Government Contracts and Labor Investment Efficiency

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Abstract

This paper investigates the impact of government contracts on labor investment efficiency by examining federal contracts awarded to U.S. public firms from 2001 to 2019. Firms with government contracts exhibit improved labor investment efficiency, seen through decreased abnormal labor hirings, addressing both under- and over-investment issues. The positive relationship between the political sensitivity of contracts and labor investment efficiency is nuanced; stronger contractor bargaining power moderates this effect. Non-labor investment efficiency, however, remains unaffected by government contracts. Rigorous tests, including propensity score matching and Two-Stage Least Squares estimation, confirm these findings' robustness. This research contributes to corporate governance and resource allocation literature by revealing the role of government contracts in enhancing labor investment efficiency, especially in politically sensitive contexts.

Keywords: Government Contracts, Investment Efficiency, Employment

1. Introduction

In the fiscal year 2022, an extraordinary milestone was reached when Federal Contract Awards escalated to an unprecedented sum of $690 billion—an allocation that signifies the federal government's most substantial commitment to contracts to date. This comprehensive figure encompasses contracts awarded to an impressive number exceeding 111,000 companies[1]. Companies that successfully secure government contracts often navigate within a distinct operational landscape that holds the potential to considerably influence their investment strategies.

However, despite the considerable scale of Federal procurement contracts and their growing influence in shaping economic and political dynamics across the nation (Samuels, 2021), empirical evidence regarding their implications for corporate investment efficiency remains relatively scarce. In this paper, we undertake an examination of the impact of federal government contracts on investment efficiency, concentrating on the perspective of labor investment efficiency.

Our focus on labor investment efficiency is grounded in the unique characteristics linked to investing in workforce. Unlike other investment categories such as Capital Expenditures (Capex) and Research and Development (R&D), labor investments undergo heightened scrutiny from government agencies tasked with awarding contracts to firms. This increased attention is a direct consequence of the intricate nature of workforce dynamics and its considerable impact, which extends beyond a company's operations. This influence reaches into the wider societal

[1] https://learning.fedmine.us/in-fy-22-federal-contract-spend-was-at-690b-the-largest-amount-ever

landscape, affecting factors such as population employment that can be closely tied to political outcomes (Hibbs et al, 1982; Cohen and King, 2003).

Government contracts, known for their stability and enduring commitments, possess the potential to bolster a company's labor efficiency. An advantage of government contracts is the regular payment schedules they typically adhere to (Nownes, 2006; Huang et al, 2016). This consistent cash flow aids financial planning and enhance credit supply, allowing companies to allocate resources more effectively (Bermelech et al. 2019; Benmelech et al.2023)

Nevertheless, the assumption of heightened labor investment efficiency in companies with government contracts is not immune to challenges. First, the landscape of regulatory demands, compounded by the bureaucracy often intertwined with government projects, can inadvertently lead to the misallocation of resources and contribute to escalated inefficiencies in labor investment. For example, as a condition of conducting business with the Federal Government, entities engaged as federal contractors must adhere to specific obligations and are restricted from certain actions. These stipulations are outlined within congressional bills or executive directives. For instance, spanning several decades, Executive Orders 11246 and 13672—enacted by Presidents Lyndon B. Johnson in 1965[2] and Barack Obama in 2014[3], respectively—have instituted requirements governing hiring and employment for U.S. government contractors. More recently, the Executive Order 14043, issued by President Joe Biden in 2021, established protocols for Federal contractors and subcontractors concerning

[2] In 2002, President George W. Bush signed Executive Order 13270 amending Executive Order 11246. https://www.dol.gov/agencies/ofccp/about/executive-order-11246-history

[3] https://www.govinfo.gov/content/pkg/DCPD-201400553/pdf/DCPD-201400553.pdf

COVID-19 safety measure[4]s. Such regulatory requirements can lead to delays, inefficient resource allocation, and increased labor costs.

Furthermore, concentrating the customer base can heighten demand uncertainty. Firms with a higher concentration of major corporate clients often face intensified demand uncertainty, leading to suboptimal investments (Raman and Sharur, 2008; Irvine et al., 2016).Aligned with these findings, studies show that firms reliant on government connections are less inclined to invest in physical and intellectual domains (Cohen and Malloy, 2016). This hampers innovation (Kong, 2020) and triggers negative market responses (Abdurakhmonov et al., 2021). Research also reveals that firms with government contracts derive value from existing assets, not prospective growth (Paglia and Harjoto, 2014; Huang et al., 2016; Esqueda et al., 2019). In contrast, Cohen and Li (2020) unveil that government customers experience less demand uncertainty compared to major corporate clients. This advantage empowers them to achieve efficiency gains and enhanced profitability.

To assess labor investment inefficiency, we adopt the labor demand model introduced by Pinnuck and Lillis (2007) to estimate a firm's projected net hiring. Their model specification aligns with approaches employed in various recent studies (Jung et al., 2014; Chodorow-Reich, 2014;Ben-Nasr and Alshwer, 2016; Falato and Liang, 2016; Giroud and Mueller, 2017;Khedmati at al., 2019; Ghaly et al., 2020; Cao and Ress, 2020). In our efforts to validate the strength of our findings, we examine different adaptations to this model. We achieve this by accounting for variables linked to labor supply and obstacles within local markets, which can impact a company's choices concerning workforce investment.

[4] https://www.whitehouse.gov/briefing-room/presidential-actions/2021/09/09/executive-order-on-requiring-coronavirus-disease-2019-vaccination-for-federal-employees/

Using a panel dataset featuring 47,411 firm-year observations covering the period 2001 to 2019, we provide compelling evidence that companies receiving government contracts present enhanced labor investment efficiency, characterized by decreased occurrences of abnormal labor hirings. Furthermore, our analysis reveals that this improvement in labor investment efficiency, attributed to government contracts, is associated with addressing both under-investment and over-investment scenarios.

Furthermore, we demonstrate that the political sensitivity of a government contract is associated to elevated labor investment efficiency. However, this positive impact is mitigated when the bargaining power of the contractor is more pronounced. These findings align with the theoretical proposition that increased bargaining power might reduce competitive pressure and a weaker impetus to optimize resource allocation, including labor investment

We show that changes in net hirings among government contractors, whether positive or negative, are associated with a higher Return on Assets, consistent with the findings indicating that government contractors display superior labor investment behavior. Finally, we find no compelling evidence that government contracts impact Non-Labor investment efficiency

We also perform various sensitivity tests to address concerns related to selection bias and endogeneity. Utilizing a propensity score matching method, we tackle the differing characteristics between firms with and without government contracts. To mitigate endogeneity concerns and establish causality, we employ a Two-Stage Least Squares (2SLS) estimation technique, using the firm's distance from Washington D.C. (U.S. Capital) as an instrument for government contracts (Boubakri et al., 2013; Esqueda et al., 2019). The results remain robust across these tests.

The remainder of the paper is organized as follows. Section 2 presents the hypotheses developments. Section 3 describes the data and research design. Section 4 presents the empirical results. Section 6 conducts robustness tests and address endogeneity. Sector 6 presents additional test, and section 8 concludes.

2. Hypotheses Development

Government contracts often involve substantial sums, occasionally reaching annual figures in the billions for certain contractors[5]. A handful of public firms report that their major customers are U.S. government department and agencies, which represents a substantial part of their revenues.[6] One benefit associated with government contracts is their tendency to consistently follow regular payment schedules (Nownes, 2006; Huang et al, 2016). Due to the risk-free nature of their clients (Federal Government) and predictability of their earnings, government contractors are less likely to default or declare bankruptcy (Dhaliwal et al. 2016). As consequence, government contractors' supplier firms face less risk of declining demand and uncollectible accounts.

The literature has documented the positive impact of government contracts on firm performance. For instance, research has demonstrated that firms with a greater concentration of government customers exhibit a reduced cost of equity (Esqueda et al., 2019; Dhaliwal et al., 2016; Papadimitri et al., 2023), improved information quality (Boscaljon et al., 2019), decreased bond yield spreads (Ngo and Susnjara, 2010), enhanced corporate valuation (Josephson et al., 2019), and an increased likelihood of successful exits among venture capital-backed firms (Suleymanov, 2022).

[5] In our sample, we have 48 firm-year observation with total government value superior to $1
[6] https://www.cnbc.com/2017/01/04/top-government-contractors-52-public-companies-that-make-the-most.html

Recognized for their stability and enduring commitments, government contracts have the potential to enhance a company's labor efficiency. For instance, government contractors are less subject to the threat of competition and profit maximizing incentive (Mills et al., 2013). The consistent cash flow they offer assists in strategic financial planning, enabling companies to allocate resources with heightened effectiveness (Benmelech et al., 2023;Cohen and Li, 2020). Consequently, we hypothesize that companies with government contracts are more likely to exhibit enhanced labor investment efficiency compared to their counterparts.

H1: Government Contracts improve labor investment efficiency.

A second prediction is that government contracts erode labor investment efficiency. This hypothesis is grounded in two fundamental premises. Firstly, this notion primarily hinges on the fact that federal contracts often carry a substantial burden of bureaucracy and regulations, necessitating firm adherence. Consequently, this leads to extended time delays, cost overruns, and a higher frequency of renegotiations (Decarolis et al., 2020). Furthermore, supported by executive orders 13672 and 14043, anecdotal evidence indicates that Federal contracts might encompass a range of labor and employment regulations that companies must adhere to. This is intended to ensure fair treatment of employees and cultivate a safe working environment. However, such regulations can introduce challenges for firms striving to uphold labor investment efficiency.

