

ABSTRACT

Corporate Venture Capital and the Acquisition of Entrepreneurial Firms

by

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This dissertation uses quantitative and qualitative methods to examine the “direct” (e.g. the effect when acquiring portfolio companies) and “indirect” (the effect on *all* startups the firm acquires) impact of corporate venture capital investments on the acquisition of technology startups. In the first study, I examine the acquisition of startups by 61 top CVC investors between 1987 and 2003. I find evidence that established firms use external venturing programs as a mechanism for identifying and monitoring potential acquisition targets. The strategic investors in my sample had a prior equity investment in one of every five startups they acquired in this 16-year period. Interestingly, I find that firms are more likely to destroy value acquiring startups from within their CVC portfolio (e.g. “trying before they buy”) than when acquiring startups outright. I then explore several alternate explanations for these puzzling results. Overall, the evidence suggests that value-destroying takeovers of portfolio companies stem from managerial overconfidence or agency problems at the CVC program level.

I supplement the quantitative analysis with interviews with CVC managers, independent VCs, and entrepreneurs. While many of the managers I spoke with agreed that acquisitions of portfolio companies ended up destroying value, several of them made comments like, “*even if we overpay for the startups we invest in first and then acquire, it is still worth it to us to stay connected to the community of startups and venture capitalists.*” I explore this potential for spillover benefits in the second empirical study. Specifically, I examine the extent to which CVC investments provide information flows that can improve the firm’s acquisition performance more generally. I find that CVC investments do in fact provide a boost to acquisition performance relative to non-investors; however, this advantage dissipates quickly and is subject to diminishing returns. Contrary to my expectations, however, I do *not* find that acquisition returns are higher when firms’ portfolio companies are concentrated in the same industries as the startups they acquired. Instead, investments in startups in IT and life science industries increase acquisition returns (when acquiring startups in IT) by roughly the same magnitude.

EXECUTIVE SUMMARY
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Over the past two decades, large firms have increasingly acquired startups as a source of new products and new technologies.¹ As Mark Bailey, vice-president in charge of mergers and acquisitions (M&A) at Symantec, put it:

“[New] innovations are becoming riskier, more expensive, and more time consuming in markets where survival depends on speed. Hence, high tech firms....are going outside to get companies with talented people and proven products that can meet market demands and generate technological ‘throw-offs’ for the future.” (Bailey, 1995)

At the same time, the willingness of established firms to finance entrepreneurial startups has dramatically increased (Figure 1). My dissertation explores how these two processes - corporate venture capital (CVC)² investing and the acquisition of technology startups - might be related and explore the implications for firm performance. Specifically, I seek to answer the following three questions: (1) How frequently do firms use CVC investments to screen potential acquisition targets? (2) How does a prior equity investment affect the acquirer’s returns if it subsequently chooses to acquire it? and (3) finally, do CVC investments represent a strategy for increasing performance more generally (even for other startups they acquire)?

¹ As this is for a non-academic audience, I have removed most of the citations that I would normally include in an academic article. For complete documentation, please refer to my dissertation.

² Corporate venture capital is defined as minority equity investments in privately-held, entrepreneurial firms by established corporations. I use the terms “young firm”, “entrepreneurial firm” and “startup” interchangeably throughout my dissertation.

This research is important for two reasons. First, startups have become an increasingly important source of research-and-development (R&D). According to National Science Foundation surveys (2008), the share of U.S. industrial R&D spending represented by firms with fewer than 1,000 employees climbed from 4.4% in 1980 to more than 23.5% in 2008 (the latest year for which data are available).³ As a result, established firms have increasingly acquired startups to gain access to new technologies.

However, such acquisitions are never easy. Startups, by definition, lack the track record of larger, more established companies. They typically have few tangible assets and most of their value is tied-up in the human capital of their founders. Moreover, such startups are often developing new technologies—technologies that may ultimately never pan out or become commercially viable.

Given these difficulties, it is not surprising that, as their reliance on technology startups has increased, established corporations have dramatically increased their willingness to fund entrepreneurial firms. For example, between 1990 and 2000, annual CVC investments in startups grew from \$156 million to \$16 billion, and accounted for 15% of all venture capital investments that year (Figure 1). And, despite pulling back since the “boom period” of the late 1990s, corporations have continued to fund startups, with surveys suggesting that nearly 25% of new ventures receive some form of corporate funding (Katila, Rosenberger, & Eisenhardt, 2008). My research suggests that investing in startups is one way that established firms have tried to “cope” with the additional

³ Small companies also tend to be young, so these NSF statistics approximate shifts toward R&D performed by entrepreneurial firms. Also, I use 1,000 employees for consistency – while NSF’s recent surveys break out the number of employees at a granular level, earlier surveys lumped all companies with fewer than 1,000 employees together.

challenges that such acquisitions pose. My objectives are to evaluate both the prevalence of the use of this “coping mechanism” and its effectiveness.

