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 venture capitalists (VCs) combine outside funding with incentive-based compensation and empirically study a policy eliminating capital gains taxes on startup investments. Using a triple-differences design exploiting industry eligibility, investment years, and holding requirements, we analyze 158 thousand investor–firm pairings over two decades. Where and when tax benefits apply, VCs shift toward riskier bets by targeting earlier-stage, more innovative opportunities: their deals increase 60% in product beta stage, double in stealth mode, and show 50% more AI-skilled talent. In turn, portfolio companies show 76% higher failure rates and 165% 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 while less likely to pursue strategic sales or IPOs. Using data on board-voting rights, executive turnover, and exit multiples, we confirm effects operate through investment selection rather than monitoring or other channels. Risk-taking with incentive magnitude, peaking at VC firm quality extremes (elite and low-tier) and in states with larger exemptions. Finally, using bunching methods, we show that a 1% increase in tax benefits leads to 3–5% increases in investor concentration at holding thresholds. Our study is the first to show that tax policy can shift capital toward more experimental ventures, with outcomes shaped by investor organizational structure and incentives.

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1 Introduction

Capital allocation to entrepreneurial ventures is arguably central to innovation and economic growth. Despite representing 3% of total employment, 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 ventures face financing challenges because of inherent market frictions—information asymmetries, moral hazard, and incomplete contracting impede 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 highest (Holmstrom and Tirole 1997).

Capital market imperfections further create tensions in the design of tax policies intended to promote entrepreneurship. On the one hand, specialized financial intermediaries like venture capitalists (VCs) help overcome market failures by combining risk capital with intensive screening and monitoring. If tax benefits encourage these intermediaries to fund more high-potential ventures—particularly at early stages where frictions are most severe—tax policies may help address the underinvestment problem. On the other hand, providing tax benefits to investors with high-risk tolerance and sophisticated investment capabilities may simply increase returns to their existing strategies without improving capital 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 by the most sophisticated investors.

This paper examines whether tax policy improves capital allocation in entrepreneurial markets. It does so by investigating how different types of investors respond to tax benefits. Our analysis addresses multiple 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, angels investing personal wealth, and strategic corporate investors? Second, can tax benefits affect not only the level of investment but also investors' willingness to back earlier-stage and riskier ventures? Third, through what mechanisms do these policies operate? Do they only affect project selection? Or do they also change how investors engage with—and support—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 testable predictions about project selection and value creation. On the one hand, VCs should increase risk-taking in project choice when their investments qualify for tax benefits. On the other, there should be limited changes in value-creation activities, such as monitoring, because both the costs and benefits of these activities scale proportionally with tax rates.

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 large, ongoing federal tax-subsidy program that is expected to forego tax revenues to the order of $2 billion in 2023 alone (with projections of $20 billion in real terms between 2024 and 2033). 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 operating in sectors like technology and manufacturing but excluding service-based industries. Policy requirements intentionally concentrate benefits in capital-intensive sectors where financing frictions are often the most severe.

The American Recovery and Reinvestment Act of 2009 marked the first major change in the QSBS, introducing a wedge in after-tax returns between qualified and non-qualified investments. Before 2009, the QSBS provided a 50% exemption on capital gains, but applied this exemption towards an outdated tax threshold from 1993, resulting in a fixed 14% effective tax rate regardless of capital gains rates. As regular capital gains rates declined—falling to 15% by 2003—the net tax benefit of the QSBS qualification became essentially muted (just one percentage point tax benefit). The 2009 reform altered this calculation by switching to a percentage-based exclusion: investors would pay taxes on only 25% of their gains at the prevailing capital gains tax rate. With the federal long-term capital gains rate at 15%, qualifying investments would face an effective tax rate of just 3.75% (15% taxes on 25% of gains), generating an 11.25 percentage point *tax benefit*. The Small Business Jobs Act (SBJA) of 2010 further expanded these benefits by *fully eliminating* capital gains taxes on certain qualifying investments.

Our analysis leverages data from PitchBook that tracks U.S. VC, angel, and corporate investments in startups. Based on the QSBS program's five-year holding requirement, we construct our sample by following investor entries between 2004 and 2017, tracking tax benefits through 2022. 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. Consistent with the QSBS eligibility criteria, we focus on investments in C-corporations with funding rounds below $50 million. We measure key outcomes, including deal characteristics, risk-taking behavior, exit patterns, and monitoring intensity.

We begin by examining how tax benefits affect investment entry decisions. Our analysis uses investor–firm level data in a difference-in-differences framework. This approach exploits variations in sector eligibility and investment timing around the 2009 reform, while controlling for investor, industry, and state–year fixed effects. We find that VCs select businesses with higher fundamental risk when tax benefits are available. To wit, when investments qualify for tax benefits, VC investments in eligible sectors become 60% more likely to occur during the product beta stage and twice as likely during stealth mode. These firms also show 50% higher concentrations of AI-skilled talent—an indicator of both innovation focus and inherently higher risk (Babina et al. 2024; Gârleanu et al. 2012). In contrast, angel and corporate investors show no significant changes in their investment entry decisions.

To rule out the possibility that changes in deal structure drive risk-taking, we examine contractual terms at the time of investment. While the basic security structure remains unchanged—preferred equity is still the dominant form of financing—, we observe offsetting changes in cash-flow rights. VC investments in eligible sectors after the reform are 22% less likely to demand equal footing (*pari-passu*) rights in liquidation, indicating a greater willingness to share risk with existing investors. At the same time, VCs require increases in cumulative dividends and participating preferred rights, suggesting a desire for downside protection. The contractual features we observe for the QSBS-eligible sectors after 2009 reinforce the view that tax benefits increase risk-taking.

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: (1) explicit industry eligibility criteria that exclude particular sectors, creating well-defined treatment and control groups; (2)

a sharp policy change in 2009 that significantly increased tax benefits; and (3) the mandatory five-year holding period requirement before investors can claim tax benefits. These institutional features allow us to implement a triple-differences research design that compares changes in investment behavior across eligible *versus* non-eligible sectors, pre– *versus* post–reform investments, and investments held for more *versus* less than five years.

Beyond exploiting eligibility rules, our triple-difference tests include several features to isolate the causal effects of tax benefits. Including investor–firm fixed effects ensures that they identify responses from within-pair variations in holding periods rather than changes in the matching between investors and firms. This ensures that our estimates are not driven by assortative matching patterns, such as higher-quality VCs systematically selecting more promising startups. Year fixed effects control for aggregate changes in entrepreneurial finance markets, while entry–year fixed effects account for vintage-specific shocks that might affect all investments initiated in a particular year. Holding-period fixed effects absorb any mechanical relationship between investment duration and outcomes. We cluster standard errors at the investor level to account for correlation in the residuals across different investments made by the same investor.[1]

The triple-difference 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 112% ($54 million relative to a mean of $48 million). Notably, this response to tax qualification is *unique* to VCs: we find no significant changes in investment patterns for angel investors or corporate investors, consistent with tax benefits working most effectively through intermediaries who combine outside capital with incentive-based compensation. Moreover, these investments attract 30% more co-investors per round, suggesting tax benefits trigger broader syndication as more investors pursue tax-advantaged opportunities.

The shift in VCs' investment selection also manifests in investment outcomes. When their investments qualify for tax benefits, VC investments in eligible sectors experience a 76% 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:

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

tax-advantaged investments are 107% 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 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 6% increase in valuations on average, with the effect strengthening to 10% among exited investments. Notably, the timing of these valuation effects aligns precisely with tax benefit eligibility: dynamic-test analyses reveal that valuations of VC investments begin diverging upward exactly when tax benefits become available, with no differential trends prior to the five-year threshold. This pattern persists in subsequent investment years, reflecting that firm exits typically involve multiple investors who complete their five-year holding periods at different times. The effect on extreme outcomes is striking: VC investments become 27% more likely to achieve unicorn status (valuations exceeding $1 billion), suggesting that tax benefits encourage VCs to pursue more high-risk–high-reward investment strategies.

Tax benefits also strategically reshape VCs' investment exit dynamics. When investments qualify for tax benefits, VCs become 114% 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 advantages. Angel also experience a significant increase in PE exits, while corporate investors show no significant changes in exit patterns.

The response to tax benefits varies systematically with both investor state-level tax exposure. VC firms headquarted in states that comply with QSBS exemption and have higher tax rates experience a 93% increase in business failure probability and a 151% increase in significant funding gaps, while also achieving substantially higher valuations and being 25% more likely to reach unicorn status. In contrast, VCs based in bottom decile-tax states show markedly smaller responses.

Similarly, tax benefits' effects vary by VC investor quality, where we observe a U-shaped pattern: elite VCs, measured through their historical exit performance, show the strongest response in valuations (+23%) and five-year funding gaps (+385%), lower-tier VCs exhibit similar directional effects with

smaller magnitudes, while mid-tier VCs show limited or even opposite responses. These patterns align with economic incentives: elite VCs, with privileged access to the most promising deals and higher carried interest fees, use tax benefits to pursue even greater upside in high-potential ventures, while lower-tier VCs, with greater sensitivity to investment failures and smaller deal flows, use tax benefits to justify more aggressive risk-taking while enjoying tax deductibility of capital losses as a downside protection.

Using detailed data from each financing round in PitchBook, we further examine whether tax benefits affect the intensity with which VCs monitor their portfolio companies. To wit, we assess if VCs obtain formal board voting rights—which offer direct oversight of major corporate decisions. We find no evidence that tax benefits change how VCs engage with portfolio companies: the triple-difference coefficient for the presence of board voting rights is economically small and statistically insignificant.

We complement this board-voting analysis with data on management changes using PitchBook's employment records. These records track executive appointments and departures over time, allowing us to identify CEO transitions and broader changes in the senior executive team of portfolio companies. We find no significant changes in CEO turnover when investments qualify for tax benefits, and observe a significant 12.5% *decrease* in C-suite turnover. The absence of positive effects on these governance measures—and even evidence of reduced executive intervention—further corroborates that the valuation improvements we observe are driven by tax incentive-enabled risk-taking in investment selection rather than through intensified post-investment monitoring.

We go a step further and use exit multiples to assess whether VCs add value to their portfolio companies on *any* quantifiable dimension. We measure exit multiples as the ratio of exit value to total capital raised and find no significant increase in average exit multiple when investments qualify for tax benefits. Dynamic analyses further reveal that exit multiples observe only modest, insignificant effects around the five-year holding threshold, with similar effects on the likelihood of achieving various multiple thresholds (5×, 10×, or 20× returns). Together, these results confirm that tax benefits operate primarily by changing VCs' risk-taking behavior in project selection.

To provide additional confirmatory evidence for our main results, we examine how portfolio companies deploy human capital. Using novel data from Revelio Labs, we analyze four dimensions of organizational design where theory suggests risk-taking should manifest: managerial centralization, depth of reporting relationships, employee turnover, and innovation focus. We find strong evidence of

increased risk-taking across all such dimensions. For example, when tax benefits apply, VC-backed portfolio companies that eventually achieve an exit show 21% higher managerial centralization (the ratio of executives to other employees), which amplifies outcome variance as managerial decisions have a more concentrated impact (Sah and Stiglitz 1991). These firms also present higher levels of turnover, which indicates more experimental organizational structures (Blanco et al. 2024). The systematic patterns in human capital deployment provide validation that tax benefits shapes VC risk-taking.

Finally, we provide direct evidence that investors strategically time their exit decisions in response to tax benefits. Using bunching estimation techniques, we find substantial excess mass precisely at the five-year holding threshold required for QSBS qualification. Our baseline estimates indicate that a 1% tax exemption leads to a 6.4% increase in the share of investors exiting exactly at the five-year mark—an effect that remains robust under both bootstrapped confidence intervals and partial identification bounds following Bertanha et al. (2023). To isolate the causal effect of tax benefits from other factors that might influence holding periods, we implement a novel difference-in-bunching approach following Brown (2013). This approach reveals that the tax benefits generate a 2.6% to 4.9% increase in bunching at the five-year threshold attributable specifically to tax incentives.

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 (personal and corporate) to entry decisions and risk behavior (Cullen and Gordon 2007; Gentry and Hubbard 2000; Bruce 2002). Cross-country and regional analyses show that corporate tax changes affect aggregate business formation (Djankov et al. 2010; Giroud and Rauh 2019). More recent studies explicitly examine policies targeting entrepreneurial investment. Edwards and Todtenhaupt (2020) look at the impact of the 2010 SBJA on pre-IPO firms and report larger funding rounds for firms that had already raised VC funds; focusing only on VC investments, the authors do not consider whether tax changes affected investor selection, risk-taking behavior, or valuation 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). 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 VCs and other investors in entrepreneurial ventures deploy capital. Tax benefits can encourage greater risk-taking, leading them to fund more experimental ventures that would otherwise go unfunded.

We also contribute to the literature on financial intermediation and tax policy. Prior studies show how intermediaries arise to bridge beliefs between optimists and pessimists (Coval and Thakor 2005), build reputation through repeated interactions (Chemmanur and Fulghieri 1994), and coexist with other intermediary types due to different funding costs (Donaldson et al. 2021). Our analysis reveals that organizational structure shapes how tax incentives transmit through financial markets, directly affecting policy effectiveness. While all sophisticated investors can access tax benefits, only VCs partnerships—who uniquely combine risk-sharing capabilities with convex payoff structures—respond to such incentives by increasing risk-taking.

The remainder of the paper is organized as follows. Section 2 develops our conceptual framework. Section 3 provides institutional details on the QSBS program. Section 4 describes the data and sample construction. Section 5 outlines our empirical strategy. Section 6 examines investment selection, Section 7 presents our main results, Section 8 explores heterogeneity in tax benefit effects, Section 9 investigates sources of value creation, Section 10 provides confirmatory evidence using workforce composition, and Section 11 presents bunching estimates. Section 12 concludes.

2 Conceptual Framework

Building on Poterba (1989) and Feldstein (1969), we develop a framework that explains why tax benefits have heterogeneous effects across investor types in entrepreneurial finance markets. 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 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 in entrepreneurial finance where initial capital is crucial but additional funding faces decreasing productivity. 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, investors differ in their capital sources and incentive structures. We discuss each of their payoff functions in turn.

Venture capitalists (VCs) 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. This structure creates option-like payoffs that increase in value with return volatility.

Angel investors, who invest personal capital (Kerr et al. 2014), maximize:

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

where $U(R, \theta)$ represents non-pecuniary benefits (e.g., mentoring opportunities, community involvement, personal interest in the technology) weighted by λ, and $\rho(\sigma_\theta^2)$ captures the direct cost of bearing undiversified risk since angels invest their personal wealth. Unlike VCs who can share risk with limited partners, angels face more concentrated exposure, making them more sensitive to the project's risk σ_θ^2. Therefore, despite facing the same tax benefits as VCs, angels are expected to be less responsive to these incentives—they face higher personal costs of risk-taking and derive utility from non-financial aspects of early-stage investing.

Corporate investors, in contrast, 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. Corporate investors are expected to be less sensitive to tax benefits than VCs—their investment decisions are driven by a broader set of objectives beyond maximizing after-tax returns.

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, represents the cost of investment. At the threshold θ^*_{VC}, the VC is indifferent between investing and not investing.

The tax benefit affects investment through two key channels. First, it directly increases after-tax returns by reducing τ_b. Second, it creates an asymmetric payoff structure since gains receive preferential treatment while losses remain fully deductible.

2.4 Value Creation *versus* Risk-Taking

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

$$R = \theta f(I, m) + \sigma(m)\eta. \tag{6}$$

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 better governance and 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:

$$(1-\tau_b)\beta\left[\frac{\partial f}{\partial m} - \frac{\partial \sigma}{\partial m}E[\eta|\eta > -\frac{R-I-h}{\sigma}]\right] = c'(m^*). \tag{7}$$

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

Since both the benefits and costs of monitoring scale proportionally with the tax rate $(1-\tau_b)$, optimal monitoring remains unchanged with tax benefits.[2] This suggests that tax benefits operate

[2]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 allow VCs to more efficiently oversee a larger portfolio of experimental ventures, strengthening the dominance of the risk-taking channel.

primarily by altering the risk–return tradeoff in project selection rather than by changing value-creation activities. The resulting option-like dynamic leads to more "extreme" outcomes:

$$P(|R - E[R]| > k) = \int_{-\infty}^{E[R]-k} f(R|\theta, m)dR + \int_{E[R]+k}^{\infty} f(R|\theta, m)dR, \tag{8}$$

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 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 projects, leading to:

$$\frac{\partial Var(R|\text{Investment})}{\partial \tau_b} < 0. \tag{9}$$

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 while capturing upside through carried interest, VCs will show the most significant decline:

$$\left|\frac{\partial \theta^*_{VC}}{\partial \tau_b}\right| > \max\left\{\left|\frac{\partial \theta^*_{Corp}}{\partial \tau_b}\right|, \left|\frac{\partial \theta^*_{Angel}}{\partial \tau_b}\right|\right\}. \tag{10}$$

Prediction 3: VC investment effects operate through risk-taking rather than through increased monitoring or value creation

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:

$$\frac{\partial m^*}{\partial \tau_b} = 0. \tag{11}$$

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

$$\frac{\partial \theta^*}{\partial \tau_b} > 0. \tag{12}$$

In practical terms, VC investors—who base their investment decisions on this threshold—will tend to fund riskier ventures when tax benefits 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 designed to stimulate investment in small businesses through capital gains tax exemptions. Established in 1993, the program has evolved over the last three decades, with its fiscal impact reaching nearly $2 billion in foregone federal tax revenue as of 2023. We discuss the various institutional features of the QSBS in turn.

3.1 Eligibility Requirements

3.1.1 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 1993a).[3] First, the entity must be a domestic C-corporation

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

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 at any point before and immediately after stock issuance. This asset test refers to gross assets rather than firm valuation.[4] 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 and other capital-intensive businesses (see Table IA2 for a mapping of eligible sectors).

3.2 Evolution of Tax Benefits

3.2.1 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.[5] Third, the maximum exclusion per issuing corporation is bounded by the greater of $10 million or ten times the initial investment basis.

