



Buy local? The geography of venture capital

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ABSTRACT

We document geographic concentration by both venture capital firms and venture capital-financed companies in three metropolitan areas: San Francisco, Boston, and New York. We find that venture capital firms locate in regions with high success rates of venture capital-backed investments. Geography is also significantly related to outcomes. Venture capital firms based in locales that are venture capital centers outperform, regardless of the stage of the investment. This outperformance arises from outsized performance outside of the venture capital firms' office locations, including in peripheral locations. If the goal of state and local policy makers is to encourage venture capital investment, outperformance of non-local investments suggests that policy makers might want to mitigate costs associated with established venture capitalists investing in their geographies rather than encouraging the establishment of new venture capital firms.

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1. Introduction

From Silicon Valley to Herzliya, Israel, venture capital firms are concentrated in very few locations. More than half of the 1000 venture capital offices listed in *Pratt's Guide to Private Equity and Venture Capital Sources* are located in just three metropolitan areas: San Francisco, Boston, and New York. More than 49% of the US-based companies financed by venture capital firms are located in these same three cities. This paper examines the location decisions of venture capital firms and the impact that venture capital firm geography has on investments and outcomes.

The location of venture capital firms matters for the development of entrepreneurial firms because venture capitalists provide more than just risk capital. Venture capital firms typically invest in early-stage and high-technology companies where informational asymmetries are high. These are companies with highly uncertain future prospects. The potential for agency conflicts is severe. Venture capital funding contracts provide for staged financing and venture capitalists are constantly evaluating their portfolio companies (see, for example, Sahlman, 1990; Gompers, 1995; Kaplan and Stromberg, 2003). Venture capitalists are actively involved

in the governance of the companies they fund through board membership, management recruiting, and the provision of management incentives.

The cost of providing this oversight is likely to be sensitive to the distance between venture capitalists and the firms in which they invest. The ability to monitor the portfolio company, to coach the management team, and to provide introductions may depend upon the ability to interact frequently with the company. For example, Lerner (1995) shows that venture capitalists are more likely to serve on the boards of geographically proximate companies. Moreover, this involvement is likely to translate into tangible economic progress. Research shows that venture capital-backed companies outperform their peers on many dimensions: (i) operational growth (Hellmann and Puri, 2000), (ii) post-IPO performance (Brav and Gompers, 1997), (iii) innovation and patenting activity (Kortum and Lerner, 2000) and (iv) potential for scale (Puri and Zarutskie, 2008). Similarly, Gompers and Lerner (2001) show that venture capital-backed companies have, relative to the amount of capital invested, disproportionately contributed to the creation of jobs, market value, and revenues. Mollica and Zingales (2007) find evidence that venture capital firms may have the primary role in fostering the entrepreneurial communities in which they are located. They show that venture capital firms increase both patents and the total number of new businesses, using the size of state pension funds as an instrument for the number of venture capital firms.

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Reflecting this awareness, states and municipalities are placing increasing emphasis on encouraging the establishment of venture capital communities in their regions. A 2001 National Governors Association report stated, “Venture capital is critical to growing the new businesses that will drive the ‘new economy’. Finding ways to nurture the culture of entrepreneurs, and the capital that feeds them, must be the top priority of states”.¹ An estimate by the National Association of Seed and Venture Funds is that state venture capital funds in 2008 totaled \$2.3 billion (*Venture Impact, 2007*)²; meanwhile, an increasing share of the approximately \$50 billion that states spend on industrial incentives is going to venture-backed firms, a trend that is likely to be accelerated by provisions in the recently enacted stimulus bill favoring clean technologies (*Engardio, 2009*). Thus, it is vitally important to understand the geography of venture capital and its association with success of the underlying portfolio companies.

First, we document the clustering of venture capital in three metropolitan areas (combined statistical areas or CSAs): San Francisco/San Jose, Boston, and New York. We call these cities “venture capital centers.” There is a long literature on industrial clustering dating back to *Marshall (1920)*. Some clustering is to be expected, since the forces that are likely to lead to agglomeration economies (input sharing, labor market pooling and knowledge spillovers) are likely to be important for both venture capital and the types of companies in which venture capital firms invest. We find a level of venture capital localization that far exceeds entrepreneurial localization more generally. The C(3) ratio of self employment was 10.7% (*Ruggles et al., 2008*)³, while the comparable C(3) ratio of venture capital partners is 60.5%. We also find evidence that venture capital is far more localized than the overall financial services industry. In 2005, the location quotient of VC partners calculated relative to employment in financial services ranged from 2.12 for New York to 10.59 for San Francisco. The spatial Gini of VC partners calculated relative to overall employment was 0.155 versus a spatial Gini of 0.067 for employment in financial services relative to overall employment in 2005.⁴

Glaeser (2007) finds that variation in the self-employment rate is related to variation in demography and industry concentration, but does not find any correlation between this broad measure of entrepreneurship and venture capital. We find that a one standard deviation increase in the number of venture capital offices in a region is associated with an increase in venture capital investments in that area of 49.7%. We find evidence for three factors that contributed to this clustering: first-order agglomeration externalities (among venture capital firms), second-order agglomeration externalities (among the types of companies in which venture capital firms invest), and the historical artifact of early venture capital firms’ location in these cities.

