

Corporate venture capital, strategic alliances, and the governance of newly public firms

Vladimir I. Ivanov
School of Business
University of Kansas
Lawrence, KS 66045
785-864-7545

Ronald W. Masulis
Owen Graduate School of Business
Vanderbilt University
Nashville, TN 37203
615-322-3687

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Abstract

We examine the effect of investments by corporate venture capitalists (CVCs) on the governance structures of venture backed IPOs. One of the main differences between CVCs and traditional venture capitalists (TVCs) is that the former often invest for strategic reasons and enter into various types of strategic alliances with their portfolio firms that last well beyond the IPO. We argue that the presence of such strategic alliances will have a significant impact on the governance structure of CVC backed firms when they go public and in the following years. Using a sample of venture backed IPOs, we evaluate several hypotheses concerning the role of CVCs in the corporate governance of newly public firms. We find that strategic CVC backed IPOs have weaker CEOs and more outsiders on the board and on the compensation committee than a carefully selected sample of matching firms. In addition, the probability of forced CEO turnover is higher for strategic CVC backed IPOs, while at the same time these firms use staggered boards more frequently. In contrast, the governance structures of purely financial CVC backed IPO firms and their matching firms do not exhibit any significant differences.

I. Introduction

We examine the role corporate venture capitalists (CVCs) play in the governance of venture backed IPO issuers. As a private equity investor group whose activity has been on the rise over the last 15 years, CVCs are an understudied participant in the private equity market. Moreover, CVCs differ from traditional venture capitalists (TVCs) in a number of important dimensions. CVCs are the venture arms of industrial corporations, and as such they have distinctly different organizational and compensation structures from TVCs, which are organized as limited partnerships. More importantly, CVCs have different investment objectives than financially focused TVCs. Rather than simply seeking to maximize financial returns, CVCs also invest for strategic reasons, financing startups that provide various strategic benefits (e.g., windows on new technologies, access to promising products, outsourcing of R&D, etc.) to CVC parent companies.

Thus, CVCs are in a unique situation: they can make venture investments in startups and they enter into strategic alliances with them, which usually last for years after the startup goes public. However, CVCs' strategic objectives can be in conflict with their financial goals. They are also likely to be in conflict with the objectives of their portfolio firm's management team and other startup investors, which are to maximize their own financial benefits. Thus, by allowing managers of portfolio firms to have wide ranging and unchecked decision making power, CVCs face substantial risks of not maximizing their own strategic and financial objectives. In addition, valuable strategic relations could be lost if a portfolio firm is acquired by a competitor. Given these concerns, a portfolio firm's corporate governance structure can be of great importance to a CVC, especially at the time it goes public. We investigate this fundamental issue by assessing whether IPO issuers backed by strategic CVCs have distinctly different

corporate governance systems than IPO issuers backed by TVCs or financially oriented CVCs.

Using a sample of 276 venture-backed IPOs from the 1992–1999 sample period, we document significant differences between the corporate governance of strategic CVC backed IPO issuers and that of a control sample of TVC backed IPO issuers. Consistent with the predictions of stronger corporate governance, we observe that firms backed by strategic CVCs have significantly more outside directors on their boards than either the control sample of TVC backed firms or IPO issuers backed by purely financially oriented CVCs. The difference is both statistically and economically significant. This evidence suggests that one out of every four to five strategic CVC backed IPOs has an additional outside director. In addition, strategic CVC backed IPOs appear to have fewer insiders on the board compensation committees. We also find that strategic CVC backed IPOs tend to sell fewer primary shares at the IPO, which is consistent with the argument that CVCs making strategic investments are more interested in preserving their voting rights after their portfolio firms go public.

Also, we document that boards of IPO firms backed by strategic CVCs approve strong anti-takeover protections (ATPs) more frequently than IPO firms backed by financially oriented CVCs. Furthermore, we find that staggered boards represent the most commonly observed ATP. Strategic CVC backed IPOs are more likely to adopt a staggered board than other VC backed IPOs. We hypothesize that CVCs making strategic investments want strong ATPs to help defend the continued viability of their parent's strategic alliance, which can be threatened by a competitor acquiring the IPO firm and

then terminating the startup firm's strategic relationship with the CVC parent firm.¹ The downside with these takeover defenses is potentially greater management entrenchment. However, this effect could be offset by weaker management board power. Consistent with greater board independence, we find that IPO issuers backed by strategic CVCs exhibit higher forced CEO turnover. In terms of economic significance, the results suggest that strategic CVC investments increase the probability of forced CEO turnover on average by 34%. In contrast, comparing IPO issuers backed by financially oriented CVCs with a control sample of IPO issuers backed by TVCs, we uncover no significant differences in board composition, committee membership, or forced CEO turnover. Lastly, we compare IPO firms backed by strategic CVC investors to similar IPO firms with strategic relationships, but no strategic CVC backing and find that strategic CVC backed IPOs have more independent boards and are associated with higher likelihood of forced CEO turnover and greater turnover-performance sensitivity.

This study contributes to the existing literature in several ways. First, relying on a large amount of hand collected governance data, we explore several unique aspects of CVC investors and the importance of their strategic objectives to better understand the relationship between venture capital (VC) investment and the quality of corporate governance. Few studies currently exist which examine the involvement of VCs in firm corporate governance. Examining the relation between CEO power and board independence, Baker and Gompers (2003) report that VC backed IPO firms have more independent boards and less powerful CEOs. Hochberg (2005) also finds VC backed IPO firms have more independent boards and audit and compensation committees, and are

¹ This is a particularly interesting situation, since ATPs are generally viewed as a device to entrench management, but in this case, it appears to be created to entrench the board and the strategic alliance.

less likely to have a dual CEO/chairman. Wangsunwai (2007) finds that firms backed by more reputable VCs have more independent boards.

This study is also related to the growing literature on the corporate governance of firms recently going public. Klausner and Daines (2001) and Field and Karpoff (2002) examine anti-takeover protections, while Boone, Field, Karpoff, and Raheja (2006) study board size and composition at newly public firms. We investigate a separate issue, namely how CVCs impact the corporate governance structures of their portfolio firms prior to going public and in the first few years thereafter. We document that CVC strategic objectives and the strategic alliances of CVC parent firms appear to affect the structure of corporate governance in IPO firms.

Second, the paper is related to a strand of corporate finance literature that focuses on strategic alliances (see Allen and Phillips (2000), Chan, Kensinger, Keown, and Martin (1997), Fee, Hadlock, and Thomas (2006), and Pablo and Subramaniam (2004)). These studies generally find such alliances to be value increasing. For example, Allen and Phillips (2000) find that alliances, joint ventures, and other product market relations combined with corporate block ownership lead to significant increases in target stock prices and significant improvements in their profitability and operating performance. Pablo and Subramaniam (2002) find that strategic alliances coupled with equity stakes alleviate the capital constraints of smaller, high-growth firms and their announcements lead to significantly positive market reactions. Unlike the prior studies, we examine a particularly important form of strategic alliances – alliances between CVCs and newly public firms. In these relationships, CVCs invest in these young firms, while they are still private and the relationship typically extends well beyond the IPO. Such relations present

an excellent opportunity to evaluate the theories on the structure and evolution of strategic alliances.

Third, this study sheds new light on the issue of corporate governance in strategic alliances (e.g., Aghion and Tirole (1994), Lerner and Elfenbein (2003), Grossman and Hart (1986), Hart and Moore (1988)). Hellmann (2002) suggests that if the startup is a complement to the corporation, it would be better off being financed by the CVC. If CVCs and TVCs have distinct abilities, Hellmann's model predicts that CVCs would have board seats and would actively provide support to the startup. While previous studies of corporate governance focus on the equity stakes and board participation of the alliance partners, we undertake a more comprehensive examination, which includes board structure, CEO power and anti-takeover mechanisms. CVCs investment activity offers an important opportunity to study issues of corporate governance in strategic alliances because their parent companies are indirectly major investors in startups giving them the opportunity to strongly influence the development of corporate governance in these young firms.

The paper is organized as follows: Section II sets forth the hypotheses we are going to test, Section III describes the data used in the analysis, Section IV presents the empirical results, Section V analyzes strategic CVC investments versus general alliances, and Section VI concludes.

II. Testable hypotheses

In this section, we present several hypotheses regarding the role of CVCs in the governance of newly private firms. Corporate VCs, although in the same general line of business as traditional VC firms, are distinctly different in a number of important

dimensions. They have different investment objectives and incentives as well as different organizational and compensation structure. These differences have an important impact on their performance (see Gompers and Lerner (2000) and Santhanakrishnan (2002)), as well as their ability to add value to startups (Ivanov and Xie (2006) and Chemmanur and Loutskina (2007)). We also argue that CVCs will have different incentives from TVCs when structuring the corporate governance systems of startup firms going public. More specifically, we examine what governance mechanisms CVCs use and how these differ between CVC backed and TVC backed IPOs.

A distinctive feature of VC investors is that they hold large equity stakes and obtain significant control rights in the startups they finance. This is a way for them to manage the significant risks, moral hazard problems and uncertainties associated with venture investments. Previous studies (see Lerner (1995), Kaplan and Stromberg (2003, 2004)) document that the strength of VC control rights is inversely proportional to a startup's performance. VCs gradually relinquish these rights as the startup's performance improves and it nears an IPO. The IPO represents a shock to the governance systems of startups. The powerful control rights of VCs disappear as their convertible preferred stock with its enhanced control rights is forced to convert into ordinary shares. Also, prior to going public, private firms usually restructure their corporate governance to meet exchange listing and disclosure standards and also to become more attractive to outside investors. As major pre-IPO investors, CVCs have significant influence over a start-up firm's choice of governance systems.

To enhance both their expected returns and private equity reputations, VCs have incentives to set up effective corporate governance systems before startups go public. VCs raise new funds usually every three to four years. This means that very frequently

they must find investors (limited partners) willing to commit capital to their new VC funds. However, investor interest is strongly related to the performance of the VC's previous funds. VCs typically realize their highest returns when they take portfolio firms public. However, VCs do not exit from their companies on the IPO date; they usually must wait for a 6 month lock-up period to expire. Underwriters typically require private equity investors to retain their shares for 6 months following the IPO. In addition, VCs frequently keep a portion of their equity stake even after the IPO lockup period expires (Barry, Muscarella, Peavy, and Vetsuypens (1990)). Thus, VCs need to ensure that their portfolio firms have good governance systems in place when they go public in order to protect the value of their on-going investments in these firms.

