Industry	No	Yes	Yes
Cohort × Event Time × State	No	No	Yes
Observations	131,178	131,178	131,128
R-squared	0.594	0.605	0.623

Table 3: **Private Equity Expansion: Labor and Technology Investments**

Table 3 presents the effects of Private Equity (PE) acquisitions on government contractors' employment and IT investment activities, estimated using Equation (1). Panel A reports results using *Log(Employment)* as the outcome variable. Panel B reports results using *IT Spending*, *IT Infrastructure*, and *IT Service*, all normalized using the IHS transformation. All continuous variables are winsorized at the 1st and 99th percentiles. Robust standard errors (in parentheses) are clustered at the firm level. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Labor Investment	(1)	(2)	(3)
Variables		Log(Employment)	
Treated × Post	0.071***	0.072***	0.073***
	(0.014)	(0.013)	(0.013)
Fixed Effects:			
Cohort × Establishment	Yes	Yes	Yes
Cohort × Event Time	Yes	Yes	Yes
Cohort × Event Time × Industry	No	Yes	Yes
Cohort × Event Time × State	No	No	Yes
Observations	131,178	131,178	131,128
R-squared	0.944	0.946	0.948

Panel B: Technology Investment	(1)	(2)	(3)
Variables	IT Spending	IT Infrastructure	IT Service
Treated × Post	0.373***	0.346***	0.353***
	(0.130)	(0.122)	(0.122)
Fixed Effects:			
Cohort × Establishment	Yes	Yes	Yes
Cohort × Event Time	Yes	Yes	Yes
Cohort × Event Time × Industry	Yes	Yes	Yes
Cohort × Event Time × State	Yes	Yes	Yes
Observations	86,083	86,083	86,083
R-squared	0.685	0.685	0.686

Table 4: **Private Equity Expansion: New Procurement Markets**

Table 4 presents the Private Equity (PE) effects on product market dynamics of acquired establishments. *Procurement Markets* is the number of unique county–NAICS2 combinations in which an establishment receives government awards in a given year, *Sectoral Markets* counts the number of distinct NAICS2 industries, and *Geographic Markets* counts the number of distinct counties where the establishment receives government awards in a given year. As the outcome variables are counts, all estimates are obtained from Poisson regressions of Equation (1). Robust standard errors (in parentheses) are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Variables	(1) Procurement Markets (#)	(2) Sectoral Markets (#)	(3) Geographic Markets (#)
Treated × Post	0.104***	0.073***	0.130***
	(0.034)	(0.028)	(0.034)
Fixed Effects:			
Cohort × Establishment	Yes	Yes	Yes
Cohort × Event Time	Yes	Yes	Yes
Cohort × Event Time × Industry	Yes	Yes	Yes
Cohort × Event Time × State	Yes	Yes	Yes
Observations	99,547	99,547	99,547

Table 5: **Private Equity's Impact on Financial Health**

Table 5 presents the effects of PE on government contractors' financial health, estimated using Equation (1) with *PAYDEX* as the outcome variable. *PAYDEX* is a business credit score (ranging from 0-100) that captures how timely a company makes payments to its suppliers, with higher scores indicating better payment performance. Robust standard errors (in parentheses) are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)
Variables		PAYDEX	
Treated × Post	-0.214	-0.218	-0.231
	(0.204)	(0.191)	(0.186)
Fixed Effects:			
Cohort × Establishment	Yes	Yes	Yes
Cohort × Event Time	Yes	Yes	Yes
Cohort × Event Time × Industry	No	Yes	Yes
Cohort × Event Time × State	No	No	Yes
Observations	121,521	121,521	121,439
R-squared	0.547	0.559	0.580

