Tax Incentives and Venture Capital Risk-Taking

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Abstract

Can tax incentives prompt investors to fund riskier ventures? We answer this question under a model in which risk-neutral venture capitalists (VCs) combine outside funding with incentive-based compensation and empirically study a policy eliminating capital gains taxes on startup investments. Using bunching methods and a triple-differences design exploiting industry eligibility, investment year, and holding requirements, we analyze 158 thousand investor–firm pairings over two decades. We document strategic investment timing, with each percentage point of tax benefit increasing investor concentration at holding thresholds by 3-5%. More importantly, where and when tax benefits apply, VCs' project selection shift toward more experimental bets by targeting earlier-stage, innovative ventures: their deals increase 50% in product beta stage firms, double in stealth mode firms, while demanding 50% more AI-skilled talent in invested businesses. In turn, their portfolio companies show 71% higher failure rates and 169% greater incidence of five-year funding gaps. The increased risk-taking generates salient outcomes: tax-advantaged investments are 27% more likely to reach unicorn status ($1 billion valuation), with VCs twice as likely to exit via private equity deals while less likely to pursue strategic sales or IPOs. Using data on board-voting rights, executive turnover, and exit multiples, we show that the increased risk-taking stems from changes in investment selection rather than from changes in post-investment governance activities. Our study is the first to show that tax policy can shift capital toward riskier, more experimental ventures, with outcomes shaped by investor organizational structure and incentives.

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1 Introduction

The allocation of capital to entrepreneurial ventures is central to economic growth and innovation. Young firms account for 20% of gross job creation in the U.S. economy and drive 26% of productivity growth through creative destruction (Haltiwanger et al. (2013); Akcigit and Kerr (2018)). These firms face financing challenges because of inherent market frictions—information asymmetries, moral hazard, and incomplete contracting impair risk-sharing between entrepreneurs and investors. These frictions lead to underinvestment in high-potential startups, particularly those pursuing new technologies or business models in which uncertainty is high (Holmstrom and Tirole (1997)).

Capital market frictions also create tensions in the design of tax policies meant to promote entrepreneurship. Specialized intermediaries may help overcome those frictions by combining risk capital with intensive screening and monitoring. If tax incentives encourage intermediaries to fund more high-potential ventures—particularly at early stages where frictions are most severe—tax policies may ameliorate underinvestment. However, providing benefits to investors with high-risk tolerance and sophisticated investment capabilities may simply increase returns to their existing strategies without improving allocation to the marginal venture. The value of tax benefits in entrepreneurial finance depends on whether they help overcome market failures or merely create opportunities for tax arbitrage.

This paper examines whether tax policy improves capital allocation in entrepreneurial markets. It does so looking at how different types of investors respond to tax benefits. Our analysis addresses several key questions. First, how do responses to tax benefits vary across investors with different organizational structures and incentive schemes? In particular, are there differences between VCs who combine outside capital with incentive-based compensation and angel investors investing personal wealth? Second, can tax incentives affect not only the level of investment but also investors' willingness to back riskier ventures? Third, through what mechanisms do these policies operate? Do they only affect project selection? Or also affect how investors engage with—and support—their portfolio companies?

We tackle these questions using a conceptual framework in which VCs combine outside capital with incentive-based compensation through carried interest. This organizational structure creates option-like payoffs that increase in value with venture return volatility. As such, VCs are particularly more responsive to tax benefits than other investors because they can share risk while maintaining convex

return profiles. Our model generates several testable predictions about project selection and value creation. For example, VCs will significantly increase risk-taking in project choice when their investments qualify for tax benefits. On the other hand, there will be limited changes in their value-creation activities, such as monitoring, because both the costs and benefits of these activities scale proportionally with taxes.

We empirically test our predictions by exploiting the 2009–2010 enhancement of the Qualified Small Business Stock (QSBS) program, which created significant discontinuities in tax benefits for certain startup investments. The QSBS is a major, ongoing subsidy program that provides capital gain tax benefits at both federal and state levels, costing over $2 billion in foregone taxes annualy. As we explain in detail below, the program provides preferential tax treatment for investments in qualifying small businesses, subject to a mandatory five-year holding period requirement. Qualification is restricted to newly issued stock in C-corporations, with gross assets below $50 million, and operating in sectors like technology and manufacturing but excluding service-based industries. Policy requirements intentionally concentrate benefits in specific capital-intensive sectors where financing frictions are often most severe.

The American Recovery and Reinvestment Act (ARRA) of 2009 marked the first major change in the QSBS program, introducing a wedge in after-tax returns between qualified and non-qualified investments. Before 2009, QSBS-qualifying investments held for five years had a constant 14% federal capital gain tax rate—originally designed to be half the long-term federal capital gain tax rate when introduced in 1993. However, as regular capital gains rates declined over time—falling to 15% by 2003—the net tax benefit of QSBS qualification dropped to just one percentage point. The 2009 reform altered this calculation by switching to a percentage-based exclusion: investors started paying taxes on only 25% of their gains at the prevailing capital gains tax rate. With the federal long-term capital gains rate at 15.3% in 2009, qualifying investments faced an effective tax rate of just 3.8% (15.3% taxes on 25% of gains), creating a 11.5% tax benefit. The Small Business Jobs Act (SBJA) of 2010 further expanded these benefits by fully eliminating capital gains taxes on qualifying investments.

Our analysis leverages data primarily from PitchBook, which tracks VC, angel, and corporate investments in startups. Based on QSBS's eligibility criteria, we construct a testing sample by following investor entries between 2004 and 2022, focusing on investments in C-corporations with initial funding rounds below $50 million. Using detailed investment-level data, we identify and track 39 thousand unique investors and 35 thousand unique portfolio companies, observing each investor–firm paring

relationship from initial investment through exit. Notably, QSBS benefits apply to individuals and pass-through entities like VC and angel investors, but not to corporations (which pay corporate income taxes instead of capital gain taxes). As we explain below, this distinction, along with the fact that many corporations engage in corporate VC, creates an additional comparison group for our analyses. In all, our data allows for tests that compare and contrast different groups of investors across several outcomes, including deal characteristics, risk-taking behavior, investment failures, valuation patterns, exit channels, monitoring activities, exit multiples, and human capital deployment in portfolio companies.

We begin by estimating the elasticity of investor responses to tax benefits using bunching methods. In doing so, we analyze the extent to which investors cluster at the required five-year holding period. Baseline estimates show significant bunching at the five-year mark for QSBS-eligible investments after the 2009 reform, an effect that remains robust under both bootstrapped confidence intervals and partial identification bounds. To separate tax effects from any other factors that might naturally lead investors to prefer five-year holding periods, we implement a difference-in-bunching approach (cf. Brown (2013)) that compares eligible versus ineligible sectors and pre-reform versus post-reform periods. The results reveal that QSBS benefits generate a 2.6% to 4.9% increase in the mass of investors exiting *exactly* at the five-year holding threshold for each percentage point of tax benefit.

Next, we examine how tax benefits affect investment entry decisions using investor–firm level data in a difference-in-differences framework. The approach exploits variation in sector eligibility and investment timing around the 2009 reform, while controlling for investor, industry, and state–year fixed effects. We show that VCs select businesses with higher fundamental risk *when* and *where* tax benefits are available: when investments qualify for tax benefits, VC investments in eligible sectors become 50% more likely to occur during the product beta stage (testing phase before full commercial release) and twice as likely during stealth mode (secret, high-uncertainty startup operations, designed for late-stage exits). Their new investments also show a 50% higher concentration of AI-skilled talent—these drive greater innovation and carry higher business risk (Babina et al. (2024); Hellmann and Puri (2000)). In contrast, angel and corporate investors show no significant changes in their investment entry decisions.

Next, we examine whether this risk-taking through investment selection translates into different performance outcomes, exit routes, and changes in how investors engage with portfolio companies after investment. In these analyses, we exploit three key features of the QSBS program in a triple-differences

research design: (1) explicit industry eligibility criteria that exclude particular sectors, creating well-defined treatment groups; (2) the 2009 policy change that significantly increased tax benefits; and (3) the mandatory five-year holding period requirement for investors to claim tax benefits. In other words, our analysis compares changes in investment behavior across eligible *versus* ineligible sectors, pre-*versus* post-reform investments, and investments held for more *versus* less than five years.

Our tests exploit several additional data features that help further isolate the causal effect of tax incentives. Investor–firm fixed effects address assortative matching confounders, such as higher-quality VCs systematically selecting more promising startups. Year fixed effects control for aggregate changes in entrepreneurial finance markets. Holding-period fixed effects absorb any mechanical relationship between investment duration and outcomes. Year and holding-period fixed effects also control for vintage-specific shocks affecting investments initiated in a given year. Standard-error clustering at the investor level accounts for correlation in the residuals across different investments made by the same investor.[1]

These tests yield several new results. First, they show that tax benefits significantly affect *both* the level and composition of VC investment. When investments satisfy all the QSBS requirements—being in eligible sectors and held for at least five years following the 2009 tax reform—VCs increase deal sizes by 118% ($57 million relative to a mean of $48 million). Notably, this response to tax qualification is *unique* to VCs: neither angel investors nor corporate investors (a "placebo group") change their investment patterns, consistent with capital tax benefits working most effectively through intermediaries who combine outside capital with incentive-based compensation. Moreover, tax-advantaged VC investments attract 21% more co-investors per round, suggesting tax benefits trigger broader syndication (greater need for risk sharing) as VCs pursue tax-advantaged opportunities.

The shift in VCs' investment selection also manifests itself in investment-risk outcomes. When their investments qualify for tax benefits, VC investments in eligible sectors experience a 71% higher rate of complete business failures relative to the baseline failure rate (failures occur in 2% of investor–firm–year observations, representing 22% of all exit events). The effects extend beyond outright failures: tax-advantaged VC investments are 169% more likely to experience extended periods (five or more years) without raising new funding, a common predictor of distress in VC markets where successful firms typically raise capital every 12 to 18 months (Gompers (1995)). These patterns are unique to

[1] We show in later robustness checks that our results hold under several alternative error-clustering schemes.

VC-backed investments; neither angel nor corporate investors exhibit increases in failure likelihood.

Additionally, tax-qualified investments show superior valuation performance exclusively among VC-backed companies. When VC investments qualify for tax benefits, they experience a 7% increase in valuations on average, with the effect strengthening to 11% for portfolio companies that achieve an exit. Notably, dynamic analyses show that valuations of VC investments begin diverging upward (overperforming) exactly when tax benefits become available, with no differential trends prior to the five-year threshold. This valuation premium, combined with earlier findings on increased failure rates, shows that tax benefits encourage VCs to pursue more high-risk–high-reward investment strategies. The effect on extreme valuations is striking: VC investments become 27% more likely to achieve unicorn status (valuations exceeding $1 billion).

Tax benefits also reshape VCs' exit strategies. When investments qualify for tax benefits, VCs become 129% more likely to exit through private equity (PE) buyouts, while simultaneously reducing strategic sales and IPO exits. This shift in exit channels aligns with the program's five-year holding requirement—PE buyouts typically occur later in a company's lifecycle when tax qualification has been satisfied, while IPOs and strategic acquisitions generally present earlier liquidity opportunities that would sacrifice tax gains. Angels and corporate investors do not show similar changes in exit strategies.

Notably, most—but not all—states comply with the federal QSBS tax benefits, providing additional capital gain tax exemptions at the state level.[2] We take advantage of this heterogeneity in the data and start with a case study of California-based investors to further characterize our results. California initially provided a 50% state-level QSBS exemption before eliminating it in 2013 after a court ruling found the benefit unconstitutional. Consistent with our priors, California-based VCs show stronger risk-taking when state benefits were available: when state-level benefits were available (2009-2012), tax-advantaged investments were 160% more likely to fail compared to pre-reform investments. After California eliminated these benefits in 2013, similar investments showed a more modest 82% increase in failure rates relative to the pre-period. Valuation effects follow the same patterns. Similar results emerge when comparing all high-tax *versus* all low-tax states that comply with federal QSBS benefits.

To determine whether the observed risk-taking and value creation outcomes stem from intensified monitoring or monetary tax benefits, we analyze formal board voting rights—which offer direct

[2]Non-conforming states include NJ, PA, MS, AL, and CA (after 2012), mainly due to fiscal constraints or legal concerns.

oversight of major corporate decisions—and executive changes in portfolio companies. We find no evidence that VCs change how they monitor portfolio companies: tax-advantaged investments show no significant differences in the likelihood of investor board voting rights or CEO turnover. Looking at broader changes in portfolio companies' C-suite team, we observe a significant 12.5% *decrease* in C-suite turnover. These results show that the observed effects are driven by risk-taking in project selection.

We go a step further and use exit multiples to assess whether VCs enhance their post-investment value creation in portfolio companies when tax benefits apply. If they do, one would expect to observe higher exit multiples—which we measure as the ratio of exit value to total capital raised up to the investment exit. We find no significant changes in average exit multiple among tax-advantaged VC investments—with similar null effects for the likelihood of achieving various multiple thresholds (5×, 10×, or 20× returns). Together with analyses on changes in post-investment monitoring, these results reinforce the view that tax benefits shape VCs' risk-taking behavior in project selection.

For additional validation of our tax-triggered risk-taking hypothesis, we analyze how VC portfolio companies structure their workforce. Using data from Revelio Labs, we study features where organizational economics theory predicts risk-taking manifests. We find evidence consistent with increased risk-taking. For example, when tax benefits apply, portfolio companies that achieve an exit show 14% higher managerial centralization (the ratio of executives to all employees), which tends to amplify outcome variance as managerial decisions have a more concentrated impact (Sah and Stiglitz (1991)).

Our results contribute to research on the impact of tax policy on entrepreneurial activity. Early theoretical and empirical work established various channels connecting tax rates to entry decisions and risk behavior (Cullen and Gordon (2007); Gentry and Hubbard (2000); Bruce (2002)). Notably, tax policy effects extend beyond firm entry to affect a range of corporate decisions, including hiring quality (Campello et al. (2025)) and capital structure (Lin and Flannery (2013)). Relatedly, studies of targeted incentives show that direct tax credits (Freedman et al. (2022)) and R&D incentives (Hall and Van Reenen (2000); Zwick and Mahon (2017)) generate positive effects when they directly support firm operations.

More recent studies explicitly examine policies targeting entrepreneurial investment. Edwards and Todtenhaupt (2020) study the impact of the 2010 SBJA on pre-IPO firms and report larger funding rounds for firms that had already raised funds; those authors look only at VC investments and do not consider whether tax changes affected investor selection, risk-taking behavior, nor valuation of exit

outcomes. Chen and Farre-Mensa (2023) document that the QSBS increased aggregate firm births in eligible sectors; their work does not speak to investor behavior or investment outcomes since they only track entry decisions. Dimitrova and Eswar (2023) use staggered state-level tax changes to show that higher capital gains taxes reduce VC-backed firms' innovation activities (patent counts and citations). Denes et al. (2023) document that angel investor tax credits increase investment activity but fail to generate real economic effects. Among several other dimensions, we advance this literature by showing that tax policy can affect not just the level of entrepreneurial investment, but fundamentally alter how certain types of investors—chiefly VCs—deploy capital. Tax benefits can encourage greater risk-taking, leading investors to fund more experimental ventures that would otherwise go unfunded.

We also expand the literature on financial intermediation by showing how organizational structure shapes responses to tax benefits. While prior studies have examined how VC firm structure affects investment performance (Kaplan and Schoar (2005); Hochberg et al. (2007); Ewens and Rhodes-Kropf (2015)), the relationship between intermediary structure and tax policy responsiveness remains unexplored. We show that VCs' distinctive organizational structure—combining outside capital with incentive-based compensation through carried interest—creates unique responses to tax benefits. These insights advance our understanding of how public policy shapes capital allocation.

The remainder of the paper is organized as follows. Section 2 develops our framework, Section 3 details the QSBS program, and Section 4 describes our data. Section 5 presents bunching estimates. After describing our empirical strategy in Section 6, we examine investment selection in Section 7, present main results in Section 8, explore heterogeneity in Section 9, investigate alternative mechanisms in Section 10, and provide confirmatory evidence in Section 11. Section 12 concludes.

2 Conceptual Framework

We develop a framework that explains why tax benefits have heterogeneous effects across investor types in entrepreneurial finance markets (see Poterba (1989)). While prior work focused on the supply of VC funds and individual investment decisions, our framework emphasizes the interaction between tax benefits and investor incentive structures. The key insight is that VCs—who combine outside capital with incentive-based compensation—are the most responsive to tax benefits among startup investors.

By modeling differences in capital sources and compensation structures by investor type, our framework helps explain why tax benefits shape the level of investment, risk-taking behavior, and startup outcomes.

2.1 Setup

Consider an investor evaluating a startup opportunity. The project requires initial capital I_0 at $t = 0$ and potentially follow-on investment I_1 at $t = 1$. Project quality $\theta \in [0, 1]$ is uncertain at the time of investment following distribution $G(\theta)$ with density $g(\theta)$. Investors observe only a noisy signal $s = \theta + \epsilon$ about quality, where $\epsilon \sim N(0, \sigma_\epsilon^2)$.

The project's final payoff depends on both underlying quality and total investment:

$$R = \theta f(I) + \eta \tag{1}$$

where $f(I)$ is concave ($f'(I) > 0$, $f''(I) < 0$), reflecting diminishing marginal returns to investment—a standard feature where initial capital is crucial but additional funding faces decreasing productivity (Gompers (1995)). The term $\eta \sim N(0, \sigma_\eta^2)$ represents an uninsurable risk that investors can diversify but not eliminate, creating a fundamental risk–return tradeoff in project selection. The investor faces a combined federal (τ_f) and state (τ_s) capital gains tax rate $\tau = \tau_f + \tau_s$. Under the tax-benefit program, this becomes $\tau_b = (1-\phi_f)\tau_f + (1-\phi_s)\tau_s$, where ϕ_f and ϕ_s represent federal and state exemption levels.

2.2 Investor Types and Incentives

In our framework, investor types differ in their capital sources and incentive structures. We discuss each of their payoff functions in turn.

Venture capitalists (VCs), who combine management fees and carried interest in their compensation structure (Metrick and Yasuda (2010)), maximize:

$$\Pi_{VC}(\theta) = \alpha I + (1 - \tau_b)\beta E_\eta[\max(R - I - h, 0)] - I, \tag{2}$$

where $\Pi_{VC}(\theta)$ is the VC's expected payoff from investing in a project of quality θ, α is the management fee rate on committed capital I, τ_b is the effective tax rate under the tax-benefit program, β is the carried

interest rate, R is the project's final payoff, h is the hurdle rate that must be exceeded before VCs earn carried interest, and $E_\eta[\cdot]$ denotes expectation over the distribution of risk η.

The hurdle rate h is the critical differentiator in the VC payoff structure. It creates an option-like payoff through the $\max(R-I-h, 0)$ term, since VCs receive no carried interest until returns exceed both the invested capital and the hurdle rate. This non-linear structure shapes risk-taking incentives by making higher-variance investments more attractive—the option value increases with volatility even when expected returns remain unchanged. Although GPs do commit some of their own capital to the fund, these investments typically represent only a small fraction of the total capital (Ivashina and Lerner (2019)), limiting their downside exposure. Our characterization of VCs as risk-neutral is consistent with Gompers and Lerner (1998), who document that VCs effectively mitigate risk through limited partnership structures while capturing upside through carried interest, and with Hochberg et al. (2007), who show that VCs' syndication behaviors align with maximizing expected returns rather than minimizing risk.

Angel investors, who invest personal capital , maximize:

$$\Pi_{Angel}(\theta) = (1-\tau_b)E_\eta[\max(R-I, 0)] - I - \rho(\sigma_\theta^2), \tag{3}$$

where $\rho(\sigma_\theta^2)$ captures the direct cost of bearing undiversified risk. Angels are more sensitive to project-specific risk since they do not distribute risk across limited partners. Angels also lack the hurdle rate present in the VC payoff function—their compensation begins at any positive return rather than only above a threshold. This combination of higher risk sensitivity and a more linear payoff structure makes angels less responsive to tax benefits than VCs, even when facing identical tax treatment.

Corporate investors, including both strategic corporate acquirers and corporate venture capital (CVC) arms, maximize:

$$\Pi_{Corp}(\theta) = (1-\tau_c)E_\eta[\max(R-I, 0)] + \gamma S(R, \theta) - I, \tag{4}$$

where τ_c is the corporate tax rate and $S(R, \theta)$ represents the strategic value (e.g., access to new technologies, market intelligence, or customers) that corporations derive beyond purely financial returns, with γ representing the weight they place on these strategic benefits. The parameter γ may vary across different

types of corporate investors—traditional corporate acquirers typically place heavy weight on strategic synergies (Bena and Li (2014); Graebner et al. (2010)), while CVC arms often pursue a dual mandate that includes both strategic alignment with the parent and standalone financial returns (Chemmanur et al. (2014); Ma (2020)). Despite these variations in objectives, all corporate investors are ultimately subject to corporate income taxes rather than capital gains taxes, and therefore are ineligible for QSBS benefits. Thus, corporate investors are expected to be unresponsive to capital gains tax benefits.

2.3 Investment Decisions and Risk-Taking

For VCs, the optimal investment threshold θ^*_{VC} satisfies:

$$\alpha I + (1 - \tau_b)\beta \int_I^\infty (R - I - h) f(R|\theta^*_{VC}) dR = I. \tag{5}$$

The left side of this equation represents the VC's expected benefits from investment. The first term, αI, is the management fee earned regardless of performance. The integral term captures the expected carried interest on successful investments. Within this term, $R - I - h$ represents the investment profit above the hurdle rate, multiplied by the probability density of returns $f(R|\theta^*_{VC})$ for a project at the minimum acceptable quality. By integrating from I to infinity, we sum over all possible positive outcomes, with $(1 - \tau_b)\beta$ representing the VC's after-tax share of these profits. The right side, I, is the cost of investment. At the threshold θ^*_{VC}, the VC is indifferent between investing and not investing.

