Democratizing Venture Capital: Tax Incentives and the Geographic Expansion of Startup Investing*

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Can tax subsidies expand the geographic reach of startup investing? Despite decades of growth, venture capital (VC) remains concentrated in a handful of metropolitan areas, leaving most of the country with limited access to startup financing. We study the 2009–2010 enhancement of the Qualified Small Business Stock (QSBS) program, which eliminated federal capital gains taxes on investments in qualifying startups. By raising the payoff to success, the reform made riskier investments more attractive, including entry into unfamiliar markets. This incentive is especially strong for VC funds. Relative to similarly sized metros that already had VC, the reform raised the probability that a previously unserved metro received VC investment in qualifying sectors by 8 to 10 percentage points. There was no comparable increase in sectors excluded from QSBS or among angel investors, who receive the same tax benefit. Startups in newly served markets performed like those in other non-hub markets, created high-wage jobs, and attracted scientific and technical workers, some from established hubs. Our findings suggest that a sufficiently large subsidy can extend VC into markets it had long bypassed, even with no requirement on where startups are located.

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1 Introduction

Venture capital (VC) plays a formidable role in the U.S. economy. VC-backed companies account for 41% of the total market capitalization of public companies and, among public companies founded in the past five decades, represent over 90% of R&D spending and patent value (Gornall and Strebulaev 2021). Yet VC is among the most geographically concentrated forms of finance. Six coastal metropolitan areas (San Francisco, San Jose, New York, Boston, Los Angeles, and Seattle) account for nearly two-thirds of VC activity, leaving most of the country with little access to high-growth entrepreneurship financing. Prior work traces this concentration to self-reinforcing networks of investors, entrepreneurs, and service providers that lower the cost of deal-making in established hubs, while raising barriers to first entry in unfamiliar markets (Saxenian 1994; Sorenson and Stuart 2001). The resulting divide in access to startup finance has consequences for regional job creation, innovation, and economic dynamism (Moretti 2011; Chetty et al. 2014; Kerr and Robert-Nicoud 2020).

Over the years, governments tried to steer investment toward lagging regions through place-based programs that restrict benefits to areas the statute designates, with mixed results (Kline and Moretti 2014; Neumark and Simpson 2015). The most recent of these, the Opportunity Zone program, confines capital gains relief to low-income census tracts. In contrast, the Qualified Small Business Stock (QSBS) program — the focus of this study — subsidizes investment in qualifying startups regardless of where they are based. A startup in Lincoln, Nebraska, qualifies on the same terms as one in the Bay Area. Federal tax expenditures on the QSBS program reached $4.6 billion in 2025 (U.S. Department of the Treasury 2026).

In what follows, we look at whether investors respond to QSBS tax incentives by entering new markets or by simply deepening investment in the hubs where VC funding has long concentrated. We organize our study around three questions. First, did the 2009–2010 expansion of QSBS benefits open new metropolitan markets to startup investors, and did the response come from VCs, from angel investors, or both?[1] Second, in markets that VC already served, did investment tilt toward tax-eligible sectors, and was that tilt sharpest where venture activity had been thinnest? Third, did startups entering new and underserved markets create real economic value, including for the workers they hired and for local economies?

[1] VC funds are financial intermediaries: general partners (fund managers) invest capital raised from limited partners, such as pension funds and endowments, in young private companies, earning management fees and a share of the fund's gains (carried interest). Angel investors are individuals who receive the same tax benefit but invest their own money directly.

QSBS, created under Section 1202 of the Internal Revenue Code in 1993, excludes from federal tax part or all of the capital gain on stock in a small domestic C-corporation held for at least five years. Industries whose principal asset is human capital or reputation, such as professional services, financial services, and hospitality, do not qualify, so the benefit concentrates in technology, manufacturing, and pharmaceuticals.[2] Because the 1993 law excluded only half of a qualifying gain and taxed the other half at a fixed 28% rate, the benefit eroded as regular rates fell. By 2003, with the regular long-term capital gains rate at 15%, QSBS-qualifying gains were taxed at 14% — only one percentage point less.

The QSBS reform we study came in two steps. The American Recovery and Reinvestment Act (ARRA) of 2009 raised the exclusion to 75%, and the Small Business Jobs Act (SBJA) of 2010 exempted qualifying gains entirely, an exclusion later made permanent in 2015. Qualifying investors thus went from a one-point advantage to paying no federal capital gains tax at all, while investors in ineligible sectors continued to pay the regular rate, which averaged 22% over 2009–2025. To illustrate the impact of the reform, an investor whose $1 million stake in a qualifying startup grows to $10 million avoids about $2 million in federal taxes relative to the same investment in a non-qualifying firm. The reform thus opened a large wedge in after-tax returns between eligible- and ineligible-sector investments.

We argue that the response to this wedge should depend on how investors are organized and on what it costs them to enter an unfamiliar market. Fund managers deploy predominantly outside capital and participate in fund gains through carried interest, which should make their investment thresholds more responsive to the subsidy than those of angels investing their own wealth. Consistent with this, in companion work we show that the reform raised ex-ante risk-taking among VC funds but not angel investors (Campello and Junqueira 2026). The QSBS program did not reduce the costs of entering unfamiliar markets, which prior work ties to informational frictions and network building (Lerner 1995; Sorenson and Stuart 2001). However, by raising the payoff to success, QSBS increased the attractiveness of markets where entry costs had kept VC scarce or absent. Accordingly, we expect two outcomes. First, the reform should extend startup investing into new and underserved markets rather than merely deepen it in established hubs. Second, the response should come from VC funds rather than from angel investors.

We assemble investment-level data from PitchBook covering 158 thousand investor–firm pair-

[2]Most states exempt qualifying gains from state tax. The total subsidy varies with the investor's state of residence (not the startup's location). Section 2 details eligibility, state conformity, and the 2025 changes under the One Big Beautiful Bill Act.

ings formed between 2004 and 2017 across 35 thousand portfolio companies, and we follow these startups through 2022. We then link the startups to USPTO patent grants, Revelio Labs worker profiles, and Lightcast job postings, and link their metros to BEA local income and wage data. We classify all 382 U.S. metropolitan areas (Core Based Statistical Areas, CBSAs) by their VC activity in the pre-reform years 2004–2008 and hold the classification fixed, so that no metro's tier depends on post-reform outcomes. The 233 metros with no VC-backed investment of any kind in those years form the *No Prior VC* tier; the other 149 are split by tertile into *Low Prior VC* (56 metros), *Medium Prior VC* (44), and *Established Hubs* (49). The raw counts are suggestive of a large expansion. Before 2009, 39% of U.S. metropolitan areas had received any VC-backed investment. After the reform, 60% had, and 86 of the 233 previously unserved metros received their first VC-backed startup.

To test whether the reform caused this expansion, we compare how the probability of eligible-sector VC entry changed after 2009 in *No Prior VC* metros with how it changed in metros that already had VC. The identifying assumption of this difference-in-differences design is that, absent the reform, entry rates in the two groups would have followed parallel paths. The main threat to this assumption is size. Previously unserved metros are smaller than served ones (median populations of 146 versus 560 thousand residents), and entry probabilities rise with metro size,[3] so a comparison that ignores size would attribute to the policy any trend that differs between small and large metros. We therefore compare unserved metros only with similarly sized served metros, those in the same decile of year-2000 population, in the same year. Our stricter specification also absorbs regional trends with Census-division×year fixed effects.[4] A second threat is that some post-2009 force, such as the recovery from the financial crisis or a gradual spread of VC into smaller markets, raised entry in previously unserved metros for reasons unrelated to the subsidy. Because QSBS covers some sectors and not others, we can test for such a force directly: a placebo asks whether ineligible-sector entry rose too, and a triple-differences design compares the two sectors within the same metro and year, removing any local force that lifts both equally.

On the first question, the reform opened new markets to startup investing, and the response came from VC funds rather than angels. Relative to similarly sized metros that already had VC activity, the probability that a *No Prior VC* metro received eligible-sector VC investment rose by 8 to 10 percentage

[3] Metros in the bottom decile of 2000 population receive eligible-sector VC in 7% of years, against 92% in the top decile.
[4] Standard errors are clustered at the CBSA level to account for serial correlation in VC activity within metros over time.

points after the reform. The result is robust to population weighting, a restriction to metros of overlapping size, five alternative tier classifications, and wild-cluster bootstrap inference. Angel investors, who receive the same tax benefit, show no comparable expansion. Raw counts suggest that the response was also concentrated in eligible sectors: 33% of previously unserved metros saw eligible-sector VC grow after 2009, against 11% in ineligible sectors. The placebo regression corroborates this pattern. Against the same similarly sized served metros, ineligible-sector entry did not rise significantly. The triple-differences estimates point the same way. In previously unserved metros relative to served ones, the gap between eligible- and ineligible-sector VC activity widened by 11 to 17 percentage points after 2009. In an event-study version, pre-reform coefficients are flat, and the effect emerges after the reform date.

On the second question, the reform also tilted investment toward eligible sectors in markets VC already served, most sharply where venture activity had been thinnest. After 2009, eligible-sector VC grew in 70% of *Low Prior VC* metros and 66% of *Medium Prior VC* metros, against only 27% and 45% for ineligible-sector VC. In *Established Hubs*, eligible- and ineligible-sector VC grew in 94% and 92% of metros, respectively. Relative to the hubs, the probability of ineligible-sector entry fell by 16 to 19 percentage points in *Low* and *Medium Prior VC* metros, and the number of ineligible-sector startups funded fell by 45% in *Low* and 34% in *Medium Prior VC* metros. This pattern is consistent with constrained VCs shifting capital and attention toward subsidized deals. Under this reasoning, the ineligible deals that lose out first are the ones closest to the margin, in thin markets where sourcing, monitoring, and syndication cost more.

The third question concerns the firms themselves. We examine their quality, the scale of their activity, and what they did for workers and local economies. On quality, the concern is that markets long bypassed by VC lack the agglomeration economies that sustain firm performance (Saxenian 1994), so that a subsidy that reaches them would fund weaker firms. Against this, such markets may hold good projects that went unfunded for want of local capital (Chen et al. 2010). The raw outcomes suggest no shortfall relative to other non-hub markets. Post-2009 failure rates in *No Prior VC* metros (41%) match those in *Low* and *Medium Prior VC* metros (40%) and exceed the hubs' (31%). Patent rates (26%) fall within the non-hub range, just below the hubs (29%). Employment per firm (21 workers) exceeds the other non-hub tiers and trails the hubs (26). Difference-in-differences estimates for the tiers with pre-reform firms reinforce this picture. Relative to *Established Hubs*, the coefficients on *Low* and *Medium*

Prior VC metros are indistinguishable from zero across outcomes; the one exception is a marginally significant positive patent coefficient in *Low Prior VC* metros. In sum, the startups VC backed in underserved metros after the reform were no worse than those it was already backing outside the hubs.

On scale, activity in new markets is modest. *No Prior VC* metros produced 218 VC-backed startups after 2009, with 57 patent firms and 3,279 workers, against 12,720 startups in *Established Hubs*. That gulf is what one would expect of nascent ecosystems observed over a short window.

The last issue we consider is what these firms did for workers and local economies. Startups in newly served markets pay about the same as hub startups, with modeled salaries from Revelio Labs averaging about $110,500 a year in both.[5] Since living costs in these metros are lower,[6] wage parity implies higher real pay. Notably, these startups employ well-credentialed scientific and technical workers and retain them for longer than hub startups do. More than a third of their hires moved in from another metro area, some directly from the coastal VC hubs. The gains register beyond the firms. Among metros that received entry, those that received more eligible-sector startups saw significantly faster growth in economy-wide wage-and-salary disbursements and personal income than those that received fewer,[7] and they were not already growing faster before the reform. Because the amount of entry is not randomly assigned, we read this gradient as suggestive rather than dispositive. On this evidence, the reform carried not only capital but also talent and earnings into regions long outside the venture economy.

Our results speak to two literatures. The first studies the geography of entrepreneurial finance. VC is among the most spatially concentrated forms of investment (Kerr and Robert-Nicoud 2020; Chen et al. 2010), sustained by information frictions that keep investors close to their local networks (Lerner 1995; Sorenson and Stuart 2001) and by monitoring costs that rise with distance (Bernstein et al. 2016). A related literature evaluates place-based policies that steer investment toward underserved regions (Papke 1993; Neumark and Simpson 2015; Kline and Moretti 2014; Busso et al. 2013).

The second literature studies how taxes shape business activity (Lin and Flannery 2013; Zwick and Mahon 2017; Giroud and Rauh 2019; Campello et al. 2025), including the supply of venture capital (Poterba 1989; Gompers and Lerner 1998; Kortum and Lerner 2000; Edwards and Todtenhaupt 2020;

[5] Revelio Labs predicts each position's salary from its title, seniority, employer, and location, using a model trained on salaries reported in visa filings, job postings, and self-reports.

[6] Bureau of Economic Analysis regional price parities (all items, U.S. = 100, 2023), weighted by each metro's post-2009 VC-backed startups, average 95 in previously unserved metros that received entry, against 111 in *Established Hubs*.

[7] Both series come from the Bureau of Economic Analysis county accounts (CAINC30), aggregated to metros.

Dimitrova and Eswar 2023; Abdulrauf et al. 2025) and the location of innovative activity (Moretti and Wilson 2017; Akcigit et al. 2022). Within this literature, Chen and Farre-Mensa (2026) document that QSBS raised aggregate firm births and patenting, and Denes et al. (2023) find that state angel tax credits raise investment activity without generating real economic effects. We contribute to both literatures by showing that a federal subsidy with no location requirement generated a meaningful geographic expansion. It opened markets that had no VC-backed startups before the reform, tilted investment in already-active markets toward eligible sectors, and did so without lowering firm quality. The evidence is consistent with the VC organizational structure as the transmission mechanism for these geographic effects.

The remainder of the paper proceeds as follows. Section 2 describes the QSBS program, and Section 3 describes our data, metro classification, and the reform's geographic footprint. Sections 4 and 5 establish that QSBS caused entry into new markets and trace the tilt toward eligible sectors across underserved tiers. Section 6 examines firm performance, deal structure, and industry mix in newly reached markets. Section 7 examines local jobs, wages, and talent flows. Section 8 concludes.

2 The QSBS Program

The Qualified Small Business Stock (QSBS) program is a federal tax subsidy designed to stimulate investment in small, capital-intensive businesses. Established under Section 1202 of the Internal Revenue Code in 1993, the program provides capital gains tax relief to investors in qualifying startups.

2.1 Eligibility Requirements

QSBS benefits depend on three conditions that must be satisfied simultaneously. First, the portfolio company must be a domestic C-corporation whose aggregate gross assets (cash plus the adjusted tax basis of all other property) do not exceed $50 million immediately before *and* immediately after the stock issuance. Once a company's assets exceed this threshold, future stock issuances permanently lose QSBS eligibility, even if assets later fall back below $50 million. Second, the corporation must use at least 80% of its assets (by value) in qualified business activities throughout the investor's holding period. The program explicitly excludes industries where the principal asset is human capital or reputation — including professional services, financial services, and hospitality — concentrating benefits

in technology, manufacturing, pharmaceuticals and biotechnology, and other capital-intensive sectors.[8] Third, investors must hold the qualifying stock for at least five years before selling. Gains on shares sold before this threshold do not qualify for the exclusion, while gains on shares sold at or after five years do. This holding requirement creates a sharp notch in the tax schedule that generates the strategic investment holding behavior documented by Campello and Junqueira (2026).

On the investor side, benefits flow to individual taxpayers. The benefit reaches angel investors, who invest their own money directly, and the general partners of venture capital funds, who manage outside capital for performance-based pay. These funds are organized as pass-through partnerships for tax purposes, so gains and losses flow to the partners' individual returns. Corporate investors, including corporate venture capital arms, are subject to corporate income taxes rather than capital gains taxes and therefore cannot access QSBS benefits regardless of their portfolio companies' characteristics.

2.2 The 2009 Reform and Its Fiscal Consequences

The 2009–2010 reform restored a benefit that had nearly disappeared. When the program was enacted in 1993, it excluded half of a qualifying gain from federal tax and taxed the other half at 28%, the regular long-term capital gains rate at the time. Because that 28% rate was fixed in the statute, the exclusion's value eroded as the regular rate fell over the following decade. By 2003, the regular rate had dropped to 15%, while qualifying gains still faced an effective rate of 14% (half the gain taxed at 28%), a net benefit of one percentage point.[9] The American Recovery and Reinvestment Act of 2009 revitalized the program by raising the exclusion to 75%, which cut the effective rate on qualifying gains to 7%. The Small Business Jobs Act of 2010 went further, fully exempting qualifying gains from federal tax. The Protecting Americans from Tax Hikes Act of 2015 made this full exclusion permanent.[10]

The subsidy is economically large. At the federal level, investors in qualifying startups avoid paying the long-term capital gains tax — averaging 22% over the 2009–2025 period (Tax Foundation 2025) — on realized gains up to a per-issuer cap of the greater of $10 million or ten times basis. The

[8] A complete list of eligible and ineligible sectors appears in the internet appendix of Campello and Junqueira (2026).

[9] A portion of the excluded gain was also a preference item under the alternative minimum tax, further eroding the benefit for affected taxpayers. The 2010 reform removed this preference for fully excluded gains.