Furthermore, government contractors can exhibit a greater customer base concentration (Mills et al., 2013), which may associated with higher demand uncertainty and reduced investment efficiency (Raman and Sharu, 2008). Moreover, government contracts inherently encompass a degree of political uncertainty risk (Douidar, 2023) and exhibit reduced levels of information clarity (Khadaroo, 2014).To support this notion, studies have shown that firms with

government contracts derive value from existing assets, not prospective growth (Paglia and Harjoto, 2014; Huang et al., 2016; Esqueda et al., 2019). Cohen and Malloy (2019) shed light on the fact that companies relying heavily on government connections exhibit reduced productivity for investing in both physical and intellectual domains. Furthermore, studies have revealed that government contractors exhibit higher cost of debt (Houstin et al 2018;Craig and Hadley, 2020; Ngo and Susnjara, 2020), lower innovation (Kong, 2020) and inferior stock return and valuation (Abdurakhmonov et al., 2021; Esqueda et al. 2019).

The above-mentioned premises lead us to formulate our second hypothesis:

H2: Government Contracts improve labor investment efficiency.

We begin with a neutral stance among these hypotheses, avoiding favoritism towards any particular one. Our primary focus resides in determining whether the presence and scope of government contracts contribute to mitigating or exacerbate labor investment efficiency. It is important to note that the positive and negative impacts of government involvement on investment efficiency are not mutually exclusive. It is conceivable that government contracts could moderate inclinations toward under-investment while concurrently accentuating instances of over-investment, and vice versa. Consequently, the potential for an uneven influence on these distinct manifestations of labor investment inefficiency warrants thoughtful consideration.

Thus, the possibility of an asymmetrical impact on these divergent forms of labor investment inefficiency requires careful consideration. Therefore, employing tests that disentangle the adverse and beneficial effects of government contracts on labor investment efficiency plays a pivotal role in validating our findings.

3. Data and Research Design

3.1. Sample creation

Government contracts data is collected from the Federal Procurement Data System (FPDS), accessible through the USAspending.gov website. FPDS serves as a comprehensive source, providing information about federal contract awards and modifications exceeding $25,000, starting from the fiscal year 2001. This database offers in-depth insights into federal contracts, awarding agencies, and contractors. It covers various aspects, including the total contract value, recipient's name, location, and DUNS number. As there is no shared identifier between these two datasets, we utilize fuzzy matching techniques. This involves identifying DUNS numbers for portfolio companies by comparing company names and locations from the Compustat database with recipient names and locations from the FPDS database. To ensure accuracy in these matches, we personally manually review all the matched names.

Our starting dataset comprises all U.S. companies with shared stock price data in CRSP and financial details in Compustat spanning from 2001 to 2019. We omit firms heavily governed by regulations (SIC code 6000-6999) and those within the utility sector (4900-4999) from the final dataset. We source information about a firm's net hiring and financial attributes from Compustat. Data regarding portfolio holdings of institutional investors is collected from the Thomson Reuters 13F database, which provides institutional common stock holdings and transactions[7]. To reduce the influence of outliers, we winsorize all continuous variables at the top and bottom 1%. Our final sample consists 5,751 of firms and 47,411 firm-year observations.

3.2.Measuring Government contracts.

[7] All institutions managing more than $100 million in equity must file a quarterly report listing all the common stock holdings that are greater than 10,000 shares or $200,000 in market value.

Our research strategy involves the creation of five distinct measurement sets, each tailored to capture government contracts at the firm level. Firstly, the "Contract" indicator serves as a binary variable, assuming a value of one when a firm secures a government procurement contract in any given year. Secondly, we utilize the natural logarithm of the total USD value attributed to contracts granted to each portfolio company annually. Thirdly, our approach involves the natural logarithm of the annual count of contracts awarded to individual firms. Fourthly, we consider the natural logarithm of the mean USD value of government contracts awarded to firms per year. Finally, we incorporate the ratio of the total USD value from contracts to the firm's overall sales in a specific year. All these measures find substantial application in existing literature focused on assessing the influence of government procurement contracts on firm performance (Ferris et al., 2019; Esqueda et al., 2019; Cumming et al., 2022).

Following Hadley (2019), the political sensitivity measure of a government contract and bargaining power of a contractor are adapted from Mills et al. (2013). First, as articulated by Mills et al., political sensitivity delineates the confluence of a firm securing contracts of substantial magnitude, leading to government scrutiny, and contracts of significant importance to the firm, prompting strategic behavioral shifts. Therefore, the political sensitivity measure incorporates metric factors in two essential dimensions of a contract: the discernibility of contracts and their significance to the contracting firms. To capture contracts with a High Visibility, we employ an indicator variable set to one if a firm's total government contracts awarded within a given year pertains to the decile among all firms per year[8]. Contract Importance is derived from the ratio of government contract USD dollars received by the firm to

[8] In conducting robustness tests, we check the High Visibility of government contracts using different percentiles. This will be explained in the upcoming sections.

its total annual revenue ($ContractValue_t/Sale_t$). Hence, the construct of political sensitivity takes form as the product of a contract's High Visibility and its Contract Importance.

To quantify the bargaining power of a contract, we turn to Porter's (1980) competition theory and incorporate four distinct variables. Firstly, we use the percentage of contracts awarded to a contractor firm that doesn't require competitive bids (No_Bid %). Secondly, we account for the contract percentage within each 2-digit SIC industry group (Contractor % Ind). Thirdly, we consider the percentage of annual contracts awarded that are classified as Defense contracts. Lastly, our fourth measure of bargaining power assesses the contractor's industry concentration using the Herfindahl-Hirschman Index (HHI). The HHI Index is employed as a proxy for understanding the overall competitive environment within the portfolio company's industry. This is achieved by analyzing U.S. public firm sales categorized under the same three-digit SIC codes in the Compustat database.

3.3.Measuring Labor Investment Efficiency.

Our research methodology falls in line with a commonly employed approach within the prevailing literature to quantify Labor Investment Efficiency. This methodological framework draws inspiration from the foundational study conducted by Pinnuck and Lillis (2007), which has consequently served as a foundation for recent empirical investigations (Jung et al., 2014; Chodorow-Reich, 2014; Ben-Nasr and Alshwer, 2016; Falato and Liang, 2016; Giroud and Mueller, 2017; Khedmati et al., 2019; Ghaly et al., 2020; Cao and Ress, 2020; Cao and Ress, 2023). Specifically, we estimate Expected Hiring employing a comprehensive set of firm-specific variables that explain prevalent norms and practices governing hiring decisions, as follows:

$$\text{Net\_Hiring}_{i,t} = \alpha + \beta_1 \text{SalesGrowth}_{i,t} + \beta_2 \text{SalesGrowth}_{i,t-1} + \beta_3 \text{Profit}_{i,t} + \beta_4 \Delta\text{Profit}_{i,t} + \beta_6 \text{Return}_{i,t} + \beta_7 \text{Size}_{i,t-1} + \beta_8 \text{QuickRatio}_{i,t-1} + \beta_9 \Delta\text{QuickRatio}_{i,t-1} + \beta_{10} \text{QuickRatio}_{i,t-1} + \sum_{L=1}^{5} \delta_l \text{LossBins}_t^{1to5} + \lambda_j + \varepsilon_{i,t} \quad (1)$$

where i and t refer to firm i and year t, respectively. Net_Hiring is the percentage change in the number of employees between year t-1 and year t (i.e., labor investment). We include year fixed effects (λ_j) to control for unobserved industry characteristics impacting net hiring in each year.[9] We then use the raw deviation from the predicted labor investment based on model (1) to measure Labor Investment Efficiency. Higher levels of Abnormal_Investments is associated with investment inefficiency:

$$\text{Abnomal\_Net\_Hiring} = |\text{Actual\_Net\_Hiring} - \text{Expected\_Net\_Hiring}| \quad (2)$$

Chen, Hribar, and Melessa (2018) showed that using a two-step regression approach, where the residuals from the first-step regression are employed as the dependent variable in the second step, can result in biased and inaccurate estimations. To prevent any potential misinterpretations, we adhere to their suggestion and incorporate the controls from the initial stage in regressions where the absolute residuals of the first-step regression serve as the dependent variable.

3.4.Empirical specification

To examine the impact of government contract on labor investment efficiency, we examine the impact of those contracts on Abnormal Hirings, which represents the absolute value of residuals described in equations (1)-(2).

[9] In the robustness tests, we conduct a series of thorough evaluations by incorporating fixed effects for different scenarios: year and industry, year and company, and state and year. These tests are designed to address the possibility of missing factors not included in the initial models. More details are described in the subsequent sections.

$$\text{Abnormal\_Hiring}_{i,t+1} = \alpha + \beta_1 \text{Government\_Contract}_{i,t} + \gamma_1 X_{i,t} + \lambda_i + \gamma_{i,t}\, \varepsilon_{i,t} \quad (3)$$

where Abnormal_Hiring is defined based in accordance with the formulation presented in Eq.(2). Higher (lower) levels of Abnormal Hiring are associated with investment inefficiency (efficiency). The variable **X** is a matrix containing control variables.. The coefficient β1 quantifies the influence of government contracts on investment efficiency. Consequently, Hypothesis 1 (H1) postulates a positive coefficient (β1), whereas an opposing proposition, Hypothesis 2 (H2) , posits that government contracts increase abnormal hirings, thereby promoting investment inefficiency. This, in turn, corresponds to a positive coefficient (β1). The model includes industry & year fixed effects to address unobserved industry and year characteristics that may influence net hiring.

Denoted as **X**, the matrix encompasses various control variables. We augment our regression with control variables based on theoretical research on labor investment efficiency. (Jensen, 1986, Richardson, 2006; Biddle et al. 2009; Ghaly et al. 2020). Details on the construction of the variables are provided in Appendix.