Table 6: **Private Equity Effects on Competitors' Government Awards**

Table 6 This table presents the effects on competitors of PE-backed establishments. *Competitor* equals one if an establishment is in the same county and NAICS2 industry as a treated establishment, but is never directly treated. *Awards Amount(IHS)* is the total dollar value of government awards received by an establishment in a given year, normalized using inverse hyperbolic sine (IHS) transformation and winsorized at the 1st and 99th percentiles. Robust standard errors (in parentheses) are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Variables	(1)	(2)
	Awards Amount(IHS)	
Competitor × Post	-0.341***	-0.222**
	(0.086)	(0.094)
Treated × Post		0.314***
		(0.114)
Fixed Effects:		
Cohort × Establishment	Yes	Yes
Cohort × Event Time	Yes	Yes
Cohort × Event Time × Industry	Yes	Yes
Cohort × Event Time × State	Yes	Yes
Observations	131,128	131,128
R-squared	0.623	0.623

Table 7: **Competitors' Response to Private Equity**

Table 7 reports investment activities and product market dynamics of competitor establishments before and after PE entry into their respective markets. *Competitor* equals one if an establishment is located in the same county and NAICS2 industry as a PE-backed establishment, but is never directly acquired by PE. Other variables are defined in Online Appendix A. Columns (1)-(2) are estimated using OLS regression. Columns (3)-(5) are estimated using Poisson regression. All variables are winsorized at the 1st and 99th percentiles. Robust standard errors (in parentheses) are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Variables	(1) Log (Employment)	(2) IT Spending	(3) Procurement Markets (#)	(4) Sectoral Markets (#)	(5) Geographic Markets (#)
Competitor × Post	-0.012	0.128	-0.010	-0.007	-0.014
	(0.011)	(0.115)	(0.034)	(0.025)	(0.034)
Treated × Post	0.067***	0.431***	0.097**	0.068**	0.121***
	(0.015)	(0.136)	(0.040)	(0.032)	(0.040)
Fixed Effects:					
Cohort × Establishment	Yes	Yes	Yes	Yes	Yes
Cohort × Event Time	Yes	Yes	Yes	Yes	Yes
Cohort × Event Time × Industry	Yes	Yes	Yes	Yes	Yes
Cohort × Event Time × State	Yes	Yes	Yes	Yes	Yes
Observations	131,128	86,083	99,547	99,547	99,547
R-squared	0.948	0.688	N/A	N/A	N/A

Table 8: **Private Equity and Market Power**

Table 8 presents the PE effects on the market share of treated establishments. *Market Share* is an establishment's share of government awards amount in a given procurement market, winsorized at the 1st and 99th percentiles and estimated using OLS regression. Columns (1), (2) and (3) report results for procurement markets defined at the county-NAICS2, county-NAICS4, county-NAICS6 levels, respectively. Robust standard errors (in parentheses) are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Variables	(1)	(2)	(3)
		Market Share (%)	
Treated × Post	0.003	0.014***	0.021***
	(0.003)	(0.005)	(0.006)
Fixed Effects:			
Cohort × Establishment	Yes	Yes	Yes
Cohort × Event Time	Yes	Yes	Yes
Cohort × Event Time × Industry	Yes	Yes	Yes
Cohort × Event Time × State	Yes	Yes	Yes
Observations	128,406	128,406	128,406
R-squared	0.650	0.623	0.617

Table 9: **Summary Statistics of Government Awards**

Table 9 reports summary statistics at the government contract level. Columns (1)–(2) summarize contract characteristics for the full stacked sample, whereas columns (3)–(4) and (5)–(6) report statistics for the Treated and Control groups, respectively. The first three variables are scaled in thousands of dollars for brevity. Variables expressed in logarithmic (Log) or inverse hyperbolic sine (IHS) form are normalized transformations of the corresponding raw variables and therefore do not have physical units. All continuous variables are winsorized at the 1st and 99th percentiles. Definitions of all variables are available in Online Appendix A.