[10] The One Big Beautiful Bill Act (OBBBA) of 2025 further expanded Section 1202 for stock issued after July 4, 2025. It introduced a tiered exclusion of 50%/75%/100% at three-, four-, and five-year holding periods, raised the per-issuer cap from $10 to $15 million, and raised the gross-asset ceiling from $50 to $75 million.

aggregate fiscal consequences reflect this magnitude: federal tax expenditures attributable to QSBS grew from $70 million in 2010 to $4.6 billion in 2025 (both in 2025 dollars) (U.S. Department of the Treasury 2026). By 2021, over 33,000 individual taxpayers claimed QSBS exclusions, with taxpayers excluding more than $1 million accounting for roughly 90% of total gains excluded (Abdulrauf et al. 2025).

2.3 Geographic Variation in QSBS Benefits

The federal benefit is the same everywhere, but the total subsidy varies with the investor's state of residence (not the startup's location) because states differ in whether they conform to the federal exclusion. Most states do, providing a corresponding state-level capital gains tax exemption for qualifying investments, which adds substantially to the federal benefit. State capital gains tax rates average around 5% nationally (Feenberg and Coutts 1993). In 2020, top rates reached 13.3% in California and 10.75% in New Jersey, neither of which conferred the exclusion, and 8.95% in the District of Columbia and 8.82% in New York, which did (Tax Foundation 2020).[11] In conforming high-tax states, the combined federal and state subsidy can therefore approach or exceed 30 cents on every dollar of gain. However, a handful of states have opted out or adopted conformity only recently. Pennsylvania, Mississippi, and Alabama have consistently declined to provide state-level QSBS benefits. California eliminated its conformity in 2013 following a court ruling citing constitutional issues. Massachusetts adopted full conformity in 2022 and New Jersey in 2026. Illinois, Maine, Oregon, and Vermont recently stopped recognizing the exclusion.[12]

Despite this state-level heterogeneity, two features of the program preserve a meaningful degree of geographic uniformity in investment incentives. First, the federal exclusion is the dominant component of the total subsidy. Second, state taxes depend on where the *investor* is domiciled, whereas QSBS eligibility depends on the characteristics of the *portfolio company*. This means that the program creates no inherent bias toward startups in locations where investors are concentrated.

[11] Campello and Junqueira (2026) show that QSBS-induced VC risk-taking is more pronounced in high-tax states.

[12] Illinois, Maine, Oregon, and Vermont stopped recognizing the exclusion after the One Big Beautiful Bill Act expansion (see footnote 10). Maine taxes only gains on stock acquired after July 4, 2025. The other three tax all gains realized after 2026.

3 Data and Metro Classification

3.1 Data Sources and Sample Construction

Our primary data source is PitchBook, a commercial database that records the near-universe of VC-backed companies in the United States, including investor identities, deal dates, deal sizes, and company characteristics such as industry classification, founding date, and location. We construct our sample to be consistent with QSBS eligibility requirements. First, we restrict to U.S.-based firms. Second, we exclude firms designated as Limited Liability Partnerships or Limited Partnerships, as only C-corporations can issue qualifying stock under the program. Third, we exclude investor–firm pairs where the investment amount exceeds $50 million in the startup's first operating year or the investor's entry year, consistent with the program's gross asset threshold. We then classify firms into eligible and ineligible sectors based on the Internal Revenue Code's Section 1202 criteria. We track startup investments made between 2004 and 2017 and observe firm outcomes through 2022. The final sample covers 158 thousand investor–firm pairings across 35 thousand unique portfolio companies and 39 thousand unique investors.

We use four additional data sources to track the outcomes of these startups and their local economies. Patent data come from the USPTO.[13] Employment and worker data come from Revelio Labs, which constructs workforce counts, position histories, and worker characteristics from LinkedIn.[14] For each position, Revelio also provides a modeled annual salary, predicted from the position's title, seniority, employer, and location, using data from visa filings, job postings, and self-reports. Labor demand is measured with online job postings from Lightcast, matched to portfolio companies at the firm level. Metro-level personal income and wage-and-salary disbursements come from the Bureau of Economic Analysis county accounts, aggregated to CBSAs.

[13] We match PitchBook and USPTO through exact matching on standardized company names (including legal names, trade names, and former names), followed by fuzzy matching using token-sort similarity with state-level blocking. Matches are validated using geographic proximity and founding-year plausibility, retaining only high-confidence matches (score ≥ 95).

[14] We match Revelio Labs and PitchBook companies sequentially on LinkedIn profile URLs, website domains, and fuzzy company names. We retain the highest-similarity match, with ties broken by validating on country, state, and founding year.

3.2 Metro Area Classification

A metropolitan area (Core Based Statistical Area; CBSA) is the unit of geographic analysis throughout this paper. We assign each portfolio company to a CBSA based on its ZIP code at the time of first investment, using the Missouri Census Data Center's GEOCORR crosswalk. Company locations are the headquarters recorded by PitchBook. For companies appearing in multiple CBSAs across investor–firm pairings, we retain the canonical CBSA from the first observation.

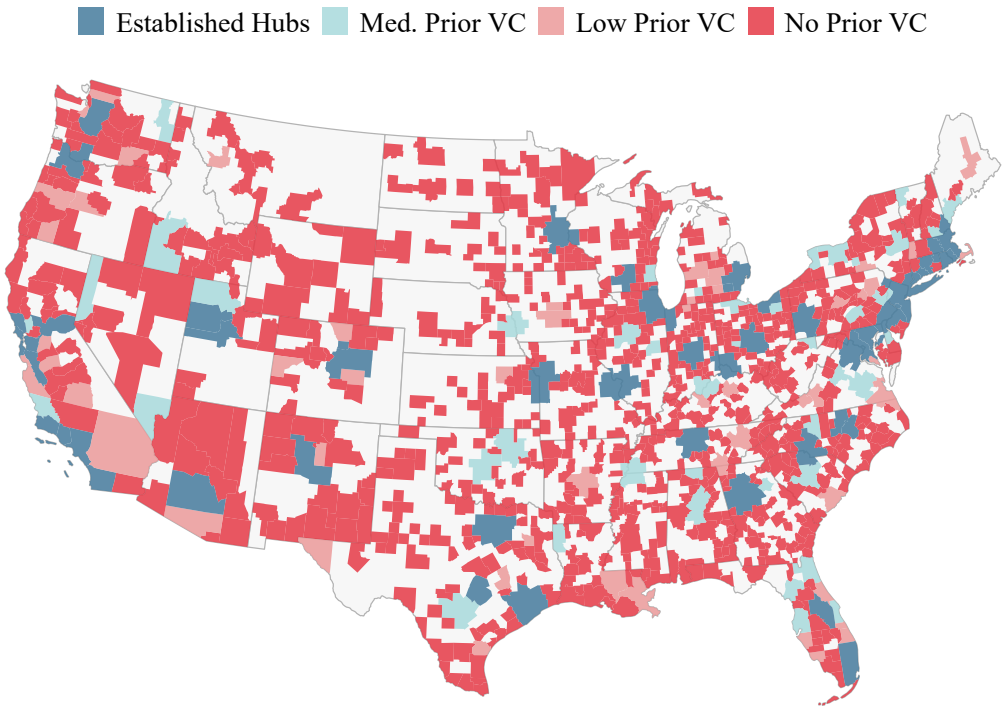
We classify CBSAs into four tiers based on their total VC-backed startup activity — eligible and ineligible sectors combined — during the pre-reform period of 2004–2008. This classification is constructed once and held fixed throughout, so tier assignment does not depend on post-reform outcomes. CBSAs with zero VC activity of any kind during 2004–2008 form the *No Prior VC* tier. All such metros are retained regardless of their post-2009 activity, so that the treated group is defined purely by the pre-reform period and is not selected on the outcome. Among CBSAs with any pre-2009 activity, we partition by tertile of total pre-2009 VC-backed startup counts into *Low Prior VC* (bottom tertile; 56 metros), *Medium Prior VC* (middle tertile; 44 metros), and *Established Hubs* (top tertile; 49 metros). As shown below, our results are robust to several alternative tier classifications, including top-N VC hubs, as well as different quantile cuts; Table IA2 collects the *No Prior VC* coefficient across all of these classifications under both the common-support and population-weighted samples.

Figure 1 maps the tiers. *Established Hubs* cluster along the coasts and in a few interior cities such as Austin, and account for the vast majority of pre-2009 deal activity. *Low* and *Medium Prior VC* metros are mostly mid-sized cities with nascent ecosystems, such as Chattanooga (TN) and Boise (ID). The *No Prior VC* tier spans the interior, from university towns such as Lincoln (NE) to regional manufacturing centers such as Fort Wayne (IN). The breadth of this last tier shows how concentrated VC was before the reform and how many markets the reform could, in principle, reach.

3.3 Outcome Variables

We construct two main sets of outcome variables, both built from firm-level data with each firm assigned once to its canonical CBSA and entry year. The first set measures *investment activity*. We count the unique VC-backed firms entering each CBSA in each year, by sector, and use these counts at the

Figure 1: VC Activity by (Pre-2009) Metro Tier: Geographic Distribution



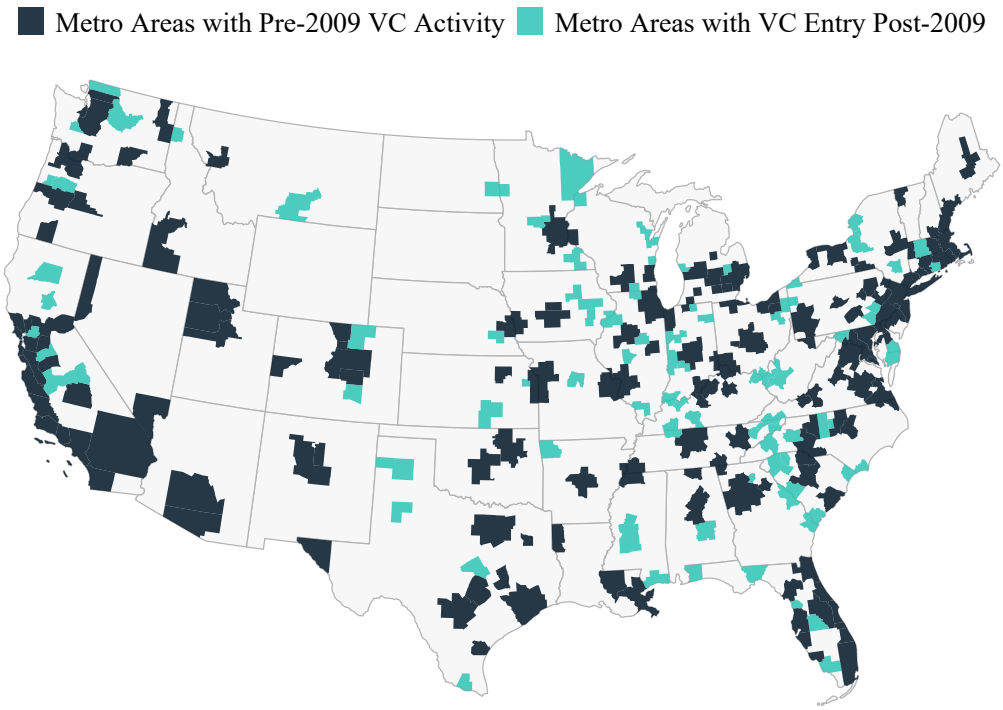
This figure displays U.S. Core Based Statistical Areas (CBSAs) classified into four tiers based on pre-2009 total VC activity. *Established Hubs* (dark blue) are CBSAs in the top tertile of pre-2009 VC-backed startup counts. *Medium Prior VC* (light blue) and *Low Prior VC* (light red) are the middle and bottom tertiles of CBSAs with any pre-2009 VC activity. *No Prior VC* (red) are CBSAs with zero VC-backed startups before 2009. Areas outside the 382 metropolitan CBSAs in the analysis universe are unshaded. Metro boundaries from the U.S. Census Bureau. VC investors only. Data from PitchBook.

CBSA–year level in regressions and by tier and period in descriptive analysis. The extensive-margin indicators $\mathbb{1}\{\text{Any Eligible VC}\}_{ct}$ and $\mathbb{1}\{\text{Any Ineligible VC}\}_{ct}$ equal one if CBSA c received at least one VC-backed startup in the respective sector in year t. We also measure the share of VC-backed firms and of capital raised in eligible sectors. Capital raised is in millions of USD and is reported in PitchBook for 94% of deals in our sample, with similar coverage in eligible and ineligible sectors.

The second set measures *firm-level lifetime outcomes*, observed from each firm's entry year through 2022. *Failure* equals one if the firm is ever recorded as out of business in PitchBook or goes five or more consecutive years without raising new funding.[15] *Unicorn status* equals one if the firm is ever flagged by PitchBook as having achieved a valuation of $1 billion or more. *Patent firms* equals one if the firm ever receives a USPTO patent grant; *patents* counts cumulative USPTO grants across

[15] Successful startups typically raise new investment rounds every 12 to 18 months (Gompers 1995).

Figure 2: Geographic Expansion of VC Activity: New vs. Established Metro Areas



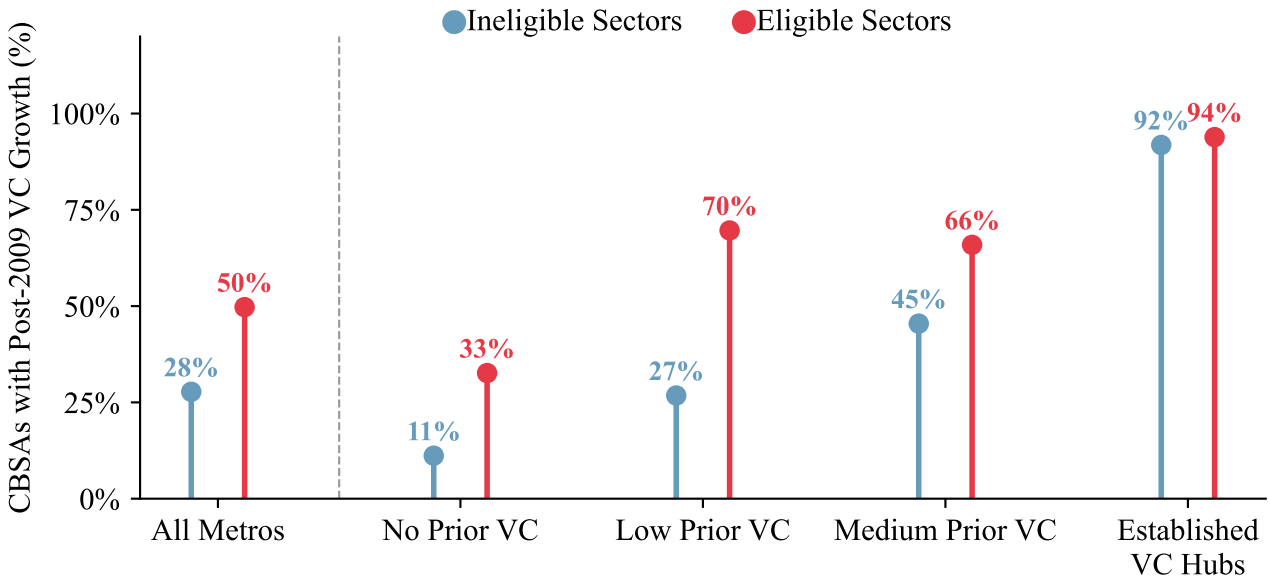
This figure displays U.S. Core Based Statistical Areas (CBSAs) classified by their pre-2009 total VC activity. *Metro Areas with Pre-2009 VC Activity* (dark green) are CBSAs that received at least one VC-backed startup between 2004 and 2008. *Metro Areas with VC Entry Post-2009* (teal) are CBSAs with zero VC activity before 2009 that received at least one VC-backed startup after 2009. Metro boundaries from the U.S. Census Bureau. VC investors only. Data from PitchBook.

all years. *Employment* is the firm's mean annual headcount across the years it appears in Revelio Labs. Tier averages of employment include only firms with Revelio headcount, about three quarters of post-2009 entrants in the non-hub tiers and 82% in *Established Hubs*.

3.4 The Geographic Footprint of the Reform

VC activity in the U.S. has long been geographically concentrated (Chen et al. 2010). Before the 2009 QSBS expansion, 149 of the 382 metropolitan areas — just 39% — had received any VC-backed investment, and nearly two-thirds of eligible-sector activity was clustered in San Francisco, San Jose, New York, Boston, Los Angeles, and Seattle. After the reform, the share of metros with VC activity rose to

Figure 3: Share of Metro Areas with Post-2009 VC Growth, by Sector Eligibility and Metro Tier



This figure shows the share of CBSAs within each metro tier with positive post-2009 VC growth, separately for QSBS-eligible and ineligible sectors. Growth is defined as a higher average annual VC-backed firm count in 2009–2017 than in 2004–2008; the denominator is all U.S. metropolitan CBSAs, including those with no VC activity in either period. Tiers are defined by pre-2009 total VC-backed startup counts. VC investors only. Data from PitchBook.

60%: of the 233 metros with no prior VC activity of any kind, 86 received their first VC-backed startup.[16] Figure 2 maps this expansion. Post-2009 entry is distributed broadly across the interior of the country — the Midwest, Mountain West, and South — and the new markets are not satellite metros adjacent to existing hubs but mid-sized university towns and regional centers with no prior foothold in the VC ecosystem, including Lincoln (NE), Fayetteville (AR), Syracuse (NY), Iowa City (IA), and Greenville (SC).