To evaluate the impact of government's contract political sensitivity and contractor's government bargain on labor investment efficiency, we follow Hadley (2019) and employ the following equation:

$$\text{Abnormal\_Hiring}_{i,t+1} = \alpha + \beta_1 \text{PoliticalStability}_{i,t} + \beta_2 \text{BargainingPower}_{i,t} * \text{PoliticalStability}_{i,t} + \beta_3 \text{BargainingPower}_{i,t} + \gamma_1 X_{i,t} + \lambda_i + \gamma_{i,t}\, \varepsilon_{i,t} \quad (4)$$

4. Empirical Results

4.1. Summary statistics.

In Table 1, we provide an overview of summary statistics derived from our sample. On average, approximately 24.3% of companies have been recipients of federal government awards, and the mean total value of these awards amounts to $1.92 million in USD. Firms, on average, secure 16 government contracts annually. Furthermore, these contracts constitute, on average, approximately 0.9% of the companies' total annual revenues. As per the data, the averages of the metrics employed for evaluating bargaining power, NoBid and Defense, are computed to be 9.3% and 12.5% respectively. Taking into account the considerable number of firms that abstain from engaging in government contract acquisitions on an annual basis, the data underlines that 38.3%[10] of the contracts are awarded through non-competitive bidding processes, while an appreciable 52.00%[11] of the contracts are attributed to defense contracts.

Appendix A2 presents the detailed industry-specific analysis. The data reveals that government contracts are more prevalent within the Construction and Wholesale Trade sectors, constituting 41.57% and 28.74% respectively. Conversely, the Mining sector and the Agriculture, Forestry, and Fishing sector exhibit relatively lower instances of government contracts, at 4.43% and 10.49% respectively. On average, manufacturing companies exhibit the highest levels of USD contract value relative to the total sales of the firm, constituting 1.29%. The summary statistics pertaining to the characteristics of government contracts with our sample are in line with previous studies (Ferris et al. 2019; Hardley 2020).

[Table 1 Here]

[10] 0.093/0.243
[11] .0125/0.243

The mean of net Net Hiring is 4.59%. The average of Expected_Hiring, value computed using Equation (1) yield a very similar value of 4.67%, thereby lending support to our model's validity. The sample's average Abnormal Net Hiring, or the absolute value of residuals, is 13.22%. These values are in line with previous literature (Jung et al., 2014; Ghaly et al. 2020). On a different note, the typical distance between the headquarters of firms and Washington D.C. spans approximately 1,026 miles.

4.2.The impact of government contracts on Labor-Investment Efficiency

First, we test our Hypotheses 1 and 2 (H1 and H2). Our primary focus revolves around the evaluation of how government contracts impact Abnormal Net Hiring, which serves as our metric to estimate Labor Investment inefficiency. To deal with potential bias in the two-stage estimation procedure, our approach incorporates the inclusion of covariates from the first stage into all second stage models, as established by Chen et al. (2018). We report robust t-statistics for the coefficients, and standard errors are clustered by firm. We report results in Table 2.

The estimated coefficient of Government Contract is negative across all the specifications. In Models (1)-(4), regardless of the method used to quantify contracts—whether it's based on their presence (Contract), the natural logarithm of the aggregate USD value of all government contracts granted to the firm (Ln(Total Value of Contracts)), the natural logarithm of the count of government contracts received by the firm (Ln(Number of Contract)), or the natural logarithm of the average USD value of government contracts received by the firm annually (Ln(Mean Value Contracts))—the coefficients exhibit statistical significance at the 1% level. In Model (5), the coefficient associated with the ratio of the total value of government contracts awarded to the firm in relation to its total sales (ContractValue/Sales) is statistically significant at the 10% level.

These results suggest that government contract is positively (negatively) associated with investment efficiency (inefficiency). In column (1), Table 1, the economic significance is such that the presence of a government contract in year t decreases Abnormal Investments by 6.27 % (10.97%) relative to mean (median) Abnormal Net Hiring[12]. In column (5), results indicate that 1-standard deviation increase in the Total Contract value relative to company sales decreases Abnormal Investments by 2.71% relative to median Abnormal Net Hiring. [13]

The analyses of control variables in Table 2, column (1), indicate that investment efficiency, denoted by variables showcasing negative coefficients, is positively associated with higher Market-to-Book ratio, larger firm size, higher levels of institutional ownership, and higher Tangibility of Assets. In contrast, investment inefficiency (positive coefficient) is positively associated with Higher levels of Quick Ratio, Cash Flow volatility, Sales Volatility, negative profit, Abnormal-Non-Labor investments, and higher levels of institutional investors' turnover rate. These results are consistent with prior literature on labor investment efficiency (e.g. Jung et al, 2014; Ben-Nasr and Alshwer, 2016; Ghaly et al. 2020)[14]

[Table 2 Here]

Next, in the spirit of Biddle et al. (2009) and Ghaly et al. (2020), we examine the impact of government contract on specific forms of labor investment efficiency. Our focus lies in determining whether the presence and extent of government contracts contribute to the reduction of both over- and under-investment. Government contracts could feasibly curtail over-investment tendencies while simultaneously exacerbating instances of under-investment.

[12] -0.83/13.219 and -0.83/7.567
[13] 0.147*-1.393/7.567
[14] Ghaly et al. (2020) incorporated investor stability into their analytical framework, a concept derived by multiplying Inv_Turnover by -1.

Consequently, the potential for an asymmetrical impact on these divergent forms of labor investment inefficiency is a plausible consideration.

Panel A of Table 3 presents the results on the relation between government contract and over-investment. For that purpose, we estimate Equation (3) for a subsample of firms with positive Abnormal_Net_Hiring (Actual Net Hiring> Expected Net Hiring). The coefficient of Government_Contract is negative and statistically significant at 1% level across all specifications, indicating that the existence and magnitude of Government_Contract correspond to a reduction in Labor Over-investment . This pattern resonates with predictions of hypothesis 1 (H1) . In Panel B we encounter similar results within firms marked by negative Abnormal_Net_Hiring (Actual Net Hiring<Expected Net Hiring). In Panel B, across the range of Models (1)-(4), the Government_Contract coefficients maintain their negative and statistically significant status at the 1% level. These results underscore a key insight – government contracts, when present and substantial, is associated with a lower Labor Under-investment. Notably, this relationship loses its statistical significance when Government_Contract is measured by ContractValue/Sales ratio. Overall, the findings presented in this Panel B deviate from the proposition that government contracts might amplify Labor Under-investment (H2). Furthermore, a similar set of tests using Abnormal Net Hiring – where values equate to zero for residuals falling below (or above) zero – yields results that mirror those outlined in Table 3, as indicated in Appendix A3.

[Table 3 Here]

In summary, results presented in this section indicate that government contract is associated with lower levels of Labor investment efficiency. This holds true for both the realms of Over-investment and Under-investment, aligning with the hypothesis that government

contracts are associated with an overall Labor Investment efficiency for the contractor firm, posited by Hypothesis 1.

4.3.Propensity Score Matching.

The address the potential influence of confounding variables that predict both Abnormal Hiring and Government Contracts, we perform a propensity score matching (PSM) (Rosenbaum and Rubin, 1983; Heckman et al., 1997,1998). We select the optimal match using the nearest neighbor technique within the propensity score matching procedure, ensuring that potential matches originate from the same year.

Table 4 provides an overview of the outcomes derived from a matching procedure. Among the results, only the Inv_Turnover_Ratio demonstrates statistical significance at the 5% level when comparing Contract and Non-Contract firms. It is important to acknowledge that this particular variable exclusively captures the turnover ratio of institutional investors associated with the firm. Notably, the analysis reveals no significant statistical difference in the means of the Institutional Ownership ratio between the two groups after the matching procedure. Given these observations, we are confident that the matching process provides appropriate benchmark for evaluating the impact of Contracts on Abnormal Hiring.

[Table 4 Here]

Table 5 presents the results, revealing the influence of government contracts on Abnormal Hiring within the propensity score matched sample . The observed results align closely with those previously detailed in Table 2. Specifically, in Panel A of Table 5, the Government_Contract coefficient consistently has a negative and statistically significant estimate across all the specifications. As we delve into the analysis of overinvestment and

underinvestment subsamples, presented in Panels B and C, the results continue to reflect those observed in the earlier analysis. As a whole, the use of the PSM approach serves to support and conclusions highlighted in the preceding section.

[Table 5 Here]

4.4.Political sensitivity of a contract and contractors' bargaining power.

In this section, we examine the interaction of political sensitivity of a contract and the bargaining power of the firm awarded with the contract on the labor investment efficiency. We follow Mills' et al. (2013) and Hardley (2020) to measure political sensitivity of a contract and bargaining power. Political sensitivity is based on the two dimensions of a contract: its visibility and its importance to the contracting firms. Bargaining Power of the contracting firm is measured by the percentage of contracts awarded to a contractor firm that doesn't require competitive bids (No_Bid %), the contract percentage within each 2-digit SIC industry group (Contractor % Ind), the percentage of annual contracts awarded that are classified as Defense contracts (Defense %), and the contractor's industry concentration using the Herfindahl-Hirschman Index (HHI). The method to calculate these variable is described in detail in section 3.1. We report results in Table 6. All the models include Industry & Year fixed effects, with the exception of models focusing on industry concentration as measure of bargaining power[15], which include only year fixed effects.

Through Models (1) and (2), Table 6, the coefficient estimation for the Political_Stability of the contracts are negative and statistically significant. This finding implies that firms involved in government contracting, characterized by higher levels of political sensitivity, are linked to an improvement in labor investment efficiency. Additionally, Models (1) and (2) reveal positive

[15] In this case, the coefficient would be omitted by the industry fixed effect.

coefficients for the contractor's bargaining power. These positive coefficients indicate that the presence of bargaining power reduces the impact, typically positive in nature, on labor investment efficiency. In Model (3), where the proxy for bargaining power is the Defense %, the coefficient Political_Sensitivity remains negative but not statistically significant. Furthermore, the coefficient of the interaction term between Political_Sensitivity and bargaining power stands as statistically insignificant. This finding suggests that, when evaluated through the lens of the Defense (%) parameter, bargaining power does appear to exert a moderating effect on the influence of political sensitivity concerning labor investment efficiency.