		(1)	(2)	(3)	(4)	(5)	(6)
		Full Sample		Treated		Control	
Variables	Unit	Mean	SD	Mean	SD	Mean	SD
Initial Value	$ '000	27.89	110.27	42.73	132.36	25.48	106.06
Total Value	$ '000	38.60	175.82	58.67	213.13	35.34	168.77
Renegotiation	$ '000	4.09	32.47	5.67	38.68	3.83	31.34
Cost Overrun	%	0.02	0.28	0.03	0.30	0.02	0.28
Initial Duration	Years	0.20	0.35	0.24	0.35	0.19	0.35
Modifications	#	1.22	0.83	1.27	0.93	1.22	0.81
Cost-plus	Dummy	0.03	0.17	0.13	0.33	0.01	0.12
Extension	Dummy	0.05	0.22	0.06	0.24	0.05	0.21
Initial Value(IHS)	N/A	7.69	2.80	8.77	2.78	7.52	2.76
Renegotiation(IHS)	N/A	0.12	2.72	0.14	3.00	0.11	2.67
Cost Overrun(IHS)	N/A	0.01	0.22	0.02	0.23	0.01	0.21
Modifications(Log)	N/A	0.11	0.35	0.13	0.38	0.11	0.34
Observations		N=3,067,157		N=427,918		N=2,639,239	

Table 10: **Private Equity and Initial Award Characteristics**

Table 10 shows regression results from Equation (1), applying the same model with additional controls and fixed effects at the contract level to estimate the following variables: *Initial Value(IHS)*, *Initial Duration*, and *Cost-plus*. *Initial Value(IHS)* is the IHS-transformed value of the initial award amount. *Initial Duration* is the duration of the initial award (in years). *Cost-plus* is a dummy that equals 1 if the pricing type of the award is cost-plus, and 0 otherwise. All continuous variables are winsorized at the 1st and 99th percentiles. Robust standard errors (in parentheses) are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Variables	(1) Initial Value(IHS)	(2) Initial Duration	(3) Cost-plus
Treated × Post	0.216	0.018	-0.006
	(0.142)	(0.024)	(0.005)
Fixed Effects:			
Cohort × Establishment	Yes	Yes	Yes
Cohort × Event Time	Yes	Yes	Yes
Cohort × Event Time × Industry	Yes	Yes	Yes
Cohort × Event Time × State	Yes	Yes	Yes
Cohort × Event Time × Agency	Yes	Yes	Yes
Award Type	Yes	Yes	Yes
Pricing Type	Yes	Yes	No
Observations	3,035,825	3,035,819	3,047,234
R-squared	0.584	0.620	0.621

Table 11: **Private Equity and Procurement Performance**

Table 11 shows regression results from Equation (1), applying the same model with additional controls and fixed effects at the award level to estimate the following procurement performance variables: *Modifications(Log)* is the log of the number of transactions incurred per contract; *Renegotiation(IHS)* is the difference between the initial award and final award values, normalized using IHS transformation; *Cost Overrun(IHS)* is the renegotiated amount scaled by the initial award amount, normalized using IHS transformation; *Extension* equals 1 if the final completion date exceeds the completion date per the initial award, and 0 otherwise. All continuous variables are winsorized at the 1st and 99th percentiles. Robust standard errors (in parentheses) are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Variables	(1) Modifications (Log)	(2) Renegotiation (IHS)	(3) Cost Overrun (IHS)	(4) Extension (Dummy)
Treated × Post	0.027***	0.147*	0.013**	0.013**
	(0.009)	(0.078)	(0.006)	(0.006)
Initial Value(IHS)	0.007***	-0.067***	-0.001	0.006***
	(0.003)	(0.025)	(0.001)	(0.002)
Initial Duration	0.196***	0.888***	0.071***	0.025***
	(0.017)	(0.144)	(0.012)	(0.006)
Fixed Effects:				
Cohort × Establishment	Yes	Yes	Yes	Yes
Cohort × Event Time	Yes	Yes	Yes	Yes
Cohort × Event Time × Industry	Yes	Yes	Yes	Yes
Cohort × Event Time × State	Yes	Yes	Yes	Yes
Cohort × Event Time × Agency	Yes	Yes	Yes	Yes
Award Type	Yes	Yes	Yes	Yes
Pricing Type	Yes	Yes	Yes	Yes
Observations	3,035,819	3,035,819	3,017,057	3,035,819
R-squared	0.511	0.175	0.218	0.289