Like other VC investors, CVCs repeatedly access the IPO market by bringing new portfolio companies public and their reputations affect the willingness of investment bankers to underwrite these IPOs. If CVC backed IPO firms are known to have poor performance, then future IPOs backed by these same CVCs are likely to experience weak underwriter interest. To preserve their reputational capital, CVCs have an incentive to implement good governance systems in the startups they finance. In addition, CVCs also have to wait for the lock-up periods to expire to cash out of their positions. Hence, CVCs like TVCs have similar incentives to ensure that their portfolio firms have good governance systems in place before going public.

CVCs also have an additional incentive to establish effective governance mechanisms to curb managerial entrenchment and private benefits of control. Unlike TVCs, CVCs primarily invest for strategic reasons. As a result, they often enter into formal or informal strategic or business relationships with their portfolio firms, which tend to last for a number of years after these companies go public. These strategic

relationships can take on various forms: a) supplier or customer relations, b) product development agreements; c) joint research agreements; d) marketing and distribution agreements; e) licensing agreements, etc. These relationships offer important strategic as well as financial benefits to CVC parent corporations.

Strategic alliances can be plagued by a host of contracting problems in the highly risky industries in which CVCs usually invest. Financial contracts in such settings are usually incomplete because the parties can neither anticipate nor reliably observe all the possible outcomes. This information contracting environment can lead to opportunistic behavior by one of the two parties. For example, one party in the strategic relationship may exploit the other by exerting insufficient effort, underinvesting, or appropriating a disproportionate share of the joint surplus created by the relation. Thus, some additional mechanisms are required in order for a strategic alliance to be initially viable and to remain so. According to the literature on incomplete contracting (see Klein, Crawford, and Alchian (1978), Grossman and Hart (1986), Hart (1988, 2001)), equity ownership and control rights in startups can mitigate potential hold-up problems between the parties in a strategic alliance, which in our case are CVC parents and startups. A distinctive feature of CVC strategic investments is that CVCs often hold equity stakes in the portfolio companies after they go public and continue to sit on their boards. Given their long standing investment in startup firms, CVCs are also apt to be better informed about the future prospects of the firms they fund.

As strategic investors, CVCs have incentives to seek greater control rights than other investors because they have more to lose due to their strategic objectives. CVC parents can be hurt if the portfolio firm's management is unwilling to pursue operating and investment decisions that are complementary or at least not damaging to the CVC

parent's or if a portfolio firm is acquired, which could threaten its commercial relationships with the portfolio firm as well as change its operating and investment decisions. CVCs generally have important strategic objectives that can be consistent with, independent of or in conflict with the goal of maximizing the financial returns from their equity investment in the portfolio firm. Since, manager incentives are generally aimed at maximizing the portfolio firm's financial returns, strategically oriented CVCs are taking greater risk when they allow startup firm managers unchecked decision making power. Thus, CVCs have incentives to seek greater decision making power in their portfolio firms than other VCs and to limit management influence by establishing effective corporate governance systems that can help protect their strategic goals after a startup goes public, and they lose their special control rights.

It should also be recognized that there can be conflicts of interest between CVCs and TVCs. TVCs and entrepreneurs often have the same objective – maximizing the financial returns on their investments. This might be in conflict with the strategic objectives of CVCs. Thus, entrepreneurs might rely on TVCs for protection against unchecked CVC power. Hellmann's (2002) model predicts that a startup entrepreneur will prefer TVC investors or CVC investors if its parent sells complementary products or services. Hence CVCs might prefer to work with weaker, less reputable TVCs when they invest for strategic reasons since this would enable them to have greater influence over major decisions such as a startup's corporate governance mechanisms and its potential exit strategies. On the other hand, CVCs can benefit from co-investing with reputable TVCs. VC syndication could lead to better deal flow and screening of potential venture investments, larger pools of capital, risk sharing, and more private equity contacts to help develop startup operations. The fact that TVCs have an incentive to support efficient

governance structures that will help ensure that managers do not behave opportunistically also helps protect CVC strategic investments. Aghion and Tirole (1994), in their model of the organization of R&D activity, show that it is optimal for CVCs (“customer” in their model) to have TVCs as co-investors since it can help raise CVC profits. Thus, syndication with TVCs can be beneficial for CVCs (both from a strategic and financial viewpoint) and can also alleviate entrepreneurial concerns about being expropriated by CVCs.

Given the difference in investment strategies between CVCs and TVCs, we conjecture that important differences will be observed in the corporate governance of CVC backed and TVC backed IPO firms. More importantly, we argue that such differences will be especially pronounced when comparing *strategic* CVC investments to TVC backed IPOs. Unlike other strategic alliance partners, CVC equity stakes in startups are relatively large (16.4% versus 2.5%), and thus they are in a much better position to affect the corporate governance systems of their portfolio companies before these firms go public. Given the impact of an IPO on a VC-backed firm’s corporate governance, CVCs may set up certain governance mechanisms pre-IPO to ensure that their interests continue to be protected. On the other hand, significant differences between the governance systems of IPO firms backed by financially oriented CVCs and those backed by TVCs are unlikely. This follows since financially oriented CVCs have incentives very similar to TVCs to support corporate governance mechanisms that maximizing the financial returns on their equity investments.

We propose several hypotheses, which are empirically evaluated in the next section. We test the validity of these hypotheses against the null hypothesis that CVC backing (for strategic reasons or purely financial reasons) has no additional impact on the

governance systems of VC-backed IPO issuers. CVCs can be just one more venture investor and in most cases they are not even lead VC investors. One possibility is that the VC syndicate as a group (or the lead VC) determines the governance structure of the firm, so that even when a strategically motivated CVC is in the VC syndicate, its marginal role is very minor and not easily detected empirically. In addition, anecdotal evidence suggests that CVCs often do not actively monitor their portfolio firms².

Our first hypothesis focuses on how quickly different types of VC firms unwind their equity holdings following IPOs. Since strategically oriented CVCs have an incentive to continue monitoring their portfolio firms beyond the IPO, we conjecture that CVCs on average hold equity positions post-IPO for longer periods than TVCs. We formally state this in the following hypothesis:

H1: Strategically motivated CVCs (1) will hold a larger percentage of equity relative to managers, (2) support smaller percentages of new shares in IPOs to minimize dilution of their voting rights, and (3) will hold equity positions in VC backed IPOs for longer period of time than financially motivated CVCs or TVCs.

We also expect CEOs in IPO firms to exercise less power relative to strategic CVC investors, who should demand more board power relative to management. Consistent with the arguments in favor of a less powerful CEO, we expect strategic CVC investors in IPO issuers to push for more independent directors on these boards and their key committees than other VC investors. More outsiders on the board will constrain CEO power, limit managerial entrenchment, and thus protect CVCs' interests in strategic

² Our analysis of strategic CVC investments suggests that CVCs tend to invest in earlier rounds, which provides some support to the argument that CVCs have a significant influence on the governance of startups.

alliances. In addition, we expect strategic CVC backed IPOs to employ fewer gray directors (outside directors that have some commercial or financial relationship to the firm) since they are less independent of the CEO's influence. For the same reason, CVCs should demand that an independent, non-executive officer be chairman of the board. This analysis can be summarized in the following hypothesis:

H2: IPO firms backed by strategic CVC investors will have (1) a greater percentage of outsiders on the board and its key committees (2) a smaller percentage of gray directors, (3) a smaller percentage of inside directors and (4) fewer incidences of CEO/Chairman duality) than IPOs backed by TVCs or purely financial oriented CVC investors.

Another important consequence of the incentives of strategic CVCs and their relative power with respect to senior management is the likelihood of forcefully replacing the company's CEO. This is one of the key decisions that the board makes and it has long-lasting repercussions for the firm's investment and financing policies and performance. Since managerial opportunism could endanger the benefits of their long-term strategic relationships, we expect that CVCs will use their board power and try to replace CEOs who exhibit poor performance or who extract excessive private benefits. H2 suggests that it would be easier to displace a CEO in an IPO firm backed by a strategic CVC since CEO board power is weaker in these firms. This is a prediction that we test directly using information on CEO turnovers in our sample.

H3: Forced CEO turnover is more likely in IPO issuers backed by strategic CVC investors. There should also be greater forced CEO turnover sensitivity to firm performance.

It is well known that many IPO firms get acquired soon after they go public (see *Daily Deal*, March 22, 2000). In addition, Dai, Anderson, Bittlingmayer (2006) reports that VC backed IPO firms are more likely to be acquired in the first few years after their IPOs compared to non-VC backed IPOs. Early acquisitions can be undesirable for CVCs because it could jeopardize valuable strategic relationships. Thus, CVCs are likely to support stronger defensive mechanisms when their portfolio firms go public.

A large arsenal of anti-takeover provisions exists to protect firms from unwanted bidders. Arrangements such as staggered boards, limits to shareholder amendments of the bylaws and the charter, supermajority requirements and poison pills are known to protect the board from being quickly replaced. However, Bebchuk, Cohen, and Ferrell (2005) argue that these arrangements are some of the most important preemptive legal takeover defenses available and they find convincing empirical support this conclusion. Bebchuk, Coates, and Subramanian (2002) argue that staggered boards are the most important takeover defense and find strong empirical support for this position. Field and Karpoff (2002) study the frequency of takeover defenses in IPO firms, but fail to find a significant effect of VC backing. However, they do not distinguish between CVCs and TVCs, nor do they distinguish between strategic and financial CVC investors, which we argue are crucial distinctions. We formalize the above analysis in the following hypothesis:

H4: IPOs backed by strategic CVC investors are likely to have stronger takeover defenses than those backed by financially oriented CVCs or TVCs. Stronger takeover protections, especially staggered boards, are especially likely to be adopted in IPO firms backed by strategically oriented CVCs.

III. Data

The data for this study comes from Thompson Financial's VentureXpert database and Jay Ritter's IPO website, <http://bear.cba.ufl.edu/ritter/ipodata.htm>. We begin by extracting all the VC backed IPOs listed on a major US exchange in the 1992-1999 period. There are 138 IPO by US firms having VC investment by US corporations in this sample period (CVC backed IPOs). The IPOs in our sample are backed by the venture arms of some of the biggest and most respected corporations in the economy, such as Microsoft, Intel, GE, Cisco Systems, AOL, and Xerox. Because the motives of CVC investors can vary substantially, we classify each of the 138 CVC IPOs into strategic or purely financial objectives. The classification is based on information provided in offer prospectuses, annual reports, and other corporate filings.

When a CVC parent has a strategic alliance, joint development agreement, licensing agreement, or similar arrangement with the IPO firm, we classify the CVC investment as strategic. Similarly, if the prospectus explicitly states that there is a customer/supplier relation between the CVC and the IPO firm, we also classify this as a strategic CVC investment. When a CVC has no strategic alliances with the firm we classify it as a purely financial investor. This classification scheme yields 94 strategic CVC investments and 44 purely financial CVC investments. Of course all of these CVC backed IPOs also have TVC investors as well.