Next, we examine the impact of political sensitivity of the contract and its interaction with the bargaining power on specific types of labor investment inefficiency. Table 6, Models (4)-(6) present the results for overinvesting firms, where hiring deviations are positive. The coefficients for political stability are positive and statistically significant at 5% level across all specifications models. This pattern implies that political sensitivity of the contract reduces overinvestment in the contractor firm. Moreover, the interaction term between political sensitivity and bargaining power is positive across all the models, but only statistically significant at the 10% level when bargaining power is measured by the Contractor % Ind and Defense %, which suggests that bargaining power reduces the impact of political sensitivity on overinvestment.

[Table 6 Here]

Models (7)-(8), Table 6, present the results for the subsample of underinvesting firms, characterized by a negative hiring deviation. In this particular context, the coefficients for political sensitivity are not statistically significant across all specifications. Furthermore, within this subset of underinvesting firms, the analysis of the interaction terms between bargaining

power and political sensitivity reveals ambiguous results. When assessed through the NoBid (%) metric, the coefficient of the interaction term exhibits a positive value, indicating that the political sensitivity of the contract, when coupled with contractors' bargaining power, exacerbates underinvestment. In contrast, when evaluated using the Defense (%) metric, the coefficient of the interaction term turns negative, suggesting that bargaining power mitigates the underinvestment associated with the political sensitivity of the government. In both cases, the coefficients are only statistically significant at 10% level, which combined with the ambiguous results and the absence of statistical significance in Model (8), provide us with a weak evidence that bargaining power reduce or exacerbate the impact of political sensitivity contracts on underinvestment.

In Table 7, we present an analysis of the interplay between political sensitivity and bargaining power in relation to labor investment efficiency based on a Propensity Score Matched (PSM) sample. Similar to results presented in Table 7, the Political_Sensitivity coefficient is negative across all specifications. It also attains statistical significance at the 5% significance level when bargaining power is assessed through the NonBid (%) and Contractor % Ind metrics. Additionally, the interaction term involving bargaining power and Political_Sensitivity assumes a positive orientation and reaches statistical significance at the 10% level. This alignment reinforces earlier conclusions, underscoring the notion that the bargaining power of the contractor acts to reduce the favorable impact of Political_Sensitivity on labor investment efficiency.

[Table 7 here]

In summary, the results presented in this section indicate that the political sensitivity of government contracts reduces labor investment efficiency, particularly with regard to

inefficiencies tied to overinvestment. Furthermore, the results suggest that the bargaining power of contractors, assessed through the percentage of contracts that don't necessitate competitive bids (NoBid %) and the contract percentage within each 2-digit SIC industry group (Contractor % Ind), mitigates the impact of political sensitivity on labor investment efficiency.

5. Robustness checks and Causality Analysis.

5.1. Alternative fixed effects and models for expected and abnormal net hirings

To enhance the robustness of our findings, we follow Ghaly et al.(2020) and replicate our analysis while incorporating metrics on the original Pinnuck and Lillis (2007) model to project net hiring expectations. Given that the original Pinnuck and Lillis (2007) model solely incorporates industry fixed effects, our approach involves estimating the model to forecast expected hiring while factoring in an array of additional fixed effects. Our presentation of results unfolds as follows: In Panel A, we provide the results when Industry and Year fixed effects are introduced. Subsequently, in Panel B, we showcase the results when Firm and Year fixed effects are integrated. Further enriching the model, Panel C furnishes results including firm, industry-year, and state-year fixed effects. These model adjustments serve to enhance the foundational features of Pinnuck and Lillis' original work by encompassing variables related to firm attributes, industry dynamics, and the geographical context of contracting firms. We present the results in Table 8. The results from all models exhibit qualitative consistency with our baseline findings.

[Table 8 here]

5.2. Causality Estimation: IV Analysis

In this section, we employ an IV analysis to establish a causal relationship. Building upon the approach of Boubakri et al. (2013) and Esqueda et al. (2019), we employ the distance

between a firm's headquarters and Washington D.C. as the instrumental variable to determine the firm's status as a government contractor. To address potential geographical variations among companies from different industries in U.S., we normalize the distance of a firm's headquarters to D.C. by calculating the average distance within a specific industry for a given year. This process is elaborated as follows:

$$\text{DC\_Distance\_Normalized} = \frac{\text{Fir}\ \ '\text{s HQ}'\text{Distance to D.C.}}{\text{Annual Avg.Industry Distance to D.C.}} \quad (4)$$

This variable satisfies the exclusion restriction as it is unlikely to be correlated with Abnormal Hiring. This instrument is based on the premise that firms with government contracts are more likely to be located nearer to the capital city.

Table 9 shows the IV regression results. Models (1)-(5) present the results of the first stage of the IV analysis. Panel A presents the results without the first-stage regressors to obtain Abnormal_Hiring as control variables. Panel B presents the results with those controls (Chen et al. 2018). As estimated, DC_Distance_Normalized is negative and statistically significant at the 1 % level in all Government_Contract specifications, which is consistent with our prediction that government contractors are located nearer to D.C. Further, the Cragg-Donald Wald F Stastictics, used for the test of weak instruments exceeds the critical value of 10 (Stock and Yogo, 2002). These results suggest that the instrument is relevant.

[Table 9 here]

In Models (6)-(10), as seen in both Panel A and B, we present the IV second-stage results. Notably, all the estimates for the variable Government_Contract maintain a consistent negative sign and retain statistical significance, reaching at least the 10% level. These IV results robustly

support the hypothesis that government contracts contribute to a reduction in Abnormal Hiring, consequently enhancing the efficiency of Labor Investment within the contracting firm.

6. Additional tests

6.1. The impact of changes in Hiring in firm performance

Up to this point, our study has revealed the positive impact of government contracts on Labor Investment within contracting firms. We now shift focus to their potential influence on future performance. We evaluate this by analyzing Returns on Assets in the 5- and 4-year periods following government contract acquisition. In essence, we aim to determine whether the positive effects on addressing Over-investment and under-investment result in a discernible impact. If government contracts effectively alleviate these concerns, we expect a positive (or negative) correlation between net hiring and government contracts based on the direction of net hiring. Results are presented in Table 10.

[Table 10 Here]

Panel A in Table 10 presents an analysis focused on a subset of firms with positive Net Hiring. The results highlight that both the coefficients for positive Net Hiring and Government Contract are not statistically significant. However, across all specifications, the Interaction term between Net Hiring and Government Contract consistently displays a positive and statistically significant relationship. These results provide support for the idea that the combination of Government Contract and positive changes in Net Hiring contributes to an improvement in the 5-year Return on Assets (ROA) for contracting firms.

Moving to Panel B, we replicate a similar analysis with a subset of firms demonstrating negative Net Hiring in t+1. Notably, the coefficient of Net Hiring remains positive and

statistically significant across all specifications. Given the exclusive presence of negative values for Net Hiring in this panel, we can conclude that unfavorable shifts in Net Hiring adversely affect the firm's 5-year ROA. Of particular interest, the interaction term between Net Hiring and Government Contract is consistently negative and statistically significant at the 5% level in all specifications, except when Government Contract is measured by Contract Value/Sales. These findings suggest that the combined effect of Government Contract and Net Hiring diminishes the impact of Net Hiring on the firm's ROA. Table 10, Panel C and D, present similar results when 3-years ROA is used as dependent variable. In Appendix A4, we employ a regression analysis on the entire dataset, using the absolute values of Net Hirings as the focal variable. The findings align closely with those presented in Table 10. Notably, shifts in Net Hirings, irrespective of their direction – positive or negative – exhibit a positive influence on the return on assets within contracting firms.

In summary, the findings presented in this section provide compelling evidence that the efficacy of Labor Investment within contracting firms is closely tied to improved overall firm performance, as indicated by Return on Assets.

6.2.The impact of government contracts on Non-Labor Investment

In this section, we examine the impact of government contracts on non-labor investment. We follow a common approach in the literature to measure investment inefficiency (Richardson, 2006; Biddle et al.,2009). We first estimate a firm-specific optimal model of investment based on growth opportunities (measured by sales growth).

$$Investment_{i,t+1} = \beta_0 + \beta_1 \, Sales\ Growth_{i,t} + \varepsilon_{i,t+1} \quad (5)$$

Where investment is the level of total investment defined as the sum of capital expenditures, acquisitions, and R&D scaled by lagged total assets. *Sales Growth* is the percentage change in sales from year *t-1* to *t*. We estimate model (5) for each industry-year, based on the Fama and French (1997) 48 industry classification (Biddle et al. 2009). Similar to the model used to capture Expected Net Hiring, we use the absolute value of raw deviation from the predicted investment to estimate Abnormal Non-Labor Investments.

[Table 11 Here]

In Table 11, we present regression results on the association between government contracts and non-labor abnormal investments, following Model (5). Contrary to the results for labor investments, we do not find compelling evidence that Government_Contract is negatively associated with Non-Labor investment Efficiency, or Abnormal Lon-Labor Investment. None of the estimates display a negative and statistically significant value at the 5% significance level. However, when we consider the total government contract to sales ratio (ContractValue/Sales) as a proxy, an intriguing pattern emerges. The coefficient takes on a positive value and attains statistical significance at the 1% level. This finding suggests that firms exhibiting higher levels of government contracts tend to demonstrate elevated levels of non-labor investment inefficiency.

7. Conclusion

In conclusion, this study offers valuable insights into the intricate relationship between government contracts and labor investment efficiency. By examining a sample of federal government contracts with U.S. public firms between 2001 and 2019, our research establishes a strong case for the positive impact of government contracts on firms' labor investment practices.

The findings provide compelling evidence that companies engaged in government contracts exhibit enhanced labor investment efficiency. This is demonstrated by a reduction in abnormal labor hirings, indicating optimized resource allocation. Notably, the improvements extend to addressing both under-investment and over-investment scenarios, underscoring the role of government contracts in fostering balanced workforce management.