When tax benefits reduce τ_b, VCs experience a direct increase in after-tax returns. Most significantly, the hurdle rate amplifies this effect for high-variance investments. Consider two projects with identical expected returns but different variance profiles: a lower-risk project with consistent moderate returns and a higher-risk project with more dispersed outcomes (higher probability of both failure and exceptional success). With the hurdle rate, VCs disproportionately benefit from the higher-risk project because they capture more value from the right tail of the distribution while being shielded from losses beyond their limited personal investment. When tax benefits reduce τ_b, this asymmetry becomes even more pronounced, further tilting the risk-return calculation toward higher-variance projects.

For angel investors, the optimal investment threshold θ^*_{Angel} satisfies:

$$(1-\tau_b)\int_I^{\infty}(R-I)f(R|\theta^*_{Angel})dR-\rho(\sigma^2_{\theta^*_{Angel}})=I. \tag{6}$$

When tax benefits reduce τ_b, the derivative of the threshold with respect to the tax rate ($\frac{\partial\theta^*_{Angel}}{\partial\tau_b}$) is smaller in magnitude than for VCs because of the $\rho(\sigma^2_\theta)$ term. This term, which represents the direct cost of bearing undiversified risk, increases as angels consider riskier projects. As the angel contemplates projects with lower θ (lower quality but higher potential variance), the corresponding increase in $\rho(\sigma^2_\theta)$ directly counteracts the benefit from the tax reduction, resulting in a less pronounced shift in the quality threshold compared to VCs.

For corporate investors, the investment threshold θ^*_{Corp} satisfies:

$$(1-\tau_c)\int_I^{\infty}(R-I)f(R|\theta^*_{Corp})dR+\gamma S(R,\theta^*_{Corp})=I. \tag{7}$$

Crucially, corporate investors' decisions are unaffected by changes in capital gains tax rates since they pay corporate income taxes at rate τ_c. This makes corporate investors a natural placebo group.

2.4 Value Creation *versus* Risk-Taking

Investors can create value through monitoring intensity m, affecting expected returns and risk:

$$R=\theta f(I,m)+\sigma(m)\eta. \tag{8}$$

In words, project returns depend on two monitoring channels: the production function $f(I,m)$ captures how monitoring affects expected returns through value-added activities like strategic guidance and network access, while $\sigma(m)$ represents how monitoring reduces return volatility through enhanced risk management. Monitoring increases expected returns ($\frac{\partial f}{\partial m}>0$) and reduces risk ($\frac{\partial\sigma}{\partial m}<0$). Monitoring also requires costly effort captured by a convex cost function $c(m)$. The optimal monitoring intensity m^* satisfies:

$$(1-\tau_b)\beta\left[\frac{\partial f}{\partial m}-\frac{\partial\sigma}{\partial m}E[\eta|\eta>-\frac{R-I-h}{\sigma}]\right]=c'(m^*). \tag{9}$$

This condition equates the marginal benefit of monitoring (left side) with its marginal cost $c'(m^*)$.

The tax term $(1 - \tau_b)$ appears symmetrically in both the benefits and costs of monitoring. As Holmstrom and Tirole (1997) show in their model of financial intermediation, when economic factors (like our tax term) proportionally scale both the returns from monitoring and the costs of monitoring, the optimal monitoring intensity remains largely unchanged. Similarly, Kaplan and Strömberg (2004) and Robinson and Sensoy (2013) document that monitoring provisions in venture capital contracts respond primarily to internal agency risks rather than to external economic factors. This suggests that tax benefits operate primarily by altering the risk–return tradeoff in project selection.[3] The resulting option-like dynamic leads to more "extreme" outcomes:

$$P(|R - E[R]| > k) = \int_{-\infty}^{E[R]-k} f(R|\theta, m)dR + \int_{E[R]+k}^{\infty} f(R|\theta, m)dR, \tag{10}$$

where the first integral represents the probability of significantly negative returns and the second integral captures the probability of significantly positive returns, with threshold k defining what constitutes an extreme outcome. As VCs lower their quality threshold in response to tax benefits, both probabilities increase, consistent with more failures but also more large successes.

2.5 Testable Predictions

Our simple framework yields three predictions about how tax benefits shape VC investment:

Prediction 1: Tax benefits increase risk-taking in venture investment selection by VCs

Tax benefits create asymmetric payoffs by providing preferential treatment of capital investment gains while maintaining full deductibility of losses. This asymmetry is particularly powerful for VCs, who already have convex payoff structures through carried interest. When their effective tax rate on gains decreases, they should be willing to accept higher-risk investment projects, leading to:

$$\frac{\partial Var(R|\text{Investment})}{\partial \tau_b} < 0. \tag{11}$$

[3] If monitoring costs scale less than proportionally due to economies of scale in monitoring activities—consistent with the "spray and pray" approach documented in Ewens et al. (2018)—then the marginal cost of monitoring would fall. The reduced marginal cost of monitoring would strengthen the dominance of the risk-taking channel.

Prediction 2: VCs exhibit the most significant decrease in minimum project quality threshold

The magnitude of investment threshold reduction in response to tax benefits can be measured through $|\frac{\partial \theta^*}{\partial \tau_b}|$, depending on investors' ability to share risk and capture upside returns. Due to their unique ability to share risk through outside capital funding while capturing upside through carried interest, VCs will show the most significant decline among investors eligible for capital gains tax benefits:

$$\left|\frac{\partial \theta^*_{VC}}{\partial \tau_b}\right| > \left|\frac{\partial \theta^*_{Angel}}{\partial \tau_b}\right|. \tag{12}$$

Prediction 3: VC investment effects operate through greater risk-taking rather than through increased monitoring and value-added activities

By preferentially reducing the tax burden on gains while leaving losses fully deductible, tax benefits do not alter the relative cost of monitoring—both benefits and costs scale proportionally with the tax rate $(1 - \tau_b)$. Consequently, the optimal monitoring intensity remains unchanged:

$$\frac{\partial m^*}{\partial \tau_b} = 0. \tag{13}$$

However, this tax-induced asymmetry lowers the effective project quality required for investment so that the minimum acceptable threshold rises:

$$\frac{\partial \theta^*}{\partial \tau_b} > 0. \tag{14}$$

In practical terms, VC investors—who base their investment decisions on this threshold—will tend to fund riskier ventures when tax subsidies are available, rather than compensating with increased monitoring or other value-creation activities.

3 Institutional Background

The Qualified Small Business Stock (QSBS) program is a tax policy tool designed to stimulate investment in capital-intensive small businesses through capital gains tax benefits. Established in 1993, the

program has evolved over the last three decades, with its fiscal impact reaching some $2 billion in foregone federal tax revenue as of 2023. We discuss the various institutional features of the QSBS in turn.

3.1 Tax Treatment of Startup Investments

3.1.1 Tax Status by Investor Type

Different investor types face distinct tax treatment that affects their eligibility for QSBS benefits. Angel investors, pay individual capital gains taxes and can qualify for QSBS benefits on eligible investments. As explained in detail below, VCs can also qualify for QSBS benefits. In contrast, corporate investors, including corporate VC arms, are subject to corporate income tax rather than individual capital gains tax, making them ineligible for QSBS benefits regardless of the characteristics of their portfolio companies.[4]

3.1.2 VC Organizational Structure and Tax Pass-Through

VC firms are organized as limited partnerships, which are pass-through entities for tax purposes. This structure means the partnership itself pays no taxes; instead, all gains and losses flow through to the partners. When a VC firm exits an investment, it distributes proceeds (pre-tax) to both limited partners (LPs; the investors in the VC fund) and general partners (GPs; the partners running the VC firm).

Each LP's tax treatment depends on their own tax status. Individual LPs, such as high-net-worth individuals, can qualify for QSBS benefits on eligible investments. Tax-exempt LPs, including pension funds, endowments, and foundations, typically do not pay taxes on their investment gains regardless of QSBS status. Corporate LPs are ineligible for QSBS benefits.

Similarly, each GP reports their share of the gains on their own tax returns. GPs are typically individuals who receive both management fees (taxed as ordinary income) and carried interest (eligible for QSBS benefits when the underlying investment qualifies). Alternatively, GPs can be structured as legal entities (e.g., LLC, S-Corporation, or management companies), which are typically organized as pass-through entities themselves. In these cases, the tax treatment eventually flows to the individual owners or partners, who remain eligible for QSBS benefits.

[4] In the rare cases where corporate VCs raise external LP capital, if the LP is an individual, the LP may qualify for QSBS benefits. However, most corporate VC investments come directly from the corporation's balance sheet.

3.2 Eligibility Requirements

3.2.1 Company Eligibility Requirements

For a company's stock to qualify as QSBS under Section 1202 of the Internal Revenue Code, the issuing corporation must satisfy three criteria (IRS (1993)).[5] First, the entity must be a domestic C-corporation at the time of stock issuance and throughout the holding period—LLCs, LPs, and other firm types are not eligible. Second, the corporation's gross assets, defined as cash plus the adjusted bases of other property, cannot exceed $50 million before and immediately after the stock issuance. This asset test refers to gross assets rather than firm valuation. Third, the corporation must maintain at least 80% of its assets in qualified business sectors throughout the shareholder's holding period. Notably, the QSBS program explicitly excludes industries where the principal asset is human capital skill or reputation, such as professional services, financial services, hospitality businesses, farming, and natural resource extraction. These restrictions concentrate tax benefits into technology, pharmaceutical and biotechnology, and other capital-intensive businesses (see Table IA2 for a mapping of eligible sectors).

3.2.2 Shareholder Eligibility Requirements

Shareholder eligibility for tax benefit centers on three key dimensions. First, investors must acquire stock at original issuance directly from the corporation in exchange for money, property (excluding stock), or services—ownership via secondary transactions does not qualify. Second, shareholders face a mandatory five-year holding period before qualifying for tax benefits.[6] Third, the maximum exclusion per issuing corporation is bounded by the greater of $10 million or ten times the initial investment basis.

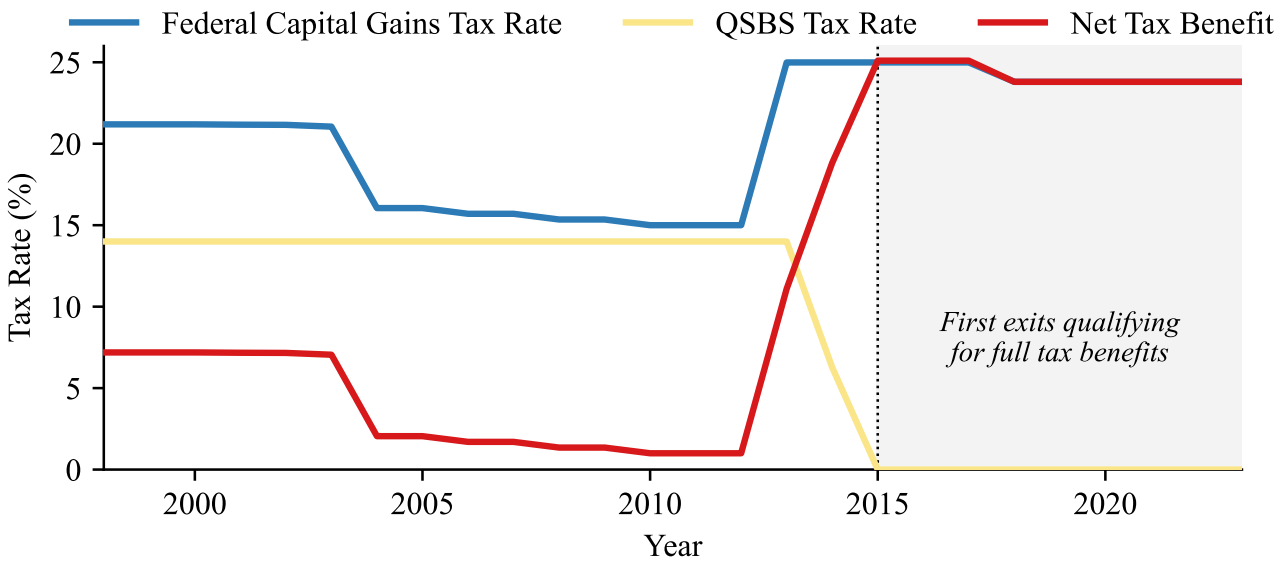
3.3 Evolution of Tax Benefits

The QSBS was originally introduced in 1993, offering a special federal capital gain tax rate of 14% on long-term investments—representing a 50% reduction over the prevailing tax rate at the time, of 28%.

[5] Section 1202 was added to the Internal Revenue Code by the Omnibus Budget Reconciliation Act of 1993 to promote long-term investment in capital-intensive sectors. It defines the tax treatment and eligibility requirements for the QSBS.

[6] For different types of equity compensation, the QSBS holding period starts at different times: for stock options, it starts at exercise (not at grant); for restricted stock awards (RSAs), it starts at issuance if an 83(b) election is made (otherwise at vesting); and for convertible securities like SAFEs, it starts at conversion into stock.

Figure 1: The Evolution of the QSBS Federal Tax Benefits



This figure plots three series from 1998 to 2023: the maximum federal long-term capital gains tax rate (blue line), the QSBS capital gains tax rate (yellow line), and their difference—the net tax benefit (red line). The vertical dotted line marks 2015, when the first exits qualifying for full benefits under the 2010 SBJA became possible. The shaded gray area highlights the period when investments could achieve the full tax benefits. Data are from NBER TAXSIM.

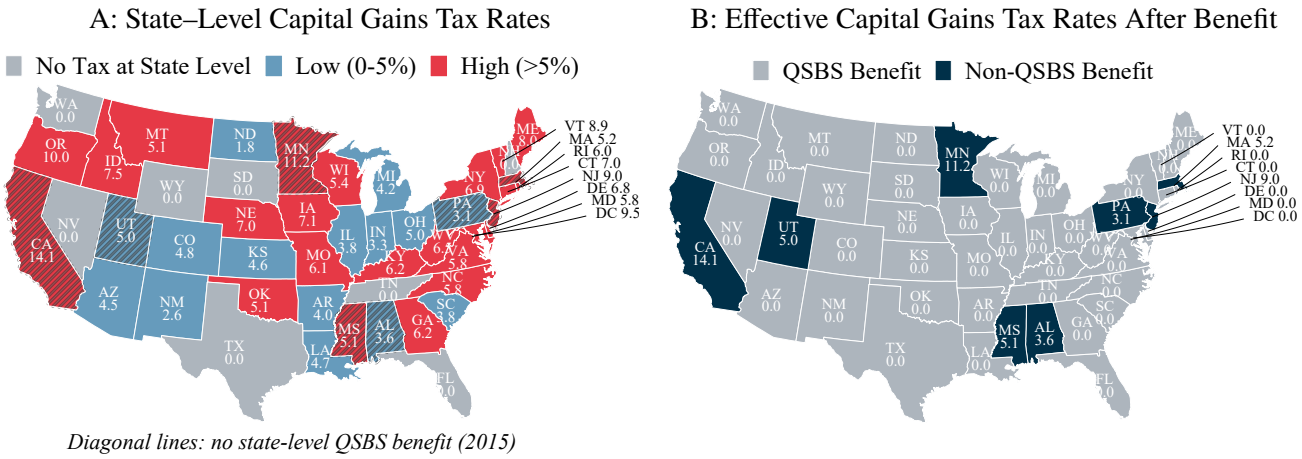
However, the program's benefits diminished steadily over the following decade. While the QSBS effective rate remained fixed at 14%, regular capital gains rates declined, eventually dropping to 15% in 2003.

Two key reforms revitalized the program. First, the American Recovery and Reinvestment Act (ARRA) of 2009 switched to a percentage-based model, taxing only 25% of gains at the prevailing rate. Second, the Small Business Jobs Act (SBJA) of 2010 further raised the exclusion to 100% for qualified stock acquired after September 27, 2010. While the full exemption was initially temporary, the 2015 Protecting Americans from Tax Hikes Act (PATH) made it permanent.[7]

Figure 1 illustrates the impact of the QSBS tax benefits for taxpayers. The net benefit (red line) jumped from just 1% for eligible investments exited in 2003 to 25% for eligible investments started after the 2010 SBJA and realized in 2015. At the regular tax rate of 15.35% in 2009 and 2010 (blue line), investors could project a net benefit of between 11.5% and the full 15.35% based on the 75% and 100% exclusions, respectively. Figure IA1 shows that the fiscal impact of QSBS benefits have grown substan-

[7] Additionally, before 2009, 7% of the excluded QSBS gain was treated as a preference item under the Alternative Minimum Tax (AMT). As such, investors exceeding AMT thresholds were taxed at the AMT rate of 26%–28%. The ARRA reform eliminated the AMT treatment for QSBS, further enhancing the value of QSBS benefits (Viswanathan (2020)).

Figure 2: State–Level Capital Gains Tax Rates in QSBS Eligible Sectors (2015)



This figure displays state–level capital gains tax rates as of 2015. Panel A categorizes states by tax rates: no tax (gray), low 0–5% (blue), and high >5% (red). Diagonal lines indicate states that do not provide state-level QSBS benefits. Panel (b) shows effective capital gains tax rates after accounting for the QSBS exemption, where states in gray provide the full exemption (effective rate of 0%) and states in navy blue maintain their original tax rates. Data are from NBER TAXSIM.

tially: federal government's tax expenditures increased from $65 million in 2010 to $1.8 billion in 2023 (in 2023 dollars), and cumulative costs between 2024 and 2033 are projected at $20 billion in real terms.

3.4 State-Level Compliance

The economic value of the QSBS benefits varies across states through two channels: state-level capital gains tax rates and state conformity with federal QSBS treatment. As shown in Figure 2, state capital gains tax rates in 2015—the first year when both the 2009 ARRA and 2010 SBJA exclusions became effective due to the five-year holding requirement—ranged from 0% to 14.1%. Nine states have no state capital gains tax, making state-level QSBS provisions irrelevant for their residents.[8]

As Table IA1 shows, most states conform with federal QSBS treatment, but four have consistently opted out of offering QSBS benefits: New Jersey, Pennsylvania, Mississippi, and Alabama. California initially provided the QSBS benefits but eliminated its provisions in 2012.[9] In contrast, Utah

[8]These are: Alaska, Florida, Nevada, New Hampshire, South Dakota, Tennessee, Texas, Washington, and Wyoming.

[9]The court found that providing preferential treatment to California-based businesses was unconstitutional. Before the court ruling, California investors could exclude 50% of their QSBS gains from state taxation. Starting Junuary 1, 2013, they became subject to the full state tax rate on all QSBS gains, though they remained eligible for the federal benefit.

and Massachusetts adopted conformity in 2016 and 2022, respectively. Regardless of state-level policy, investors in all states remain eligible for the federal QSBS benefits.[10]

4 Data and Variable Construction

We use data from PitchBook, which tracks investments on startups by VCs, angel investors, and corporate investors. We construct our sample carefully identifying investments eligible for the QSBS tax benefits while maintaining consistency with the program's eligibility requirements.

First, we restrict the sample to U.S.-based companies, excluding those founded before 2000. This geographic and temporal restriction aligns with the QSBS program's focus on domestic entrepreneurial activity and ensures we track firms from their inception. Second, using legal firm names in PitchBook, we exclude firms designated as Limited Liability Partnerships (LLPs) or Limited Partnerships (LPs), as only C-corporations can issue qualifying stock under the QSBS program. Third, consistent with the program's $50 million gross asset requirement, we exclude investor–firm pairs where the investment amount exceeds $50 million in the investor's entry year. We then classify firms into eligible and ineligible sectors based on the Internal Revenue Code's Section 1202 criteria.

We track investor–firm pairs from investment entry through exit or up to a 10-year holding period between 2004 and 2022.[11] Focusing on entries through 2017, we track any investment long enough to observe whether it reaches the five-year holding period required for the QSBS qualification. Our final sample yields 1.1 million investor×firm×year observations and over 158 thousand investor–firm pairings.

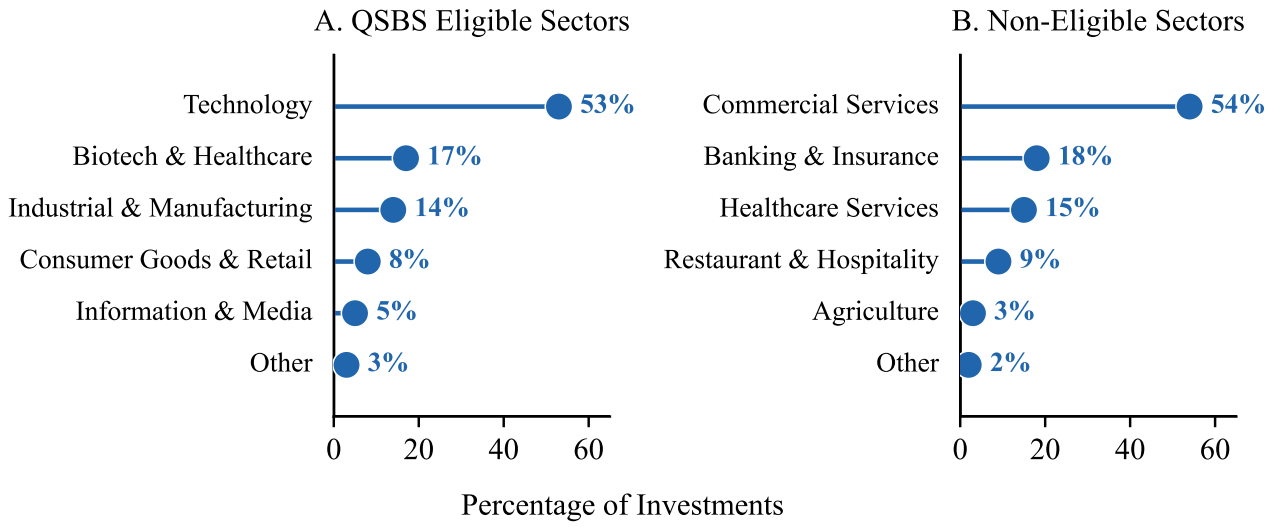
4.1 Industry and Investor Composition

Technology companies dominate our sample of eligible investor–firm pairings, accounting for 53% of investments, as shown in Panel A of Figure 3. Within technology, business and productivity software represents the most prominent component, followed by application software and social/platform software. Biotech and healthcare firms represent the second-largest category at 17%, followed by

[10] Before 2009, conforming states usually applied a 50% exclusion to their current capital gains rates—e.g., Illinois, with a 3% regular long-term capital gain tax rate in 2008, provided a 1.5% benefit for eligible investments exited in 2008.