Overview of the Dissertation Essays

I examine the above questions using a blend of quantitative and qualitative methods. Specifically, this dissertation includes two empirical studies that examine both the “direct” (e.g. the effect when acquiring portfolio companies) and “indirect” (the effect on *all* startups the firm acquires) impact of corporate venture capital investments and the acquisition of technology startups by established firms. I supplement the quantitative analysis with interviews with a number of individuals involved with corporate venture capital.⁴ These interviews were very helpful in interpreting my statistical results (particularly for Chapter 2) as well as in the formulation of additional hypotheses (for Chapter 3). I discuss each chapter in turn below.

Chapter 2: Does ‘trying before you buy’ improve acquisition performance?

In Chapter 2, I tackle the question of CVC’s direct effects. Specifically, I examine (1) to what extent do CVC investors have pre-existing venture investments with startups they acquire? And (2) how does such a prior investment affect the acquirer’s returns?

⁴ During 2005 and 2006, I conducted 31 open-ended interviews with individuals involved with corporate venture capital. I conducted nine additional interviews in 2007-2008. I spoke with providers of such capital (managers involved with making the investments) as well as co-investors (independent VCs) and recipients (entrepreneurs). Several individuals had participated in corporate venture capital in multiple roles (e.g. had been at a corporate investor, but now was an independent VC, etc). Chapter 2 draws primarily from the earlier set of interviews, while Chapter 3 uses insights from both sets of interviews.

Interestingly, I find that despite the increased familiarity with the startup—after all, by investing in them, the firm better knows the management team and the technology of the startup firm—acquirers do significantly *worse* when purchasing startups in which they have prior equity investments.⁵ Indeed, I find that on average, acquirer’s *destroy* \$63.5M in shareholder value when they acquire a company from their venture capital portfolio. In contrast, acquirers *create* \$8.5M in shareholder value with the startups they acquire outright (e.g. in which they have no prior investment).

My empirical analysis can then be divided into two parts: First, I examine whether the negative reaction I observe truly indicates overpayment and does not merely reflect (1) the fact that the market incorporates information about the startup at the initial (CVC investment) stage, or (2) “disappointment” that the startup has been acquired and thus will not have an IPO (where investors generally earn higher returns). Second, I then examine what explains the differences in returns to these two types of acquisitions. I empirically test between several alternate explanations for this overpayment. For example, I examine whether the acquirers overbid because of competition, problems in firm governance or excessive CEO self-confidence, and I find little evidence to support any of these explanations.

Instead, I find the differences in the performance are largely explained by differences in how the CVC program is structured. For example, corporations that make investments through a dedicated group (e.g. Intel Capital, Dell Ventures) are significantly less likely to overpay when acquiring portfolio companies than are CVC investors that invest through product groups or other operating units. Similarly, dedicated units are also

⁵ I use the stock market’s reaction to compare the performance of CVC and non-CVC acquisitions.

less likely to “throw good money after bad” by making following-on investments in their portfolio companies that ultimately went bankrupt.

Hence, while this chapter documents that CVC investors frequently make investments as a means of screening potential acquisitions – indeed, in my sample they had a prior equity stake in one out of every five startups they ultimately acquired – it also suggests that such investors may pay a price for “trying before they buy,” particularly when the investments originate from product groups or business units.

Chapter 3: Do CVC investments provide information that “spills over” and improves acquisition performance on other acquisitions the firm makes?

While Chapter 2 focused on the direct impact of CVC investments (the impact when acquiring portfolio companies), Chapter 3 focuses on the broader impact of CVC investments. In particular, Chapter 3 examines whether CVC investing provides information benefits that can “spill over” to affect other acquisitions that the firm undertakes (e.g acquisitions of non-portfolio companies.) The relationship between Chapters 2 and 3 is represented in Figures 2 and 3. Chapter 2 focused on the effect of a prior equity investment if the portfolio firm was subsequently acquired. In Figure 3, this relationship corresponds to the impact of the prior investment when acquiring portfolio companies *a*, *b*, and *c*. Chapter 3, in contrast, focuses on the broader impact of CVC investments. Continuing with our example in Figure 3, this chapter examines how do the firm’s investments in startups *a*, *b*, and *c* affect the returns when the firm acquires startup *f* and *g*?