Moreover, the study uncovers the significance of the political sensitivity of government contracts. We observe that higher political sensitivity is associated with increased labor investment efficiency, suggesting the strategic importance of political factors in shaping resource allocation decisions. However, the influence of political sensitivity is tempered by the bargaining power of contractors. This finding aligns with theoretical propositions, highlighting the interplay between competitive pressures, bargaining power, and resource optimization.

The positive correlation between changes in net hirings among government contractors and a higher Return on Assets further emphasizes the financial benefits of efficient labor investment. This finding underscores the crucial role of labor resource management in firms' overall financial performance.

Importantly, our research contributes to the understanding of the specificity of government contracts' impact. While labor investment efficiency is significantly improved, no compelling evidence is found to suggest a similar effect on non-labor investment efficiency. This indicates that the benefits of government contracts are more pronounced within the domain of labor allocation.

To enhance the robustness of our findings, we rigorously address potential concerns of selection bias and endogeneity. The implementation of propensity score matching and the Two-

Stage Least Squares estimation technique utilizing the firm's distance from Washington D.C. as an instrument for government contracts bolster the credibility and validity of our results.

In essence, this study not only substantiates the positive influence of government contracts on labor investment efficiency but also advances our comprehension of the underlying mechanisms and contingencies at play. The implications of our findings extend to corporate governance, resource allocation strategies, and the broader landscape of government-business interactions.

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Table 1- Summary Stats

This table presents summary stats for the labor investment, government contract, coThis Lontrol variables, and variables used in the estimation of the expected level of net hiring used in our main analysis. The sample comprises 47,411 firm-year observations corresponding to 5,751 firms between 2001 and 2019. The firms in the sample are publicly traded U.S. operating firms (shrcd 10 & 11) excluding financial and utilities. All variables are defined in Appendix

	Mean	Std. Dev.	Median	min	max
Actual_Net_Hiring (%)	4.585	25.26	1.754	-63.675	138.889
Expected_Net_Hiring (%)	4.669	10.54	5.04	-56.13	189.257
Abnormal_Net_Hiring (%)	13.219	17.001	7.567	.137	102.04
Contract	.243	.429	0	0	1
Contract_Value ($Million)	1.917	10.331	0	0	85.56
Number_Of_Contracts	16.146	74.085	0	0	588
Contract_Value/Sale	.009	.147	0	0	19.886
MTB	3.001	5.408	1.988	-17.904	35.008
Ln_Asset	5.984	2.09	5.958	1.294	10.924
Quick_Ratio	2.16	2.455	1.356	.098	16.016
Leverage	.162	.204	.082	0	.878
Inst_Ownership	.564	.335	.634	0	1.138
Dividend	.009	.022	0	0	.149
Repurchase	.016	.039	0	0	.23
CF_Volatility	.083	.087	.055	.007	.543
Sales_Volatility	.253	.247	.177	.007	1.442
Tangibility	.233	.22	.157	.003	.897
Loss	.367	.482	0	0	1
Inv_Turnover	.192	.083	.178	.572	.051
Net_Hire_Volatility	.724	16.265	.14	0	1181.857
Labor_Intensity	.008	.022	.004	0	1.31
Abnormal_Non-Labor_Inv (%)	9.921	11.785	6.548	0	74.864
Non-Labor_Inv (%)	14.868	18.074	8.946	-1.159	109.881
Age	1.902	1.654	1.4	0	8.3
Z_Score	.049	5.467	1.45	-36.418	5.18
Avg_ROA_3Yrs	.051	.247	.106	-1.341	.449
Avg_ROA_5Yrs	4.836	24.894	10.557	-140.09	42.924
No_Bid (% Contract)	.093	.243	0	0	1
Defense (% Contract)	.125	.306	0	0	1
Distance_DC	1026.187	850.149	712.4	0	4850.2
Distance_DC_Normalized	1.004	.832	.695	0	4.812

Table 2 – The effect of government contracts on labor investment efficiency.

This table presents the regression results examining the influence of government contracts on labor investment efficiency. The dependent variable, Abnormal Hiring, represents the absolute value of residuals—indicating deviations from predicted investments—calculated using Eq. (1). Predicted labor investments are computed based on the methodology established by Pinnuck and Lillis (2007). Abnormal Net Hiring is quantified as the disparity between actual and anticipated hiring, serving as a proxy for labor investment inefficiency.In Model (1), the presence of a government contract is approximated by the variable "Contract", a binary indicator that takes the value of one if a firm received at least one government contract in year t, and zero otherwise. Model (2) employs "Ln(Total Value of Contracts)" to proxy the government factor, representing the natural logarithm of the total USD value of all government contracts awarded to a firm in year t. Model (3) employs "Ln(Number of Contracts)" to gauge the government contract variable, referring to the natural logarithm of the count of government contracts awarded to a firm in year t. Model (4) utilizes "Ln(Mean Value of Contracts)" as a measure of government contract, representing the natural logarithm of the average USD value of government contracts awarded to a firm in year t. Model (5) employs "Contract_Value/Sales" as a metric for government contract, calculated by dividing the total value of all government contracts awarded to a firm in year t by the firm's total sales.Consistent with Chen et al. (2018), first-stage controls used for predicting estimated hirings are included across all models. Additionally, all models incorporate industry and year fixed effects to account for potential variations. For detailed definitions of all variables, please refer to the Appendix. The reported T-statistics in parentheses are computed using robust standard errors clustered at the firm level. The notation ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Dep. Variable	**Abnormal Net Hiring$_{t+1}$**				
	Contract$_t$	Ln(Total Value of Contracts)$_t$	Ln(Number of Contract)$_r$	Ln(Mean Value Contracts)$_t$	ContractValue/Sales$_t$
	(1)	(2)	(3)	(4)	(5)
Government_Contract	-.83***	-.061***	-.224***	-.075***	-1.393*
	(-4.386)	(-4.218)	(-3.972)	(-4.125)	(-1.768)
MTB	-.037**	-.037**	-.037**	-.037*	-.037**
	(-1.961)	(-1.964)	(-1.996)	(-1.954)	(-1.976)
Ln_Asset	-.275***	-.271***	-.271***	-.272***	-.287***
	(-4.441)	(-4.371)	(-4.37)	(-4.393)	(-4.617)
Quick_Ratio	.548***	.548***	.549***	.548***	.555***
	(9.57)	(9.576)	(9.584)	(9.579)	(9.671)
Leverage	-.796	-.797	-.787	-.798	-.762
	(-1.567)	(-1.569)	(-1.549)	(-1.569)	(-1.498)
IOR	-2.312***	-2.316***	-2.316***	-2.317***	-2.348***
	(-6.122)	(-6.131)	(-6.129)	(-6.135)	(-6.203)
Dividend	3.746	3.704	3.705	3.71	3.803
	(.984)	(.973)	(.973)	(.974)	(.999)
Repurchase	.765	.743	.728	.756	.856
	(.439)	(.426)	(.417)	(.434)	(.49)

CF_Volatility	4.968***	4.967***	4.991***	4.982***	5.164***
	(2.838)	(2.838)	(2.852)	(2.846)	(2.949)
Sales_Volatility	2.618***	2.628***	2.633***	2.625***	2.625***
	(5.527)	(5.551)	(5.557)	(5.545)	(5.536)
Tangibility	-2.836***	-2.853***	-2.865***	-2.841***	-2.779***
	(-4.373)	(-4.395)	(-4.412)	(-4.377)	(-4.272)
Loss	.645***	.642***	.637***	.646***	.653***
	(2.746)	(2.735)	(2.709)	(2.749)	(2.78)
Inv_Turnover	7.779***	7.785***	7.801***	7.791***	7.865***
	(-5.909)	(-5.913)	(-5.923)	(-5.917)	(-5.969)
Net_Hire_Volatility	.005	.005	.005	.005	.005
	(.97)	(.965)	(.96)	(.967)	(.966)
Labor_Intensity	-6.835	-6.788	-6.61	-6.807	-6.307
	(-1.311)	(-1.303)	(-1.272)	(-1.306)	(-1.219)
Abnormal_Non-Labor_Inv	.34***	.34***	.34***	.34***	.341***
	(24.006)	(24.02)	(24.03)	(24.016)	(24.055)
_Const	7.734***	7.701***	7.656***	7.7***	7.539***
	(13.826)	(13.768)	(13.69)	(13.767)	(13.466)
Observations	45767	45767	45767	45767	45767
R-squared	.222	.222	.222	.222	.222
Industry & Year FE	Yes	Yes	Yes	Yes	Yes

Table 3 – The effect of government contracts on specific types of labor investment efficiency

This table presents regression findings on the impact of government contracts on specific labor investment efficiencies. Panel A explores government contracts' relation to overinvestment, defined as excessive positive hiring deviations (Eq. 1). Panel B examines their relation to underinvestment, characterized by negative abnormal hiring (Eq. 1). Labor investments are assessed using Pinnuck and Lillis' (2007) approach, with Abnormal Net Hiring representing inefficiency.Models (1)-(10) quantify government contract effects: "Contract," "Ln(Total Value of Contracts)," "Ln(Number of Contracts)," "Ln(Mean Value of Contracts)," and "Contract_Value/Sales." All models incorporate industry, and year fixed effects. Consistent with Chen et al. (2018), we incorporate first-stage controls to predict estimated hirings across all models. Definitions are in the Appendix. T-statistics in parentheses show significance, *** (1%), ** (5%), and * (10%), computed with robust standard errors at the firm level..