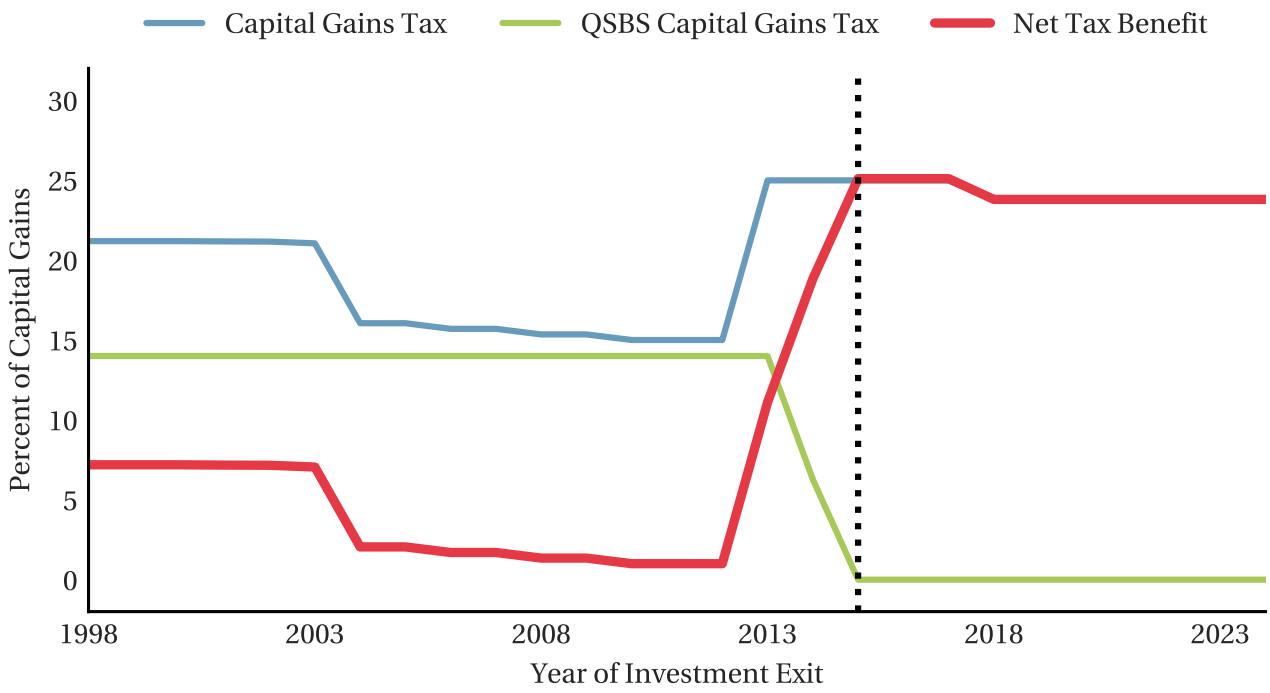
At inception, the QSBS program provided a 50% capital gains tax exclusion. As such, in 1993, when the maximum long-term federal capital gains tax rate was 28%, the exclusion reduced the effective tax rate to 14% for qualifying investments. However, the program's benefits diminished steadily over the following decade. While the QSBS effective rate remained fixed at 14%, regular capital gains rates declined, eventually dropping to 15% in 2003.

Two major policy changes in the late 2000s revitalized the program. The American Recovery and Reinvestment Act (ARRA) of 2009 increased the exclusion to 75% for stock purchased after February 17, 2009. The ARRA also changed how the QSBS benefits were calculated: instead of a

[4]For example, Lyft maintained the QSBS eligibility during its Series B round despite a valuation above $50 million.

[5]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

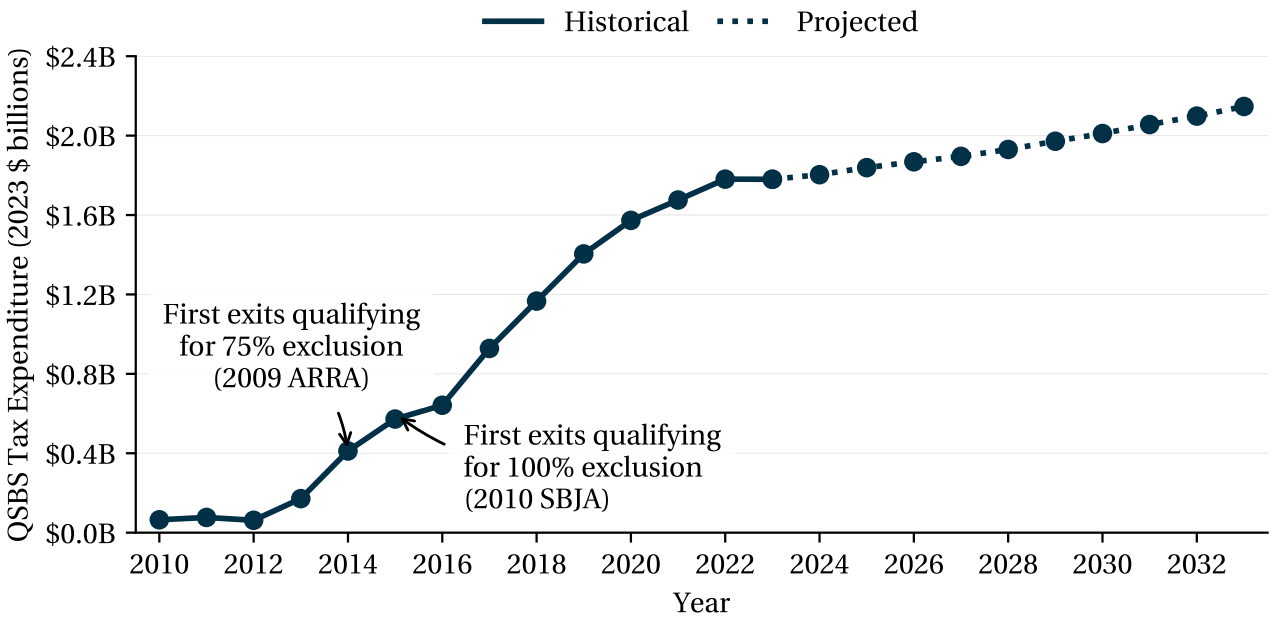


This figure plots three series from 1998 to 2023: the maximum federal long-term capital gains tax rate (blue line), the QSBS capital gains tax rate (green line), and their difference, which represents the net tax benefit (red line). The vertical line marks 2015, when the first exits qualifying for full exemption under the 2010 SBJA became possible, reflecting the QSBS's mandatory five-year holding period. Data are from NBER TAXSIM.

fixed effective rate, tax benefits would now scale with regular capital gains rates. For example, with the prevailing 15% capital gains rate, investors would pay only 3.75% tax on their gains (that is, 25% of 15%). 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.

As shown in Figure 1, these policy changes significantly increased tax benefits accruing to qualified small business investments. The blue line shows how the maximum federal capital gains tax rate evolved over time: 21.2% in 1998, 15.3% in 2009, and 23.8% since 2018. The green line represents the QSBS tax rate, which dropped to zero for post-2010 investments after the five-year holding period elapsed. The red line shows the net tax benefit—the difference between these rates—which increased from just 1% in 2003 to 23.8% by 2015.

Figure 2: Federal Tax Expenditures from the QSBS Tax Exemption



This figure shows the evolution of federal tax expenditures due to the QSBS exemptions 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, adjusted using the 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.

The fiscal impact of these tax benefits has grown substantially over time. As shown in Figure 2, the cost to the federal government in terms of foregone tax revenue increased from $65 million in 2010 to $1.8 billion in 2023 (in 2023 dollars). The first major increase occurred in 2014, when tax expenditure more than doubled to $412 million, reflecting the first exits of investments qualifying for the 75% exemption introduced by the ARRA in early 2009. Treasury projections indicate continued growth, with annual expenditure reaching $2.2 billion by 2033 and cumulative costs between 2024 and 2033 approaching $20 billion in real terms.

3.3 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 IA1, 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.[6]

Most states conform with federal QSBS treatment, but four notable exceptions have consistently opted out of offering state-level QSBS benefits: New Jersey, Pennsylvania, Mississippi, and Alabama. As shown in Table IA1, California initially provided the QSBS benefits but eliminated its provisions in 2012 after a state appellate court ruled that its approach violated the Commerce Clause of the U.S. Constitution.[7] In contrast, some states have recently expanded their QSBS benefits, with Utah adopting conformity in 2016 and Massachusetts following in 2022. Regardless of state-level policy, investors in all states remain eligible for the federal QSBS exemption.

4 Data and Variable Construction

Our analysis employs comprehensive data on private market investments from PitchBook, which tracks detailed information about VC, angel, and corporate startup investments. We construct our sample systematically to identify investments potentially eligible for the QSBS tax benefits while maintaining consistency with the program's eligibility requirements.

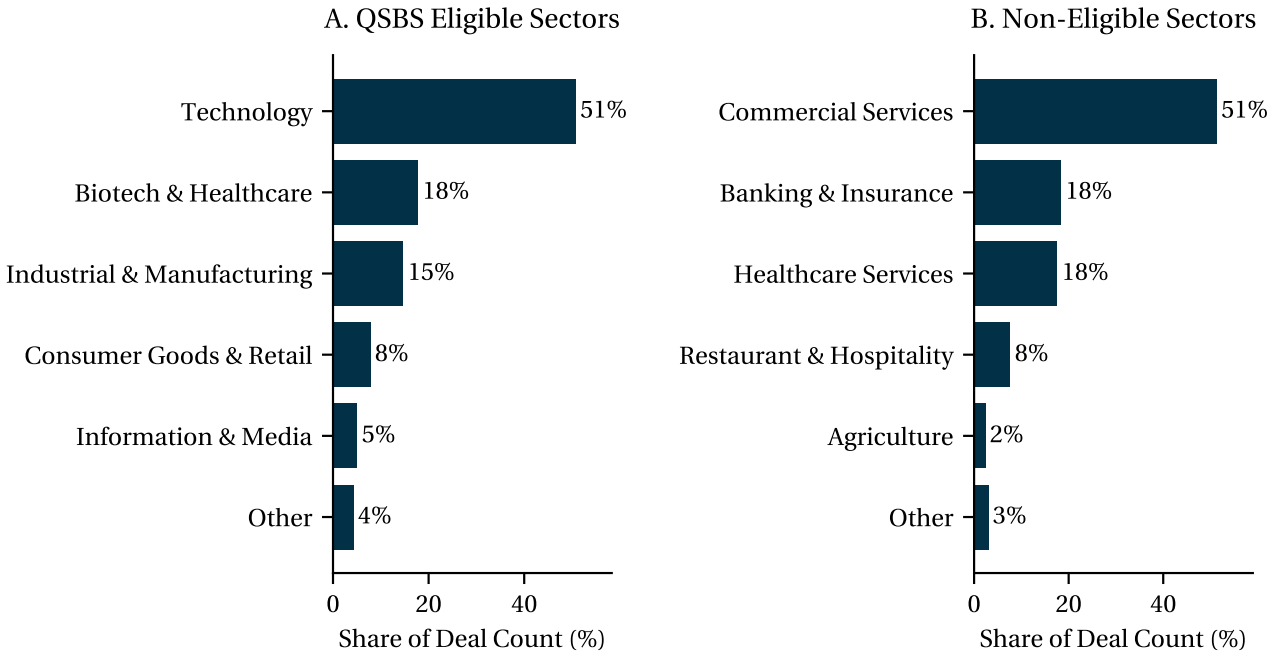
First, we restrict the sample to U.S.-based companies, excluding those founded before 2000. This geographic and temporal restriction aligns with the QSBS program's focus on domestic entrepreneurial activity and ensures we can track firms from their inception. Second, using legal firm names in PitchBook, we exclude firms designated as Limited Liability Partnerships (LLPs) or Limited Partnerships (LPs), as only C-corporations can issue qualifying stock under Section 1202 of the Internal Revenue Code. 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 non-eligible 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

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

[7] The court found that providing preferential treatment to California-based businesses was unconstitutional. Before 2012, California investors could exclude 50% of their QSBS gains from state taxation. After the court ruling, they became subject to the full state tax rate on all QSBS gains, though they remained eligible for the federal exemption.

Figure 3: Investment Distribution by Sector



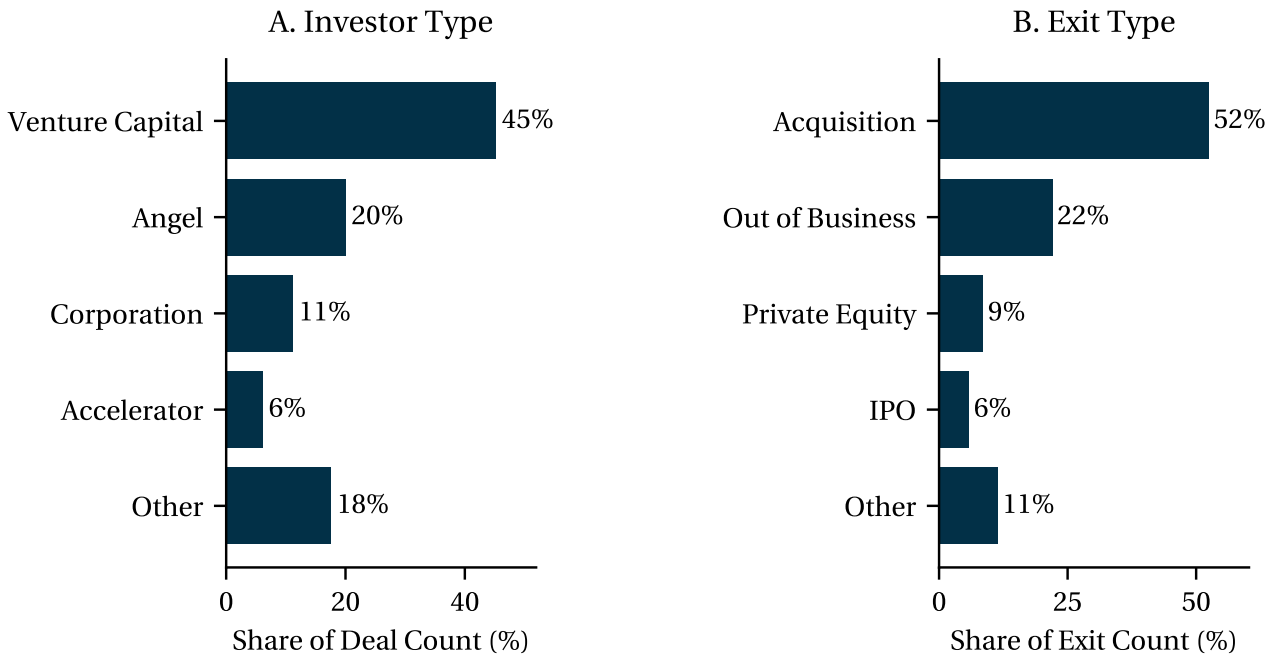
This figure shows the distribution of investments across QSBS-eligible and non-eligible sectors from 2004 to 2022. Panel A shows the composition of QSBS-eligible sectors, where sectors are defined based on IRC Section 1202 eligibility criteria. Panel B shows non-eligible sectors, which are excluded from the QSBS benefits. Percentages represent the share of total number of deals in each category. Data are from PitchBook.

period (beyond which venture investments typically represent failed businesses that remain technically active) between 2004 and 2022. Focusing on entries through 2017 allows us to track any investment long enough to observe whether it reaches the five-year holding period required for the QSBS qualification. Our final sample yields 1,052,649 investor×firm×year observations and over 186 thousand investor–firm pairings. This rich panel data exhibits substantial cross-sectional variation: the average VC makes 8.9 different investments, while the average firm receives funding from 4.5 distinct investors.

4.1 Industry and Investment Composition

Technology companies dominate our sample of eligible investments, accounting for 51% of deals as shown in Panel A of Figure 3. Within technology, business and productivity software represents the most prominent component (13% of eligible deals), followed by information services (7%) and social/platform software (3%). Biotech and healthcare firms represent the second-largest category at

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 and corporate VC. Angel includes individual angel investors and angel groups. Percentages represent the share of deal and exit counts. Data are from PitchBook.

18%, followed by industrial and manufacturing at 15%. Consumer goods and retail (8%) and information and media (5%) constitute smaller shares, with other qualified sectors accounting for the remaining 4%. Among non-eligible sectors shown in Panel B, commercial services—e.g., IT consulting (9%), consulting (7%), and B2C services (7%)—represent 51% of investments. Banking and insurance (18%), healthcare services (18%), and restaurant and hospitality (8%) make up most of the remaining non-eligible activity, with agriculture accounting for a small share (2%).

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 45% of investments. Angel investors represent 20% of deals, while corporations participate in 11%. Accelerators contribute 6% of deals, with other investors, including private equity firms accounting for the remaining 18%. The distribution of exit types in Panel B highlights the opportunities and risks in early-stage investment. Acquisitions represent the most common successful exit at 52% of outcomes, while business failures account for 22% of exits. Private equity buyouts represent 9% of exits,

while IPOs account for 6%. Other exit types, including secondary sales, account for the remaining 11%.

4.2 Key Variables and Summary Statistics

We analyze the effect of tax policy on investment behavior at two different levels of data organization. First, we discuss initial investment decisions at the investor–firm level. Second, we analyze investment holdings and outcomes at the investor–firm–year level.

4.2.1 Investor–Firm Level Analysis

Treatment Status Proxies

At the investor–firm level, we construct proxies identifying investments qualifying for tax benefits. Our primary treatment variable is the interaction between post-reform entry and sector eligibility (denoted by $\mathbb{1}\{\text{Eligible Sector}\}_f \times \mathbb{1}\{\text{Investor Entry Post-2009}\}_{i,f}$, where $_f$ indexes portfolio firm and $_i$ indexes investor). This interaction exploits both temporal variation in tax benefit availability and cross-sectional variation in sector eligibility under Internal Revenue Code Section 1202 criteria. For biotech investments specifically, which are part of eligible sectors, our treatment variable is solely the post-reform entry indicator.

Outcome Variables

We examine three sets of outcome variables at the investor–firm level. First, we track the investment stage through six key indicators from PitchBook's deal-level data: (1) product "beta stage" investments occur when firms have only an early test version of their product (representing significant technological risk as market viability remains unproven and substantial development challenges may emerge); (2) "stealth mode" investments target firms operating in complete secrecy before product launch (where information asymmetries are high and investors must rely on founder quality and market potential rather than observable traction); (3) "first deal" identifying a company's inaugural funding round; (4) "seed-stage" investments represent early-stage funding before significant revenue or market validation (but usually with higher visibility than stealth-mode ventures); (5) "pre-clinical trial stage" (representing biotech firms with highest degree of uncertainty), and (6) "clinical trial-stage" biotech firms.[8]

[8] In the biotech sector, new drugs or treatments must progress through a rigorous sequence of research and clinical trials

Second, we measure innovation intensity using talent metrics from Revelio Labs.[9] Following the methodology of 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 proportion of AI-skilled employees among all staff and (2) the concentration of AI skills specifically among engineers.