[11] Over 90% of business investments in our sample exit in 10 years or less (exits include firm closure, buyouts, and IPOs).

Figure 3: Investment Distribution by Sector

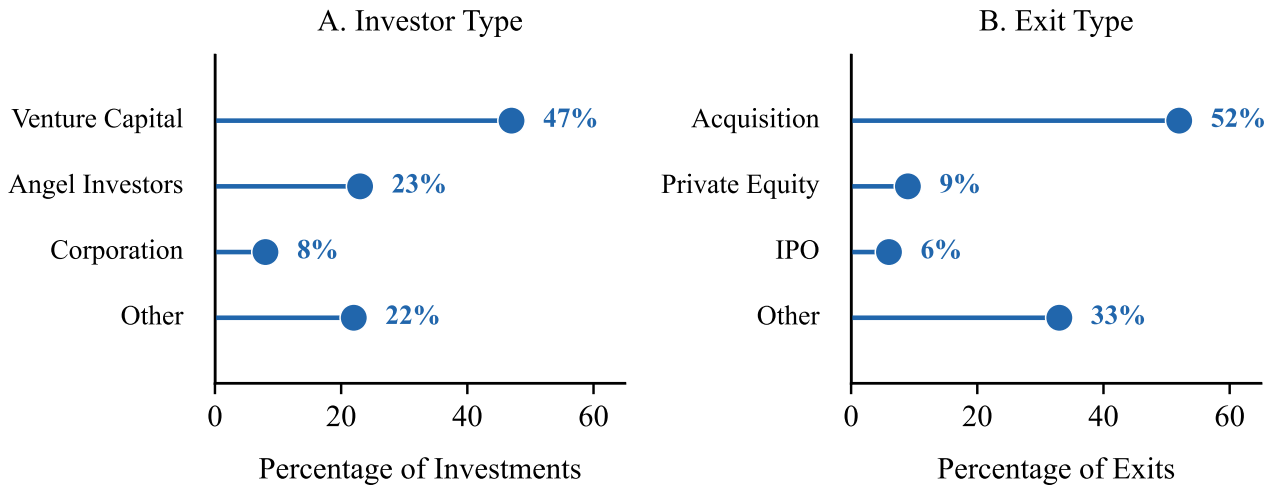


This figure shows the distribution of investments across QSBS-eligible and ineligible sectors from 2004 to 2022. Panel A shows the composition of QSBS-eligible sectors, where sectors are defined based on IRC Section 1202 eligibility criteria. Panel B shows ineligible sectors, which are excluded from the QSBS benefits. Data are from PitchBook.

industrial and manufacturing at 14%. Consumer goods and retail (8%) and information and media (5%) constitute smaller shares, with other qualified sectors accounting for the remaining 3%. Among ineligible sectors shown in Panel B, commercial services—e.g., consulting, education and training, and real estate—represent 54% of investor–firm pairings. Banking and insurance (18%), healthcare services (15%), and restaurant and hospitality (9%) make up most of the remaining ineligible activity, with agriculture (3%) and other sectors (2%) accounting for small shares.

The composition of investors and exit outcomes in our sample, presented in Figure 4, reveals the central role of VC in early-stage finance. Panel A shows that VC firms are the dominant investor type, accounting for 47% of investor–firm pairings. Angel investors represent 23%, while corporations participate in 8%. Combined, other investors—including e.g., accelerators, PE firms, family offices, and the U.S. Government—account for the remaining 22%. The distribution of exit types in Panel B highlights the opportunities and risks in early-stage investment. Acquisitions represent the most common exit path at 52% of outcomes. Private equity buyouts represent 9% of exits, while IPOs account for 6%. Other exit types—comprising mostly business closures—account for the remaining 33%.

Figure 4: Distribution of Investor and Exit Types



This figure shows the distribution of investments by investor type (Panel A) and exits by exit type (Panel B) from 2004 to 2022. Venture Capital includes traditional VC firms. Angel Investors includes individual angel investors and angel groups. Corporatation includes corporate VC arms and other corporate investments. Data are from PitchBook.

4.2 Key Variables and Summary Statistics

We analyze the effect of tax policy on investment behavior at two different types of analysis. First, we discuss initial investment decisions, using data at the investor–firm level. Second, we analyze financing and performance outcomes at the investor–firm–year level.

4.2.1 Investment Selection

We examine three sets of investment selection variables at the investor–firm level. First, we track the investment stage through two key indicators from PitchBook's deal-level data: (1) product "beta stage" investments (with significant technological risk as market viability remains unproven and development challenges may emerge) and (2) "stealth mode" investments (operating in secrecy before product launch, with high information asymmetries and, as Arora et al. (2021) document, designed for late-stage exits).

Second, we measure innovation intensity using talent metrics from Revelio Labs. Following Babina et al. (2024), who document that firms with higher concentrations of AI-skilled employees generate more product innovation and experience accelerated growth, we construct two measures for each portfolio firm in our sample: (1) the fraction of AI-skilled employees to all employees and (2) the fraction

of AI-skilled employees to engineering employees. Innovation entails greater business risk through multiple channels, including longer and more uncertain time-to-market cycles (Hellmann and Puri (2000)).[12]

Third, using deal contract data from Pitchbook, we analyze whether investors demand safeguards when they take on riskier ventures. Specifically, we examine three key contractual provisions that allocate cash-flow rights: (1) participating preferred stock (providing liquidation rights that allow investors to "double-dip" by first receiving their initial investment and then sharing pro-rata in remaining proceeds); (2) cumulative dividend rights (which gradually increases the liquidation preference over time and provides additional downside protection); and (3) equal footing (*pari-passu*) rights in liquidation (ensuring new investors share equally with existing ones rather than having senior claims).

4.2.2 Financing and Performance Outcomes

Understanding how tax benefits affect financing and performance outcomes requires tracking investor–firm relationships over time. We construct seven sets of outcome variables that capture the evolution of investments from funding through exit: (1) financing patterns; (2) investment failures; (3) valuation performance; (4) exit channels; (5) monitoring of portfolio companies by investors; (6) post-investment value-add activities; and (7) human capital deployment in portfolio companies.

Our first set examines financing patterns. We measure deal size as the total amount invested in each financing round, allowing us to track how capital provision changes as investments mature. To capture broader market interest, we count both total investors per round and new investors (those investing in the firm for the first time). These measures reveal whether tax benefits affect not only the focal investor's behavior but also portfolio companies' ability to attract fresh co-investment.

Our second set identifies investment failures through three complementary measures: (1) complete business failure, based on PitchBook's "Out of Business" designation for firms that cease operations; (2) funding difficulties, tracked by counting consecutive years without new capital raises; and (3) severe funding droughts, captured through an indicator that equals one when firms go five or more years without raising new capital.[13] These measures capture degrees of investment distress, ranging from complete failure to early warning signs of trouble.

[12] Pástor and Veronesi (2009) similarly document that innovative public firms show up to 3× higher stock price volatility.

[13] Among firms that ultimately failed, the average duration without new funding was 2.1 years before closure, while firms achieving unicorn status typically went only 0.3 years between funding rounds.

Our third set tracks investment performance through firm valuation. Our base measure uses post-money valuation, which reflects firm value immediately after each financing round. Since valuations are not observed in all funding events in PitchBook, we compute a continuous series via three steps: (1) linear interpolation between known values; (2) backward extension of the earliest known value; and (3) forward extension of the latest known value.[14] We also identify "unicorn" status—firms reaching valuation above $1 billion—as a measure of exceptional success.[15]

Our fourth set examines exit patterns through mutually exclusive indicators for three types of exits: (1) PE buyouts (acquisitions by PE firms); (2) IPOs (public listings); and (3) strategic acquisitions (sales to operating companies). This categorization follows the lifecycle of venture-backed firms—PE buyouts typically occur when companies are more mature, while IPOs and strategic acquisitions often happen earlier when firms still need growth capital (Gompers (1996); Puri and Zarutskie (2012)).

Our fifth set examines whether tax benefits affect how investors engage with portfolio companies after investment. We analyze this through two distinct lenses: (1) monitoring activities and (2) overall value creation. For monitoring activities, we track both formal control rights and management changes. Board voting rights, observed in PitchBook's deal-level data, capture investors' direct oversight capacity and ability to influence major corporate decisions. Management turnover, constructed from PitchBook's individual-level employment records, identifies years when firms replace their CEO (based on titles like "CEO") or other C-suite executives (identified through titles like "CFO" and "Senior VP").

Our sixth set analyzes whether change the way they interact with portfolio companies through any dimension by looking into exit multiples (exit value divided by total capital invested). For example, a company that raises $10 million and exits at $50 million generates a 5× multiple. We examine both the average multiple and the likelihood of achieving specific thresholds (5×, 10×, or 20× returns). These metrics help us understand whether VCs change value-added activities in tax-advantaged investments.

Finally, we examine human capital deployment in portfolio companies using data from Revelio Labs. Building on organizational economics research (e.g., Sah and Stiglitz (1991) and Blanco et al. (2024)), we construct two sets of measures that capture different dimensions of organizational

[14]For example, if an investor holds a company from 2008 to 2017 but valuations are only observed in 2012 and 2017, we interpolate between 2013 and 2016 and extend the 2012 value to earlier years.

[15]We also compute valuation measures using (1) only linear interpolation and (2) no modifications. Our main approach is most conservative since valuations in our sample typically become available in later rounds when values are higher.

risk-taking: (1) managerial centralization (ratio of executives to all employees), which tends to amplify outcome variance as managerial decisions have a more concentrated impact; and (2) gross employee turnover, which captures greater experimentation in worker-firm matches.

4.3 Summary Statistics

Table 1 presents summary statistics for our 1.1 million investor–firm–year observations. Most investments in our sample are in QSBS-eligible sectors (89%) and occur after the 2009 reform (86%). The average investment is held for 3.4 years, with about one-third reaching the five-year holding requirement for tax benefits. Deal sizes average $43 million but show large variation—the median is only $5.7 million, and investments that achieve exits are notably larger at $67 million on average.

PLACE TABLE 1 ABOUT HERE

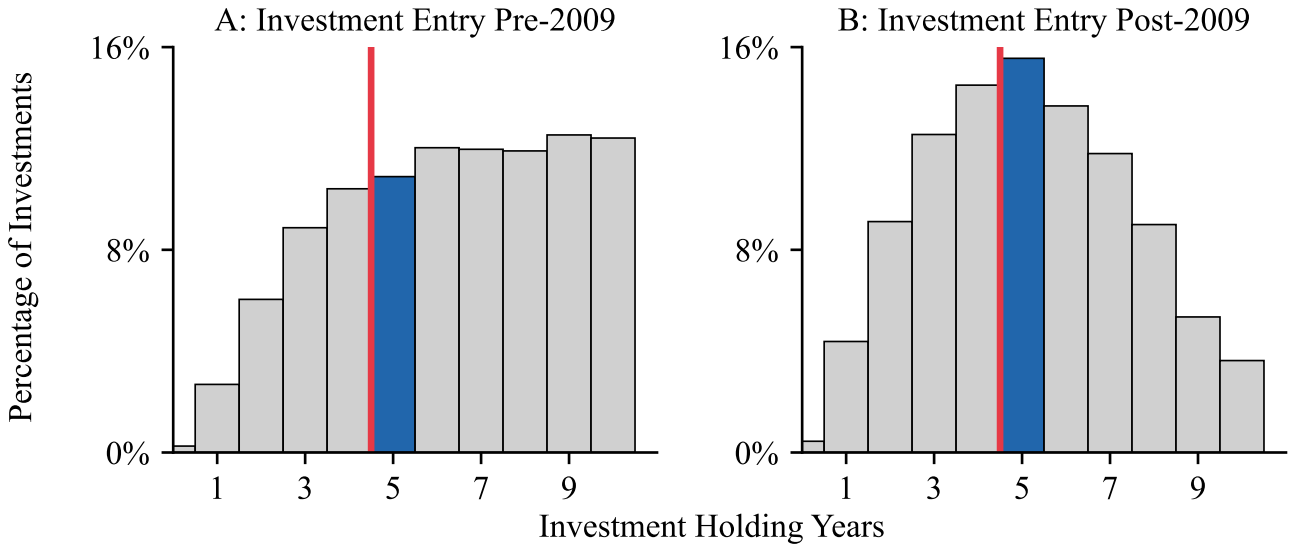
Investment outcome statistics capture high returns and high risks of venture funding. Complete business failures occur in 1.9% of investor–firm–year observations, and 6.4% go five or more years without raising new capital. While the average exit multiple is 9.2×, only 34% of exits return more than 5× the invested capital. Unicorn status appears in 2.6% of investor–firm–year observations, which overstates the occurrence of these rare outcomes.[16] Besides business closure, most investment exits come through acquisitions (4.4% of investor–firm–years), with PE buyouts (0.7%) and IPOs (0.5%) being less common.

Table IA3 compares raw, unconditional means between QSBS-eligible and ineligible sectors. In the pre-reform period (investment entry between 2004 and 2008), the two groups show similar characteristics—investment holding periods differ by only 0.04 years ($t = 1.3$), business failure rates are identical at 0.6%, and mean valuations differ by an insignificant $182 million ($t = -0.8$). The only notable differences appear in investment structure, with board voting rights 30% more common in eligible sectors and deal sizes 22% lower.[17] In the post-reform period, eligible sectors show significantly higher holding periods and failure rates, lower valuations, and fewer high-multiple exits compared to ineligible sectors, suggesting a shift in investment patterns.

[16] 437 portfolio companies in our sample (1.2% of the total) achieve unicorn status while 6,292 (17.8%) go out of business. Unicorns appear more frequently in the investor–firm–year panel for two reasons: (1) they attract more investors (unicorns average 8.4 investors *versus* 3.1 for firms that go out of business) and (2) they may hold unicorn status for multiple years.

[17] This works against tax benefits shaping risk-taking (stronger governance is associated with more conservative behavior (Gompers et al. (2003)) and lower funding should constrain rather than enable risk-taking (Campello et al. (2010))).

Figure 5: Distribution of Investment Holding Period Around the QSBS Reform



This figure shows a distribution of investment holding periods. The sample includes only investments that achieved an exit, and includes entry years from 2004 to 2017. Data construction steps are described in Section 4. Data are from PitchBook.

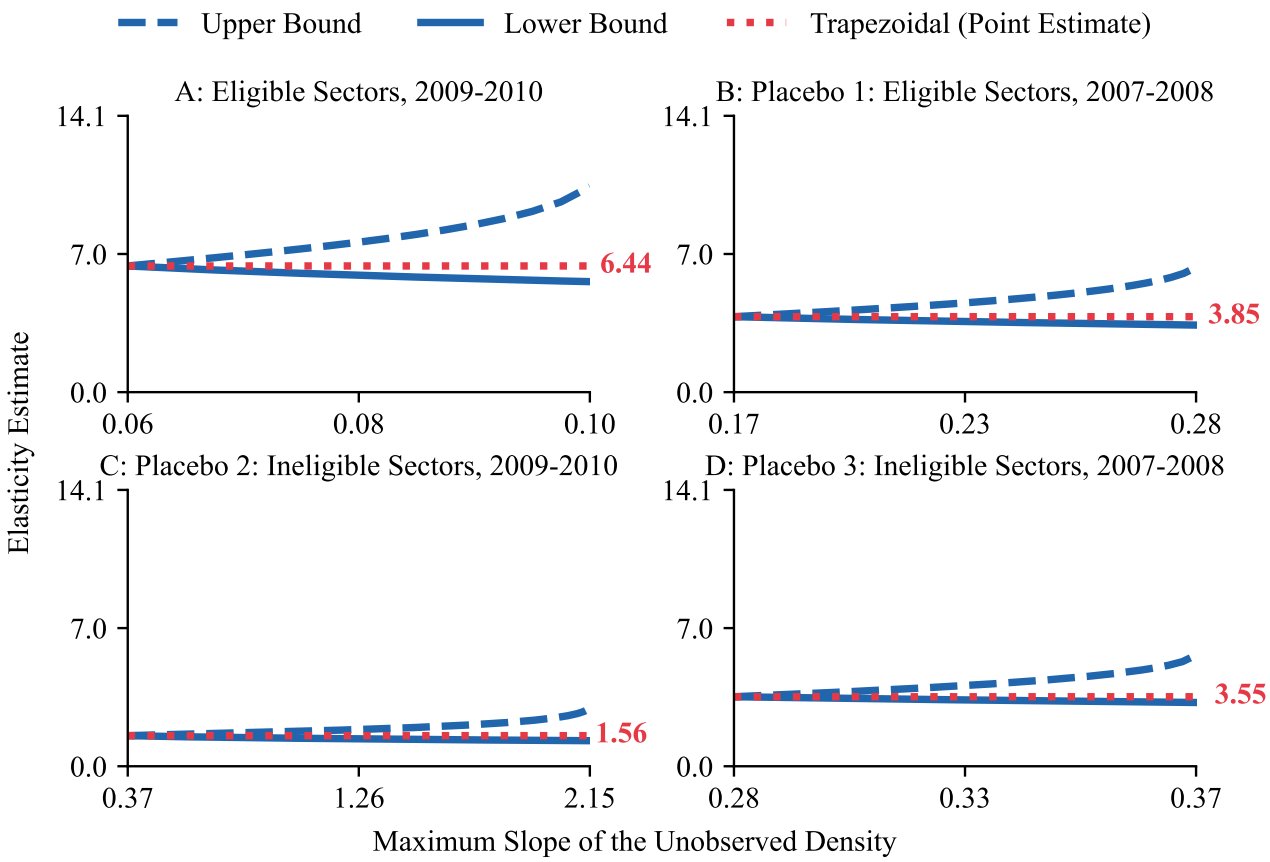
5 Bunching Estimates: Elasticity of Tax Benefits

Figure 5 shows that the QSBS reform altered investment holding patterns. Panel A shows that pre-reform distribution shows no distinct clustering at five-year holding period, while Panel B demonstrates that post-reform investments exhibit a pronounced spike at the five-year mark required for tax qualification.[18]

To quantify this response rigorously, we estimate the elasticity of investors' holding period decisions using bunching estimation techniques.[19] These methods quantify behavioral responses to tax incentives by measuring excess mass at policy thresholds. Recent work by Londoño-Vélez and Ávila Mahecha (2024) using bunching techniques shows that a 1% increase in wealth tax rates leads to 2% decrease in reported wealth by creating a notch (or "forbidden zone") just below wealth brackets. Similarly, in our context, the mandatory five-year holding period required for the QSBS qualification creates a notch in the tax schedule—investors who hold investments for at least five years qualify for substantial tax benefits, while those exiting just before five years receive no preferential treatment. The resulting elasticity estimates the increase in the mass of investors concentrating *exactly* at the five-year threshold mark.

[18]This strategic timing is similar to the portfolio rebalancing effects documented by Constantinides (1983); Ritter (1988).
[19]See Saez (2010), Chetty et al. (2011), and Kleven and Waseem (2013)

Figure 6: Point Estimates and Partial Identification Bounds for the Elasticity of Tax Benefits



This figure displays partially identified sets for the elasticity of holding-period choices of tax-advantaged investments and three placebo groups, following Bertanha et al. (2023). The X axis plots the maximum slope M of the unobserved heterogeneity distribution, and the Y axis is the elasticity. The solid blue curve is the lower bound, the dashed blue curve is the upper bound, and the dotted red line is the trapezoidal (point) estimate. Estimates consider investments from 2007 to 2010, M of 3.0 and a tax of 15.35% (the maximum long-term federal capital gain tax rate in 2009). Data are from PitchBook.

5.1 Baseline Bunching Estimates

We examine holding periods from 0 to 10 years, and keep investments from two years before and after the 2009 policy change (2007 to 2010). We employ three estimation approaches: (1) a standard trapezoidal approximation to point-identify the elasticity; (2) bootstrapped confidence intervals to assess statistical significance; and (3) the partial identification approach developed by Bertanha et al. (2023), which provides bounds on the elasticity under weaker identifying assumptions.

