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Government Contracting and Venture Capital Exit Outcomes

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Abstract

How does post-investment government contracting activity affect the exit outcomes of venture capital (VC) investments? While prior research highlights the role of government customers in shaping firm performance and information quality, little is known about how these dynamics influence VC-backed companies. Using a large sample of U.S. VC investments, we show that portfolio companies receiving government contracts after VC investment are more likely to achieve successful exits via initial public offerings (IPOs) or acquisitions and are less likely to be liquidated. The effect is moderated by suppliers' bargaining power with government agencies: firms with weaker bargaining power benefit more in IPO exits, while those with stronger bargaining power see greater improvements in acquisition and survival outcomes. The findings are robust to matching techniques, instrumental variable analysis, and hold across both reputable and non-reputable VC firms.

Keywords: Venture Capital, Contracting, Initial Public Offerings, Merger

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JEL Classifications: G24, G30

1 INTRODUCTION

Modern firms are often viewed as a "nexus of contracts" among diverse stakeholders (Jensen and Meckling, 1976). Among these, agreements with government agencies as customers and with venture capital (VC) firms as financiers form two critical dimensions of a private company's contracting environment. Understanding how these contractual relationships interact is both theoretically and empirically important. This study investigates how a portfolio company's participation in government contracting influences the exit outcomes of venture capital investments.

Each year, the U.S. federal government procures more than $500 billion in goods and services.[1] To ensure that small businesses participate in this large market, the Small Business Act of 1953 directs federal agencies to allocate a fair share of contracts to smaller firms through various set-aside and preference programs.[2] In 2019, small businesses accounted for roughly $133 billion, or about one-quarter of total federal contracting.[3] Despite these efforts, many young and venture-backed firms remain hesitant to engage in government procurement, citing long approval timelines and the administrative complexity of the contracting process (Orazem, Mallory, Schlueter, and Werfel, 2017).

VC backing can provide small firms with the financial resources and managerial expertise needed to overcome the barriers of government procurement. For instance, in 2014, former senior investment officer Yanev Suissa, who served under the Bush and Obama administrations, founded a VC firm specializing in early-stage companies without prior government contracting

[1] See details at https://datalab.usaspending.gov/contract-explorer/
[2] See the Small Business Act of July 30, 1953, at https://www.sba.gov/sites/default/files/2019-03/Small_Business_Act.pdf
[3] See the article by U.S. Small Business Administration published on August 13, 2020, at https://www.sba.gov/blog/small-businesses-received-historic-1329-billion-federal-contracts-new-fy19-procurement-scorecard

experience, helping them successfully enter and compete in this market.[4] Despite the economic scale and policy significance of federal procurement for small businesses, its firm-level financial consequences remain largely unexplored.

We examine how the government contracting activities of portfolio companies influence the exit outcomes of VC investments. VC firms invest in young private companies that face substantial uncertainty and information asymmetry (Sahlman, 1990; Gompers and Lerner, 1999). VC success depends on reducing these frictions to facilitate value realization by future investors or acquirers (Amit, Brander, and Zott, 1998; Cumming and Johan, 2008). Participation in government contracting can provide a credible signal of operational capability and financial stability, helping VCs mitigate information frictions and improve value realization at exit. Government suppliers generally experience lower demand uncertainty (Goldman, Rocholl, and So, 2013; Dhaliwal, Judd, Serfling, and Shaikh, 2015; Samuels, 2021) and less intense product-market competition (Mills, Nutter, and Schwab, 2013; Hadley, 2019), resulting in more stable earnings and cash flows (Cohen and Li, 2020). They also tend to exhibit higher financial reporting quality (Samuels, 2021; Chen, Huang, Garg, and Khedmati, 2021) and more accurate managerial forecasts (Hope, Jiang, and Vyas, 2021) due to stringent public oversight and compliance requirements. Together, these factors suggest that government contracting enhances exit outcomes for VC-backed firms by increasing the likelihood of IPO and acquisition exits while reducing the likelihood of liquidation.

We further examine how suppliers' bargaining power influences this relationship. Prior research suggests that the impact of government contracting on firms' operating stability and information quality depends on the supplier's relative power in the exchange (Mills, Nutter, and Schwab,

[4]See the interview with Yanev Suissa at https://www.nextgov.com/cio-briefing/2015/07/q-how-venture-fund-aims-push-startups-federal-contracts/118018/

2013; Hadley, 2019). When suppliers hold stronger bargaining positions because replacing them would be costly for the government or their products are strategically important, the positive effects of contracting on operating stability tend to be greater (Esqueda, Ngo, and Susnjara, 2019; Ngo and Susnjara, 2020). Conversely, when the government has greater leverage, its oversight and monitoring are more effective, constraining suppliers' discretion while enhancing compliance and transparency (Karpoff, Lee, and Vendrzyk, 1999; Mills, Nutter, and Schwab, 2013; Hadley, 2019).

Because IPO exits involve a broader and more dispersed base of less-informed investors, information asymmetry poses a greater challenge in IPOs than in acquisitions (Cumming and Johan, 2008). Accordingly, we predict and find that the positive effect of government contracting on IPO outcomes is stronger for suppliers with weaker bargaining power, where government oversight and transparency mitigate informational frictions. In contrast, the benefits associated with improved operating stability are more relevant for acquisition and liquidation outcomes, where greater supplier bargaining power enhances the value created through government contracts.

A key empirical challenge in this analysis is the potential for selection bias, as firms that secure government contracts may inherently be of higher quality. We address this concern using several complementary strategies. First, we estimate our models on both the full sample and a propensity score-matched sample to ensure comparability between contracting and non-contracting firms. Second, we employ an instrumental variable approach that uses mimicking variables to instrument for the likelihood of government contracting. Third, we examine whether the results differ across investments made by reputable and non-reputable VC firms. The findings remain robust across all specifications.

This study makes three primary contributions. First, it extends the literature on government contracting by documenting its impact on the growth and survival of private firms. Second, it contributes to the venture capital literature by identifying a previously underexplored value-added role of VC firms in supporting portfolio companies that obtain and manage government contracts. Third, it introduces government contracting activity as a new determinant of VC exit outcomes.

The remainder of the paper is organized as follows. Section 2 develops the hypotheses. Section 3 describes the data, variable construction, and empirical methodology. Section 4 presents the results. Section 5 concludes.

2 HYPOTHESIS DEVELOPMENT

This section develops the study's hypotheses. We begin by outlining the first hypothesis, which examines the association between government contracting and VC investment outcomes. We then introduce a second set of hypotheses that address how suppliers' bargaining power influences the relationship between government contracting and VC exit outcomes.

2.1. Government contracting and VC investment outcomes

VC firms add value to their portfolio companies by enhancing their credibility with potential customers (Timmons and Bygrave, 1986; Fried and Hisrich, 1995) and helping them attract new clients (Gorman and Sahlman, 1989; Maula, Autio, and Murray, 2005; Hochberg, Ljungqvist, and Lu, 2007; Alperovych and Hübner, 2013; Gompers, Gornall, Kaplan, and Strebulaev, 2020). VC backing can also assist small firms in navigating the complexities of government procurement and in executing public sector contracts effectively. In turn,

government contracting may enhance VC investment outcomes by improving firms' operating performance and information quality.

Government customers are less likely to default or switch suppliers and are more likely to establish long-term contractual relationships than corporate customers (Goldman, Rocholl, and So, 2013; Dhaliwal, Judd, Serfling, and Shaikh, 2015; Samuels, 2021; Cohen and Li, 2020). Suppliers serving government agencies also face less product market competition, as many contracts are awarded through noncompetitive bidding processes (Mills, Nutter, and Schwab, 2013; Hadley, 2019). Lower demand uncertainty, reduced collection risk, and limited competition contribute to more stable earnings and stronger operating profitability (Cohen and Li, 2016; Cohen and Li, 2020). These characteristics of government contracting can enhance firm valuation, increasing the likelihood of successful exits through IPOs or acquisitions and reducing the likelihood of liquidation.

Strict government oversight and public scrutiny further strengthen governance and transparency among government contractors. Such firms tend to exhibit higher financial reporting quality (Samuels, 2021; Chen, Huang, Garg, and Khedmati, 2021) and more accurate managerial earnings forecasts (Hope, Jiang, and Vyas, 2021). Because VC investment outcomes depend on reducing information asymmetry and agency problems for future investors or acquirers (Amit, Brander, and Zott, 1998; Cumming and Johan, 2008), we expect government contracting to also improve exit prospects through enhanced transparency and governance. Although information asymmetry is typically more pronounced in IPOs than in acquisitions, VC investors are likely to benefit from improved information quality in both types of exits (Cumming and Johan, 2008).

We also expect government contracting to shorten the time required for VC firms to exit their investments through IPOs or acquisitions. VC investors typically exit when the expected

marginal benefit of their value-added services falls below their marginal cost (Cumming and MacIntosh, 2001; Cumming and Johan, 2010). Enhancements in operating performance and information quality resulting from government contracting can substitute for some of the monitoring and certification functions traditionally performed by VCs. As a result, portfolio companies engaged in government contracting may achieve exit readiness more quickly.

Hypothesis 1: *VC-backed companies with government contracts are more likely and faster to exit successfully through IPOs or acquisitions, and less likely and slower to be liquidated.*

2.2. The role of suppliers' bargaining power

The government contracting literature suggests that the magnitude and direction of contracting effects on firm performance and information quality depend on suppliers' bargaining power relative to the government. The positive influence of government contracting on firm performance is stronger in strategically important industries, where suppliers tend to hold greater bargaining power (McGowan and Vendrzyk, 2002; Esqueda, Ngo, and Susnjara, 2019; Ngo and Susnjara, 2020). In contrast, the government's disciplinary effect on contractors' information quality is weaker when suppliers possess more bargaining power (Karpoff, Lee, and Vendrzyk, 1999; Mills, Nutter, and Schwab, 2013; Hadley, 2019). Moreover, winning contracts in highly competitive bidding environments, where suppliers have limited bargaining power, can serve as a positive signal of firm quality and growth potential.

Information asymmetry is particularly significant in IPOs, where a dispersed group of public investors often lacks the resources or expertise to fully evaluate firm quality (Cumming and Johan, 2008). Therefore, we expect the positive association between government contracting and IPO likelihood to be stronger for firms with less bargaining power, as the information benefits of contracting are more pronounced in these cases. In contrast, acquirers in trade sales focus more

on operational stability and future performance than on informational asymmetry. Thus, the positive effect of government contracting on acquisition likelihood should be stronger for suppliers with greater bargaining power, who experience larger gains in operating stability. Similarly, the reduction in liquidation likelihood is expected to be greater for these firms, as government contracts provide a buffer against adverse economic conditions.

Hypothesis 2A*: Government contractors with greater bargaining power are less likely to exit through IPOs than those with less bargaining power.*

Hypothesis 2B*: Government contractors with greater bargaining power are more likely to exit through acquisitions than those with less bargaining power.*

Hypothesis 2C*: Government contractors with greater bargaining power are less likely to be liquidated than those with less bargaining power.*

3 DATA, VARIABLES, AND METHODOLOGY

3.1. Data

We obtain data on venture capital (VC) investments from the Thomson Reuters VentureXpert database. VentureXpert provides detailed information on venture financing rounds, including deal characteristics, portfolio company attributes, and VC firm details such as investment date, estimated investment amount, and portfolio company exit outcomes. The analysis focuses on investments made by U.S.-based VC firms in U.S.-based portfolio companies. We exclude buyout investments in mature companies made by private equity funds, as well as investments by government-backed VC firms, since these entities often pursue non-commercial objectives.

The sample consists of round-by-round VC investments from 2004 to 2015, for which complete data are available beginning with the first round of venture financing. The starting year of 2004

allows for three full years of government contracting information prior to each investment, as federal procurement data became available on October 1, 2000. We track exit outcomes for the portfolio companies through early 2020 and end the investment window in 2015 to ensure a minimum four-year period for exits, consistent with Hochberg, Ljungqvist, and Lu (2007) and Nahata (2008).

Data on government contracts are obtained from the Federal Procurement Data System (FPDS), accessible through the USAspending.gov platform. FPDS provides comprehensive information on all federal contract awards and modifications valued above $25,000 since fiscal year 2001, including contract value, type (competitive or noncompetitive), awarding agency, and recipient details such as name, location, and DUNS number. Because VentureXpert and FPDS do not share a common identifier, we use fuzzy matching techniques to identify portfolio company DUNS numbers, matching company names and locations across the two databases. All matches are manually verified to ensure accuracy.

For each portfolio company, we aggregate government contracting activity over two distinct periods: the three years preceding and the three years following the VC investment date. To isolate the effect of post-investment contracting, we exclude from the main analysis any company that received a government contract during the three years prior to the VC investment. The final sample comprises 69,371 round-by-round VC investments in 13,758 portfolio companies made by 3,375 VC firms.

3.2. **Variables**

We examine the relationship between a VC-backed company's government contracting activity and its exit outcomes, controlling for VC firm, portfolio company, and deal characteristics, as well as prevailing market conditions. This subsection defines all variables used in the analysis.[5]

3.2.1. Government contracting variables

We construct an indicator variable, CONTRACT, which equals one if the portfolio company associated with a financing round received at least one government contract within three years following the VC investment date, and zero otherwise. We also create a continuous measure of government contracting, LN(CONTRACT VALUE), defined as the natural logarithm of the total U.S. dollar value of all government contracts awarded to the portfolio company over the same three-year period.