Since TVC backed IPOs are more frequent than their CVC backed counterparts, we select a control group of 138 TVC backed IPOs (with no CVC investors) that have the same three- and four-digit SICs and similar size (pre-IPO sales within 50%-150% of those of CVC backed IPOs) to the CVC backed IPOs. For each IPO in our sample, we collect data on ownership, management, and board structure from the IPO prospectus and

proxy statements for the five years after the IPO. The identities of the participating VCs are taken from VentureXpert. In our analysis, we take into account the panel data characteristics of our sample by estimating firm fixed effects and random effects models. Our final sample has 1,240 firm-year observations by 276 IPO firms.

Table 1 reports summary statistics for our VC-backed IPO sample. Compared to other IPO studies, most IPOs in our sample are in high-tech industries – business services, computers, electronics, and biotech. This is not surprising given VC preferences for investing in newer, high-growth industries. Our IPOs are roughly half the size of the Baker and Gompers (2003) sample, though they report asset values in the IPO year, which captures the effect of the equity offering, while we report asset values for the prior year and draw our sample from a more recent period. In addition, strategic CVCs invest in IPO issuers that are younger and smaller than their financial CVC counterparts. However they are able to obtain higher IPO proceeds – their median proceeds are \$43 million compared to a median value of \$39 million for IPOs backed by financial CVCs. This is consistent with the finding of Ivanov and Xie (2006) that strategic CVC backed IPOs have higher valuations than other VC backed IPOs. Compared to their matched firms, strategic CVC backed IPOs, besides having larger IPO proceeds, are backed by more prestigious underwriters. We find similar patterns in the subsample of financial CVC backed IPOs. This sample of IPO firms tends to be older and have larger proceeds than their matched TVC-backed firms.

IV. Empirical results

Panels A and B of Table 2 present summary statistics for the subsamples of strategic and financial CVC backed IPOs, respectively. Table 2 shows that IPOs affiliated

with strategic CVCs on average have a higher equity ownership level and a longer holding period than financial CVCs. Median equity holdings of financial CVCs are essentially zero after year 1, while those of strategic CVCs do not fall to zero until the 4th or 5th calendar year after the IPO. Tests for equality of medians (not reported here for the sake of brevity) suggest that the equity ownership of strategic CVCs is significantly higher than that of their financially oriented counterparts from year -1 until year 3, where year 0 is the IPO year. A similar conclusion can be made about board participation in the cases of strategic and financial CVC investors. Strategic CVCs tend to have more directors, although the differences disappear after year 3. Tests show that strategic CVCs hold significantly more board seats than financially oriented CVCs in the first three years. These findings are intuitively plausible because strategic CVC directors have more to gain by being actively involved and remaining on the board longer.

Table 2A also shows that the equity ownership of strategic CVCs and TVCs in their portfolio companies continues until year 5 and the median equity holdings are different from zero until year 3. The ownership stake of TVCs is significantly higher than that of CVCs, but this is due to the fact that we report cumulative ownership of all TVCs investing in a given company. An important implication of the comparisons that can be drawn from Table 2A is that strategic CVCs do not appear to maintain post-IPO shareholdings longer than TVCs. Therefore, the results do not provide any support for H1. In addition, the results in Table 2B suggest that there are no differences in CEO ownership and tenure between strategic and financial CVC backed IPOs and their control firms. However, strategic CVCs on average have higher share ownership stakes than CEOs in years -1, 0 and +1, while financial CVCs have higher equity stakes than CEOs in years -1 and 0. Also, CEO share ownership is significantly larger than financial CVCs

after year +1 and larger than strategic CVCs after year +3. These findings provide some support for our conjecture in H1 that CVCs investing for strategic reasons will tend to have higher ownership than CEOs, even after an IPO. In addition, we do not find any significant differences regarding gray directors and CEO/Chairman duality between CVC backed and TVC backed IPOs or between strategic CVC backed and financial CVC backed IPOs. These findings do not provide support for H2.

Lastly, we investigate whether firms with strategic CVC backing tend to sell fewer shares in their IPOs. This is one way for the CVCs to preserve their voting power and influence over the startup and limit potential hostile bids. A smaller IPO issue means a lower dilution of the CVC's voting rights. We compare the ratio of primary shares sold at the IPO to shares outstanding before the offering. The information on pre-IPO shares and primary shares sold at the IPO comes from SDC's New Issues database. In some cases the information on pre-IPO shares is missing, so we use information from the IPO prospectuses to fill in the missing observations. The results of the univariate analysis are reported in Panel A of Table 3. We find that firms with strategic CVC backing sell a smaller percentage of shares than both their matching firms and IPO issuers backed by financially oriented CVCs. The median fraction of primary shares of IPO issuers with strategic CVC backing is 26.1%, which is significantly smaller than that of their matching firms (37.2%) and IPOs backed by financially oriented CVCs (31.6%).

We also investigate the percentage of primary shares issued using a regression framework to control for the effects of other differences in IPO characteristics. In Panel B of Table 3, we regress the percentage of primary shares on a number of firm-specific and offer-specific variables and CEO characteristics. Again, the results show that strategic CVC IPOs sell a significantly smaller percentage of primary shares compared to other

VC backed IPOs. In all the specifications, the *Strategic* variable is negative and significant. These results support H1: CVCs making strategic investments are more interested in preserving their voting rights after their portfolio firms go public.

IV.A. Board composition

We next consider the board structure to be the result of bargaining between CEOs and outside investors, in the spirit of Baker and Gompers (2003). We measure CEO power over the board of directors by the portion of officer-directors on the board (inside directors). Inside directors have strong incentives to support the CEO's positions in board decisions since any lack of loyalty could result in the officer being fired by the CEO. We begin by examining board size. The results in Tables 2A and 2B suggest that strategic CVC backed firms have larger boards (median of 7) than their control firms (median of 6) in the IPO year and the difference persists for at least two more years. On the other hand, the board size of financial CVC backed IPOs (median of 6) is significantly different than that of their control firms (median of 5) only in the IPO year. The post-IPO board size of financial CVC backed IPOs is not significantly different from its control sample.

Turning to board composition, we find that strategic CVC backed IPOs have more outsiders on their boards. As Table 2A shows, the difference in the median percentage of outside directors is insignificant for strategic CVC backed IPOs and their control firms in the IPO year (the median percentage of outside directors in strategic CVC backed firms is 73.2%, compared with 71.4% for the control sample). However, the strategic CVC backed firms have a significantly larger fraction of outside directors in four of the five post-IPO years. In contrast, financial CVC backed IPOs have a similar number of outside

directors on their boards as their control firms in the IPO year and the following 5 years.³ We also find that strategic CVC backed IPOs have significantly smaller fraction of insider directors than their matching firms as well as in comparison to financial CVC backed IPOs.

While outside directors are likely to exhibit greater independence from the CEO, there are important exceptions in terms of what is termed gray directors. These are directors who are related to the CEO, executives in other firms that sell goods and services to the firm in question, interlocking directors, or directors that have personal contracts with the firm or its subsidiaries. These directors have special incentives to support the CEO's positions in board deliberations due to their familial, financial or business connections. Thus, we define independent directors to be non-gray outside directors.

Tables 4A and 4B presents estimates from pooled cross-section time series regressions of the fraction of outside directors as a dependent variable with standard errors robust to heteroscedasticity and firm clustering. The explanatory variables include several CEO characteristics (age and tenure) and indicators for a founder and chairman of the board to capture CEO influence on the board. We also control for several firm characteristics including firm size (measured by log of sales in the prior year), age, research intensity, cash flows, underwriter reputation and VC reputation. In constructing these variables, we use many of the same variables in Baker and Gompers (2003) and Boone, Field, Karpoff, and Raheja (2006). As a VC reputation measure, we use the age of the lead VC, where a lead VC is defined as the VC with the earliest investment in the firm. If there are two or more VCs at the initial round, we select the VC with the largest

³ Another group of outside directors who may lack independence from the CEO are former officers and employees of the firm.

investment as the lead VC.⁴ The number of observations included in the regression is smaller than 1,240 because some firms in the sample do not have data on research intensity and cash flows. In Tables 4A and 4B we use both firm fixed effects and random effects models, where firm level heterogeneity is assumed to be time-invariant in both models.

Model 1 of Table 4A includes an indicator for strategic CVC investors. The coefficient on the strategic CVC indicator is positive (0.037) and statistically significant at the 5% level. This means that the presence of a strategic CVC investment increases the proportion of outside directors by roughly 5%. Interpreting this coefficient's economic significance, it says that that one in every four strategic CVC backed IPOs has an additional outside director (given that the average board of our IPO sample has approximately seven members, of which about five are outside directors). In addition, consistent with the findings of Baker and Gompers (2003), we document that the fraction of outsiders on the board is decreasing in cash flows as a fraction of sales. Like Boone et al. (2006), we also find that the fraction of independent directors is negatively related to CEO ownership.

In Model 2 of Table 4A we include an indicator variable that equals one if there is a strategic CVC investor, who also serves as the lead investor in the VC syndicate. We expect that lead CVCs are likely to have a strong influence on corporate governance mechanisms adopted by the firm prior to going public. The coefficient on the strategic CVC indicator is 0.039 and is significant at the 5% level, which indicates that IPO firms with strategic CVC investors are positively associated with larger fractions of outsider

⁴ We used alternative definitions of lead VC (the VC with the largest equity stake and the VC with the longest board membership) and reputation measures (amount of capital under management, number of firms taken public, etc.) and found qualitatively similar results.

directors. However, there is no significant marginal effect when the CVC is the lead syndicate investor.

In column 3 of Table 4A we also include company and year fixed effects to better account for the statistical properties of panel data. The results are again similar to what we find with the previous two models. The coefficient on the strategic CVC indicator is 0.150 and is significant at the 5% level. In column 4 of Table 4A, we estimate a random effects GLS model. If we assume that the unobserved firm heterogeneity is distributed independently of the regressors, then we can use a random effects model to estimate the panel regression. The main benefit of this approach is that it yields consistent estimates of all the parameters, including the time-invariant regressors, such as *Strategic*. The results mirror those of the previous specifications. Since our dependent variable is bounded by 0 and 1, in column 5 of Table 4A we estimate a generalized linear model, which is specifically designed to deal with fractional response data (see Papke and Wooldridge (1996)). This model uses a logit transformation of the dependent variable so that it maps onto the real line. The estimation results show that the coefficient on *Strategic* CVC indicator continues to be positive (0.181) and is significant at the 1% level (t-stat of 2.63). Thus, the analysis in this subsection suggests that strategic CVC backed IPOs have a larger fraction of outside directors than other VC backed IPOs, and this difference is both statistically and economically significant. Thus, the results supports hypothesis H2.