Table 12: **Private Equity's Political Connection and Procurement Performance**

Table 12 presents heterogeneous treatment effects on procurement performance by PE political connection. In this analysis, treated establishments are classified as acquired by either a politically connected PE firm (*PE Connected*) or a non-connected PE firm (*PE Not Connected*). A PE firm is deemed politically connected if it has positive lobbying expenditures as reported by OpenSecrets. All continuous variables are winsorized at the 1st and 99th percentiles. Robust standard errors (in parentheses) are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Variables	(1) Modifications (Log)	(2) Renegotiation (IHS)	(3) Cost Overrun (IHS)	(4) Extension (Dummy)
PE Connected × Post	0.037*	0.614***	0.048***	0.002
	(0.022)	(0.223)	(0.015)	(0.011)
PE Not Connected × Post	0.025***	0.057	0.007	0.015**
	(0.010)	(0.061)	(0.005)	(0.006)
Initial Value(IHS)	0.007***	-0.067***	-0.001	0.006***
	(0.003)	(0.025)	(0.001)	(0.002)
Initial Duration	0.196***	0.888***	0.071***	0.025***
	(0.017)	(0.144)	(0.012)	(0.006)
Fixed Effects:				
Cohort × Establishment	Yes	Yes	Yes	Yes
Cohort × Event Time	Yes	Yes	Yes	Yes
Cohort × Event Time × Industry	Yes	Yes	Yes	Yes
Cohort × Event Time × State	Yes	Yes	Yes	Yes
Cohort × Event Time × Agency	Yes	Yes	Yes	Yes
Award Type	Yes	Yes	Yes	Yes
Pricing Type	Yes	Yes	Yes	Yes
Observations	3,035,819	3,035,819	3,017,057	3,035,819
R-squared	0.511	0.175	0.218	0.289

Online Appendix

This Appendix is for Online Publication (OA) and provides further details on the results of the paper "Barbarians on Capitol Hill? Private Equity and Government Contractors". Online Appendix A reports the variable definition and data sources of the variables used in our empirical analysis. Online Appendix B reports additional empirical results in tables and figures.

Online Appendix A. Variable Definition

We report a detailed definition of all variables used in the paper along with their data sources in the table below. Throughout, $\log(\cdot)$ denotes the natural logarithm and $\text{IHS}(x) = \text{asinh}(x) = \ln\Big(x + \sqrt{x^2+1}\Big)$.

Variable	Definition	Source
PE Deal Characteristics		
PE Investors Per Deal	Number of PE investors involved as buyers in an acquisition.	Capital IQ
Deal Value	PE acquisition value reported in millions of U.S. dollars.	Capital IQ
Leveraged Buyout (LBO)	Indicator = 1 when a sponsor, management, or individual acquires a majority stake in a mature business by combining equity with debt, raised by leveraging the business.	Capital IQ
Management Related	Indicator = 1 when a target company's management either acquire a majority ownership (MBO) or contribute equity in the deal (Management Participated).	Capital IQ
Platform	Indicator = 1 if a financial buyer acquire a strategic company as a platform through which it makes add-on acquisitions.	Capital IQ
Corporate Divestiture	Indicator = 1 if the PE deal involves an acquisition of a company's subsidiary, division, or operations line.	Capital IQ
Cross Border	Indicator = 1 if the buyer(s) in the acquisition is headquartered outside of the United States.	Capital IQ
Recapitalization	Indicator = 1 if the deal restructures a company's capital structure and allows existing shareholders to cash out most of their current stake.	Capital IQ

(Continued on next page)