The initial motivation for Chapter 3 stemmed, in part, from the interviews I conducted for Chapter 2. One particular interviewee, a manager at a frequent CVC investor, made the following statement, “*Even if we overpay for some of our [CVC] acquisitions, it is still important for us to continue [CVC] investing in order to stay connected to the community of VCs and startups.*” Several other managers made similar statements, indicating that they perceived that CVC investments provided them with several important informational advantages. For example, managers indicated that CVC investments provided three types of information benefits: (1) information about new technologies, both where the state of the art stands and where it is heading; (2) information about the quality (and price) of other startups in the market; and (3) private deal information regarding what other firms are willing to pay for startups.⁶ These comments by managers, along with the fact that CVC investors were good acquirers overall (e.g. their returns to non-CVC acquisitions were significantly positive), spurred me to examine whether information gathered through CVC investing might improve performance on other acquisitions that the firms undertake. The statistical evidence from Chapter 3 suggest that there is indeed a spillover benefit. I find that CVC investors are indeed better acquirers – but only in years in which they are actively investing in startups. Importantly, I find no significant differences in acquisition performance in years when firms were not making investments.⁷ However, since I am not able to randomly assign firms to one of the treatments (e.g. I can’t assign them to make CVC investments or not), I have to take several additional precautions to ensure that it is the CVC investments that

⁶ I examine these reasons in more depth, and include comments from the interviews, on pages 78-85 of the dissertation.

⁷ This helps rule out one alternate explanation—that perhaps firms that choose to make CVC investments were better acquirers to begin with.

cause the firms to do better, rather than that such investments merely proxy for something else. Consider the case where CVC investments have no causal effect, but rather that smart firms are both (a) more likely to make CVC investments, and (b) to do better when making acquisitions. In that case, it isn't the CVC investments that make the difference, but rather that the firm has smart managers. Indeed, if a firm with "dumb managers" (to continue the metaphor) were to make CVC investments, we would expect no improvement in their acquisition performance. To rule this alternative out, in supplemental analysis (see Table 3.5 on p.121) I use only variation within a firm in its CVC investments, and ignore the differences with other firms.⁸ This allows me to hold the "smartness" of the firm relatively constant. I then compare the firm's performance when it is making lots of CVC investments against *its own* performance when it is making few or no investments. If CVC investments truly improve firm performance, because they give the firm important information about trends, the market, and technology, that is not available to firms that don't make such investments, I would expect that the firm will perform higher in years when it is making lots of investments than in years when it is making few investments. In my results in Chapter 3, I find this is indeed the case. Moreover, as firms add more and more investments, they receive diminishing returns from those investments, consistent with the idea that each investment is providing them with less and less new information. Finally, the benefit from investing depreciates rapidly—only investments made in the current year or prior year have any discernible effect on acquisition performance. Investments in prior years seem to have little to no impact. Again, this is consistent with the idea of CVC investments providing

⁸ Statistically-minded readers will recognize this as a fixed-effect regression.

information benefits—if the investments provide valuable information regarding the “state of the art”, then investments made more recently should have a larger effect than investments made long ago.

Conclusion

As startups have become more important actors in research and innovation, it is not surprising that established firms have acquired them in ever greater numbers. Moreover, given the very real risks associated with such acquisitions, it is also not surprising that managers have experimented with ways to reduce that risk, such as by “trying before they buy” through equity investments in those startups. By examining the tradeoffs associated with using corporate venture capital to inform acquisition decisions, my dissertation sheds new light on this important managerial issue.