One alternative explanation for our board composition results is that strategically oriented CVCs simply select startups with more independent boards. If this is the case, then the residuals in our regressions will be correlated with the *Strategic* CVC indicator, thus leading to biased coefficients. We address this selection bias concern in several ways. First, we include in the analysis only the strategic CVC backed IPOs that received

their first corporate venture investments at an early stage of their life.⁵ Thus, board structure is likely to be much malleable and subject to substantial change prior to going public. The results are reported in the second column of Table 4B. The coefficient on *Strategic* is positive (0.056) and statistically significant (t-stat=2.66). Second, we run the regression only on IPOs (both CVC and TVC backed) that receive their first round of CVC (for CVC backed firms) or TVC (for the matching firms) financing at an early stage. Early-stage startups are the ones with highest degrees of uncertainty and information asymmetry about both future prospects and governance characteristics. The results from this sub-sample of IPOs are given in Model 2 in Table 4B. Again, the coefficient on *Strategic* is positive (0.44) and significant (t-stat=1.94).

Third, we address the CVC endogeneity issue by using an instrumental variables (IV) approach. We use three variables as instruments for strategic CVC investing: aggregate CVC investments as a portion of total VC investments in the year prior to the year in which a given startup received its first VC investment, the stage at which an IPO receives its first VC investment (early or late), and the average number of companies that the VCs investing in the startup have taken public. These three variables are significantly correlated with the *Strategic* CVC indicator, but not with the dependent variable. The Hansen-Sargan test of overconfidence restrictions cannot reject the null that the instruments satisfy the required orthogonality conditions (p-value=0.78), suggesting that these three variables are valid instruments. The results from the IV regression are reported as Model 3 of Table 4B. The coefficient on *Strategic* remains positive, but is higher than in the previous specifications (0.210). The *Strategic* CVC indicator also

⁵ We follow the VentureXpert classification of VC backed IPOs into early-stage and late-stage investments. If a firm is designated by VentureXpert as 'Early Stage', 'Other Early', 'Seed', or 'Startup' then we classify it as early stage. If a firm is designated by VentureXpert as 'First Stage', 'Second Stage', 'Third Stage', 'Expansion', 'Other Expansion', 'Bridge', 'Bridge Loan', or 'Other Later Stage' then we classify it as late stage.

remains statistically significant, although the level of statistical significance decreases (t-stat=2.11) relative to the earlier specifications. Thus, the earlier results continue to hold even after we control for the potential endogeneity of CVCs initial investment choices.

Lastly, we try to control for the endogeneity of the CEO/COB variable. It is possible that the CEO is more likely to be a chairman if the board is less independent. This could explain the positive and significant coefficients on this variable. To control for this potential endogeneity, we again employ an IV regression, in which we instrument for CEO/COB using the CEO/Founder variable. The results of this regression are shown in the last column of Table 4B. The coefficient estimate on the instrumented CEO/COB variable continues to be positive, though it no longer is statistically significant. Nevertheless, *Strategic* CVC indicator is still positive and significant.

IV.B. Board committees

The board generally establishes several committees to provide oversight on top management and to actively participate in the governance of the corporation. The most important committees are audit, compensation, and nominating. The audit committee usually makes recommendations to the board regarding the selection of independent auditors, reviews the financial results and the scope of the audit and other services provided by independent auditors, and reviews and evaluates the company's internal control functions. The compensation committee decides on and evaluates compensation packages for employees, including the CEO and administers the company's stock plans. The nominating committee recommends candidates for senior management positions as well as for election to the board of directors. The proportion of outsiders on these committees is another measure of the power balance between the CEO and outside

investors. H2 predicts that the key committees of IPO firms with strategic CVC investors have a majority of outside directors. While all of the IPOs in our sample have audit and compensation committees, the majority of them do not have a nominating committee. However, it should be noted that the lack of a nominating committee is likely to give a CEO greater influence over board nominations.

We first examine the composition of audit and compensation committees using a probit model. The dependent variables are respectively equal to one if the audit or compensation committee is composed entirely of independent directors at the IPO, and zero otherwise. Independent directors exclude any outside gray directors. We use a similar set of control variables like the one used by Klein (1998 and 2002) in her analysis of board committee composition. We also include *Strategic*, an indicator variable for the presence of a strategic CVC investor.

The estimates from the probit model are presented in Table 5. The first model analyzes compensation committee composition. *Strategic* has a positive coefficient of 0.44, which is significant at the 5% level ($Z\text{-stat}=2.07$), which we interpret as showing greater compensation committee independence. The result is also economically significant. The presence of a strategic CVC investor increases the probability of an independent compensation committee by roughly 10%. Of the other explanatory variables, only the log of the CEO age is positive and significant. Thus, it appears that strategic CVC backed companies have an important bearing on the independence of compensation committees. We do not find that CVC backing has a significant impact on the composition of the audit committee. Further tests reveal that the impact of strategic CVC investors on the composition of the compensation committee remains significant in the first year after the IPO (*Strategic* has a coefficient of 0.50 with $Z\text{-stat}=2.42$). As an

additional test, we examine whether CEO membership on the compensation or audit committee is less likely in the presence of strategic CVC investor, but do not find any significant effects.

As an additional test of CEO power, we examine whether a firm has a nominating committee independent of the CEO at the time of the offering. The dependent variable is equal to one if the firm has a nominating committee, and zero otherwise.⁶ In this analysis, we exclude the *CEO_Founder* indicator variable because it perfectly predicts the presence of a nominating committee. As the last regression in Table 5 suggests, strategic CVC backed firms are more likely to have a nominating committee, but the coefficient on the *Strategic CVC* indicator is not statistically significant.

IV.C. Anti-Takeover Protections

Next we turn to the analysis of takeover defenses CVC and TVC backed IPOs. We measure the degree of takeover protection using a version of the index proposed by Bebchuk, Cohen, and Ferrell (2005). They consider six governance provisions – staggered boards, limits to shareholder bylaw amendments, supermajority requirements for mergers, supermajority requirements for charter amendments, poison pills, and golden parachutes. We make two changes – instead of golden parachutes, which are not frequently encountered in IPO firms, we include severance agreements that contain payments equal to at least the manager’s annual salary and instead of poison pills, we use blank check preferred stock since few IPOs have poison pills. If H3 holds, then we expect strategic CVC backed IPOs to have higher ATP index levels, since CVCs have incentives

⁶ In robustness analysis, we examine firms with nominating committees that exclude the CEO as a member.

to protect their companies from being acquired by potential competitors, unlike TVCs which could see added financial gains from such acquisitions.

Tables 6A and 6B reports the results of a univariate analysis between CVC backed IPOs and their matching firms. We compare ATP index levels as well as their components across types of CVC backed IPOs and their matching firms. In Table 5A we find that there is no significant difference between the ATP levels in strategic CVC backed IPOs and their matching firms. On the other hand, Table 6B shows that IPO firms backed by financial CVC have lower ATP index levels than their control firms (the difference is significant at the 5% level). This result is consistent with the predictions of H4. So strategic CVC backed IPOs employ more takeover defenses, which could ward off bids by competitors of the CVC parent. While higher APTs could result in greater management entrenchment, this effect could be offset by the fact that strategic CVC backed IPOs have more independent boards. Thus, these independent directors could exert pressure to limit CEO empire-building, shirking and excessive perquisite consumption, while using ATPs to protect the strategic alliance from potential competitors. Thus, strategic CVCs are likely to find that having a higher ATP index levels to be beneficial. In further analysis, we examine the frequency of acquisitions in the following 3 years and find that CVC parents and competitors of the CVC parent are equally likely to be the acquirer.

We further examine the differences in these takeover defenses in Tables 6A and 6B, where we compare each component of the ATP index. Since staggered boards are considered the strongest common takeover defense, we focus on this particular ATP. We find that strategic CVC backed IPOs employ staggered boards more often than their control firms or financial CVC backed IPO firms. Staggered boards are present in 63.3%

of the strategic CVC backed IPOs, while they occur in only 51.1% of the matched firms (the difference is significant at the 10% level) and in 45.2% of the IPOs backed by financial CVCs. There is no difference between CVC backed IPOs and their control firms with respect to the other elements of the ATP index. This evidence supports the above-mentioned argument that CVCs have greater incentive to employ more anti-takeover mechanisms. On the other hand, staggered boards allow managers to entrench themselves and thus, might be shareholder value destroying (see Bebchuk and Cohen (2005) and Faleye (2006)), which might negatively affect the value of a CVC's strategic investments. However, strategic CVCs also address the negative effects of managerial entrenchment by encouraging its IPO firms to appoint more independent boards and key committees, which could more than offset the entrenchment effects of senior management.

To further analyze these questions, we use a regression framework to control for other IPO characteristics, which could differ across the two samples. We then examine the determinants of the decision to adopt a staggered board, which is a particularly effective ATP.⁷ We use a probit model to examine this question where the dependent variable is equal to 1 if the firm has a staggered board at the time of the IPO, and is 0 otherwise. We use a model specification similar to Pompilio (2007), who investigates the general impact of VC backing on the decision to adopt a staggered board.

The results are presented in Table 7. We can see that the presence of strategic CVC investor is associated with a higher probability of adopting a staggered board. In Model 1, the coefficient on the *Strategic* indicator variable is 0.271, which is significant at the 10% level ($z\text{-stat}=1.78$). In terms of economic significance, the results suggest that the presence of a strategic CVC investor increases the likelihood of a staggered board by

⁷ Recent studies (see, for example, Bebchuk and Cohen (2005) and Faleye (2007)) present evidence that staggered boards have a significantly negative effect on firm value.

roughly 11%. In Model 2 we include an indicator variable equal to one if the strategic CVC is also the lead investor in the firm. The coefficient on this variable, however, is not significantly different from zero.

In Model 3 we control for the fact that the decision to adopt a staggered board might be endogenous with respect to strategic CVC backing. CVC might invest for strategic reasons in startups which already have a staggered board. To deal with this selection issue, we use a bivariate probit model, where we first model the strategic CVC investment decision and then estimate the model with staggered board as a dependent variable. We use the same specification for the strategic CVC selection model as the one in Section IV.A. The results from the bivariate model specification are qualitatively similar to those in Models 1 and 2. The coefficient on the *Strategic* is positive (0.622) and statistically significant ($z\text{-stat}=2.60$). Thus, using both univariate and multivariate analysis, we document that strategic CVC investors are associated with a significantly higher likelihood of adopting a staggered board. This is consistent with our H3: CVCs making strategic investments also try to protect their parents' strategic interests by reducing the probability that these startups are later acquired by potential competitors. Our findings also complement the results in Pompilio (2007) by showing that a specific type of VC investors (CVCs), which has different investment incentives and objectives, which have an important bearing on whether a startup adopts a staggered board.