Figure 6 presents baseline bunching results. Panel A reveals substantial bunching precisely at the five-year threshold for QSBS-eligible investments, with a point estimate elasticity of 6.44, indicating

that a 1% tax benefit corresponds to a 6.4% increase in the proportion of investors holding investments *exactly* for five years. The partial identification bounds of [5.6, 10.5] and tight 95% confidence intervals of [5.4, 7.5] (derived from 1,000 bootstrap iterations), as shown in Column (3) of Panel A in Table IA4, confirm this significant bunching pattern. In contrast, Panels B through D of Figure 6 demonstrate that the natural tendency to hold investments for five years—independent of tax incentives—yields considerably more modest elasticities. Panel B of Table IA4 corroborates these findings, with Column (3) showing partial identification bounds of [3.4, 6.3] for investments in eligible sectors before the policy change and similarly lower estimates for other "placebo groups" (investments in ineligible sectors both pre-2009 and post-2009). In summary, while the five-year mark is as a focal point in investment horizons generally, the QSBS tax benefits substantially amplify this bunching behavior.

5.2 Difference-in-Bunching Approach

Following Brown (2013), we implement a difference-in-bunching approach to construct counterfactual distributions net of the effect of the natural trend of holding investments specifically for five years. Rather than relying just on extrapolation from regions away from the threshold, this method differences out baseline investor preference for five-year holding periods that would exist regardless of tax benefits, allowing us to isolate bunching behavior attributable specifically to tax benefits.

We compute three difference-in-bunching estimates. First, we compute the difference between post-reform and pre-reform elasticities within eligible sectors ($\hat{\epsilon}_{eligible,post} - \hat{\epsilon}_{eligible,pre}$). This specification accounts for any sector-specific factors influencing bunching behavior regardless of tax benefits. Second, we compute the difference between eligible and ineligible sectors after the 2009 reform ($\hat{\epsilon}_{eligible,post} - \hat{\epsilon}_{ineligible,post}$). This approach controls for any contemporaneous forces affecting holding period decisions across all sectors. Third, we compute the difference between post-reform eligible and pre-reform ineligible sectors ($\hat{\epsilon}_{eligible,post} - \hat{\epsilon}_{ineligible,pre}$), which accounts for both temporal trends and sectoral differences in investor holding patterns.

For each investor type and comparison group, we estimate the elasticity using the same bunching methodology as before. We then calculate the difference between elasticities, with standard errors computed from 1,000 bootstrap iterations. The standard errors for the difference are calculated assuming

statistical independence between the treatment and control group elasticity estimates:

$$\hat{\epsilon}_{diff} = \hat{\epsilon}_{treatment} - \hat{\epsilon}_{control} \tag{15}$$

$$SE(\hat{\epsilon}_{diff}) = \sqrt{SE(\hat{\epsilon}_{treatment})^2 + SE(\hat{\epsilon}_{control})^2} \tag{16}$$

Table 2 presents difference-in-bunching estimates. Panel A compares eligible sectors before and after the reform. Column (1) shows a statistically significant excess elasticity of 2.6, indicating that the QSBS benefits generate a 2.6% increase in the mass of investors exiting precisely at the five-year mark for each percentage point of tax benefit. Panels B and C present estimates comparing eligible investments with ineligible investments after and before 2009, respectively, with Column (1) showing excess elasticities of 4.9 and 2.9.

PLACE TABLE 2 ABOUT HERE

The elasticity range of 2.6 to 4.9 is economically meaningful compared to other studies on tax elasticities. For example, Saez (2010) finds elasticities of taxable income for marginal tax rates between 1.0 and 0.8, while Chetty et al. (2011) estimates an elasticity of 0.6 in the context of labor supply.

6 Main Empirical Strategy

Our main empirical analyses proceeds in two steps. First, we examine whether investors change their investment selection decisions as a function of tax benefits. Second, we analyze how these decisions manifest in observed investment outcomes.

6.1 Investment Selection

We exploit the 2009 QSBS reform as a shock to the expected tax treatment of new investments in eligible sectors to identify changes in venture funding behavior. We do so looking at deal characteristics at the

time of investment using the following linear model:

$$\begin{aligned} Y_{i,f} =& \beta_0 + \beta_1 \cdot [\mathbb{1}\{\text{Eligible Sector}\}_f \times \mathbb{1}\{\text{Post-2009}\}_{i,f}] \\ &+ \beta_2 \cdot \mathbb{1}\{\text{Eligible Sector}\}_f + \beta_3 \cdot \mathbb{1}\{\text{Post-2009}\}_{i,f} \\ &+ \alpha_i + \gamma_s + \lambda_{j,t} + \epsilon_{i,f} \end{aligned} \tag{17}$$

where i indexes investors and f indexes portfolio firms. The dependent variable $Y_{i,f}$ represent characteristics at the time of initial investment, including firm stage (e.g., product development phase, firm in stealth mode) and contractual terms of investments (e.g., liquidation rights, cumulative dividends). The coefficient of interest is β_3 as the associated interaction term identifies how investment selection changes for eligible sectors after the 2009 QSBS reform. We include investor fixed effects (α_i) to absorb time-invariant investor characteristics like investment style and risk preferences. Industry fixed effects (γ_s) control for systematic differences across sectors, while state–entry year fixed effects ($\lambda_{j,t}$) account for local economic conditions affecting investment opportunities. Standard-error clustering at the investor level accounts for potential correlation in the residuals across different investments made by the same investor, ensuring statistical inference is robust to arbitrary correlation patterns within investor portfolios.

6.2 Performance Outcomes

In our main regression analyses, we estimate the effect of the QSBS tax benefits on investment outcomes using a triple-difference test design that exploits variation in sector eligibility, investor entry timing, and holding period requirements. We use the following model:

$$\begin{aligned} Y_{i,f,t} =& \beta_0 + \beta_1 \cdot [\mathbb{1}\{\text{Eligible Sector}\}_f \times \mathbb{1}\{\text{Holding Years} \geq 5\}_{i,f,t} \times \mathbb{1}\{\text{Entry Post-2009}\}_{i,f,t}] \\ &+ \beta_2 \cdot [\mathbb{1}\{\text{Eligible Sector}\}_f \times \mathbb{1}\{\text{Holding Years} \geq 5\}_{i,f,t}] \\ &+ \beta_3 \cdot [\mathbb{1}\{\text{Eligible Sector}\}_f \times \mathbb{1}\{\text{Entry Post-2009}\}_{i,f,t}] \\ &+ \beta_4 \cdot [\mathbb{1}\{\text{Holding Years} \geq 5\}_{i,f,t} \times \mathbb{1}\{\text{Entry Post-2009}\}_{i,f,t}] \\ &+ \beta_7 \cdot \mathbb{1}\{\text{Eligible Sector}\}_f + \beta_6 \cdot \mathbb{1}\{\text{Holding Years} \geq 5\}_{i,f,t} + \beta_7 \cdot \mathbb{1}\{\text{Entry Post-2009}\}_{i,f,t} \\ &+ \alpha_{i,f} + \delta_t + \theta_h + \epsilon_{i,f,t} \end{aligned} \tag{18}$$

where i indexes investors, f indexes portfolio firms, and t indexes years. $Y_{i,f,t}$ includes deal char-

acteristics (e.g., number of investors), risk measures (e.g., business failures), performance indicators (e.g., valuations), exit types (e.g., IPO), and organizational dynamics (e.g., employee turnover). Our coefficient of interest is β_7, which captures how the relationship between five-year holding periods and outcomes differs for eligible *versus* ineligible sectors after the QSBS tax benefits were enhanced in 2009.

Our baseline specification includes a set of fixed effects meant to isolate the impact of the QSBS tax benefits from confounding factors. Year fixed effects (δ_t) control for aggregate economic conditions and changes in the entrepreneurial finance environment—such as overall funding availability, or macroeconomic shifts that affect all firms simultaneously. Holding period fixed effects (θ_h) absorb systematic patterns in how investments naturally evolve, independent of tax benefits. For example, firms typically raise larger rounds as they mature, and the probability of both failure and successful exit tends to follow predictable patterns over an investment's life. Together, year and holding-period fixed effects also account for cohort-specific shocks that affecting all investments initiated in a particular year, like changes in startup formation rates or the quality of entrepreneurial opportunities in different vintages.

Beyond these temporal controls, we address potential selection concerns through investor–firm fixed effects ($\alpha_{i,f}$).[20] This approach addresses several potential confounders. First, it controls for time-invariant investor characteristics that might affect investment behavior, such as investment style (e.g., early *versus* late stage focus), organizational structure (e.g., fund size, partnership composition), or risk preferences. Second, it absorbs firm-specific attributes that could influence outcomes, including business model, founding team quality, or initial growth prospects. Third, it accounts for any assortative matching between investors and firms—for instance, if higher-quality VC firms systematically invest in more promising startups (see Ewens et al. (2022) and Sørensen (2007)).

We cluster standard errors at the investor level to account for potential correlation in the residuals across different investments made by the same investor, which might arise from standard portfolio management practices, risk preferences, or network effects in deal sourcing and exit opportunities. Our results are stable under firm-level and two-way clustering at both the investor and firm levels.

[20]Regressions analyzing exit multiples as the dependent variable employ non-interacted investor and firm fixed effects since exit multiples appear only once in an investment's lifecycle.

7 Results on Investment Selection

We begin by examining how tax benefits affect investment decisions, measuring risk-taking through multiple development milestones. One can see from Columns (1) and (2) of Panel A in Table 3 that after the reform, investments in QSBS-eligible sectors become 50% more likely to occur during the product beta stage (+0.003 relative to a mean of 0.006) and 75% more likely during stealth mode (+0.003 relative to a mean of 0.004). These patterns suggest that investors become more willing to back firms at early development stages—periods of greater uncertainty and information asymmetry.

PLACE TABLE 3 ABOUT HERE

The shift toward riskier, more experimental ventures extends beyond development stage to innovation intensity. Results under columns (3) and (4) of Panel A show that post-reform, eligible-sector investments target firms with significantly higher fractions of AI-skilled talent: 32% higher across all employees (+0.01 compared to a mean of 0.03) and 45% higher among engineers (+0.05 compared to a mean of 0.12). As documented by Babina et al. (2024), firms with higher concentrations of AI-skilled talent are significantly more innovative. They bear greater business risk through market uncertainty, higher cash-flow volatility, and changing risk profiles during technology adoption (Hellmann and Puri (2000)).

The examination of investor heterogeneity in Columns (1) through (4) in Panels B through D of Table 3 reveals that VCs drive most of the effects. Indeed, VCs more than double their stealth-mode investments (+0.006 relative to a mean of 0.005) and increase AI-skilled engineering talent by 66% (+0.07 relative to a mean of 0.11). Angel investors respond to the tax incentive by increasing product beta-stage investments but they do not invest in stealth mode products nor do they change investments in AI-skilled firms. Corporate investors show no increase in interest for investment that is riskier or innovative.

To rule out the possibility that different contracting rules drive the increased risk-taking in investment selection, we analyze cash-flow rights at the time of the initial investment. Results in Columns (5) through (7) of Panel B in Table 3 show that VC investments in eligible sectors after the reform exhibit offsetting changes in contractual protections. On one hand, VCs become 22% less likely to demand equal footing (*pari-passu*) rights in liquidation (-0.08 relative to a mean of 0.34), indicating greater willingness to share risk with existing investors rather than demanding seniority. On the other

hand, these investments are more likely to include cumulative dividends (+0.08 relative to a mean of 0.16). This pattern suggests that VCs are not simply using contracts to neutralize additional risk—if they were, we would observe a consistent strengthening across protective provisions. Instead, they accept greater risk in one dimension while seeking protection in another. Columns (5) through (7) of Panels C and D show that angel investors become significantly less likely to use preferred equity (−0.09) and more likely to accept common stock (+0.11), while corporate investors show no change in contractual terms.

The results from this section show that tax benefits affect risk-taking through the selection of inherently riskier ventures, with effects driven by VC investors. This pattern of responses aligns with our conceptual framework: because VCs combine outside capital with incentive-based compensation through carry they have stronger incentives to pursue riskier investments under increases in tax benefits. Angel investors, investing personal capital, do not respond in the same way to tax incentives. Corporate investors, not eligible to capital gain incentives, show similarly no response.

8 Results on Investment Outcomes

We now examine how the shift in investment strategy manifests in investment outcomes. We implement a triple-difference design that exploits sector eligibility under the QSBS criteria, investment entry timing relative to the 2009 reform, and the program's five-year holding requirement.

8.1 Funding Patterns

We begin by analyzing funding patterns. Table 4 presents our baseline triple-difference estimates for deal size and investor participation. Column (1) of Panel A shows that when investments qualify for tax benefits, deal sizes increase by 66% ($30.5 million relative to a mean of $46.1 million). This triple interaction effect ($\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$) isolates the differential effect of the tax reform on QSBS-eligible investments that satisfy the five-year holding requirement relative to investments that don't meet all three criteria. The double interaction terms reveal important baseline differences: the negative coefficient on $\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$ (−$44.8 million) indicates that before the reform, eligible-sector investments held long-term received substantially less funding, while the positive coefficient on $\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$ ($45.1 million) shows that ineligible long-held

investments increased in size after 2009. Our triple-difference estimate thus represents the incremental funding increase specifically attributable to QSBS tax qualification beyond these underlying trends.

PLACE TABLE 4 ABOUT HERE

Columns (3) and (4) of Panel A in Table 4 show that the tax benefit effect is particularly pronounced for VC investments, with an increase of 118% ($56.5 million relative to a mean of $47.8 million), which rises to 130% (+$91.7 million relative to a mean of $70.3 million) when considering only firms that achieve an exit. This indicates that only VCs systematically adjust their funding behavior in the presence of tax benefits, while, as Columns (5) through (8) show, we find no statistically significant triple-difference effects for angel or corporate investors.

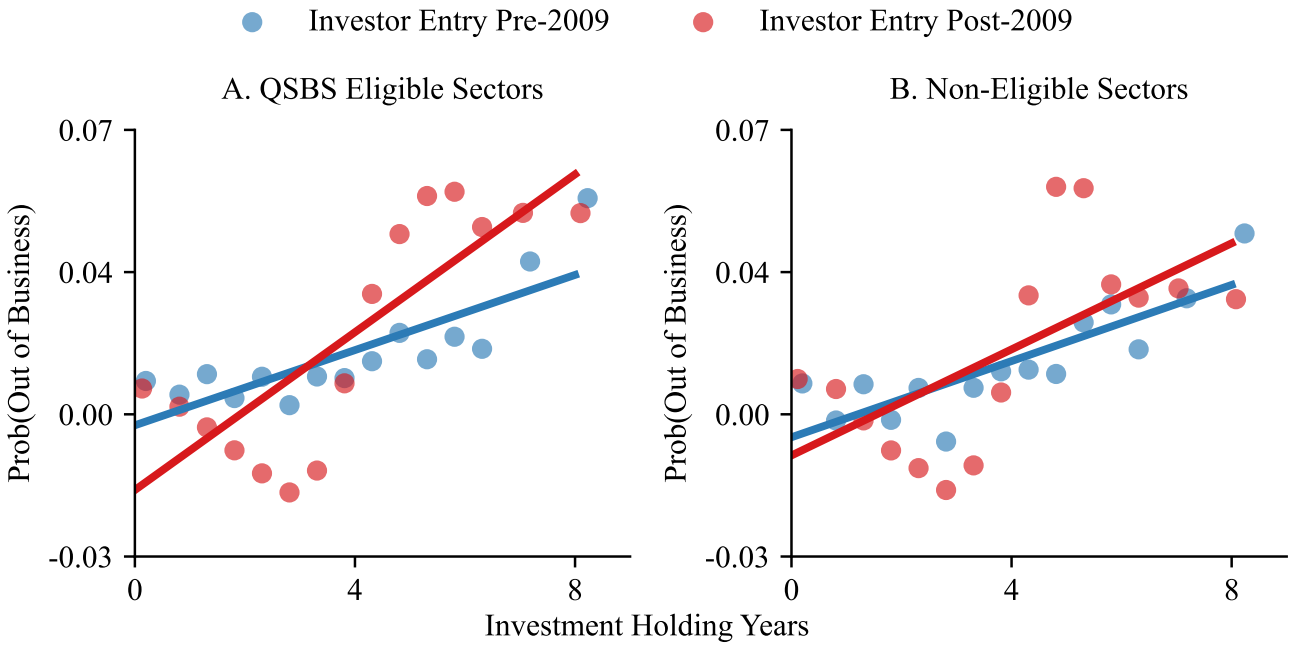
The tax benefit also attracts a broader investor base to eligible investments. Columns (1) and (2) of Panel B show that qualifying investments attract 30% more investors (+1.6 relative to a mean of 5.3 per round) across all portfolio firms, and 26% more investors across firms that eventually achieve an exit. As Columns (3) through (8) show, the increased investor participation is robust for VC investments (+1.0 investors, a 20% increase relative to a mean of 5.2) and for angel investors (+2.8 investors, a 42% increase relative to a mean of 6.7), while corporate investments show no change. Panel C shows that most of this increase comes from new investors: Columns (1) through (8) show that qualifying investments attract 31% more first-time investors (+1.2 relative to a mean of 3.8 new investors), and that this effect persists in subsamples of exited investments and among VC and angel investors.

8.2 Investment Failure

We next examine how the QSBS tax benefits affect the likelihood of failed investments. Columns (3) and (4) of Panel A in Table 5 show that when investments qualify for tax benefits, VC investments in eligible sectors become 71% more likely to go out of business (+0.012 relative to a mean of 0.017). This effect nearly doubles when considering only portfolio firms achieving an exit +(117%). Columns (5) through (8) show that failure rates do not change for angel or corporate investors, except for a marginally significant increase failures of angel investments that achieve an exit, presented in Column (6).[21]

[21] These results are robust to alternative model specifications. Columns (1) and (2) in Table IA5 present logit estimates that yield a statistically significant log odds coefficient of 0.148 for business failure in tax-advantaged investments.

Figure 7: Binned Scatterplots of Holding Period on the Likelihood of Firm Closure



This figure shows the relationship between business closure probabilities and investment holding periods, separately for the QSBS eligible sectors (Panel A) and ineligible sectors (Panel B). The plots compare VC investments made pre- and Post-2009. Each point shows the mean closure probability within holding period bins after controlling for investor–firm fixed effects. The plots reflect within-firm variation in investment performance over different holding periods.

PLACE TABLE 5 ABOUT HERE

Figure 7 illustrates the increased failure risk in VC investments. Panel A shows that for QSBS-eligible sectors, VC investments made after 2009 experience a markedly steeper increase in failure rates as they approach and exceed the five-year holding requirement. In contrast, Panel B shows that for ineligible sectors, the relationship between holding period and failure probability is similar for both pre-2009 and post-2009 investments, with the slopes of both trend lines being relatively parallel.

Tax benefits also lead to more subtle manifestations of distress through funding droughts. We track these funding difficulties in two ways. First, we count the consecutive years a firm goes without raising new capital. Columns (3) and (4) of Panel B in Table 5 show that when VC investments qualify for tax benefits, they experience a 36% increase in consecutive years without funding (+0.36 relative to a mean of 1.0 year). This effect persists in the exit sample, where the increase is 33%. Columns (5) through (8) show that this effect appears for angel investors but vanishes among exited angel investments,

and are marginally significant for corporate investors but only among investments achieving an exit.

These funding droughts often become severe enough to signal serious distress. Column (3) of Panel C shows that when investments qualify for tax benefits, VC investments become 165% more likely to experience funding gaps of five or more years (+0.081 relative to a mean of 0.049). Successful startups typically raise new rounds every 12 to 18 months (Gompers (1995)), making such extended periods without capital often precede outright failure. The effect is more substantial for VC investments that achieve an exit, where Column (4) shows that the probability of experiencing these prolonged funding gaps increases by five times (+0.094 relative to a mean of 0.019). Results in Columns (5) through (8) confirm that these patterns do not appear at all for corporate investors or angel investors.

8.3 Valuations and Exit Decisions

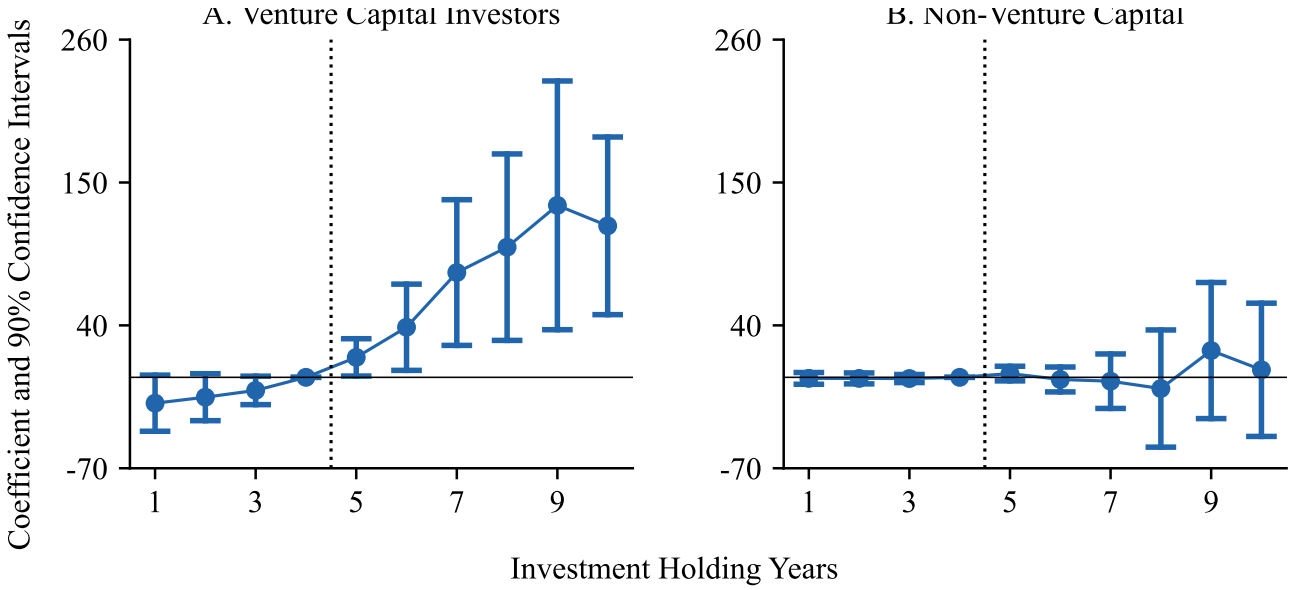
We next examine how tax benefits affect valuations. Our model predicts that tax benefits lead VCs to pursue more high-risk, high-reward investment strategies. Table 6 presents our baseline estimates. Columns (2) and (3) of Panel A show that VC investments in eligible sectors see a 6.7% increase in valuations (+$70 million relative to a mean of $1.0 billion) when tax benefits become available, an effect that nearly doubles among firms that achieve an exit (+$118 million, a 11.2% increase).[22] This pattern is unique to VC investors, as Columns (5) through (8) show: angel and corporate investors see declining, statistically insignificant, changes in valuations.