Dep. Variable	**Abnormal Net Hiring$_{t+1}$**				
	Contract$_t$	Ln(Total Value of Contracts)$_t$	Ln(Number of Contract)$_r$	Ln(Mean Value Contracts)$_t$	ContractValue/Sales$_t$
	(1)	(2)	(3)	(4)	(5)
Panel A. Overinvestment					
Government_Contract	-1.063***	-.081***	-.308***	-.098***	-4.254***
	(-3.031)	(-2.993)	(-2.785)	(-2.909)	(-3.371)
Controls	Yes	Yes	Yes	Yes	Yes
Industry & Year FE	Yes	Yes	Yes	Yes	Yes
First-Stage Controls	Yes	Yes	Yes	Yes	Yes
Observations	18779	18779	18779	18779	18779
R-squared	.246	.246	.246	.246	.246
	(6)	(7)	(8)	(9)	(10)
Panel B. Underinvestment					
Government_Contract	-.702***	-.048***	-.162***	-.061***	.022
	(-4.388)	(-4.023)	(-3.65)	(-3.985)	(.039)
Controls	Yes	Yes	Yes	Yes	Yes
Industry & Year FE	Yes	Yes	Yes	Yes	Yes
First-Stage Controls	Yes	Yes	Yes	Yes	Yes
Observations	26931	26931	26931	26931	26931
R-squared	.28	.279	.279	.279	.279

Table 4 – Mean descriptive stats – unmatched versus matched sample mean comparisons

This table provides the main mean descriptive statistics across different characteristics by firms not awarded with government contracts (Non_Contract) versus firms awarded with government contracts (Contract). The table provides the two-sample means test results between major characteristics of a sample obtained based on propensity score matching. We use the estimated propensity scores to conduct the nearest-neighbor matching in each year. The means test is a two-sample t test with equal variance. *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively

	Original Sample: Non_Contract vs Contract					**PSM Sample: Non_Contract vs Contract**				
	Non_Contract N	Contract N	Non_Contract Mean	Contract Mean	Mean Differences	Non_Contract N	Contract N	Non_Contract Mean	Contract Mean	Mean Differences
Inst_Ownership	35906	11535	.547	.613	-.066***	11535	11535	.611	.613	-.003
MTB	35906	11535	2.978	3.073	-.095	11535	11535	3.104	3.073	.032
Ln_Asset	35906	11535	5.899	6.251	-.352***	11535	11535	6.218	6.251	-.034
Quick_Ratio	35906	11535	2.183	2.089	.094***	11535	11535	2.073	2.089	-.016
Leverage	35906	11535	.167	.146	.021***	11535	11535	.144	.146	-.002
Dividend	35906	11535	.009	.009	-.001***	11535	11535	.009	.009	0
Repurchase	35906	11535	.015	.018	-.003***	11535	11535	.018	.018	0
CF_Volatility	35906	11535	.088	.069	.019***	11535	11535	.07	.069	.001
Sales_Volatility	35906	11535	.257	.24	.017***	11535	11535	.246	.24	.005*
Tangibility	35906	11535	.247	.191	.056***	11535	11535	.188	.191	-.003
Loss	35906	11535	.386	.309	.076***	11535	11535	.306	.309	-.003
Abnormal_Non-Labor_Inv	35906	11535	10.142	9.232	.909***	11535	11535	9.188	9.232	-.044
Inv_TurnoverRatio	35906	11535	.194	.187	.007***	11535	11535	.191	.187	.004***
Net_Hire_Volatility	35906	11535	.793	.508	.285	11535	11535	.347	.508	-.161
Labor_Intensity	35906	11535	.008	.006	.002***	11535	11535	.006	.006	0

Table 5 – Labor investment efficiency analysis based on matched samples.

This table presents the regression results the impact of government contracts on labor investment efficiencies. This table examines the relation between government contracts and labor investment efficiency based on the matched sample. We use the estimated propensity scores to conduct the nearest-neighbor matching in each year. Pre and Post sample stats are provided in Table 4 . Labor investments are assessed using Pinnuck and Lillis' (2007) approach, with Abnormal Net Hiring representing inefficiency. Panel A examines the full sample. Panel B explores government contracts' relation to overinvestment, defined as excessive positive hiring deviations (Eq. 1). Panel C examines their relation to underinvestment, characterized by negative abnormal hiring (Eq. 1). Models quantify government contract effects: "Contract," "Ln(Total Value of Contracts)," "Ln(Number of Contracts)," "Ln(Mean Value of Contracts)," and "Contract_Value/Sales." All models include industry, and year fixed effects. Consistent with Chen et al. (2018), we incorporate first-stage controls to predict estimated hirings across all models. Definitions are in the Appendix. T-statistics in parentheses show significance, *** (1%), ** (5%), and * (10%), computed with robust standard errors at the firm level..

Dep. Variable	**Abnormal Net Hiring$_{t+1}$**				
	Contract$_t$	Ln(Total Value of Contracts)$_t$	Ln(Number of Contract)$_r$	Ln(Mean Value Contracts)$_t$	ContractValue/Sales$_t$
	(1)	(2)	(3)	(4)	(5)
Panel A. Full Sample					
Government_Contract	-.698***	-.05***	-.177***	-.061***	-1.372*
	(-3.219)	(-3.063)	(-2.904)	(-2.941)	(-1.902)
Controls	Yes	Yes	Yes	Yes	Yes
Industry & Year FE	Yes	Yes	Yes	Yes	Yes
First-Stage Controls	Yes	Yes	Yes	Yes	Yes
Observations	22374	22374	22374	22374	22374
R-squared	.218	.218	.218	.218	.218
Panel B. Overinvesting subsample					
Government_Contract	-.876**	-.064**	-.231*	-.076*	-4.39***
	(-2.087)	(-2.005)	(-1.885)	(-1.914)	(-3.168)
Controls	Yes	Yes	Yes	Yes	Yes
Industry & Year FE	Yes	Yes	Yes	Yes	Yes
First-Stage Controls	Yes	Yes	Yes	Yes	Yes
Observations	8922	8922	8922	8922	8922
R-squared	.292	.292	.292	.292	.293
Panel C. Underinvesting subsample					
Government_Contract	-.723***	-.049***	-.153***	-.063***	.273
	(-3.828)	(-3.578)	(-3.245)	(-3.499)	(.482)
Controls	Yes	Yes	Yes	Yes	Yes
Industry & Year FE	Yes	Yes	Yes	Yes	Yes
First-Stage Controls	Yes	Yes	Yes	Yes	Yes
Observations	13311	13311	13311	13311	13311
R-squared	.237	.237	.236	.237	.236

Table 6 – The effect of Political sensitivity of contracts and firm's bargaining power on labor investment efficiency.

This table presents the regression results examining the influence of political sensitivity of government contracts and firm's bargaining power on labor investment efficiency. The dependent variable, Abnormal Hiring, represents the absolute value of residuals—indicating deviations from predicted investments—calculated using Eq. (1). Predicted labor investments are computed based on the methodology established by Pinnuck and Lillis (2007). Abnormal Net Hiring is quantified as the disparity between actual and anticipated hiring, serving as a proxy for labor investment inefficiency. The measure of Political Sensitivity involves the interaction between High Visibility, indicating firms with contract dollars in the top decile, and Contract Importance, representing the revenue portion sourced from contracts. Firm bargaining power is gauged through Non-Bid (%), Contractor % of an Industry, and Defense (%). Non-Bid (%) reflects the share of annual contract dollars exempt from competition. Contract % of an Industry signifies the contract percentage within each 2 SIC industry group. Defense (%) represents the portion of annual contract dollars from defense contracts.Model (1)-(3) presents findings for the full sample. Models (4)-(6) detail results for overinvesting firms, where hiring deviations are positive (Eq. 1). Similarly, Models (7)-(9) focus on underinvesting firms with negative hiring deviations (Eq. 1). All the models include Industry & Year fixed effects, with the exception of models focusing on industry concentration as measure of bargaining power , which include only year fixed effects. Consistent with Chen et al. (2018), we incorporate first-stage controls to predict estimated hirings across all models. Definitions are in the Appendix. T-statistics in parentheses show significance, *** (1%), ** (5%), and * (10%), computed with robust standard errors at the firm level..

Dep. Variable	**Abnormal Net Hiring$_{t+1}$**								
	Full-Sample			Over-investment			Under-investment		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Political Sensitivity	-3.587**	-4.789***	-1.083	-5.787**	-7.047***	-5.495***	-2.073	-2.244	.438
	(-2.561)	(-2.625)	(-1.273)	(-2.323)	(-2.99)	(-4.991)	(-1.511)	(-.924)	(.897)
Non-Bid (%)	-.803**			-.346			-1.159***		
	(-2.574)			(-.579)			(-4.509)		
Sensitivity*Non-Bid	3.589**			5.53			2.944*		
	(2.211)			(1.33)			(1.915)		
Contractor % Of Ind		-4.5***			-7.07***			-5.059***	
		(-4.334)			(-4.071)			(-5.565)	
Sensitivity*Contractor % Of Ind		8.91**			10.622*			5.247	
		(2.192)			(1.861)			(.973)	
Defense (%)			-.576**			-.606			-.478**
			(-2.345)			(-1.341)			(-2.289)
Sensitivity*Defense (%)			-.719			4.28*			-2.914*
			(-.436)			(1.73)			(-1.724)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
First-Stage Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	45767	45767	45767	18821	18821	18821	26946	26946	26946
R-squared	.208	.2	.207	.217	.209	.217	.256	.247	.255
Industry & Year FE	Yes	Only Year	Yes	Yes	Only Year	Yes	Yes	Only Year	Yes

Table 7–Political sensitivity of contracts and firm's bargaining power on labor investment efficiency based on matched.

This table presents the regression results examining the influence of political sensitivity of government contracts and firm's bargaining power on labor investment efficiency based on the matched samples. We use the estimated propensity scores to conduct the nearest-neighbor matching in each year. Pre and Post sample stats are provided in Table 4 . Predicted labor investments are computed based on the methodology established by Pinnuck and Lillis (2007). Abnormal Net Hiring is quantified as the disparity between actual and anticipated hiring, serving as a proxy for labor investment inefficiency. The measure of Political Sensitivity involves the interaction between High Visibility, indicating firms with contract dollars in the top decile, and Contract Importance, representing the revenue portion sourced from contracts. Firm bargaining power is gauged through Non-Bid (%), Contractor % of an Industry, and Defense (%).All the models include Industry & Year fixed effects, with the exception of models focusing on industry concentration as measure of bargaining power , which include only year fixed effects. Consistent with Chen et al. (2018), we incorporate first-stage controls to predict estimated hirings across all models. Definitions are in the Appendix. T-statistics in parentheses show significance, *** (1%), ** (5%), and * (10%), computed with robust standard errors at the firm level.