IV.D. CEO Turnover

In this section we examine the effect of strategic CVC investments on CEO turnover. We are particularly interested in forced CEO turnovers since this is an important measure of managerial entrenchment. This follows because entrenched

managers are less susceptible to involuntary departures since they are not exposed to strong board oversight or market pressure.

To identify CEO turnover, we rely on information taken from proxy statements in the five years following the IPO. In our panel data, we have 1,093 firm-years and 273 firms and we observe 170 CEO departures. We then identify forced departures by reading news reports in Factiva around the time of the CEO change. Forced turnovers are those reported to be due to dismissals or firings by the board, departures following poor performance or firm scandals, cases where CEOs depart for a lower status job (if the CEO is under 60) or fails to take a new executive position within 12 months, and other similar circumstances. In total we have 40 forced departures, which translates into a 23.5% turnover rate. Other studies report similar turnover rates (for example, Huson, Parino, and Starks (2001) report a rate of 23.4%, while Faleye (2006) reports a rate of 23%).

To test whether the presence of a strategic CVC investor is associated with higher forced turnover, we estimate this panel data using a logistic model with industry fixed effects and standard errors robust to heteroscedasticity and firm clustering. The dependent variable is an indicator variable that equals one if the CEO departure is forced and zero otherwise. The main explanatory variable of interest is an indicator variable, *Strategic*, that equals one if there is strategic CVC investor. Since prior studies identify several factors that influence CEO turnover, we include these as control variables. The first control variable captures past stock return performance in the calendar year preceding the IPO (see Coughlan and Schmidt (1985) and Warner, Watts, and Wruck (1988)) measured by cumulative abnormal stock returns, where we adjust returns by subtracting the return on the CRSP equal-weighted portfolio of NYSE/Amex/Nasdaq

stocks. Yermack (1996) finds a negative relation between board size and forced turnover, while Goyal and Park (2002) documents a similar relation between the probability of forced turnover and a dual CEO-chairman of the board. To take these effects into account, we include board size and an indicator for a dual CEO-chairman as regressors. Denis, Denis, and Sarin (1997) show that a CEO is more likely to continue in the position as his or her shareholdings in the firm rise, while Weisbach (1988) finds that forced CEO turnover is more likely if the board is dominated by outside directors. Thus, we also use CEO ownership and an indicator for boards having a majority outside directors as regressors. All the control variables are measured in the year prior to the CEO's departure.

The results of this estimation are presented in Table 8. In the first model, we include a strategic CVC indicator to investigate whether there is a general impact of strategic CVC investments on forced turnovers. We find that the presence of a strategic CVC is associated with a significantly higher likelihood of forced CEO departure. The *Strategic* indicator has a positive coefficient of 0.713 and a significant t-statistic of 2.06. The result is also economically significant. The odds ratio for the strategic CVC indicator is 2.04, which means that strategic CVC backing increases the odds of forced turnover by more than a 100%. Alternatively, the result suggests that strategic CVC backing increase the probability of forced CEO turnover by 34%. This result supports H3.

We next examine is the impact of a lead strategic CVC investor on forced CVC turnover (Model 2). CVCs should be able to put stronger pressure on CEOs if they are the leading VC syndicate investor, since they generally have greater board power. To test the validity of this prediction, we interact the CVC *Strategic* indicator with an indicator for them also being a lead investor. The results support a positive relation between the

presence of strategic CVC investors and forced CEO departures since the coefficient on the strategic CVC indicator is positive (0.841) and significant (t-stat=2.28). The odds ratio for this coefficient is 2.32, which implies that strategic CVC investments increase the odds in favor of forced CEO turnover by 132%. Consistent with our other finding for lead strategic CVCs, the probability of forced CEO removal is not significantly related to the interaction term *Strategic Lead*. This may reflect the greater influence of the CEO in these firms due to the greater concern about lead CVC investors having conflicts of interest as shown in Masulis and Nahata (2007). Thus, having a CVC investor results in a higher probability of forced CEO departure, but only when there is strategic fit between the IPO firm and the CVC parent.⁸ This supports our initial conjecture that strategic CVC investors have greater incentives and ability to curb managerial entrenchment in order to protect their investments. Turning to the other control variables, we find that past firm performance is negatively correlated with the likelihood of forced CEO departure, which is consistent with findings in previous studies.

In the third column of the table (Model 3), we examine the impact of strategic CVC investments on the performance-sensitivity of CEO turnover by creating an interaction term between past stock return performance and the strategic CVC indicator variable. The coefficient on *Strategic Past return* is negative, but insignificant (t-statistic = -0.18). The result suggests that strategic CVC investors do not increase the sensitivity of CEO turnover to performance.

⁸ Since boards seem to be more sensitive to ROA performance relative to stock performance according to Graham and Harvey (200?) survey, we test for the sensitivity of CEO forced turnover to ROA performance with the addition of an interaction term. We find similar results to when we examine the past stock return performance, namely that the coefficient associated with ROA is significant and negative, and the interaction term with the *Strategic* indicator is insignificant.

Lastly, we examine the impact of strategic CVC investments on the probability of CEO turnover for a sample that includes only firm years with CEO turnover (Model 4). Here, the indicator variable equals one if CEO departure is forced, and zero if it is voluntary. The coefficient on *Strategic* is again positive (0.853) and statistically significant (t-stat=2.01). For the control variables, we find a significant negative relation between the likelihood of forced CEO turnover and a dual CEO-chairman (t-stat=-1.77), which is consistent with more powerful CEOs being less likely to be fired.

V. Strategic corporate venture capital investments versus strategic relationships

One potential explanation for the results in the previous section is that they are due to other established strategic relationships. VC backed IPOs sometimes enter into various types of strategic relationships with established corporations and these relationships may also create incentive to establish corporate governance structures similar to those frequently found in the presence of strategic CVC investments. To investigate this possibility, we include VC backed IPOs with strategic relationships in our analysis. For the period 1992-1999, there are 133 VC backed IPOs which enter in strategic relationships or strategic alliances with established corporations. We add these IPO firms to the sub-sample of 94 strategic CVC backed IPOs to form a new sample of 227 IPO firms with strategic relationships. We then compare the board composition, independence of audit and compensation committees, and the use of staggered board provisions between strategic CVC backed IPOs and VC backed IPOs with other strategic corporate relationships.

Table 9 presents the results for board independence. Again, the main variable of interest is the indicator variable denoting strategic CVC backing. We find that even after

controlling for the presence of corporate alliances, strategic CVC backed IPOs continue to have more independent boards. In the resulting pooled time series cross-sectional regressions where we adjust for heteroscedasticity and firm clustering, the strategic CVC indicator is positive (0.03) and significant at conventional levels for all the model specifications (t-stat=1.81). The same result holds when we use year and firm fixed effects (Model 2) and random effects models (Model 3). The coefficient on the strategic CVC indicator is highest in the fixed effects model (0.196 with t-stat=13.65), which suggests that every strategic CVC IPO has one more independent director than IPOs with business alliances. Some of the other control variables are also significant in various specifications. Additionally, we estimate probit models for the independence of the audit and compensation committees (similar to the analysis in section IV.B.) and perform a univariate analysis of staggered boards. We do not find any significant differences with respect to composition of audit and compensation committees or the use of staggered boards.

Lastly, we investigate whether CEO forced turnover is more likely for strategic CVC backed IPOs than IPOs with only other strategic relationships. As in Section IV.C., we examine the frequency of forced CEO departures for the sample of IPOs with strategic relationships using *Factiva* and other news sources. We identify 61 CEO turnovers, 14 of which we identify as forced. Combining the two sub-samples yields 35 forced departures in a total of 925 firm-year observations. We use again use a cross-sectional time series logistic model with corrections for heteroscedasticity and firm clustering. The dependent variable is one if the CEO is forced to depart and zero otherwise. We use the same control variables as in Section IV.C.

The results of the estimation are presented in Table 10. Model 1 includes an indicator for strategic CVC investments. Its coefficient is positive (0.663) and significant at conventional levels (t-stat=1.77), which implies that CEOs of strategic CVC IPOs are more likely to be forced out. In Model 2 we include an indicator variable for when a CVC is the lead VC syndicate member. The coefficient on this indicator is not statistically significant, but the coefficient on *Strategic* is 0.74 and significant at the 6% level. The odds ratio for this variable is 2.09, which suggests that having a strategic CVC investor increases the likelihood of CEO forced departure by almost 110% compared to the presence of other strategic relationships. Lastly, in Model 3 we examine whether the presence of a strategic CVC investor increases the turnover-performance sensitivity by including an interaction term between *Strategic* and the firm's market adjusted return. This interaction term is positive (0.315) and significant (t-stat=1.76), consistent with firms backed by strategic CVC investors experiencing greater CEO turnover-performance sensitivities. In addition, the coefficient on *Strategic* is positive (0.951) and significant (t-stat=2.41), which is further support for the disciplining effect of strategic CVCs, even when the market for corporate control is restricted by strong ATPs..

Overall, our results suggest that strategic CVC investors tend to be associated with more independent boards and a higher likelihood of forced CEO departures. One explanation for these results is that CVCs have a greater incentive and ability to influence the corporate governance structures in their startup investments. The mean ownership stake of strategic CVCs is 16.4%, compared to 2.5% for alliance partners (the median for these is 0). Thus, strategic CVCs backing IPO firms have more at stake compared to when IPO firms with strategic corporate partners. Thus, CVCs are likely to work harder to protect their investments in the former cases.

VI. Conclusion

We investigate how differences in investment incentives and strategies between CVCs and TVCs affect corporate governance structures of IPO firms. We hypothesize that strategic investments by CVCs can lead to certain type of corporate governance structure, which reflect the nature of strategic alliances between CVC parents and startups and the need for CVCs to protect their strategic investments. On the other hand, we do not expect any significant differences between TVC backed IPOs and IPOs backed by CVCs that invest purely for financial reasons. We test three hypotheses regarding the effects of prior CVC funding of IPO firms which is related to their continued involvement after the IPO, the degree of independence of the board and key board committees, and the level of managerial entrenchment. We test our hypotheses using a sample of 276 IPOs during 1992-1999, supplemented by a large amount of hand collected corporate governance data.