Third, we analyze whether investors demand safeguards when they take on riskier ventures by collect contract data from PitchBook's deal terms and security type fields. For security type, we identify: (1) preferred equity (the standard form of VC financing that provides priority claims in liquidation); (2) complex preferred equity (preferred stock with additional features such as PIK dividends or ratchet provisions); and (3) common stock (standard equity without preferential rights). We also examine three key contractual provisions that allocate cash-flow and control 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 (requiring dividend accrual regardless of declaration, 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 Investor–Firm–Year Level Analysis

Treatment Identification Proxies

Our main analysis exploits three sources of variation required for the QSBS tax benefit qualification. The first treatment variable is $\mathbb{1}\{\text{Eligible Sector}\}_j$, which equals one if firm j operates in a sector qualifying under Section 1202 criteria. The second is $\mathbb{1}\{\text{Holding} \geq 5\}_{i,j,t}$, an indicator for investments reaching the program's mandatory five-year holding period, computed as the difference between the current year t and investor i's entry year in firm j. The third is $\mathbb{1}\{\text{Post-2009}\}_{i,j}$, which equals one for investments initiated after 2009 when the QSBS tax benefit expanded substantially. The interaction of these variables identifies investments qualifying for tax benefits.

before receiving approval to go to market: less than one-third of pre-clinical trial candidates ever advance to clinical-trial stage (Takebe et al. 2018), and of those advancing to clinical trials, only 14% receive FDA approval (Wong et al. 2019)

[9] Data steps for the Revelio Labs variables are detailed in Section IA1 of the Internet Appendix.

Outcome Variables

While our previous analyses capture initial investment decisions and portfolio allocation strategies, understanding how tax benefits affect investment outcomes requires tracking investor–firm relationships over time. We construct six sets of outcome variables at the investor–firm–year level that capture the evolution of investments from funding through exit: financing patterns, investment failures, interim performance, exit channels, value-add activities, and organizational design.

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. The first indicates complete business failure, based on PitchBook's "Out of Business" designation for firms that cease operations. The second tracks funding difficulties by counting consecutive years without new capital raises. The third flags severe funding droughts through an indicator that equals one when firms go five or more years without raising new capital.[10] These measures capture degrees of investment distress, ranging from complete failure to early warning signs of trouble.

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.[11] We also identify "unicorn" status—firms reaching valuation above $1 billion—as a measure of exceptional success.[12]

Our fourth set examines exit patterns through mutually exclusive indicators for three types of exits: (1) private equity buyouts (acquisitions by PE firms); (2) IPOs (public listings); and (3) strategic

[10] 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.

[11] 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.

[12] We also compute alternative valuation measures using (1) only linear interpolation between known values without backward or forward extension and (2) no modifications to the raw data. If anything, our approach biases against finding effects since valuations in our sample typically become available only in later rounds when values are higher.

acquisitions (sales to operating companies). This categorization follows the lifecycle of venture-backed firms—PE buyouts typically occur later 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 "Chief Executive Officer" and "CEO") or other C-suite executives (identified through titles like "CFO" and "Senior VP").

Our sixth set analyzes whether investors create value beyond providing capital—through monitoring, strategic guidance, network connections, or any other value-added activities—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, regardless of any interim valuations it achieved. We examine both the average multiple and the likelihood of achieving specific thresholds (5×, 10×, or 20× returns) to understand the distribution of investment outcomes.[13] Together, these metrics help us determine whether tax benefits primarily affect project selection or if they also lead to enhanced value creation through post-investment activities.

Finally, we examine workforce composition of portfolio firms in our sample. We do this as a way to provide confirmatory evidence supporting our main tests relying on labor dynamics data from Revelio Labs. Building on organizational economics research (e.g., Sah and Stiglitz (1991), Malenko (2024), and Blanco et al. (2024)), we construct three sets of measures that capture different dimensions of organizational risk-taking: organizational structure (managerial centralization and depth of reporting relationships), workforce stability (net employment changes and gross employee turnover),

[13]This measure differs from our valuation analysis in two key ways. First, it captures only realized returns at exit rather than interim paper gains. Second, it accounts for how much capital was required to achieve those returns, distinguishing between companies that generate similar exit values but require very different investment amounts.

innovation-focus (fractions of AI-skilled jobs to all employees and engineers).[14]

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 another 6.4% face severe funding difficulties, going 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, though this overstates the rarity of such outcomes.[15] Most successful exits come through acquisitions (4.4% of investor–firm–years), with PE buyouts (0.7%) and IPOs (0.5%) being less common.

Table 2 compares raw, unconditional means between QSBS-eligible and non-eligible 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—which works against finding an effect of tax benefits on risk-taking since eligible sectors start with stronger governance (associated with more conservative behavior, as Gompers et al. (2003) observe) and more conservative financing (Campello et al. (2010) show that lower funding typically constrains rather than enables risk-taking).

[14] More details on how these variables are defined are available in Section IA1 of the Internet Appendix.

[15] In our sample of 35,286 unique portfolio firms, only 437 (1.2%) ever achieve unicorn status while 6,292 (17.8%) went out of business. However, unicorns appear more frequently in our investor–firm–year panel for two reasons: (1) successful firms attract more investors (unicorns average 8.4 investors *versus* 3.1 for firms that go out of business) and (2) firms may maintain unicorn status for multiple years while remaining in our sample.

PLACE TABLE 2 ABOUT HERE

5 Empirical Strategy

Our empirical analysis proceeds in two steps. First, we examine whether investors actively change their investment decisions in anticipation of tax benefits. Second, we analyze how these decisions manifest in investment outcomes using a triple-difference framework.

5.1 Investment Selection Analysis

We exploit the 2009 QSBS reform as a shock to the expected tax treatment of new investments to identify changes in investment behavior. We examine investment decisions at the investor–firm sample, which allows us to analyze deal characteristics at the time of investment.

We examine investment selection at the investor–firm level using:

$$\begin{aligned} Y_{i,f} =& \beta_0 + \beta_1 \cdot \mathbb{1}\{\text{Eligible Sector}\}_s + \beta_2 \cdot \mathbb{1}\{\text{Post-2009}\}_{i,f} \\ &+ \beta_3 \cdot [\mathbb{1}\{\text{Eligible Sector}\}_s \times \mathbb{1}\{\text{Post-2009}\}_{i,f}] \\ &+ \alpha_i + \gamma_s + \lambda_{j,t} + \epsilon_{i,f} \end{aligned} \tag{13}$$

where $Y_{i,f}$ represents characteristics at the time of initial investment, including firm stage (e.g., product development phase, firm in stealth mode) and contractual terms (e.g., liquidation preferences, cumulative dividends). The 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–by–entry year fixed effects ($\lambda_{j,t}$) account for local economic conditions that might affect startup formation and investment opportunities. 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 helps ensure our statistical inference is robust to arbitrary correlation patterns within investor portfolios.

5.2 Main Identification Strategy: Difference-in-Difference-in-Differences

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. Our main specification is:

$$\begin{aligned} Y_{i,f,t} =& \beta_0 + \beta_1 \cdot \mathbb{1}\{\text{Eligible Sector}\}_s + \beta_2 \cdot \mathbb{1}\{\text{Holding Years} \geq 5\}_{i,f,t} + \beta_3 \cdot \mathbb{1}\{\text{Investor Entry Post-2009}\}_{i,f,t} \\ &+ \beta_4 \cdot [\mathbb{1}\{\text{Eligible Sector}\}_s \times \mathbb{1}\{\text{Holding Years} \geq 5\}_{i,f,t}] \\ &+ \beta_5 \cdot [\mathbb{1}\{\text{Eligible Sector}\}_s \times \mathbb{1}\{\text{Investor Entry Post-2009}\}_{i,f,t}] \\ &+ \beta_6 \cdot [\mathbb{1}\{\text{Holding Years} \geq 5\}_{i,f,t} \times \mathbb{1}\{\text{Investor Entry Post-2009}\}_{i,f,t}] \\ &+ \beta_7 \cdot [\mathbb{1}\{\text{Eligible Sector}\}_s \times \mathbb{1}\{\text{Holding Years} \geq 5\}_{i,f,t} \times \mathbb{1}\{\text{Investor Entry Post-2009}\}_{i,f,t}] \\ &+ \text{Fixed Effects} + \epsilon_{i,f,t} \end{aligned} \tag{14}$$

where i indexes investors, f indexes firms, and t indexes years. The dependent variable $Y_{i,f,t}$ represents various investment outcomes, including deal characteristics (e.g., deal size, 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* non-eligible sectors after the QSBS tax benefits were enhanced in 2009.

Our baseline specification includes an extensive set of fixed effects to isolate the impact of the QSBS tax benefits from potential confounding factors. Year fixed effects control for aggregate economic conditions and changes in the entrepreneurial finance environment—such as overall funding availability, IPO market conditions, or macroeconomic shifts that affect all firms simultaneously. Entry–year fixed effects account for cohort-specific shocks that might affect all investments initiated in a particular year, like changes in startup formation rates or the quality of entrepreneurial opportunities in different vintages. Holding period fixed effects absorb any systematic patterns in how investments naturally evolve over time, independent of tax benefits.[16]

Beyond these temporal controls, we address potential selection concerns through investor–firm

[16]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.

fixed effects. This approach addresses several potential confounds. First, it controls for time-invariant investor characteristics that might affect investment behavior, such as investment style (e.g., early *vs.* 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 industry, 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.[17]

We cluster standard errors at the investor level throughout our analysis. This accounts 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. Clustering at the investor level is more conservative than clustering at the firm level: in our sample, the mean VC makes 8.9 investments, while the mean firm has 4.5 investors. For robustness, we also show that our results are stable under firm-level and two-way clustering at both the investor and firm levels.

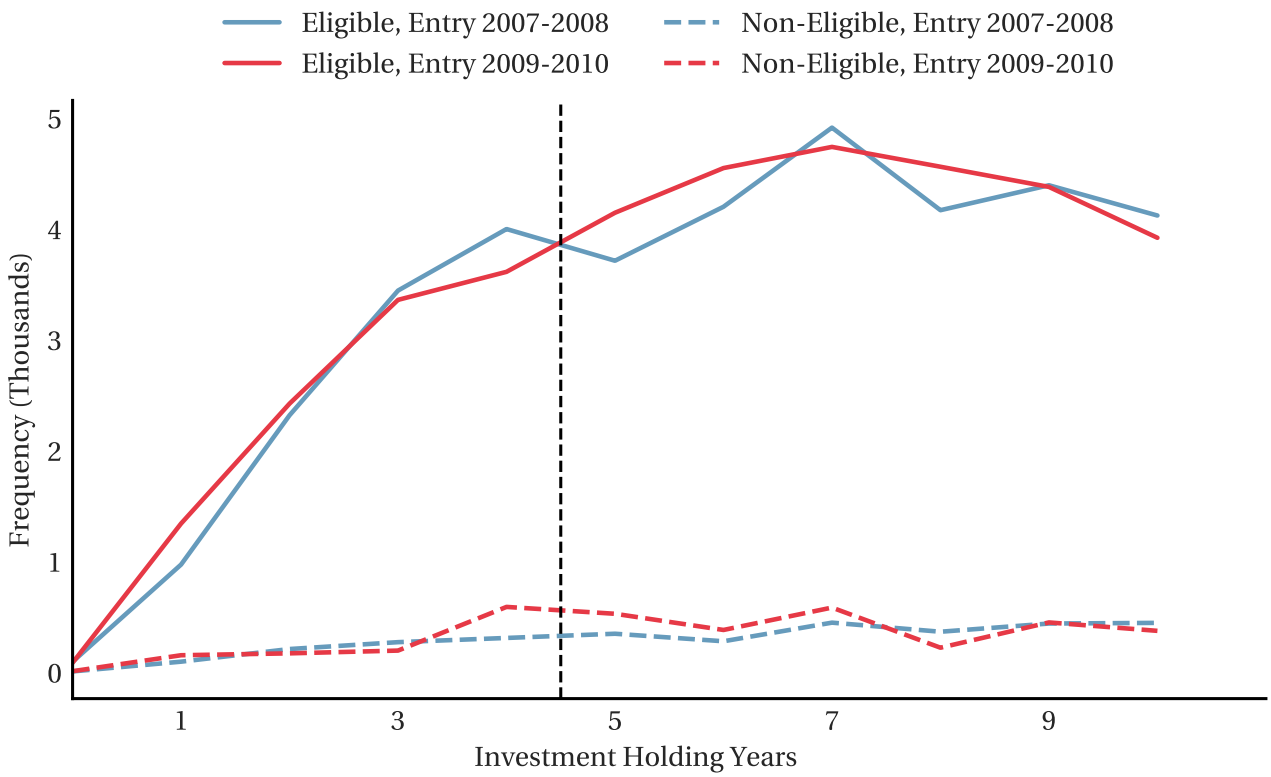
5.3 Triple-Difference Identification Requirements

Identification in our triple-difference setting requires the absence of shocks that differentially affect the relationship between holding periods and outcomes across eligible and non-eligible sectors in the post-reform period. Olden and Møen (2022) argue that this is a stronger requirement than parallel trends, as it involves comparing differences in slopes rather than levels. For example, our identifying assumption would be violated if eligible sectors experienced technological changes altering the returns to longer-duration investments around the time they qualified for the QSBS benefits.

Several patterns in the data support the validity of our identification strategy. First, Figure 5 shows that after 2009, investments in eligible sectors exhibit a marked increase in holding periods beyond the five-year threshold, while non-eligible sectors remain stable. This discontinuity appears precisely where tax benefits become available, suggesting investors adjust holding periods in response to tax incentives, but only where these incentives apply.

[17]For exit multiple analyses, we replace investor × firm fixed effects with separate investor and firm fixed effects since exit outcomes are observed only once per investment.

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



This figure shows a distribution of investment holding periods. The sample, at the investor–firm–year level, includes investments entered between 2007 and 2010 that eventually achieved an exit. Data are from PitchBook.

Second, the relationship between holding periods and outcomes changes distinctly across sectors after the reform. Binscatter plots of business failure rates,[18] show steeper increases in failure with holding periods for post-2009 investments in eligible sectors, while non-eligible sectors show no such differential pattern. For valuations, Figure IA2 reveals that post-2009 investments in non-eligible sectors show notably flatter trajectories compared to their pre-2009 counterparts, while eligible sectors maintain consistent valuation patterns across periods. These patterns suggest that tax benefits affect both risk-taking behavior and value creation, specifically in eligible sectors.

Dynamic triple-difference estimates provide further support for the validity of our triple-difference identification.[19] First, effects consistently emerge precisely at the five-year threshold required

[18] See Figure 6 in Section 7

[19] See Figures IA3, IA4 and 7.

for tax benefits, creating a discontinuity that aligns exactly with the policy design. Second, these changes occur predominantly for VC investors; if unobserved sector-specific factors were driving the results, they would likely affect all investor types similarly. Third, there are no observable pre-trends before the threshold, suggesting the results are not driven by pre-existing differences. Fourth, the effects persist after qualification rather than immediately reversing, indicating fundamental changes in investment behavior rather than mere timing manipulation. Collectively, these patterns strongly support a causal interpretation as they would be difficult to explain through alternative channels such as technological changes or broader shifts in investment preferences.

6 Investment Selection

We begin by examining how tax benefits affect investment decisions, measuring risk-taking through multiple development milestones. At the investor–firm level, we compare eligible and non-eligible sectors before and after the reform. Table 3 shows 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 firms extends beyond development stage to innovation intensity. Panel A shows that post-reform, eligible-sector investments target firms with significantly higher fractions of AI-skilled talent: 32% higher across all employees (+0.009 compared to a mean of 0.028) and 45% higher among engineers (+0.053 compared to a mean of 0.117). As documented by Babina et al. (2024), firms with higher concentrations of AI-skilled talent are significantly more innovative—which inherently entails greater business risk through market uncertainty, higher cash-flow volatility, and changing risk profiles during technology adoption (Gârleanu et al. 2012; Pástor and Veronesi 2009).

Examining investor heterogeneity in Panels B-D reveals that VCs drive most of these effects. VCs show the strongest response in both development stage and innovation measures: they double

their stealth-mode investments (+0.005 relative to a mean of 0.005) and increase AI-skilled engineering talent by 66% (+0.072 relative to a mean of 0.109).[20] In contrast, angel investors respond primarily through product beta-stage investments (+0.006, a 100% increase) but show no significant change in AI-skilled talent. Corporate investors display no statistically significant changes in any investment entry dimension. We find no consistent effects on funding round characteristics across investor types, suggesting that tax incentives alter the types of companies targeted rather than simply shifting the timing of when investors enter a firm's financing lifecycle.

To rule out the possibility that different contracting rules drive the increased risk-taking in investment selection, we analyze security choices and cash-flow rights at the moment of the investment. Table 4 shows that VC investments in eligible sectors after the reform exhibit offsetting changes in contractual protections. On one hand, VCs become 21.7% less likely to demand equal footing (*pari-passu*) rights in liquidation (−0.074 relative to a mean of 0.341), 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 (+0.077 relative to a mean of 0.155) and participating preferred rights (+0.060 relative to a mean of 0.263). This mixed pattern suggests that VCs are not simply using contracts to neutralize additional risk—if they were, we would observe consistent strengthening across protective provisions. Instead, they accept greater risk in some dimensions while seeking protection in others. Angel investors become significantly less likely to use preferred equity (−0.095) and more likely to accept common stock (+0.109), while corporate investors show little response in contractual terms. This investor-type heterogeneity supports the interpretation that tax benefits directly affect risk tolerance.

PLACE TABLE 4 ABOUT HERE

Together, the results from this section show that tax benefits affect risk-taking through the selection of inherently riskier ventures, with effects concentrated among VC investors. This pattern of responses aligns with our conceptual framework: VCs, who combine outside capital with incentive-based compensation through carry, have stronger incentives to pursue riskier investments under increases in tax benefits. Corporate investors, driven by strategic objectives, and angel investors, investing personal capital, respond more mildly to tax incentives.

[20] We find similar patterns when examining biotech investments specifically, with VC investments at the pre-clinical trial-stage becoming 75% more likely after the reform (see Table IA3 and examples of biotech investments in Table IA4).

7 Investment Outcomes

Having established that VCs respond to tax benefits by selecting riskier ventures, we now examine how this shift in investment strategy manifests in investment outcomes. We implement a triple-difference research design that exploits three sources of variation: sector eligibility under the QSBS criteria, investment entry timing relative to the 2009 reform, and the program's five-year holding period requirement.

7.1 Funding Patterns

We begin by analyzing funding patterns. Table 5 presents our baseline triple-difference estimates for deal size and investor participation. Panel A shows that when investments qualify for tax benefits, deal sizes increase by +66% ($30.495 million relative to a mean of $46.143 million). This effect is particularly pronounced for VC investments, with an increase of +112% ($54.063 million relative to a mean of $48.097 million). It becomes even more significant when examining exited VC investments, where the increase reaches 135% (+$94.668 million relative to a mean of $70.244 million). In contrast, we find no significant effects for angel or corporate investors.

PLACE TABLE 5 ABOUT HERE

The tax benefit also attracts a broader investor base to eligible investments. Panel B shows that qualifying investments attract 30% more investors (+1.559 relative to a mean of 5.255 per round). This expansion in investor participation is robust for angel investors (+2.795 investors, representing a 42% increase relative to their mean of 6.678) and VC firms (+1.032 investors, representing a 20% increase relative to their mean of 5.207). Panel C reveals that much of this increase comes from new investors entering these deals, with qualifying investments attracting +31% more first-time investors (+1.171 relative to a mean of 3.809 new investors). These effects persist in the subsample of exited investments.