Variable	Definition	Source
Franchise Acquisition	Indicator = 1 for an acquisition of a franchise or business block, where an entity acquires the rights to operate under a specific brand or business model.	Capital IQ
Going Private	Indicator = 1 if a financial buyer acquires 100% of a publicly-traded company, thereby delisting the acquired company from a stock exchange.	Capital IQ
Family Succession	Indicator = 1 whenever a family is selling a majority stake or controlling stake in a business to outside investors.	Capital IQ
DiD Treatment Indicators		
Treated	Indicator = 1 for establishments whose parent is acquired in an LBO/MBO/going-private deal (i.e. treatment); 0 otherwise.	Capital IQ
Post	Indicator = 1 for years following the PE acquisition; 0 otherwise (stacked DiD event time).	Constructed
Competitor	Indicator = 1 for establishments never acquired by PE but operating in the same county–NAICS2 market as a treated establishment.	USAspending, NETS
PE Connected	Indicator = 1 for establishments acquired by a politically connected PE firm.	OpenSecrets
PE NotConnected	Indicator = 1 for establishments acquired by a PE firm that is not politically connected.	OpenSecrets
Pseudo Treated	Indicator = 1 for establishments whose parent is a target in an announced but subsequently cancelled PE deal; 0 otherwise.	Capital IQ
Establishment-Level Variables		

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Variable	Definition	Source
Log(Sales)	Log of total sales (nominal) of an establishment in year t.	NETS
Log(Employment)	Log of the number of employees at an establishment in year t.	NETS
PAYDEX	Business payment score (0–100), higher = more timely payments; proxy for short-term default risk.	NETS/D&B
Sales Growth	Year-over-year change in sales (first-differenced log).	NETS
Employment Growth	Year-over-year change in employment (first-differenced log).	NETS
Establishment Age	Years since establishment founding.	NETS
Log(# Establishments)	Log of the number of establishments the parent firm operates.	NETS
Government Awards	Sum of all federal procurement transactions (obligated dollars) linked to an establishment's DUNS within calendar year t. Also used as IHS(Awards Amount).	USAspending
Awards Growth(IHS)	Year-over-year change in government award dollars received by an establishment (first-differenced IHS).	USAspending
Market Share (%)	Establishment's share of government award dollars within a market in year t (unit: percentage points). Market is defined at the county–NAICS2/4/6 levels.	USAspending
Women Owned	Indicator = 1 if women-owned status is reported.	NETS
Small Business	Indicator = 1 if establishment has fewer than 5 employees.	NETS
Public	Indicator = 1 if the parent firm is publicly listed in year t; 0 otherwise.	NETS
Minority Owned	Indicator = 1 if minority-owned status is reported.	NETS

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Variable	Definition	Source
IT Spending	Overall information technology (IT) expenditures for a given establishment-year, normalized using IHS transformation.	Harte-Hanks
IT Infrastructure	Amount of IT spending that is dedicated to hardware, software and storage, normalized using IHS transformation.	Harte-Hanks
IT Service	Amount of IT spending that is dedicated to services and communication, normalized using IHS transformation.	Harte-Hanks
Procurement Markets (#)	Count of unique county–NAICS2 markets in which the establishment wins at least one award in year t.	USAspending
Product Markets (#)	Count of distinct NAICS2 industries in which the establishment wins at least one award in year t.	USAspending
Geographic Markets (#)	Count of distinct counties in which the establishment wins at least one award in year t.	USAspending
Contract-Level Variables		
Initial Value(IHS)	IHS of the dollar amount of the initial award (award-level).	USAspending
Initial Duration	Years between the start and completion dates specified in the initial award.	USAspending
Cost-plus	Indicator = 1 if pricing type of the award is cost-plus; 0 otherwise.	USAspending
Modifications	Count of number of transactions for a given contract (inclusive of the initial award), normalized version is denoted as (Log).	USAspending
Renegotiation	The dollar change between final and initial obligated amount (ex-post adjustment), normalized version is denoted with (IHS).	USAspending

(Continued on next page)

Variable	Definition	Source
Cost Overrun	Renegotiated dollar increase divided by initial award amount (percent), normalized version is denoted with (IHS).	USAspending
Extension	Indicator = 1 if final completion date exceeds the initial completion date; 0 otherwise.	USAspending

Online Appendix B: Tables

Table OA2: **Private Equity Deal Characteristics**

Table OA2 presents summary statistics for Private Equity (PE) deal characteristics over the 2006-2021 period. Columns (1) and (2) cover all successfully completed PE deals in Capital IQ, whereas Columns (3) and (4) focus on the deals involving government contractor targets. *PE Investors Per Deal* measures the number of PE investors involved in an acquisition. *Deal Value* is the acquisition amount reported in millions of U.S. dollars. The following are indicator variables equal to one if the deal has the corresponding features: *Leveraged Buyout(LBO)*, *Management Related*, *Platform*, *Corporate Divestiture*, *Cross Border*, *Recapitalization*, *Franchise Acquisition*, *Going Private*, and *Family Succession*. In Column (5), *Diff.* is the normalized difference between the full and matched samples: $(\bar{X}_T - \bar{X}_C)/\sqrt{(s_T^2 + s_C^2)/2}$.