Consistent with the strategic alliance hypotheses, we find that IPO firms backed by strategic CVCs have more outsiders on the board and more independent directors on compensation committees than a set of matched firms or a set of IPO firms backed by purely financially motivated CVCs. In addition, forced CEO turnover is more likely in such IPOs. Both results are statistically and economically significant. We do not find any significant differences between the board composition and forced CEO turnover in IPO firms backed by financial CVCs and a set of matched firms. In addition, we find that strategic CVC backed IPOs have stronger anti-takeover protections than other IPOs, and that the difference is mainly due to heavy use of staggered boards. We interpret this as reflecting CVC concerns for protecting the strategic relationships that these IPO firms

have with the CVCs' parents. Our explanation is that although ATPs produce greater managerial entrenchment, there is an offsetting benefit for CVCs since they prevent competitors from acquiring CVC backed IPOs and potentially destroying valuable strategic relationships. In addition, the managerial entrenchment effect of anti-takeover devices is at least partially counteracted by more independent boards and compensation committees. Lastly, we compare IPO firms backed by strategic CVCs to IPO firms with general strategic relationships with other corporations and find that they look similar with respect to the independence of board committees and use of anti-takeover defense mechanisms. However, firms backed by strategic CVCs continue to have significantly more independent directors and a higher likelihood of forced CEO turnover, especially in the face of poor firm performance.

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Table 1
Summary statistics for our IPO samples

The sample consists of 276 venture backed IPOs for the period 1992-1999. Strategic CVCs are IPOs which have a strategic relationship with their CVC investor. Financial CVCs are IPOs which have no strategic relationship with their CVC investor. Matching sample in each case is a sample of TVC backed IPOs from the same industry (three- and four-digit SIC) and with similar size (based on pre-IPO sales). Age is measured as of the IPO year. R&D intensity is calculated as R&D expenses (Compustat item43) divided by total assets (Compustat item6). Underwriter rank is calculated using the approach in Carter and Manaster (1990). Lead VC age is the age of the lead venture capitalist in the year of the offering. Lead VC is the VC with the earliest investment in the company. The symbols ***, **, * represent statistically significant differences between strategic and financial CVC IPOs and their respective matching firms at the 1%, 5%, and 10% based on nonparametric Mann-Whitney test for equality of medians.

Variables	Strategic CVC IPOs		Financial CVC IPOs	
	CVCs	Matching sample	CVCs	Matching sample
Number of companies	94	94	44	44
Age at IPO	5.3 (4.0)	5.2 (4.0)	7.6* (6.0)	5.9 (5.0)
Pre-IPO sales (mill.)	11.2 (5.3)	11.0 (5.2)	18.8 (11.0)	18.9 (12.3)
Pre-IPO book value of assets	24.8* (13.7)	20.2 (9.7)	24.5 (14.8)	18.5 (9.8)
Pre-IPO R&D Intensity (%)	41.4 (27.8)	36.6 (25.5)	29.4 (16.6)	32.9 (21.2)
IPO proceeds (mill.)	54.6*** (43.0)	39.4 (33.9)	51.6** (39.1)	34.9 (32.0)
Underwriter rank	8.1** (9.0)	7.6 (8.0)	8.2 (8.0)	7.6 (8.0)
Lead VC age	14.1 (13.5)	15.6 (16)	13.3 (11.5)	13.5 (12)
Main industries – SIC codes	73, 28, 36, 38, 48		73, 36, 35, 38, 28	
Major CVC investors (number of IPOs in our sample)	Microsoft(8) Intel(7) Cisco Syst.(5) AOL(4) MediaOne(4)		GE(9) Intel(6) AT&T(5) Xerox(4) EG&G(3)	

Table 2
Summary statistics for strategic and financial CVC backed IPOs

The table presents summary statistics for the sample of 94 strategic and 44 financial CVC backed IPOs CVC backed IPOs for the period 1992-1999. Strategic CVC IPOs are IPOs which have a strategic relationship with their CVC investor. Financial CVC backed IPOs are cases where the IPO issuer has no strategic relationship with the CVC parent. Both strategic and financial CVC backed IPOs have TVC investors as well. Matching TVC IPOs in each case is a sample of TVC backed IPOs from the same industry (three- and four-digit SIC) and with similar size (based on pre-IPO sales). Year 0 is the IPO year. The symbols ***, **, * represent statistically significant differences between strategic CVC IPOs and their matching firms at the 1%, 5%, and 10% based on nonparametric Mann-Whitney test for equality of medians.

Panel A. Strategic CVC backed IPOs

Variables – mean (median)	Year -1	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Ownership							
CVCs	20.7% (17.5)	16.4% (12.7)	13.2% (11.2)	9.7% (6.9)	7.4% (4.9)	5.3% (0.0)	2.6% (0.0)
Matching TVC IPOs	42.2% (42.2)	30.9% (32.0)	24.5% (23.1)	15.2% (11.4)	9.7% (3.9)	8.1% (0.0)	5.5% (0.0)
Board size							
Strategic CVC IPOs		6.9* (7.0)	6.9** (7.0)	6.7** (6.5)	6.7 (6.0)	6.8 (7.0)	6.6 (6.0)
Matching TVC IPOs		6.4 (6.0)	6.4 (6.0)	6.2 (6.0)	6.2 (6.0)	6.2 (6.0)	6.5 (6.0)
Number of venture directors							
CVC directors		0.9 (1.0)	0.8 (1.0)	0.6 (0.0)	0.5 (0.0)	0.3 (0.0)	0.2 (0.0)
TVC directors –coinvesting TVCs		1.9 (2.0)	1.7 (2.0)	1.5 (1.0)	1.1 (1.0)	0.9 (1.0)	0.8 (1.0)
TVC directors – matching TVC IPOs		2.1 (2.0)	1.8 (2.0)	1.4 (1.0)	1.2 (1.0)	0.9 (1.0)	0.6 (0.0)
CEO ownership							
Strategic CVC IPOs	9.5% (6.1)	7.7% (4.6)	6.4% (3.8)	5.9% (3.8)	5.1% (3.6)	5.4% (3.6)	4.6% (3.2)
Matching TVC IPOs	11.2% (6.1)	8.3% (4.3)	7.7% (4.3)	6.5% (3.6)	5.4% (3.0)	6.1% (3.4)	5.7% (3.1)
Strategic CVC vs. CEO – z-stat (p-value)	6.30 (0.00)	6.66 (0.00)	4.53 (0.00)	1.51 (0.13)	0.45 (0.65)	-1.77 (0.08)	-3.64 (0.00)
CEO tenure – years							
Strategic CVC IPOs		3.4 (3.0)	4.2 (4.0)	4.7 (5.0)	5.0 (5.0)	5.0 (6.0)	5.7 (7.0)
Matching TVC IPOs		4.0 (3.0)	4.8 (4.0)	4.7 (4.0)	5.5 (5.0)	5.2 (4.0)	5.2 (3.0)
% outside directors							
Strategic CVC IPOs		72.0%* (73.2)	71.7%* (72.4)	74.4%*** (75.0)	71.7% (71.4)	72.2%** (75.0)	75.1%** (77.8)
Matching TVC IPOs		69.2% (71.4)	69.2% (71.4)	67.2% (71.4)	71.7% (71.4)	63.8% (66.7)	68.6% (71.4)

% inside directors							
Strategic CVC IPOs	28.0%*	27.6%	24.4%***	26.6%	26.0%***	23.6%*	
	(25.0)	(25.0)	(22.0)	(25.0)	(25.0)	(21.0)	
Matching TVC IPOs	29.9%	29.5%	30.8%	26.7%	33.3%	27.9%	
	(28.6)	(28.6)	(28.6)	(28.6)	(34.5)	(28.6)	

Table 2 (continued)

Panel B. Financial CVC backed IPOs

Variables – mean (median)	Year -1	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Ownership							
Financial CVC IPOs	16.0%	11.2%	8.5%	4.8%	4.3%	4.6%	3.4%
	(11.3)	(7.9)	(6.4)	(0.0)	(0.0)	(0.0)	(0.0)
Matching TVC IPOs	44.7%	29.5%	20.8%	11.1%	5.4%	6.0%	2.0%
	(37.9)	(28.0)	(18.3)	(7.0)	(0.4)	(0.0)	(0.0)
Board size							
Financial CVC IPOs		6.5**	6.7	6.7	6.9	6.7	6.8
		(6.0)	(6.0)	(6.5)	(6.0)	(6.0)	(6.0)
Matching TVC IPOs		6.0	6.1	6.4	6.2	6.1	6.4
		(5.0)	(6.0)	(7.0)	(6.0)	(6.0)	(6.0)
Number of venture directors							
CVC directors		0.5	0.3	0.2	0.3	0.3	0.2
		(0.0)	(0.0)	(0.0)	(0.0)	(0.0)	(0.0)
TVC directors – coinvesting		2.1	1.7	1.2	0.8	0.7	0.7
TVCs		(2.0)	(2.0)	(1.0)	(1.0)	(0.5)	(0.5)
TVC directors – matching		1.9	1.7	1.3	1.0	0.9	0.60
TVC IPOs		(2.0)	(1.0)	(1.0)	(1.0)	(1.0)	(0.5)
CEO ownership							
Financial CVC IPOs	9.7%	7.2%	6.7%	5.5%	5.2%	5.8%	3.5%
	(4.8)	(3.7)	(3.6)	(2.9)	(3.0)	(3.1)	(2.9)
Matching TVC IPOs	9.1%	5.7%	5.2%	4.5%	3.9%	3.8%	3.3%
	(5.6)	(3.4)	(3.6)	(3.3)	(2.8)	(2.9)	(2.1)
Financial CVC vs. CEO – z-stat (p-value)	3.32	3.46	1.03	-1.82	-2.62	-2.56	-3.24
	(0.00)	(0.00)	(0.31)	(0.07)	(0.01)	(0.01)	(0.00)
CEO tenure (years)							
Financial CVC IPOs		3.4	4.3	4.5	4.6	5.5	4.8
		(3.0)	(4.0)	(4.0)	(4.0)	(5.0)	(4.0)
Matching TVC IPOs		3.7	3.9	4.5	4.6	5.2	5.6
		(3.0)	(3.0)	(4.0)	(4.0)	(4.0)	(5.0)
% outside directors							
Financial CVC IPOs		70.8%	71.0%	70.0%	71.4%	73.3%	74.9%**
		(71.4)	(71.4)	(71.4)	(72.0)	(75.0)	(80.0)
Matching TVC IPOs		67.6%	67.9%	67.7%	68.9%	66.6%	63.2%
		(71.4)	(71.4)	(71.4)	(71.4)	(66.7)	(66.7)

% inside directors						
Financial CVC IPOs	27.8%	27.7%	28.3%	27.4%	26.7%	24.3%**
	(28.6)	(25.0)	(28.6)	(25.0)	(25.0)	(20.0)
Matching TVC IPOs	31.9%	31.4%	31.9%	30.7%	32.3%	33.9%
	(28.6)	(28.6)	(28.6)	(28.6)	(33.3)	(33.3)

Table 3
Primary shares sold at IPO as percentage of total shares outstanding prior to IPO

The table presents the results of a univariate and multivariate analysis of the ratio of primary shares sold at the offering to pre-IPO shares outstanding. The sample includes only observations in the year of IPO. Nonparametric Mann-Whitney test for equality of medians is used in Panel A. Strategic is an indicator that equals one if there is a strategic CVC investor. Leading CVC is the first CVC investor in the firm. CEO tenure is the tenure of the CEO. CEO chairman is an indicator that equals one if the CEO is also a chairman of the board. Total assets is the Compustat item006 in the year prior to IPO. Firm age is the age of the firm at IPO. R&D intensity is measured as the ratio of R&D to sales in the previous year. VC reputation is the age of the lead VC. Underwriter rank is an indicator variable that equals one if the leading underwriter's rank is above 7 based on the Carter-Manaster (1990) reputation measure, updated by Jay Ritter. Abvrange is an indicator equal to one if the IPO offer price is above the middle of the pre-offer filing range. White (1980) heteroskedasticity-consistent t-statistics are reported in brackets.