7.2 Investment Failure

We next examine how the QSBS tax benefits affect investor risk-taking behavior by looking into outcomes. Table 6 presents striking evidence that tax benefits significantly increase VCs' investment

failure. When their investments qualify for tax benefits, VC investments in eligible sectors become 76% more likely to fail (+0.013 relative to a mean of 0.017). This effect more than doubles in the exit sample, where the likelihood of failure increases by 129% (+0.044 relative to a mean of 0.034). In contrast, we find no significant changes in failure rates for angel or corporate investors.

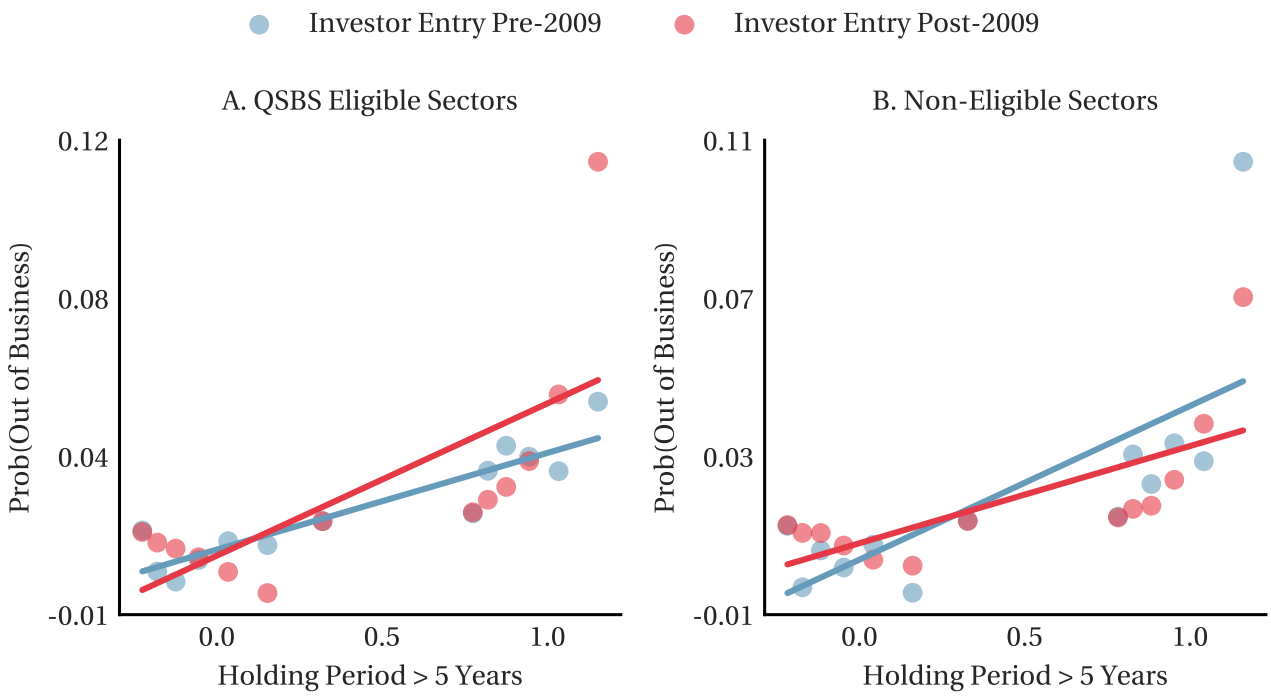
PLACE TABLE 6 ABOUT HERE

The increased failure risk is visually apparent in Figure 6. Panel A shows that for eligible sectors, investments made after 2009 experience a markedly steeper increase in failure rates as they approach and exceed the five-year holding requirement. Panel B shows no such pattern for non-eligible sectors, where the relationship between holding period and failure remains relatively flat regardless of entry timing. This divergence in failure patterns appears precisely when tax benefits become available, suggesting a direct link between tax incentives and risk-taking behavior.

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, which starts at zero in the year of a funding round and increases by one each subsequent year without new funding. Panel C shows that when VC investments qualify for tax benefits, they experience a 36% increase in consecutive years without funding (+0.360 relative to a mean of 0.994 years). This effect persists in the exit sample, where the increase is 33% (+0.222 relative to a mean of 0.675 years).

These funding droughts often become severe enough to signal serious distress. 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). As Gompers (1995) documents, successful startups typically raise new rounds every 12 to 18 months on average, making such extended periods without capital often precede outright failure. The effect is more substantial for VC investments in the exit sample, where the probability of experiencing these prolonged funding gaps increases by 494% (+0.094 relative to a mean of 0.019). Moreover, these funding difficulties are more pronounced among VC investment—they do not appear for corporate investors, and their effects on angel investors are also large, but become insignificant in the exited sample.

Figure 6: 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 non-eligible sectors (Panel B). The plots compare 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.

7.3 Value Creation

We next examine how tax benefits affect investment outcomes, focusing on exit types and valuations. According to our framework, tax benefits should lead VCs to pursue more high-risk, high-reward investment strategies. Table 7 presents our baseline estimates. Panel A shows that VC investments in eligible sectors see a $61.957 million increase in valuations (+6.1% relative to a mean of $1.0 billion) when tax benefits become available.[21] This effect nearly doubles for exited investments, reaching $105.7 million (+10.4% relative to a mean of $1.0 billion). The response to tax benefits is unique to VC investors. Angel investors show *no significant changes* in valuations (t-stat −1.41) when their investments qualify for tax benefits, while corporate investors see declining valuations (−$8.2 million,

[21] Figure IA2 visualizes this pattern, showing that investments initiated after 2009 experience steeper valuation growth over the holding period in eligible sectors. In contrast, post-2009 investments exhibit almost flat valuation trajectories for non-eligible sectors compared to the upward trend of pre-2009 investments.

a 1.7% decline relative to the mean of $491.3 million).

PLACE TABLE 7 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, the effects are substantially larger at $940.4 million (+69.0% relative to the mean) and $2.5 billion (+140.0%), respectively (see Table IA6). The results are also robust to examining the natural logarithm of valuations rather than levels.

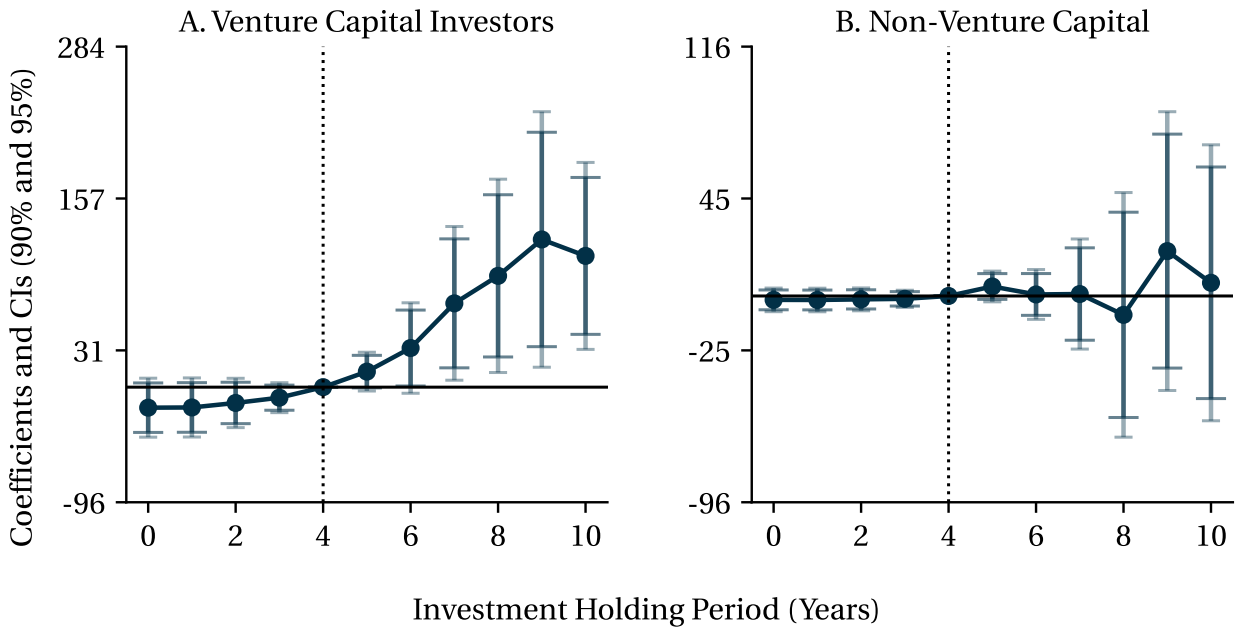
The dynamic evolution of these valuation effects is particularly striking. Figure 7 shows that valuations of VC investments in eligible sectors begin diverging upward precisely at the five-year threshold when tax benefits become available. The effect grows steadily in subsequent years, reaching nearly $300 million by year 8, while non-venture 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 7 shows that tax benefits significantly affect extreme outcomes. When VC investments qualify for tax benefits, they become 26.7% more likely to achieve unicorn status (+0.008 relative to a mean of 0.030), with this effect strengthening to 30.9% (+0.017 relative to a mean of 0.055) in the exit sample.[22] In contrast, neither angel nor corporate investments show an increased probability of achieving unicorn status. These effects are robust to alternative specifications—examining thresholds of $500 million and $2 billion (see Table IA7).

Significant changes in exit patterns accompany the valuation effects. Table 8 reveals that when investments qualify for tax benefits, VC investments become 114% more likely to exit through private equity (PE) buyouts (+0.008 relative to a mean of 0.007). However, these same investments become 47% less likely to exit through acquisitions (−0.024 relative to a mean of 0.051), and IPO exits nearly disappear from their portfolio. This shift reflects the timing differences in exit channels: Kaplan and

[22] Table IA5 presents examples of unicorns in sample, including Drift (backed by fourteen investors between 2015 and 2017) and Datalogix (backed by eight investors between 2009 and 2014), later acquired by Vista Equity Partners and Oracle, respectively.

Figure 7: Dynamic Triple-Differences Estimates for Firm Valuations ($ M)



This figure illustrates the dynamic difference-in-difference-in-differences coefficients for firm valuations ($ millions), based on the following specification for all firms: $Y_{i,j,t} = \beta_0 + \sum_{k=0}^{10} \beta_k [\mathbb{1}\{\text{Holding Years} = k\}_{i,j,t} \times \mathbb{1}\{\text{Inv. Entry Year} \geq 2009\}_{i,j} \times \mathbb{1}\{\text{Eligible Sector}\}_j] + \text{Controls} + \epsilon_{i,j,t}$. 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, entry year, investor × firm) and standard errors clustered at the investor level. Results of Panel A correspond to Table 7, Panel A, Column 3.

Stromberg (2009) document that PE buyouts typically occur later in a company's lifecycle, Gompers (1996) establishes that IPOs are often early exit opportunities, and Puri and Zarutskie (2012) show that strategic acquisitions similarly offer early liquidity paths.

PLACE TABLE 8 ABOUT HERE

7.4 Robustness: Alternative Clustering Schemes and Excluding California

The structure of venture investments presents two distinct features. First, as Lerner (1994) documents, deals typically involve syndication. Second, as Gompers and Lerner (1998) show, investment activity is geographically concentrated, with California-headquartered investors accounting for 31% of investor–firm pairings in our sample (44% among VC investors). Given these features, we examine our results' robustness to alternative clustering approaches and regional subsamples.

Our results are robust to alternative specifications of standard error clustering. As shown in Table IA8, our main findings maintain their economic and statistical significance whether we cluster at the firm level or double-cluster at both the investor and firm level, compared to our baseline investor-level clustering. Key outcomes like deal size, investor participation, and the probability of extreme outcomes (both failures and successes) remain stable across these specifications, suggesting that correlation patterns in the error terms do not drive our findings.

Most of our results are also robust to excluding California-based investors from the sample. As shown in Table IA9, in the sample without California investors, investments that qualify for tax benefits still show 47.3% higher likelihood of business failures, 22.6% longer funding droughts, and 94.2% higher chance of experience five-year funding gaps. However, the likelihood of achieving unicorn status becomes statistically insignificant (t = 1.29).

8 Heterogeneity in Tax Benefit Effects

We examine next how the effect of tax benefits varies with economic magnitude of tax incentives, starting with investor jurisdiction. QSBS exemptions provide greater economic value in locations with higher tax rates, as investors in these areas face larger potential tax bills without the exemption. To capture this variation in tax exposure, we classify investors based on their headquarters state's maximum long-term capital gains tax rate using data from NBER TAXSIM. There is substantial variation in these rates—in 2015, for instance, they ranged from 0% in states with no capital gains taxes to 14.1% in California. For each lagged year, we rank states by their statutory rates and create an indicator for investors based in states with bottom decile tax rates. Importantly, our analysis restricts to states that comply with QSBS exemptions, excluding non-conforming states such as Pennsylvania, New Jersey, and Massachusetts, and partially conforming states during non-compliance periods.

Table 9 shows that the risk-taking effects of QSBS tax benefits are more pronounced in states with higher tax rates, where the economic value of the exemption is greater. In higher-tax states, VC investments that qualify for tax benefits (eligible sectors held for five or more years after 2009) experience a 93% increase in business failure probability (+0.013 compared to a mean of 0.014) and a 151% increase in significant funding gaps (+0.083 compared to a mean of 0.055). These investments

also achieve substantially higher valuations (+$70.6 million, a 7.1% increase relative to a mean of $994 million) and are 25% more likely to reach unicorn status (+0.008 relative to a mean of 0.032).

PLACE TABLE 9 ABOUT HERE

In contrast, VCs headquartered in states with bottom-decile tax rates show markedly smaller responses to tax benefits. Their increase in business failure is more modest (a 75% increase relative to a mean of 0.02) and while lower statistical significance (t = 1.86) while their five-year funding gaps show no significant change (t = 0.99). Similarly, their valuation gains are only about one-fourth as large (+$17.2 million, a 3% increase relative to a mean of $549 million) and their probability of reaching unicorn status is small and not statistically significant. This systematic heterogeneity in risk-taking behavior provides further evidence that tax incentives directly affect investment decisions, with effects scaling in proportion to the economic magnitude of the tax benefits.

The incentives to pursue riskier investments may also vary across VC firm quality tiers. Elite VCs typically have preferential access to the most promising deals, as documented by Hsu (2004) and Sørensen (2007), and can command higher carried interest fees (Metrick and Yasuda 2010). This privileged position allows elite VCs to capture larger upside potential when tax benefits reduce the effective cost of risk-taking. At the other end of the spectrum, lower-tier VCs face greater competitive pressure and limited access to premium deals, potentially making tax benefits especially valuable for justifying higher-risk strategies. These firms typically manage smaller pools of capital to absorb losses, and investment failures are more damaging to their ability to raise future funds. The QSBS tax treatment potentially creates particularly high-powered incentives for these investors by reducing or eliminating taxation on successful investments while losses on QSBS investments are still treated as capital losses.[23]

To measure VC firm quality, we rank investors based on their track record of successful exits. Specifically, we count each VC firm's number of IPOs or acquisitions above $100 million for U.S.-based portfolio companies between 2004 and 2022. We classify VCs in the top 10 as "Elite VCs," those ranking 11-40 as "Mid-Tier VCs," and those ranking 41 or lower as "Lower-Tier VCs."

[23] Under Section 1202 of the Internal Revenue Code, losses on QSBS are treated as capital losses, subject to the standard limitation of $3,000 per year in deductions against ordinary income. Moreover, Section 1244 allows individuals and partnerships investing in firms that received less than $1 million in capital to treat losses as ordinary losses, enabling full deduction against ordinary income rather than being subject to a capital loss limitation (IRS 1993a,b).

Table 10 reveals a U-shaped pattern in risk-taking response across VC quality tiers. Elite VCs show the strongest positive response in deal valuations (+$253.7 million, a 22.7% increase relative to a mean of $1.1 billion) and experience significant increases in both business failures (+0.011, a 110% increase relative to a mean of 0.010) and five-year funding gaps (+0.150, a 385% increase relative to a mean of 0.039). Lower-tier VCs exhibit a similar pattern with smaller magnitudes in valuations (+$59.4 million, a 5.7% increase relative to a mean of $1 billion) and unicorn probability (+0.006, a 22% increase relative to a mean of 0.027), while also showing significant increases in business failures (+0.013, a 76.5% increase relative to a mean of 0.017) and five-year funding gaps (+0.092, a 184% increase relative to a mean of 0.050). Notably, mid-tier VCs display a markedly different pattern—they show no significant changes in business failures, valuations, or unicorn status, and actually experience a significant *decrease* in funding gaps and unicorn probability.

PLACE TABLE 10 ABOUT HERE

9 Sources of Value Creation: Selection *vs.* Treatment Effects

Our conceptual framework predicts that tax benefits should primarily affect VCs' risk-taking in project selection rather than their value-added activities since both the benefits and costs of monitoring scale proportionally with tax rates. We test this prediction by examining two key channels VCs create value beyond providing capital: direct monitoring through board representation and executive turnover, and any type of value creation activities as measured by exit performance.

We first analyze monitoring intensity through three measures. Board voting rights capture investors' formal oversight capacity and ability to influence major corporate decisions. CEO and broader C-suite turnover represent one of the most significant governance actions investors take, and, as documented by Ewens and Marx (2018), VCs often replace management to enhance firm performance. Table 11 shows that when VC investments qualify for tax benefits, no statistically significant changes exist in board voting rights (0.008, t = 0.36) or CEO turnover (-0.002, t = -0.28). Moreover, C-suite turnover actually decreases significantly (-0.049, t = -2.58), representing a 12.5% reduction relative to the mean, although the effect becomes statistically insignificant in the sample of exited investments (t =

−1.38). These findings strengthen the interpretation that the increased valuations and unicorn outcomes we observe are *not* driven by intensified monitoring.

PLACE TABLE 11 ABOUT HERE

To examine whether tax benefits affect *any* form of value-added activities beyond monitoring, we analyze exit multiples (exit value divided by total capital raised). This measure captures the overall efficiency of VCs transforming invested capital into exit value, reflecting all potential treatment effects, including strategic guidance, network connections, and operational improvements. Table 12 shows that when investments qualify for tax benefits, neither the average exit multiple (+0.077 relative to a mean of 6.0) nor the likelihood of achieving various return thresholds (5×, 10×, 20×, or 50× returns) shows significant changes.

PLACE TABLE 12 ABOUT HERE

Together, these results suggest 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. This pattern aligns with our framework's prediction that value-added activities' relative costs and benefits remain unchanged even as investors shift toward backing riskier ventures.

10 Confirmatory Tests: Evidence from Human Capital

We seek additional evidence that tax benefits increase VC risk-taking by examining how portfolio companies deploy human capital. We analyze four dimensions of organizational design where theory suggests risk-taking should manifest: managerial centralization (ratio of executives to other employees), communication structure (depth of reporting relationships), workforce stability (net employment change and gross employee turnover), and innovation focus (share of AI-skilled labor to total employment and engineering staff). Table 13 presents our results.