The raw counts also suggest that the expansion was concentrated in QSBS-eligible sectors. Figure 3 shows the share of metros in each tier with positive post-2009 VC growth, separately for eligible and ineligible sectors. Among *No Prior VC* metros, 33% experienced positive growth in eligible-sector VC after 2009, against just 11% in ineligible sectors, a threefold difference. The ratio falls steadily with prior VC intensity, to 2.6 in *Low Prior VC* metros (70% versus 27%), 1.5 in *Medium Prior VC*

[16] Figure IA1 reports the counts by tier. Nearly all previously active metros remained active after 2009 — 50 of the 56 *Low Prior VC* metros, 43 of the 44 *Medium Prior VC* metros, and all 49 *Established Hubs* — so the extensive-margin gain came entirely from markets receiving their first VC-backed startup. The expansion is not an artifact of the longer post-reform window. Restricted to the same five years as the pre-period (2009–2013), 48% of metros (184 of 382) had VC activity, against 39% in 2004–2008, and 52 of the 86 first-time entrants had already entered.

metros (66% versus 45%), and near parity in *Established Hubs* (94% versus 92%). The eligible-sector advantage is largest in the most underserved markets and vanishes in the hubs, where both sectors were already active. Eligible-sector capital reached underserved markets that ineligible capital largely bypassed, while *Established Hubs* expanded in both sectors (Table IA3).

4 Did QSBS Open New Markets for Startup Investing?

Our first question is whether the QSBS expansion opened new metropolitan markets to startup investors and, if so, whether the response came from VC funds, from angels, or from both. The descriptive patterns in Section 3.4 suggest that it did: after 2009, VC reached previously unserved metropolitan areas, and the expansion was concentrated in eligible-sector investment rather than reflecting a broad post-crisis recovery in VC activity. The QSBS exclusion is a windfall on every eligible deal. In established hubs, where deals were viable all along, it deepens activity without changing which markets are served. The deals it can tip are those that entry costs had kept out of reach, in markets where venture capital had penetrated least. This section asks whether those patterns reflect a causal effect of the reform.

4.1 Difference-in-Differences Evidence

We use a balanced CBSA-year panel covering all 382 U.S. metropolitan areas over 2004–2017 for VC investors only. Our primary outcome is $\mathbb{1}\{\text{Any Eligible VC}\}_{ct}$, an indicator equal to one if CBSA c received at least one VC-backed startup in a QSBS-eligible sector in year t. Our baseline specification estimates:

$$\mathbb{1}\{\text{Any Eligible VC}\}_{ct} = \alpha_c + \gamma_{d(c),t} + \beta \cdot [\mathbb{1}\{\text{No Prior VC}\}_c \times \mathbb{1}\{\text{Post}\}_t] + \varepsilon_{ct}, \tag{1}$$

where α_c are CBSA fixed effects that absorb all time-invariant differences across metros — such as local industrial structure, proximity to universities, and population density — that might independently predict VC activity, and $\gamma_{d(c),t}$ are population-decile×year fixed effects, with $d(c)$ denoting metro c's decile of year-2000 metropolitan population — measured before the sample begins and held fixed throughout. Because previously unserved metros are far smaller in population than served ones (median

populations of 146 thousand and 560 thousand residents), these fixed effects are central to identification. They compare previously unserved metros to served metros of comparable size in the same year. Our second specification adds Census-division×year fixed effects, absorbing differential time trends across the nine Census divisions. $\mathbb{1}\{\text{No Prior VC}\}_c$ equals one for CBSAs with zero total VC activity (eligible and ineligible combined) during 2004–2008, and the coefficient β captures the post-2009 change in the probability of receiving any eligible-sector VC investment in *No Prior VC* metros relative to similarly sized metros that already had VC. It identifies the effect of the reform if, absent the reform, entry in the two groups would have moved in parallel within each size decile. $\mathbb{1}\{\text{Post}\}_t$ equals one for years 2009 and later; its main effect is absorbed by $\gamma_{d(c),t}$, just as α_c absorbs the time-invariant $\mathbb{1}\{\text{No Prior VC}\}_c$ term, which is why only the interaction appears in Equation (1). We include 2009 in the post-reform period because the ARRA was enacted in February of that year and the tax expenditure data show an immediate jump in QSBS uptake following enactment (U.S. Department of the Treasury 2026).

4.1.1 Venture Capitalists vs. Angel Investors

Table 1 presents results separately for VCs and angel investors. Columns (1) and (2) show that, relative to similarly sized metros that already had VC, the 2009 QSBS expansion raised the probability that a previously unserved metro received eligible-sector VC investment by 8 to 10 percentage points on the full universe of 382 metropolitan areas. The estimate is +0.078 under the population-decile specification and +0.096 with Census-division×year fixed effects added.[17]

PLACE TABLE 1 ABOUT HERE

Columns (3) and (4) show no comparable expansion among angel investors. Under the symmetric construction that defines previously unserved metros by their own prior angel activity, the coefficients are small and statistically indistinguishable from zero. This contrast is informative for two reasons. First, angel investors receive the same statutory QSBS benefits as VC general partners, so the null result for angels is difficult to reconcile with explanations based on contemporaneous shocks that broadly affected all startup investors after 2009. A post-crisis recovery in risk appetite, declining interest rates,

[17] The effect is stable across the size-robustness specifications in Table IA1, including population weighting and a common-support restriction, and it survives wild-cluster bootstrap inference. The *No Prior VC* entry coefficient also remains positive and significant under the alternative tier classifications in Table IA2, which take the top hubs as the omitted baseline.

or secular growth in startup formation should have moved angels and VCs alike. Second, the contrast points to the VC organizational structure as the operative mechanism. General partners invest outside capital and share in gains through carried interest, which makes their payoffs convex and amplifies their response to a capital gains subsidy. Angels invest their own money and bear a linear payoff, so the same subsidy moves their investment thresholds less. Campello and Junqueira (2026) show the same contrast between VCs and angels in risk-taking.

4.1.2 A Placebo Test: Ineligible-Sector VC

A natural concern is that the extensive-margin entry documented above reflects forces unrelated to the subsidy — a broad post-crisis resurgence of VC activity, or a secular widening of venture capital's geographic reach that would have carried investment into smaller markets regardless of the reform. Both alternatives, however, operate at the level of markets rather than tax-code sections. Table 2 addresses them directly by replacing the dependent variable with $\mathbb{1}\{\text{Any Ineligible VC}\}_{ct}$ and re-estimating the baseline specification from Equation (1). A recovery or diffusion process strong enough to open new markets would raise ineligible-sector entry in tandem with eligible-sector entry. If QSBS is the operative force, ineligible-sector entry should show no corresponding increase.

PLACE TABLE 2 ABOUT HERE

The estimates confirm the latter. The coefficient on the interaction term is small and statistically insignificant under both specifications (+0.027 and +0.024 relative to a mean of 0.110), so previously unserved metros saw no significant expansion of *ineligible*-sector VC even as eligible-sector entry rose sharply. This null is measured against similarly sized metros that already had VC. Against a different benchmark, *Established Hubs*, the same flat trajectory appears as a relative decline, because the post-2009 resurgence lifted both sectors in the hubs. The comparison with the hubs is reported in Table 5 and discussed in Section 5.2. Differences in metro size or region cannot explain the pattern. Any secular tendency of VC to spread down the metro-size distribution is absorbed by the population-decile×year fixed effects, and regional diffusion by the Census-division×year fixed effects. Taken together with the angel null result in Section 4.1.1 — angel capital, eligible for the same exclusion, did not spread to

these markets — this placebo points to QSBS, rather than a contemporaneous shock to VC markets or a secular trend in their geographic reach, as the source of the expansion documented in Section 3.4.[18]

4.2 Triple-Differences Estimates

The difference-in-differences estimates in Section 4.1 compare *No Prior VC* metros to similarly sized metros that already had VC. A remaining concern is that some unobserved metro-level shock after 2009, unrelated to QSBS, differentially affected previously unserved markets. We address this with triple-differences estimates that compare eligible and ineligible sectors within the same metro and year, so that identification comes entirely from whether the eligible–ineligible gap within previously unserved metros widened after 2009 relative to the same gap in other metros. The regression estimates:

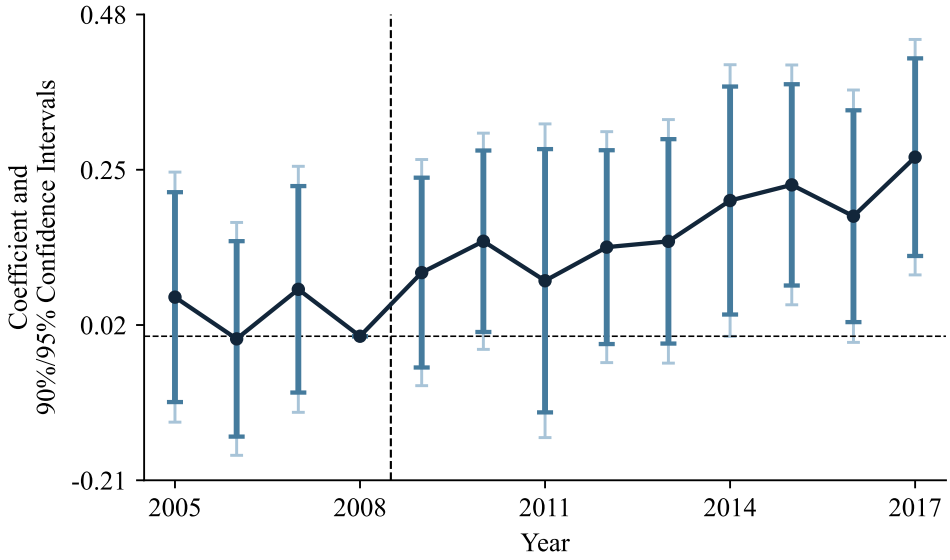
$$y_{cst} = \beta \cdot [\mathbb{1}\{\text{No Prior VC}\}_c \times \mathbb{1}\{\text{Eligible}\}_s \times \mathbb{1}\{\text{Post}\}_t] + \alpha_{cs} + \gamma_{ct} + \delta_{st} + \varepsilon_{cst}, \tag{2}$$

where c indexes CBSAs, s indexes sector eligibility, and t indexes years, the outcome y_{cst} is an indicator for any VC-backed firm activity, and $\mathbb{1}\{\text{No Prior VC}\}_c$ equals one for CBSAs with zero total pre-2009 VC activity. CBSA × Sector fixed effects (α_{cs}) absorb time-invariant differences in eligible versus ineligible VC composition across metros; CBSA × Year fixed effects (γ_{ct}) absorb all metro-level time-varying shocks affecting both sectors equally; and Sector × Year fixed effects (δ_{st}) absorb national trends in eligible relative to ineligible VC activity. The lower-order terms of a conventional triple-differences specification, the main effects and pairwise interactions of the three indicators, are all subsumed by these two-way fixed effects, each in its most general form, leaving the triple interaction as the only estimable term. The identifying assumption is that, absent the reform, the eligible–ineligible gap in previously unserved metros would have evolved in parallel with the same gap in served metros.

Table 3 reports the estimates. Relative to the same gap in served metros, the eligible–ineligible gap in previously unserved metros widened by 11 to 17 percentage points after 2009. The coefficient on the triple interaction is +0.174 under population weighting, which requires no sample restriction, and

[18] A hold-out exercise over a longer pre-treatment horizon reinforces this conclusion. Extending the investment-level data back to 2000 and redefining unserved status on 2000–2003 — before the estimation sample begins — we place placebo reform dates inside the pre-reform period: both placebo estimates are statistically indistinguishable from zero, whereas the actual 2009 reform yields positive estimates that reach +0.078 (t = 2.36) when unserved status is defined over the full 2000–2008 pre-reform window; dynamic estimates (not tabulated) show flat pre-2009 coefficients (joint p = 0.51). See Table IA4.

Figure 4: QSBS and Eligible VC in New Markets: Triple-Differences Event Study



This figure plots dynamic triple-difference estimates of Equation (2), replacing the post indicator with event-time indicators; 2008 is the omitted baseline year. Each point is the coefficient on $\mathbb{1}\{\text{No Prior VC}\} \times \mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{year} = t\}$, with 90% (darker) and 95% (lighter) confidence intervals based on CBSA-clustered standard errors. The estimation weights by population, as in Column (1) of Table 3; fixed effects follow Equation (2). A joint test that all pre-2009 coefficients equal zero gives $p = 0.33$; Figure IA2 reports the corresponding estimates on the common-support sample of Column (3), with $p = 0.48$. Because previously unserved metros have no venture activity in either sector before 2009 by construction, the pre-reform coefficients test the stability of the eligible–ineligible gap in comparison metros — the counterfactual the triple difference borrows. Data are from PitchBook.

+0.112 and +0.148 on common-support samples restricted to metros at least as large as the 25th and 50th percentile of post-2009 entrants, respectively. The estimates are essentially unchanged when the enactment year 2009 is excluded (+0.182, +0.112, and +0.153; see Table IA5). These results confirm that the within-CBSA shift toward eligible-sector VC in previously unserved metros is robust to the inclusion of CBSA × Year fixed effects and to how the metro-size differential is handled.

PLACE TABLE 3 ABOUT HERE

Figure 4 presents the dynamic version of Equation (2), replacing the post indicator with event-time indicators. Pre-reform coefficients are small and statistically indistinguishable from zero. A joint test that all pre-2009 coefficients equal zero gives $p = 0.33$ under population weighting, and $p = 0.66$ and $p = 0.48$ on the 25th- and 50th-percentile common-support samples (Figure IA2). The effect emerges after the reform date. Because previously unserved metros have no venture activity in either

sector before 2009 by construction, the pre-reform coefficients test the stability of the eligible–ineligible gap in comparison metros, which is the counterfactual the triple difference borrows. These dynamics leave little room for a secular-trend account. To explain the estimates, a competing force would have to begin in 2009 and widen the eligible–ineligible gap more in previously unserved metros than in served ones. The natural candidate, a broad post-crisis recovery, would also have drawn angel investors and ineligible-sector VC into unserved markets, but neither rose significantly (Tables 1 and 2).

5 Did QSBS Tilt Investment in Already-Served Markets?

Our second question is whether, in markets VC already served, investment tilted toward eligible sectors, and whether that tilt was sharpest where venture activity had been thinnest. Section 4 established that QSBS opened new markets to VC funds and that the effect was specific to eligible sectors. The descriptive patterns in Section 3.4 suggest that the shift toward eligible sectors was not confined to new markets. In *Low* and *Medium Prior VC* metros, eligible-sector VC grew in far more metros than ineligible-sector VC, while the hubs grew in both. We test this in two steps, first within metros that already had VC and then across all four tiers relative to *Established Hubs*.

5.1 The Composition Shift Toward Eligible Sectors

We begin by asking whether the reform shifted the sectoral composition of VC activity in metros that were already active before 2009. Table 4 examines this by restricting to CBSAs with any pre-2009 VC activity (*Low Prior VC*, *Medium Prior VC*, and *Established Hubs*) and regressing the fraction of VC-backed firms in QSBS-eligible sectors on a post-reform indicator, with CBSA fixed effects absorbing all time-invariant differences across metros. The within-CBSA shift in the eligible share captures whether VC activity in existing markets tilted toward eligible sectors after the reform, independently of any extensive-margin effects.

PLACE TABLE 4 ABOUT HERE

Column (1) shows that the fraction of VC-backed firm counts in eligible sectors rose by 7.6 percentage points within active metros after the reform, about 13% of its mean (+0.076 relative to a

mean of 0.597), and Column (2) shows a nearly identical shift in the fraction of total capital raised (+0.082 relative to a mean of 0.584), both statistically significant at the 1% level. The result is distinct from the extensive-margin finding in Section 4.1.1: it does not require a metro to have been previously unserved, and it is identified entirely from within-CBSA variation in the sectoral mix of VC activity over time. Together with the entry results, this composition shift is consistent with QSBS tilting VC toward eligible sectors, both by opening new markets and by shifting the mix within existing ones.

5.2 The Tilt Across Metro Tiers

We now ask where within the full metro tier distribution the tilt concentrated, using a broader specification that includes all four tiers and takes *Established Hubs* as the omitted baseline. This allows us to assess whether the composition shift was monotonically decreasing in prior VC intensity — as it should be if the subsidy bites hardest where eligible-sector activity was thinnest and the room to shift toward qualifying sectors greatest — and whether ineligible-sector activity lost ground across the distribution.

Table 5 presents results for firm counts across both extensive-margin outcomes and the eligible-sector composition share. Column (1) shows that, relative to *Established Hubs*, the probability of eligible-sector VC entry rose by about 15 percentage points in *No Prior VC* metros (+0.149 relative to a mean of 0.389) and by a comparable margin in *Low Prior VC* metros (+0.137), with a positive but statistically insignificant effect for *Medium Prior VC* metros — a gradient consistent with the tax subsidy having its largest extensive-margin effect precisely where investors would not otherwise have entered.[19]

PLACE TABLE 5 ABOUT HERE

Column (2) shows the relative decline of ineligible-sector entry. Relative to *Established Hubs*, the probability of ineligible-sector VC entry fell by 17 percentage points in *No Prior VC* metros (−0.172 relative to a mean of 0.151) and by comparable magnitudes in *Low Prior VC* (−0.189) and *Medium Prior VC* (−0.164) metros.[20] This pattern is what a sector-specific subsidy predicts. Unlike the eligible-sector

[19] Results are robust to alternative hub definitions and tier granularity. Tables IA6 to IA8 use the top 15, 5, and 10 metros as the baseline, and Tables IA9 and IA10 use quartile and quintile classifications in place of tertiles. The extensive-margin results are stable across all alternatives, and the ineligible-sector coefficient is stable under the quartile and quintile classifications and attenuates, negative but statistically insignificant, under the top-5 and top-10 baselines.