PLACE TABLE 6 ABOUT HERE

Our main valuation measure combines linear interpolation between observed values with forward and backward extension of the earliest and latest known valuations. Since valuations in our sample typically become available later in a firm's life when values are higher, this approach provides conservative estimates. When using only interpolated values between rounds or examining observed valuations alone, we observe larger effects: +69.0% (+$940 million relative to a mean of $1.4 billion)

[22] Figure IA2 visualizes this pattern through binned scatterplots. Panel A shows that in eligible sectors, post-2009 investments experience steeper valuation growth over the holding period compared to pre-2009 investments. In contrast, Panel B reveals that in ineligible sectors, post-2009 investments exhibit almost completely flat valuation trajectories, while pre-2009 investments show a strong upward trend.

Figure 8: Dynamic Triple-Differences Estimates for Valuations ($ M)



This figure presents dynamic triple-difference estimates for valuations ($ millions), based on the following specification: $Y_{i,f,t} = \beta_0 + \sum_{k=0}^{10} \beta_k [\mathbb{1}\{\text{Eligible Sector}\}_f \times \mathbb{1}\{\text{Holding Years} = k\}_{i,f,t} \times \mathbb{1}\{\text{Entry Post-2009}\}_{i,f}] + \text{Fixed Effects} + \epsilon_{i,f,t}$. Fixed effects include year, holding period, and investor×firm. Standard errors clustered at the investor level.

and +140.0% (+$2.5 billion relative to a mean of $1.8 billion), respectively (see Table IA7). The results are also robust to examining the natural logarithm of valuations rather than levels.

Figure 8 presents dynamic triple-difference estimates. Valuations of VC investments in eligible sectors begin diverging upward precisely at the five-year threshold when tax benefits become available. The effect grows steadily in subsequent years, reaching nearly $300 million by year 8, while non-VC investments show no such pattern. This persistent divergence makes economic sense, given that firm exits typically involve multiple investors who complete their five-year holding periods at different times.

Panel B of Table 6 shows that tax benefits significantly affect extreme valuations. As one can see in Columns (3) and (4), VC investments qualifing for tax benefits become 27% more likely to achieve unicorn status (+0.01 relative to a mean of 0.03), with this effect strengthening to 35% among investments achieving an exit.[23] In contrast, Columns (5) and (6) show that angel investments show no increased probability of achieving unicorn status, while corporate investments, presented in Columns (7) and (8), become 13% to 20% less likely to become unicorns. These effects are robust to alternative

[23] Table IA6 presents examples of unicorns in the sample, including Drift (backed by 14 investors) and Datalogix (backed by 8 investors), later acquired by Vista Equity Partners and Oracle, respectively.

valuation thresholds (such as $500 million, $2 billion, and $3 billion; see Table IA8).

Significant changes in exit patterns accompany the valuation effects. Columns (3) and (4) in Panel A of Table 7 reveal that when investments qualify for tax benefits, VC investments become 129% more likely to exit through private equity (PE) buyouts (+0.009 relative to a mean of 0.007)—an effect that increases to 153% when considering only portfolio companies achieving an exit. However, as Columns (3) and (4) in Panels B and C show, these same investments become less likely to exit through either acquisitions (–53%, or −66% considering only firms achieving an exit), or IPOs. This shift reflects the timing differences in exit channels documented in earlier literature.[24] Columns (5) through (8) in Panels A, B, and C show that these changes are nearly exclusive to VC investments.

PLACE TABLE 7 ABOUT HERE

9 Heterogeneity in Tax Benefit Effects

It is important that we examine next how the effect of tax benefits varies with economic magnitude of tax incentives. We start with a case study of investment by California-based investors. California initially partially complied with the federal-level QSBS exemption, providing qualifying investments with 50% exemption at the state level. This state-level benefit was economically relevant: the maximum long-term capital gain tax rate in California was 11.2% in 2009 and 2010. However, California eliminated its QSBS exclusion in 2012 after a court ruling citing constitutional issues, making any investment made after January 1 2013 ineligible to state-level QSBS benefits.

Results in Columns (1) through (4) of Table 8 show that, consistent of the economic magnitude of incentives, risk-taking by California-based VCs was higher when the state complied with the federal-level exemption. Column (1) shows that tax-advantaged investments between 2009 and 2012 were 160% more likely to go out of business (+0.016 relative to a mean of 0.01) in comparison to investments in eligible sectors between 2004 and 2008 held for more than five years. In contrast, as Column (2) shows, similar investments between 2013 and 2017 face a more modest increase in failure likelihood: they are

[24] Kaplan and Stromberg (2009) show that PE buyouts typically occur later in a company's lifecycle, while Gompers (1996) and Puri and Zarutskie (2012) establish that IPOs and strategic acquisitions, respectively, are often early exit opportunities.

82% more likely to go out of business relative to the pre-period (+0.014 relative to a mean of 0.017). Similarly, columns (3) and (4) show that increases in valuation were more pronounced when state-level benefits were available (+$159 million *versus* +$115 million). Table IA9 similarly shows that among states complying with the the federal QSBS benefits, those above the median tax rates show higher investment failure rates as well as higher increases in valuations.

PLACE TABLE 8 ABOUT HERE

10 Sources of Effects: Selection *versus* Treatment Effects

It is relevant to learn next whether the observed increases in both failures and valuations are driven by risk-taking in project selection or by other channels, such as changes in investor oversight. Our conceptual framework predicts that tax benefits primarily affect VCs' risk-taking in project selection rather than monitoring of portfolio companies since both the benefits and costs of monitoring scale proportionally with tax rates. We test this prediction empirically by examining changes in VC board voting rights in portfolio companies—a proxy for formal oversight capacity and ability to influence major corporate decisions—and CEO and executive team turnover in VC portfolio companies—one of the most significant governance actions investors take (as Ewens and Marx (2018) show, VCs often replace management teams of portfolio companies to enhance firm performance).

Columns (1) through (4) in Table 9 show that VC investments that qualify for tax benefits are not different in board voting rights or CEO turnover. Moreover, results in Columns (5) and (6) show that turnover in the broader executive team of portfolio companies *decreases* by 12.5% (−0.05 relative to a mean of 0.39), although the effect becomes statistically insignificant in the sample of portfolio companies that achieve an exit. These findings strengthen the interpretation that the failure and valuation effects we observe are driven by increased risk-taking in project selection instead of changes in monitoring by VCs.

PLACE TABLE 9 ABOUT HERE

Beyond governance mechanisms, we examine whether VCs enhance other value-adding activities in tax-advantaged investments. If the observed failure and valuation effects were driven by changes

in post-investment treatment—such as enhanced networking opportunities, strategic guidance, or operational improvements—we would expect to see higher exit multiples (the ratio of exit value to total capital raised). Instead, Columns (1) through (6) of Table 10 show that when investments qualify for tax benefits, neither the average exit multiple nor the likelihood of achieving various return thresholds (5×, 10×, 20×, or 50× returns) show statistically significant changes. Dynamic triple-difference estimates presented in Figure IA4 further illustrate these null exit multiple results.

PLACE TABLE 10 ABOUT HERE

Together, these results confirm that tax policy shapes capital allocation in entrepreneurial markets primarily through selection effects—affecting which ventures receive funding—rather than through treatment effects on how investors engage with their portfolio companies after investment.

11 Evidence from Human Capital

We seek additional evidence that tax benefits increase VC risk-taking by examining how VC portfolio companies deploy human capital. We analyze two dimensions where theory suggests risk-taking should manifest: managerial centralization and workforce turnover. Table 11 presents our results.

PLACE TABLE 11 ABOUT HERE

We begin by examining organizational centralization, measured as the ratio of executive positions to all employees. Sah and Stiglitz (1991) show that centralized organizational structures alter the risk profile of firms by concentrating decision-making authority. In their model, centralization amplifies outcome variance because managerial decisions have more concentrated impact—highly capable managers generate greater value through broader control, while less capable managers can create more extensive damage. Therefore, observing portfolio companies adopting more centralized structures would provide additional validation of VCs' increased risk-taking under tax benefits. Our evidence supports this prediction. Column (1) and (2) show that when investments qualify for tax benefits, organizational centralization increases by 14% (+0.05 relative to a mean of 0.34) in VC portfolio

companies that achieve an exit—those where our risk-taking results are most pronounced, although the effect becomes statistically insignificant when also considering non-exited firms.

We examine next gross employee turnover, measured as the sum of employee entries and departures in a given year divided by firm employment in the beginning of the year. Blanco et al. (2024) observe that turnover patterns reflect the underlying match quality between workers and firms, with higher turnover indicating greater experimentation in worker-firm matches. Results in Columns (3) and (4) show that, consistent with VCs pursuing higher-risk strategies, investments qualifying for tax benefits show 51.7% higher net employment change (+0.05 relative to a mean of 0.09), with the effect increasing to 116.7% among exited investments (+0.06 relative to a mean of 0.05).

These findings provide additional evidence of the increased risk-taking in VC investments when tax benefits apply. Across both organizational centralization and employee turnover, we find tax-advantaged portfolio companies adopting riskier approaches, consistent with our core results.

12 Conclusion

This paper examines whether tax incentives can prompt investors to fund riskier ventures. Using a triple-difference design exploiting the Qualified Small Business Stock program's elimination of capital gains taxes on certain startup investments, we analyze how VCs, angels, and corporations responded to tax benefits between 2004 and 2022. Our identification leverages discontinuities created by industry eligibility criteria, the 2009 policy enhancement, and the five-year holding requirement, isolating the causal effect of tax benefits on investment decisions and outcomes.

Our analysis yields three key findings. First, tax benefits significantly reshape both the level and composition of VC investment. When tax incentives become available, VCs strategically shift toward riskier ventures: they increase their investments in stealth-mode and beta-stage companies, and target more innovative firms. This risk-taking strategy generates measurable consequences—tax-qualified investments experience higher failure rates and more extended funding gaps, but also achieve higher valuations and likelihood of reaching unicorn status. Second, this response is uniquely concentrated among VC partnerships—we find no comparable risk-shifting among angel investors or corporations. Third, these effects are driven by project selection rather than post-investment engagement—we find no

evidence that VCs intensify board involvement or management oversight when tax benefits apply, and exit multiples remain unchanged, confirming that value creation stems from initial investment decisions.

These findings advance our understanding of how tax policy affects entrepreneurial finance markets in two important ways. First, we show that investor organizational structure matters for policy transmission—tax benefits work most effectively through VC partnerships, which combine risk-sharing capabilities with incentive-based compensation. Second, tax policy can help overcome financing frictions by encouraging VC investors to fund marginally riskier ventures. These results have implications for ongoing policy debates about promoting entrepreneurship through the tax code; while critics argue that programs like the QSBS primarily benefit sophisticated investors who would fund risky ventures regardless of tax benefits, our evidence shows that tax benefits help address financing frictions in entrepreneurial markets by encouraging greater risk-taking in venture funding when channeled through intermediaries who combine risk-sharing with strong performance incentives.

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Table 1: Summary Statistics

	All Investments								Exited Investments							
	Mean	SD	P10	P25	P50	P75	P90	N	Mean	SD	P10	P25	P50	P75	P90	N
Panel A: Investment Characteristics																
Holding Years	3.374	2.618	0.000	1.000	3.000	5.000	7.000	1,052,649	2.732	2.317	0.000	1.000	2.000	4.000	6.000	464,363
$\mathbb{1}\{\text{Holding Years} \geq 5\}$	0.321	0.467	0.000	0.000	0.000	1.000	1.000	1,052,649	0.219	0.413	0.000	0.000	0.000	0.000	1.000	464,363
Investment Entry Year	2012.762	3.363	2007	2011	2014	2015	2017	1,052,649	2011.977	3.411	2007	2010	2013	2015	2016	464,363
$\mathbb{1}\{\text{Post}\}$	0.858	0.349	0.000	1.000	1.000	1.000	1.000	1,052,649	0.811	0.391	0.000	1.000	1.000	1.000	1.000	464,363
$\mathbb{1}\{\text{Eligible Sector}\}$	0.887	0.317	0.000	1.000	1.000	1.000	1.000	1,052,611	0.901	0.298	1.000	1.000	1.000	1.000	1.000	464,363
Panel B: Funding Patterns																
Deal Size ($M)	42.870	427.857	0.390	1.500	5.700	20.000	55.000	435,494	66.733	611.108	0.520	1.950	7.000	23.750	78.000	209,813
Number of Investors	5.258	5.748	1.000	1.000	3.000	7.000	12.000	453,433	4.749	5.227	1.000	1.000	3.000	6.000	11.000	235,925
Number of New Investors	3.887	5.263	0.000	1.000	2.000	5.000	10.000	453,433	3.380	4.849	0.000	1.000	2.000	4.000	9.000	235,925
Panel C: Failed Investments																
$\mathbb{1}\{\text{Out of Business}\}$	0.019	0.135	0.000	0.000	0.000	0.000	0.000	1,052,649	0.042	0.201	0.000	0.000	0.000	0.000	0.000	464,363
Years Without Funding	1.143	1.740	0.000	0.000	0.000	2.000	4.000	1,052,649	0.760	1.292	0.000	0.000	0.000	1.000	2.000	464,363
$\mathbb{1}\{\text{Five Years Without Funding}\}$	0.064	0.245	0.000	0.000	0.000	0.000	0.000	1,052,649	0.026	0.159	0.000	0.000	0.000	0.000	0.000	464,363
Panel D: Valuation																
Valuation ($M)	1353.934	6542.927	10.000	38.926	175.000	543.520	1781.000	152,561	1328.554	6621.938	9.600	37.500	161.921	525.000	1734.000	138,295
$\mathbb{1}\{\text{Unicorn}\}$	0.026	0.158	0.000	0.000	0.000	0.000	0.000	1,052,649	0.051	0.220	0.000	0.000	0.000	0.000	0.000	464,363
Panel E: Exit Patterns																
$\mathbb{1}\{\text{Private Equity Buyout}\}$	0.007	0.083	0.000	0.000	0.000	0.000	0.000	1,052,649	0.016	0.125	0.000	0.000	0.000	0.000	0.000	464,363
$\mathbb{1}\{\text{Acquisition}\}$	0.044	0.206	0.000	0.000	0.000	0.000	0.000	1,052,649	0.100	0.301	0.000	0.000	0.000	0.000	1.000	464,363
$\mathbb{1}\{\text{IPO}\}$	0.005	0.070	0.000	0.000	0.000	0.000	0.000	1,052,649	0.011	0.104	0.000	0.000	0.000	0.000	0.000	464,363
Panel F: Investor Monitoring																
$\mathbb{1}\{\text{Board Voting Rights}\}$	0.353	0.478	0.000	0.000	0.000	1.000	1.000	548,449	0.286	0.452	0.000	0.000	0.000	1.000	1.000	285,317
$\mathbb{1}\{\text{CEO Turnover}\}$	0.044	0.206	0.000	0.000	0.000	0.000	0.000	905,368	0.069	0.254	0.000	0.000	0.000	0.000	0.000	362,750
$\mathbb{1}\{\text{C-Suite Turnover}\}$	0.347	0.476	0.000	0.000	0.000	1.000	1.000	905,368	0.425	0.494	0.000	0.000	0.000	1.000	1.000	362,750
Panel G: Exit Multiples																
Exit Multiple	9.154	124.820	0.290	0.860	2.992	6.611	13.383	19,008	9.154	124.820	0.290	0.860	2.992	6.611	13.383	19,008
$\mathbb{1}\{\text{Exit Multiple} > 5\times\}$	0.343	0.475	0.000	0.000	0.000	1.000	1.000	19,008	0.343	0.475	0.000	0.000	0.000	1.000	1.000	19,008
$\mathbb{1}\{\text{Exit Multiple} > 10\times\}$	0.151	0.358	0.000	0.000	0.000	0.000	1.000	19,008	0.151	0.358	0.000	0.000	0.000	0.000	1.000	19,008
$\mathbb{1}\{\text{Exit Multiple} > 20\times\}$	0.049	0.216	0.000	0.000	0.000	0.000	0.000	19,008	0.049	0.216	0.000	0.000	0.000	0.000	0.000	19,008
$\mathbb{1}\{\text{Exit Multiple} > 50\times\}$	0.018	0.135	0.000	0.000	0.000	0.000	0.000	19,008	0.018	0.135	0.000	0.000	0.000	0.000	0.000	19,008

This table presents summary statistics for our main sample (investor–firm–year level), including investments in C-corporations from 2004 to 2017 (tracked from 2004 to 2022) where the investor joined in a round under $50 million. Statistics are presented separately for all investments and those that experienced any exit. Panel A reports investment characteristics. Panel B presents funding patterns. Panel C shows business failure variables. Panel D presents performance metrics. Panel E reports the frequency of different exit types. Panel F presents monitoring and governance measures. All indicator variables are denoted by $\mathbb{1}$. Exit Multiple is the ratio of exit value to total investment. Valuation is post-money. Data are from PitchBook.

Table 2: Difference-in-Bunching Estimates: Elasticity of Tax Benefits

Statistical Model	Trapezoidal Approximation (Elasticity ϵ)	Observations	
		Eligible	Counterfactual
	(1)	(2)	(3)
Panel A: Eligible Sectors Only, Post-2009 vs. Pre-2009			
Elasticity (ϵ)	2.589***	37,120	36,340
	(4.53)		
Panel B: Eligible vs. Ineligible Sectors, Post-2009 Only			
Elasticity (ϵ)	4.878***	37,120	3,661
	(9.09)		
Panel C: Eligible Post-2009 vs. Ineligible Sectors Pre-2009			
Elasticity (ϵ)	2.893***	37,120	3,224
	(3.30)		

This table reports difference-in-bunching elasticity estimates for QSBS tax benefits, following Brown (2013). Panel A presents the difference between eligible investments (eligible sectors, investor entry post-2009) and ineligible investments (ineligible sectors, post-2009), while Panel B presents the difference between eligible investments post-2009 and eligible investments pre-2009. Elasticity estimates are obtained using a trapezoidal approximation; the t-statistics (in parentheses) are based on bootstrap standard errors (1,000 replications). Observations refer to the number of investor–firm-years. The sample includes investments from 2007 to 2010.