	(1)	(2)	(3)	(4)	**(5)**
	All Deals		Government Deals		
Variables	Mean	SD	Mean	SD	**Diff.**
PE Investors Per Deal	1.15	0.46	1.21	0.56	**-0.11**
Deal Value ($Millions)[a]	779.21	2533.94	1545.91	3946.55	**-0.23**
Leveraged Buyout (LBO)	0.98	0.13	0.97	0.16	**0.05**
Management Related	0.18	0.39	0.22	0.41	**-0.09**
Platform	0.18	0.39	0.26	0.44	**-0.19**
Corporate Divestiture	0.12	0.33	0.09	0.29	**0.10**
Cross Border	0.10	0.30	0.06	0.24	**0.13**
Recapitalization	0.09	0.28	0.12	0.32	**-0.10**
Franchise Acquisition	0.07	0.25	0.04	0.21	**0.09**
Going Private	0.05	0.22	0.07	0.26	**-0.09**
Family Succession	0.04	0.20	0.06	0.24	**-0.07**
No. PE Deals	N=12,424		N=1,223		

[a] *Deal Value* is only available for approximately 22% of the deals in both samples. Summary statistics are computed using the subset of deals with non-missing transaction values.

Table OA3: **Private Equity and Government Awards (Levels)**

Table OA3 shows regression results from Equation (1). *Awards Amount* is the total dollar value of government awards received by an establishment in a given year. Robust standard errors (in parentheses) are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Variables	(1)	(2)	(3)
	Awards Amount		
Treated × Post	52,909***	52,425***	57,748***
	(19,417)	(16,853)	(16,439)
Fixed Effects:			
Cohort × Establishment	Yes	Yes	Yes
Cohort × Event Time	Yes	Yes	Yes
Cohort × Event Time × Industry	No	Yes	Yes
Cohort × Event Time × State	No	No	Yes
Observations	131,178	131,178	131,128
R-squared	0.763	0.769	0.780

Table OA4: **Private Equity and Government Awards (Log Transformation)**

Table OA4 shows regression results from Equation (1). *Log(1+Awards Amount)* is the natural logarithm of one plus the total dollar value of government awards received by an establishment in a given year. Robust standard errors (in parentheses) are clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Variables	(1)	(2)	(3)
	Log(1+Awards Amount)		
Treated × Post	0.324***	0.320***	0.352***
	(0.110)	(0.095)	(0.095)
Fixed Effects:			
Cohort × Establishment	Yes	Yes	Yes
Cohort × Event Time	Yes	Yes	Yes
Cohort × Event Time × Industry	No	Yes	Yes
Cohort × Event Time × State	No	No	Yes
Observations	128,503	128,503	128,449
R-squared	0.657	0.667	0.683

Table OA5: **Private Equity and Government Awards (Alternative Clustering)**

Table OA5 shows regression results from Equation (1). *Awards Amount(IHS)* is the total dollar value of government awards received by an establishment in a given year, normalized via IHS transformation. Columns (1), (2) and (3) reports the coefficient estimates with robust standard errors clustered at the establishment, county, and industry (NAICS2) levels, respectively. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Variables	(1)	(2)	(3)
	Awards Amount(IHS)		
Treated × Post	0.428***	0.428***	0.428***
	(0.097)	(0.089)	(0.125)
Fixed Effects:			
Cohort × Establishment	Yes	Yes	Yes
Cohort × Event Time	Yes	Yes	Yes
Cohort × Event Time × Industry	Yes	Yes	Yes
Cohort × Event Time × State	Yes	Yes	Yes
Level of Clustering:	Establishment	County	Industry
Observations	131,128	131,128	131,128
R-squared	0.623	0.623	0.623