Table 1 compares the government contracting activity of portfolio companies during the three years before and after the initial VC financing round.[6] The percentage of portfolio companies with government contracts increased from 4.7 percent before VC involvement to 7.9 percent afterward. Among companies that received contracts in both periods, the average total contract value rose from 2.0 million USD in the three years preceding the investment to 2.9 million USD in the three years following it.

INSERT TABLE 1

Figure 1 illustrates the average annual government contract values around the initial VC financing date for portfolio companies that received government contracts before and after VC

[5] Appendix A1 presents definition of all variables used in this study. Appendix A2 presents detailed descriptive statistics for the primary and propensity score matched sample.
[6] In the main analysis, I exclude portfolio companies with government contract awards within three years prior to the VC investment date to minimize the selection concerns.

investments. We find no noticeable discontinuity around the time of VC involvement, and average contract values increase almost linearly over time.

INSERT FIGURE 1

Figure 2 presents the average sweetheart index of government contracts annually around the initial VC investment date. The sweetheart index, developed by Ferris, Javakhadze, and Houston (2019), measures the favorability of procurement awards to contractors based on four contract features: no-bid contracts, cost-plus contracts, multi-year contracts, and exemptions from providing cost or pricing data. We observe a significant improvement in the average quality of contract terms around the initial VC investment date. As shown in Table 1, portfolio companies become substantially more likely to receive multi-year and cost-plus contracts following VC involvement.

INSERT FIGURE 2

3.2.2. Bargaining power variables

We construct three sets of measures to capture the relative bargaining power of suppliers in government contracting, drawing on Porter's (1980) theory of competition and prior research on government procurement (Mills, Nutter, and Schwab, 2013; Hadley, 2019). Porter (1980) argues that certain market conditions shift bargaining power from buyers to suppliers. These conditions include high industry concentration, high urgency of products to buyers, high switching costs, extensive product customization, and limited availability of substitutes.

The first set of bargaining power measures captures supplier industry concentration using the Herfindahl–Hirschman Index (HHI). We construct HHI INDEX to proxy for overall industry concentration, measured as the HHI of U.S. public firm sales within the same three-digit SIC

codes in Compustat. We also construct HHI GOV INDEX to capture the degree of concentration in competition for government contracts, calculated using the government revenues of VC-backed firms within the same three-digit SIC codes. Higher HHI values indicate greater industry concentration and, consequently, stronger supplier bargaining power.

The second set of measures reflects the competitiveness of government contract awards. Public procurement laws define specific circumstances that allow contracting without full and open competition, such as the presence of a unique supplier, urgency of procurement, national security considerations, follow-on contracts, and highly research-based products.[7] These exceptions tend to increase suppliers' bargaining power relative to the government. We construct two indicator variables, COMPETITIVE CONTRACT and NON-COMPETITIVE CONTRACT, which equal one if the portfolio company received at least one competitive or noncompetitive contract, respectively, within three years following the VC investment round. We also create continuous measures, LN (COMPETITIVE CONTRACT VALUE) and LN (NON-COMPETITIVE CONTRACT VALUE), representing the natural logarithm of total contract value over the same period. Supplier bargaining power is expected to be higher in noncompetitive awards and lower in competitive awards.

The third set of measures relates to defense contracting. Defense contractors typically possess greater bargaining power because defense projects are often critical to national security, involve specialized products with few substitutes, and carry high switching costs (Mills, Nutter, and Schwab, 2013). We construct two binary variables, DEFENSE CONTRACT and NON-DEFENSE CONTRACT, indicating whether the portfolio company received any defense or non-defense contracts within three years following the VC investment. We also define two

[7] See the details in Federal Acquisition Regulations at https://www.acquisition.gov/far/part-6#FAR_6_302

continuous variables, LN (DEFENSE CONTRACT VALUE) and LN (NON-DEFENSE CONTRACT VALUE), measuring the total contract value for each type. Supplier bargaining power is expected to be higher in defense-related contracts and lower in non-defense contracts.

Following VC involvement, portfolio companies are more likely to receive government contracts of all types and to secure larger contract values, as shown in Table 1.

3.2.3. VC investment exit variables

Ideally, VC investment performance would be measured directly using each portfolio company's return over the investment period. However, such data are unavailable because VC funds do not publicly disclose investment-level performance. Instead, we measure VC performance indirectly through investment exit outcomes. VC firms realize most of their returns as capital gains upon exit, with the highest returns typically generated through IPOs, followed by acquisitions (Cumming and MacIntosh, 2003; Cochrane, 2005; Nikoskelainen and Wright, 2007; Phalippou and Gottschalg, 2009). The empirical literature on VC performance defines IPOs and acquisitions as successful exits (Brander, Amit, and Antweiler, 2002; Hochberg, Ljungqvist, and Lu, 2007; Sorensen, 2007; Puri and Zarutskie, 2007; Nahata, 2008). We construct three binary variables, IPO, ACQUISITION, and LIQUIDATION, to identify the exit outcome of each VC investment as of the beginning of 2020.

Table 2 reports the year-by-year distribution of round-level VC investments made between 2004 and 2015, for which complete data, including first-round information, are available. In the sample, 8.7 percent of VC investments exited through IPOs and 23.8 percent through acquisitions, consistent with the combined 33.5 percent successful exit rate reported by Nahata (2008). VC investment activity rises at the beginning of the sample period, declines sharply

during the 2008 financial crisis, and gradually recovers toward the end of the period. Investments made in the years immediately following the crisis exhibit the highest IPO rates, possibly reflecting reduced competition for high-quality deals (Gompers and Lerner, 2000) or increasing public market valuations after the crisis (Lerner, 1994; Gompers, Kovner, Lerner, and Scharfstein, 2008). The proportion of unsuccessful investments increases over time because later investments have shorter horizons to exit. To account for this right-censoring issue, we also employ Cox's (1972) proportional hazard model.

INSERT TABLE 2

3.2.4. Control variables

Following prior literature, we control for portfolio company characteristics, VC firm characteristics, VC syndication, VC industry competition, and public market conditions.

VC exit outcomes depend heavily on the quality of the underlying portfolio companies. High-quality firms are also more likely to win government contracts and to exit successfully. To mitigate potential omitted-variable bias, we control for portfolio company quality using several approaches. Following Nahata (2008), we proxy for firm quality with the total VC investment received across all financing rounds, since better-quality companies are more likely to attract larger amounts of venture funding. Because there is no perfect proxy for quality, we also employ propensity score matching and instrumental variable analyses to further address endogeneity concerns. In addition, we include an indicator variable for whether the VC investment occurred at the seed or early stage of development, as early-stage investments involve greater uncertainty and information asymmetry that may affect exit outcomes.

We control for VC firms by type (independent, corporate, or bank affiliated) since prior research documents performance differences across VC types (Gompers and Lerner, 1999; Luukkonen, Deschryvere, and Bertoni, 2013; Maula, Autio, and Murray, 2005). To account for the role of VC reputation, which influences exit outcomes through better selection and value-added activities (Hochberg, Ljungqvist, and Lu, 2007; Sorensen, 2007; Nahata, 2008), we use the number of IPOs backed by each VC firm in the three years prior to the investment date as a proxy for reputation. We also control for syndicate size, as larger VC syndicates are typically associated with higher returns (Brander, Amit, and Antweiler, 2002).

To capture competition within the VC industry, we construct a proxy based on the aggregate VC investments in the year preceding each VC deal. We measure the overall investment environment using the median market-to-book ratio of high-tech sector firms, following Nahata (2008). Because VC firms tend to time their exits when equity market conditions are favorable (Lerner, 1994), we also include a proxy for exit market conditions measured by the lagged quarterly number of IPOs. For exited investments, this measure reflects IPO activity during the quarter preceding the exit. For non-exited investments, it represents the average number of IPOs per quarter over the entire investment period, from the investment date through the beginning of 2020.

3.3. Methodology

To analyze the impact of government contracting on the likelihood of a successful exit, we estimate the following regression equation using a logit model.

$$VC\ Exit_{c,f,t} = \alpha + \beta Contract_{c,t\ to\ t+3} + \theta Controls_{c,f,t} + Year\ F.E. + Industry\ F.E. + \varepsilon_{c,f,t} \quad (Eq.1)$$

The dependent variables are binary indicators denoting whether a VC investment exited through an IPO, ACQUISITION, or LIQUIDATION. The main explanatory variables are the CONTRACT indicator and LN(CONTRACT VALUE). All models include controls for VC firm characteristics, portfolio company characteristics, and market conditions, as well as industry and year fixed effects. Standard errors are clustered at the VC firm level. The regressions are estimated using both the full sample and the propensity score-matched sample.

We also employ the Cox proportional hazard model to examine the timing of VC exits. The dependent variable in the hazard model is the natural logarithm of the time to exit, measured in days from the VC investment round date to the exit event date. For investments without a successful exit, the time to exit is right-censored at the beginning of 2020. The hazard model explicitly accounts for this censoring.

To analyze the effect of supplier industry concentration on the relationship between government contracting and VC exits, we include interaction terms between the government contracting variables and the HHI indices. To examine the role of contract competitiveness and defense contracting, we estimate the main regression models separately using the COMPETITIVE, NON-COMPETITIVE, DEFENSE, and NON-DEFENSE contracting measures.

4 EMPIRICAL RESULTS

4.1. Univariate Analysis

Table 3, Panel A compares the observable characteristics of VC investment rounds among portfolio companies with and without government contracts over the three years following the investment date. In 6.4 percent of VC investment rounds, portfolio companies received at least

one government contract within three years of the investment. Among VC investments with government contracts, 12.9 percent exited through IPOs and 29.1 percent through acquisitions, compared with 8.4 percent and 23.5 percent, respectively, among those without government contracts. Figure 3 shows that 9.4 percent of VC investments that exited via IPOs involved government contractors, compared with 7.8 percent for acquisition exits and 5.5 percent for unsuccessful exits.

As shown in Table 3, Panel A, most observable characteristics of investment rounds with government contracts differ significantly from those without such contracts. Portfolio companies that receive government contracts tend to attract larger VC funding, have larger syndicates, are less likely to be in seed or early development stages, and are more likely to be financed by reputable VCs.

INSERT TABLE 3 and *FIGURE 3*

To analyze the impact of government contracting on VC exit outcomes within a more comparable sample, we construct a propensity score-matched dataset. Each VC investment involving a government contract is matched to a control investment without a government contract using exact matching on industry, stage, syndicate size, and year, and fuzzy matching on total VC funding. Descriptive statistics for the matched sample are presented in Table 3, Panel B. The differences in control variables are no longer statistically significant in the matched sample. However, the likelihood of IPO and acquisition exits remains statistically and economically higher among VC investments involving government contractors compared with those without government contracts.

4.2. Government Contracting and VC exits

Table 4 reports the results of the logit regressions analyzing the impact of government contracting on the likelihood of successful VC exits. Panel A presents the results for the full sample, and Panel B shows the results for the propensity score-matched sample. For each covariate, we report the average marginal effects and corresponding t-statistics. The main variables of interest are CONTRACT, which equals one if the portfolio company associated with the VC investment round received at least one government contract within three years following the investment date and zero otherwise, and LN(CONTRACT VALUE), defined as the natural logarithm of the total government contract value received by the portfolio company over the same three-year period.

The dependent variable in Models (1) and (2) is IPO, which equals one if the VC investment exited through an IPO before the beginning of 2020 and zero otherwise. On average, having a government contract increases the probability of an IPO exit by 1.4 percentage points, or 16 percent relative to the sample mean. A ten percent increase in total government contract value is associated with approximately a one percentage point increase in the probability of an IPO exit. Greater total VC funding, larger syndicate size, stronger VC firm reputation, and more favorable exit market conditions are also positively associated with IPO likelihood.

The dependent variable in Models (3) and (4) is ACQUISITION, which equals one if the VC investment exited through an acquisition before the beginning of 2020 and zero otherwise. Government contracting is associated with a 4.9 percentage point increase in the probability of acquisition exits, or 21 percent relative to the sample mean. A ten percent increase in total government contract value raises the likelihood of an acquisition exit by approximately 4.4 percentage points.

The dependent variable in Models (5) and (6) is LIQUIDATION, which equals one if the VC investment was liquidated before the beginning of 2020 and zero otherwise. Government contracting decreases the probability of liquidation by 0.6 percentage points, or 40 percent relative to the sample mean. A ten percent increase in total government contract value reduces the likelihood of liquidation by approximately 0.8 percentage points.

INSERT TABLE 4

Table 5 presents the results of the hazard model analysis examining the timing of VC exits. Panel A reports the results for the full sample, and Panel B reports the results for the propensity score-matched sample. For each covariate, we report hazard ratios, coefficients, and t-statistics. A hazard ratio greater than one and a positive coefficient indicates that the covariate increases the hazard rate and shortens the expected time to exit, while a hazard ratio less than one and a negative coefficient indicates that it lowers the hazard rate and lengthens the time to exit. The hazard analysis confirms the findings from the logit models: government contracting increases both the likelihood and speed of IPO and acquisition exits, while it reduces and delays liquidation exits. Overall, the empirical evidence supports the predictions in Hypothesis 1.