Table 3: Impact of QSBS Tax Benefits on Investments and Contracts: Cross-Sectional Regressions

Dependent Variable:	Early Business Stage		Innovation-Focused		Contract Terms (Cash Flow Rights)		
	𝟙{Product Beta} (1)	𝟙{Stealth Mode} (2)	AI-Skilled/ All Employees (3)	AI-Skilled/ Engineers (4)	𝟙{Equal Footing} (5)	𝟙{Cumulative Dividends} (6)	𝟙{Participating Preferred} (7)
Panel A: All Investors							
𝟙{Eligible} × 𝟙{Post}	0.003***	0.003*	0.009**	0.053*	−0.060**	0.072***	0.028
	(4.26)	(1.80)	(2.44)	(1.78)	(−2.39)	(3.68)	(1.10)
𝟙{Eligible}	−0.000	0.002	−0.003	−0.059**	0.056**	−0.067***	0.010
	(−0.26)	(1.29)	(−0.91)	(−2.06)	(2.33)	(−3.61)	(0.40)
Observations	131,256	131,256	99,664	76,248	50,517	50,697	61,028
Adjusted R^2	−0.000	−0.016	0.042	0.087	0.073	0.289	0.275
Mean Dependent Variable	0.006	0.004	0.028	0.117	0.339	0.160	0.247
Panel B: Venture Capital							
𝟙{Eligible} × 𝟙{Post}	0.003***	0.006**	0.014***	0.073***	−0.076**	0.078***	−0.001
	(2.75)	(2.44)	(2.75)	(2.70)	(−2.36)	(3.27)	(−0.13)
𝟙{Eligible}	0.000	0.001	−0.008	−0.060**	0.069**	−0.070***	−0.000
	(0.14)	(0.23)	(−1.57)	(−2.33)	(2.24)	(−3.07)	(−0.00)
Observations	60,504	60,504	47,194	37,686	28,267	28,681	34,412
Adjusted R^2	−0.002	−0.006	0.048	0.050	0.067	0.296	0.075
Mean Dependent Variable	0.006	0.005	0.028	0.110	0.343	0.155	0.945
Panel C: Angel Investors							
𝟙{Eligible} × 𝟙{Post}	0.006***	−0.000	0.007	−0.028	−0.174***	0.029	−0.095**
	(4.53)	(−0.04)	(0.85)	(−0.65)	(−3.47)	(0.88)	(−2.58)
𝟙{Eligible}	−0.001	0.006**	−0.001	0.054	0.205***	0.006	0.097***
	(−0.41)	(2.02)	(−0.17)	(1.31)	(4.18)	(0.18)	(2.62)
Observations	30,449	30,449	23,856	17,910	11,959	11,501	14,526
Adjusted R^2	0.001	−0.039	0.065	0.055	0.087	0.286	0.098
Mean Dependent Variable	0.006	0.004	0.027	0.125	0.368	0.127	0.850
Panel D: Corporate							
𝟙{Eligible} × 𝟙{Post}	−0.003	0.000	0.005	−0.040	−0.041	−0.022	−0.019
	(−0.41)	(0.01)	(0.36)	(−0.66)	(−0.40)	(−0.19)	(−0.58)
𝟙{Eligible}	0.006	0.001	−0.003	−0.009	0.008	−0.045	0.029
	(1.01)	(0.70)	(−0.27)	(−0.16)	(0.08)	(−0.43)	(0.88)
Observations	8,571	8,571	6,565	5,398	3,662	3,913	4,617
Adjusted R^2	−0.025	−0.023	0.099	0.075	0.048	0.250	0.061
Mean Dependent Variable	0.004	0.003	0.029	0.099	0.309	0.154	0.966
Investor FE	✓	✓	✓	✓	✓	✓	✓
Industry FE	✓	✓	✓	✓	✓	✓	✓
Firm State×Investor Entry Year FE	✓	✓	✓	✓	✓	✓	✓
Clustered SE (Investor)	✓	✓	✓	✓	✓	✓	✓

This table presents estimates of the effect of QSBS tax benefits on investment selection and contract terms at the moment of investment entry. The dependent variables include: Product Beta and Stealth Mode indicators; AI-skilled employees as a fraction of all employees and of engineers; and cash flow rights provisions (Equal Footing, Cumulative Dividends, and Participating Preferred). We identify AI roles through the following keywords in job titles: "machine learning", "ai", "computer vision", "data scientist", "applied scientist", "data mining", "big data", "data analytics", "applied researcher", "data science". Results are shown by investor type in separate panels, with t-statistics based on standard errors clustered at the investor level shown in parentheses. Firm State×Investor Entry Year fixed effects interacts portfolio company state and investment year. The sample is at the investor–firm level and includes investment entry years from 2004–2017. Eligible indicates QSBS-eligible sectors, and Post indicates investments made after 2009. For each specification, we report the number of observations, adjusted R-squared, and mean of the dependent variable. Venture Capital includes traditional VC firms, Angel includes individual angel investors and angel groups, and Corporate includes corporate venture capital and other investments by corporations. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 4: Impact of QSBS Tax Benefits on Funding Patterns: Triple-Difference Regressions

	All Investors		Venture Capital		Angel		Corporate	
	All Firms (1)	Exited (2)	All Firms (3)	Exited (4)	All Firms (5)	Exited (6)	All Firms (7)	Exited (8)
Panel A: Dependent Variable = Deal Size ($ millions)								
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	30.495*	29.443	56.500**	91.726*	−52.356	−148.114	3.075	50.791
	(1.78)	(0.84)	(2.29)	(1.77)	(−1.20)	(−1.46)	(0.07)	(0.45)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	−44.792***	−74.911***	−64.400***	−130.192***	30.188	52.882	−17.659	−71.332
	(−2.90)	(−2.82)	(−2.99)	(−3.23)	(0.73)	(0.61)	(−0.41)	(−0.70)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	45.109***	126.585***	−0.750	5.847	211.748***	500.779***	−1.478	−60.344
	(2.62)	(3.67)	(−0.03)	(0.12)	(4.82)	(5.03)	(−0.03)	(−0.54)
Observations	396,062	183,253	169,874	85,571	109,715	46,320	31,941	16,614
Adjusted R^2	0.063	0.059	0.013	0.012	0.149	0.162	0.117	0.099
Mean Dependent Variable	46.143	74.535	47.837	70.333	49.643	87.771	43.882	63.210
Panel B: Dependent Variable = Number of Investors								
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	1.559***	1.207***	1.113***	1.444***	2.795***	1.549**	0.294	0.367
	(8.36)	(5.93)	(4.72)	(4.42)	(4.69)	(2.24)	(0.55)	(0.80)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	−1.099***	−0.814***	−0.805***	−0.503*	−1.789***	−0.896	−0.924**	−0.866***
	(−6.71)	(−5.13)	(−4.34)	(−1.95)	(−3.12)	(−1.37)	(−2.18)	(−2.69)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.315	0.462**	−0.089	0.078	−0.739	0.514	0.407	0.716
	(−1.55)	(2.11)	(−0.35)	(0.22)	(−1.20)	(0.71)	(0.74)	(1.50)
Observations	420,494	218,717	178,318	98,744	117,451	57,438	34,100	19,897
Adjusted R^2	0.246	0.243	0.240	0.230	0.291	0.322	0.242	0.236
Mean Dependent Variable	5.255	4.731	5.211	4.587	6.678	6.089	4.511	4.001
Panel C: Dependent Variable = Number of New Investors								
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	1.171***	0.851***	0.921***	1.155***	2.033***	1.319**	0.224	−0.112
	(7.57)	(5.10)	(4.87)	(4.60)	(3.95)	(2.06)	(0.50)	(−0.32)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	−0.809***	−0.551***	−0.589***	−0.339*	−1.363***	−0.884	−0.732**	−0.290
	(−6.06)	(−4.55)	(−4.23)	(−1.84)	(−2.75)	(−1.47)	(−2.08)	(−1.36)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.229	0.426**	−0.079	0.012	−0.521	0.198	0.502	1.096***
	(−1.34)	(2.31)	(−0.39)	(0.04)	(−0.98)	(0.30)	(1.14)	(3.02)
Observations	420,494	218,717	178,318	98,744	117,451	57,438	34,100	19,897
Adjusted R^2	0.265	0.274	0.279	0.280	0.325	0.361	0.252	0.250
Mean Dependent Variable	3.809	3.289	3.593	3.027	5.262	4.714	2.947	2.450
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Holding Period FE	✓	✓	✓	✓	✓	✓	✓	✓
Investor-Firm FE	✓	✓	✓	✓	✓	✓	✓	✓
Clustered SE (Investor)	✓	✓	✓	✓	✓	✓	✓	✓

This table presents estimates of the effect of QSBS tax benefits on funding patterns. The dependent variables are deal size in millions of dollars (Panel A), total number of investors per funding round (Panel B), and number of new investors per funding round (Panel C). Post is an indicator for investments made after 2009, Eligible indicates QSBS-eligible sectors, and $\mathbb{1}\{\text{Holding} \geq 5\}$ indicates investments held for five or more years. The sample is at the investor–firm–year level and includes years from 2004–2022 and investment entry years from 2004–2017. Results are shown for all investors (split between all firms and those that experienced any exit) and by investor type, where Venture Capital includes traditional VC firms, Angel includes individual angel investors and angel groups, and Corporate includes corporate venture capital and other investments by corporations. t-statistics based on standard errors clustered at the investor level are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 5: Impact of QSBS Tax Benefits on Failed Outcomes: Triple-Difference Regressions

	All Investors		Venture Capital		Angel		Corporate	
	All Firms	Exited	All Firms	Exited	All Firms	Exited	All Firms	Exited
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Dependent Variable = 𝟙{Out of Business Outcome}								
𝟙{Eligible} × 𝟙{Holding ≥ 5} × 𝟙{Post}	0.011***	0.037***	0.012***	0.041***	0.001	0.023*	0.004	0.015
	(5.04)	(6.42)	(3.92)	(4.94)	(0.34)	(1.87)	(0.68)	(0.95)
𝟙{Eligible} × 𝟙{Holding ≥ 5}	0.001	−0.004	0.002	−0.002	0.011***	0.018*	0.005	0.004
	(0.59)	(−0.83)	(0.79)	(−0.37)	(4.03)	(1.70)	(1.05)	(0.41)
𝟙{Holding ≥ 5} × 𝟙{Post}	−0.024***	−0.072***	−0.025***	−0.074***	−0.014***	−0.057***	−0.010*	−0.034**
	(−11.11)	(−12.39)	(−7.76)	(−8.85)	(−4.69)	(−4.72)	(−1.79)	(−2.28)
Observations	1,050,884	462,661	412,453	197,964	302,134	118,027	85,845	43,066
Adjusted R^2	0.108	0.108	0.109	0.103	0.106	0.104	0.092	0.088
Mean Dependent Variable	0.018	0.042	0.017	0.035	0.019	0.048	0.015	0.029
Panel B: Dependent Variable = Zero Funding Years								
𝟙{Eligible} × 𝟙{Holding ≥ 5} × 𝟙{Post}	0.382***	0.207***	0.351***	0.222**	0.511***	−0.106	0.307	0.349*
	(5.55)	(3.09)	(3.71)	(2.39)	(2.75)	(−0.56)	(1.47)	(1.72)
𝟙{Eligible} × 𝟙{Holding ≥ 5}	−0.508***	−0.266***	−0.356***	−0.258***	−0.518***	0.070	−0.694***	−0.495***
	(−7.66)	(−4.26)	(−3.89)	(−3.02)	(−2.85)	(0.38)	(−3.61)	(−2.74)
𝟙{Holding ≥ 5} × 𝟙{Post}	−0.403***	−0.227***	−0.401***	−0.253***	−0.727***	−0.008	−0.227	−0.324*
	(−6.08)	(−3.48)	(−4.36)	(−2.81)	(−4.17)	(−0.04)	(−1.12)	(−1.66)
Observations	1,050,884	462,661	412,453	197,964	302,134	118,027	85,845	43,066
Adjusted R^2	0.466	0.335	0.438	0.301	0.467	0.342	0.474	0.359
Mean Dependent Variable	1.145	0.763	1.002	0.679	1.203	0.746	1.173	0.852
Panel C: Dependent Variable = 𝟙{Five Years Without Funding}								
𝟙{Eligible} × 𝟙{Holding ≥ 5} × 𝟙{Post}	0.080***	0.083***	0.083***	0.098***	0.048	0.017	0.063	0.065
	(6.16)	(5.73)	(4.78)	(5.22)	(1.36)	(0.42)	(1.57)	(1.34)
𝟙{Eligible} × 𝟙{Holding ≥ 5}	−0.108***	−0.100***	−0.076***	−0.085***	−0.045	−0.010	−0.175***	−0.169***
	(−8.82)	(−7.39)	(−4.59)	(−4.76)	(−1.31)	(−0.25)	(−4.79)	(−3.92)
𝟙{Holding ≥ 5} × 𝟙{Post}	−0.083***	−0.092***	−0.088***	−0.107***	−0.065*	−0.011	−0.072*	−0.084*
	(−6.54)	(−6.34)	(−5.13)	(−5.64)	(−1.95)	(−0.28)	(−1.81)	(−1.74)
Observations	1,050,884	462,661	412,453	197,964	302,134	118,027	85,845	43,066
Adjusted R^2	0.317	0.187	0.290	0.150	0.314	0.182	0.337	0.229
Mean Dependent Variable	0.064	0.026	0.049	0.019	0.069	0.025	0.067	0.034
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Holding Period FE	✓	✓	✓	✓	✓	✓	✓	✓
Investor × Firm FE	✓	✓	✓	✓	✓	✓	✓	✓
Clustered SE (Investor)	✓	✓	✓	✓	✓	✓	✓	✓

This table presents estimates of the effect of QSBS tax benefits on measures of risk taking. Panel A examines business failures through an indicator for firms that went out of business. Panel B measures the length of funding droughts by counting the number of consecutive years a firm has gone without raising new funding (e.g., a value of 3 indicates the firm has not raised funding for three consecutive years at that point in time). Panel C examines funding gaps through an indicator for firms that go five or more years without raising new funding. Post is an indicator for investments made after 2009, Eligible indicates QSBS-eligible sectors, and 𝟙{Holding ≥ 5} indicates investments held for five or more years. The sample is at the investor–firm–year level and includes years from 2004–2022 and investment entry years from 2004–2017. Results are shown for all investors (split between all firms and those that experienced any exit) and by investor type, where Venture Capital includes traditional VC firms, Angel includes individual angel investors and angel groups, and Corporate includes corporate venture capital and other investments by corporations. t-statistics based on standard errors clustered at the investor level are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 6: Impact of QSBS Tax Benefits on Valuations: Triple-Difference Regressions

	All Investors		Venture Capital		Angel		Corporate	
	All Firms	Exited	All Firms	Exited	All Firms	Exited	All Firms	Exited
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Dependent Variable = Valuation ($ millions)								
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	34.278**	59.674***	69.879***	117.749***	−1.807	−2.790	−24.211	−27.058
	(2.53)	(2.76)	(2.75)	(2.75)	(−1.41)	(−1.40)	(−1.34)	(−1.40)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	−29.910**	−56.194***	−56.784**	−106.252**	1.820	2.800	6.604*	8.310*
	(−2.31)	(−2.65)	(−2.29)	(−2.49)	(1.41)	(1.41)	(1.93)	(1.92)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−31.676**	−57.335***	−62.473**	−109.676***	−0.179	−0.041	17.042	18.455
	(−2.38)	(−2.70)	(−2.52)	(−2.60)	(−0.38)	(−0.08)	(0.89)	(0.89)
Observations	152,344	138,082	74,194	66,632	32,338	29,665	15,551	14,441
Adjusted R^2	0.999	0.999	0.998	0.998	1.000	1.000	1.000	1.000
Mean Dependent Variable	1355.837	1330.576	1035.323	1048.754	2657.219	2584.310	631.296	620.549
Panel B: Dependent Variable = $\mathbb{1}\{Unicorn\}$								
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.004**	0.010**	0.008**	0.019**	−0.000	−0.001	−0.003**	−0.008**
	(2.08)	(2.23)	(2.27)	(2.34)	(−1.00)	(−1.00)	(−2.18)	(−2.05)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	−0.004**	−0.010**	−0.008**	−0.019**	0.000	0.001	0.003*	0.005*
	(−2.09)	(−2.28)	(−2.24)	(−2.33)	(1.00)	(1.00)	(1.94)	(1.93)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.005***	−0.011***	−0.009**	−0.020**	−0.000	−0.000	0.001	0.002
	(−2.65)	(−2.69)	(−2.34)	(−2.40)	(−1.00)	(−0.99)	(0.61)	(0.65)
Observations	1,050,884	462,661	412,453	197,964	302,134	118,027	85,845	43,066
Adjusted R^2	0.994	0.993	0.991	0.989	1.000	1.000	0.992	0.991
Mean Dependent Variable	0.026	0.051	0.030	0.054	0.027	0.059	0.023	0.041
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Holding Period FE	✓	✓	✓	✓	✓	✓	✓	✓
Investor × Firm FE	✓	✓	✓	✓	✓	✓	✓	✓
Clustered SE (Investor)	✓	✓	✓	✓	✓	✓	✓	✓

This table presents estimates of the effect of QSBS tax benefits on firm valuations. Panel A examines firm valuation in millions of dollars, which is linearly interpolated between funding rounds. Panel B examines the likelihood of achieving unicorn status (valuation exceeding $1 billion), where unicorn status is determined based on interpolated valuations and appears for each investor–firm–year with the given status. Results without interpolation and with alternative valuation thresholds are available in Tables IA7 and IA8 of the Internet Appendix. Post is an indicator for investments made after 2009, Eligible indicates QSBS-eligible sectors, and $\mathbb{1}\{\text{Holding} \geq 5\}$ indicates investments held for five or more years. The sample is at the investor–firm–year level and includes years from 2004–2022 and investment entry years from 2004–2017. Results are shown for all investors (split between all firms and those that experienced any exit) and by investor type, where Venture Capital includes traditional VC firms, Angel includes individual angel investors and angel groups, and Corporate includes corporate venture capital and other investments by corporations. t-statistics based on standard errors clustered at the investor level are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 7: Impact of QSBS Tax Benefits on Exit Choices: Triple-Difference Regressions

	All Investors		Venture Capital		Angel		Corporate	
	All Firms (1)	Exited (2)	All Firms (3)	Exited (4)	All Firms (5)	Exited (6)	All Firms (7)	Exited (8)
Panel A: Dependent Variable $= \mathbb{1}\{$*Private Equity Buyout*$\}$								
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.007***	0.020***	0.009***	0.023***	0.002	0.029**	−0.001	−0.003
	(3.06)	(3.37)	(2.75)	(2.79)	(0.57)	(1.99)	(−0.23)	(−0.20)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	−0.006**	−0.021***	−0.006**	−0.020***	0.002	−0.015	0.002	−0.001
	(−2.57)	(−3.88)	(−1.99)	(−2.95)	(0.47)	(−1.07)	(0.45)	(−0.05)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.007***	−0.021***	−0.007**	−0.022***	−0.002	−0.029**	0.004	0.003
	(−2.90)	(−3.65)	(−2.21)	(−2.72)	(−0.64)	(−2.08)	(0.75)	(0.21)
Observations	1,050,884	462,661	412,453	197,964	302,134	118,027	85,845	43,066
Adjusted R^2	0.053	0.048	0.052	0.051	0.043	0.043	0.054	0.052
Mean Dependent Variable	0.007	0.016	0.007	0.015	0.005	0.014	0.008	0.016
Panel B: Dependent Variable $= \mathbb{1}\{$*Acquisition*$\}$								
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.022***	−0.046***	−0.027***	−0.070***	−0.069***	−0.128***	0.024	0.062*
	(−4.60)	(−4.18)	(−3.51)	(−3.84)	(−7.53)	(−4.44)	(1.42)	(1.80)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	0.019***	0.009	0.021***	0.012	0.057***	0.065**	−0.020	−0.075**
	(4.15)	(0.95)	(3.19)	(0.88)	(6.49)	(2.39)	(−1.31)	(−2.55)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.038***	0.031***	0.048***	0.060***	0.083***	0.097***	−0.009	−0.087**
	(7.54)	(2.86)	(6.25)	(3.38)	(8.75)	(3.39)	(−0.53)	(−2.54)
Observations	1,050,884	462,661	412,453	197,964	302,134	118,027	85,845	43,066
Adjusted R^2	0.116	0.144	0.118	0.148	0.117	0.154	0.119	0.148
Mean Dependent Variable	0.043	0.098	0.051	0.106	0.039	0.100	0.053	0.106
Panel C: Dependent Variable $= \mathbb{1}\{$*IPO*$\}$								
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.006***	−0.006	−0.007**	−0.008	−0.002	0.028	−0.008	−0.012
	(−2.94)	(−1.21)	(−2.11)	(−1.07)	(−0.34)	(1.14)	(−1.57)	(−1.04)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	0.008***	0.011**	0.009***	0.012*	0.004	−0.023	0.011**	0.019*
	(4.24)	(2.56)	(2.99)	(1.76)	(0.61)	(−0.96)	(2.43)	(1.94)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.004**	0.001	0.005	0.002	−0.001	−0.036	0.006	0.003
	(2.39)	(0.30)	(1.61)	(0.23)	(−0.27)	(−1.50)	(1.23)	(0.29)
Observations	1,050,884	462,661	412,453	197,964	302,134	118,027	85,845	43,066
Adjusted R^2	0.053	0.025	0.049	0.023	0.013	−0.003	0.059	0.028
Mean Dependent Variable	0.005	0.011	0.006	0.013	0.003	0.007	0.007	0.013
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Holding Period FE	✓	✓	✓	✓	✓	✓	✓	✓
Investor × Firm FE	✓	✓	✓	✓	✓	✓	✓	✓
Clustered SE (Investor)	✓	✓	✓	✓	✓	✓	✓	✓

This table presents estimates of the effect of QSBS tax benefits on successful exit types. Panel A examines private equity buyouts. Panel B examines acquisitions. Panel C examines initial public offerings (IPOs). Post is an indicator for investments made after 2009, Eligible indicates QSBS-eligible sectors, and $\mathbb{1}\{\text{Holding} \geq 5\}$ indicates investments held for five or more years. The sample is at the investor–firm–year level and includes years from 2004–2022 and investment entry years from 2004–2017. Results are shown for all investors (split between all firms and those that experienced any exit) and by investor type, where Venture Capital includes traditional VC firms, Angel includes individual angel investors and angel groups, and Corporate includes corporate venture capital and other investments by corporations. t-statistics based on standard errors clustered at the investor level are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 8: Heterogeneity of Risk-Taking: State-Level Exemption (California Case Study)

	𝟙{Out of Business}		Valuation ($M)	
	CA State QSBS Eligible Period (2009-2012)	CA State QSBS Ineligible Period (2013-2017)	CA State QSBS Eligible Period (2009-2012)	CA State QSBS Ineligible Period (2013-2017)
	(1)	(2)	(3)	(4)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.016***	0.014***	159.439***	114.533**
	(2.72)	(3.00)	(3.03)	(2.30)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	0.002	0.002	−108.807**	−108.006**
	(0.49)	(0.60)	(−2.19)	(−2.17)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.015**	−0.020***	−155.558***	−104.589**
	(−2.45)	(−4.26)	(−3.06)	(−2.10)
Observations	77,445	137,729	23,871	25,488
Adjusted R^2	0.049	0.127	0.997	1.000
Mean Dependent Variable	0.010	0.017	1205.759	1050.165
Year FE	✓	✓	✓	✓
Holding Period FE	✓	✓	✓	✓
Investor × Firm FE	✓	✓	✓	✓
Clustered SE (Investor)	✓	✓	✓	✓

This table presents a case study of California-based investments and the effect of QSBS eligibility changes that occurred in 2013. Columns 1 and 3 focus on California investments made during the QSBS-eligible period (2009-2012 entry years), while columns 2 and 4 focus on investments made after California eliminated QSBS benefits (2013-2017 entry years). The dependent variables are an indicator for out of business status (columns 1-2) and firm valuation in millions of dollars (columns 3-4). Post is an indicator for investments made after 2009, Eligible indicates QSBS-eligible sectors, and $\mathbb{1}\{\text{Holding} \geq 5\}$ indicates investments held for five or more years. The sample is at the investor–firm–year level, and includes traditional VC firms in California only. t-statistics based on standard errors clustered at the investor level are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 9: Potential Alternative Channel Driving Risk-Taking: VC Monitoring of Portfolio Companies