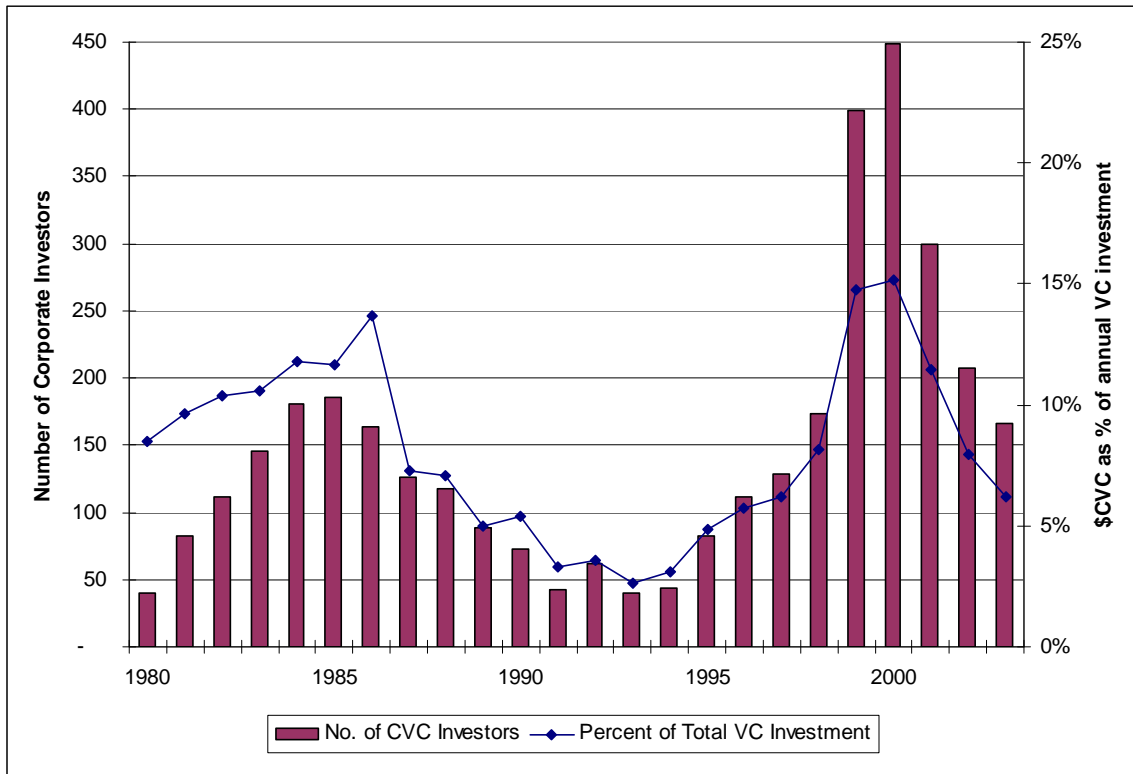
REFERENCES

Bailey, M. W. 1995. New-Age Challenges to Acquirers in High Technology. *Mergers and Acquisitions*, 29(5).

Katila, R., Rosenberger, J., & Eisenhardt, K. 2008. Swimming with sharks: Technology ventures, defense mechanisms and corporate relationships. *Administrative Science Quarterly*, 53(2): 295-332.

National Science Foundation. 2008. Research & Development in Industry: 2008. Washington, DC: NSF 10-326.

Figure 1. Number of Corporate Investors, 1980-2003
 (by year and % of total venture capital investing)



Source: Venture Economics

Figure 2. Comparing the Research Question of Chapters 2 and 3, part 1

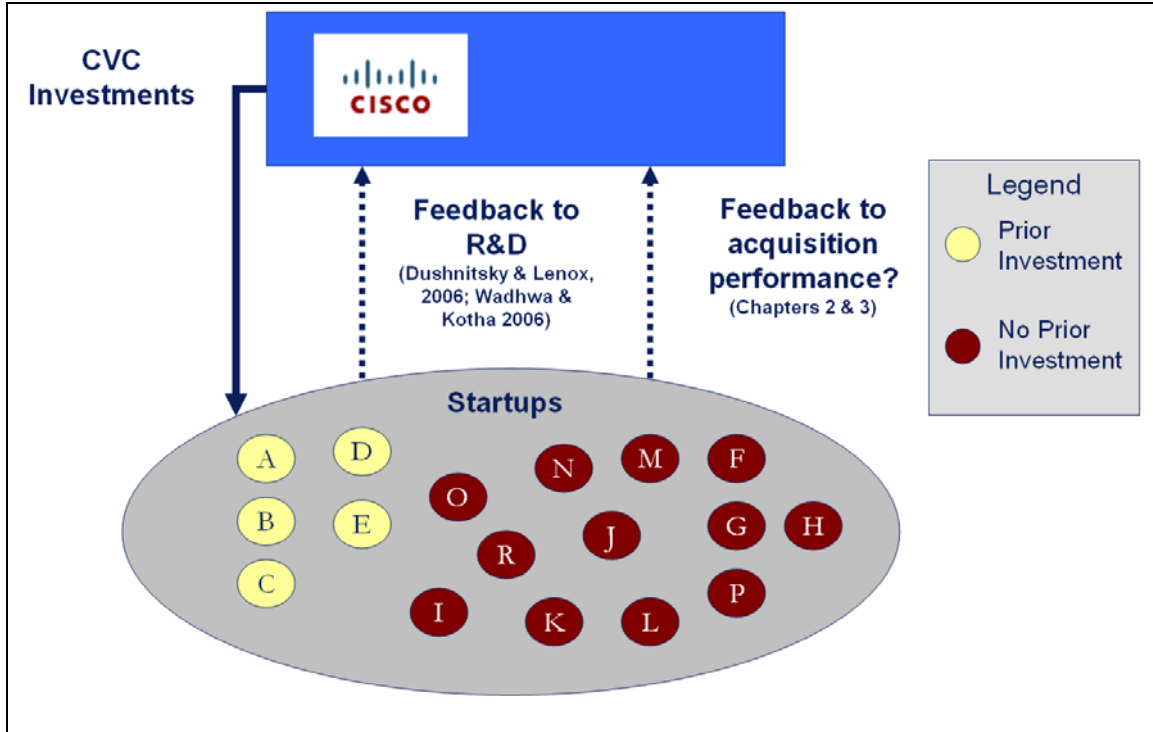


Figure 3. Comparing the Research Question of Chapters 2 and 3, part 2