Panel A. Univariate results

	CVC	Matching	p-value of tests for differences in medians
	Mean (median)	Mean (median)	
Strategic CVC	27.7% (26.1%)	52.1% (37.8%)	0.01
Financial CVC	39.0% (31.6%)	53.2% (38.7%)	0.22
Strat vs. Fin			0.05
Num. Obs.	94	44	

Panel B. Regression analysis

Variables	Dependent variable: Primary shares/Pre-IPO shares		
	(1)	(2)	(3)
Strategic CVC	-0.156 [-2.61]	-0.151 [-2.60]	-0.167 [-2.61]
Strategic CVC lead		-0.068 [-0.95]	-0.022 [-0.28]
Log (CEO tenure)	-0.045 [-1.48]	-0.043 [-1.45]	-0.035 [-1.05]
CEO-chairman	-0.006 [-0.09]	-0.011 [-0.15]	-0.013 [-0.17]
Log (Total assets)	0.011 [0.24]	0.011 [0.23]	-0.025 [-0.63]
Log (Firm age)	-0.149 [-1.02]	-0.150 [-1.02]	-0.141 [-0.81]
R&D intensity	-0.044 [-0.53]	-0.047 [-0.56]	-0.079 [-0.86]
Log (VC reputation)	-0.019 [-0.53]	-0.019 [-0.55]	-0.004 [-0.11]
Underwriter rank	-0.188 [-2.19]	-0.187 [-2.17]	-0.134 [-2.16]

Abvrange	-0.002 [-0.04]	-0.001 [-0.02]	-0.002 [-0.03]
Industry fixed effects	No	No	Yes
Num. Obs.	273	273	273
p-value of χ^2	0.01	0.01	0.01
Pseudo R ²	0.07	0.07	0.10

Table 4
Board composition and strategic CVC investments

The table presents the results of a pooled cross-sectional time series regression of the fraction of outsiders on the company's board on a number of explanatory variables for the period 1992-1999. Strategic is an indicator that equals one if there is a strategic CVC investor. Leading CVC is the first CVC investor in the firm. CEO-chairman and CEO-founder are respectively indicators that equal one if the CEO is also a chairman of the board and if the CEO is a firm founder. VC reputation is the age of the lead VC. R&D intensity is measured as the ratio of R&D to total assets in the previous year. Firm risk is measured as the industry median standard deviation of stock returns in the previous year. Competitive industry is the Herfindahl index for the respective 2-digit SIC code. Standard errors are robust to heteroscedasticity and clustering. The t-statistics are reported in brackets.

Panel A. Whole sample results

Variables	Percentage of outsiders on the board				
	Pooled cross-sectional time series regressions			Random effects GLS	General linear model
	(1)	(2)	(3)	(4)	(5)
Strategic CVC	0.037 [2.61]	0.039 [2.76]	0.150 [2.04]	0.033 [2.14]	0.181 [2.63]
Strategic CVC lead		-0.006 [-0.30]		-0.007 [-0.36]	
CEO characteristics:					
CEO ownership	-0.003 [-3.53]	-0.003 [-3.57]	-0.004 [-0.05]	-0.001 [-1.84]	-0.013 [-3.63]
Log (CEO tenure)	0.011 [1.20]	0.011 [1.21]	0.016 [1.39]	0.012 [1.83]	0.054 [1.23]
CEO-chairman	0.031 [2.39]	0.031 [2.38]	0.013 [1.38]	0.018 [2.08]	0.151 [2.42]
CEO-founder	0.011 [0.68]	0.011 [0.70]	0.004 [0.23]	0.015 [1.30]	0.052 [0.67]
Firm characteristics:					
Log (Firm size)	-0.002 [-0.42]	-0.002 [-0.43]	0.004 [0.74]	0.001 [0.09]	-0.010 [-0.41]
Firm risk	-0.023 [-0.20]	-0.025 [-0.22]	-0.046 [-0.52]	-0.032 [-0.38]	-0.028 [-0.23]
R&D intensity	-0.002 [-0.10]	-0.003 [-0.14]	-0.010 [0.79]	-0.009 [-0.68]	-0.009 [-0.10]
Cash flow/Sales	-0.001 [-4.40]	-0.0009 [-4.40]	-0.001 [-7.31]	-0.0007 [-1.51]	-0.0008 [-4.68]
Log (Firm age)	0.004 [0.20]	0.003 [0.20]	-0.013 [-0.67]	0.005 [0.36]	0.014 [0.18]
Log (VC reputation)	0.006 [0.72]	0.006 [0.71]	0.033 [2.33]	0.004 [0.40]	0.029 [0.74]
Competitive industry	-0.296 [-0.62]	-0.308 [-0.64]	0.381 [1.21]	0.172 [0.58]	-1.644 [-0.67]
Industry fixed effects	Yes	Yes	No	Yes	Yes
Firm and year fixed effects	No	No	Yes	No	No
Intercept	0.736 [18.55]	0.737 [18.53]		0.725 [6.75]	0.973 [5.58]
Num. Obs.	1201	1201	1201	1201	1201

Adjusted R²

0.11

0.11

0.57

0.05

Table 4 (continued)

Panel B. Robustness checks

Early-stage IPOs are firms that received their first VC investment when they were at “Seed”, “Startup”, or “Early stage” of development. Model 1 includes all financial CVC backed and TVC backed IPOs in our sample and only those strategic CVC backed IPOs that were at early stage when the CVC invested for first time. Model 2 includes only those IPOs (strategic CVC backed, financial CVC backed and TVC backed) that were at early stage when CVCs (for the CVC backed firms) or TVCs (for the matching firms) invested for first time. Model 3 controls for the potential endogeneity of strategic CVC backing using an IV approach, where we instrument for strategic CVC investments using the aggregate CVC investments as a portion of total VC investments in the year prior to a startup’s initial VC investment, the stage at which an IPO receives its first VC investment (early or late), and the average number of companies that the VCs investing in the startup have taken public. Model 4 controls for the endogeneity of the CEO-chairman variable using CEO-founder as an instrument. Standard errors are robust to heteroscedasticity and clustering. The t-statistics are reported in brackets.

Variables	Percentage of outsiders on the board			
	Early-stage strategic CVCs	All early- stage IPOs	Endogeneity of strategic CVC	Endogeneity of CEO/COB
	(1)	(2)	(3)	(4)
Strategic CVC	0.056 [2.66]	0.044 [1.94]	0.210 [2.11]	0.039 [2.78]
Strategic CVC lead	-0.007 [-0.23]	-0.025 [-0.82]	-0.076 [-1.56]	-0.005 [-0.26]
CEO characteristics:				
CEO ownership	-0.001 [-0.76]	0.001 [0.40]	-0.002 [-1.27]	-0.003 [-3.38]
Log (CEO tenure)	0.008 [0.61]	0.014 [1.14]	0.014 [0.99]	0.014 [1.62]
CEO-chairman	0.016 [0.97]	-0.003 [-0.17]	0.024 [1.35]	0.032 [2.48]
CEO-founder	0.006 [0.27]	0.015 [0.65]	0.006 [0.24]	
Firm characteristics:				
Log (Firm size)	0.001 [0.10]	0.021 [2.14]	-0.003 [-0.48]	-0.002 [-0.41]
Firm risk	-0.90 [-0.60]	-0.183 [-0.97]	-0.375 [-1.26]	-0.027 [-0.24]
R&D intensity	-0.016 [-0.61]	0.009 [0.27]	-0.023 [-0.94]	-0.001 [-0.07]
Cash flow/Sales	-0.002 [-4.39]	-0.001 [-1.79]	-0.001 [-3.87]	-0.0005 [-4.26]
Log (Firm age)	-0.024 [-1.04]	-0.039 [-1.62]	0.023 [1.03]	0.001 [0.05]
Log (VC reputation)	0.013 [1.06]	-0.008 [-0.54]	-0.001 [-0.02]	0.006 [0.72]
Competitive industry	-0.513 [-0.69]	-0.175 [-0.16]	0.216 [0.55]	-0.027 [-0.58]
Industry fixed effects	Yes	Yes	Yes	Yes
Intercept	0.779 [13.13]	0.831 [10.98]	0.621 [2.70]	0.735 [6.32]

Hansen-Sargan			0.48	
J-statistic			0.78	
p-value for J-statistic				
Num. Obs.	894	471	1201	1201
Adjusted R ²	0.09	0.11	0.15	0.08

Table 5
Audit and compensation committee composition

The table presents the results of a Probit analysis of the probability of particular compensation, audit and nominating committee composition structure at the IPO. In the Compensation committee specification the dependent variable is an indicator that equals one if the compensation committee has only outside members, and zero otherwise. In the Audit committee specification the dependent variable is an indicator that equals one if the audit committee has only outside members, and zero otherwise. In the Nominating committee specification the dependent variable is an indicator that equals one if the firm has a nominating committee, and zero otherwise. Strategic is an indicator that equals a one if there is a strategic CVC investment. Size is measured by firm sales in the calendar year prior to IPO. VC reputation is the age of the lead VC. CEO-chairman is an indicator that equals one if the CEO is also a chairman of the board. CEO-founder is an indicator that equals one if the CEO is also a founder of the company. Delaware incorporated is an indicator variable that equals one if the company is incorporated in Delaware. We use White (1980) heteroskedasticity-consistent robust standard errors adjusted for VC clustering.