	𝟙{Board Voting Rights}		𝟙{CEO Turnover}		𝟙{C-Suite Turnover}	
	All Firms	Exited Firms	All Firms	Exited Firms	All Firms	Exited Firms
	(1)	(2)	(3)	(4)	(5)	(6)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.021	0.010	−0.002	−0.001	−0.046**	−0.037
	(0.92)	(0.37)	(−0.19)	(−0.06)	(−2.38)	(−1.13)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	−0.014	−0.022	−0.002	−0.008	0.024	0.036
	(−0.68)	(−0.97)	(−0.28)	(−0.70)	(1.32)	(1.28)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.131***	−0.131***	−0.006	−0.020	−0.199***	−0.240***
	(−6.08)	(−4.94)	(−0.69)	(−1.63)	(−10.59)	(−7.42)
Observations	226,725	125,497	356,670	157,669	356,670	157,669
Adjusted R^2	0.029	0.039	0.006	0.004	0.015	0.014
Mean Dependent Variable	0.398	0.321	0.050	0.072	0.389	0.453
Year FE	✓	✓	✓	✓	✓	✓
Holding Period FE	✓	✓	✓	✓	✓	✓
Investor × Firm FE	✓	✓	✓	✓	✓	✓
Clustered SE (Investor)	✓	✓	✓	✓	✓	✓

This table presents estimates of the effect of QSBS tax benefits on VC monitoring activities. Board Voting Rights indicates whether the investor has board voting rights, CEO Turnover indicates CEO replacement, and C-Suite Turnover indicates turnover among all C-suite executives. Post is an indicator for investments made after 2009, Eligible indicates QSBS-eligible sectors, and $\mathbb{1}\{\text{Holding} \geq 5\}$ indicates investments held for five or more years. The sample is at the investor–firm–year level and includes years from 2004–2022 and investment entry years from 2004–2017, and includes VC investors only. Results are shown separately for all firms and those that experienced any exit. t-statistics based on standard errors clustered at the investor level are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 10: Other Potential Changes in Value-Add by VC Firms: Exit Multiples of Portfolio Companies

Dependent Variable:	Exit Multiple	Exit Multiple Thresholds			
		$\mathbb{1}\{ > 5\times\}$	$\mathbb{1}\{ > 10\times\}$	$\mathbb{1}\{ > 20\times\}$	$\mathbb{1}\{ > 50\times\}$
	(1)	(2)	(3)	(4)	(5)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.077	0.003	0.001	0.001	0.001
	(0.54)	(0.77)	(0.65)	(0.52)	(0.52)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	0.023	0.000	0.001	0.000	0.000
	(0.25)	(0.10)	(0.40)	(0.02)	(0.02)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.114	−0.005**	−0.002	−0.002	−0.002
	(−1.03)	(−2.04)	(−1.40)	(−1.21)	(−1.21)
Observations	8,499	8,499	8,499	8,499	8,499
Adjusted R^2	0.997	0.998	0.998	0.996	0.986
Mean Dependent Variable	6.027	0.331	0.136	0.036	0.010
Year FE	✓	✓	✓	✓	✓
Holding Period FE	✓	✓	✓	✓	✓
Investor FE	✓	✓	✓	✓	✓
Firm FE	✓	✓	✓	✓	✓
Clustered SE (Investor)	✓	✓	✓	✓	✓

This table presents estimates of the effect of QSBS tax benefits on venture capital exit performance. The dependent variables are the exit multiple (Column 1) and indicators for achieving various exit multiple thresholds (Columns 2 to 5). Post is an indicator for investments made after 2009, Eligible indicates QSBS-eligible sectors, and $\mathbb{1}\{\text{Holding} \geq 5\}$ indicates investments held for five or more years. The sample is at the investor–firm–year level and includes years from 2004–2022 and investment entry years from 2004–2017, and includes VC investors only. t-statistics based on standard errors clustered at the investor level are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 11: Additional Evidence of Risk-Taking: Human Capital Deployment in VC Portfolio Companies

	Managerial Centralization		Gross Turnover	
	All Firms	Exited Firms	All Firms	Exited Firms
	(1)	(2)	(3)	(4)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.011	0.046***	0.107***	0.190***
	(0.99)	(3.55)	(4.07)	(5.11)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	0.010	−0.013	−0.020	−0.080***
	(0.96)	(−1.08)	(−0.91)	(−2.66)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.017	−0.053***	−0.104***	−0.134***
	(−1.58)	(−4.21)	(−4.09)	(−3.53)
Observations	335,184	149,274	278,956	117,522
Adjusted R^2	0.657	0.670	0.213	0.204
Mean Dependent Variable	0.335	0.337	0.784	0.796
Year FE	✓	✓	✓	✓
Holding Period FE	✓	✓	✓	✓
Investor × Firm FE	✓	✓	✓	✓
Clustered SE (Investor)	✓	✓	✓	✓

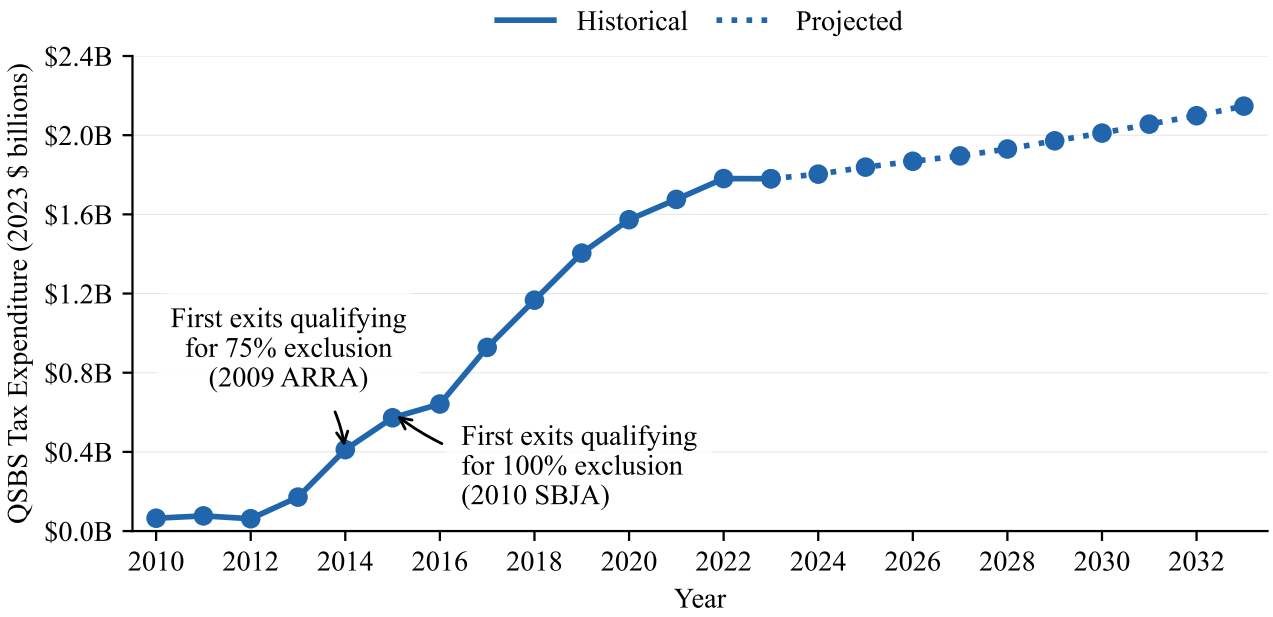
This table presents estimates of the effect of QSBS tax benefits on firm organizational structure and labor dynamics for traditional VC firms. Managerial centralization is measured as the ratio of executives (seniority levels 5 to 7 in Revelio Labs) to all employees. Gross Turnover is calculated as (new employees + exited employees) / employment at beginning of year. Post is an indicator for investments made after 2009, Eligible indicates QSBS-eligible sectors, and $\mathbb{1}\{\text{Holding} \geq 5\}$ indicates investments held for five or more years. The sample is at the investor–firm–year level and includes years from 2004–2022 and investment entry years from 2004–2017, and includes traditional VC firms only. Results are shown separately for all portfolio firms and those that experienced any exit. t-statistics based on standard errors clustered at the investor level are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Internet Appendix to
"Tax Incentives and Venture Capital Risk-Taking"

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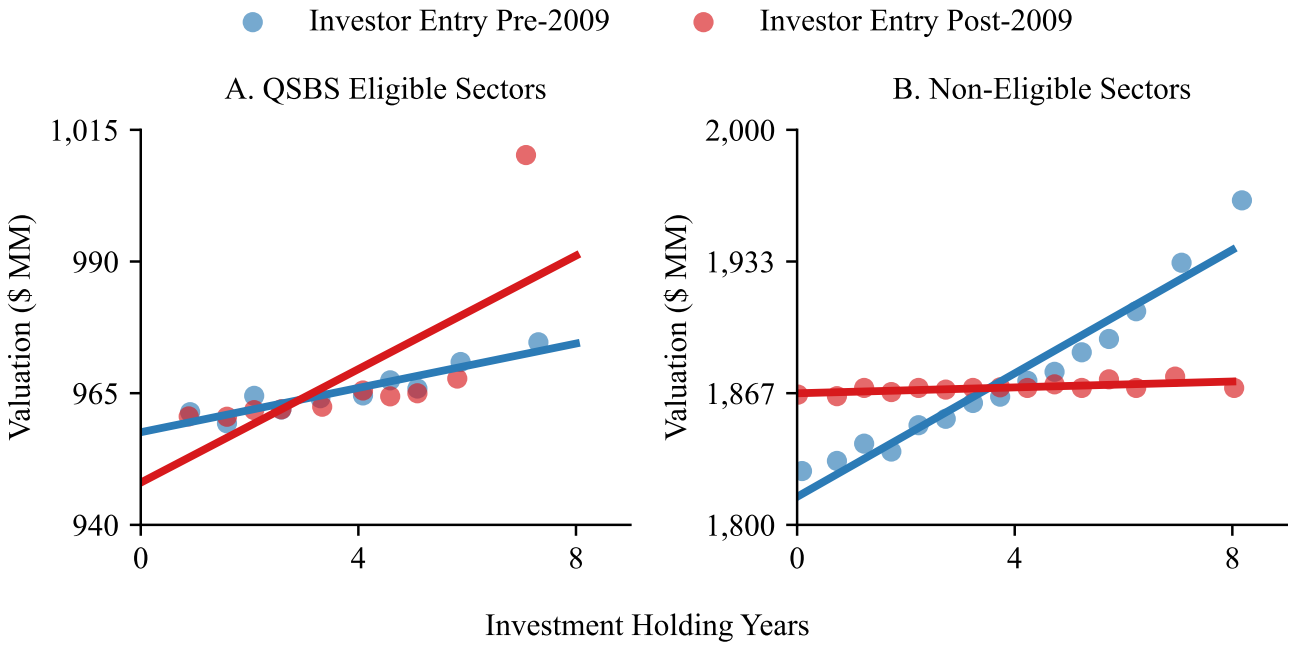
Guilherme Junqueira
University of Florida

Figure IA1: Federal Tax Expenditures from the QSBS Tax Benefits



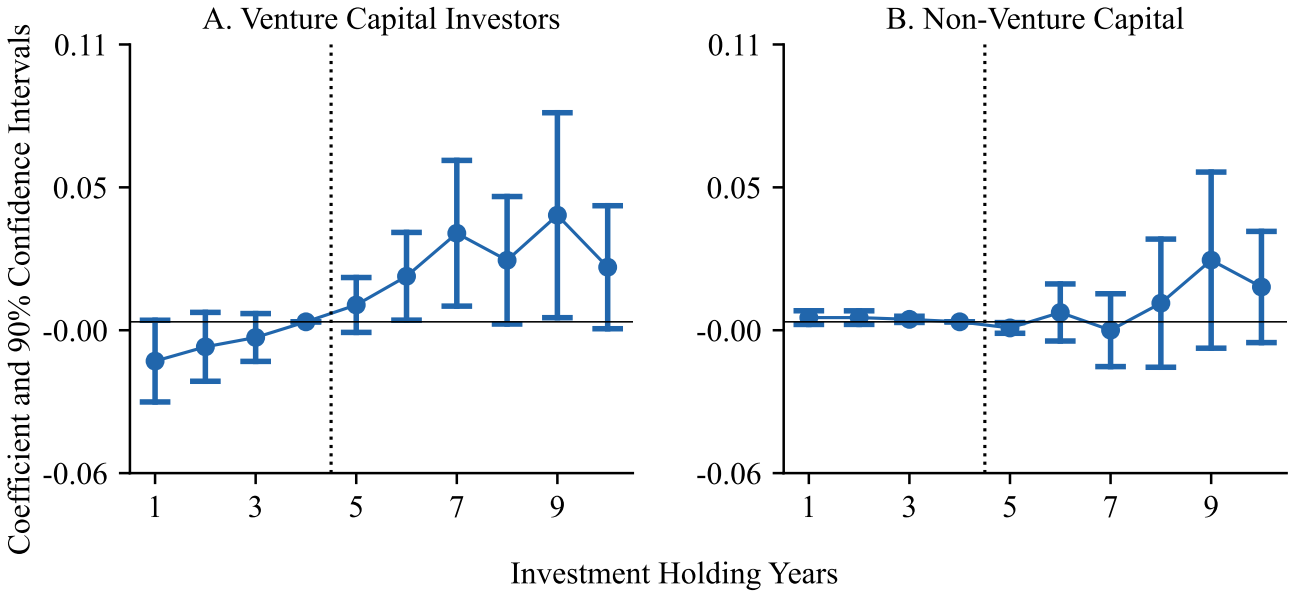
This figure shows the evolution of federal tax expenditures due to the QSBS benefits from 2010 to 2033. Tax expenditures represent the government's foregone tax revenue from preferential tax treatment. The first major increase in 2014 reflects exits qualifying for the 75% exclusion under the 2009 ARRA, followed by exits qualifying for the 100% exclusion under the 2010 SBJA starting in 2015. Values are in 2023 dollars (based on PCE Price Index). Historical values (solid line) are through 2023, with Treasury projections shown thereafter (dotted line). Data are from the U.S. Department of the Treasury.

Figure IA2: Binned Scatterplots of Holding Period on Investment Valuations



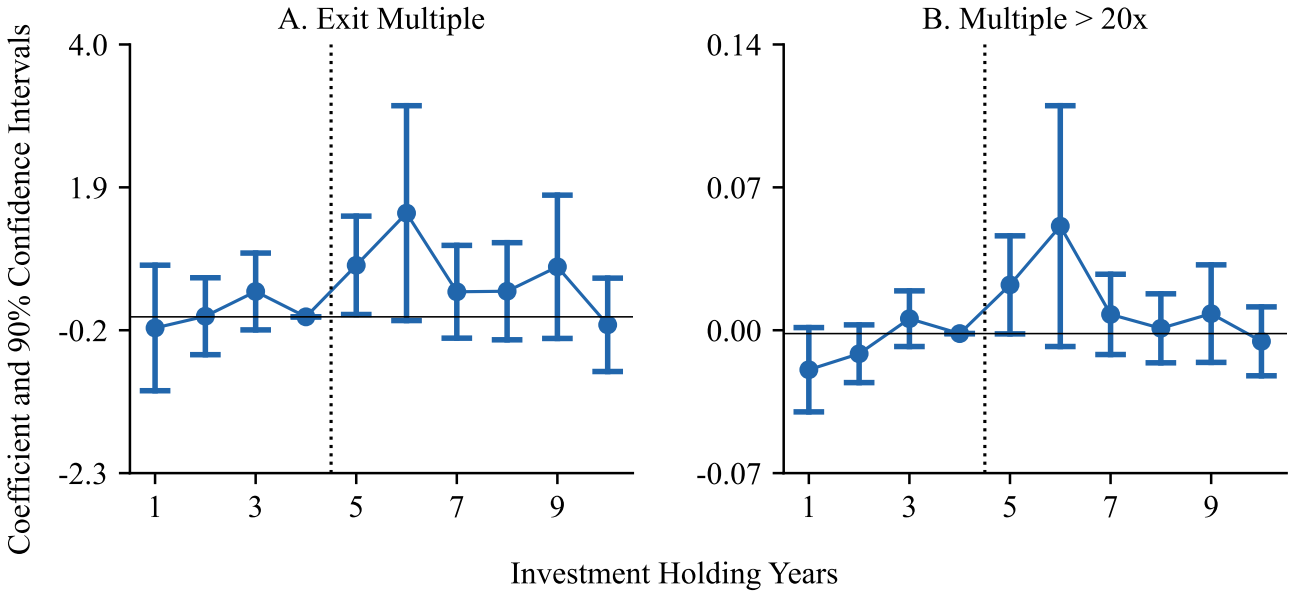
This figure shows the relationship between firm valuations and investment holding periods, separately for QSBS eligible sectors (Panel A) and ineligible sectors (Panel B). The plots compare VC investments made pre- and post–2009. Each point shows the mean valuation within holding period bins after controlling for investor-firm fixed effects.

Figure IA3: Dynamic Triple-Differences Estimates for Likelihood of Achieving Unicorn Status



This figure illustrates the dynamic difference-in-differences coefficients for the likelihood of achieving unicorn status, based on the following specification for all firms: $Y_{i,j,t} = \beta_0 + \sum_{k=0}^{10} \beta_k [\mathbb{1}\{\text{Holding Years} = k\}_{i,j,t} \times \mathbb{1}\{\text{Entry Year} \geq 2009\}_{i,j} \times \mathbb{1}\{\text{Eligible Sector}\}_j] + \text{Fixed Effects} + \epsilon_{i,j,t}$. The x-axis represents the investment holding period (in years), while the y-axis shows the estimated coefficients alongside 90% and 95% confidence intervals. All specifications include fixed effects (year, holding period, investor × firm) and standard errors clustered at the investor level.

Figure IA4: Dynamic Triple-Differences Estimates for Exit Multiples of VC-Backed Firms



This figure illustrates the dynamic difference-in-differences coefficients for exit multiples (exit value divided by total investment) and the likelihood of a multiple above 20× the invested capital, based on the following specification: $Y_{i,j,t} = \beta_0 + \sum_{k=0}^{10} \beta_k [\mathbb{1}\{\text{Holding Years} = k\}_{i,j,t} \times \mathbb{1}\{\text{Entry Year} \geq 2009\}_{i,j} \times \mathbb{1}\{\text{Eligible Sector}\}_j] + \text{Controls} + \epsilon_{i,j,t}$. The x-axis represents the investment holding period (in years), while the y-axis shows the estimated coefficients alongside 90% and 95% confidence intervals. All specifications include fixed effects (year, holding period, investor × firm) and standard errors clustered at the investor level.

Table IA1: Timeline of QSBS Exemptions at Federal and State Levels

Year	Policy or Event
1993	Federal QSBS program is introduced under Section 1202, fixing the tax rate on QSBS gains at 14%.
2009	Federal QSBS exclusion is increased to 75% for investments made after February 17, 2009.
2010	Federal QSBS exclusion is increased to 100% for investments made after September 27, 2010.
2012	California eliminates its QSBS exclusion after a court ruling citing constitutional issues.
2015	100% federal QSBS exemption is made permanent under the PATH Act.
2016	Utah adopts QSBS conformity, offering full exclusion at the state level.
2022	Massachusetts adopts QSBS conformity, providing state-level exemptions for qualifying investments.
Ongoing	New Jersey, Pennsylvania, Mississippi, and Alabama maintain non-conformity with federal QSBS.

This table provides a timeline of key events related to the Qualified Small Business Stock (QSBS) exemptions. The 1993 federal QSBS program established a flat 14% tax rate for qualifying gains, independent of the long-term capital gains tax rate. In contrast, the 2009 and 2010 changes introduced exclusions that tracked the long-term capital gains tax rate (75% and 100%, respectively). In all cases—both at the federal and state levels—investors must hold the stock for a minimum of 5 years to qualify for the exemptions. Unless otherwise noted, states complied with federal exclusions for QSBS, offering corresponding benefits at the state level.

Table IA2: Sectors Eligible for QSBS Tax Benefits

Accessories	Aerospace and Defense	Agricultural Chemicals
Air	Alternative Energy Equipment	Animal Textiles
Application Software	Application Semiconductors	Automation Software
Automotive	Beverages	Biotechnology
Broadcasting	Building Products	Buildings and Property
Business Equipment	Business Software	Cable Service Providers
Catalog Retail	Clothing	Coal Equipment
Commodity Chemicals	Communication Software	Computers and Peripherals
Connectivity Products	Cruise Lines	Database Software
Decision Analysis	Department Stores	Diagnostic Equipment
Discovery Tools	Distributors	Drug Delivery
Drug Discovery	Educational Software	Electric Utilities
Electrical Equipment	Electronic Components	Electronic Equipment
Electronics	Energy Infrastructure	Energy Marketing
Energy Production	Energy Storage	Energy Transportation
Enterprise Systems	Entertainment Software	Fiberoptic Equipment
Financial Software	Food Products	Footwear
Gas Utilities	General Merchandise	General Semiconductors
Holding Companies	Home Furnishings	Household Appliances
Household Products	Industrial Chemicals	Industrial Supplies
Information Services	Infrastructure	Internet Retail
Internet Providers	Internet Software	Logistics
Luxury Goods	Machinery	Marine
Media Technology	Medical Records	Medical Supplies
Metal Containers	Mineral Textiles	Monitoring Equipment
Movies and Entertainment	Multi-Utilities	Network Software
Office Electronics	Oil and Gas Equipment	Operating Systems
Personal Products	Pharmaceuticals	Plastic Containers
Publishing	Rail	Raw Materials
Recreational Goods	Road	Security Services
Social Content	Social Software	Software Development
Specialty Chemicals	Specialty Retail	Storage (IT)
Surgical Devices	Synthetic Textiles	Systems Management
Telecommunications	Therapeutic Devices	Transportation Equipment
Vertical Software	Water Utilities	Wireless Equipment

This table presents our mapping of industries that qualify for QSBS tax benefits under Internal Revenue Code Section 1202 to PitchBook's industry code classification. Based on the statute's guidelines for qualified trades or businesses, we manually categorize PitchBook's industry codes as eligible for QSBS benefits, focusing on capital-intensive sectors that require substantial investment for growth. The categorization follows the program's explicit exclusion of sectors where the human capital where the human capital constitutes the primary asset, such as professional services, financial services, hospitality, and farming.