Dep. Variable	**Abnormal Net Hiring$_{t+1}$**		
	(1)	(2)	(3)
Political Sensitivity	-3.487**	-4.574**	-1.238
	(-2.322)	(-2.445)	(-1.475)
Non-Bid (%)	-.411		
	(-1.262)		
Sensitivity*Non-Bid	3.272*		
	(1.873)		
Contractor % Of Ind		-4.247***	
		(-3.507)	
Sensitivity*Contractor % Of Ind		8.317**	
		(2.004)	
Defense (%)			-.404
			(-1.515)
Sensitivity*Defense (%)			-.456
			(-.268)
Controls	Yes	Yes	Yes
First-Stage Controls	Yes	Yes	Yes
Observations	22374	22374	22374
R-squared	.218	.184	.218
Industry & Year FE	Yes	Only Year	Yes

Table 8 – Incorporating additional factors to estimate Expected Hiring.

This table presents the regression results examining the influence of government contracts on labor investment efficiency. The dependent variable, Abnormal Hiring, represents the absolute value of residuals—indicating deviations from predicted investments. We incorporate a set of fixed effects in the original Pinnuck and Lillis (2007) model to estimate Expected Hiring. In Panel A, we provide the results when Industry and Year fixed effects are introduced. In Panel B, we showcase the results when Firm and Year fixed effects are integrated. In Panel C furnishes results including firm, industry-year, and state-year fixed effects. Models (1)-(5) quantify government contract effects: "Contract," "Ln(Total Value of Contracts)," "Ln(Number of Contracts)," "Ln(Mean Value of Contracts)," and "Contract_Value/Sales." All models incorporate industry, and year fixed effects. Consistent with Chen et al. (2018), we incorporate first-stage controls to predict estimated hirings across all models. Definitions are in the Appendix. T-statistics in parentheses show significance, *** (1%), ** (5%), and * (10%), computed with robust standard errors at the firm level..

Dep. Variable	**Abnormal Net Hiring$_{t+1}$**				
	Contract$_t$	Ln(Total Value of Contracts)$_t$	Ln(Number of Contract)$_r$	Ln(Mean Value Contracts)$_t$	ContractValue/Sales$_t$
	(1)	(2)	(3)	(4)	(5)
Panel A. Industry and Year FE in Pinnuck and Lillis (PL) Model					
Government_Contract	-.9101***	-.0665***	-.2428***	-.0821***	-1.4409*
	(-4.5375)	(-4.3385)	(-4.0601)	(-4.2537)	(-1.9058)
Observations	45767	45767	45767	45767	45767
R-squared	.2061	.2061	.206	.2061	.2058
Industry & Year FE	Yes	Yes	Yes	Yes	Yes
Panel B. Firm and Year FE in PL Model					
Government_Contract	-.7169***	-.05***	-.1966***	-.0605***	-.9064
	(-3.4133)	(-3.0761)	(-3.0706)	(-2.9889)	(-1.4153)
Observations	45091	45091	45091	45091	45091
R-squared	.1782	.1781	.1781	.1781	.1779
Industry & Year FE	Yes	Yes	Yes	Yes	Yes
Panel B. Firm Industry-Year and State-Year FE in PL Model					
Government_Contract	-.5924***	-.0405***	-.1541**	-.0495**	-.6341
	(-2.9439)	(-2.6196)	(-2.525)	(-2.5652)	(-1.1819)
Observations	42738	42738	42738	42738	42738
R-squared	.1767	.1767	.1767	.1767	.1765
Industry & Year FE	Yes	Yes	Yes	Yes	Yes

Table 9 – Identification Strategy: between a company's headquarters and Washington D.C as Instrument

This table presents the outcomes derived from instrumental variable (IV) regressions employing a two-stage least squares (2SLS) approach. The initial stage's dependent variable measures the distance between a company's headquarters and Washington D.C. This measurement is then normalized by calculating the average distance within each industry-year grouping.In Panel A, the first-stage predictors are omitted to capture instances of unusual hirings, as established by Chen et al. (2018), within the context of IV first-stage regressions. Panel B, on the other hand, includes these predictor variables.Models quantify government contract effects: "Contract," "Ln(Total Value of Contracts)," "Ln(Number of Contracts)," "Ln(Mean Value of Contracts)," and "Contract_Value/Sales." All models incorporate industry, and year fixed effects. Consistent with Chen et al. (2018), we incorporate first-stage controls to predict estimated hirings across all models. Definitions are in the Appendix. Robust T-statistics in parentheses show significance, *** (1%), ** (5%), and * (10%).

	1st Stage: Dep. Variable = Government_Contract					**2nd Stage Dep. Variable = Abnormal Non-Labor Investments$_{t+1}$**				
Measure of Gov. Contract:	Ln(Total Value of Contracts)$_t$	Ln(Number of Contract)$_r$	Ln(Mean Value Contracts)$_t$	ContractValue/ Sales$_t$	Political Sensitivity	Ln(Total Value of Contracts)$_t$	Ln(Number of Contract)$_r$	Ln(Mean Value Contracts)$_t$	ContractValue/ Sales$_t$	Political Sensitivity
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A. Without Chen et al. (2018) controls in the IV first-stage regression estimation										
DC_Distance_Normalized	-0.189***	-0.049***	-0.138***	-0.003***	-0.003***					
	(-5.61)	(-5.80)	(-5.14)	(-4.73)	(-4.59)					
Government_Contract						-1.233**	-4.776**	-1.684**	-83.96**	-88.58**
						(-2.22)	(-2.22)	(-2.19)	(-2.14)	(-2.13)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry & Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
First-Stage Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	44169	44169	44169	44169	44169	44169	44169	44169	44169	44169
F-Stats	31.42	33.59	26.39	22.42	26.78					
Panel B. Chen et al. (2018) controls in the IV first-stage regression estimation										
DC_Distance_Normalized	-0.182***	-0.046***	-0.134***	-0.003***	-0.003***					
	(-5.40)	(-5.51)	(-4.97)	(-4.75)	(-4.59)					
Government_Contract						-0.931*	-3.661*	-1.267*	-59.37*	-62.80*
						(-1.70)	(-1.70)	(-1.69)	(-1.68)	(-1.67)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry & Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
First-Stage Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	44169	44169	44169	44169	44169	44169	44169	44169	44169	44169
F-Stats	29.16	30.31	24.73	22.53	21.09					

Table 10 – The long-term impact of government contract and net hiring on hiring on firm's ROA – Positive and negative net hiring analysis.

This table presents firm-level regressions exploring the impact of government contracts and Net Hiring interaction on long-term performance measured by 5-year and 3-year average Return on Assets (ROA). In Panels A and B, we present the regression results with the Average 5-year ROA as the dependent variable, while Panels C and D present the results with the Average 3-year ROA as the dependent variable. Panels A and B: Regression results for Average 3-year ROA with a focus on sub-samples of positive and negative Net Hiring. Panels C and D: Similar breakdown for sub-samples of positive and negative Net Hiring. Models (1)-(5) quantify government contract effects: "Contract," "Ln(Total Value of Contracts)," "Ln(Number of Contracts)," "Ln(Mean Value of Contracts)," and "Contract_Value/Sales." All models incorporate industry, and year fixed effects. Consistent with Chen et al. (2018), we incorporate first-stage controls to predict estimated hirings across all models. Definitions are in the Appendix. T-statistics in parentheses show significance, *** (1%), ** (5%), and * (10%), computed with robust standard errors at the firm level.

	$Contract_t$	$Ln(Total\ Value\ of\ Contracts)_t$	$Ln(Number\ of\ Contract)_r$	$Ln(Mean\ Value\ Contracts)_t$	$ContractValue/Sales_t$
	(1)	(2)	(3)	(4)	(5)
Panel A. Average ROA 5 years – Net_Hiring>0					
Net_Hiring_{t+1}	-.0045	-.0044	-.0047	-.0036	.0053
	(-.43)	(-.4251)	(-.462)	(-.3467)	(.5721)
$Government\_Contract_t$	.6558	.0289	.1093	.0341	-.3849
	(1.4341)	(.8385)	(.8379)	(.778)	(-.1589)
Net_Hiring_{t+1}*Gov_Contract	.0469***	.0036***	.0178***	.004**	-.1331**
	(2.8263)	(2.8495)	(3.7471)	(2.4455)	(-1.9875)
Controls	Yes	Yes	Yes	Yes	Yes
Industry & Year FE	Yes	Yes	Yes	Yes	Yes
Observations	20000	20000	20000	20000	20000
R-squared	.4877	.4875	.4878	.4874	.4877
Panel B. Average ROA 5 years – Net_Hiring<0					
Net_Hiring_{t+1}	.2806***	.2815***	.276***	.2815***	.2563***
	(10.0616)	(10.1731)	(10.4194)	(10.1557)	(10.8198)
$Government\_Contract_t$	-.6783	-.0757*	-.1996	-.1022*	-10.0579
	(-1.2015)	(-1.7402)	(-1.2184)	(-1.8588)	(-1.3602)
Net_Hiring_{t+1}*Gov_Contract	-.1229**	-.0097***	-.0402***	-.0116***	.099
	(-2.5111)	(-2.629)	(-2.6758)	(-2.6251)	(.3445)
Controls	Yes	Yes	Yes	Yes	Yes
Industry & Year FE	Yes	Yes	Yes	Yes	Yes
Observations	13012	13012	13012	13012	13012
R-squared	.5025	.5025	.5024	.5025	.5035
Panel C. Average ROA 3 years – Net_Hiring>0					
Net_Hiring_{t+1}	-.0088	-.0085	-.0083	-.0078	.001
	(-.9108)	(-.8867)	(-.8864)	(-.8173)	(.1203)
$Government\_Contract_t$	.2473	.0036	.0457	-.0014	-2.8523
	(.5691)	(.1089)	(.3668)	(-.0328)	(-1.0726)
Net_Hiring_{t+1}*Gov_Contract	.0562***	.0042***	.0206***	.0048***	-.0219
	(3.7151)	(3.6267)	(4.5599)	(3.1895)	(-.2995)