[20] These estimates do not contradict the placebo null of Table 2. Ineligible activity in underserved metros stayed low after 2009 (Table IA3, Panel B). Against similarly sized served metros, ineligible activity in previously unserved metros was flat, the placebo null; relative to *Established Hubs*, the same low level is a relative shortfall.

gradient in Column (1), the shortfall is similar across the three underserved tiers, separating the hubs from all other markets. For VCs with limited capital and partner time, QSBS raises the opportunity cost of every ineligible deal by raising the after-tax return on eligible ones. The ineligible deals that fail to keep pace are the marginal ones, in thin markets rather than in the hubs' deep deal flow. Prior work ties the cost of such deals to sourcing, monitoring, and the scarcity of local co-investors (Lerner 1995; Sorenson and Stuart 2001). Ineligible deal flow in the hubs is infra-marginal and continued to ride the post-2009 resurgence that lifted both sectors there. Because hubs and underserved metros follow different cyclical trajectories, we read these hub-benchmarked estimates as characterizing *where* the tilt concentrated.

Columns (3) and (4) estimate the intensive margin using Poisson regression on the subsample of CBSAs with positive VC activity; *No Prior VC* metros are absorbed by CBSA fixed effects due to complete separation.[21] Among metros with prior activity, eligible-sector counts also fell short of the hubs (Column (3)), but by less than ineligible-sector counts, which fell by about 34% in *Medium Prior VC* and 45% in *Low Prior VC* metros relative to the hubs (Poisson estimates of −0.421 and −0.590; Column (4)).

Column (5) shows the composition shift in firm counts for active metros. Relative to *Established Hubs*, the fraction of VC-backed firms in QSBS-eligible sectors rose by 13 percentage points in *Low Prior VC* metros, about 22% of its mean (+0.132 relative to a mean of 0.597), and is positive but statistically insignificant for *Medium Prior VC* metros, consistent with the least-served active markets driving the within-metro shift.

The answer to the second question is therefore yes. Within already-served markets, VC activity tilted toward eligible sectors after the reform, and relative to the hubs the tilt was largest where venture activity had been thinnest.[22]

[21] *No Prior VC* metros have no pre-2009 activity by construction, so CBSA fixed effects leave nothing to identify the post indicator (a standard separation problem), removing them from specifications defined only for active metros. Their headline effect (Table 1) is unaffected, and the triple-differences design of Table 3 identifies them without pre-period activity.

[22] Capital flows mirror the firm-count patterns (Table IA11). Relative to *Established Hubs*, the fraction of total capital going to eligible sectors rose by 16 percentage points in *Low Prior VC* metros, about 27% of its mean (+0.158 relative to a mean of 0.584), while ineligible-sector capital fell significantly for *Medium Prior VC* metros (−$17.2 million relative to a mean of $32.9 million). Eligible-sector capital itself grew faster in the hubs, consistent with the subsidy deepening activity where deals were already viable.

6 The Nature of Investment in New Markets

Our third question is whether the firms entering new and underserved markets created real economic value. We take it up in two steps. This section examines how the startups VC backed in new markets performed, how VCs invested in them, and what kinds of startups they were. Section 7 turns to the workers they hired and the local economies around them.

6.1 Firm Quality and Scale

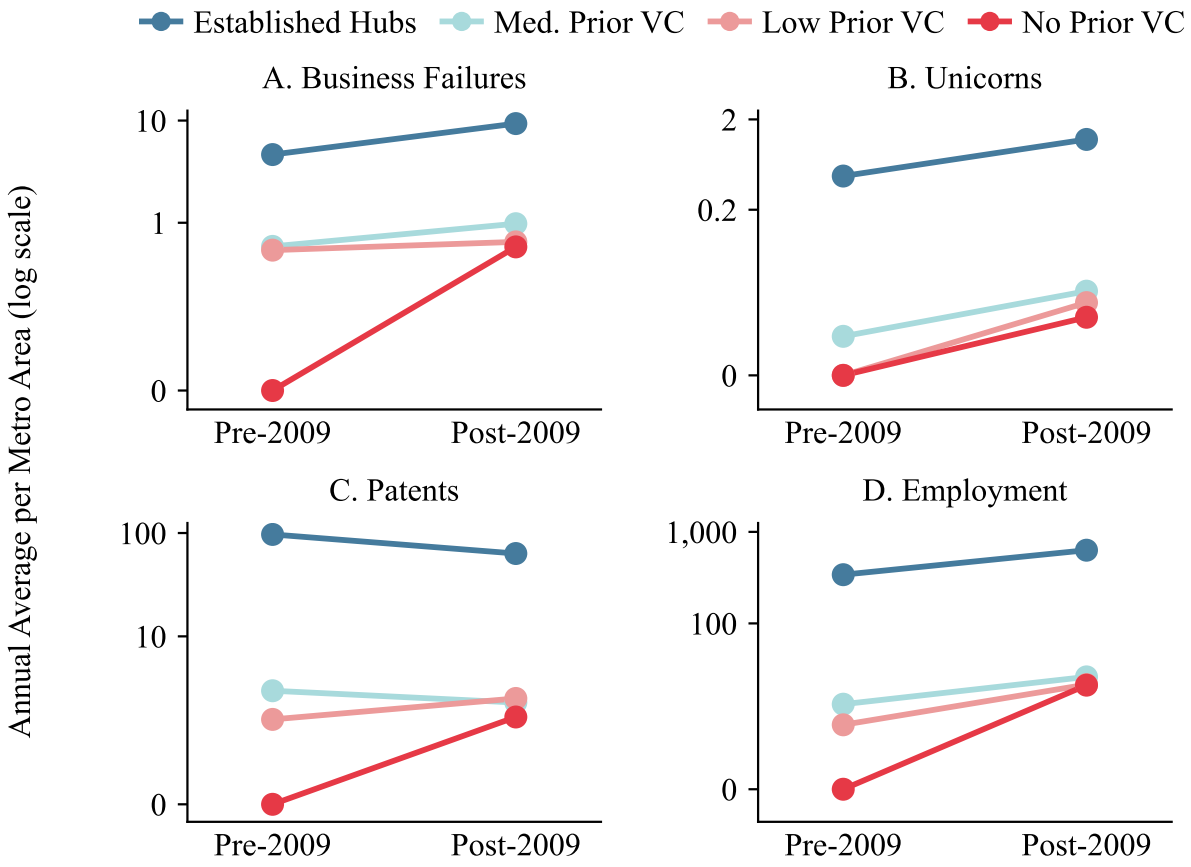
Opening new markets is worth the tax expenditure only if the startups funded there are viable rather than short-lived and low quality.[23] The prior runs in both directions. Markets long bypassed by VC may hold good projects that went unfunded for want of local capital — in which case entering firms should outperform — or may lack the agglomeration economies that sustain firm performance, in which case the subsidy would be propping up weaker firms. We assess firm quality using failure rates and unicorn attainment from PitchBook, patent grants from the USPTO, and employment from Revelio Labs. Each firm is counted once, in its canonical CBSA and entry year. Pre-reform cohorts entered in 2004–2008 and post-reform cohorts in 2009–2017, and all outcomes are observed through 2022. Throughout, we compare *No Prior VC* metros to two benchmarks: other non-hub tiers, whose ecosystems are closest to those of markets receiving their first VC-backed startup, and *Established Hubs*.

The raw outcome rates suggest that firms entering new markets perform in line with those in other non-hub markets and trail *Established Hubs*, most of all in outlier successes. Failure rates in *No Prior VC* metros post-2009 (41%) match those in *Low* and *Medium Prior VC* metros (40% in both) and exceed *Established Hubs* (31%). Unicorn rates are about 1% in all three non-hub tiers, well below *Established Hubs* (4%). Patent rates (26%) fall within the non-hub range (24% to 31%) and modestly below *Established Hubs* (29%). Employment per firm (21 employees) exceeds both non-hub tiers (18 and 15) and trails *Established Hubs* (26) (Table IA12).

Figure 5 plots the same outcomes as annual counts per metro, before and after the reform. Difference-in-differences estimates for the tiers with pre-reform firms support the comparison of rates.

[23] Relatedly, Campello et al. (2026) show that Brazil's cash transfer program raises entry into entrepreneurship while the businesses it induces survive less, grow less, and create fewer jobs than those of comparable founders.

Figure 5: Average Annual Startup Outcomes per Metro Area by Tier: Pre- vs. Post-2009



This figure plots average annual counts of business failures, unicorns, patents, and employment for VC-backed startups in QSBS-eligible sectors, by metro tier, for firms entering before (2004–2008) and after (2009–2017) the QSBS expansion. Outcomes are lifetime realizations observed through 2022. Each point is the period total divided by the number of metro-years with at least one entering startup. Tiers are defined by pre-2009 total VC-backed startup counts. The y-axis uses a symmetric log scale. *No Prior VC* metros had zero activity in all outcomes pre-2009 by construction. Post-2009 patent counts are right-truncated, since later cohorts have had less time to obtain grants. Data from PitchBook, USPTO, and Revelio Labs.

Relative to *Established Hubs*, the coefficients on *Low* and *Medium Prior VC* metros are statistically indistinguishable from zero across all four outcomes, except for a marginally significant *positive* patent-rate coefficient for *Low Prior VC* metros (Table IA13).[24]

On scale, activity in new markets is modest. *No Prior VC* metros produced 218 VC-backed startups post-2009, with 57 patent firms and 3,279 workers, against 12,720 startups in *Established Hubs* (Table IA14). These aggregate counts reflect the reality that building a VC ecosystem from scratch

[24] *No Prior VC* metros are absorbed by CBSA fixed effects in these regressions, so their post-2009 performance is characterized directly by the rates above. Post-2009 firms in newly entered metros and in the hubs entered at about the same time on average (2014.1 versus 2013.7), so observing outcomes only through 2022 affects both groups similarly.

takes time and that our sample period captures only the earliest years of what may be a longer-run process. That said, activity in some underserved markets is already sizable. Lincoln (NE), a first-time market, attracted 21 VC-backed startups employing nearly 900 workers, among them Virtual Incision, a surgical-robotics developer spun out of the University of Nebraska. Chattanooga (TN), a *Low Prior VC* metro, grew from a single pre-2009 firm to 15 firms employing over 400 workers, including Bellhop and FreightWaves. Over time, these early entries may compound into larger venture ecosystems.

Table IA15 reports failure rates by industry. In *No Prior VC* metros, the failure rates of biotech and healthcare startups (29%) and of industrial and manufacturing startups (38%) are close to those in *Established Hubs* (26% and 33%). Technology startups are the exception, failing at 51% against 30% in the hubs. The sector cells are small, however, and we read these comparisons as descriptive.

6.2 Investment Risk-Taking

We examine investment characteristics that proxy for risk-taking in project selection. *Pre-commercial stage* equals one if the portfolio company is in stealth mode, product beta, clinical trials, or has received a grant as its most recent financing. Such investments carry high information asymmetry, long exit timelines, and uncertain commercial viability (Hall and Lerner 2010). *First funding* equals one if the company has no prior backing from any VC, angel, accelerator, corporate, or debt investor at the time of investment. Companies with prior financing have passed through screening and due diligence that reduces risk for subsequent investors (Kerr et al. 2014; Gompers et al. 2020). *Multi-investor* equals one if the initial round involves five or more investors, capturing above-median syndicate size in our sample. Syndication reduces investment risk through risk sharing, information pooling, and social validation (Lerner 1994; Hochberg et al. 2007). The sample is restricted to VC investors in QSBS-eligible sectors between 2004 and 2017, and the specification includes Investor×Industry, Industry×Year, Investor State×Year, and Industry×Firm State fixed effects with standard errors clustered at the investor level. Coefficients on $\mathbb{1}\{\text{Tier} = \tau\}\times\mathbb{1}\{\text{Post}\}$ are measured relative to *Established Hubs* (omitted). For *Low* and *Medium Prior VC* metros they capture differential post-reform changes, while for *No Prior VC* metros they compare the deals through which VCs entered these markets with contemporaneous hub deals.

Columns (1) and (2) of Table IA16 show no differential shift in either broad measure. Pre-

commercial-stage investing, which rose under QSBS overall (Campello and Junqueira 2026), did not rise disproportionately in underserved markets relative to *Established Hubs*, and the first-funding coefficients are small for *No Prior VC* metros and of mixed sign across the other tiers. We take these estimates at face value: the reform did not tilt the type of company backed in new and underserved markets relative to hubs.

In contrast, Column (3) shows that post-reform investments in *No Prior VC* metros were 11.4 percentage points less likely to involve a large, multi-investor syndicate than contemporaneous hub investments. Some of this is mechanical, since a market with no incumbent investors offers few partners to syndicate with. But the scarcity of co-investors is not a confound here. It is part of the cost of entering an unfamiliar market. Entering these markets meant holding a more concentrated position, with less of the risk sharing and certification that a large syndicate provides, a cost the subsidy made worth bearing.

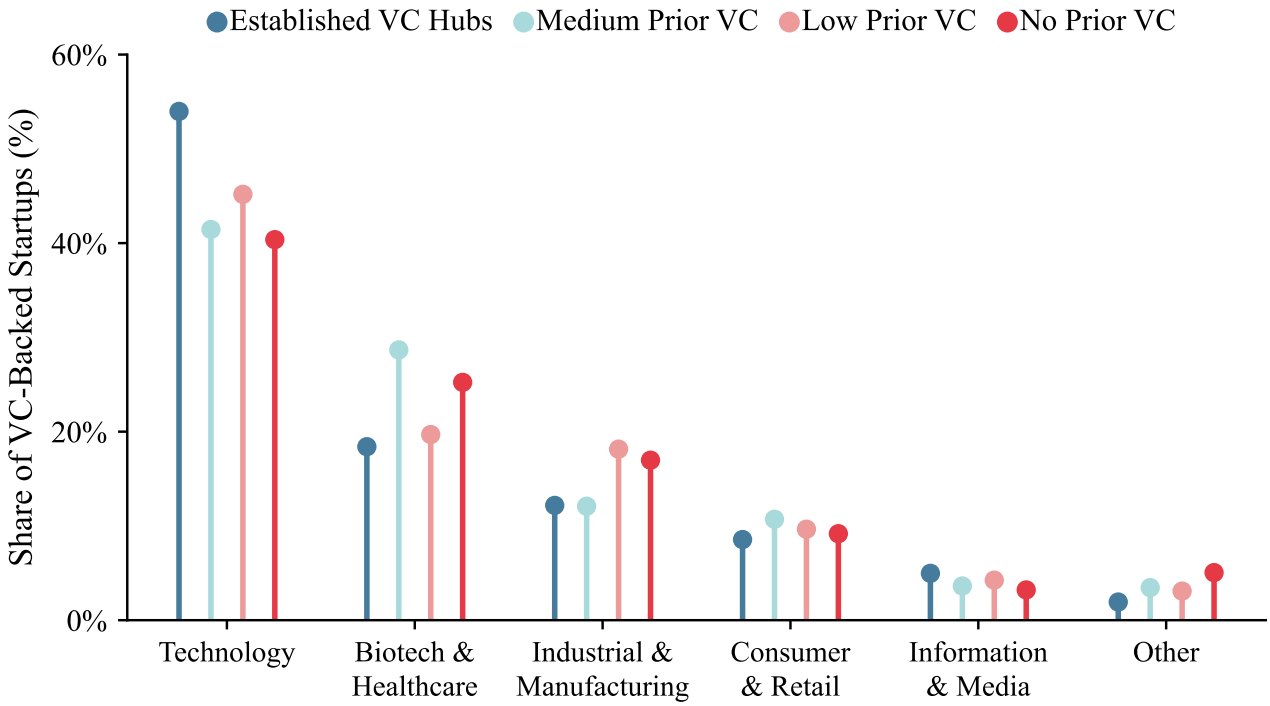
6.3 Industry Composition

Figure 6 shows the share of VC-backed startups in each QSBS-eligible industry by metro tier, post-2009. Technology dominates across all tiers, but its share is lower in previously unserved metros (40%) than in *Established Hubs* (54%), with the difference taken up by Industrial & Manufacturing and Biotech & Healthcare, which together account for 42% of activity in *No Prior VC* metros versus 31% in the hubs.

Table IA17 asks whether these compositional differences are statistically distinguishable, regressing metro-level industry shares on tier indicators and Census-division×year fixed effects, with *Established Hubs* as the omitted tier. Most tier coefficients are statistically indistinguishable from zero, reflecting considerable heterogeneity across metros within tiers. The only difference significant at the 5% level is in Industrial & Manufacturing, where *No Prior VC* metros allocate a 6.6 percentage point larger share than the hubs ($t = 2.16$). With 15 coefficients tested, we treat it as suggestive.