INSERT TABLE 5

4.3. Endogeneity Concerns

The government contracting variables used in the primary analysis may be endogenous. VC exit outcomes depend heavily on the underlying quality of portfolio companies, and higher-quality firms are more likely to receive government contract awards. To mitigate this concern, we control for portfolio company quality using the total VC funding received across all rounds as a proxy for firm quality. Although this variable does not perfectly capture firm quality, we further

construct a propensity score-matched sample to test our predictions within a more comparable set of VC investments.

To more directly address potential endogeneity, we implement a two-stage least square (2SLS) instrumental variable analysis. We instrument the endogenous variables CONTRACT and LN(CONTRACT VALUE) using mimicking variables that exhibit similar behavioral patterns. The mimicking variables, $\widehat{\text{CONTRACT}}$ and LN ($\widehat{\text{CONTRACT}}$ VALUE), are measured for each VC investment as the average of government contracting activity among all VC investments in portfolio companies located in the same ZIP code area during the previous 12 months. The use of mimicking variables follows prior applications in finance (Bell, Filatotchev, and Rasheed, 2012) and venture capital research (Cumming, Meoli, and Vismara, 2019).

Table 6 presents the results of the 2SLS instrumental variable analysis. In the first stage, we estimate the endogenous government contracting variables using the instrumental variables and relevant controls. In the second stage, we regress the VC exit outcomes on the instrumented contracting variables and control variables. Mimicking variables satisfy both the relevance and exogeneity conditions required for valid instruments. Models (1) and (2) show t-statistics near 30 for the mimicking variables, confirming that the instruments are not weak and are strongly correlated with the endogenous regressors. We consider these instruments exogenous because they depend on contracting activity by other firms in the same geographic area rather than on the quality of the specific portfolio company.

The instrumental variable analysis supports the main findings. Exogenous variation in government contracting increases the probability of IPO and acquisition exits by 4.7 and 12 percentage points, respectively, while reducing the probability of liquidation by 3.5 percentage points.

INSERT TABLE 6

4.4. Bargaining Power and VC Exits

Table 7 presents the regression results examining how suppliers' bargaining power influences the relationship between government contracting and VC investment exits.[8]

Panel A analyzes the role of industry concentration, measured by HHI INDEX and HHI GOV INDEX, in shaping the relationship between government contracting and VC exits. Higher values of these indices indicate greater supplier concentration and, consequently, stronger bargaining power. The key variable of interest is the interaction term between the HHI indices and the CONTRACT variable. The results show that stronger supplier bargaining power mitigates the positive effect of government contracting on the likelihood of IPO exits, consistent with Hypothesis 2A. In contrast, the positive impact of government contracting on acquisition likelihood is more pronounced among firms with greater bargaining power, supporting Hypothesis 2B. However, we find no evidence that stronger supplier bargaining power amplifies the negative effect of government contracting on liquidation likelihood, leading to a rejection of Hypothesis 2C.

Panel B evaluates whether the impact of government contracting on VC exit outcomes differs between competitive and non-competitive procurement processes. We separately analyze COMPETITIVE CONTRACTS, which are subject to open bidding, and NON-COMPETITIVE CONTRACTS, which are not. The results indicate that only competitive contracts increase the likelihood of IPO exits, with such contracts raising IPO probability by 2.9 percentage points. In contrast, non-competitive contracts are associated with a reduced probability of IPO exits. These

[8] Appendix A4, A5, and A6 reports robustness tables using hazard analysis and propensity score matched sample.

findings suggest that stronger supplier bargaining power, typically reflected in non-competitive contracting, weakens the positive effect of government contracting on IPO outcomes, supporting Hypothesis 2A.

Both competitive and non-competitive contracts are associated with higher acquisition likelihood. The average marginal effect of competitive contracts on acquisition probability is roughly twice that of non-competitive contracts, consistent with Hypothesis 2B. Finally, only non-competitive contracts, which typically reflect limited government ability to switch suppliers, reduce the probability of liquidation, consistent with Hypothesis 2C.

Panel C investigates whether the effects of DEFENSE CONTRACTS differ from those of NON-DEFENSE CONTRACTS. The results show that only non-defense contracts increase the likelihood of IPO exits, while defense contracting is associated with a lower probability of IPO exits, supporting Hypothesis 2A. Both defense and non-defense contracts increase the likelihood of acquisition exits and decrease the likelihood of liquidation exits, consistent with Hypotheses 2B and 2C.

INSERT TABLE 7

4.5. Robustness test

We examine whether the results are driven by VC investments made by reputable or non-reputable firms. Specifically, we analyze whether the effect of government contracting complements or substitutes for VC reputation. Prior research shows that VC reputation influences valuations at the investment stage (Hsu, 2004), the quality of post-investment value-added activities (Hochberg, Ljungqvist, and Lu, 2007), IPO timing (Lerner, 1994), investment duration (Gompers, 1996), and the likelihood of successful exits (Nahata, 2008). The literature

further suggests that both market sorting, where high-quality firms attract more reputable VCs, and superior post-investment involvement by reputable VCs contribute to their higher success rates (Sorensen, 2007; Chemmanur, Krishnan, and Nandy, 2011; Alperovych and Hübner, 2013; Bernstein, Giroud, and Townsend, 2016).

Table 8 presents the regression results examining the joint effects of government contracting and bargaining power on VC exit outcomes across subsamples of VC investments categorized by VC firm reputation. [9] We classify a VC firm as reputable if it was involved in at least one IPO within the three years preceding the investment date.

The results in Panel A show that government contracting significantly increases the likelihood of IPO exits only among reputable VC investments. However, when accounting for competition and bargaining power, government contractors with weaker bargaining power are more likely to exit through IPOs in both subsamples. The average marginal effect of government contracting on IPO likelihood is nearly twice as large for reputable VCs compared with non-reputable VCs, suggesting that government contracting complements rather than substitutes for VC reputation. The effects of government contracting on acquisition and liquidation outcomes do not differ significantly between reputable and non-reputable VC firms.

INSERT TABLE 8

5 CONCLUSION

We investigate whether post-investment government contracting activities of VC-backed companies influence the exit outcomes of VC investments. VC firms typically invest in young

[9] Appendix A7, A8, and A9 reports robustness tables using logit analysis on propensity score matched sample, hazard analysis on full sample, and hazard analysis on propensity score matched sample, respectively.

private companies characterized by high levels of uncertainty and information asymmetry. The success of these investments depends on VC firms' ability to mitigate these challenges for the portfolio company's future owners. Prior research shows that government customers improve contractors' operating performance and information quality. We find that these benefits of government contracting enhance VC firms' ability to achieve successful exits. Specifically, receiving government contracts after VC investment increases the likelihood of IPO or acquisition exits and decreases the likelihood of liquidation. These results remain robust after addressing potential endogeneity using instrumental variable analysis.

We further examine how the supplier's bargaining power relative to the government shapes the relationship between government contracting and VC exit outcomes. Previous studies suggest that higher supplier bargaining power strengthens the positive effects of government customers on operating stability while weakening their influence on information quality. Information asymmetry poses a greater challenge for IPO exits, which involve a broad set of public investors, compared with acquisition exits, which involve fewer and more sophisticated buyers. In contrast, operating stability is more relevant for acquisitions and for reducing the likelihood of liquidation. Consistent with these distinctions, we find that the positive effect of government contracting on IPO likelihood is weaker when suppliers possess greater bargaining power, whereas the effects on acquisition and liquidation outcomes are stronger under higher supplier bargaining power. These findings are robust across subsamples of investments by both reputable and non-reputable VC firms.

This study contributes to finance literature in several ways. First, it documents a novel link between government contracting and the outcomes of VC-backed companies. Second, it highlights a new value-added role for VC firms in supporting portfolio companies' engagement

in government contracting. Third, it identifies government contracting activity as an important determinant of VC exit outcomes, providing new insights into how such contracts influence exit strategies. Taken together, these findings indicate that government procurement can influence private capital outcomes by shaping firm performance and exit dynamics, offering insights for investors, entrepreneurs, and policymakers aiming to foster innovation and efficient resource allocation.

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Figures and Tables

Figure 1 Government contract values around VC involvement

This figure shows the average contract value (in million USD) per government contractor per year for three years leading to the initial VC investment date and three years following the initial VC investment date.

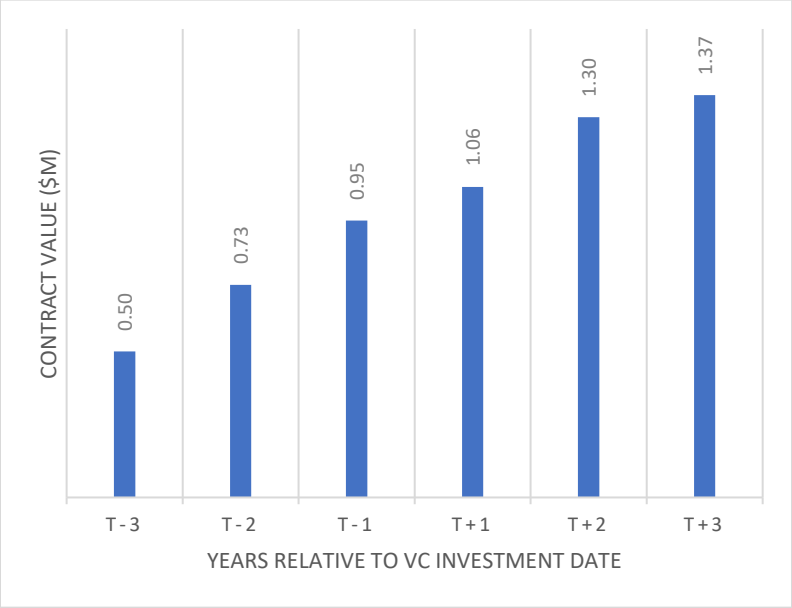


Figure 2 Government contract quality around VC involvement

This figure shows the average value-weighted 'sweetheart index' per government contractor per year for three years leading to the initial VC investment date and three years following the initial VC investment date. Sweetheart index ranges from 0 to 4, for being the best contract, based on four "sweetheart" contract terms in favor of contractors, which are no-bid contract, cost-plus contract, multi-year contract, and exempt from providing cost or pricing data.

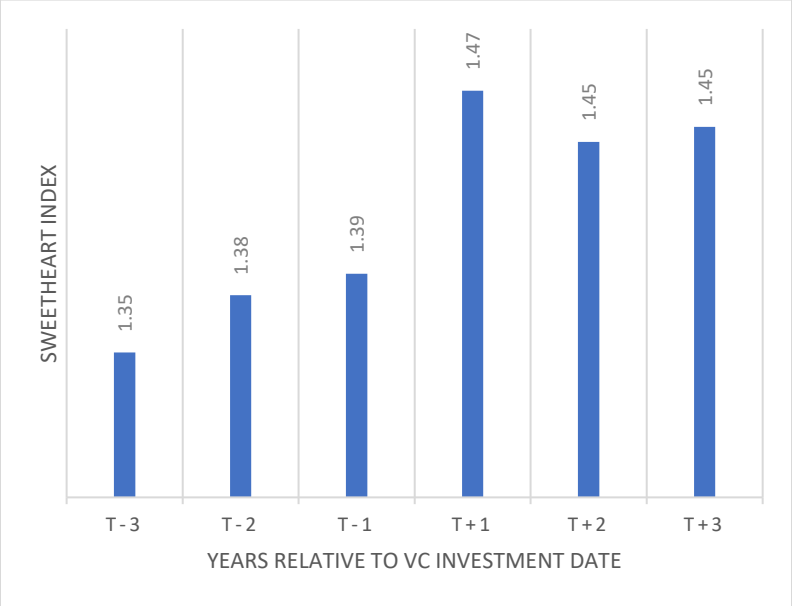


Figure 3 Percentage of government contractors by VC investment outcome

This figure shows the percentage of portfolio companies that received at least one government contract within three years following the VC financing round for the full sample and subsamples categorized by VC exit outcome.

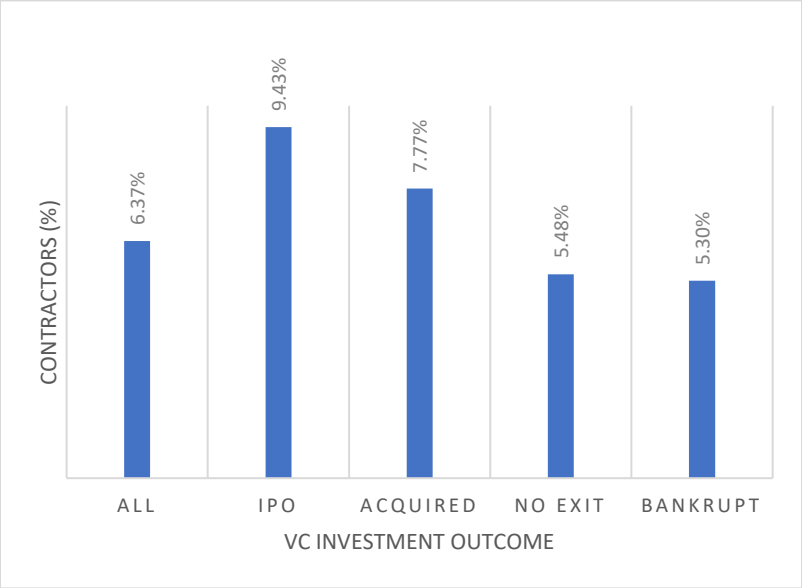


Table 1

VC investments and government contracting activity

This table presents a comparison of government contracting activity of portfolio companies during three years before and after the first VC financing round. The comparison of contract value and contract quality variables only includes companies that received at least one government contract both before and after the initial VC investment round.