PLACE TABLE 13 ABOUT HERE

We begin by examining organizational centralization, measured as the ratio of executive positions to middle and junior roles. Sah and Stiglitz (1991) demonstrate that centralized organizational structures fundamentally alter the risk profile of firms by concentrating decision-making authority. In their framework, 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. The evidence supports this prediction. When investments qualify for tax benefits, organizational centralization in exited investments increases by 20.8% (+0.12 relative to a mean of 0.57). This effect also appears in the sample with exited investments by all investors (+0.11 relative to a mean of 0.56), although it becomes insignificant when looking at all VC-backed investments ($t = 0.02$).

Centralized organizations often suffer from impaired information flows, as Malenko (2024) documents, since local knowledge must travel through more organizational layers to reach decision-makers. To assess whether tax-advantaged firms experience such friction, we examine communication layers, measured as the weighted average depth of reporting relationships. When investments qualify for tax benefits, communication layers increase by 19.2% (+0.135 relative to a mean of 0.695), specifically in the sample of exited VC investments—an effect that also holds in the sample of exited investments by all investors. This suggests that VCs implement organizational designs that maintain can impair effective information flows.

We next examine next net employment changes, measured as the difference between new and departing employees scaled by firm employment. Blanco et al. (2024) observe that turnover patterns reflect the underlying match quality between workers and firms, with separations occurring when productivity-to-wage ratios move outside an equilibrium inaction region. In their model, higher turnover indicates greater experimentation in worker-firm matches. Consistent with VCs pursuing higher-risk strategies, investments qualifying for tax benefits show 51.7% higher turnover (+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). We find similar results analyzing gross turnover (total of new hires and departures relative to firm employment). This provides additional evidence that tax benefits encourage greater risk-taking in the organizational design of VC-backed firms.

Finally, we examine firms' innovation intensity through AI-skilled talent measures. As documented by Babina et al. (2024), firms with higher concentrations of AI-skilled talent generate significantly more product innovation and experience accelerated growth, but such innovative firms face greater inherent risk Gârleanu et al. (2012). When investments qualify for tax benefits, the fraction of AI-skilled talent among all employees shows no significant change. However, the fraction of AI skilled employees to employees working in engineering increases significantly in both the VC exited sample (+0.097, representing an 81.5% increase relative to the mean of 0.119) and all investor exited sample. This pattern suggests that VCs restructure technical teams to become more innovation-driven.

These findings in organizational design provide additional evidence of the increased risk-taking in VC investments when tax benefits apply that we observe in our main tests. Across several dimensions—from organizational centralization to employee turnover—we find tax-advantaged firms adopting riskier approaches that amplify both upside potential and downside exposure, consistent with our core results on investment selection and outcomes.

11 Bunching Estimates: Elasticity of Tax Benefits

In the last step of our analysis, we estimate the elasticity of investors' holding period decisions for tax benefits using bunching estimation techniques. These methods, pioneered by Saez (2010), Chetty et al. (2011), and Kleven and Waseem (2013), 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.[24] The resulting elasticity estimates the increase in the mass of investors concentrating *exactly* at the five-year threshold mark.

[24] See Figure 5 for a visual representation of this bunching pattern.

11.1 Baseline Bunching Estimates

We employ three approaches to estimate the baseline elasticity of investors' holding period decisions for tax benefits. First, we use a standard trapezoidal approximation to point-identify the elasticity. Second, we construct bootstrapped confidence intervals to assess statistical significance. Third, we implement the partial identification approach developed by Bertanha et al. (2023), which provides bounds on the elasticity under weaker identifying assumptions.[25]

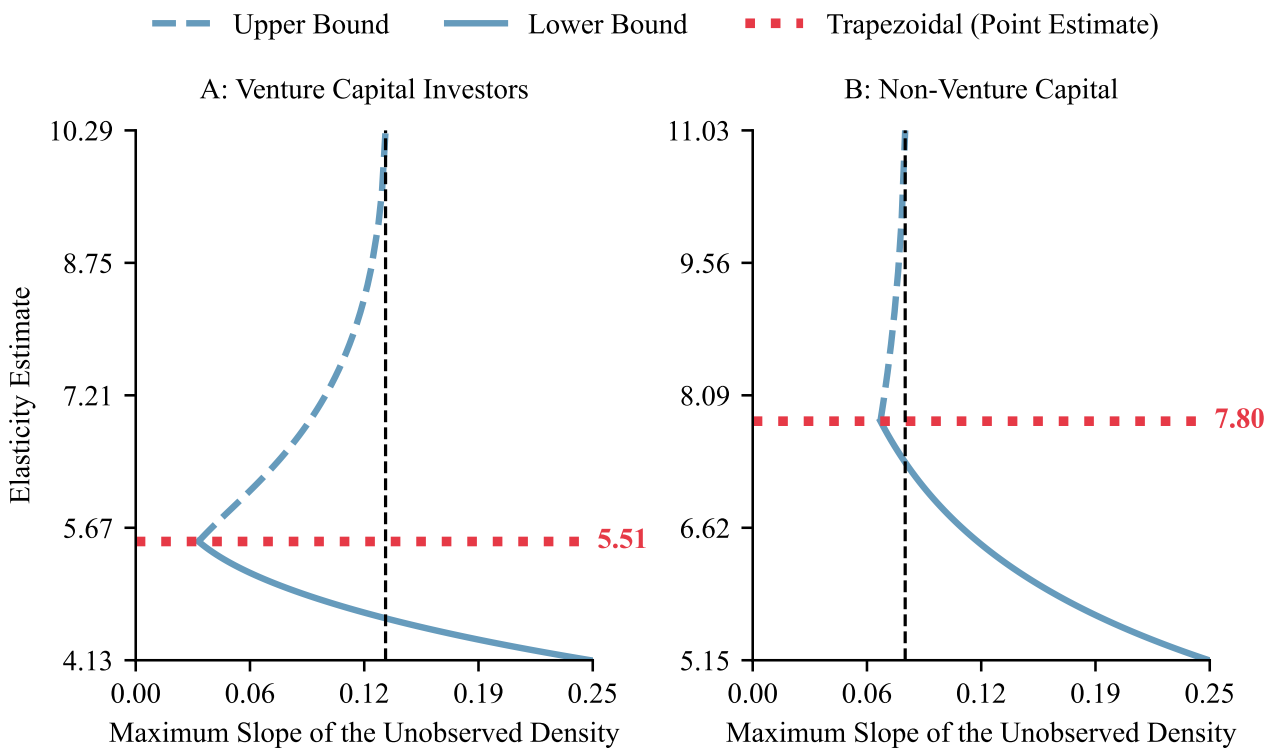
Table 14 presents baseline bunching estimates. Panel A reveals substantial bunching precisely at the five-year threshold for the QSBS-eligible investments initiated after 2009. For the full sample, the trapezoidal approximation yields an elasticity estimate of 6.44, suggesting that a 1% tax exemption is associated with a 6.4% increase in the share of investors holding their investments exactly at the five-year mark. This effect is precisely estimated, with a t-statistic of 12.21 (based on standard errors calculated from 1,000 bootstrap iterations) and tight 95% confidence intervals [5.41, 7.47]. The partial identification bounds in Column 3 provide further evidence of substantial investor response, with the lower bound elasticity of 5.62 supporting the robust bunching effect. Investor types exhibit heterogeneous responses to tax incentives. Non-VC investors (including angels and corporates) show a stronger bunching response with an elasticity of 7.80 compared to VCs' elasticity of 5.51.

PLACE TABLE 14 ABOUT HERE

Panel B presents falsification tests. For non-eligible sectors after 2009, we find an elasticity of 1.56, substantially lower than the 6.44 estimate for eligible sectors. Similarly, for eligible sectors before 2009 (when tax benefits were minimal), we observe an elasticity of 3.85. These patterns suggest that while the five-year mark may be a focal point in investment horizons generally, the QSBS tax benefits significantly amplify bunching behavior.

[25] In these analyses, we examine holding periods ranging from 0 to 10 years, capturing five years before and after the threshold. We keep a window of investment entries two years before and after the policy change—from 2007 to 2011—and track these investments until they are exited or hit a 10-year holding period. We consider a tax exemption rate of 15.3%, the maximum federal tax rate in 2009. Our computation consider a slope M of 2.0, which, as Bertanha et al. (2023) recommend, is above the maximum M for which the upper bound is finite in all our cases.

Figure 8: Partial Identification Bounds for the Elasticity of Tax Benefits



This figure displays partially identified sets for the elasticity of investors' holding-period choices concerning a 1% reduction in tax rates following Bertanha et al. (2023), where the horizontal axis plots the maximum slope M of the unobserved heterogeneity distribution, and the vertical 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 denotes the trapezoidal (point) estimate. The vertical black dashed line indicates the largest M for which the partial identification set is bounded. The sample is at the investor–firm–year level and includes investments in QSBS-eligible sectors between 2007 and 2011, tracked through exit or up to 10 years.

11.2 Difference-in-Bunching Approach

Following the methodology developed by Brown (2013) and outlined in Kleven (2016), we implement a difference-in-bunching approach using observed distributions under alternative tax regimes to construct more credible counterfactual distributions. Rather than relying on extrapolation from regions away from the threshold, this method leverages cross-sectional variation (eligible *versus* non-eligible sectors) and temporal variation (pre- *versus* post-reform periods) to identify the excess bunching attributable specifically to tax incentives.

We compute two difference-in-bunching estimates. First, we calculate the difference-in-bunching elasticities between eligible and non-eligible sectors after the 2009 reform ($\hat{\epsilon}_{eligible,post}$ −

$\hat{\epsilon}_{non-eligible,post}$). This approach controls for any contemporaneous forces affecting holding period decisions across all sectors. Second, 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.

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 assuming independence:

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

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

Table 15 presents our difference-in-bunching estimates across investor types. Panel A compares eligible sectors to non-eligible sectors in the post-reform period. For all investors combined, we find a statistically significant excess elasticity of 4.9, indicating that the QSBS benefits generate a 4.9% increase in the share of investors exiting precisely at the five-year mark for each percentage point of tax benefit. This effect is consistent across investor types, with VCs showing an elasticity of 4.4 and non-VC investors showing an elasticity of 5.9.

PLACE TABLE 15 ABOUT HERE

Panel B presents estimates comparing eligible sectors before and after the 2009 reform. For all investors, we find an excess elasticity of 2.6. VCs show an elasticity of 1.6, while non-VC investors exhibit a more pronounced elasticity of 4.0.

These difference-in-bunching estimates demonstrate that a 1% capital gain tax exemption leads to an increase between 2.6% and 4.9% in the mass of investors concentrating *exactly* at the five-year holding period attributable to the tax exemption itself. These results are economically meaningful compared to other tax elasticities in the literature. 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 0.59 in the context of labor supply.

The heterogeneity of responses across investor types reveals a distinction in how different market participants react to tax incentives. While VCs are unique in increasing risk-taking in response to tax benefits, addressing an underinvestment problem by funding marginal ventures, other investors appear to strategically engage in tax arbitrage without significantly altering their investment selection strategy.

12 Conclusion

We examine how tax policy affects capital allocation in entrepreneurial markets through a triple-difference analysis of VC, angel, and corporate responses to a program that eliminated capital gains taxes on certain startup investments between 2004 and 2022, exploiting industry eligibility rules, investment timing, and holding period requirements.

Our analysis yields three main findings. First, tax benefits significantly affect the level and composition of VC investment. When tax benefits become available, VCs shift toward riskier investments through multiple channels: they increase investment in firms at earlier development stages like product beta and stealth mode, take on more scientific uncertainty through early-stage clinical trials, and concentrate their portfolios in eligible sectors. These investment strategy changes lead to higher failure rates and more prominent successes—qualifying investments show increased business failures, funding droughts, and higher valuations. Second, this response is unique to VC partnerships—we find no significant changes in investment behavior among angel investors or corporations. Third, tax benefits operate primarily through project selection rather than post-investment treatment—we find no evidence that VCs adjust their governance approach through board representation or management turnover, nor do we find significant differences in value creation as measured by exit multiples.

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 investors to fund marginally riskier ventures.

Our 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, 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: Mean Differences in Sectors Eligible and Non-Eligible 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 non-eligible 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 non-eligible 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 3: Impact of QSBS Tax Benefits on Investment Entry Decisions: Cross-Sectional Regressions

Dependent Variable:	Business Stage		Innovation-Focused		Funding Round	
	𝟙{Product Beta} (1)	𝟙{Stealth Mode} (2)	AI-Skilled/ All Employees (3)	AI-Skilled/ Engineers (4)	𝟙{First Deal} (5)	𝟙{Seed Round} (6)
Panel A: All Investors						
𝟙{Eligible} × 𝟙{Post}	0.003***	0.003*	0.009**	0.053*	0.008	0.005
	(4.26)	(1.80)	(2.44)	(1.78)	(0.51)	(0.64)
𝟙{Eligible}	−0.000	0.002	−0.003	−0.059**	−0.043***	−0.008
	(−0.26)	(1.29)	(−0.91)	(−2.06)	(−2.73)	(−1.37)
Observations	131,256	131,256	99,664	76,248	131,544	75,054
Adjusted R^2	−0.000	−0.016	0.042	0.087	0.095	0.197
Mean Dependent Variable	0.006	0.004	0.028	0.117	0.319	0.185
Panel B: Venture Capital						
𝟙{Eligible} × 𝟙{Post}	0.003***	0.005**	0.014***	0.072***	−0.017	−0.008
	(2.75)	(2.21)	(2.76)	(2.76)	(−0.75)	(−0.79)
𝟙{Eligible}	0.000	0.001	−0.008	−0.062**	−0.024	−0.002
	(0.08)	(0.42)	(−1.55)	(−2.51)	(−1.13)	(−0.23)
Observations	66,075	66,075	51,676	41,504	66,099	46,181
Adjusted R^2	−0.004	−0.002	0.050	0.051	0.087	0.206
Mean Dependent Variable	0.005	0.005	0.028	0.109	0.317	0.170
Panel C: Angel Investors						
𝟙{Eligible} × 𝟙{Post}	0.006***	−0.000	0.007	−0.028	−0.017	0.079**
	(4.53)	(−0.04)	(0.85)	(−0.65)	(−0.34)	(2.49)
𝟙{Eligible}	−0.001	0.006**	−0.001	0.054	−0.004	−0.068**
	(−0.41)	(2.02)	(−0.17)	(1.31)	(−0.09)	(−2.32)
Observations	30,449	30,449	23,856	17,910	30,450	16,616
Adjusted R^2	0.001	−0.039	0.065	0.055	0.091	0.138
Mean Dependent Variable	0.006	0.004	0.027	0.125	0.342	0.281
Panel D: Corporate						
𝟙{Eligible} × 𝟙{Post}	−0.004	0.009	−0.008	−0.094	0.082	−0.069
	(−0.31)	(1.57)	(−0.50)	(−1.29)	(0.91)	(−1.35)
𝟙{Eligible}	0.010	−0.004	0.000	0.009	−0.067	0.038
	(1.16)	(−0.65)	(0.00)	(0.19)	(−0.78)	(0.84)
Observations	3,109	3,109	2,184	1,673	3,135	1,649
Adjusted R^2	−0.054	0.034	0.086	0.080	0.118	0.015
Mean Dependent Variable	0.005	0.003	0.029	0.098	0.243	0.073
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 entry decisions, measured through portfolio firm charachteristics at the moment of entry. The dependent variables include: Product Beta and Stealth Mode indicators; AI-skilled employees as a fraction of all employees and of engineers; and indicators for first investment deals and seed rounds. Results are shown by investor type in separate panels, with t-statistics based on standard errors clustered at the investor level shown in parentheses. State×Entry Year fixed effects represent the interaction of portfolio company state and investor entry year. The sample is at the investor-firm level. 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. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 4: Impact of QSBS Tax Benefits on Contract Terms: Cross-Sectional Regressions

Dependent Variable:	Security Type			Cash Flow Rights		
	𝟙{Has Preferred} (1)	𝟙{Complex Preferred} (2)	𝟙{Common Only} (3)	𝟙{Equal Footing} (4)	𝟙{Cumulative Dividends} (5)	𝟙{Participating Preferred} (6)
Panel A: All Investors						
𝟙{Eligible} × 𝟙{Post}	−0.018**	0.011	0.015*	−0.060**	0.072***	0.028
	(−2.02)	(0.72)	(1.79)	(−2.39)	(3.68)	(1.10)
𝟙{Eligible}	0.019**	−0.011	−0.015**	0.056**	−0.067***	0.010
	(2.31)	(−0.68)	(−1.97)	(2.33)	(−3.61)	(0.40)
Observations	94,531	50,517	94,531	50,517	50,697	61,028
Adjusted R^2	0.148	0.041	0.144	0.073	0.289	0.275
Mean Dependent Variable	0.913	0.028	0.088	0.339	0.160	0.247
Panel B: Venture Capital						
𝟙{Eligible} × 𝟙{Post}	−0.004	0.026	−0.003	−0.073**	0.077***	0.060*
	(−0.45)	(1.34)	(−0.41)	(−2.33)	(3.24)	(1.95)
𝟙{Eligible}	0.003	−0.024	0.006	0.065**	−0.073***	−0.024
	(0.40)	(−1.19)	(0.87)	(2.17)	(−3.23)	(−0.79)
Observations	54,944	31,139	54,944	31,139	31,727	37,485
Adjusted R^2	0.073	0.049	0.066	0.067	0.287	0.294
Mean Dependent Variable	0.948	0.029	0.054	0.341	0.155	0.263
Panel C: Angel Investors						
𝟙{Eligible} × 𝟙{Post}	−0.095**	−0.042**	0.109***	−0.174***	0.029	−0.195***
	(−2.58)	(−2.44)	(2.84)	(−3.47)	(0.88)	(−2.98)
𝟙{Eligible}	0.097***	0.038**	−0.111***	0.205***	0.006	0.237***
	(2.62)	(2.27)	(−2.91)	(4.18)	(0.18)	(3.68)
Observations	22,367	11,959	22,367	11,959	11,501	14,526
Adjusted R^2	0.098	0.016	0.099	0.087	0.286	0.204
Mean Dependent Variable	0.850	0.022	0.156	0.368	0.127	0.160
Panel D: Corporate						
𝟙{Eligible} × 𝟙{Post}	0.041	−0.007	−0.042	0.162	−0.371***	0.012
	(0.98)	(−0.09)	(−1.19)	(1.07)	(−2.77)	(0.04)
𝟙{Eligible}	−0.013	0.056	−0.011	−0.139	0.243**	−0.016
	(−0.35)	(0.71)	(−0.38)	(−1.19)	(2.07)	(−0.06)
Observations	2,014	797	2,014	797	897	1,081
Adjusted R^2	0.121	0.012	0.087	0.016	0.257	0.177
Mean Dependent Variable	0.956	0.035	0.040	0.294	0.158	0.293
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 security type choice and cash flow rights. Panel A examines the types of securities used, and Panel B examines specific cash flow rights. Each panel shows results by investor type in separate rows, with t-statistics based on standard errors clustered at the investor level shown in parentheses. State×Entry Year fixed effects represent the interaction of portfolio company state and investor entry year. The sample is at the investor-firm level. 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. *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 5: Impact of QSBS Tax Benefits on Funding Patterns: Triple-Difference Regressions