The direction of these differences is consistent with the economic geography of the places being reached — university towns such as Lincoln (NE) and Lafayette (IN), with strong engineering and agricultural research institutions, and mid-sized manufacturing cities such as Greenville (SC) and Fayetteville (AR). But the data support a modest conclusion: entry into new markets was neither a transplant of hub investment patterns nor sharply different in kind. Eligible-sector investment reached new markets

Figure 6: Industry Composition of QSBS-Eligible VC-Backed Startups by Metro Tier (Post-2009)



This figure shows the share of VC-backed startups in QSBS-eligible sectors within each metro tier, post-2009. Shares are computed from the post-2009 firm counts in Table IA15. Each industry has a vertical stem spanning the range across the four tiers; colored dots indicate the share for each tier. Tiers are defined by pre-2009 total VC-backed startup counts: *No Prior VC* = zero pre-2009 VC; *Low Prior VC* = bottom tertile of active metros; *Med. Prior VC* = middle tertile; *Established Hubs* = top tertile. VC investors only. Data from PitchBook.

in roughly the mix found elsewhere, tilted somewhat toward the industrial base of the places it reached.

7 Local Labor-Market and Talent Effects

We conclude our analyses by asking whether the startups formed in previously unserved markets created good jobs, whether skilled workers moved into these regions, and whether the gains reached the broader local economy. We use worker-level data from Revelio Labs, job postings from Lightcast, and county-level income and wage data from the Bureau of Economic Analysis (BEA). Unless noted, comparisons are across tiers for post-2009 cohorts of VC-backed startups in QSBS-eligible sectors, with *Established Hubs* as the benchmark.

7.1 Workforce Composition, Skill, and Retention

Table 6 summarizes the workforce of VC-backed startups by metro tier. Startups in previously unserved metros are technically skilled but somewhat less so than hub startups: scientists and engineers account for 33% of their workforce, versus 40% in *Established Hubs*, with a correspondingly lower software-engineering share. The gap is consistent with the larger industrial and manufacturing share noted in Section 6.3, rather than with weaker workers. The workforce of new-market startups is also more senior and draws less on workers from outside North America (13% of geolocated workers, versus 21% in hubs). Startups in new markets *retain* their workers better: separations per employee are lower than in hubs. Columns (5)–(7) of Table 6 formalize these comparisons: relative to *Established Hubs*, the scientist-and-engineer share is 6.7 percentage points lower in *No Prior VC* metros, while the annual separation rate is 4.5 percentage points lower, off a hub baseline of 27% — both significant at the 1% level.

PLACE TABLE 6 ABOUT HERE

The educational profile of these workers reinforces the picture. Panel A of Table 7 reports degree attainment from Revelio education histories. The share of workers holding a doctorate is comparable across tiers, between 3% and 4% in each, and the advanced-degree share is somewhat lower in *No Prior VC* metros than in *Established Hubs* (20% versus 26%). The largest difference is university pedigree. Workers at new-market startups are half as likely to hold a degree from a top-25 U.S. or top-50 world university (7% versus 14%). Startups in underserved markets thus employ well-credentialed scientific talent, drawn from less elite universities than hub startups.

PLACE TABLE 7 ABOUT HERE

7.2 Worker Compensation

If new-market startups were simply arbitraging cheap labor, they would pay markedly less than their hub counterparts. Panel B of Table 7 reports mean worker pay by tier, measured as the annual salary of each position — an annualized, full-time rate of pay, not an hourly wage or realized earnings — averaged across a firm's positions and then across firms. Startups in *No Prior VC* metros pay essentially

the same as those in *Established Hubs*, about $110,500 per worker per year in both, and a log-salary regression conditioning on Census division and entry year finds them statistically indistinguishable from hubs (−0.6%, $t = -0.2$). Living costs in these metros are lower: BEA regional price parities for 2023 (all items, U.S. = 100), weighted by each metro's post-2009 VC-backed startups, average 95 in the 86 previously unserved metros that received entry, against 111 in *Established Hubs*. Wage *parity* therefore implies higher real pay, so these startups created high-paying jobs.[25]

7.3 Talent Attraction and Worker In-Migration

The most direct test of whether QSBS carried *talent* (not just capital) into new markets is whether the workers who staffed new-market startups relocated to do so, and from where. For each worker's first position at a portfolio company, we identify the metropolitan area of their immediately preceding position from their Revelio career history. Panel C of Table 7 reports the results. Among workers joining startups in *No Prior VC* metros, 38% moved in from a different metropolitan area, slightly *higher* than at hub startups (35%). More than 5% came directly from one of the six coastal hubs (San Francisco, San Jose, New York, Boston, Los Angeles, or Seattle). That flow is smaller than the hub-to-hub flow, but it runs from the established centers into previously unserved regions, against the usual direction of skilled migration. Consistent with the composition evidence, new-market startups drew less on international talent (21% from abroad, versus 32% at hubs), relying instead on domestic and regional labor markets.

7.4 Labor Demand and Local Economies

We finally ask whether these effects register in labor demand and in the broader local economy. Panel D of Table 7 measures labor demand using the volume of online job postings by our portfolio companies (Lightcast).[26] VC-backed startups in *No Prior VC* metros post more jobs per firm-year than those in *Established Hubs* (about 64 versus 42), confirming that the entrants are actively hiring.

Turning to the broader local economy, we use BEA data on each metro's total wages and personal

[25] Revelio Labs salaries are modeled rather than administratively reported, so we interpret levels as relative. The comparison is unchanged under Revelio's broader total-compensation measure, which adds variable pay: startups in *No Prior VC* metros pay 6.7% more than hubs, statistically indistinguishable from zero ($t = 1.3$).

[26] Lightcast posting coverage begins circa 2010, so the comparison for Lightcast is post-reform and cross-tier.

income over 2004–2022 and relate them to the number of eligible-sector startups the metro received in 2009–2017. Among metros that received entry, those that received more saw faster growth in both (Table IA18). A metro that attracted ten startups saw total wages rise about 3% more on average after the reform than a metro that attracted one, and about 6% more by 2022. These metros were not already growing faster before 2009, and the gains appear only after the reform and build through the 2010s (Figure IA3). However, because metros that attracted more startups may also have grown faster for other reasons, we treat this relationship as suggestive.[27]

Taken together, the labor-market evidence completes our answer to the third question. The startups that entered previously unserved markets after the reform created high-wage jobs, staffed them with well-credentialed scientific and technical workers, and kept those workers longer than hub startups did. On this evidence, the reform carried not only capital but also talent and high-paying jobs into regions long outside the venture economy.

8 Concluding Remarks

This paper asks whether a tax subsidy with no requirement on where startups are located can extend VC into markets it had long bypassed, using the 2009–2010 enhancement of the QSBS program. We document three main patterns. First, the reform opened new metropolitan markets to startup investors, and the response came from VC funds rather than angels. Relative to similarly sized metros that already had VC, the probability that a previously unserved metro received eligible-sector VC investment rose by 8 to 10 percentage points, and the effect emerges after the reform date. Against the same similarly sized served metros, ineligible-sector entry did not rise significantly, and angel investors, who receive the same tax benefit, show no comparable expansion. Second, in markets VC already served, investment tilted toward eligible sectors, most sharply where venture activity had been thinnest. Third, the startups entering new and underserved markets created real economic value, though on a modest scale. VCs entered through smaller syndicates and more concentrated positions, consistent with scarce local co-investors, and the firms they backed were no worse than those VC was already backing outside the

[27] The relationship holds when each tier is allowed its own path over time (tier×year fixed effects), so the gradient is identified within tiers.

hubs. They paid about the same as hub startups despite lower living costs, hired well-credentialed scientific and technical workers, some directly from the coastal hubs, and kept them longer.

Two implications follow for tax policy. First, a sufficiently large subsidy can extend VC into markets it had long bypassed, even with no location requirement, by raising the payoff to success enough to make entry worthwhile. Second, the evidence is consistent with the VC organizational structure as the transmission mechanism for these geographic effects. Our results suggest that tax subsidies will have their largest geographic reach when channeled through intermediaries that manage outside capital for performance-based pay. Whether the nascent ecosystems established by QSBS-induced first entry will compound over time into self-sustaining hubs remains an open question, and one with important implications for evaluating the long-run social return to the program.

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Table 1: Did QSBS Open New Markets? VC vs. Angel Investors

Dependent Variable:	$\mathbb{1}\{\text{Any Eligible VC}\}$		$\mathbb{1}\{\text{Any Eligible Angel}\}$	
	(1)	(2)	(3)	(4)
$\mathbb{1}\{\text{No Prior}\} \times \mathbb{1}\{\text{Post}\}$	0.078^{**}	0.096^{***}	-0.003	0.023
	(2.27)	(2.81)	(-0.07)	(0.57)
Observations	5,348	5,348	5,348	5,348
Adjusted R^2	0.66	0.67	0.62	0.62
Mean Dep. Var.	0.283	0.283	0.214	0.214
Population-decile×Year FE	✓	✓	✓	✓
Census Division×Year FE		✓		✓
CBSA FE	✓	✓	✓	✓
Full metro universe (382 CBSAs)	✓	✓	✓	✓
Clustered SE (CBSA)	✓	✓	✓	✓

This table presents estimates of the effect of the 2009 QSBS expansion on the probability that a metropolitan area receives eligible-sector venture-capital investment. The sample is a balanced panel of all 382 U.S. metropolitan areas (CBSAs), 2004–2017. $\mathbb{1}\{\text{No Prior VC}\}$ equals one for metros with no venture activity during 2004–2008 (in the angel columns, no angel activity). Because previously unserved metros are systematically smaller, every specification includes population-decile×year fixed effects, which compare previously unserved metros to served metros of comparable size in the same year; deciles are computed from year-2000 metropolitan population — measured before the sample begins — and held fixed throughout. Columns (2) and (4) add Census-division×year fixed effects, absorbing differential time trends across the nine Census divisions. Columns (1)–(2) use venture-capital investors; Columns (3)–(4) use angel investors. Eligible-sector venture entry into previously unserved metros rises significantly following the reform, whereas angel entry — eligible for the same exclusion — does not, consistent with the incentive operating through the venture-capital organizational form rather than through informal investment. t-statistics based on CBSA-clustered standard errors are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Investment data are from PitchBook; population data are from the Bureau of Economic Analysis.

Table 2: QSBS and Ineligible-Sector VC Entry: A Placebo Test

Dependent Variable:	$\mathbb{1}\{\text{Any Ineligible VC}\}$	
	(1)	(2)
$\mathbb{1}\{\text{No Prior VC}\} \times \mathbb{1}\{\text{Post}\}$	0.027	0.024
	(1.42)	(1.26)
Observations	5,348	5,348
Adjusted R^2	0.62	0.63
Mean Dep. Var.	0.110	0.110
Population-decile×Year FE	✓	✓
Census Division×Year FE		✓
CBSA FE	✓	✓
Full metro universe (382 CBSAs)	✓	✓
Clustered SE (CBSA)	✓	✓

This table reports a placebo test of the market-opening effect of QSBS, using entry by *ineligible*-sector venture capital as the outcome. The sample is a balanced panel of all 382 U.S. metropolitan areas (CBSAs), 2004–2017, and the specification parallels Table 1: metropolitan size is held fixed through population-decile×year fixed effects, and Column (2) adds Census-division×year fixed effects; deciles are computed from year-2000 metropolitan population — measured before the sample begins — and held fixed throughout. Because the exclusion applies only to eligible sectors, a general post-2009 recovery in venture activity would raise ineligible-sector entry as well; instead the estimated effect is small and statistically insignificant under both specifications, while eligible-sector entry rises sharply (Table 1). The contrast localizes the response to the sectors the incentive targets; the accompanying relative decline of ineligible-sector activity in previously active markets is documented in Table 5. *t*-statistics based on CBSA-clustered standard errors are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Investment data are from PitchBook; population data are from the Bureau of Economic Analysis.

Table 3: QSBS and Eligible VC in New Markets: Triple-Differences Estimates

Dependent Variable:	$\mathbb{1}\{\text{Any VC Activity}\}$		
	Pop.-weighted (1)	Common support (25th pctile) (2)	Common support (50th pctile) (3)
$\mathbb{1}\{\text{No Prior VC}\} \times \mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Post}\}$	0.174^{***}	0.112^{**}	0.148^{**}
	(3.30)	(2.02)	(2.31)
Observations	10,696	6,356	4,816
Adjusted R^2	0.86	0.82	0.82
Mean Dep. Var.	0.197	0.308	0.383
CBSA×Sector, CBSA×Year, Sector×Year FE	✓	✓	✓
Clustered SE (CBSA)	✓	✓	✓

This table presents triple-difference estimates of the effect of QSBS on eligible-sector venture-capital entry into previously unserved metropolitan areas. The unit of observation is a CBSA×sector-eligibility×year cell over 2004–2017, and the dependent variable equals one if any venture-backed startup is active in the cell. The reported coefficient is the interaction of *No Prior VC*, sector eligibility, and the post-2009 indicator. CBSA×sector and sector×year fixed effects absorb, respectively, time-invariant differences in the eligible-versus-ineligible mix across metros and national trends in eligible relative to ineligible activity, and CBSA×year fixed effects absorb all metro-level shocks affecting both sectors equally. Identification therefore rests on the post-2009 shift in the eligible-versus-ineligible composition within previously unserved metros relative to served metros. Because previously unserved metros are far smaller than served ones, Column (1) weights by population, requiring no sample restriction. Columns (2) and (3) instead restrict the sample to metros at least as large as the 25th and 50th percentile, respectively, of post-2009 entrants' year-2000 metropolitan population (160,280 and 235,658 residents; 227 and 172 CBSAs), so that comparisons are made within the size range where first entry is empirically observed. *t*-statistics based on CBSA-clustered standard errors are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Investment data are from PitchBook; population data are from the Bureau of Economic Analysis.

Table 4: Did QSBS Shift VC Composition Toward Eligible Sectors?

Dependent Variable:	Fraction Eligible	
	Firm Counts	Capital Raised
	(1)	(2)
$\mathbb{1}\{\text{Post}\}$	0.076^{***}	0.082^{***}
	(3.94)	(4.12)
Observations	2,086	2,086
Adjusted R^2	0.36	0.37
Mean Dep. Var.	0.597	0.584
CBSA FE	✓	✓
Clustered SE (CBSA)	✓	✓

This table estimates whether the fraction of VC activity in QSBS-eligible sectors rose after the 2009 QSBS expansion, among metros with any prior VC activity. Column (1) uses the fraction of VC-backed firm counts in eligible sectors; Column (2) uses the fraction of total capital raised in eligible sectors. CBSA fixed effects absorb all time-invariant differences across metros; the coefficient on $\mathbb{1}\{\text{Post}\}$ captures the within-CBSA shift in the eligible share following the reform. The sample excludes *No Prior VC* metros, whose eligible share is undefined before 2009. *t*-statistics based on CBSA-clustered standard errors in parentheses. *, **, *** at 10%, 5%, 1%. Data from PitchBook.

Table 5: QSBS-Induced VC Growth by Metro Tier: Firm Counts

	Extensive Margin (LPM)		*Intensive Margin (Poisson)*		*Composition*
Dependent Variable:	$\mathbb{1}\{\text{Any Elig. VC}\}$	$\mathbb{1}\{\text{Any Inelig. VC}\}$	Elig. Firms	Inelig. Firms	Frac. Eligible
	(1)	(2)	(3)	(4)	(5)
$\mathbb{1}\{\text{No Prior VC}\} \times \mathbb{1}\{\text{Post}\}$	0.149^{***}	-0.172^{***}	—	—	—
	(5.73)	(−4.28)			
$\mathbb{1}\{\text{Low Prior VC}\} \times \mathbb{1}\{\text{Post}\}$	0.137^{***}	-0.189^{***}	-0.379^{***}	-0.590^{***}	0.132^{***}
	(3.33)	(−4.50)	(−3.88)	(−3.20)	(3.49)
$\mathbb{1}\{\text{Med. Prior VC}\} \times \mathbb{1}\{\text{Post}\}$	0.064	-0.164^{***}	-0.356^{***}	-0.421^{***}	0.069
	(1.30)	(−3.25)	(−2.97)	(−3.07)	(1.46)
Observations	3,892	3,892	1,472	537	2,086
Mean Dep. Var.	0.389	0.151	18.61	4.92	0.597
CBSA FE	✓	✓	✓	✓	✓
Census Division×Year FE	✓	✓	✓	✓	✓
Clustered SE (CBSA)	✓	✓	✓	✓	✓

This table presents estimates of where QSBS-induced VC growth concentrated, using tier×post interactions with Established Hubs (top tertile) as the omitted category. Tiers are defined by pre-2009 total VC activity, and $\mathbb{1}\{\text{No Prior VC}\}$ equals one for metros with no VC activity during 2004–2008. Columns (1)–(2) report linear-probability estimates for the extensive margin on a balanced CBSA-year panel, 2004–2017, comprising all metros with prior VC activity together with previously unserved metros at least as large as the 25th-percentile post-2009 entrant (278 CBSAs); this common-support restriction addresses the size differential between unserved metros and the hub baseline. Columns (3)–(4) report Poisson QMLE estimates for firm counts on the subsample of CBSA-years with positive activity; *No Prior VC* metros are absorbed by the CBSA fixed effects due to separation. Column (5) reports OLS estimates for the fraction of funded startups in eligible sectors, restricted to metros with prior VC activity, since the eligible share is undefined where there is no prior activity. The negative coefficients in Column (2) indicate that ineligible-sector VC in underserved metros failed to keep pace with its hub trajectory, consistent with a compositional tilt toward eligible sectors. t-statistics based on CBSA-clustered standard errors are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Data are from PitchBook.