	Obs.	Before VC	After VC	Dif.	St Err.	t-value	p-value
Contract (%)	14,405	4.742	7.865	3.124	0.198	15.8	0.000
Contract value (M$)	494	2.026	2.905	0.879	0.202	4.35	0.000
Number of transactions	494	15.729	26.314	10.585	01.73	6.1	0.000
Sweetheart index	494	1.387	1.445	0.058	0.022	2.7	0.007
No data	494	0.918	0.915	-0.003	0.009	-0.3	0.780
No bid	494	0.339	0.346	0.007	0.018	0.4	0.686
Multiyear	494	0.012	0.020	0.008	0.005	1.75	0.081
Cost-plus	494	0.118	0.163	0.045	0.012	3.8	0.000
Competitive contract (%)	14,405	3.124	4.748	1.624	0.155	10.5	0.000
Non-competitive contract (%)	14,405	2.909	5.332	2.423	0.167	14.6	0.000
Defense contract (%)	14,405	3.742	6.095	2.353	0.179	13.2	0.000
Non-defense contract (%)	14,405	2.534	4.832	2.298	0.162	14.1	0.000
Competitive contract value (M$)	494	0.310	0.413	0.103	0.049	2.1	0.036
Non-competitive contract value (M$)	494	1.716	2.492	0.776	0.197	3.9	0.000
Defense contract value (M$)	494	0.944	1.330	0.386	0.098	3.9	0.000
Non-defense contract value (M$)	494	1.082	1.575	0.493	0.165	3.0	0.003

Table 2

Distribution of VC investments by year

This table presents the yearly distribution of VC investment rounds between 2004 and 2015, for which all relevant data available starting from the first financing round. Companies that went public until the end of 2019 are classified as 'IPO' exits. Companies that were acquired until the end of 2019 are classified as 'Acquisition' exits. Companies that were written off until the end of 2019 are classified as 'Liquidation' exits. All other companies are denoted as 'Unsuccessful exit'.

Funding Year	VC investment status by year					VC investment status by year (%)			
	IPO	Acquisition	Liquidation	Unsuccessful	Total	IPO	Acquisition	Liquidation	Unsuccessful
2004	461	1,930	176	2,492	5,059	9.11%	38.15%	3.48%	49.26%
2005	441	1,823	151	2,970	5,385	8.19%	33.85%	2.80%	55.15%
2006	527	1,868	166	3,667	6,228	8.46%	29.99%	2.67%	58.88%
2007	573	1,842	188	4,282	6,885	8.32%	26.75%	2.73%	62.19%
2008	625	1,604	99	4,055	6,383	9.79%	25.13%	1.55%	63.53%
2009	232	513	16	1,290	2,051	11.31%	25.01%	0.78%	62.90%
2010	546	1,233	69	3,293	5,141	10.62%	23.98%	1.34%	64.05%
2011	598	1,392	33	3,953	5,976	10.01%	23.29%	0.55%	66.15%
2012	558	1,212	32	4,085	5,887	9.48%	20.59%	0.54%	69.39%
2013	516	1,201	28	4,638	6,383	8.08%	18.82%	0.44%	72.66%
2014	488	1,069	24	5,285	6,866	7.11%	15.57%	0.35%	76.97%
2015	473	842	36	5,776	7,127	6.64%	11.81%	0.51%	81.04%
Total	**6,038**	**16,529**	**1,018**	**45,786**	**69,371**	**8.70%**	**23.83%**	**1.47%**	**66.00%**

Table 3

Descriptive statistics

This table provides comparative statistics for the VC investment rounds based on the portfolio companies' government contract activity. Portfolio companies that received at least one government contract award within three years after the VC investment round are categorized as "Contractor," and "Non-contractor" otherwise. Panel A provides descriptive statistics for all investment rounds in the sample. Panel B provides descriptive statistics for the investment rounds in the propensity-score-matched sample. All continuous variables are winsorized at the 1% and 99% levels. t-Tests are used to examine the difference in means between each sample.

Panel A: Full Sample								
	Non-Contractor		Contractor					
	Obs.	Mean	Obs.	Mean	Dif.	St Err	t-stat	p- value
Exit outcome								
IPO	64,955	0.084	4,416	0.129	-0.044	0.005	-10.2	0.000
Acquisition	64,955	0.235	4,416	0.291	-0.057	0.007	-8.5	0.000
Liquidation	64,955	0.015	4,416	0.012	0.003	0.002	1.4	0.163
Government contracting variables								
Contract value ($M)	64,955	0.000	4,416	0.885	-0.885	0.014	-62.15	0.000
Competitive contract value (M$)	64,955	0.000	4,416	0.640	-0.640	0.012	-56.4	0.000
Non-competitive contract value (M$)	64,955	0.000	4,416	0.126	-0.126	0.002	-69.75	0.000
Defense contract value (M$)	64,955	0.000	4,416	0.236	-0.236	0.004	-70.7	0.000
Non-defense contract value (M$)	64,955	0.000	4,416	0.492	-0.492	0.010	-49.6	0.000
Control variables								
Total VC funding across all rounds ($M)	64,955	52.694	4,416	64.293	-11.598	1.940	-6	0.000
VC syndicate size across all rounds	64,955	9.564	4,416	11.604	-2.040	0.090	-22.55	0.000
Seed or Early stage	64,955	0.453	4,416	0.293	0.159	0.007	20.6	0.000
VC independent	64,955	0.858	4,416	0.860	-0.002	0.005	-.3	0.769
VC bank affiliate	64,955	0.016	4,416	0.021	-0.005	0.002	-2.65	0.008
VC corporate	64,955	0.062	4,416	0.061	0.001	0.004	.15	0.883
VC IPO experience	64,955	0.465	4,416	0.489	-0.025	0.008	-3.15	0.002
VC number of IPOs	64,955	1.733	4,416	1.841	-0.108	0.052	-2.1	0.037
Number of IPOs in Market	64,955	93.913	4,416	94.954	-1.041	0.317	-3.3	0.001
Median M/B ratio in high-tech industry	64,955	2.136	4,416	2.125	0.011	0.005	2.1	0.037
Aggregate fund inflows in VC industry ($M)	64,955	49,418	4,416	47,952	1,466	219.0	6.7	0.000
Panel B: Propensity score matched sample								
	Non-Contractor		Contractor					
	Obs.	Mean	Obs.	Mean	Dif.	St Err	t-stat	p- value

Exit outcome								
IPO	3,658	0.083	3658	0.116	-0.034	0.007	-4.85	0.000
Acquisition	3,658	0.235	3658	0.298	-0.064	0.011	-6.2	0.000
Liquidation	3,658	0.025	3658	0.013	0.012	0.003	3.8	0.000
Government contracting variables								
Contract value ($M)	3,658	0.000	3,658	0.490	-0.490	0.026	-18.55	0.000
Competitive contract value (M$)	3,658	0.000	3,658	0.371	-0.371	0.025	-15.25	0.000
Non-competitive contract value (M$)	3,658	0.000	3,658	0.097	-0.097	0.005	-18.25	0.000
Defense contract value (M$)	3,658	0.000	3,658	0.181	-0.181	0.011	-16.5	0.000
Non-defense contract value (M$)	3,658	0.000	3,658	0.308	-0.308	0.024	-13.2	0.000
Control variables								
Total VC funding across all rounds ($M)	3,658	59.208	3,658	57.434	1.774	2.525	0.7	0.482
VC syndicate size across all rounds	3,658	10.188	3,658	10.188	0.000	0.122	0.0	1.000
Seed or Early stage	3,658	0.311	3,658	0.311	0.000	0.011	0.0	1.000
VC independent	3,658	0.856	3,658	0.865	-0.009	0.008	-1.05	0.296
VC bank affiliate	3,658	0.022	3,658	0.020	0.003	0.004	0.8	0.413
VC corporate	3,658	0.068	3,658	0.058	0.010	0.005	1.75	0.084
VC IPO experience	3,658	0.476	3,658	0.487	-0.012	0.012	-1.0	0.326
VC number of IPOs	3,658	1.784	3,658	1.849	-0.065	0.081	-0.8	0.420
Number of IPOs in Market	3,658	94.456	3,658	94.971	-0.515	0.528	-1.0	0.330
Median M/B ratio in high-tech industry	3,658	2.118	3,658	2.118	0.000	0.007	.000	1.000
Aggregate fund inflows in VC industry ($M)	3,658	48,381	3,658	48,381	0.000	308.0	.000	1.000

Table 4

Logit regression analysis of government contracting and VC investment outcomes

This table reports the results of the regressions estimated using the logit model. Panel A reports the results for the full sample, which consists of VC investments between 2004 and 2015. Panel B reports the results for the propensity-score-matched sample. The dependent variable in Columns (1) and (2) is *IPO* indicator, which takes the value of one if the portfolio company backed by VC investment has gone public by the beginning of the year 2020, and zero otherwise. The dependent variable in Columns (3) and (4) is the *Acquisition* indicator, which takes the value of one if the portfolio company backed by VC investment has been acquired by the beginning of the year 2020, and zero otherwise. The dependent variable in Columns (5) and (6) is the *Liquidation* indicator, which takes the value of one if the portfolio company backed by VC investment has been written off by the beginning of the year 2020, and zero otherwise. *Contract* is an indicator variable that equals one if the portfolio company received a government contract over three years following the VC investment date, and zero otherwise. *Ln (Contract value)* is the natural log of the total USD value of all government contracts awarded to the portfolio company over three years following the VC investment date. *Ln (Total VC funding)* is the natural log of the total VC funding to the portfolio company across all financing rounds. *Ln (VC syndicate size)* is the natural log of the size of the VC syndicate in the portfolio company. Exit market condition is proxied by *Ln (Number of IPOs in the market)*, which is the natural log of the number of IPO transactions measured over the entire VC-funded timeframe for unsuccessful companies and the lagged quarterly for successful companies. VC firm reputation is proxied by *Ln (Number of IPOs by VC)*, which is the natural log of the number of companies taken public by the VC firm during the three before the investment date. *Median M/B ratio in the high-tech industry*, estimated using the public firms' data in the Compustat, proxies for the availability of investment opportunities to VCs. *Ln (Agg. fund inflows in the VC industry)* is the natural log of aggregate fund inflows in the VC industry in the previous year and proxies for the competition in the VC industry. *VC independent, VC corporate,* and *VC bank affiliate* are binary variables that indicate the VC type. *Seed or Early stage* is an indicator variable that equals one if VC invested at early or seed stage, and zero otherwise. All continuous variables are winsorized at the 1% and 99% levels. All models include industry and year fixed effects. T-statistics computed based on the standard errors clustered at the VC firm level are reported below the average marginal effects. ***, **, * indicate statistical significance at the 1%, 5% and 10% level, respectively.