	All Investors		Venture Capital		Angel		Corporate	
	All	Exited	All	Exited	All	Exited	All	Exited
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Dependent Variable = Deal Size ($ millions)								
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\} \times \mathbb{1}\{\text{Eligible}\}$	30.495*	29.443	54.063**	94.668*	−52.356	−148.114	11.483	62.342
	(1.78)	(0.84)	(2.20)	(1.87)	(−1.20)	(−1.46)	(0.47)	(0.96)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Eligible}\}$	−44.792***	−74.911***	−66.172***	−138.417***	30.188	52.882	14.714	13.808
	(−2.90)	(−2.82)	(−3.05)	(−3.43)	(0.73)	(0.61)	(0.90)	(0.33)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	45.109***	126.585***	−2.156	−6.027	211.748***	500.779***	−7.729	−56.655
	(2.62)	(3.67)	(−0.09)	(−0.12)	(4.82)	(5.03)	(−0.33)	(−0.92)
Observations	396,062	183,253	185,461	94,162	109,715	46,320	16,925	8,350
Adjusted R^2	0.063	0.059	0.022	0.019	0.149	0.162	−0.049	−0.085
Mean Dependent Variable	46.143	74.535	48.097	70.244	49.643	87.771	37.565	57.137
Panel B: Dependent Variable = Number of Investors								
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\} \times \mathbb{1}\{\text{Eligible}\}$	1.559***	1.207***	1.032***	1.374***	2.795***	1.549**	0.596	0.153
	(8.36)	(5.93)	(4.41)	(4.40)	(4.69)	(2.24)	(1.09)	(0.29)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Eligible}\}$	−1.099***	−0.814***	−0.825***	−0.544**	−1.789***	−0.896	−0.700*	−0.394
	(−6.71)	(−5.13)	(−4.45)	(−2.20)	(−3.12)	(−1.37)	(−1.67)	(−1.09)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.315	0.462**	−0.041	0.121	−0.739	0.514	0.203	0.880
	(−1.55)	(2.11)	(−0.16)	(0.37)	(−1.20)	(0.71)	(0.37)	(1.56)
Observations	420,494	218,717	194,639	108,440	117,451	57,438	18,395	10,585
Adjusted R^2	0.246	0.243	0.237	0.229	0.291	0.322	0.258	0.234
Mean Dependent Variable	5.255	4.731	5.207	4.593	6.678	6.089	3.920	3.418
Panel C: Dependent Variable = Number of New Investors								
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\} \times \mathbb{1}\{\text{Eligible}\}$	1.171***	0.851***	0.873***	1.064***	2.033***	1.319**	0.380	−0.123
	(7.57)	(5.10)	(4.64)	(4.41)	(3.95)	(2.06)	(0.84)	(−0.33)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Eligible}\}$	−0.809***	−0.551***	−0.621***	−0.347**	−1.363***	−0.884	−0.473	−0.020
	(−6.06)	(−4.55)	(−4.45)	(−1.97)	(−2.75)	(−1.47)	(−1.32)	(−0.08)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.229	0.426**	−0.035	0.095	−0.521	0.198	0.263	0.989**
	(−1.34)	(2.31)	(−0.18)	(0.36)	(−0.98)	(0.30)	(0.57)	(2.42)
Observations	420,494	218,717	194,639	108,440	117,451	57,438	18,395	10,585
Adjusted R^2	0.265	0.274	0.277	0.280	0.325	0.361	0.245	0.211
Mean Dependent Variable	3.809	3.289	3.568	3.007	5.262	4.714	2.645	2.140
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Holding Period FE	✓	✓	✓	✓	✓	✓	✓	✓
Entry Year 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 $\mathbb{1}\{\text{Holding} \geq 5\}_{i,j,t}$ 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 and corporate venture capital, Angel includes individual angel investors and angel groups, and Corporate includes corporations and holding companies. 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 Failed Outcomes: Triple-Difference Regressions

	All Investors		Venture Capital		Angel		Corporate	
	All	Exited	All	Exited	All	Exited	All	Exited
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Dependent Variable = $\mathbb{1}\{$*Out of Business Outcome*$\}$								
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\} \times \mathbb{1}\{\text{Eligible}\}$	0.011***	0.037***	0.013***	0.044***	0.001	0.023*	0.000	0.004
	(5.04)	(6.42)	(4.27)	(5.35)	(0.34)	(1.87)	(0.01)	(0.22)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Eligible}\}$	0.001	−0.004	0.001	−0.004	0.011***	0.018*	0.006	0.008
	(0.59)	(−0.83)	(0.47)	(−0.74)	(4.03)	(1.70)	(1.29)	(0.79)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.024***	−0.072***	−0.025***	−0.076***	−0.014***	−0.057***	−0.002	−0.014
	(−11.11)	(−12.39)	(−8.11)	(−9.29)	(−4.69)	(−4.72)	(−0.33)	(−0.75)
Observations	1,050,884	462,661	448,474	216,740	302,134	118,027	51,451	25,146
Adjusted R^2	0.108	0.108	0.107	0.102	0.106	0.104	0.089	0.092
Mean Dependent Variable	0.018	0.042	0.017	0.034	0.019	0.048	0.015	0.030
Panel B: Dependent Variable = $\mathbb{1}\{$*Five Years Without Funding*$\}$								
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\} \times \mathbb{1}\{\text{Eligible}\}$	0.080***	0.083***	0.081***	0.094***	0.048	0.017	0.040	0.044
	(6.16)	(5.73)	(4.77)	(5.18)	(1.36)	(0.42)	(0.91)	(0.80)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Eligible}\}$	−0.108***	−0.100***	−0.076***	−0.080***	−0.045	−0.010	−0.175***	−0.172***
	(−8.82)	(−7.39)	(−4.69)	(−4.61)	(−1.31)	(−0.25)	(−4.45)	(−3.65)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.083***	−0.092***	−0.086***	−0.102***	−0.065*	−0.011	−0.040	−0.056
	(−6.54)	(−6.34)	(−5.11)	(−5.59)	(−1.95)	(−0.28)	(−0.94)	(−1.07)
Observations	1,050,884	462,661	448,474	216,740	302,134	118,027	51,451	25,146
Adjusted R^2	0.317	0.187	0.288	0.147	0.314	0.182	0.375	0.285
Mean Dependent Variable	0.064	0.026	0.049	0.019	0.069	0.025	0.088	0.048
Panel C: Dependent Variable = Zero Funding Years								
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\} \times \mathbb{1}\{\text{Eligible}\}$	0.382***	0.207***	0.360***	0.222**	0.511***	−0.106	0.135	0.247
	(5.55)	(3.09)	(3.89)	(2.47)	(2.75)	(−0.56)	(0.58)	(1.07)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Eligible}\}$	−0.508***	−0.266***	−0.369***	−0.246***	−0.518***	0.070	−0.593***	−0.438**
	(−7.66)	(−4.26)	(−4.13)	(−2.98)	(−2.85)	(0.38)	(−2.82)	(−2.20)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.403***	−0.227***	−0.400***	−0.250***	−0.727***	−0.008	−0.049	−0.231
	(−6.08)	(−3.48)	(−4.43)	(−2.87)	(−4.17)	(−0.04)	(−0.22)	(−1.05)
Observations	1,050,884	462,661	448,474	216,740	302,134	118,027	51,451	25,146
Adjusted R^2	0.466	0.335	0.436	0.299	0.467	0.342	0.502	0.388
Mean Dependent Variable	1.145	0.763	0.994	0.675	1.203	0.746	1.363	1.008
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Holding Period FE	✓	✓	✓	✓	✓	✓	✓	✓
Entry Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Investor × Firm FE	✓	✓	✓	✓	✓	✓	✓	✓
Clustered SE (Investor)	✓	✓	✓	✓	✓	✓	✓	✓

This table presents estimates of the effect of QSBS tax benefits on measures of ex-post risk taking. Panel A examines business failures through an indicator for firms that went out of business. Panel B examines funding gaps through an indicator for firms that go five or more years without raising new funding. Panel C 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). Post is an indicator for investments made after 2009, Eligible indicates QSBS-eligible sectors, and $\mathbb{1}\{\text{Holding} \geq 5\}_{i,j,t}$ 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 and corporate venture capital, Angel includes individual angel investors and angel groups, and Corporate includes corporations and holding companies. 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 Value Creation: Triple-Difference Regressions

	All Investors		Venture Capital		Angel		Corporate	
	All	Exited	All	Exited	All	Exited	All	Exited
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Dependent Variable = Valuation ($ millions)								
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\} \times \mathbb{1}\{\text{Eligible}\}$	34.278**	59.674***	61.957**	105.674***	−1.807	−2.790	−8.223**	−10.386**
	(2.53)	(2.76)	(2.55)	(2.61)	(−1.41)	(−1.40)	(−1.99)	(−1.99)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Eligible}\}$	−29.910**	−56.194***	−53.560**	−99.018**	1.820	2.800	7.051*	9.223*
	(−2.31)	(−2.65)	(−2.28)	(−2.48)	(1.41)	(1.41)	(1.74)	(1.75)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−31.676**	−57.335***	−55.337**	−98.520**	−0.179	−0.041	−3.190*	−3.265*
	(−2.38)	(−2.70)	(−2.33)	(−2.48)	(−0.38)	(−0.08)	(−1.74)	(−1.71)
Observations	152,344	138,082	81,919	73,914	32,338	29,665	8,122	7,411
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	1011.235	1020.297	2657.219	2584.310	491.275	484.105
Panel B: Dependent Variable = $\mathbb{1}\{Unicorn\}$								
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\} \times \mathbb{1}\{\text{Eligible}\}$	0.004**	0.010**	0.008**	0.017**	−0.000	−0.001	−0.002*	−0.005*
	(2.08)	(2.23)	(2.17)	(2.21)	(−1.00)	(−1.00)	(−1.73)	(−1.73)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Eligible}\}$	−0.004**	−0.010**	−0.008**	−0.018**	0.000	0.001	0.003*	0.005*
	(−2.09)	(−2.28)	(−2.19)	(−2.29)	(1.00)	(1.00)	(1.73)	(1.73)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.005***	−0.011***	−0.008**	−0.018**	−0.000	−0.000	−0.001	−0.002
	(−2.65)	(−2.69)	(−2.27)	(−2.30)	(−1.00)	(−0.99)	(−1.53)	(−1.55)
Observations	1,050,884	462,661	448,474	216,740	302,134	118,027	51,451	25,146
Adjusted R^2	0.994	0.993	0.991	0.990	1.000	1.000	0.991	0.989
Mean Dependent Variable	0.026	0.051	0.030	0.055	0.027	0.059	0.017	0.030
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Holding Period FE	✓	✓	✓	✓	✓	✓	✓	✓
Entry Year 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 (results without interpolation and with alternative valuation thresholds are available in Tables IA6 and IA7 of the Internet Appendix). 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. Our sample contains 120 unique unicorn firms. 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 8: Impact of QSBS Tax Benefits on Exit Choices: Triple-Difference Regressions

	All Investors		Venture Capital		Angel		Corporate	
	All	Exited	All	Exited	All	Exited	All	Exited
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Dependent Variable $= \mathbb{1}\{$*Private Equity Buyout*$\}$								
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\} \times \mathbb{1}\{\text{Eligible}\}$	0.007***	0.020***	0.008**	0.022***	0.002	0.029**	0.001	0.001
	(3.06)	(3.37)	(2.54)	(2.68)	(0.57)	(1.99)	(0.18)	(0.04)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Eligible}\}$	−0.006**	−0.021***	−0.005*	−0.018***	0.002	−0.015	−0.002	−0.007
	(−2.57)	(−3.88)	(−1.70)	(−2.74)	(0.47)	(−1.07)	(−0.29)	(−0.58)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.007***	−0.021***	−0.007**	−0.022***	−0.002	−0.029**	0.005	0.007
	(−2.90)	(−3.65)	(−2.08)	(−2.75)	(−0.64)	(−2.08)	(0.66)	(0.44)
Observations	1,050,884	462,661	448,474	216,740	302,134	118,027	51,451	25,146
Adjusted R^2	0.053	0.048	0.052	0.051	0.043	0.043	0.054	0.055
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*$\}$								
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\} \times \mathbb{1}\{\text{Eligible}\}$	−0.022***	−0.046***	−0.024***	−0.060***	−0.069***	−0.128***	0.023	0.053
	(−4.60)	(−4.18)	(−3.16)	(−3.38)	(−7.53)	(−4.44)	(1.20)	(1.38)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Eligible}\}$	0.019***	0.009	0.020***	0.008	0.057***	0.065**	−0.026	−0.080**
	(4.15)	(0.95)	(3.02)	(0.59)	(6.49)	(2.39)	(−1.51)	(−2.53)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.038***	0.031***	0.044***	0.048***	0.083***	0.097***	−0.004	−0.065*
	(7.54)	(2.86)	(5.84)	(2.73)	(8.75)	(3.39)	(−0.22)	(−1.70)
Observations	1,050,884	462,661	448,474	216,740	302,134	118,027	51,451	25,146
Adjusted R^2	0.116	0.144	0.118	0.149	0.117	0.154	0.114	0.138
Mean Dependent Variable	0.043	0.098	0.051	0.106	0.039	0.100	0.049	0.100
Panel C: Dependent Variable $= \mathbb{1}\{$*IPO*$\}$								
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\} \times \mathbb{1}\{\text{Eligible}\}$	−0.006***	−0.006	−0.007**	−0.008	−0.002	0.028	−0.007	−0.011
	(−2.94)	(−1.21)	(−2.16)	(−1.06)	(−0.34)	(1.14)	(−1.35)	(−0.89)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Eligible}\}$	0.008***	0.011**	0.009***	0.012*	0.004	−0.023	0.010**	0.019*
	(4.24)	(2.56)	(3.07)	(1.77)	(0.61)	(−0.96)	(2.20)	(1.90)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.004**	0.001	0.006*	0.002	−0.001	−0.036	−0.000	−0.006
	(2.39)	(0.30)	(1.84)	(0.28)	(−0.27)	(−1.50)	(−0.08)	(−0.50)
Observations	1,050,884	462,661	448,474	216,740	302,134	118,027	51,451	25,146
Adjusted R^2	0.053	0.025	0.050	0.024	0.013	−0.003	0.058	0.025
Mean Dependent Variable	0.005	0.011	0.006	0.013	0.003	0.007	0.005	0.011
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Holding Period FE	✓	✓	✓	✓	✓	✓	✓	✓
Entry Year 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 $\mathbb{1}\{\text{Holding} \geq 5\}_{i,j,t}$ 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 and corporate venture capital, Angel includes individual angel investors and angel groups, and Corporate includes corporations and holding companies. 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: 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}	
	Bottom Decile Tax	Higher Tax	Bottom Decile Tax	Higher Tax
	(1)	(2)	(3)	(4)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.015*	0.013***	0.055	0.083***
	(1.86)	(3.46)	(0.99)	(4.22)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	0.007	−0.001	−0.048	−0.079***
	(1.30)	(−0.32)	(−0.91)	(−4.31)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.033***	−0.021***	−0.061	−0.087***
	(−4.21)	(−5.46)	(−1.19)	(−4.45)
Observations	32,529	258,760	32,529	258,760
Adjusted R^2	0.117	0.091	0.314	0.303
Mean Dependent Variable	0.020	0.014	0.052	0.055
Panel B: Value Creation	Valuation ($M)		𝟙{Unicorn}	
	Bottom Decile Tax	Higher Tax	Bottom Decile Tax	Higher Tax
	(1)	(2)	(3)	(4)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	17.167*	70.560**	0.001	0.008**
	(1.73)	(2.42)	(1.43)	(1.98)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	−8.333	−57.041**	−0.000	−0.008**
	(−1.05)	(−2.05)	(−0.94)	(−2.01)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−11.848	−64.044**	−0.000	−0.008**
	(−1.44)	(−2.29)	(−0.45)	(−2.17)
Observations	5,120	52,708	32,529	258,760
Adjusted R^2	0.999	0.998	0.995	0.990
Mean Dependent Variable	548.988	994.252	0.023	0.032
Year FE	✓	✓	✓	✓
Holding Period FE	✓	✓	✓	✓
Entry Year 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 Venture Capital 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). Bottom Decile Tax is an indicator for investors headquartered in states in the bottom decile of maximum long-term capital gains tax rate, 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. 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 10: Heterogeneity of Extreme Outcomes: VC Firm Quality

Panel A: Failed Outcomes	𝟙{Out of Business}			𝟙{5 Years Without Funding}		
	Elite VCs	Mid-Tier VCs	Lower-Tier VCs	Elite VCs	Mid-Tier VCs	Lower-Tier VCs
	(1)	(2)	(3)	(4)	(5)	(6)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.011*	0.005	0.013***	0.150**	−0.119**	0.092***
	(1.96)	(0.78)	(3.89)	(2.72)	(−2.32)	(4.86)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	0.005*	0.012***	0.001	−0.129**	0.063*	−0.081***
	(2.20)	(4.73)	(0.40)	(−2.94)	(1.78)	(−4.47)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.018**	−0.006	−0.027***	−0.116*	0.081	−0.100***
	(−2.61)	(−0.73)	(−7.58)	(−1.94)	(1.43)	(−5.43)
Observations	13,981	17,330	371,938	13,981	17,330	371,938
Adjusted R^2	0.092	0.088	0.109	0.297	0.287	0.291
Mean Dependent Variable	0.010	0.011	0.017	0.039	0.036	0.050
Panel B: Value Creation	Valuation ($M)			𝟙{Unicorn}		
	Elite VCs	Mid-Tier VCs	Lower-Tier VCs	Elite VCs	Mid-Tier VCs	Lower-Tier VCs
	(1)	(2)	(3)	(4)	(5)	(6)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	253.744*	32.076	59.395**	0.063	−0.013*	0.006**
	(2.02)	(0.41)	(2.20)	(1.28)	(−1.92)	(2.00)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	−219.824	13.859	−51.399*	−0.063	0.007**	−0.006*
	(−1.74)	(1.16)	(−1.91)	(−1.28)	(2.43)	(−1.90)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−242.385*	5.480	−56.064**	−0.071	0.008	−0.006*
	(−1.85)	(0.09)	(−2.14)	(−1.42)	(1.01)	(−1.87)
Observations	4,437	6,253	61,985	13,981	17,330	371,938
Adjusted R^2	0.999	0.981	0.999	0.981	0.977	0.993
Mean Dependent Variable	1117.312	960.714	1048.354	0.072	0.058	0.027
Year FE	✓	✓	✓	✓	✓	✓
Holding Period FE	✓	✓	✓	✓	✓	✓
Entry Year FE	✓	✓	✓	✓	✓	✓
Investor × Firm FE	✓	✓	✓	✓	✓	✓
Clustered SE (Investor)	✓	✓	✓	✓	✓	✓