Table OA6: **Private Equity and Government Awards (Placebo Test)**

Table OA6 presents estimates from Equation (1) using a matched sample in which cancelled PE acquisitions serve as placebo treatments. *Pseudo Treated* equals one for establishments whose parent firms were subject to an announced but subsequently cancelled PE acquisition, and zero for matched establishments that were never targeted or acquired by a PE firm. *Awards Amount (IHS)* is the total dollar value of government awards received by an establishment in a given year, normalized using inverse hyperbolic sine (IHS) transformation and winsorized at the 1st and 99th percentiles. Robust standard errors (in parentheses) are clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Variables	(1)	(2)	(3)
	Awards Amount(IHS)		
Pseudo Treated × Post	-2.422**	-0.727	0.417
	(0.914)	(1.857)	(2.455)
Fixed Effects:			
Cohort × Establishment	Yes	Yes	Yes
Cohort × Event Time	Yes	Yes	Yes
Cohort × Event Time × Industry	No	Yes	Yes
Cohort × Event Time × State	No	No	Yes
Observations	2,102	1,507	1,214
R-squared	0.560	0.602	0.649

Table OA7: **Private Equity and Procurement Performance (Placebo Test)**

Table OA7 presents contract-level estimates of Equation (4) using a matched sample in which cancelled PE acquisitions serve as placebo treatments. *Pseudo Treated* equals one for contracts awarded to establishments whose parent firms were subject to an announced but subsequently cancelled PE acquisition, and zero for contracts awarded to matched establishments that were never targeted or acquired by a PE firm. All continuous variables are winsorized at the 1st and 99th percentiles. Robust standard errors (in parentheses) are clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. See Online Appendix A for detailed variable definitions.

Variables	(1) Modifications (Log)	(2) Renegotiation (IHS)	(3) Cost Overrun (IHS)	(4) Extension (Dummy)
Pseudo Treated × Post	-0.015	-0.781	0.012	-0.074
	(0.056)	(0.924)	(0.059)	(0.058)
Initial Value(IHS)	0.020***	-0.064**	-0.009	0.014***
	(0.007)	(0.026)	(0.006)	(0.004)
Initial Duration	0.257***	0.836***	0.125***	0.006
	(0.042)	(0.277)	(0.042)	(0.019)
Fixed Effects:				
Cohort × Establishment	Yes	Yes	Yes	Yes
Cohort × Event Time	Yes	Yes	Yes	Yes
Cohort × Event Time × Industry	Yes	Yes	Yes	Yes
Cohort × Event Time × State	Yes	Yes	Yes	Yes
Cohort × Event Time × Agency	Yes	Yes	Yes	Yes
Award Type	Yes	Yes	Yes	Yes
Pricing Type	Yes	Yes	Yes	Yes
Observations	8,239	8,239	8,062	8,239
R-squared	0.523	0.217	0.269	0.287