We examine venture capitalists’ location decisions. Instead of expanding to regions with few VC firms, VCs tend to open satellite offices in the same three cities that are existing centers for venture capital activity. For example, a Boston-based firm is more likely to open a San Francisco/San Jose office than they are an office in Aus-

tin, Texas. The success rate for previous VC investments explains an additional 10.9% of the variance in the number of offices in a region, suggesting that second-order agglomeration externalities contribute to office location decisions.

Since the relationship between VC firm location and the location of their investments is endogenous, we examine the relationship between success and distance from VC investors. Overall, venture capital firms based in the venture capital centers outperform even after controlling for the selection effect of historically successful firms (firm experience). This may reflect a variety of factors, which are difficult to disentangle, including first and second-order agglomeration economies, unobserved local advantage, the superior experience of these investors, their greater connections with elite limited partners and corporations, and their superior syndication networks (*Sorenson and Stuart, 2001*).

Surprisingly, much of the VC outperformance in these venture capital centers arises from their non-local investments. This finding is counterintuitive, since venture capitalists might be expected to be the most involved and add the most value to the geographically closest companies. We observe this outperformance of non-local companies in both early- and late-stage investments. Thus, this wedge in expected returns does not seem to be the result of established VC firms’ cherry-picking later-stage enterprises that they are more likely to successfully exit. The higher rates of return on non-local deals may indicate economically meaningful geographic differences in the availability of venture capital. One potential explanation for this higher return to non-local deals is that venture capitalists have a higher hurdle rate (i.e., require a higher expected rate of return) for investments that have a higher monitoring cost. This higher hurdle rate may reflect the imputed (personal) cost of traveling to remote locations.

We find additional evidence that there may be a higher investment or expected return threshold for non-local deals. If a venture capital firm has done or will do another investment in the same geographic area, there is a 2% drop in expected success. VCs may lower their threshold on a potential deal if they have a lower marginal cost of visiting the area, i.e., if the venture capitalist is already visiting one portfolio company, the personal cost of visiting a second company is substantially lower.

Venture capital firms are likely to locate in areas that offer them the highest concentration of profitable investments since geographically close investments are easier for the venture capitalist to monitor. Travel to other geographies is costly and will be undertaken only when an investment offers prospects for a high enough return to, in expectation, compensate the venture capitalist for the additional time and money associated with monitoring a distant investment. The resulting concentration of venture capitalists and entrepreneurs may pose grounds for concern given the positive public externalities associated with the establishment of new firms. For example, *Gompers et al. (2005)* find that founders of venture capital-backed start-ups disproportionately come from prior positions at previously venture capital-backed companies. If the supply of venture capital is a limiting factor for the establishment of new firms, policy makers in regions with low concentrations of venture capital may wish to provide incentives for established VCs based in venture capital centers to invest in their regions.

The paper is organized as follows. The next section describes the hypotheses and related literature. The following section details the construction of the data. Section 4 examines the geography of venture capital firms and geographic factors associated with the supply of venture capital. Section 5 describes the geography of venture capital-backed companies. Section 6 reviews the determinants of venture capital investment success. Section 7 proposes some implications of venture capital expansion for policymakers and Section 8 concludes the paper.

¹ National Governors Association, center for best practices “Issue Brief Growing New Businesses with Seed and Venture Capital: State Experiences and Options,” 2001, <http://www.nga.org/Files/pdf/VENCAPITAL.PDF> (accessed 11.04.09).

² [http://www.nasvf.org/nasvf/web.nsf/pages/documents.html/\\$file/3-24-08%20Table%20of%20State%20Venture%20Funds%20Distributed%20to%20Response%20Group.pdf](http://www.nasvf.org/nasvf/web.nsf/pages/documents.html/$file/3-24-08%20Table%20of%20State%20Venture%20Funds%20Distributed%20to%20Response%20Group.pdf) (accessed 11.04.09).

³ C(3) is the percentage of total employment of the top three regions, calculated for self-employment using 2000 micro-level Census data from the Integrated Public Use Microdata Series (IPUMS) at <http://usa.ipums.org/usa/>, and for venture capital partners using the Pratt’s Guide to Private Equity and Venture capital sources described in Section 3.

⁴ The spatial Gini coefficients are defined as in *Krugman (1991)* as $G = \sum_i (z_i - x_i)^2$, where z_i equals the proportion of overall venture capital employment (financial services industry employment) in the metropolitan area and x_i equals the proportion of overall employment in the metropolitan area.

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