Table 6: Scientific & Technical Talent of VC-Backed Startups by Metro Tier (Post-2009)

Measure	*Tier Means*				*Difference vs. Established Hubs*		
	No Prior VC	Low Prior VC	Medium Prior VC	Established Hubs	No Prior VC	Low Prior VC	Medium Prior VC
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Employees/Firm	21	18	15	26	−2.15	−7.42**	−9.34***
Sci+Eng Share (%)	32.5	40.6	39.5	39.7	−6.69***	1.49	1.08
Scientist Share (%)	5.4	9.2	9.0	7.2	−3.05**	1.84	1.34
Engineer Share (%)	27.2	31.4	30.4	32.5	−3.64**	−0.35	−0.26
Software-Eng Share (%)	10.6	11.2	10.8	13.7	−2.04	−1.87*	−1.79**
Foreign-Origin Share (%)	13.2	12.3	17.5	21.2	−3.57	−5.41	−0.34
Senior Share (%)	36.3	34.9	34.9	32.2	3.19	1.78	1.62
Hires/Firm/Yr	7.2	6.9	5.4	9.9	−1.55	−2.21*	−3.27***
Ann. Separation Rate (%)	21.3	24.2	23.1	27.0	−4.51***	−1.56	−2.65***
N firms	158	192	426	10,474	—	—	—

This table characterizes the workforce of VC-backed startups in QSBS-eligible sectors, by metro tier. The sample comprises post-2009 entry cohorts (2009–2017), observed through 2022, restricted to firms with positive measured headcount in Revelio Labs. Columns (1)–(4) report tier means. Columns (5)–(7) report coefficients from firm-level regressions of each measure on tier indicators and Census-division fixed effects, with *Established Hubs* as the omitted category; statistical significance is assessed using standard errors clustered by CBSA. *Scientist*, *Engineer*, and *Senior* shares are mean headcount in each category divided by mean total headcount. *Foreign-Origin Share* is the mean share of geolocated workers originating outside North America. *Hires/Firm/Yr* is mean annual gross hires. The *Annual Separation Rate* is departures per year as a percentage of headcount, an inverse measure of worker retention. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Data are from Revelio Labs and PitchBook.

Table 7: Worker Education, Compensation, Geographic Origins, and Labor Demand by Metro Tier

Panel A: Educational Attainment

Firm's metro tier	Workers	PhD (%)	Advanced (%)	Elite Univ. (%)
No Prior VC	28,329	3.1	19.9	7.0
Low Prior VC	36,649	3.4	23.8	8.6
Medium Prior VC	67,599	3.8	22.2	7.5
Established Hubs	3,476,974	3.7	26.0	13.5

Panel B: Worker Compensation

Firm's metro tier	Firms	Avg. Salary ($)	Engineer ($)	Scientist ($)
No Prior VC	153	110,493	108,696	98,456
Low Prior VC	201	106,920	103,726	95,232
Medium Prior VC	431	105,884	102,725	100,205
Established Hubs	10,612	110,503	113,642	105,822

Panel C: Where New Hires Came From

Firm's metro tier	Arrivals w/ prior job	Moved-in (%)	From a hub (%)	From abroad (%)
No Prior VC	26,644	38.0	5.5	21.4
Low Prior VC	31,880	38.4	7.2	16.8
Medium Prior VC	54,736	35.2	5.7	18.3
Established Hubs	2,539,910	35.1	8.8	32.0

Panel D: Labor Demand (Online Job Postings, 2010–2022)

Firm's metro tier	Firms	Firm-Yrs	Postings	Postings/Firm-Yr
No Prior VC	68	224	14,215	63.5
Low Prior VC	125	466	12,129	26.0
Medium Prior VC	235	808	17,438	21.6
Established Hubs	6,698	28,045	1,184,610	42.2

This table characterizes the workers employed by VC-backed startups in QSBS-eligible sectors, and those startups' hiring activity, by metro tier. Panels A and D cover startups that entered in 2004–2017, and Panels B and C cover startups that entered in 2009–2017. *Panel A* reports the highest degree attained, from Revelio Labs education histories: *PhD* comprises doctoral degrees, *Advanced* comprises Master's and doctoral degrees, and *Elite Univ.* indicates a degree from a top-25 U.S. or top-50 world-ranked university. *Panel B* reports mean modeled annual salary across all salaried positions at firms with at least three such positions in Revelio Labs; a log-salary regression on tier indicators with Census-division and entry-year fixed effects (standard errors clustered by CBSA) finds that startups in *No Prior VC* metros pay statistically indistinguishably from those in *Established Hubs* (-0.6%, $t = -0.2$), despite substantially lower local costs of living; salaries are modeled rather than administratively reported, so levels are best interpreted in relative terms. *Panel C* traces the geographic origins of new hires: for each worker's first position at a portfolio company, the metropolitan area of the immediately preceding position is identified from Revelio Labs employment histories; *Moved-in* indicates a prior position in a different metropolitan area, *From a hub* a prior position in San Francisco, San Jose, New York, Boston, Los Angeles, or Seattle, and *From abroad* a prior position outside the United States. *Panel D* reports online job-posting activity at these startups over 2010–2022; because Lightcast posting coverage begins around 2010, no pre-reform baseline is available and the comparison is cross-tier within the post-reform period, with *Firm-Yrs* the number of firm-years with posting activity in Lightcast and *Postings/Firm-Yr* equal to Postings divided by Firm-Yrs. Data are from Revelio Labs, Lightcast, and PitchBook.

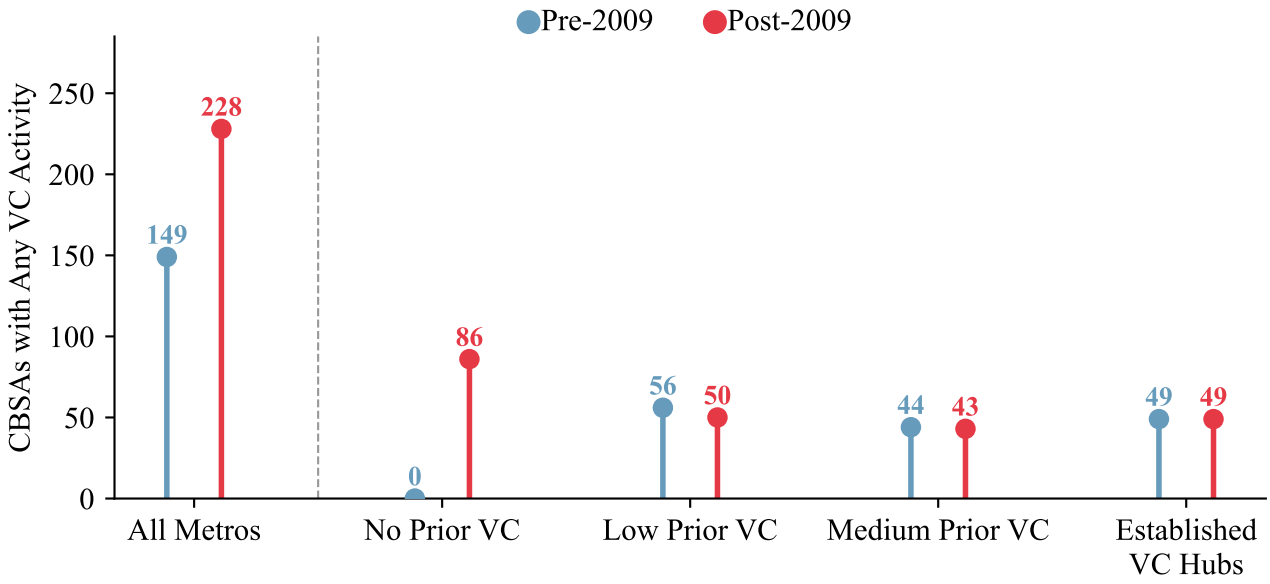
Internet Appendix to

"Democratizing Venture Capital: Tax Incentives and the Geographic Expansion of Startup Investing"

Murillo Campello
University of Florida & NBER

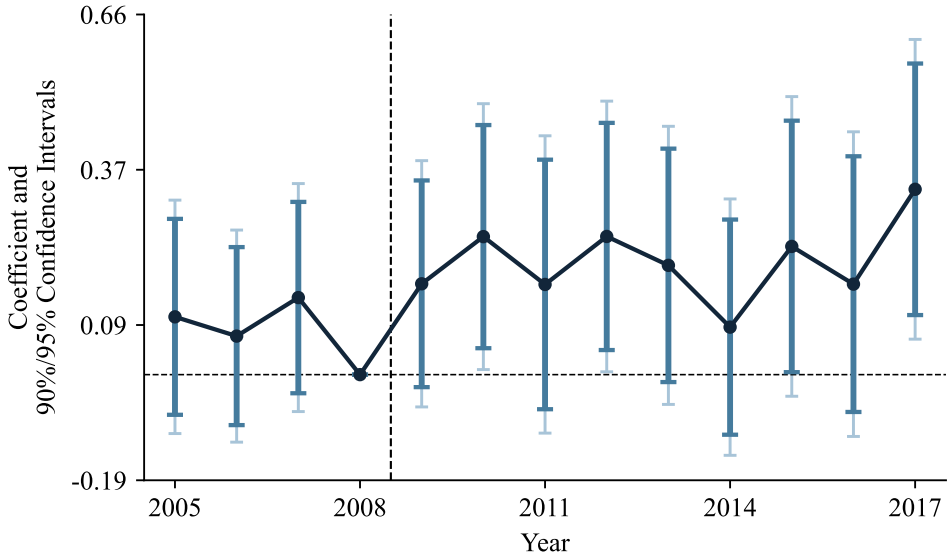
Guilherme Junqueira
University of Florida

Figure IA1: Number of U.S. Metro Areas with VC Activity: Pre- vs. Post-2009



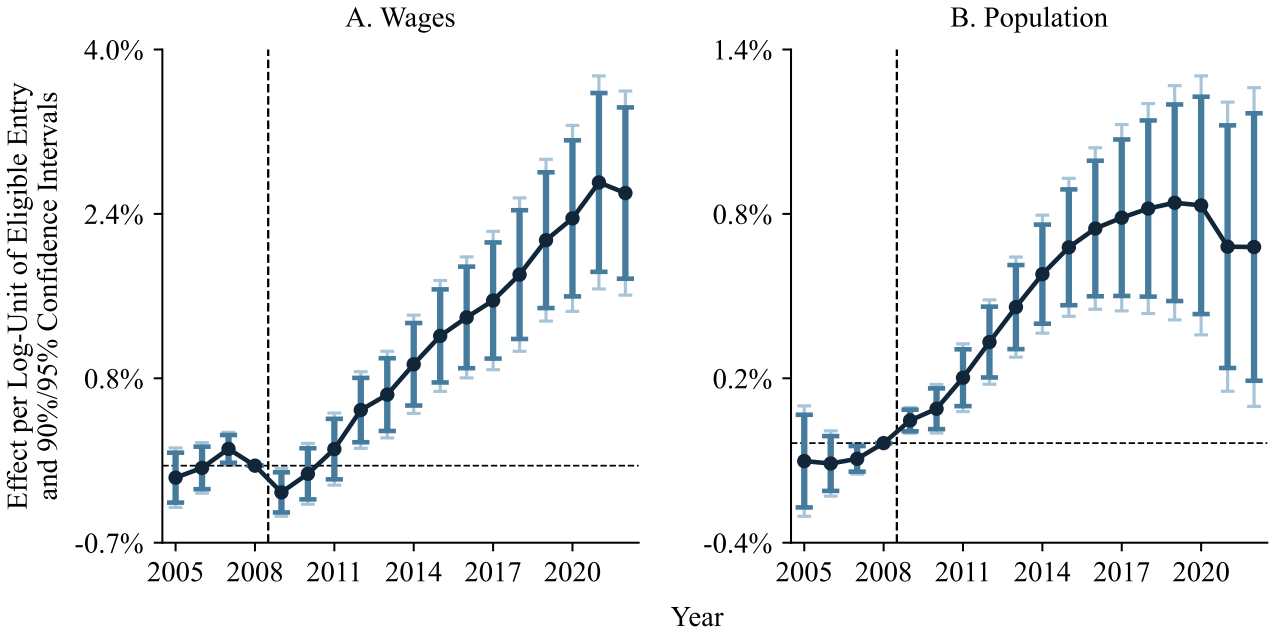
This figure shows the number of U.S. metro areas (CBSAs) with at least one VC-backed firm, before and after the 2009 QSBS expansion, overall and by metro tier. A CBSA is counted if it had VC activity in at least one year of the relevant period (Pre-2009 = 2004–2008; Post-2009 = 2009–2017). Tiers are defined by pre-2009 total VC-backed startup counts: *No Prior VC* = zero pre-2009 VC activity; *Low Prior VC* = bottom tertile of active metros; *Medium Prior VC* = middle tertile; *Established Hubs* = top tertile. VC investors only. Data from PitchBook.

Figure IA2: Triple-Differences Event Study: Common-Support Sample



This figure replicates the triple-differences event study of Figure 4 on the common-support sample of Column (3) of Table 3, restricting to metros at least as large as the median post-2009 entrant; 2008 is the omitted baseline year, and 90% (darker) and 95% (lighter) confidence intervals are based on CBSA-clustered standard errors. A joint test that all pre-2009 coefficients equal zero gives $p = 0.48$; the corresponding test on the 25th-percentile common-support sample of Column (2) gives $p = 0.66$. Data are from PitchBook.

Figure IA3: Local Wages and Population by VC Dose: Event Study



This figure plots dynamic dose-response estimates of local economic outcomes. Each point is the coefficient on log(total post-2009 eligible-sector VC-backed startups) $\times$ $\mathbb{1}\{\text{year} = t\}$, defined for entrant metros, from a regression of the log CBSA outcome — wages and salaries (Panel A) and population (Panel B) — on the full set of intensity×year interactions, with Any-Entry×year indicators absorbing the extensive margin and CBSA and Census-division×year fixed effects; 2008 is the omitted baseline. Bars denote 90% (darker) and 95% (lighter) confidence intervals based on CBSA-clustered standard errors. Outcomes are BEA county data (CAINC30) aggregated to CBSAs, 2004–2022, for the 233 metros with VC activity at some point during 2004–2017 that match to the BEA county aggregates — 86 *No Prior VC* entrants, 54 *Low*, 44 *Medium Prior VC*, and 49 *Established Hubs*. The average post-period effect in Panel A corresponds to the intensive-margin wage estimate in Panel A of Table IA18. Data are from BEA and PitchBook.

Table IA1: Robustness: Extensive-Margin Estimates Across Alternative Specifications and Samples

Specification and sample	Coef.	(t)
Baseline: all metros, population-decile×year FE	0.078**	(2.27)
+ log(Population)×Post control	0.075**	(2.20)
All metros, log(Population)×Post control	0.074**	(2.19)
All metros, population-weighted	0.071**	(2.33)
All metros, common support	0.077***	(2.66)
Metros with any VC activity, 2004–2017	0.155***	(4.70)

This table examines the sensitivity of the extensive-margin entry result to the specification of the size control and the definition of the estimation sample. The dependent variable is an indicator for any eligible-sector VC activity in a CBSA-year, and the reported coefficient is on $\mathbb{1}\{\text{No Prior VC}\} \times \mathbb{1}\{\text{Post}\}$, where $\mathbb{1}\{\text{No Prior VC}\}$ equals one for CBSAs with zero total VC activity during 2004–2008. The first row reproduces the baseline specification of Table 1, Column (1): CBSA and population-decile×year fixed effects; deciles are computed from year-2000 metropolitan population — measured before the sample begins — and held fixed throughout. The second row adds a log(Population)×Post control to the baseline; the estimate is essentially unchanged, confirming that the coefficient of interest does not depend on the parametric control. The remaining rows include CBSA and Census-division×year fixed effects and address the size differential through, respectively, a continuous log(Population)×Post control, population weighting, and a common-support restriction that drops previously unserved metros smaller than the 25th-percentile post-2009 entrant (278 CBSAs). The final row restricts the sample to metros with VC activity at some point during 2004–2017 (235 CBSAs); because this restriction conditions on post-2009 outcomes, it mechanically inflates the estimated effect. A wild-cluster restricted bootstrap (Rademacher weights, 1,999 replications, null imposed) yields $p = 0.005$ for the common-support specification, corroborating the cluster-robust inference. t-statistics based on CBSA-clustered standard errors are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Investment data are from PitchBook; population data are from the Bureau of Economic Analysis.