Table OA8: **Heterogeneous Effects: Complexity of the Contracts**

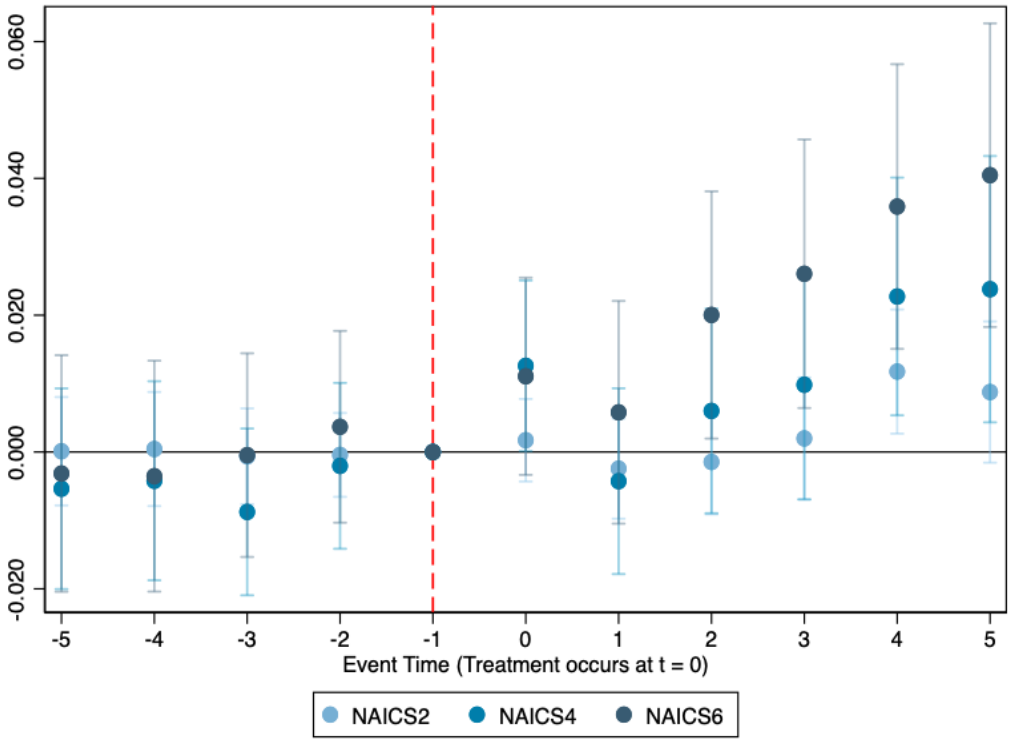
Table OA8 examines whether PE-backed contractors face greater operational strain and learning difficulties on contracts with longer initial duration. *Initial Duration* measures the contract's originally specified length of performance (in years). All continuous variables are winsorized at the 1st and 99th percentiles. Robust standard errors (in parentheses) are clustered at the firm level. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. See Online Appendix A for a full list of variable definitions.

Variables	(1) Modifications (Log)	(2) Renegotiation (IHS)	(3) Cost Overrun (IHS)	(4) Extension (Dummy)
Treated × Post × Initial Duration	-0.055*	0.047	0.007	-0.049***
	(0.032)	(0.206)	(0.022)	(0.015)
Treated × Post	0.048***	0.118	0.009	0.034***
	(0.016)	(0.126)	(0.011)	(0.008)
Treated × Initial Duration	0.023	0.093	0.005	0.020*
	(0.044)	(0.366)	(0.036)	(0.011)
Post × Initial Duration	0.025*	0.048	0.003	0.003
	(0.013)	(0.121)	(0.009)	(0.008)
Initial Value(IHS)	0.007***	-0.067***	-0.001	0.006***
	(0.003)	(0.025)	(0.001)	(0.002)
Initial Duration	0.186***	0.843***	0.068***	0.026***
	(0.020)	(0.161)	(0.013)	(0.006)
Fixed Effects:				
Cohort × Establishment	Yes	Yes	Yes	Yes
Cohort × Event Time	Yes	Yes	Yes	Yes
Cohort × Event Time × Industry	Yes	Yes	Yes	Yes
Cohort × Event Time × State	Yes	Yes	Yes	Yes
Cohort × Event Time × Agency	Yes	Yes	Yes	Yes
Award Type	Yes	Yes	Yes	Yes
Pricing Type	Yes	Yes	Yes	Yes
Observations	3,035,819	3,035,819	3,017,057	3,035,819
R-squared	0.511	0.175	0.218	0.290

Online Appendix B: Figures

Figure OA1: **Private Equity and Market Power - Dynamic Effects**

Figure OA1 displays the dynamic effects of Private Equity (PE) on establishments' market share of government awards. The outcome variable is *Market Share*, defined at various levels of industry NAICS code. The x-axis represents years relative to the PE acquisition year (t=0), with negative values indicating pre-treatment periods and positive values indicating post-treatment periods. The y-axis shows estimated coefficients relative to the year prior to treatment (t=-1), which is normalized to zero.



Market Share