Panel A: Full sample

	IPO		Acquisition		Liquidation	
	(1)	(2)	(3)	(4)	(5)	(6)
Contract	0.014***		0.049***		-0.006***	
	(2.730)		(7.146)		(-2.844)	
Ln (Contract Value)		0.001*		0.004***		-0.001***
		(1.943)		(7.095)		(-3.542)
Ln (Total VC funding)	0.043***	0.043***	-0.019***	-0.018***	-0.003***	-0.003***
	(19.811)	(19.857)	(-7.332)	(-7.314)	(-5.390)	(-5.406)
Ln (VC syndicate size)	0.085***	0.085***	-0.008	-0.008	0.003***	0.003***
	(20.882)	(20.860)	(-1.611)	(-1.627)	(2.622)	(2.660)
Ln (Number of IPOs in market)	0.093***	0.093***	-0.140***	-0.141***	-0.015***	-0.015***
	(8.854)	(8.836)	(-16.161)	(-16.221)	(-11.898)	(-11.901)

Median M/B ratio in high-tech industry	0.003	0.003	-0.031***	-0.031***	0.002	0.002
	(0.745)	(0.796)	(-5.221)	(-5.198)	(1.206)	(1.201)
Ln (Agg. fund inflows in VC industry)	-0.000	-0.000	-0.034***	-0.034***	-0.003***	-0.003***
	(-0.156)	(-0.117)	(-10.166)	(-10.157)	(-2.961)	(-2.964)
Ln (Number of IPOs by VC)	0.008***	0.008***	0.006	0.006	0.002*	0.002*
	(2.932)	(2.925)	(1.515)	(1.521)	(1.756)	(1.734)
VC independent	-0.031***	-0.031***	0.037***	0.037***	0.005**	0.005**
	(-3.183)	(-3.197)	(2.905)	(2.906)	(2.111)	(2.111)
VC corporate	-0.024**	-0.024**	0.083***	0.083***	0.007**	0.007**
	(-2.034)	(-2.053)	(5.885)	(5.878)	(2.474)	(2.480)
VC bank affiliate	-0.030**	-0.030**	0.061***	0.060***	0.006	0.006
	(-2.032)	(-2.037)	(2.982)	(2.965)	(1.512)	(1.522)
Seed or Early stage	-0.009***	-0.009***	0.040***	0.040***	0.008***	0.008***
	(-2.781)	(-2.812)	(9.330)	(9.317)	(6.207)	(6.205)
Observations	69,371	69,371	69,371	69,371	69,371	69,371
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.291	0.291	0.050	0.050	0.090	0.091
Log likelihood	-14,533	-14,537	-36,189	-36,189	-4,830	-4,826

Panel B: Propensity score matched sample

	IPO		Acquisition		Liquidation	
	(1)	(2)	(3)	(4)	(5)	(6)
Contract	0.029***		0.061***		-0.014***	
	(3.590)		(5.623)		(-3.651)	
Ln (Contract Value)		0.001*		0.006***		-0.002***
		(1.678)		(6.137)		(-4.318)
Ln (Total VC funding)	0.048***	0.048***	-0.020***	-0.020***	-0.006***	-0.006***
	(9.632)	(9.687)	(-3.094)	(-3.050)	(-3.229)	(-3.341)
Ln (VC syndicate size)	0.081***	0.080***	-0.021*	-0.022**	0.006*	0.006*
	(8.506)	(8.436)	(-1.911)	(-2.048)	(1.770)	(1.851)
Ln (Number of IPOs in market)	0.173***	0.175***	-0.106***	-0.109***	-0.035***	-0.034***
	(6.350)	(6.329)	(-4.968)	(-5.131)	(-8.369)	(-8.465)
Median M/B ratio in high-tech industry	0.019*	0.020*	0.009	0.009	-0.014***	-0.015***
	(1.695)	(1.715)	(0.503)	(0.537)	(-2.716)	(-2.777)
Ln (Aggregate fund inflows in VC industry)	0.011	0.011	-0.040***	-0.040***	-0.003	-0.003
	(1.291)	(1.300)	(-3.083)	(-3.079)	(-0.761)	(-0.718)
Ln (Number of IPOs by VC)	0.004	0.004	-0.006	-0.005	0.002	0.001
	(0.724)	(0.709)	(-0.860)	(-0.823)	(0.836)	(0.658)
VC independent	-0.036*	-0.037*	-0.003	-0.002	0.003	0.003

	(-1.902)	(-1.957)	(-0.106)	(-0.076)	(0.384)	(0.391)
VC corporate	-0.030	-0.032	0.064**	0.065**	0.012	0.011
	(-1.232)	(-1.307)	(2.016)	(2.046)	(1.180)	(1.174)
VC bank affiliate	0.006	0.005	0.069	0.068	0.008	0.008
	(0.225)	(0.182)	(1.366)	(1.349)	(0.604)	(0.635)
Seed or Early stage	-0.003	-0.003	0.024*	0.024*	0.011**	0.012**
	(-0.313)	(-0.262)	(1.782)	(1.791)	(2.344)	(2.396)
Observations	7,316	7,316	7,316	7,316	6,358	6,358
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.237	0.233	0.049	0.050	0.203	0.210
Log likelihood	-1,806	-1,815	-4,032	-4,029	-530	-526

Table 5

Hazard analysis of government contracting and VC investment outcomes

This table reports the regression results estimated using Cox's Proportional Hazard Model assuming the exponential distribution of the hazard rate. The dependent variable in these regressions is time to exit. *Time to exit* for exited VC investments is the number of days from the VC investment to the exit date. *Time to exit* for VC investments unsuccessful exits is right censored at the beginning of 2020. For each covariate, I report hazard ratios in the first row, coefficients in the second row, and t-statistics in the third row. Hazard ratios greater (less) than 1 indicate the covariate increases (decreases) the hazard and shortens (lengthens) the duration to exit. Similarly, a positive (negative) coefficient indicates a higher (lower) hazard and shorter (longer) duration to exit. Panel A reports the results for regressions estimated using the full sample, which consists of VC investments between 2004 and 2015. Panel B reports the results for regressions estimated using the propensity-score-matched sample. The dependent variable is *IPO* indicator in Columns (1) and (2), *Acquisition* indicator in Columns (3) and (4), and *Liquidation* indicator in Columns (5) and (6). Control variables include *Ln (Total VC funding)*, *Ln (VC syndicate size)*, *Ln (Number of IPOs in the market)*, *Ln (Number of IPOs by VC)*, *Median M/B ratio in the high-tech industry*, *Ln (Agg. fund inflows in the VC industry), VC independent, VC corporate, VC bank affiliate*, and *Seed or Early stage*. All continuous variables are winsorized at the 1% and 99% levels. All models include industry and year fixed effects. T-statistics computed based on the standard errors clustered at the VC firm level. ***, **, * indicate statistical significance at the 1%, 5% and 10% level, respectively.

Panel A: Full sample

	IPO		Acquisition		Liquidation	
	(1)	(2)	(3)	(4)	(5)	(6)
Contract	1.202***		1.211***		0.634***	
	0.184***		0.191***		-0.456***	
	(2.612)		(5.952)		(-2.776)	
Ln (Contract Value)		1.008		1.018***		0.942***
		0.008		0.017***		-0.060***
		(1.377)		(5.969)		(-3.669)
Observations	69,371	69,371	69,371	69,371	69,371	69,371
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	-60,245	-60,251	-177,819	-177,819	-10,420	-10,415

Panel B: Propensity score matched sample

	IPO		Acquisition		Liquidation	
	(1)	(2)	(3)	(4)	(5)	(6)
Contract	1.499***		1.308***		0.516***	
	0.405***		0.269***		-0.661***	

	(4.027)		(5.413)		(-3.200)	
Ln (Contract Value)		1.012		1.026***		0.917***
		0.012		0.026***		-0.087***
		(1.383)		(5.963)		(-4.060)
Observations	7,316	7,316	7,316	7,316	7,316	7,316
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	-5,768	-5,781	-16,567	-16,563	-1,019	-1,013

Table 6

Instrument variable analysis of government contracting and VC investment outcomes

This table reports the results of the two-stage least squared instrumental variable analysis, in which endogenous variables *Contract* and *Ln(Contract value)* are instrumented by respective variables that exhibit mimicking behavior. The sample in these regressions is consist of VC investments between 2004 and 2015. Mimicking variables, *Predicted Contract* and *Ln(Predicted Contract Value)* is calculated for each portfolio company at each investment date as the average of all portfolio companies located in the same Zip code area in the previous 12 months. Columns (1) and (2) report the results for the first stage, where dependent variables are *Contract* and *Ln(Contract value)*, respectively. Columns (3) to (8) report the results for the second stage regressions. The dependent variable is *IPO* indicator in Columns (3) and (4), *Acquisition* indicator in Columns (5) and (6), and *Liquidation* indicator in Columns (7) and (8). Control variables include *Ln (Total VC funding)*, *Ln (VC syndicate size)*, *Ln (Number of IPOs in the market)*, *Ln (Number of IPOs by VC)*, *Median M/B ratio in the high-tech industry*, *Ln (Agg. fund inflows in the VC industry), VC independent, VC corporate, VC bank affiliate*, and *Seed or Early stage*. All continuous variables are winsorized at the 1% and 99% levels. All models include industry and year fixed effects. T-statistics computed based on the standard errors clustered at the VC firm level are reported below the average marginal effects. ***, **, * indicate statistical significance at the 1%, 5% and 10% level, respectively.

	First-stage		Second-stage					
	Contract	Ln (Con. Val.)	IPO		Acquisition		Liquidation	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Predicted Contract	0.433***							
	(33.106)							
Ln (Predicted Contract Value)		0.082***						
		(28.606)						
Contract			0.047**		0.120***		-0.035***	
			(2.299)		(4.072)		(-4.350)	
Ln (Contract Value)				0.013***		0.040***		0.000
				(4.173)		(8.551)		(0.330)
Observations	60,870	60,870	60,870	60,870	60,870	60,870	60,870	60,870
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.075	0.038	0.172	0.161	0.054	0.004	0.017	0.020

Table 7

The role of bargaining power in the government contracting and VC investment outcome relationship

This table reports the results of the regressions that examine the impact of bargaining power on VC investment outcomes. The sample consists of VC investments between 2004 and 2015. Panel A examines the impact of industry concentration on VC investment outcomes. Panel B separately examines the impact of competitive and non-competitive government contracts on VC investment outcomes. Panel C separately examines the impact of defense and non- defense government contracts on VC investment outcome. The dependent variable is *IPO* indicator in Columns (1) and (2), *Acquisition* indicator in Columns (3) and (4), and *Liquidation* indicator in Columns (5) and (6). *HHI index* proxies for the competition in portfolio company's industry estimated using public firm data in the Compustat. *HHI Gov index* proxies for the competition for government contracts in portfolio company's industry estimated using government sales data of VC-backed companies. *Competitive contract, Non-competitive contract, Defense contract,* and *Non-defense contract* are indicators variable that equals one if the portfolio company received a respective government contract over three years following the VC investment date, and zero otherwise. *Ln (Competitive contract value), Ln (Non-competitive contract value), Ln (Defense contract value),* and *Ln (Non-defense contract value)* are the natural logs of total USD value of all respective government contracts awarded to the portfolio company over three years following the VC investment date. All continuous variables are winsorized at the 1% and 99% levels. All models include all the controls, industry fixed effects, and year fixed effect. T-statistics computed based on the standard errors clustered at the VC firm level are reported below the average marginal effects. ***, **, * indicate statistical significance at the 1%, 5% and 10% level, respectively.

Panel A: Industry concentration (HHI)

	IPO		Acquisition		Liquidation	
	(1)	(2)	(3)	(4)	(5)	(6)
Contract	0.016***	0.019***	0.038***	0.041***	-0.010***	-0.006***
	(3.147)	(3.623)	(5.295)	(5.948)	(-3.673)	(-2.664)
Contract x HHI Gov. Index	-0.021***		0.017***		0.005**	
	(-4.260)		(2.696)		(2.136)	
Contract x HHI Index		-0.020***		0.034***		-0.000
		(-4.114)		(4.604)		(-0.045)
HHI Gov. Index	-0.000		-0.017***		0.002**	
	(-0.193)		(-7.423)		(2.384)	
HHI Index		0.001		-0.028***		0.001
		(0.327)		(-11.341)		(0.719)
Observations	62,407	67,083	62,407	67,083	62,407	67,083
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.287	0.281	0.067	0.069	0.100	0.101
Log likelihood	-13,521	-14,525	-32,595	-34,550	-4,178	-4,410

Panel B: Competitive government contracts

	IPO		Acquisition		Liquidation	
	(1)	(2)	(3)	(4)	(5)	(6)
Competitive contract	0.029***		0.025***		-0.002	
	(4.942)		(2.655)		(-0.510)	
Non-competitive contract	-0.015**		0.057***		-0.016***	
	(-1.980)		(5.845)		(-3.749)	
Ln (Comp. cont. value)		0.003***		0.002*		-0.000
		(5.342)		(1.915)		(-0.795)
Ln (Non-comp. cont. value)		-0.001**		0.006***		-0.001***
		(-2.048)		(6.055)		(-3.542)
Observations	69,371	69,371	69,371	69,371	69,371	69,371
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.292	0.292	0.050	0.050	0.092	0.092
Log likelihood	-14522	-14520	-36180	-36181	-4821	-4821

Panel C: Defense government contracts

	IPO		Acquisition		Liquidation	
	(1)	(2)	(3)	(4)	(5)	(6)
Defense contract	-0.019***		0.042***		-0.007**	
	(-2.695)		(4.139)		(-2.276)	
Non-defense contract	0.030***		0.046***		-0.009**	
	(5.094)		(4.855)		(-2.283)	
Ln (Defense cont. value)		-0.001*		0.003***		-0.001**
		(-1.768)		(3.534)		(-2.259)
Ln (Non-defense cont. value)		0.002***		0.004***		-0.001**
		(4.450)		(5.008)		(-2.311)
Observations	69,371	69,371	69,371	69,371	69,371	69,371
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.292	0.292	0.050	0.050	0.091	0.091
Log likelihood	-14,516	-14,522	-36,183	-36,186	-4,825	-4,825

Table 8

The role of VC firm reputation in the government contracting and VC investment outcome relationship

This table reports the results of the regressions that examine the impact of government contracting and bargaining power on VC investment outcomes in subsamples of VC investments categorized by VC reputation. The sample in regressions reported in Columns (1), (3), and (5) consists of VC investments between 2004 and 2015 made by reputable VCs. The sample in regressions reported in Columns (2), (4), and (6) consists of VC investments between 2004 and 2015 made by non-reputable VC firms. VC firms are considered reputable if the VC firm was involved in making a portfolio company public during the three years prior to the investment date. Panel A examines the impact of government contracting activity regardless of bargaining power. Panel B examines the impact of industry concentrations on VC investment outcomes. Panel C separately examines the impact of competitive and non-competitive government contracts on VC investment outcomes. awards. Panel D examines the impact of defense and non-defense government contracts on VC investment outcomes. The dependent variable is *IPO* indicator in Columns (1) and (2), *Acquisition* indicator in Columns (3) and (4), and *Liquidation* indicator in Columns (5) and (6). All continuous variables are winsorized at the 1% and 99% levels. All models include all the controls, industry fixed effects, and year fixed effects. T-statistics computed based on the standard errors clustered at the VC firm level are reported below the average marginal effects. ***, **, * indicate statistical significance at the 1%, 5% and 10% level, respectively.