Table IA2: Robustness: No Prior VC Extensive Margin Across Alternative Tier Classifications

Classification (baseline omitted)	$\mathbb{1}\{\text{Any Elig. VC}\}$		$\mathbb{1}\{\text{Any Inelig. VC}\}$	
	Common supp. (1)	Pop.-wtd. (2)	Common supp. (3)	Pop.-wtd. (4)
Tertile	0.144^{***}	0.129^{***}	-0.161^{***}	-0.139^{***}
Top 5	0.198^{***}	0.166^{***}	-0.042	-0.058
Top 10	0.180^{***}	0.175^{***}	-0.065	-0.077
Top 15	0.168^{***}	0.154^{***}	-0.100^{*}	-0.105^{***}
Quartile	0.166^{***}	0.145^{***}	-0.142^{***}	-0.135^{***}
Quintile	0.165^{***}	0.142^{***}	-0.184^{***}	-0.138^{***}

This table reports the No Prior VC × Post extensive-margin coefficient under alternative definitions of the metropolitan tiers, with the top group in each scheme (top tertile, top 5, top 10, top 15, top quartile, or top quintile) as the omitted category. Columns (1)–(2) use an indicator for any eligible-sector VC; Columns (3)–(4) use any ineligible-sector VC. "Common supp." drops previously unserved metros smaller than the 25th-percentile post-2009 entrant (278 CBSAs). "Pop.-wtd." weights the full 382-metro sample by population. Because previously unserved metros and established hubs occupy largely disjoint size ranges, metropolitan size is controlled through the sample restriction and weighting rather than a continuous term. Tier boundaries are reconstructed from pre-2009 activity within each scheme, so the tertile row may differ slightly from the corresponding main-text estimates. Statistical significance is assessed using CBSA-clustered standard errors. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Data are from PitchBook.

Table IA3: Metro Area VC Activity by Tier: Pre- vs. Post-2009

Panel A: Eligible-Sector VC Activity

	Any Eligible VC		Avg. Firms Funded		Avg. Raised ($M, cond.)	
Tier	Pre-2009	Post-2009	Pre-2009	Post-2009	Pre-2009	Post-2009
No Prior VC	—	0.233	—	0.34	—	4.6
Low Prior VC	0.229	0.377	0.24	0.69	5.9	7.1
Medium Prior VC	0.618	0.689	0.97	1.97	8.4	11.4
Established Hubs	0.963	0.986	21.49	46.48	204.3	325.2

Panel B: Ineligible-Sector VC Activity

	Any Ineligible VC		Avg. Firms Funded		Avg. Raised ($M, cond.)	
Tier	Pre-2009	Post-2009	Pre-2009	Post-2009	Pre-2009	Post-2009
No Prior VC	—	0.048	—	0.05	—	6.1
Low Prior VC	0.039	0.042	0.04	0.05	4.7	3.5
Medium Prior VC	0.114	0.146	0.11	0.16	8.8	3.6
Established Hubs	0.518	0.705	1.61	4.87	24.5	44.8

This table presents descriptive statistics for VC activity by metro tier before and after the 2009 QSBS expansion. The sample is a balanced CBSA-year panel, 2004–2017, VC investors only. Tiers are defined by pre-2009 *total* VC activity (eligible and ineligible combined): *No Prior VC* = zero total VC pre-2009; *Low/Medium Prior VC* = bottom/middle tertile of metros with any prior VC; *Established Hubs* = top tertile. *Any Eligible (Ineligible) VC* is the fraction of CBSA-years with at least one VC-backed startup in a QSBS-eligible (ineligible) sector. *Avg. Firms Funded* is the mean count of newly funded startups per CBSA-year. *Avg. Raised ($M, cond.)* is the conditional mean of capital raised (among CBSA-years with positive reported capital) in millions USD. Pre-2009 = 2004–2008; Post-2009 = 2009–2017. Post-2009 statistics for the *No Prior VC* tier are computed over the 86 metros that received their first VC-backed startup after 2009. "—" indicates zero activity in that period by construction. Data are from PitchBook.

Table IA4: Hold-Out Definitions of Unserved Markets and Placebo Reform Dates

	Unserved defined on	Estimation window	(1)	(2)
Placebo reform 2006	2000–2003	2004–2008	−0.064	−0.016
			(−1.04)	(−0.28)
Placebo reform 2007	2000–2003	2004–2008	−0.032	0.013
			(−0.56)	(0.23)
QSBS reform 2009	2000–2008	2004–2017	0.059*	0.078**
			(1.78)	(2.36)
Population-decile×Year FE, CBSA FE			✓	✓
Census Division×Year FE				✓

This table implements the hold-out exercise: unserved status is redefined on data that predate the estimation sample, and the analysis is rerun with reform dates placed inside the pre-reform period. Extending the investment-level data back to 2000, *No Prior VC* is redefined as zero VC-backed startup entries during 2000–2003 (first two rows; 294 metros) or during the full 2000–2008 pre-reform window (final row; 224 metros). Because these years predate the sample construction of the main analysis, the panel is built directly from first financings of U.S. VC-backed startups over 2000–2017; the dependent variable is an indicator for any eligible-sector VC entry in a CBSA-year, and the reported coefficient is on $\mathbb{1}\{\text{Unserved}\} \times \mathbb{1}\{\text{Post}\}$, where Post begins in the year shown. All specifications include CBSA and population-decile×year fixed effects, with deciles computed from year-2000 metropolitan population; Column (2) adds Census-division×year fixed effects, as in Table 1. Because the 2000–2003 definition window is disjoint from the estimation sample, a constant rate of sporadic re-entry is absorbed by the CBSA fixed effects, so the placebo rows isolate precisely the accelerating diffusion that a secular-trends account implies; both placebo estimates are statistically indistinguishable from zero, while the actual 2009 reform — with unserved status defined over the full pre-reform window — yields a positive and significant estimate. In a dynamic version with event-time indicators (2008 omitted), a joint test that all pre-2009 coefficients equal zero gives $p = 0.51$. t-statistics based on CBSA-clustered standard errors are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Investment data are from PitchBook; population data are from the Bureau of Economic Analysis.

Table IA5: QSBS and Eligible VC in New Markets: Triple-Difference (Excluding 2009)

	Pop.-weighted (1)	Common support (25th pctile) (2)	Common support (50th pctile) (3)
$\mathbb{1}\{\text{No Prior VC}\} \times \mathbb{1}\{\text{Eligible}\} \times \mathbb{1}\{\text{Post}\}$	0.182^{***}	0.112^{*}	0.153^{**}
	(3.28)	(1.91)	(2.27)
Observations	9,932	5,902	4,472
CBSA×Sector, CBSA×Year, Sector×Year FE	✓	✓	✓

This table reproduces the triple-difference estimates in Table 3 for a sample that omits the reform year 2009 (a "donut" specification), under the population-weighted sample and the two common-support samples of that table. *t*-statistics based on CBSA-clustered standard errors are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Investment data are from PitchBook; population data are from the Bureau of Economic Analysis.

Table IA6: Robustness: Top 15 Metros vs. Others

Panel A: Firm Counts			
Dependent Variable:	𝟙{Any Elig. VC}	𝟙{Any Inelig. VC}	Frac. Eligible
	(1)	(2)	(3)
𝟙{No Prior VC} × 𝟙{Post}	0.250***	−0.089*	—
	(8.06)	(−1.72)	
𝟙{Other Active Metros} × 𝟙{Post}	0.104***	−0.057	0.087***
	(4.10)	(−1.09)	(3.26)
Observations	3,290	3,290	2,086
Mean Dep. Var.	0.460	0.179	0.597
Panel B: Capital			
Dependent Variable:	Elig. Capital (Log)	Inelig. Capital (Log)	Frac. Eligible ($)
	(4)	(5)	(6)
𝟙{No Prior VC} × 𝟙{Post}	—	—	—
𝟙{Other Active Metros} × 𝟙{Post}	−0.299*	−0.520	0.108***
	(−1.67)	(−1.34)	(3.46)
Observations	1,427	520	2,086
Mean Dep. Var.	2.5	2.0	0.584
CBSA FE	✓	✓	✓
Census Division×Year FE	✓	✓	✓
Clustered SE (CBSA)	✓	✓	✓

This table replicates the main tier analysis of Tables 5 and IA11 using the top 15 metros by pre-2009 VC activity as the omitted baseline, with all remaining active metros grouped as *Other Active Metros*. The extensive-margin sample comprises metros with any 2004–2017 VC activity (235 CBSAs), and thus differs from the 278-CBSA common-support sample of Table 5. *Panel A* reports firm count outcomes; *Panel B* reports capital outcomes. Fraction eligible columns restricted to metros with prior VC activity. No Prior VC metros are excluded from capital regressions due to separation (see footnote 21). *t*-statistics based on CBSA-clustered standard errors in parentheses. *, **, *** at 10%, 5%, 1%. Data from PitchBook.

Table IA7: Robustness: Top 5 Metros vs. Others

Panel A: Firm Counts			
Dependent Variable:	𝟙{Any Elig. VC}	𝟙{Any Inelig. VC}	Frac. Eligible
	(1)	(2)	(3)
𝟙{No Prior VC} × 𝟙{Post}	0.273***	−0.030	—
	(7.32)	(−0.66)	
𝟙{Other Active Metros} × 𝟙{Post}	0.120***	0.007	0.102***
	(3.86)	(0.15)	(2.61)
Observations	3,290	3,290	2,086
Mean Dep. Var.	0.460	0.179	0.597
Panel B: Capital			
Dependent Variable:	Elig. Capital (Log)	Inelig. Capital (Log)	Frac. Eligible ($)
	(4)	(5)	(6)
𝟙{No Prior VC} × 𝟙{Post}	—	—	—
𝟙{Other Active Metros} × 𝟙{Post}	−0.729***	−0.371	0.104**
	(−3.24)	(−0.91)	(2.50)
Observations	1,427	520	2,086
Mean Dep. Var.	2.5	2.0	0.584
CBSA FE	✓	✓	✓
Census Division×Year FE	✓	✓	✓
Clustered SE (CBSA)	✓	✓	✓

This table replicates the main tier analysis classifying the top 5 metros by pre-2009 VC activity as Established Hubs (omitted baseline), with all remaining active metros grouped as Other Active Metros. The extensive-margin sample comprises metros with any 2004–2017 VC activity (235 CBSAs). *Panel A* reports firm count outcomes; *Panel B* reports capital outcomes. Fraction eligible columns restricted to metros with prior VC activity. *No Prior VC* metros are excluded from capital regressions due to separation. *t*-statistics based on CBSA-clustered standard errors in parentheses. *, **, *** at 10%, 5%, 1%. Data from PitchBook.

Table IA8: Robustness: Top 10 Metros vs. Others

Panel A: Firm Counts			
Dependent Variable:	𝟙{Any Elig. VC}	𝟙{Any Inelig. VC}	Frac. Eligible
	(1)	(2)	(3)
𝟙{No Prior VC} × 𝟙{Post}	0.260***	−0.054	—
	(7.66)	(−1.12)	
𝟙{Other Active Metros} × 𝟙{Post}	0.111***	−0.018	0.084***
	(3.97)	(−0.37)	(2.67)
Observations	3,290	3,290	2,086
Mean Dep. Var.	0.460	0.179	0.597
Panel B: Capital			
Dependent Variable:	Elig. Capital (Log)	Inelig. Capital (Log)	Frac. Eligible ($)
	(4)	(5)	(6)
𝟙{No Prior VC} × 𝟙{Post}	—	—	—
𝟙{Other Active Metros} × 𝟙{Post}	−0.420**	−0.228	0.094***
	(−2.03)	(−0.42)	(2.77)
Observations	1,427	520	2,086
Mean Dep. Var.	2.5	2.0	0.584
CBSA FE	✓	✓	✓
Census Division×Year FE	✓	✓	✓
Clustered SE (CBSA)	✓	✓	✓

This table replicates the main tier analysis classifying the top 10 metros by pre-2009 VC activity as Established Hubs (omitted baseline), with all remaining active metros grouped as Other Active Metros. The extensive-margin sample comprises metros with any 2004–2017 VC activity (235 CBSAs). *Panel A* reports firm count outcomes; *Panel B* reports capital outcomes. Fraction eligible columns restricted to metros with prior VC activity. *No Prior VC* metros are excluded from capital regressions due to separation. *t*-statistics based on CBSA-clustered standard errors in parentheses. *, **, *** at 10%, 5%, 1%. Data from PitchBook.

Table IA9: Robustness: Quartile Tier Classification

Panel A: Firm Counts			
Dependent Variable:	𝟙{Any Elig. VC}	𝟙{Any Inelig. VC}	Frac. Eligible
	(1)	(2)	(3)
𝟙{No Prior VC} × 𝟙{Post}	0.235***	−0.141***	—
	(8.46)	(−2.95)	
𝟙{Q1} × 𝟙{Post}	0.144***	−0.171***	0.126***
	(3.76)	(−3.54)	(3.27)
𝟙{Q2} × 𝟙{Post}	0.041	−0.145**	0.013
	(0.60)	(−2.47)	(0.19)
𝟙{Q3} × 𝟙{Post}	0.081**	−0.071	0.064
	(1.99)	(−1.10)	(1.46)
Observations	3,290	3,290	2,086
Mean Dep. Var.	0.460	0.179	0.597
Panel B: Capital			
Dependent Variable:	Elig. Capital (Log)	Inelig. Capital (Log)	Frac. Eligible ($)
	(4)	(5)	(6)
𝟙{No Prior VC} × 𝟙{Post}	—	—	—
𝟙{Q1} × 𝟙{Post}	−0.519**	0.152	0.156***
	(−2.46)	(0.20)	(3.87)
𝟙{Q2} × 𝟙{Post}	0.075	0.058	0.001
	(0.25)	(0.08)	(0.01)
𝟙{Q3} × 𝟙{Post}	−0.412*	−0.673	0.087**
	(−1.92)	(−1.44)	(1.99)
Observations	1,427	520	2,086
Mean Dep. Var.	2.5	2.0	0.584
CBSA FE	✓	✓	✓
Census Division×Year FE	✓	✓	✓
Clustered SE (CBSA)	✓	✓	✓

This table replicates the main tier analysis using quartiles instead of tertiles to classify metros with prior VC activity. Established Hubs (Q4, top quartile) is the omitted baseline. The extensive-margin sample comprises metros with any 2004–2017 VC activity (235 CBSAs). *Panel A* reports firm count outcomes; *Panel B* reports capital outcomes. Fraction eligible columns restricted to metros with prior VC activity. *No Prior VC* metros are excluded from capital regressions due to separation. t-statistics based on CBSA-clustered standard errors in parentheses. *, **, *** at 10%, 5%, 1%. Data from PitchBook.

Table IA10: Robustness: Quintile Tier Classification

Panel A: Firm Counts			
Dependent Variable:	𝟙{Any Elig. VC} (1)	𝟙{Any Inelig. VC} (2)	Frac. Eligible (3)
𝟙{No Prior VC} × 𝟙{Post}	0.242***	−0.156***	—
	(8.93)	(−3.44)	
𝟙{Q1} × 𝟙{Post}	0.118**	−0.170***	0.104**
	(2.26)	(−3.59)	(2.01)
𝟙{Q2} × 𝟙{Post}	0.128***	−0.203***	0.111**
	(2.70)	(−4.01)	(2.36)
𝟙{Q3} × 𝟙{Post}	0.166***	−0.161**	0.167***
	(2.73)	(−2.59)	(2.79)
𝟙{Q4} × 𝟙{Post}	0.019	−0.038	−0.005
	(0.56)	(−0.55)	(−0.13)
Observations	3,290	3,290	2,086
Mean Dep. Var.	0.460	0.179	0.597
Panel B: Capital			
Dependent Variable:	Elig. Capital (Log) (4)	Inelig. Capital (Log) (5)	Frac. Eligible ($) (6)
𝟙{No Prior VC} × 𝟙{Post}	—	—	—
𝟙{Q1} × 𝟙{Post}	−0.977**	0.531	0.129**
	(−2.60)	(0.89)	(2.42)
𝟙{Q2} × 𝟙{Post}	−0.344	−0.421	0.113**
	(−1.35)	(−0.64)	(2.17)
𝟙{Q3} × 𝟙{Post}	−0.162	−0.909	0.177***
	(−0.58)	(−1.47)	(2.74)
𝟙{Q4} × 𝟙{Post}	−0.310	−0.442	0.006
	(−1.41)	(−0.98)	(0.16)
Observations	1,427	520	2,086
Mean Dep. Var.	2.5	2.0	0.584
CBSA FE	✓	✓	✓
Census Division×Year FE	✓	✓	✓
Clustered SE (CBSA)	✓	✓	✓

This table replicates the main tier analysis using quintiles instead of tertiles to classify metros with prior VC activity. Established Hubs (Q5, top quintile) is the omitted baseline. The extensive-margin sample comprises metros with any 2004–2017 VC activity (235 CBSAs). *Panel A* reports firm count outcomes; *Panel B* reports capital outcomes. Fraction eligible columns restricted to metros with prior VC activity. *No Prior VC* metros are excluded from capital regressions due to separation. t-statistics based on CBSA-clustered standard errors in parentheses. *, **, *** at 10%, 5%, 1%. Data from PitchBook.