This table presents estimates of the heterogeneous effect of QSBS tax benefits on firm outcomes by VC firm quality. The sample includes Venture Capital 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). Elite VCs are firms ranking in the top 10, Mid-Tier VCs are firms ranking from 11 to 40, and Lower-Tier VCs are those ranking 41 or lower, by number of IPOs or acquisitions for U.S.-based portfolio companies between 2004 and 2022. 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 11: Sources of Venture Capital Value Creation: Monitoring Activities

	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)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.008	−0.004	−0.002	−0.001	−0.049**	−0.044
	(0.36)	(−0.17)	(−0.28)	(−0.08)	(−2.58)	(−1.38)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	−0.005	−0.015	−0.002	−0.008	0.025	0.033
	(−0.24)	(−0.65)	(−0.23)	(−0.72)	(1.41)	(1.22)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.121***	−0.120***	−0.005	−0.019	−0.198***	−0.238***
	(−5.79)	(−4.63)	(−0.61)	(−1.62)	(−10.72)	(−7.56)
Observations	247,164	137,535	388,647	173,256	388,647	173,256
Adjusted R^2	0.030	0.040	0.006	0.004	0.015	0.014
Mean Dependent Variable	0.399	0.322	0.050	0.071	0.392	0.455
Year FE	✓	✓	✓	✓	✓	✓
Holding Period FE	✓	✓	✓	✓	✓	✓
Entry Year FE	✓	✓	✓	✓	✓	✓
Investor × Firm FE	✓	✓	✓	✓	✓	✓
Clustered SE (Investor)	✓	✓	✓	✓	✓	✓

This table presents estimates of the effect of QSBS tax benefits on venture capital monitoring activities. The sample includes Venture Capital firms only. 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. 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 12: Sources of Venture Capital Value Creation: Any Treatment Effects

Dependent Variable:	Exit Multiple (1)	Exit Multiple Thresholds $\mathbb{1}\{ > 5\times\}$ (2)	$\mathbb{1}\{ > 10\times\}$ (3)	$\mathbb{1}\{ > 20\times\}$ (4)	$\mathbb{1}\{ > 50\times\}$ (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	✓	✓	✓	✓	✓
Entry Year 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 2-5). Post is an indicator for investments made after 2009, Eligible indicates QSBS-eligible sectors, and $\mathbb{1}\{\text{Holding} \geq 5\}_{i,j,t}$ 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 13: Impact of QSBS Tax Benefits on Portfolio Firm Org. Structure and Labor Dynamics

Panel A: Organizational Structure	Centralization			Communication Layers		
	VC Investors, All Firms (1)	VC Investors, Exited Firms (2)	All Investors, Exited Firms (3)	VC Investors, All Firms (4)	VC Investors, Exited Firms (5)	All Investors, Exited Firms (6)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.001	0.118***	0.106***	−0.005	0.135***	0.090***
	(0.02)	(3.12)	(3.93)	(−0.13)	(2.68)	(2.59)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	0.035	−0.080**	−0.078***	0.091***	0.014	0.015
	(1.15)	(−2.27)	(−3.06)	(2.62)	(0.29)	(0.47)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.028	−0.144***	−0.129***	0.001	−0.139***	−0.106***
	(−0.88)	(−3.92)	(−4.99)	(0.04)	(−2.83)	(−3.16)
Observations	344,168	154,047	315,152	365,161	163,920	339,249
Adjusted R^2	0.527	0.541	0.545	0.678	0.695	0.697
Mean Dependent Variable	0.568	0.567	0.561	3.413	3.427	3.425
Panel B: Employee Turnover	Net Employment Changes			Gross Turnover		
	VC Investors, All Firms (1)	VC Investors, Exited Firms (2)	All Investors, Exited Firms (3)	VC Investors, All Firms (4)	VC Investors, Exited Firms (5)	All Investors, Exited Firms (6)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.046***	0.056***	0.051***	0.008	0.020**	0.022***
	(3.66)	(2.70)	(3.54)	(1.54)	(2.41)	(3.83)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	−0.045***	−0.062***	−0.056***	−0.003	−0.009	−0.006
	(−3.81)	(−3.54)	(−4.34)	(−0.65)	(−1.19)	(−1.17)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.050***	0.002	0.004	−0.006	−0.024***	−0.023***
	(−3.92)	(0.11)	(0.30)	(−1.10)	(−2.97)	(−4.05)
Observations	365,161	163,920	339,249	365,161	163,920	339,249
Adjusted R^2	0.225	0.276	0.252	0.358	0.311	0.329
Mean Dependent Variable	0.089	0.048	0.046	0.294	0.309	0.306
Panel C: Innovation Focus	AI-Skilled / All Employees			AI-Skilled / Engineers		
	VC Investors, All Firms (1)	VC Investors, Exited Firms (2)	All Investors, Exited Firms (3)	VC Investors, All Firms (4)	VC Investors, Exited Firms (5)	All Investors, Exited Firms (6)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	0.000	-0.002	-0.002	0.026	0.097***	0.067**
	(0.02)	(-0.46)	(-0.47)	(0.93)	(3.13)	(2.31)
$\mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Holding} \geq 5\}$	-0.001	-0.000	-0.001	−0.030	−0.077***	−0.053**
	(-0.23)	(-0.03)	(-0.26)	(−1.19)	(−2.85)	(−2.16)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	-0.005	-0.003	-0.002	−0.036	−0.107***	−0.072**
	(-1.21)	(-0.61)	(-0.78)	(−1.34)	(−3.52)	(−2.58)
Observations	365,161	163,920	339,249	310,786	139,843	280,502
Adjusted R^2	0.580	0.578	0.588	0.642	0.714	0.738
Mean Dependent Variable	0.033	0.030	0.030	0.143	0.119	0.131
Year FE	✓	✓	✓	✓	✓	✓
Holding Period FE	✓	✓	✓	✓	✓	✓
Entry Year FE	✓	✓	✓	✓	✓	✓
Investor × Firm FE	✓	✓	✓	✓	✓	✓
Clustered SE (Investor)	✓	✓	✓	✓	✓	✓

This table presents estimates of the effect of QSBS tax benefits on firm organizational structure, employee turnover, and innovation focus. Panel A examines measures of organizational structure (centralization and communication layers). Panel B examines employee turnover (net employment changes and gross turnover). Panel C examines measures of innovation focus (fraction of software and AI jobs to total engineering jobs). Results are shown for VC investors with all firms, VC investors with exited firms, and all investors with exited firms. 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. 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 14: Bunching Estimates: Elasticity of Tax Benefits

Statistical Model	Trapezoidal Approximation	Bootstrapped 95% CI	Nonparametric Bounds (M = $\hat{M}$)	Observations
	(1)	(2)	(3)	(4)
Panel A: Exemption-Eligible Investments (Eligible Sectors, Entry Post-2009)				
All Investors				
Elasticity (ϵ)	6.439***	[5.406, 7.473]	[5.619, 11.390]	37,120
	(12.21)			
Venture Capitalists				
Elasticity (ϵ)	5.513***	[4.318, 6.708]	[4.620, 10.291]	18,640
	(9.04)			
Other Investors (Non-VC)				
Elasticity (ϵ)	7.802***	[5.494, 10.110]	[7.344, 11.033]	18,480
	(6.63)			
Panel B: Non-Eligible Investments				
All Investors, Non-Eligible Sectors, Investor Entry Post-2009				
Elasticity (ϵ)	1.562***	[1.366, 1.757]	[1.315, 2.442]	3,661
	(15.66)			
All Investors, Eligible Sectors, Investor Entry Pre-2009				
Elasticity (ϵ)	3.851***	[3.432, 4.269]	[3.416, 6.693]	36,340
	(18.02)			

Notes: This table presents bunching elasticity estimates for different investor categories using three approaches. 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 the period from 2007 to 2011 (2 years before and after the policy change). Panel A presents results for eligible investments (eligible sectors with investor entry after 2009). Panel B presents results for non-eligible investments (either non-eligible sectors post-2009 or eligible sectors pre-2009). *, **, and *** denote significance at the 10%, 5%, and 1% level, respectively.

Table 15: Difference-in-Bunching Estimates: Elasticity of Tax Benefits

Statistical Model	Trapezoidal Approximation	Observations	
		Eligible	Counterfactual
	(1)	(2)	(3)
Panel A: Eligible vs. Non-Eligible Post-Reform			
All Investors			
Elasticity (ϵ)	4.878***	37,120	3,661
	(9.09)		
Venture Capitalists			
Elasticity (ϵ)	4.397***	18,640	1,239
	(7.05)		
Other Investors (Non-VC)			
Elasticity (ϵ)	5.904***	18,480	2,422
	(4.97)		
Panel B: Eligible Post-Reform vs. Pre-Reform			
All Investors			
Elasticity (ϵ)	2.589***	37,120	36,340
	(4.53)		
Venture Capitalists			
Elasticity (ϵ)	1.647**	18,640	20,558
	(2.42)		
Other Investors (Non-VC)			
Elasticity (ϵ)	3.970***	18,480	15,782
	(3.24)		

Notes: This table reports difference-in-bunching elasticity estimates for QSBS tax benefits. Panel A presents the difference between eligible investments (eligible sectors, investor entry post-2009) and non-eligible investments (non-eligible 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 2011 (2 years before and after the policy change). The difference-in-bunching approach follows the methodology of Brown (2013).

Internet Appendix to

"Tax Incentives and Venture Capital Risk-Taking"

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IA1 Revelio Labs Data and Variables Construction

This appendix provides complete details on our workforce composition data from Revelio Labs, including raw data structure, processing methodology, and exact variable construction formulas. The five organizational risk measures we analyze are managerial centralization, communication structure, workforce stability, geographic concentration, and technical specialization.

A. Raw Data Description

The Revelio Labs dataset contains standardized employment records with detailed information on workforce composition and dynamics. The core dataset includes:

- `user_id`: Unique identifier for each employee
- `position_id`: Unique identifier for each employment position
- `startdate, enddate`: Beginning and end dates of employment
- `title_raw`: Original job title as reported
- `job_category`: Standardized job function (e.g., Engineer, Sales, Marketing)
- `seniority`: Uniform 7-level scale where 1 (7) represent the most junior (senior) roles

B. Data Processing

We process the raw data through the following steps:

1. **Date Conversion**: All employment records are converted from raw dates to calendar years
2. **Employment Spell Expansion**: Each employment record is expanded so employees appear in every year between their start and end dates
3. **Tracking Employee Movement**: We generate binary indicators:
    - `new_employee`: Equals 1 if the active year matches the start year

- `left_employee`: Equals 1 if the active year matches the end year

4. **Technical Roles**: We categorize technical roles by matching keywords in job titles:

   - **Software roles** include positions with any of these keywords:

     ```
     "software", "developer", "web", "frontend", "backend",
     "full stack", "programmer", "mobile developer", "devops",
     "sde", "coding", "web application", "software architect",
     "qa engineer", "java developer", "python developer"
     ```

   - Following Babina et al. (2024), **AI roles** include positions with any of these keywords:

     ```
     "machine learning", "ai", "computer vision",
     "data scientist", "applied scientist", "data mining",
     "big data", "data analytics", "applied researcher", "data science"
     ```

C. Variable Construction

For each firm f in year t, we construct the following measures:

C.1 Organizational Structure: Following Sah and Stiglitz (1991), we build a measure of the concentration of decision-making authority in the organizational hierarchy:

$$\text{Managerial Centralization}_{j,t} = \frac{\text{Number of Jobs in Levels 5–7}_{f,t}}{\sum_{k=1}^{4} \text{Number of Jobs in Level } k_{f,t}}$$

Building on Malenko (2024), we build a measure that captures the depth of organizational hierarchy through which information must flow:

$$\text{Communication Layers}_{j,t} = \sum_{k=1}^{7} k \times \frac{\text{Number of Jobs in Level } k_{f,t}}{\text{Number of Employees}_{f,t}}$$

C.2 Labor Turnover: Measures employee turnover relative to total workforce

$$\text{Gross Turnover Rate}_{f,t} = \frac{\text{Number of New Employees}_{f,t} + \text{Number of Departing Employees}_{f,t}}{2 \times \text{Number of Employees}_{f,t}}$$

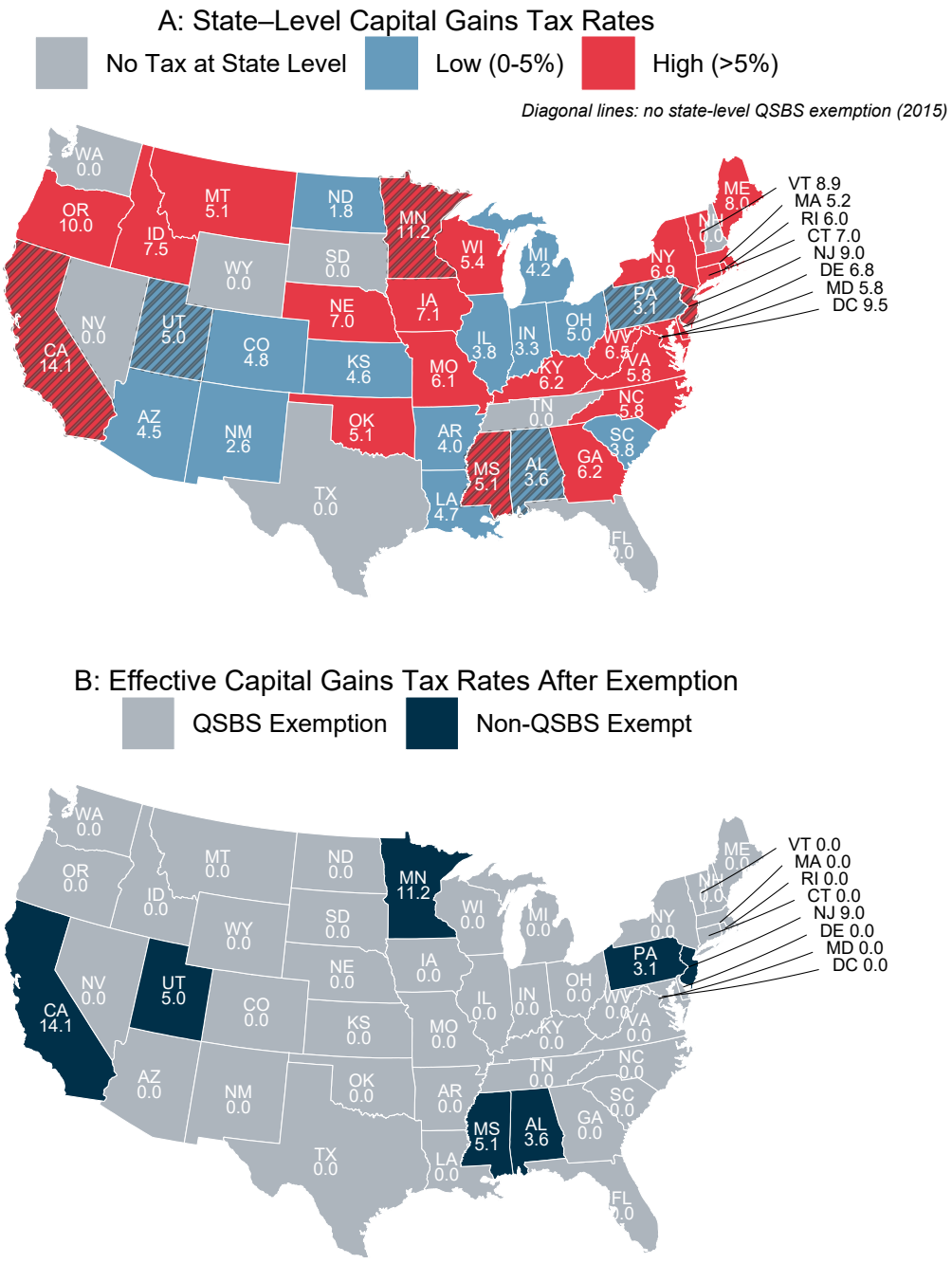
$$\text{Net Employment Change}_{f,t} = \frac{\text{Number of New Employees}_{f,t} - \text{Number of Departing Employees}_{f,t}}{\text{Number of Employees}_{f,t}}$$

C.3 Technical Investment Risk: Captures how portfolio companies structure their technical workforce

$$\text{Software Focus}_{f,t} = \frac{\text{Number of Software Jobs}_{f,t}}{\text{Number of Engineering Jobs}_{f,t}}$$

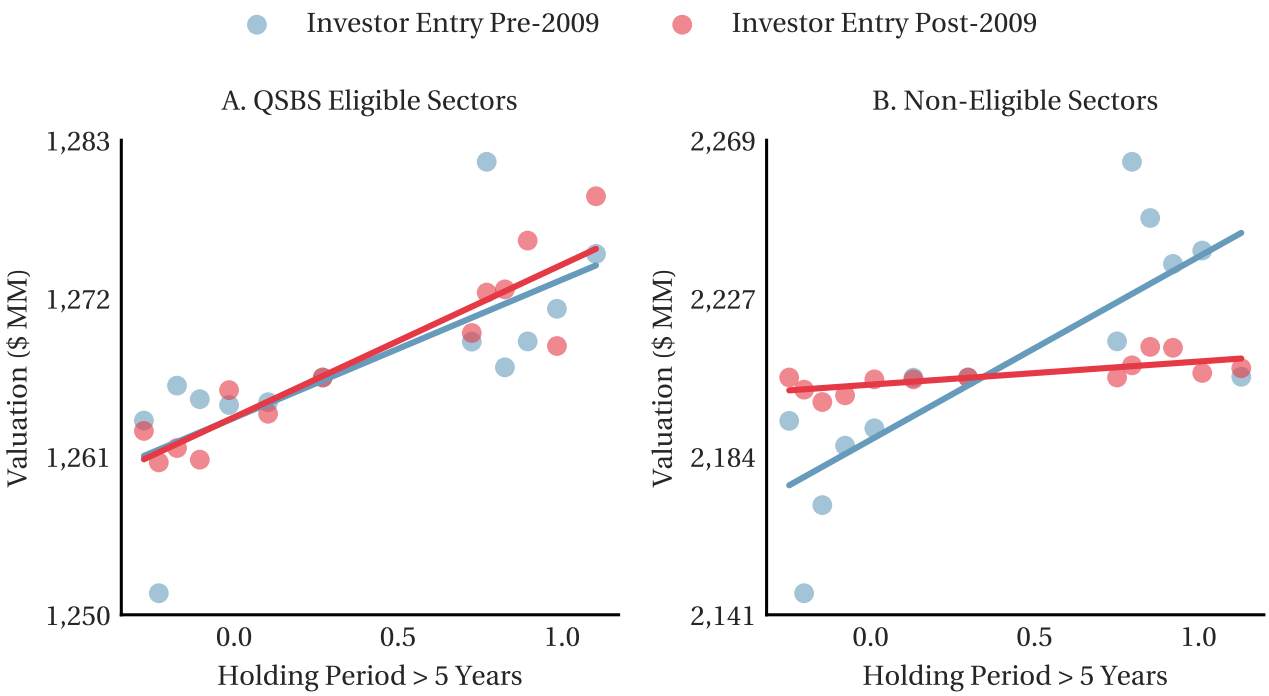
$$\text{AI Focus}_{f,t} = \frac{\text{Number of AI Jobs}_{f,t}}{\text{Number of Engineering Jobs}_{f,t}}$$