Panel A: Industry concentration (HHI)

	IPO		Acquisition		Liquidation	
	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=1
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Contract	0.020**	0.007	0.049***	0.037***	-0.006*	-0.008***
	(2.365)	(1.387)	(5.345)	(3.683)	(-1.795)	(-2.657)
Observations	32,338	37,033	32,338	37,033	32,338	37,033
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.260	0.271	0.068	0.062	0.108	0.092
Log likelihood	-8,966	-5,737	-16,361	-19,268	-2,376	-2,398

Panel B: Industry concentration (HHI)

	IPO		Acquisition		Liquidation	
	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=1
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Contract	0.023***	0.009*	0.044***	0.031***	-0.013***	-0.008***
	(2.719)	(1.675)	(4.599)	(3.003)	(-2.812)	(-2.632)

Contract x HHI Gov. Index	-0.033***	-0.010**	0.007	0.024***	0.011***	0.001
	(-3.675)	(-2.253)	(0.818)	(2.684)	(3.187)	(0.286)
HHI Gov. Index	0.005	-0.005***	-0.015***	-0.018***	0.003**	0.001
	(1.569)	(-2.587)	(-4.872)	(-5.646)	(2.184)	(1.259)
Observations	29,436	32,971	29,436	32,971	29,436	32,971
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.268	0.273	0.072	0.066	0.110	0.104
Log likelihood	-8,255	-5,231	-15,084	-17,433	-2,154	-1,984

Panel C: Competitive government contracts

	IPO		Acquisition		Liquidation	
	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=1
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Competitive contract	0.042***	0.017***	0.026**	0.024*	0.002	-0.003
	(4.127)	(2.877)	(2.014)	(1.834)	(0.483)	(-0.828)
Non-competitive contract	-0.021	-0.011	0.053***	0.059***	-0.021***	-0.014***
	(-1.546)	(-1.559)	(3.605)	(4.693)	(-2.669)	(-2.685)
Observations	32,338	37,033	32,338	37,033	29,903	37,033
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.272	0.284	0.058	0.049	0.101	0.087
Log likelihood	-8,824	-5,640	-16,540	-19,530	-2,358	-2,410

Panel D: Defense government contracts

	IPO		Acquisition		Liquidation	
	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=1
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Defense contract	-0.034**	-0.009	0.053***	0.030**	-0.007	-0.007*
	(-2.568)	(-1.336)	(3.830)	(2.076)	(-1.406)	(-1.844)
Non-defense contract	0.045***	0.016***	0.042***	0.049***	-0.010	-0.008*
	(4.318)	(2.776)	(3.130)	(3.782)	(-1.548)	(-1.716)
Observations	32,338	37,033	32,338	37,033	29,903	37,033
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.272	0.284	0.058	0.049	0.100	0.087
Log likelihood	-8,818	-5,640	-16,537	-19,535	-2,361	-2,411

Internet Appendix - Not for Publication

Government Contracting and Venture Capital Exit Outcomes

A. Additional Descriptions and Tests

Appendix A1

Abbreviation	Description
Government Contracting Variables	
Contract	An indicator variable that equals one if the portfolio company involved in the financing round received a government contract over three years following the VC investment date, and zero otherwise.
Ln (Contract value)	The natural log of the total USD value of all government contracts awarded to the portfolio company involved in the financing round over three years following the VC investment date.
Competitive contract	An indicator variable that equals one if the portfolio company involved in the financing round received a government contract via competitive bidding over three years following the VC investment date, and zero otherwise.
Ln (Competitive contract value)	The natural log of the total USD value of all government contracts awarded via competitive bidding to the portfolio company involved in the financing round over three years following the VC investment date.
Non-competitive contract	An indicator variable that equals one if the portfolio company involved in the financing round received a government contract via non-competitive bidding over three years following the VC investment date, and zero otherwise.
Ln (Non-competitive contract value)	The natural log of the total USD value of all government contracts awarded via non-competitive bidding to the portfolio company involved in the financing round over three years following the VC investment date.
Defense contract	An indicator variable that equals one if the portfolio company involved in the financing round received a defense contract over three years following the VC investment date, and zero otherwise.
Ln (Defense contract value)	The natural log of the total USD value of all defense contracts awarded to the portfolio company involved in the financing round over three years following the VC investment date.
Non-defense contract	An indicator variable that equals one if the portfolio company involved in the financing round received a non-defense contract over three years following the VC investment date, and zero otherwise.
Ln (Non-defense contract value)	The natural log of the total USD value of all non-defense contracts awarded to the portfolio company involved in the financing round over three years following the VC investment date.

VC Investment Outcome Variables

IPO	An indicator variable that equals one if the portfolio company involved in the financing round exited via IPO by beginning of 2020, and zero otherwise.
Acquisition	An indicator variable that equals one if the portfolio company involved in the financing round exited via Acquisition by the beginning of 2020, and zero otherwise.
Liquidation	An indicator variable that equals one if the portfolio company involved in the financing round was written off by the beginning of 2020, and zero otherwise.

Control variables

Ln (Total VC funding)	The natural log of the total VC funding to the portfolio company involved in the financing round across all financing rounds.
Ln (VC syndicate size)	The natural log of the size of the VC syndicate in the portfolio company involved in the financing round.
Ln (Number of IPOs in the market)	The natural log of the number of IPO transactions measured over the entire VC-funded timeframe for unsuccessful companies and the lagged quarterly for successful companies.
Ln (Number of IPOs by VC)	The natural log of the number of companies taken public by the VC firm during the three before the investment date.
Median M/B ratio in the high-tech industry	The median market to book ratio in the high-tech industry in the year of VC investment in the portfolio company was estimated using the public firm data available in the Compustat dataset. High-tech industries are defined using the three-digit SIC codes 283, 481, 365–369, 482–489, 357, and 737, following footnote 11 in Nahata's (2008) study.
Ln (Aggregate fund inflows in the VC industry)	The natural log of aggregate fund inflows in the VC industry in the year prior to the VC investment in the portfolio company
VC independent	An indicator variable that equals one if the VC is an independent VC, and zero otherwise.
VC corporate	An indicator variable that equals one if the VC is a corporate investor, and zero otherwise.
VC bank affiliate	An indicator variable that equals one if the VC is affiliated with an investment bank, and zero otherwise.
Seed or early stage	An indicator variable that equals one if VC invested at early or seed stage, and zero otherwise.
Predicted contract	The average of *Contract* indicator of all VC investment companies located in the same zip code area in the previous 12 months.

Predicted contract value	The average of the *Ln(Contract value)* for all VC investment companies located in the same zip code area in the previous 12 months.
HHI index	Herfindahl-Hirschman (HHI) index proxies for competition in portfolio company's industry estimated using the U.S. public firm data in the Compustat. HHI is the sum of the squared market shares of all firms with the same three-digit SIC codes in the year. Higher HHI indices represent greater industry concentration.
HHI Gov index	Herfindahl-Hirschman (HHI) Government index proxies for competition for government contracts in the portfolio company's industry. HHI Gov index is the sum of the squared market shares of all matched VC-backed companies in the government contracting market with the same three-digit SIC codes in the year.
VC IPO experience	An indicator variable that equals one if the VC firm involved in the financing round has an IPO experience during the three years prior to the investment date, and zero otherwise.

Appendix A2

Descriptive statistics

Panel A: Full sample						
	Obs.	Mean	Std. Dev.	Median	Min.	Max.
Exit outcomes						
IPO	69,371	0.087	0.282	0	0	1
Acquisition	69,371	0.238	0.426	0	0	1
Liquidation	69,371	0.015	0.120	0	0	1
Government contracting variables						
Contract indicator	69,371	0.064	0.244	0	0	1
Competitive contract	69,371	0.039	0.194	0	0	1
Non-competitive contract	69,371	0.036	0.186	0	0	1
Defense contract	69,371	0.030	0.171	0	0	1
Non-defense contract	69,371	0.039	0.194	0	0	1
Contract value (M$)	69,371	0.056	0.941	0	0	29.149
Competitive contract value (M$)	69,371	0.041	0.747	0	0	23.959
Non-competitive contract value (M$)	69,371	0.008	0.120	0	0	3.31
Defense contract value (M$)	69,371	0.015	0.222	0	0	5.707
Non-defense contract value (M$)	69,371	0.031	0.650	0	0	20.202
Control variables						
VC IPO experience	69,371	0.466	0.499	0	0	1
VC second or more fund	69,371	0.919	0.272	1	0	1
VC experience with gov. contractor	69,371	0.576	0.494	1	0	1
Total VC funding across all rounds ($M)	69,371	49.167	60.699	29.067	.22	379.583
VC syndicate size across all rounds	69,371	9.694	5.832	9	1	42
Seed or Early stage	69,371	0.442	0.497	0	0	1
VC independent	69,371	0.858	0.349	1	0	1
VC bank affiliate	69,371	0.016	0.125	0	0	1
VC corporate	69,371	0.062	0.241	0	0	1
VC number of IPOs	69,371	1.740	3.317	0	0	19
Number of IPOs in market	69,371	93.979	20.387	94.793	7	172
Median M/B ratio in high-tech industry	69,371	2.135	0.326	2.192	1.408	2.596
Aggregate fund inflows in VC industry	69,371	49,325	14,101	50,889	11,636	64,665
Predicted contract	60,870	0.061	0.136	0	0	1
Predicted contract value	60,870	0.031	0.138	0	0	1.055
Panel B: Propensity score matched sample						
	Obs.	Mean	Std. Dev.	Median	Min.	Max.
Exit outcomes						
IPO	7,316	0.099	0.299	0	0	1
Acquisition	7,316	0.266	0.442	0	0	1
Liquidation	7,316	0.019	0.136	0	0	1
Government contracting variables						
Contract	7,316	0.500	0.500	0.5	0	1
Competitive contract	7,316	0.304	0.460	0	0	1
Non-competitive contract	7,316	0.279	0.448	0	0	1
Defense contract	7,316	0.239	0.427	0	0	1
Non-defense contract	7,316	0.305	0.460	0	0	1
Contract value (M$)	7,316	0.245	1.157	0	0	11.521
Competitive contract value (M$)	7,316	0.185	1.055	0	0	11.521
Non-competitive contract value (M$)	7,316	0.049	0.233	0	0	2.289
Defense contract value (M$)	7,316	0.090	0.478	0	0	4.937
Non-defense contract value (M$)	7,316	0.154	1.009	0	0	11.521
Control variables						
VC IPO experience	7,316	0.481	0.500	0	0	1

VC second or more fund	7,316	0.924	0.265	1	0	1
VC experience with gov. contractor	7,316	0.610	0.488	1	0	1
Total VC funding across all rounds ($M)	7,316	54.214	65.601	34.2	0.5	464.6
VC syndicate size across all rounds	7,316	10.188	5.227	10	1	32
Seed or early stage	7,316	0.311	0.463	0	0	1
VC independent	7,316	0.860	0.347	1	0	1
VC bank affiliate	7,316	0.021	0.143	0	0	1
VC corporate	7,316	0.063	0.243	0	0	1
VC number of IPOs	7,316	1.816	3.439	0	0	20
Number of IPOs in market	7,316	94.713	22.571	94.853	9	172
Median M/B ratio in high-tech industry	6,460	2.118	0.327	2.192	1.408	2.596
Aggregate fund inflows in VC industry	6,460	48,381	13,190	50,889	11,636	64,665
Predicted contract	5,909	0.126	0.229	0.03	0	1
Predicted contract value	7,316	0.047	0.169	0	0	1.166

Appendix A3

Ordered logit regression analysis of the impact of government contracting on VC investment outcomes

Panel A: Full Sample								
VARIABLES	IPO (1)	Acquisition (2)	No Exit (3)	Liquidation (4)	IPO (5)	Acquisition (6)	No Exit (7)	Liquidation (8)
Contract	0.023***	0.037***	-0.056***	-0.004***				
	(6.934)	(6.630)	(-6.849)	(-6.415)				
Ln (Contract Value)					0.002***	0.003***	-0.005***	-0.000***
					(6.604)	(6.205)	(-6.434)	(-6.129)
Observations		69,371				69,371		
Controls		Yes				Yes		
Year FE		Yes				Yes		
Industry		Yes				Yes		
Pseudo R2		0.040				0.040		
Log likelihood		-59,292				-59,298		
Panel B: Propensity score matched sample								
VARIABLES	IPO (1)	Acquisition (2)	No Exit (3)	Liquidation (4)	IPO (5)	Acquisition (6)	No Exit (7)	Liquidation (8)
Contract	0.037***	0.054***	-0.083***	-0.008***				
	(6.829)	(7.729)	(-7.567)	(-5.924)				
Ln (Contract Value)					0.003***	0.004***	-0.006***	-0.001***
					(6.063)	(6.335)	(-6.377)	(-5.237)
Observations		7,316				7,316		
Controls		Yes				Yes		
Year FE		Yes				Yes		
Industry		Yes				Yes		
Pseudo R2		0.041				0.039		
Log likelihood		-6,704				-6,715		