Table IA11: QSBS-Induced VC Growth by Metro Tier: Capital Raised

Dependent Variable:	Eligible Capital		Ineligible Capital		Frac. Eligible ($)
	Log	Levels ($M)	Log	Levels ($M)	
	(1)	(2)	(3)	(4)	(5)
$\mathbb{1}\{\text{No Prior VC}\} \times \mathbb{1}\{\text{Post}\}$	—	—	—	—	—
$\mathbb{1}\{\text{Low Prior VC}\} \times \mathbb{1}\{\text{Post}\}$	-0.464^{**}	-133.9^{*}	0.199	-14.6	0.158^{***}
	(-2.19)	(-1.93)	(0.25)	(-1.17)	(3.95)
$\mathbb{1}\{\text{Med. Prior VC}\} \times \mathbb{1}\{\text{Post}\}$	-0.261	-125.1^{**}	-0.571	-17.2^{**}	0.073
	(-1.15)	(-2.12)	(-1.25)	(-2.08)	(1.49)
Observations	1,427	1,427	520	520	2,086
Mean Dep. Var.	2.5	137.2	2.0	32.9	0.584
CBSA FE	✓	✓	✓	✓	✓
Census Division×Year FE	✓	✓	✓	✓	✓
Clustered SE (CBSA)	✓	✓	✓	✓	✓

This table presents estimates of where QSBS-induced capital reallocation concentrated, using tier×post interactions with Established Hubs (top tertile) as the omitted baseline. The sample is a CBSA-year balanced panel, 2004–2017, VC investors only. Columns (1) and (3) report OLS for log capital on the raised > 0 subsample. Columns (2) and (4) report OLS for capital in millions USD (levels) on the raised > 0 subsample. Column (5) reports OLS for the fraction of total reported capital in eligible sectors, restricted to metros with prior VC activity. Deals with missing deal size are excluded throughout. *No Prior VC* metros exhibit separation in Columns (1)–(4) and are excluded from Column (5) because the eligible share is undefined absent prior activity. *t*-statistics based on CBSA-clustered standard errors in parentheses. *, **, *** at 10%, 5%, 1%. Data from PitchBook.

Table IA12: Startup Outcome Rates by Metro Tier: Pre- vs. Post-2009

	Pre-2009		Post-2009	
Panel A: Success and Failure				
Tier	Unicorn Rate (%)	Failure Rate (%)	Unicorn Rate (%)	Failure Rate (%)
No Prior VC	—	—	0.92	41.28
Low Prior VC	0.00	51.52	1.16	40.15
Medium Prior VC	0.53	39.57	1.04	40.41
Established Hubs	2.75	27.08	4.00	31.14
All Metros	2.61	28.01	3.77	31.86
Panel B: Innovation and Employment				
Tier	Patent Rate (%)	Employees/Firm	Patent Rate (%)	Employees/Firm
No Prior VC	—	—	26.15	20.8
Low Prior VC	34.85	11.2	31.27	17.9
Medium Prior VC	32.62	15.3	23.83	14.6
Established Hubs	43.71	27.2	28.55	25.5
All Metros	43.09	26.5	28.37	24.9

This table reports per-firm lifetime outcome rates for VC-backed startups in QSBS-eligible sectors, by metro tier and period. Each firm is counted once, in its canonical CBSA and entry year. Pre-2009 cohorts entered in 2004–2008 and post-2009 cohorts in 2009–2017, and outcomes are observed through 2022. Tiers are defined by pre-2009 total VC-backed startup counts. *Panel A*: Unicorn Rate = percentage of firms ever flagged as unicorn by PitchBook; Failure Rate = percentage of firms ever recorded as out of business or experiencing a five-year funding gap. *Panel B*: Patent Rate = percentage of firms ever receiving a USPTO patent; Employees/Firm = mean annual total headcount per firm, among firms with Revelio headcount (about three quarters of post-2009 entrants in the non-hub tiers and 82% in *Established Hubs*). "All Metros" pools all tiers. "—" indicates zero pre-2009 activity by construction for No Prior VC metros. Outcome data from PitchBook, USPTO, and Revelio Labs.

Table IA13: Per-Firm Startup Outcomes by Metro Tier: Difference-in-Differences

	Failure Rate (1)	Unicorn Rate (2)	Patent Rate (3)	Emp./Firm (4)
$\mathbb{1}\{\text{No Prior VC}\} \times \mathbb{1}\{\text{Post}\}$	—	—	—	—
$\mathbb{1}\{\text{Low Prior VC}\} \times \mathbb{1}\{\text{Post}\}$	−0.098	0.003	0.131*	3.177
	(−1.19)	(0.39)	(1.68)	(0.54)
$\mathbb{1}\{\text{Med. Prior VC}\} \times \mathbb{1}\{\text{Post}\}$	0.075	−0.001	0.048	−4.018
	(1.34)	(−0.10)	(1.01)	(−0.54)
Observations	1,346	1,346	1,346	1,166
Mean Dep. Var.	0.363	0.016	0.308	18.918
CBSA FE	✓	✓	✓	✓
Census Division×Year FE	✓	✓	✓	✓
Clustered SE (CBSA)	✓	✓	✓	✓

This table presents DiD estimates of per-firm lifetime outcome rates in previously underserved metro areas, using tier×post interactions with Established Hubs (top tertile) as the omitted baseline. Tiers are defined by pre-2009 total VC-backed startup counts: *No Prior VC* = zero pre-2009 VC; *Low Prior VC* = bottom tertile of active metros; *Med. Prior VC* = middle tertile. The sample is a CBSA×entry-year panel, 2004–2017, VC investors and QSBS-eligible sectors only. Each firm is counted once, in its canonical CBSA and entry year, and outcomes are observed through 2022. *Failure Rate*: fraction of firms ever going out of business or experiencing a five-year funding gap. *Unicorn Rate*: fraction ever flagged as unicorn by PitchBook. *Patent Rate*: fraction ever receiving a USPTO patent. *Emp./Firm*: mean annual total headcount per firm, among firms with Revelio headcount. Column (4) excludes CBSA×entry-year cells with no such firm. No Prior VC metros are fully absorbed by CBSA fixed effects due to separation — all pre-2009 outcomes are zero by construction; see Table IA12 for their post-2009 performance directly. t-statistics based on CBSA-clustered standard errors in parentheses. *, **, *** at 10%, 5%, 1%. Data from PitchBook, USPTO, and Revelio Labs.

Table IA14: Total Startup Outcomes by Metro Tier: Pre- vs. Post-2009

	Firms		Unicorns		Patent Firms		Patents		Failures		Employment	
Tier	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
No Prior VC	0	218	0	2	0	57	0	257	0	90	0	3,279
Low Prior VC	66	259	0	3	23	81	99	401	34	104	491	3,434
Medium Prior VC	187	579	1	6	61	138	375	547	74	234	1,650	6,224
Established Hubs	3,999	12,720	110	509	1,748	3,632	22,579	26,856	1,083	3,961	79,369	267,432

This table reports total lifetime outcome counts for VC-backed startups in QSBS-eligible sectors, by metro tier and period. Each firm is counted once, in its canonical CBSA and entry year. Pre-2009 cohorts entered in 2004–2008 and post-2009 cohorts in 2009–2017, and outcomes are observed through 2022. Tiers are defined by pre-2009 total VC-backed startup counts. Unicorns = firms ever flagged by PitchBook as reaching a valuation of $1 billion or more. Patent Firms = firms ever receiving a USPTO patent. Patents = cumulative USPTO grants. Failures = firms ever recorded as out of business or experiencing a five-year funding gap, the same definition used in Table IA12. Employment = sum of firm-level mean annual headcounts. Data are from PitchBook, USPTO, and Revelio Labs.

Table IA15: Startup Outcome Rates by Industry and Metro Tier: Pre- vs. Post-2009

	Pre-2009				Post-2009			
Industry	*N*	Fail (%)	Unicorn (%)	Emp./Firm	*N*	Fail (%)	Unicorn (%)	Emp./Firm
Panel A: No Prior VC								
Technology	—	—	—	—	88	51.1	2.27	38.9
Biotech & Healthcare	—	—	—	—	55	29.1	0.00	7.4
Industrial & Manufacturing	—	—	—	—	37	37.8	0.00	9.8
Consumer & Retail	—	—	—	—	20	40.0	0.00	3.5
Information & Media	—	—	—	—	7	57.1	0.00	10.7
Other	—	—	—	—	11	27.3	0.00	5.0
Panel B: Low Prior VC								
Technology	20	60.0	0.00	17.2	117	38.5	1.71	21.8
Biotech & Healthcare	18	50.0	0.00	4.0	51	33.3	0.00	6.1
Industrial & Manufacturing	16	43.8	0.00	7.3	47	31.9	2.13	24.2
Consumer & Retail	7	42.9	0.00	17.9	25	64.0	0.00	12.0
Information & Media	—	—	—	—	11	63.6	0.00	5.4
Other	5	60.0	0.00	7.9	8	50.0	0.00	10.0
Panel C: Med. Prior VC								
Technology	62	41.9	1.61	19.9	240	35.4	2.08	18.1
Biotech & Healthcare	67	28.4	0.00	11.0	166	41.6	0.00	7.5
Industrial & Manufacturing	28	50.0	0.00	13.0	70	38.6	0.00	12.1
Consumer & Retail	6	66.7	0.00	46.0	62	45.2	0.00	16.5
Information & Media	2	50.0	0.00	13.2	21	52.4	4.76	35.8
Other	22	45.5	0.00	5.9	20	70.0	0.00	3.3
Panel D: Established Hubs								
Technology	2,100	25.3	3.24	29.1	6,865	30.1	4.56	27.3
Biotech & Healthcare	904	28.1	2.43	14.9	2,341	26.1	3.84	15.7
Industrial & Manufacturing	498	28.7	2.21	35.9	1,549	33.4	3.42	33.9
Consumer & Retail	135	28.9	2.96	37.7	1,088	38.2	3.58	26.4
Information & Media	221	31.2	0.90	24.9	632	42.6	1.58	22.4
Other	141	32.6	2.13	27.0	245	33.1	1.63	14.7

This table reports firm counts and per-firm lifetime outcome rates by industry and metro tier, before and after the 2009 QSBS expansion. Each firm is counted once, in its canonical CBSA and entry year. Pre-2009 cohorts entered in 2004–2008 and post-2009 cohorts in 2009–2017, and outcomes are observed through 2022. Tiers are defined by pre-2009 total VC-backed startup counts. *Fail (%)*: percentage of firms ever going out of business or experiencing a five-year funding gap. *Unicorn (%)*: percentage of firms ever flagged as unicorn by PitchBook. *Emp./Firm*: mean annual total headcount per firm, among firms with Revelio headcount. "—" indicates no firms in the cell: *No Prior VC* metros had no pre-2009 VC activity by construction, and *Low Prior VC* metros happened to have no pre-2009 Information & Media entrants. VC investors, QSBS-eligible sectors only. Data from PitchBook and Revelio Labs.

Table IA16: QSBS, Geographic Expansion, and Investment Risk-Taking

Dependent Variable:	𝟙{Pre-Commercial}	𝟙{First Funding}	𝟙{Multi-Investor}
	(1)	(2)	(3)
𝟙{No Prior VC} × 𝟙{Post}	−0.010	0.011	−0.114***
	(−0.70)	(0.69)	(−3.96)
𝟙{Low Prior VC} × 𝟙{Post}	−0.031	−0.051*	−0.035
	(−1.01)	(−1.77)	(−0.74)
𝟙{Med. Prior VC} × 𝟙{Post}	−0.014	0.035**	−0.021
	(−0.88)	(2.26)	(−0.65)
Observations	47,664	47,664	47,664
Adjusted R^2	0.10	0.07	0.21
Mean Dep. Var.	0.033	0.029	0.452
Investor×Industry FE	✓	✓	✓
Industry×Year FE	✓	✓	✓
Inv. State×Year FE	✓	✓	✓
Industry×Firm State FE	✓	✓	✓
Clustered SE (Investor)	✓	✓	✓

This table examines whether QSBS-induced VC entry into previously unserved metropolitan areas reflects the risk-taking behavior documented in Campello and Junqueira (2026), whose sample, fixed effects, and variable construction we follow throughout. The unit of observation is an investor–firm pair at entry. The coefficients of interest are the interactions $\mathbb{1}\{\text{Tier} = \tau\} \times \mathbb{1}\{\text{Post}\}$, one for each underserved tier τ, which capture the differential post-reform shift in investment risk-taking for eligible-sector VC investments in that tier relative to *Established Hubs*, the omitted baseline. Sample restricted to VC investors in QSBS-eligible sectors, 2004–2017. In untabulated estimates, the remaining risk-taking margins in Campello and Junqueira (2026) — out-of-state investment and entry into industries outside the investor's prior experience — show no differential shift across tiers (+0.012, $t = 0.31$ and +0.012, $t = 0.34$ for *No Prior VC*, respectively), so the distinctive geographic margin of QSBS-induced risk-taking is the willingness to invest with smaller syndicates. t-statistics based on investor-clustered standard errors in parentheses. *, **, *** at 10%, 5%, 1%. Data from PitchBook.

Table IA17: Industry Composition of QSBS-Eligible VC-Backed Startups by Metro Tier (Post-2009)

Dependent Variable:	Post-2009 Share of Eligible VC Firms by Industry				
	Technology	Biotech & Healthcare	Industrial & Manufacturing	Consumer & Retail	Information & Media
$\mathbb{1}${No Prior VC}	−0.047	−0.051	0.066**	0.017	−0.019
	(−1.11)	(−1.32)	(2.16)	(0.70)	(−1.43)
$\mathbb{1}${Low Prior VC}	−0.028	−0.014	0.028	0.016	−0.005
	(−0.58)	(−0.40)	(1.01)	(0.69)	(−0.36)
$\mathbb{1}${Med. Prior VC}	−0.046	0.006	−0.005	0.040*	−0.019*
	(−1.31)	(0.17)	(−0.22)	(1.90)	(−1.67)
Observations	979	979	979	979	979
Adjusted R^2	0.03	0.05	0.03	0.01	0.04
Mean Dep. Var.	0.421	0.256	0.149	0.086	0.039
Census Division×Year FE	✓	✓	✓	✓	✓
Clustered SE (CBSA)	✓	✓	✓	✓	✓

This table provides a regression analog to Figure 6. The dependent variable is the share of QSBS-eligible VC-backed firms in each industry within a CBSA-year, post-2009, conditional on positive eligible activity. Each column uses the indicated industry's share as the dependent variable. The omitted baseline is *Established Hubs* (top tertile by pre-2009 VC activity); coefficients measure the difference in that industry's portfolio share relative to hubs, conditional on Census division×year fixed effects. CBSA fixed effects are excluded as they are collinear with the time-invariant tier classification. Tiers are defined by pre-2009 total VC-backed startup counts: *No Prior VC* = zero pre-2009 VC; *Low Prior VC* = bottom tertile of active metros; *Med. Prior VC* = middle tertile. *t*-statistics based on CBSA-clustered standard errors in parentheses. *, **, *** at 10%, 5%, 1%. Data from PitchBook.

Table IA18: Local Income and Wages by Post-2009 VC Entry and Metro Tier

Panel A: Dose-Response — Entry Intensity and Local Economic Growth			
	Log personal income	Log wages & salaries	Log per-capita income
$\mathbb{1}\{\text{Any Entry}\} \times \mathbb{1}\{\text{Post}\}$	−0.009	−0.010	−0.012
	(−0.61)	(−0.61)	(−1.36)
$\log(\text{Total Entry}) \times \mathbb{1}\{\text{Post}\}$	0.007***	0.013***	0.001
(among entrant metros)	(2.75)	(4.34)	(0.55)
Observations	4,427	4,427	4,427
Mean Dep. Var.	16.87	16.15	10.66
Panel B: Tier-Level Differences Relative to Established Hubs			
	No Prior VC × Post	Low Prior VC × Post	Medium Prior VC × Post
Log personal income	−0.021	−0.026*	−0.031**
	(−1.53)	(−1.82)	(−2.25)
Log wages & salaries	−0.054***	−0.052***	−0.041***
	(−3.69)	(−3.16)	(−2.61)
Log per-capita income	0.005	0.000	−0.009
	(0.64)	(0.06)	(−1.06)
CBSA FE	✓	✓	✓
Census Div.×Year FE	✓	✓	✓

This table relates local economic outcomes to eligible-sector VC entry in 2009–2017 (Panel A) and to metro tiers (Panel B). Outcomes are logged CBSA-level aggregates built from BEA county data on personal income, per-capita income, and wage-and-salary disbursements (CAINC30), 2004–2022, for the 233 metros with VC activity at some point during 2004–2017 that match to the BEA county aggregates (86 *No Prior VC* entrants, 54 *Low*, 44 *Medium Prior VC*, and 49 *Established Hubs*). Wage-and-salary disbursements are measured where people work and exclude proprietors' income as well as employer contributions for pensions and insurance. Personal income is measured where people live and also counts these items, along with property income and transfers. Neither series includes realized capital gains. All specifications include CBSA and Census-division×year fixed effects, with standard errors clustered by CBSA. *Panel A* splits the dose response into an extensive margin, where $\mathbb{1}\{\text{Any Entry}\}$ equals one for metros with at least one eligible-sector VC-backed firm entering in 2009–2017, and an intensive margin, the log of the metro's count of such firms. Both are interacted with Post, and the log term is fixed over time and set to zero for metros without entry. Estimates are nearly identical when a single term captures both margins, using $\log(1+\cdot)$ or the inverse hyperbolic sine of the count (wages 0.014 and 0.012, $t = 4.6$ and 4.5). They are also robust to tier×year fixed effects, which absorb each tier's full yearly trajectory (intensive margin 0.013 for wages, $t = 2.2$, and 0.012 for income, $t = 2.5$), so the gradient is identified within tiers rather than by the contrast between hubs and other metros. Figure IA3 plots the dynamics. *Panel B* reports tier×Post difference-in-differences estimates with *Established Hubs* as the omitted category. Because established hubs experienced an exceptional post-2009 technology boom, these level comparisons are dominated by the hub trajectory, and the per-capita income row shows that residents of underserved metros nonetheless kept pace. t-statistics based on CBSA-clustered standard errors are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. Data are from the BEA and PitchBook.