Figure IA1: State–Level Capital Gains Tax Rates in QSBS Eligible Sectors (2015)



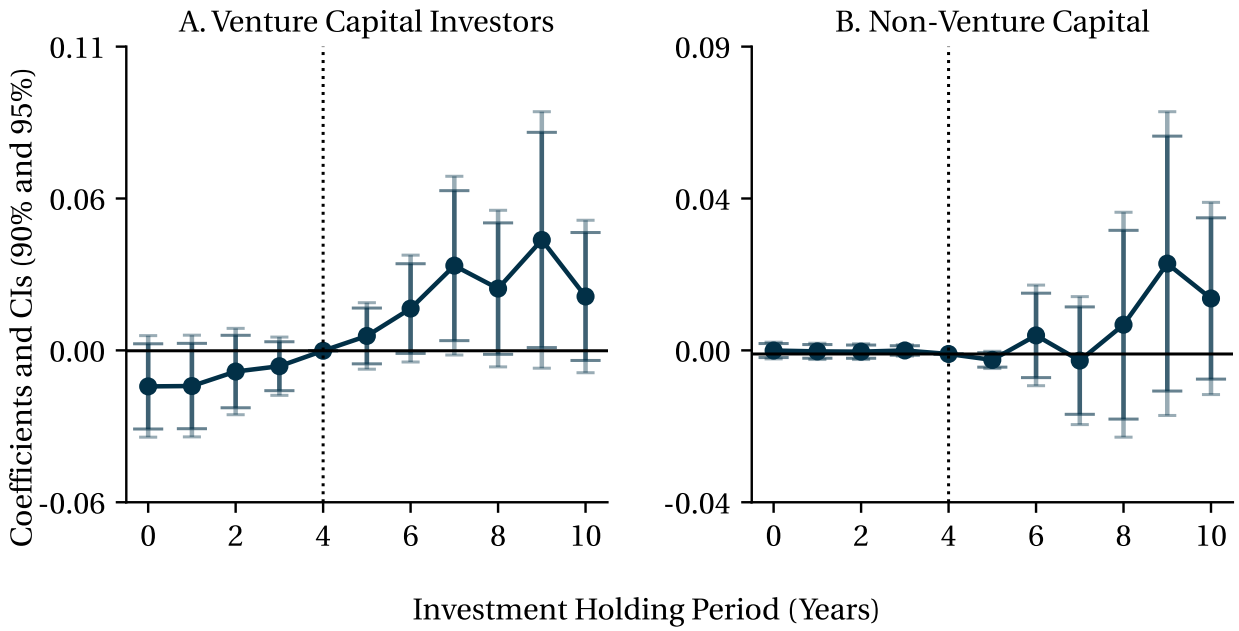
This figure displays state–level capital gains tax rates as of 2015. Panel A categorizes states by tax rates: no tax at state level (gray), low 0–5% (blue), and high >5% (red). Diagonal lines indicate states where the QSBS exemption does not apply at the state level. Panel B shows effective capital gains 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. All states remain eligible for the federal QSBS exemption regardless of state–level policy. Data are from NBER TAXSIM.

Figure IA2: Binned Scatterplots of Holding Period on Investment Valuations



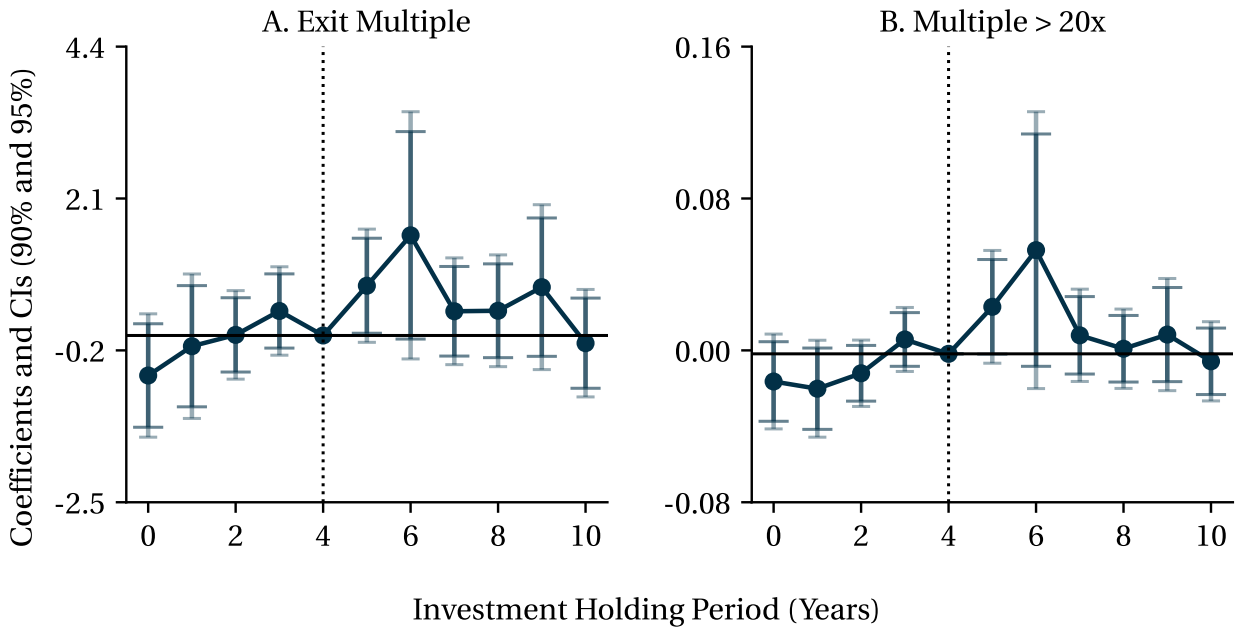
This figure shows the relationship between firm valuations and investment holding periods, separately for QSBS eligible sectors (Panel A) and non-eligible sectors (Panel B). The plots compare investments made pre- and post–2009. Each point shows the mean valuation within holding period bins after controlling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

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: $Y_{i,j,t} = \beta_0 + \sum_{k=0}^{10} \beta_k [\mathbb{1}\{\text{Holding Years} = k\}_{i,j,t} \times \mathbb{1}\{\text{Inv. Entry Year} \geq 2009\}_{i,j} \times \mathbb{1}\{\text{Eligible Sector}\}_j] + \text{Controls} + \epsilon_{i,j,t}$. 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, entry year, investor × firm) and standard errors clustered at the investor level. Results of Panel A correspond to Table 7, Panel B, Column 3.

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



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: $Y_{i,j,t} = \beta_0 + \sum_{k=0}^{10} \beta_k [\mathbb{1}\{\text{Holding Years} = k\}_{i,j,t} \times \mathbb{1}\{\text{Inv. Entry Year} \geq 2009\}_{i,j} \times \mathbb{1}\{\text{Eligible Sector}\}_j] + \text{Controls} + \epsilon_{i,j,t}$. 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 (holding period, investor × firm, and firm × year) and standard errors clustered at the investor level. Results correspond to Table 12, Columns 1 and 4.

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 classification system. 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 inclusion of manufacturing, technology, and other non-service industries.

Table IA3: Impact of QSBS on Investment Decisions: Clinical-Trial Stage

	All Investors	Venture Capital	Angel	Corporate
	(1)	(2)	(3)	(4)
Panel A: Dependent Variable = $\mathbb{1}\{$*Pre-Clinical Trial Stage*$\}$				
$\mathbb{1}\{$Investor Entry Post–2009$\}$	0.002***	0.003***	0.000	−0.001
	(3.570)	(3.478)	(0.104)	(−0.269)
Observations	129,746	65,376	30,152	3,236
Adjusted R^2	0.032	0.040	0.086	0.075
Mean Dependent Variable	0.004	0.004	0.001	0.005
Panel B: Dependent Variable = $\mathbb{1}\{$*Clinical Trial Stage*$\}$				
$\mathbb{1}\{$Investor Entry Post–2009$\}$	0.009***	0.009***	0.003***	0.014**
	(7.777)	(5.901)	(2.590)	(2.242)
Observations	129,746	65,376	30,152	3,236
Adjusted R^2	0.100	0.127	0.084	0.129
Mean Dependent Variable	0.010	0.010	0.003	0.018
Investor FE	✓	✓	✓	✓
Industry FE	✓	✓	✓	✓
State FE	✓	✓	✓	✓
Clustered SE (Investor)	✓	✓	✓	✓

This table presents estimates of the effect of QSBS tax benefits on ex-ante risk-taking through investment stage. The sample is at the investor-firm level and includes investments in C-corporations part of QSBS eligible sectors from 2004 to 2017 where the investor joined in a round under $50 million. Panel A examines investments in firms at pre-clinical trial stage. Panel B examines investments in clinical trial stage companies. Results are shown by investor type. 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 IA4: Clinical Trial Investments – Select Examples

Company	Location	Founded	Investors (Entry Year)	Lead Products	Outcome
Acceleron Pharma	Cambridge, MA	2003	Alkermes (2009), Avalon Ventures (2011), Novo Holdings (2011), Bock Family Ventures (2011), Lightstone Ventures (2011), MDA Venture Philanthropy (2011), Oxford Finance (2012)	Luspatercept (ACE-536) for anemia, Sotatercept (ACE-011) for pulmonary arterial hypertension, Dalantercept (ACE-041) for kidney cancer, ACE-083 for muscular disorders	IPO at NASDAQ 2013; Acquired by Merck 2021 ($11.5B cash)
Kite Pharma	Santa Monica, CA	2009	TPG (2013), Alta Partners (2013), Vivo Capital (2013), Two River Group (2013), BB Biotech (2013), InterWest Health Partners (2013), Bloom8 (2013), Pontifax (2013), Sonostar (2013), Commercial Street (2013)	Axicabtagene ciloleucel (YESCARTA), first CAR-T therapy approved by FDA for relapsed/refractory large B-cell lymphoma	IPO at NASDAQ 2015; Acquired by Gilead 2017 ($11.9B cash)
AveXis	Bannockburn, IL	2010	Third Security (2014), Venrock (2014), PBM Capital (2014)	Onasemnogene abeparvovec (Zolgensma) for spinal muscular atrophy using gene therapy	IPO at NASDAQ 2016; Acquired by Novartis 2018 ($8.7B)
Turning Point Therapeutics	San Diego, CA	2013	OrbiMed (2017), SR One (2017), Lilly Asia Ventures (2017)	Repotrectinib (Augtyro), tyrosine kinase inhibitor for non-small cell lung cancer	IPO at NASDAQ 2019; Acquired by BMS 2021 ($4.1B cash)
Auspex Pharmaceuticals	San Diego, CA	2001	Sloan Biotech (2010), Panorama Capital (2013), RB Capital (2013), Deerfield (2013), BioMed Ventures (2013)	Deutetrabenazine (SD-809) for Huntington's disease, tardive dyskinesia, and Tourette syndrome	IPO at NASDAQ 2014; Acquired by Teva 2015 ($3.5B cash)
Aimmune Therapeutics	Brisbane, CA	2011	Food Allergy Research (2011), Bezos Expeditions (2013), Longitude Capital (2013), Sunshine Charitable Foundation (2013)	Palforzia (AR101) for reducing allergic reactions to peanuts	IPO at NASDAQ 2015; Acquired by Nestlé 2021 ($2.1B)
Affinivax	Cambridge, MA	2014	Lion's Head Global Partners (2014), Bill & Melinda Gates Foundation (2014)	24-valent pneumococcal vaccine (AFX3772), FDA Breakthrough Therapy designation	Acquired by GSK 2022 ($2.1B + $0.6B milestone payments)
Peloton Therapeutics	Dallas, TX	2011	Nextech Invest (2014), National Cancer Institute (2016)	HIF-2 inhibitor (PT2977) for renal cell carcinoma	Acquired by Merck 2019 ($1.05B + $1.15B milestones)
Cardioxyl Pharmaceuticals	Chapel Hill, NC	2005	OrbiMed (2012), Osage University Partners (2012)	Cimlanod (CXL-1427) for acute decompensated heart failure	Acquired by BMS 2015 ($0.3B + $1.775B milestones)
Tobira Therapeutics	South San Francisco, CA	2006	Andera Partners (2014), Stonepine Capital (2015), Abingworth (2015), Montreux Growth (2015), BVF Partners (2015), Regado Biosciences (2015)	Cenicriviroc (CVC) for NASH, HIV-1, and kidney fibrosis	Acquired by Allergan 2016 ($0.615B + $1.1B milestones)
ARMO BioSciences	Redwood City, CA	2012	ND Capital (2014)	Pegilodecakin for pancreatic, lung and renal cell cancer	Acquired by Lilly 2018 ($1.6B cash)
TeneoBio	Newark, CA	2009	Sutter Hill Ventures (2016), Lightspeed Venture Partners (2016)	TNB-585, cell engager for metastatic castrate-resistant prostate cancer	Acquired by Amgen 2016 ($0.9B + $1.6B contingent)

This table presents case studies of investments in clinical-stage biotechnology companies in our sample. In total, our sample includes 608 firms (backed by 1,351 investors) at the clinical or pre-clinical trial stage. Data are from PitchBook and company press releases.

Table IA5: 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, 432 firms (backed by 2,007 investors) achieved unicorn status. QIA: Qatar Investment Authority. Data are from PitchBook.

Table IA6: 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	✓	✓	✓	✓	✓	✓
Entry Year 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 $\mathbb{1}\{\text{Holding} \geq 5\}_{i,j,t}$ 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 IA7: 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	✓	✓	✓	✓	✓	✓
Entry Year 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 7 (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 $\mathbb{1}\{\text{Holding} \geq 5\}_{i,j,t}$ 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: Robustness: Alternative Standard Error Clustering

	Clustering by Firm			Clustering by Firm and Investor		
	Triple Int. (β)	t-stat	Adj. R^2	Triple Int. (β)	t-stat	Adj. R^2
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Funding Patterns						
Deal Size ($ millions)	94.668*	1.87	0.019	30.495*	1.78	0.063
Number of Investors	1.374**	2.38	0.229	1.559***	8.36	0.246
Number of New Investors	1.064**	2.46	0.280	1.171***	7.57	0.265
Panel B: Failed Exits						
$\mathbb{1}$\{Out of Business\}	0.044***	3.20	0.102	0.011***	5.04	0.108
$\mathbb{1}$\{Five Years Without Funding\}	0.094***	2.95	0.147	0.080***	6.16	0.317
Consecutive Years Without Funding	0.222	1.51	0.299	0.382***	5.55	0.466
Panel C: Firm Value Creation						
Valuation ($ millions)	105.674*	1.71	0.998	34.278**	2.53	0.999
$\mathbb{1}$\{Unicorn\}	0.017	1.56	0.990	0.004**	2.08	0.994
Panel D: Exit Types						
$\mathbb{1}$\{Private Equity Buyout\}	0.022	1.48	0.051	0.007***	3.06	0.053
$\mathbb{1}$\{Acquisition\}	−0.060**	−1.99	0.149	−0.022***	−4.60	0.116
$\mathbb{1}$\{IPO\}	−0.008	−0.55	0.024	−0.006***	−2.94	0.053

Notes: This table presents estimates of the triple interaction coefficient ($\mathbb{1}\{\text{Holding} \geq 5\}_{i,j,t} \times \mathbb{1}\{\text{Post}\}_{i,j,t} \times \mathbb{1}\{\text{Eligible}\}_j$) for various outcome variables. Firm-level clustering uses standard errors clustered at the firm level, while two-way clustering uses standard errors clustered at both the investor and firm level. All specifications include year, holding period, entry year, and investor-firm fixed effects. * p ¡ 0.10, ** p ¡ 0.05, *** p ¡ 0.01

Table IA9: Robustness: Risk-Taking Results Excluding California-Based Investors

Dependent Variable:	𝟙{Out of Business}		Zero Funding Years		𝟙{5 Yrs. W/out Funding}		𝟙{Unicorn}	
	All	Exited	All	Exited	All	Exited	All	Exited
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\} \times \mathbb{1}\{\text{Eligible}\}$	0.009***	0.030***	0.274***	0.189**	0.066***	0.070***	0.002	0.005
	(3.43)	(4.28)	(3.31)	(2.38)	(4.26)	(3.99)	(1.29)	(1.24)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Eligible}\}$	0.001	−0.000	−0.454***	−0.263***	−0.109***	−0.099***	−0.002	−0.005
	(0.57)	(−0.04)	(−5.73)	(−3.60)	(−7.39)	(−6.14)	(−1.35)	(−1.39)
$\mathbb{1}\{\text{Holding} \geq 5\} \times \mathbb{1}\{\text{Post}\}$	−0.021***	−0.061***	−0.237***	−0.174**	−0.069***	−0.083***	−0.003	−0.006
	(−7.93)	(−8.82)	(−2.99)	(−2.25)	(−4.62)	(−4.81)	(−1.54)	(−1.47)
Observations	706,352	297,376	706,352	297,376	706,352	297,376	706,352	297,376
Adjusted R^2	0.107	0.111	0.476	0.346	0.327	0.202	0.994	0.993
Mean Dependent Variable	0.019	0.044	1.208	0.809	0.070	0.030	0.019	0.041
Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Holding Period FE	✓	✓	✓	✓	✓	✓	✓	✓
Entry Year FE	✓	✓	✓	✓	✓	✓	✓	✓
Investor × Firm FE	✓	✓	✓	✓	✓	✓	✓	✓
Clustered SE (Investor)	✓	✓	✓	✓	✓	✓	✓	✓

This table presents estimates of the effect of QSBS tax benefits on various firm outcomes after excluding California-based investors from the sample. The dependent variables are an indicator for business failure, count of consecutive years without new funding, an indicator for firms that go five or more years without raising new funding, and an indicator for firms achieving unicorn status (valuation exceeding $1 billion). Post is an indicator for investments made after 2009, Eligible indicates QSBS-eligible sectors, and $\mathbb{1}\{\text{Holding} \geq 5\}_{i,j,t}$ 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 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.