Controls	Yes	Yes	Yes	Yes	Yes
Industry & Year FE	Yes	Yes	Yes	Yes	Yes
Observations	24428	24428	24428	24428	24428
R-squared	.5057	.5056	.5059	.5054	.5052
Panel D. Average ROA 3 years – Net_Hiring<0					
Net_Hiring_{t+1}	.2561***	.2584***	.2563***	.258***	.2419***
	(12.4687)	(12.6498)	(12.9606)	(12.6227)	(13.4499)
$Government\_Contract_{t}$	-.5177	-.0665*	-.1759	-.0903*	-3.9663*
	(-1.0156)	(-1.7023)	(-1.2118)	(-1.8176)	(-1.7468)
Net_Hiring_{t+1}*Gov_Contract	-.0698*	-.0063**	-.0298***	-.0074**	.2214
	(-1.921)	(-2.3517)	(-2.8906)	(-2.2148)	(1.0522)
Controls	Yes	Yes	Yes	Yes	Yes
Industry & Year FE	Yes	Yes	Yes	Yes	Yes
Observations	34898	34898	34898	34898	34898
R-squared	.4742	.4742	.4742	.4742	.4751

Table 11 – The effect of government contracts on Non-Labor investment efficiency

This table presents regression findings on the impact of government contracts on Non-labor investment efficiency. The dependent variable Abnormal Investments is the absolute values of residuals (i.e. deviations from predicted investments) estimated for each industry-year as follows (see Eq.(1)): $Invesments_{t+1} = \beta_0 + \beta_1 SalesGrowthn_{i,t} + \varepsilon_{i,t+1}$ (Biddle et al. 2009). Abnormal Investments is the difference between actual and expected investment and is a proxy of capital investment inefficiency. Investment is defined as the sum of capital expenditure, R&D, acquisition expenditure less cash receipts from sale of PPE, scaled by the lagged total asset (TA). Models (1)-(5) quantify government contract effects: "Contract," "Ln(Total Value of Contracts)," "Ln(Number of Contracts)," "Ln(Mean Value of Contracts)," and "Contract_Value/Sales." All models incorporate industry, and year fixed effects. Consistent with Chen et al. (2018), we incorporate first-stage controls to predict estimated hirings across all models. Definitions are in the Appendix. T-statistics in parentheses show significance, *** (1%), ** (5%), and * (10%), computed with robust standard errors at the firm level..

Dep. Variable	**Abnormal Non-Labor Investments$_{t+1}$**				
	Contract$_t$	Ln(Total Value of Contracts)$_t$	Ln(Number of Contract)$_r$	Ln(Mean Value Contracts)$_t$	ContractValue/Sales$_t$
	(1)	(2)	(3)	(4)	(5)
Government_Contract$_t$	-.265*	-.011	-.02	-.015	1.419***
	(-1.742)	(-.882)	(-.439)	(-1.02)	(4.535)
Controls	Yes	Yes	Yes	Yes	Yes
Industry & Year FE	Yes	Yes	Yes	Yes	Yes
First-Stage Controls	Yes	Yes	Yes	Yes	Yes
Observations	46912	46912	46912	46912	46912
R-squared	.194	.193	.193	.193	.194

Appendix A2 - Contracts Average by Sic Industry

Sic Industry	Contract	Total Contract Value ($Millions)	Number of Contracts	Contract/Sales	Nobid (%)	Defense (%)
Agriculture, Forestry and Fishing	10.49%	$ 0.685	0.860	0.012%	4.57%	1.41%
Construction	41.57%	$ 10.592	44.723	0.436%	7.02%	22.01%
Manufacturing	26.33%	$ 1.947	17.031	1.288%	10.41%	15.33%
Mining	4.43%	$ 0.717	1.673	0.005%	1.36%	1.55%
Retail	10.88%	$ 0.419	7.341	0.023%	3.65%	3.62%
Services	27.23%	$ 2.067	15.209	0.671%	11.00%	9.86%
Transportation & Communication	26.66%	$ 1.489	12.044	0.260%	10.33%	14.37%
Whose Sale Trade	28.74%	$ 4.173	48.139	0.187%	7.02%	16.97%

Appendix A3 – The effect of government contracts on specific types of labor investment efficiency

This table presents regression findings on the impact of government contracts on specific labor investment efficiencies. Panel A explores government contracts' relation to overinvestment, defined as excessive positive hiring deviations (Eq. 1).In Panel A, negative hiring deviation is equal to zero. Panel B examines their relation to underinvestment, characterized by negative abnormal hiring (Eq. 1). In Panel B, positive hiring deviation is equal to zero. Labor investments are assessed using Pinnuck and Lillis' (2007) approach, with Abnormal Net Hiring representing inefficiency.Models (1)-(10) quantify government contract effects: "Contract," "Ln(Total Value of Contracts)," "Ln(Number of Contracts)," "Ln(Mean Value of Contracts)," and "Contract_Value/Sales." All models incorporate industry, and year fixed effects. Consistent with Chen et al. (2018), we incorporate first-stage controls to predict estimated hirings across all models. Definitions are in the Appendix. T-statistics in parentheses show significance, *** (1%), ** (5%), and * (10%), computed with robust standard errors at the firm level..

Dep. Variable	**Abnormal Net Hiring$_{t+1}$**				
	Contract$_t$	Ln(Total Value of Contracts)$_t$	Ln(Number of Contract)$_r$	Ln(Mean Value Contracts)$_t$	ContractValue/Sales$_t$
	(1)	(2)	(3)	(4)	(5)
Panel A. Overinvestment (Abnormal Net Hiring$_{t+1}$=0 if Hiring Deviation<0)					
Government_Contract	-.276*	-.025*	-.1*	-.03*	-1.943***
	(-1.651)	(-1.944)	(-1.942)	(-1.841)	(-5.513)
Controls	Yes	Yes	Yes	Yes	Yes
Industry & Year FE	Yes	Yes	Yes	Yes	Yes
First-Stage Controls	Yes	Yes	Yes	Yes	Yes
Observations	45767	45767	45767	45767	45767
R-squared	.152	.152	.152	.152	.152
	(6)	(7)	(8)	(9)	(10)
Panel B. Underinvestment (Abnormal Net Hiring$_{t+1}$=0 if Hiring Deviation>0)					
Government_Contract	-.516***	-.033***	-.118***	-.042***	.728
	(-4.476)	(-3.772)	(-3.523)	(-3.721)	(1.274)
Controls	Yes	Yes	Yes	Yes	Yes
Industry & Year FE	Yes	Yes	Yes	Yes	Yes
First-Stage Controls	Yes	Yes	Yes	Yes	Yes
Observations	45767	45767	45767	45767	45767
R-squared	.124	.124	.124	.124	.124

Appendix A4 – The long-term impact of government contract and net hiring on firm's ROA.

This table presents firm-level regressions that examine the impact between the interaction of government contract and Net Hiring on long-term performance, which is measured by 3-year and 5-year average Return on Asset (ROA). Models (1)-(5) quantify government contract effects: "Contract," "Ln(Total Value of Contracts)," "Ln(Number of Contracts)," "Ln(Mean Value of Contracts)," and "Contract_Value/Sales." All models incorporate industry, and year fixed effects. Consistent with Chen et al. (2018), we incorporate first-stage controls to predict estimated hirings across all models. Definitions are in the Appendix. T-statistics in parentheses show significance, *** (1%), ** (5%), and * (10%), computed with robust standard errors at the firm level.

	$Contract_t$	Ln(Total Value of $Contracts)_t$	Ln(Number of $Contract)_r$	Ln(Mean Value $Contracts)_t$	$ContractValue/Sales_t$
	(1)	(2)	(3)	(4)	(5)
Panel A. Average ROA 3 years					
$Abs(Net\_Hiring_{t+1})$	-.028***	-.0293***	-.0266***	-.0304***	-.0291***
	(-2.9184)	(-3.0602)	(-2.7805)	(-3.1754)	(-3.0698)
$Government\_Contract_t$	-.1478	-.0324	.0571	-.0617*	-5.9506***
	(-.3835)	(-1.1013)	(.5328)	(-1.6466)	(-6.9627)
$Abs(Net\_Hiring_{t+1})$*Gov_Contract	.0672***	.0738***	.06***	.0795***	.0721***
	(4.5154)	(5.023)	(4.0714)	(5.3961)	(5.0013)
Controls	Yes	Yes	Yes	Yes	Yes
Industry & Year FE	Yes	Yes	Yes	Yes	Yes
Observations	43674	43674	43674	43674	43674
R-squared	.4963	.4963	.4963	.4963	.4976
Panel B. Average ROA 5 years					
$Abs(Net\_Hiring_{t+1})$	-.0279**	-.0299***	-.0279**	-.0307***	-.0307***
	(-2.4925)	(-2.6721)	(-2.4922)	(-2.7528)	(-2.7737)
$Government\_Contract_t$	.2085	-.0134	-.0134	-.0325	-6.1488**
	(.5043)	(-.424)	(-.424)	(-.8064)	(-2.3843)
$Abs(Net\_Hiring_{t+1})$*Gov_Contract	.0667***	.076***	.0665***	.0801***	.0803***
	(3.8958)	(4.4761)	(3.858)	(4.7222)	(4.8151)
Controls	Yes	Yes	Yes	Yes	Yes
Industry & Year FE	Yes	Yes	Yes	Yes	Yes
Observations	34898	34898	34898	34898	34898
R-squared	.4742	.4742	.4742	.4742	.4751