Appendix A4

Logit regression analysis of government contracting and VC investment outcomes for subsample of VC investments between 2004 and 2010

Panel A: Full sample						
	IPO		Acquisition		Liquidation	
	(1)	(2)	(3)	(4)	(5)	(6)
Contract	0.012*		0.044***		-0.010***	
	(1.850)		(4.780)		(-2.707)	
Ln (Contract Value)		0.001**		0.004***		-0.001***
		(2.048)		(4.533)		(-3.404)
Observations	37,132	37,132	37,132	37,132	37,132	37,132
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.248	0.248	0.043	0.043	0.068	0.068
Log likelihood	-8,559	-8,559	-21,428	-21,429	-3,829	-3,826
Panel B: Propensity score matched sample						
	IPO		Acquisition		Liquidation	
	(1)	(2)	(3)	(4)	(5)	(6)
Contract	0.023**		0.054***		-0.017***	
	(2.339)		(3.797)		(-3.357)	
Ln (Contract Value)		0.002*		0.005***		-0.002***
		(1.901)		(4.237)		(-3.882)
Observations	4,790	4,790	4,790	4,790	4,594	4,594
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.216	0.215	0.031	0.031	0.189	0.195
Log likelihood	-1,153	-1,154	-2,899	-2,897	-468	-465

Appendix A5

The role of bargaining power in the government contracting and VC investment outcome relationship using logit analysis in propensity score matched sample

Panel A: Industry concentration (HHI)						
	IPO		Acquisition		Liquidation	
	(1)	(2)	(3)	(4)	(5)	(6)
Contract	0.029***	0.030***	0.063***	0.065***	-0.014***	-0.012**
	(3.435)	(3.520)	(5.634)	(5.930)	(-3.111)	(-2.574)
Contract x HHI Gov. Index	-0.014*		0.029***		0.006	
	(-1.678)		(2.817)		(1.639)	
Contract x HHI Index		-0.018**		0.027**		-0.007
		(-2.290)		(2.446)		(-1.503)
HHI Gov. Index	-0.005		-0.026***		0.007**	
	(-0.717)		(-3.100)		(2.531)	
HHI Index		-0.004		-0.024***		0.008**
		(-0.593)		(-2.782)		(2.206)
Observations	6,957	7,138	6,957	7,138	5,411	5,910
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.228	0.221	0.062	0.063	0.204	0.191
Log likelihood	-1,772	-1,827	-3,812	-3,898	-443	-499
Panel B: Competitive government contracts						
	IPO		Acquisition		Liquidation	
	(1)	(2)	(3)	(4)	(5)	(6)
Competitive contract	0.022**		0.044***		-0.010**	
	(2.512)		(3.586)		(-2.239)	
Non-competitive contract	0.005		0.056***		-0.022***	
	(0.601)		(4.526)		(-3.423)	
Ln (Comp. cont. value)		0.002**		0.003***		-0.001**
		(2.446)		(3.030)		(-2.383)
Ln (Non-comp. cont. value)		0.000		0.005***		-0.002***
		(0.554)		(4.720)		(-3.282)

Observations	7,316	7,316	7,316	7,316	6,358	6,358
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.235	0.235	0.051	0.051	0.212	0.212
Log likelihood	-1,810	-1,811	-4,025	-4,026	-524	-524

Panel C: Defense government contracts

	IPO		Acquisition		Liquidation	
	(1)	(2)	(3)	(4)	(5)	(6)
Defense contract	-0.021**		0.076***		-0.021***	
	(-2.204)		(6.126)		(-3.566)	
Non-defense contract	0.047***		0.038***		-0.013**	
	(5.770)		(3.000)		(-2.346)	
Ln (Defense cont. value)		-0.001*		0.006***		-0.002***
		(-1.655)		(5.701)		(-3.505)
Ln (Non-defense cont. value)		0.004***		0.003***		-0.001**
		(4.874)		(2.824)		(-2.274)
Observations	7,316	7,316	7,316	7,316	6,358	6,358
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.243	0.240	0.052	0.051	0.213	0.212
Log likelihood	-1,791	-1,798	-4,021	-4,025	-523	-524

Appendix A6

The role of bargaining power in the government contracting and VC investment outcome relationship using hazard analysis

Panel A: Industry concentration (HHI)						
	IPO		Acquisition		Liquidation	
	(1)	(2)	(3)	(4)	(5)	(6)
Contract	1.224***	1.317***	1.175***	1.204***	0.509***	0.656**
	0.202***	0.275***	0.161***	0.185***	-0.675***	-0.421**
	(2.923)	(3.875)	(4.938)	(5.727)	(-3.361)	(-2.252)
Contract x HHI Gov. Index	0.787***		1.114***		1.404**	
	-0.240***		0.108***		0.340**	
	(-3.632)		(3.718)		(2.147)	
Contract x HHI Index		0.729***		1.221***		0.968
		-0.316***		0.200***		-0.032
		(-4.545)		(5.753)		(-0.162)
HHI Gov. Index	0.954*		0.929***		1.160***	
	-0.047*		-0.074***		0.148***	
	(-1.948)		(-6.682)		(2.772)	
HHI Index		1.053*		0.870***		1.018
		0.052*		-0.139***		0.018
		(1.694)		(-10.938)		(0.319)
Observations	62,407	67,083	62,407	67,083	62,407	67,083
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	-55,781	-59,649	-164,443	-173,674	-8,968	-9,503
Panel B: Competitive government contracts						
	IPO		Acquisition		Liquidation	
	(1)	(2)	(3)	(4)	(5)	(6)
Competitive contract	1.471***		1.103**		0.853	
	0.386***		0.098**		-0.159	
	(5.067)		(2.233)		(-0.758)	
Non-competitive contract	0.796**		1.266***		0.314***	
	-0.228**		0.236***		-1.160***	
	(-2.198)		(5.215)		(-3.741)	
Ln (Comp. cont. value)		1.030***		1.006		0.982

		0.030***		0.006		-0.018
		(5.021)		(1.629)		(-1.002)
Ln (Non-comp. cont. value)		0.982**		1.023***		0.899***
		-0.018**		0.023***		-0.106***
		(-1.994)		(5.278)		(-3.503)
Observations	69,371	69,371	69,371	69,371	69,371	69,371
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	-60,234	-60,234	-177,811	-177,812	-10,409	-10,410

Panel C: Defense government contracts

	IPO		Acquisition		Liquidation	
	(1)	(2)	(3)	(4)	(5)	(6)
Defense contract	0.790**		1.169***		0.585**	
	-0.236**		0.156***		-0.536**	
	(-2.239)		(3.313)		(-2.328)	
Non-defense contract	1.381***		1.211***		0.508**	
	0.323***		0.191***		-0.678**	
	(3.921)		(4.325)		(-2.431)	
Ln (Defense cont. value)		0.989		1.012***		0.954**
		-0.011		0.012***		-0.047**
		(-1.172)		(2.769)		(-2.297)
Ln (Non-defense cont. value)		1.021***		1.018***		0.939**
		0.021***		0.018***		-0.063**
		(3.046)		(4.577)		(-2.420)
Observations	69,371	69,371	69,371	69,371	69,371	69,371
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	-60,236	-60,243	-177,815	-177,816	-10,413	-10,413

Appendix A7

The role of bargaining power in the government contracting and VC investment outcome relationship using hazard analysis in propensity score matched sample

Panel A: Industry concentration (HHI)

	IPO		Acquisition		Liquidation	
	(1)	(2)	(3)	(4)	(5)	(6)
Contract	1.471***	1.509***	1.297***	1.311***	0.581**	0.645*
	0.386***	0.411***	0.260***	0.271***	-0.542**	-0.439*
	(3.936)	(3.999)	(5.019)	(5.341)	(-2.211)	(-1.796)
Contract x HHI Gov. Index	0.847		1.125**		1.416*	
	-0.165		0.118**		0.348*	
	(-1.576)		(2.566)		(1.877)	
Contract x HHI Index		0.832*		1.147***		0.694
		-0.184*		0.137***		-0.365
		(-1.803)		(2.667)		(-1.506)
HHI Gov. Index	0.952		0.913**		1.368**	
	-0.050		-0.091**		0.314**	
	(-0.597)		(-2.306)		(2.020)	
HHI Index		1.007		0.901**		1.349
		0.007		-0.104**		0.299
		(0.080)		(-2.417)		(1.593)
Observations	6,957	7,138	6,957	7,138	6,957	7,138
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	-5,618	-5,751	-15,945	-16,301	-842	-950

Panel B: Competitive government contracts

	IPO		Acquisition		Liquidation	
	(1)	(2)	(3)	(4)	(5)	(6)
Competitive contract	1.286**		1.230***		0.574**	
	0.251**		0.207***		-0.555**	
	(2.410)		(3.695)		(-2.258)	
Non-competitive contract	1.079		1.280***		0.343***	
	0.076		0.247***		-1.070***	
	(0.696)		(4.421)		(-3.174)	
Ln (Comp. cont. value)		1.019**		1.016***		0.951**
		0.019**		0.016***		-0.050**
		(2.169)		(3.289)		(-2.287)
Ln (Non-comp. cont. value)		1.008		1.024***		0.906***

		0.008		0.024***		-0.099***
		(0.781)		(4.521)		(-2.933)
Observations	7,316	7,316	7,316	7,316	7,316	7,316
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	-5,776	-5,777	-16,558	-16,559	-1,011	-1,012

Panel C: Defense government contracts

	IPO		Acquisition		Liquidation	
	(1)	(2)	(3)	(4)	(5)	(6)
Defense contract	0.766**		1.396***		0.334***	
	-0.267**		0.333***		-1.095***	
	(-2.248)		(5.974)		(-3.671)	
Non-defense contract	1.710***		1.174***		0.525**	
	0.537***		0.160***		-0.645**	
	(5.417)		(2.775)		(-2.175)	
Ln (Defense cont. value)		0.982*		1.029***		0.907***
		-0.018*		0.029***		-0.097***
		(-1.753)		(5.635)		(-3.529)
Ln (Non-defense cont. value)		1.039***		1.014***		0.946**
		0.038***		0.014***		-0.056**
		(4.254)		(2.741)		(-2.000)
Observations	7,316	7,316	7,316	7,316	7,316	7,316
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	-5,759	-5,766	-16,556	-16,558	-1,011	-1,012

Appendix A8

The role of VC firm reputation in the government contracting and VC investment outcome relationship using logit analysis in propensity score matched sample

Panel A: Industry concentration (HHI)						
	IPO		Acquisition		Liquidation	
	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=1
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Contract	0.040***	0.016	0.093***	0.038**	-0.015**	-0.019***
	(3.203)	(1.644)	(6.389)	(2.478)	(-2.327)	(-3.265)
Observations	3,522	3,794	3,522	3,794	2,646	3,197
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.207	0.239	0.076	0.059	0.250	0.170
Log likelihood	-1,076	-741	-1,855	-2,101	-240	-277
Panel B: Industry concentration (HHI)						
	IPO		Acquisition		Liquidation	
	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=1
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Contract	0.041***	0.014	0.091***	0.036**	-0.021***	-0.011**
	(3.283)	(1.433)	(5.954)	(2.230)	(-2.739)	(-2.272)
Contract x HHI Gov. Index	-0.016	-0.011	0.019	0.038***	0.012**	0.001
	(-1.136)	(-1.228)	(1.317)	(2.673)	(2.071)	(0.217)
HHI Gov. Index	-0.003	-0.007	-0.025**	-0.027**	0.010**	0.003
	(-0.234)	(-0.984)	(-2.264)	(-2.312)	(2.511)	(0.753)
Observations	3,370	3,587	3,370	3,587	2,555	2,856
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.215	0.246	0.075	0.062	0.303	0.192
Log likelihood	-1,035	-713	-1,791	-1,995	-211	-203

Panel C: Competitive government contracts

	IPO		Acquisition		Liquidation	
	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=1
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Competitive contract	0.028**	0.015	0.058***	0.031*	-0.006	-0.014**
	(2.106)	(1.545)	(3.374)	(1.782)	(-0.992)	(-2.191)
Non-competitive contract	0.011	-0.001	0.069***	0.040**	-0.029**	-0.020**
	(0.793)	(-0.061)	(3.701)	(2.400)	(-2.544)	(-2.360)
Observations	3,522	3,794	3,522	3,794	2,257	3,281
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.215	0.262	0.069	0.050	0.289	0.190
Log likelihood	-1,066	-719	-1,868	-2,121	-219	-271

Panel D: Defense government contracts

	IPO		Acquisition		Liquidation	
	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=1
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Defense contract	-0.036**	-0.008	0.097***	0.048***	-0.022**	-0.025***
	(-2.330)	(-0.816)	(5.388)	(2.714)	(-2.005)	(-2.807)
Non-defense contract	0.066***	0.029***	0.056***	0.018	-0.017**	-0.012
	(4.989)	(3.081)	(3.234)	(1.027)	(-2.285)	(-1.641)
Observations	3,522	3,794	3,522	3,794	2,257	3,281
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R2	0.226	0.267	0.072	0.049	0.288	0.192
Log likelihood	-1,051	-714	-1,862	-2,122	-220	-271