Table IA3: Mean Differences in Sectors Eligible and Ineligible for QSBS Exemption

	Pre-Period (Investor Entry 2004–2008)						Post-Period (Investor Entry 2009–2017)					
	Mean		t-Test		N		Mean		t-Test		N	
Variable	Elig.	Non-Elig.	Diff.	t-stat	Elig.	Non-Elig.	Elig.	Non-Elig.	Diff.	t-stat	Elig.	Non-Elig.
Panel A: Investment Characteristics												
Holding Years	3.828	3.785	0.043	1.323	136,621	13,197	3.289	3.213	0.076	6.741	796,656	106,137
$\mathbb{1}\{\text{Holding Years} \geq 5\}$	0.387	0.390	-0.003	-0.638	136,621	13,197	0.310	0.304	0.005	3.242	796,656	106,137
Investment Entry Year	2006.351	2006.473	-0.122	-3.657	136,621	13,197	2013.787	2013.990	-0.203	-9.857	796,656	106,137
$\mathbb{1}\{\text{Post}\}$	0.000	0.000	0.000	0.000	136,621	13,197	1.000	1.000	0.000	0.000	796,656	106,137
Panel B: Funding Patterns												
Deal Size ($M)	34.093	43.879	-9.787	-2.296	58,983	4,893	42.520	50.859	-8.339	-3.935	328,082	43,528
Number of Investors	3.601	2.936	0.665	10.835	57,926	5,290	5.375	5.775	-0.400	-8.732	349,945	50,445
Number of New Investors	2.059	1.679	0.380	7.721	57,926	5,290	4.002	4.280	-0.278	-7.301	349,945	50,445
Panel C: Failed Exits												
$\mathbb{1}\{\text{Out of Business}\}$	0.006	0.006	-0.000	-0.415	136,621	13,197	0.021	0.016	0.004	10.166	796,656	106,137
Years Without Funding	1.317	1.703	-0.386	-9.202	136,621	13,197	1.101	1.146	-0.044	-3.680	796,656	106,137
$\mathbb{1}\{\text{Five Years Without Funding}\}$	0.086	0.137	-0.051	-8.971	136,621	13,197	0.058	0.069	-0.011	-7.228	796,656	106,137
Panel D: Valuation												
Valuation ($M)	625.932	807.610	-181.678	-0.836	42,299	3,520	1547.702	2661.980	-1114.278	-4.830	96,092	10,718
$\mathbb{1}\{\text{Unicorn}\}$	0.037	0.045	-0.008	-1.667	136,621	13,197	0.024	0.033	-0.009	-5.893	796,656	106,137
Panel E: Exit Patterns												
$\mathbb{1}\{\text{Private Equity Buyout}\}$	0.004	0.004	0.000	0.000	136,621	13,197	0.008	0.008	-0.000	-0.000	796,656	106,137
$\mathbb{1}\{\text{Acquisition}\}$	0.022	0.022	0.000	0.000	136,621	13,197	0.048	0.050	-0.002	-1.333	796,656	106,137
$\mathbb{1}\{\text{IPO}\}$	0.002	0.001	0.001	2.000	136,621	13,197	0.005	0.006	-0.001	-1.667	796,656	106,137
Panel F: Investor Monitoring												
$\mathbb{1}\{\text{Board Voting Rights}\}$	0.260	0.200	0.060	7.059	68,372	6,179	0.372	0.352	0.020	5.405	421,775	58,476
$\mathbb{1}\{\text{CEO Turnover}\}$	0.062	0.048	0.014	4.000	100,195	9,271	0.043	0.039	0.004	4.000	688,923	92,272
$\mathbb{1}\{\text{C-Suite Turnover}\}$	0.413	0.394	0.019	2.111	100,195	9,271	0.337	0.352	-0.015	-5.000	688,923	92,272
Panel G: Exit Multiples												
Exit Multiple	5.500	6.722	-1.222	-1.609	4,244	288	8.734	26.241	-17.507	-1.368	13,203	1,273
$\mathbb{1}\{\text{Exit Multiple} > 5\times\}$	0.303	0.333	-0.030	-1.068	4,244	288	0.353	0.378	-0.025	-1.761	13,203	1,273
$\mathbb{1}\{\text{Exit Multiple} > 10\times\}$	0.130	0.194	-0.065	-2.711	4,244	288	0.153	0.190	-0.037	-3.274	13,203	1,273
$\mathbb{1}\{\text{Exit Multiple} > 20\times\}$	0.036	0.056	-0.020	-1.470	4,244	288	0.050	0.075	-0.024	-3.266	13,203	1,273
$\mathbb{1}\{\text{Exit Multiple} > 50\times\}$	0.009	0.003	0.006	1.569	4,244	288	0.020	0.035	-0.015	-2.944	13,203	1,273

This table presents mean differences across sectors eligible and ineligible for QSBS exemption. The sample is at the investor–firm–year level and includes investments in C-corporations from 2004 to 2017 (tracked from 2004 to 2022) where the investor joined in a round under $50 million. For each variable, the "Elig." columns report the mean for sectors eligible and the "Non-Elig." columns report the mean for ineligible sectors. "Diff." denotes the raw difference (Elig. − Non-Elig.) and "t-stat" the t-statistic from regressions with standard errors clustered by investor. Ns indicate the number of observations.

Table IA4: Baseline Bunching Estimates: Elasticity of Tax Benefits

Statistical Model	Trapezoidal Approximation	Bootstrapped CI (95%)	Nonparametric Bounds (M = $\hat{M}$)	Observations
	(1)	(2)	(3)	(4)
Panel A: Potentially Eligible Investments				
Eligible Sectors, Post-2009 Investment				
Elasticity (ϵ)	6.439***	[5.406, 7.473]	[5.636, 10.481]	37,120
	(12.21)			
Panel B: Ineligible Investments				
Eligible Sectors, Pre-2009 Investment				
Elasticity (ϵ)	3.851***	[3.432, 4.269]	[3.421, 6.367]	36,340
	(18.02)			
Ineligible Sectors, Post-2009 Investment				
Elasticity (ϵ)	1.562***	[1.366, 1.757]	[1.301, 3.004]	3,661
	(15.66)			
Ineligible Sectors, Pre-2009 Investment				
Elasticity (ϵ)	3.547***	[2.837, 4.256]	[3.253 , 5.672]	3,224
	(9.80)			

This table presents bunching elasticity estimates for different investor categories. Panel A presents results for eligible investments (eligible sectors with investor entry after 2009). Panel B presents results for ineligible investments (eligible sectors pre-2009 or either ineligible sectors post- or pre-2009). Column (1) shows the trapezoidal approximation to point-identify the elasticity, with t-statistics in parentheses calculated from standard errors obtained using 1,000 bootstrap iterations. Column (2) presents the bootstrapped 95% confidence intervals for the elasticity estimates. Column (3) shows the Bertanha et al. (2023) nonparametric bounds for the elasticity with M = $\hat{M}$ (the maximum slope M for which the upper bound is finite). Column (4) shows the number of observations for each subsample. The sample is at the investor–firm–year level and includes investments in C-corporations part of QSBS eligible sectors, covering investment entries from 2007 to 2010 (2 years before and after the policy change). *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table IA5: Impact of QSBS on Firm Outcomes: Logit Estimates

	𝟙{Out of Business}		𝟙{Five Years No Funding}		𝟙{Unicorn}	
	All	Exited	All	Exited	All	Exited
	(1)	(2)	(3)	(4)	(5)	(6)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.148***	0.180**	0.209***	0.308***	0.096**	0.090
	(3.88)	(2.51)	(3.33)	(3.04)	(2.43)	(1.23)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	−0.101***	−0.043	−0.234***	−0.346***	−0.093**	−0.096
	(−2.82)	(−0.69)	(−3.86)	(−3.76)	(−2.49)	(−1.51)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.159***	−0.154**	−0.234***	−0.335***	−0.074*	−0.051
	(−4.30)	(−2.23)	(−3.86)	(−3.42)	(−1.90)	(−0.72)
Observations	1,052,611	464,363	1,052,611	464,363	1,052,611	464,363
Pseudo R^2	0.012	0.013	0.031	0.030	0.013	0.012

This table presents logit estimates of the effect of QSBS tax benefits on firm outcomes. The dependent variables are indicators for firm closures (columns 1-2), experiencing five or more years without funding (columns 3-4), and achieving unicorn status with $1 billion valuation (columns 5-6). All outcome variables are demeaned by investor. Results are shown for all firms and those that experienced any exit. Post is an indicator for investments made after 2009, Eligible indicates QSBS-eligible sectors, and $\mathbb{1}\{\text{Holding} \geq 5\}$ indicates investments held for five or more years. The model includes controls for year and holding years. The sample is at the investor-firm-year level and includes years from 2004–2022 and investment entry years from 2004–2017. Individual interaction terms are included in the regression but omitted in the table for brevity. t-statistics based on standard errors clustered at the investor level are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table IA6: Unicorns – Select Examples

Company	Location	Founded	Investors (Entry Year)	Sector	First Unicorn Year (Valuation)	Exit Type
Drift	Boston, MA	2014	General Catalyst (2015), CRV (2015), Dharmesh Shah (2015), Wayne Chang (2015), Mike Volpe (2015), Brian Shin (2015), JD Sherman (2015), John Kinzer (2015), Philip Harrell (2015), Florian Leibert (2015), Founder Collective (2015), NextView Ventures (2015), Sequoia Capital (2017), HubSpot (2017)	Business/Productivity Software	2021 ($1B)	PE exit to Vista Equity in 2021
Innovium	San Jose, CA	2014	Accel (2015), Greylock Partners (2015), Capricorn Investment Group (2015), New Enterprise Associates (2015), Wing Venture Capital (2015), S-Cubed Capital (2015), Qualcomm Ventures (2015), August Capital (2015), Celesta Capital (2015), Walden International (2015), Rajeev Madhavan (2015), Krishna Yarlagadda (2015), Raj Yavatkar (2015), Yuval Bachar (2015), Sachin Katti (2015), Martin Lund (2015), Redline Capital Management (2017)	Application Specific Semiconductors	2021 ($1B)	Acquired by Marvell Technology in 2021
Apptio	Bellevue, WA	2007	Shasta Ventures (2009)	Business/Productivity Software	2019 ($1.9B)	PE exit to Vista Equity in 2019
Interior Logic Group	Irvine, CA	2007	Littlejohn & Co. (2013), The Gores Group (2017), Platinum Equity (2017)	Construction and Engineering	2021 ($1.6B)	PE exit to Blackstone in 2021
Workfront	Lehi, UT	2001	University Venture Fund (2012), Escalate Capital Partners (2012), JMI Equity (2014), JW Capital (2014), Saints Capital (2014), Sorenson Capital (2014), Osborn Companies (2015), Atlas Peak Capital (2015), MicroVentures (2015), University Growth Fund (2015), Firas Raouf (2015), Scott Cunningham (2015), Joshua James (2012)	Business/Productivity Software	2020 ($1.5B)	Acquired by Adobe in 2020
Gigamon	Santa Clara, CA	2004	Highland Capital Partners (2010)	Business/Productivity Software	2017 ($1.7B)	PE exit to Elliott Management and QIA in 2017
Epic Health Services	Dallas, TX	2001	Webster Equity Partners (2010), BPEA Private Equity (2010)	Clinics/Outpatient Services	2017 ($1B)	PE exit to Bain Capital in 2017
Datalogix	Westminster, CO	2002	General Catalyst (2009), Sequel Venture Partners (2009), Wolf Ventures (2009), IVP (2013), Costanoa Ventures (2013), Wellington Management (2014), SharesPost (2014), Breyer Capital (2014)	Media and Information Services (B2B)	2015 ($1.2B)	Acquired by Oracle in 2015
Lucid Group	Newark, CA	2007	Venrock (2009), Tsing Capital (2009), LeTV (2011)	Automotive	2018 ($1.3B)	PE exit to Public Investment Fund of Saudi Arabia in 2018
Glassdoor	Mill Valley, CA	2007	Battery Ventures (2008), Benchmark (2008), Sutter Hill Ventures (2008), DAG Ventures (2012), Dragoneer Investment Group (2012), Tiger Global Management (2013), T. Rowe Price (2016)	Information Services (B2C)	2018 ($1.2B)	Acquired by Recruit Holdings in 2018
EdgeConneX	Herndon, VA	2009	True Ventures (2010), Comcast Ventures (2010), Meritage Funds (2011), TDF Ventures (2011), Providence Equity Partners (2012), Akamai Technologies (2012), Brown Brothers Harriman Capital Partners (2013), Crowd Venture Capital (2015), Pittco Management (2015), Liberty Global Ventures (2015)	Systems and Information Management	2020 ($2.7B)	PE exit to EQT in 2020
Greenphire	King of Prussia, PA	2008	Ares Capital (2015), The Riverside Company (2015)	Financial Software	2021 ($1.1B)	PE exit to Thoma Bravo in 2021
Avalara	Seattle, WA	2004	Benaroya Company (2010), Lynwood Capital Partners (2011), Sageview Capital (2011), Battery Ventures (2012), TCV (2015), Arthur Ventures (2015)	Financial Software	2018 ($1.6B)	PE exit to Vista Equity Partners in 2022
Sitecore	San Francisco, CA	2001	TCV (2011)	Business/Productivity Software	2016 ($1.1B)	PE exit to EQT Infrastructure in 2016

This table presents case studies of companies in our sample that achieved "unicorn" status (valuation of $1 billion). In our sample, 437 firms achieved unicorn status. QIA: Qatar Investment Authority. Data are from PitchBook.

Table IA7: Impact of QSBS Tax Benefits on Firm Valuations: Alternative Valuation Definitions

	Dependent Variable					
	ln(Valuation), Full Measure		Valuation ($M), Interpolation Only		Valuation ($M), Observed Values	
	All	Exited	All	Exited	All	Exited
	(1)	(2)	(3)	(4)	(5)	(6)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.025**	0.047**	940.434**	825.406*	2456.037***	2305.749**
	(2.08)	(2.41)	(2.028)	(1.707)	(2.65)	(2.26)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	−0.028**	−0.051***	−861.532***	−861.416***	−1432.219***	−1477.743***
	(−2.47)	(−2.70)	(−3.661)	(−3.666)	(−2.81)	(−2.84)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.026**	−0.048**	−708.753*	−607.220	−1822.038**	−1589.671
	(−2.18)	(−2.52)	(−1.810)	(−1.497)	(−2.10)	(−1.59)
Observations	152,312	138,050	980	949	505	480
Adjusted R^2	0.999	0.999	0.924	0.925	0.889	0.887
Mean Dependent Variable	5.016	4.977	1363.865	1398.555	1754.657	1835.089
Year FE	✓	✓	✓	✓	✓	✓
Holding Period FE	✓	✓	✓	✓	✓	✓
Investor × Firm FE	✓	✓	✓	✓	✓	✓
Clustered SE (Investor)	✓	✓	✓	✓	✓	✓

This table presents estimates of the effect of QSBS tax benefits on firm valuations using three different measurement approaches. The first measure (columns 1-2) uses both linear interpolation between observed valuations and extends the earliest and latest known values forward and backward. The second measure (columns 3-4) uses only linear interpolation between observed valuations. The third measure (columns 5-6) examines observed valuations from funding rounds without any interpolation. Results are shown for all firms and those that experienced any exit. Post is an indicator for investments made after 2009, Eligible indicates QSBS-eligible sectors, and $\mathbb{1}\{\text{Holding} \geq 5\}$ indicates investments held for five or more years. The sample is at the investor-firm-year level and includes years from 2004–2022 and investment entry years from 2004–2017. t-statistics based on standard errors clustered at the investor level are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table IA8: Impact of QSBS on Firm Value Creation: Alternative Valuation Thresholds

	Dependent Variable: $\mathbb{1}\{\text{Valuation} > X\}$					
	\$500 million		\$2 billion		\$3 billion	
	All	Exited	All	Exited	All	Exited
	(1)	(2)	(3)	(4)	(5)	(6)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.004**	0.010**	0.003**	0.008**	0.001	0.002*
	(2.08)	(2.04)	(2.44)	(2.48)	(1.42)	(1.68)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	−0.004**	−0.011**	−0.003**	−0.008***	−0.001	−0.002*
	(−2.22)	(−2.31)	(−2.48)	(−2.60)	(−1.32)	(−1.64)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.004**	−0.010**	−0.003**	−0.007**	−0.000	−0.001
	(−2.04)	(−2.05)	(−2.28)	(−2.32)	(−1.22)	(−1.36)
Constant	0.041***	0.083***	0.015***	0.029***	0.010***	0.020***
	(65.66)	(80.92)	(37.62)	(44.67)	(84.40)	(98.84)
Observations	1,050,884	462,661	1,050,884	462,661	1,050,884	462,661
Adjusted R^2	0.997	0.996	0.995	0.994	0.996	0.996
Mean Dependent Variable	0.040	0.081	0.014	0.027	0.010	0.020
Year FE	✓	✓	✓	✓	✓	✓
Holding Period FE	✓	✓	✓	✓	✓	✓
Investor × Firm FE	✓	✓	✓	✓	✓	✓
Clustered SE (Investor)	✓	✓	✓	✓	✓	✓

This table presents estimates of the effect of QSBS tax benefits on firm valuations at various thresholds. This is a robustness of our main regression results using \$1 billion threshold (unicorn status), presented in Panel B of Table 6 (columns 1 and 2). The dependent variables are indicators for achieving different valuation thresholds (\$500 million, \$2 billion, and \$3 billion). Results are shown for all firms and those that experienced any exit. Post is an indicator for investments made after 2009, Eligible indicates QSBS-eligible sectors, and $\mathbb{1}\{\text{Holding} \geq 5\}$ indicates investments held for five or more years. The sample is at the investor-firm-year level and includes years from 2004–2022 and investment entry years from 2004–2017. t-statistics based on standard errors clustered at the investor level are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table IA9: Heterogeneity of Extreme Outcomes: State-Level Tax Rate in VC Firm Jurisdiction

Panel A: Failed Outcomes	𝟙{Out of Business}		𝟙{5 Years Without Funding}	
	Below Median Tax	Above Median Tax	Below Median Tax	Above Median Tax
	(1)	(2)	(3)	(4)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.012**	0.013***	0.049	0.106***
	(1.97)	(2.92)	(1.57)	(4.34)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	−0.000	0.002	−0.050*	−0.091***
	(−0.04)	(0.45)	(−1.71)	(−4.07)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.021***	−0.018***	−0.067**	−0.103***
	(−3.30)	(−3.85)	(−2.27)	(−4.24)
Observations	107,586	154,030	107,586	154,030
Adjusted R^2	0.108	0.082	0.311	0.311
Mean Dependent Variable	0.018	0.013	0.050	0.058
Panel B: Value Creation	Valuation ($M)		𝟙{Unicorn}	
	Below Median Tax	Above Median Tax	Below Median Tax	Above Median Tax
	(1)	(2)	(3)	(4)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−4.985	109.019***	0.000	0.012**
	(−0.41)	(2.72)	(0.11)	(2.09)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	0.860	−83.599**	−0.000	−0.012**
	(0.14)	(−2.14)	(−0.33)	(−2.09)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.691	−97.559**	0.001	−0.013**
	(0.06)	(−2.53)	(1.08)	(−2.26)
Observations	15,792	36,018	107,586	154,030
Adjusted R^2	1.000	0.997	0.994	0.989
Mean Dependent Variable	709.539	1094.142	0.021	0.038
Year FE	✓	✓	✓	✓
Holding Period FE	✓	✓	✓	✓
Investor × Firm FE	✓	✓	✓	✓
Clustered SE (Investor)	✓	✓	✓	✓

This table presents estimates of the heterogeneous effect of QSBS tax benefits on firm outcomes by investor state tax rates. The sample includes traditional VC firms only and only includes states complying with QSBS exemption; therefore, it does not include PA, NJ, MS, AL, MN, MA, and only includes CA up to the 2012 entry year and UT after 2016 entry year. Panel A presents failed outcomes: an indicator for out of business status and an indicator for experiencing five consecutive years without funding. Panel B presents value creation outcomes: firm valuation in millions of dollars and an indicator for achieving unicorn status (valuation exceeding $1 billion). Below Median Tax and Above Median Tax split the sample based on the median of maximum long-term capital gains tax rate in the investor's headquarters state, lagged by one year. Post is an indicator for investments made after 2009, Eligible indicates QSBS-eligible sectors, and $\mathbb{1}\{\text{Holding} \geq 5\}$ indicates investments held for five or more years. The sample is at the investor–firm–year level and includes years from 2004–2022 and investment entry years from 2004–2017. t-statistics based on standard errors clustered at the investor level are shown in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.