Appendix A9

The role of VC firm reputation in the government contracting and VC investment outcome relationship using hazard analysis

Panel A: Industry concentration (HHI)						
	IPO		Acquisition		Liquidation	
	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=1
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Contract	1.216**	1.151	1.244***	1.179***	0.753	0.562**
	0.196**	0.141	0.218***	0.165***	-0.284	-0.576**
	(2.260)	(1.303)	(4.895)	(3.624)	(-1.318)	(-2.525)
Observations	32,338	37,033	32,338	37,033	32,338	37,033
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood						
Panel B: Industry concentration (HHI)						
	IPO		Acquisition		Liquidation	
	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=1
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Contract	1.240**	1.184	1.206***	1.143***	0.490**	0.529**
	0.215**	0.169	0.188***	0.134***	-0.713**	-0.637**
	(2.528)	(1.576)	(4.112)	(2.900)	(-2.342)	(-2.454)
Contract x HHI Gov. Index	0.770***	0.842*	1.060	1.154***	1.887***	1.034
	0.034	-0.171*	0.058	0.143***	0.635***	0.034
	(-3.010)	(-1.787)	(1.390)	(3.592)	(3.150)	(0.134)
HHI Gov. Index	1.002	0.878***	0.929***	0.928***	1.221**	1.105
	0.002	-0.130***	-0.073***	-0.075***	0.200**	0.100
	(0.068)	(-3.581)	(-4.709)	(-4.933)	(2.572)	(1.406)
Observations	29,436	32,971	29,436	32,971	29,436	32,971
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	-35,016	-17,123	-70,015	-83,670	-4,401	-3,911

Panel C: Competitive government contracts

	IPO		Acquisition		Liquidation	
	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=1
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Competitive contract	1.425***	1.530***	1.106	1.106*	1.075	0.754
	0.354***	0.425***	0.100	0.101*	0.073	-0.282
	(3.750)	(3.508)	(1.598)	(1.690)	(0.291)	(-0.948)
Non-competitive contract	0.820	0.741**	1.266***	1.257***	0.287***	0.340***
	-0.198	-0.300**	0.236***	0.229***	-1.249***	-1.078***
	(-1.534)	(-1.974)	(3.312)	(4.112)	(-2.606)	(-2.725)
Observations	32,338	37,033	32,338	37,033	32,338	37,033
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	-37,545	-18,788	-75,128	-91,192	-4,886	-4,767

Panel D: Defense government contracts

	IPO		Acquisition		Liquidation	
	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=1
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Defense contract	0.749**	0.835	1.229***	1.114	0.609	0.584*
	-0.289**	-0.180	0.206***	0.108	-0.497	-0.538*
	(-2.108)	(-1.269)	(3.159)	(1.631)	(-1.556)	(-1.749)
Non-defense contract	1.390***	1.369***	1.207***	1.210***	0.571	0.491*
	0.329***	0.314***	0.188***	0.190***	-0.559	-0.712*
	(3.089)	(2.637)	(2.861)	(3.300)	(-1.469)	(-1.915)
Observations	32,338	37,033	32,338	37,033	32,338	37,033
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	-37,544	-18,791	-75,126	-91,196	-4,889	-4,769

Appendix A10

The role of VC firm reputation in the government contracting and VC investment outcome relationship using hazard analysis in propensity score matched sample

Panel A: Industry concentration (HHI)						
	IPO		Acquisition		Liquidation	
	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=1
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Contract	1.572***	1.378**	1.502***	1.153**	0.625*	0.422***
	0.453***	0.321**	0.407***	0.142**	-0.471*	-0.863***
	(3.594)	(2.148)	(5.552)	(2.110)	(-1.727)	(-3.070)
Observations	3,522	3,794	3,522	3,794	3,522	3,794
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	-3,337	-1,925	-6,987	-8,199	-421	-468
Panel B: Industry concentration (HHI)						
	IPO		Acquisition		Liquidation	
	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=1
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Contract	1.580***	1.308*	1.475***	1.151**	0.569*	0.537*
	0.457***	0.269*	0.389***	0.141**	-0.565*	-0.622*
	(3.748)	(1.794)	(5.096)	(1.989)	(-1.689)	(-1.775)
Contract x HHI Gov. Index	0.837	0.893	1.071	1.188***	1.686*	1.005
	-0.177	-0.113	0.068	0.172***	0.522*	0.005
	(-1.254)	(-0.799)	(0.950)	(2.796)	(1.937)	(0.017)
HHI Gov. Index	0.991	0.873	0.920	0.899**	1.613*	1.137
	-0.009	-0.135	-0.084	-0.107**	0.478*	0.128
	(-0.077)	(-1.247)	(-1.451)	(-2.105)	(1.712)	(0.598)
Observations	3,370	3,587	3,370	3,587	3,370	3,587
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	-3,248	-1,874	-6,771	-7,835	-385	-344

Panel C: Competitive government contracts

	IPO		Acquisition		Liquidation	
	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=1
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Competitive contract	1.256*	1.357*	1.289***	1.184**	0.747	0.462**
	0.228*	0.305*	0.254***	0.169**	-0.292	-0.772**
	(1.847)	(1.902)	(3.131)	(2.220)	(-0.984)	(-2.207)
Non-competitive contract	1.127	0.958	1.382***	1.172**	0.335**	0.392**
	0.120	-0.042	0.323***	0.158**	-1.094**	-0.935**
	(0.931)	(-0.247)	(3.603)	(2.260)	(-2.183)	(-2.141)
Observations	3,522	3,794	3,522	3,794	3,522	3,794
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	-3,344	-1,925	-6,985	-8,194	-417	-466

Panel D: Defense government contracts

	IPO		Acquisition		Liquidation	
	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=0	VC IPO Exp=1	VC IPO Exp=1
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Defense contract	0.690**	0.897	1.513***	1.268***	0.329**	0.280***
	-0.371**	-0.109	0.414***	0.237***	-1.113**	-1.272***
	(-2.491)	(-0.642)	(4.797)	(3.089)	(-2.199)	(-2.949)
Non-defense contract	1.789***	1.603***	1.295***	1.063	0.614	0.573
	0.582***	0.472***	0.259***	0.061	-0.489	-0.557
	(4.539)	(3.238)	(3.045)	(0.794)	(-1.541)	(-1.436)
Observations	3,522	3,794	3,522	3,794	3,522	3,794
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	-3,330	-1,921	-6,981	-8,195	-416	-465

Appendix A11

Heckman two-stage selection model

Panel A: Full Sample

	First-stage	Second-stage: Logit model			Second-stage: Hazard model		
	Contract	IPO	Acquisition	Liquidation	IPO	Acquisition	Liquidation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Contract		0.013**	0.043***	-0.007***	1.182**	1.209***	0.632***
		(2.541)	(6.233)	(-3.113)	(2.382)	(5.913)	(-2.790)
Ln (Total VC funding)	0.044***	0.056***	-0.015***	-0.000	2.157***	0.908***	0.942
	(6.898)	(11.247)	(-3.714)	(-0.146)	(11.597)	(-5.020)	(-0.647)
Ln (VC syndicate size)	0.177***	0.119***	0.003	0.012**	6.412***	0.988	2.234**
	(14.436)	(6.412)	(0.165)	(2.511)	(7.273)	(-0.176)	(2.326)
Ln (Number of IPOs in Market)		0.095***	-0.145***	-0.015***	3.935***	0.455***	0.361***
		(8.445)	(-16.539)	(-11.366)	(8.699)	(-20.497)	(-13.625)
Median M/B ratio in high-tech industry		-0.006	-0.691***	-0.096***	1.452***	1.022	0.827*
		(-0.322)	(-24.045)	(-7.513)	(7.158)	(0.719)	(-1.723)
Ln (Aggregate fund inflows in VC industry)		-0.004	-0.617***	-0.056***	1.098***	0.904***	0.867*
		(-0.281)	(-35.984)	(-9.898)	(3.364)	(-6.174)	(-1.780)
Ln (Number of IPOs by VC)		0.008***	0.013***	0.002**	1.127***	1.053***	1.172**
		(3.102)	(3.222)	(2.134)	(3.345)	(2.719)	(2.452)
VC independent		-0.032***	0.033***	0.005**	0.625***	1.201***	1.446**
		(-3.288)	(2.649)	(2.093)	(-3.268)	(2.722)	(2.111)
VC corporate		-0.026**	0.082***	0.007**	0.717*	1.507***	1.627**
		(-2.138)	(5.843)	(2.434)	(-1.876)	(5.595)	(2.256)
VC bank affiliate		-0.035**	0.046**	0.004	0.652**	1.357***	1.424
		(-2.249)	(2.270)	(1.109)	(-2.111)	(3.007)	(1.240)
Seed or Early stage	-0.249***	-0.064**	0.013	-0.007	0.286***	1.061	0.613
	(-15.142)	(-2.453)	(0.585)	(-1.136)	(-3.561)	(0.575)	(-1.030)
Inverse Mills ratio		0.289**	-0.005	0.057*	89.125***	1.047	36.163
		(2.374)	(-0.053)	(1.837)	(2.707)	(0.098)	(1.612)
Company in State Capital	0.026						
	(0.960)						
Company in Washington DC	0.223**						
	(2.134)						
VC in Washington DC	0.192**						
	(2.433)						
Constant	-2.497***						

	(-25.482)						
Model	Probit	Logit	Logit	Logit	Hazard	Hazard	Hazard
Observations	69,371	69,371	69,371	69,371	69,371	69,371	69,371
Year FE	No	YES	YES	YES	YES	YES	YES
Industry	No	YES	YES	YES	YES	YES	YES
Pseudo R2	0.024	0.282	0.053	0.095			
Log likelihood	-16,078	-14,719	-41,431	-4,805	-60,232	-242,311	-10,418

Panel B: Propensity-score match

	First-stage	Second-stage: Logit model			Second-stage: Hazard model		
	Contract	IPO	Acquisition	Liquidation	IPO	Acquisition	Liquidation
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Contract		0.025***	0.068***	-0.010**	1.433***	1.351***	0.728
		(2.669)	(5.859)	(-2.345)	(3.249)	(5.516)	(-1.402)
Ln (Total VC funding)	0.045***	0.052***	-0.020***	-0.004*	1.723***	0.887***	0.832*
	(3.389)	(10.062)	(-3.217)	(-1.818)	(9.629)	(-4.147)	(-1.651)
Ln (VC syndicate size)	-0.025	0.078***	-0.018	0.006	2.926***	0.885**	1.177
	(-0.984)	(8.345)	(-1.629)	(1.566)	(8.949)	(-2.414)	(0.793)
Ln (Number of IPOs in Market)		0.187***	-0.115***	-0.039***	9.222***	0.551***	0.173***
		(5.783)	(-5.395)	(-7.515)	(6.235)	(-5.792)	(-10.656)
Median M/B ratio in high-tech industry		0.053	-0.827***	-0.075	1.322*	1.233**	0.700
		(0.940)	(-9.097)	(-1.324)	(1.942)	(2.337)	(-0.978)
Ln (Aggregate fund inflows in VC industry)		0.006	-0.663***	-0.075***	1.254*	0.865**	0.831
		(0.165)	(-13.200)	(-2.909)	(1.878)	(-2.197)	(-0.747)
Ln (Number of IPOs by VC)		0.003	0.005	0.005*	1.037	1.005	1.266*
		(0.565)	(0.661)	(1.705)	(0.567)	(0.150)	(1.646)
VC independent		-0.036*	-0.005	-0.003	0.693	0.989	0.846
		(-1.815)	(-0.195)	(-0.371)	(-1.580)	(-0.083)	(-0.433)
VC corporate		-0.027	0.066*	-0.002	0.843	1.355*	0.639
		(-0.995)	(1.924)	(-0.209)	(-0.525)	(1.914)	(-0.740)
VC bank affiliate		-0.009	0.065	-0.003	1.174	1.536*	0.813
		(-0.293)	(1.246)	(-0.221)	(0.459)	(1.667)	(-0.266)
Seed or Early stage	0.013	0.001	0.007	0.010**	0.816	0.984	1.634*
	(0.410)	(0.073)	(0.484)	(2.125)	(-1.552)	(-0.257)	(1.784)
Inverse Mills ratio		-0.044**	0.023	0.058***	0.575***	1.243*	19.698***
		(-2.354)	(0.939)	(3.287)	(-2.646)	(1.912)	(4.060)
Company in State Capital	0.064						
	(1.258)						
Company in Washington DC	0.198						

	(1.033)						
VC in Washington DC	0.451***						
	(2.890)						
Constant	-0.669***						
	(-3.286)						
Model	Probit	Logit	Logit	Logit	Hazard	Hazard	Hazard
Observations	7,316	6,457	6,457	5,322	6,457	6,457	6,457
Year FE	No	YES	YES	YES	YES	YES	YES
Industry	No	YES	YES	YES	YES	YES	YES
Pseudo R2	0.003	0.229	0.064	0.229			
Log likelihood	-5,063	-1,643	-3,505	-4,51	-5,153	-14,395	-851

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