	Compensation committee		Audit committee		Nominating committee	
	Coeff.	Z-Stat	Coeff.	Z-Stat	Coeff.	Z-Stat
Intercept	-5.88	-2.04	0.78	0.30	4.31	2.31
Strategic CVC	0.44	2.07	0.05	0.24	0.41	1.34
Log (Size)	0.07	0.84	0.09	1.13	0.03	0.25
Log (VC reputation)	-0.01	-0.08	-0.08	-0.57	-0.06	-0.29
Log (CEO age)	1.26	2.03	-0.08	-0.12	-1.86	-3.29
Log (CEO tenure)	-0.05	-0.33	0.03	0.21	0.26	1.05
CEO-chairman	0.10	0.21	0.11	0.55	-0.41	-1.14
CEO-founder	0.02	0.24	0.38	1.59		
Delaware incorporated	-0.14	-0.60	0.01	0.03	0.05	0.13
Industry fixed effects		Yes		Yes		Yes
Year fixed effects		Yes		Yes		Yes
Num. obs.		276		276		276
p-value of χ^2		0.01		0.59		0.00
Pseudo R ²		0.13		0.08		0.12
Number of firms with independent committees:						
Strategic CVC		87		85		
Financial CVC		40		41		
TVC		94		112		

Table 6**CVC investment types and anti-takeover provisions in the IPO year**

The table presents summary statistics for a version of the Entrenchment Index of Bebchuk, Cohen, and Ferrell (2005) for a sample of 94 strategic and 44 financial CVC backed IPOs for the period 1992-1999. Strategic CVC IPOs are IPOs which have a strategic relationship with their CVC investor. IPOs backed by financial CVCs are issuers which have no strategic relationship with their CVC investor. Matching TVC IPOs in each case is a sample of TVC backed IPOs from the same industry (three- and four-digit SIC) and with similar size (based on pre-IPO sales). The maximum value of the index (indicating high degree of entrenchment) is 6. The symbols ***, **, * represent statistically significant differences between CVC IPOs and their matching firms at the 1%, 5%, and 10% based on nonparametric Mann-Whitney test for equality of medians.

Panel A. Strategic CVC backed IPOs

	Entrenchment Index	Staggered board	Blank check preferred	Limits to amend Charter	Limits to amend Bylaw	Supermajority	Severance agreements
Strategic CVC IPOs	0 – 1% 1 – 17.5% 2 – 13.4% 3 – 29.9% 4 – 21.6% 5 – 12.4% 6 – 4.2%	63.3%	96.9%	42.9%	39.8%	31.6%	30.9%
Mean (median)	3.1 (3)						
Matching TVC IPOs	0 – 2.5% 1 – 13.8% 2 – 28.7% 3 – 10% 4 – 25% 5 – 16.2% 6 – 3.8%	51.1%	96.5%	37.2%	31.9%	36.2%	31.2%
Mean (median)	3 (3)						
p-value of test for difference in medians	0.95	0.09*	0.88	0.43	0.26	0.51	0.46

Table 6 (continued)

Panel B. Financial CVC backed IPOs

	Entrenchment Index	Staggered board	Blank check preferred	Limits to amend Charter	Limits to amend Bylaw	Supermajority	Severance agreements
Financial CVC IPOs	1 – 26.8%	45.2%	97.6%	38.1%	33.3%	26.2%	30.9%
	2 – 31.7%						
	3 – 9.8%						
	4 – 14.6%						
	5 – 14.6%						
	6 – 2.5%						
Mean (median)	2.6 (2)						
Matching TVC IPOs	1 – 10%	59.5%	100%	33.3%	28.6%	42.9%	23.3%
	2 – 20%						
	3 – 23.3%						
	4 – 20%						
	5 – 20%						
	6 – 6.7%						
Mean (median)	3.4 (3)						
p-value of test for difference in medians	0.04**	0.19	0.38	0.65	0.64	0.11	0.48

Table 7
Staggered boards and strategic CVC investments

The table presents the results of a probit model regression of an indicator variable equal to one if the firm has a staggered board on a number of explanatory variables. The sample includes only observations in the IPO year. Strategic is an indicator that equals one if there is a strategic CVC investment. Leading CVC is the first CVC investor in the firm. CEO-chairman is an indicator that equals one if the CEO is also a chairman of the board. Firm age is the age of the firm at IPO. Total assets is the Compustat item006 in the year prior to IPO. R&D intensity is measured as the ratio of R&D to total assets in the previous year. VC reputation is the age of the lead VC. Delaware incorporated is an indicator variable that equals one if the company is incorporated in Delaware. CVC activity is the aggregate CVC investments as a portion of total VC investments in the year prior to a startup's initial VC investment. Stage is the stage at which an IPO receives its first VC investment (0 if early or 1 if late). Avg. num. of IPOs is the average number of companies that the VCs investing in the startup have taken public. We use White (1980) heteroskedasticity-consistent robust standard errors.

	Probit model				Bivariate probit model	
	(1)		(2)		(3)	
	Coeff.	Z-Stat	Coeff.	Z-Stat	Coeff.	Z-Stat
Intercept	0.385	0.79	0.067	0.13	-0.355	-0.61
Strategic CVC	0.271	1.78	0.287	1.82	0.622	2.60
Strategic CVC lead			-0.273	-0.72		
CEO-chairman	0.213	1.33	0.172	1.07	0.241	1.50
Log (Firm age)	0.027	0.19	0.022	0.16	0.026	0.19
Log (Total assets)	-0.076	-0.84	-0.045	-0.51	0.016	0.18
R&D intensity	-0.465	-1.97	-0.502	-2.04	-0.350	-1.49
Log (VC reputation)	-0.137	-1.16	-0.168	-1.43	-0.139	-1.13
Delaware incorporated	0.533	2.70	0.576	2.93	0.555	2.76
Industry fixed effects	Yes		Yes		Yes	
Num. obs.	273		273		273	
p-value of χ^2	0.01		0.01		0.00	
Pseudo R ²	0.09		0.10			
Selection model						
CVC activity					-0.795	-3.45
Avg. num. of IPOs					-0.004	-1.68
Stage					-0.591	-2.93

Table 8
CEO turnover and strategic CVC investments

The table presents the results of a pooled cross-sectional time series logistic models of CEO turnover in the five years after the IPO for the period 1992-1999. The dependent variable is an indicator that equals one if there is a forced CEO turnover and zero otherwise. Strategic is an indicator that equals one if there is a strategic CVC investment. Leading CVC is a CVC that is the first investor in the company. CEO-chairman is an indicator that equals one if the CEO is also a chairman of the board. Outside directors measures the fraction of outsiders on the board. Past return performance is the company's market-adjusted returns in the previous calendar year. Standard errors are corrected for heteroscedasticity and clustering. The t-statistics are reported in brackets. The fourth model includes only firm observations experiencing CEO turnover in that year.

Variables	Whole sample			CEO turnover only
	(1)	(2)	(3)	(4)
Strategic CVC	0.713 [2.06]	0.841 [2.28]	0.825 [2.21]	0.853 [2.01]
Strategic CVC lead		-0.610 [-1.03]	-0.611 [-1.03]	-1.710 [-1.49]
Strategic past performance			-0.028 [-0.16]	
CEO characteristics				
CEO ownership	-0.717 [-0.14]	-0.856 [-0.17]	-0.866 [-0.17]	1.916 [0.49]
Log (CEO tenure)	0.223 [0.91]	0.250 [1.00]	0.250 [1.00]	0.062 [0.21]
CEO-chairman	-0.716 [-1.67]	-0.690 [-1.61]	-0.691 [-1.60]	-0.775 [-1.77]
Firm characteristics				
Log (Board size)	0.749 [0.94]	0.739 [0.91]	0.741 [0.91]	0.448 [0.57]
Past return performance	-0.312 [-4.03]	-0.316 [-3.99]	-0.301 [-2.25]	-0.123 [-1.15]
Outside directors	-0.661 [-0.56]	-0.711 [-0.57]	-0.705 [-0.57]	1.039 [0.77]
Intercept	-4.627 [-2.57]	-4.616 [-2.51]	-4.612 [-2.51]	-2.934 [-1.57]
Num. Obs.	1093	1093	1093	170
p-value of χ^2	0.01	0.01	0.01	0.06
% correctly classified	96.7%	96.7%	96.7%	79.1%
Pseudo R ²	0.05	0.06	0.06	0.07

Table 9
Board composition – strategic CVC investments versus general alliances

The table presents the results of a pooled cross-sectional time series regression of the fraction of outsiders on the company's board on a number of explanatory variables. The sample includes only strategic CVC backed IPOs and TVC backed IPOs that have strategic alliance with established corporations over the period 1992-1999. Strategic is an indicator that equals one if there is a strategic CVC investment. CEO-chairman is an indicator that equals one if the CEO is also a chairman of the board. CEO-founder is an indicator that equals one if the CEO is also a founder of the firm. Firm size is measured as the sales of the firm in the previous year. R&D intensity is measured as the ratio of R&D to total assets in the previous year. Firm risk is measured as the industry median standard deviation of stock returns in the previous year. VC reputation is the age of the lead VC. Standard errors are corrected for heteroscedasticity and clustering. The t-statistics are reported in brackets.

Variables	Percentage of outsiders on the board		
	Pooled cross-sectional time series regression		Random effects GLS
	(1)	(2)	(3)
Strategic	0.030 [1.81]	0.196 [13.65]	0.037 [2.37]
CEO characteristics			
CEO ownership	-0.001 [-1.11]	0.001 [1.03]	-0.002 [-0.30]
Log (CEO tenure)	0.020 [1.91]	0.007 [0.84]	0.013 [1.76]
CEO-chairman	0.012 [0.81]	0.185 [1.50]	0.017 [1.78]
CEO-founder	-0.008 [-0.47]	0.018 [0.95]	0.005 [0.39]
Firm characteristics			
Log (Firm size)	0.001 [0.11]	0.005 [1.09]	0.003 [0.68]
Firm risk	0.286 [2.34]	-0.007 [-0.08]	0.079 [0.97]
R&D intensity	0.012 [0.98]	0.007 [0.66]	0.008 [0.83]
Cash flow/Sales	-0.001 [-3.59]	-0.001 [-7.31]	-0.001 [-1.51]
Log (Firm age)	0.038 [2.14]	0.042 [2.12]	0.034 [2.57]
Log (VC reputation)	0.012 [0.61]	0.048 [2.58]	0.009 [0.40]
Industry fixed effects	Yes	No	Yes
Firm and year fixed effects	No	Yes	No
Intercept	0.334 [5.54]		0.343 [3.23]
Num. Obs.	1,152	1,152	1,152
Adjusted R ²	0.17	0.67	0.16

Table 10
CEO turnover – strategic CVC investments versus general alliances

The table presents estimates from a logistic model of CEO turnover using a pooled cross-sectional time series where the sample includes strategic CVC backed IPOs and TVC backed IPOs with strategic relationships over the period 1992-1999. The dependent variable is an indicator that equals one if there is a forced CEO turnover and zero otherwise. Strategic is an indicator that equals one if there is a strategic CVC investment. CEO-chairman is an indicator that equals one if the CEO is also a chairman of the board. Outside directors is equal to the fraction of outsiders on the board. Leading CVC is a CVC that is the first investor in the company. Past return performance is the company's market-adjusted returns in the pre-IPO calendar year. Standard errors are corrected for heteroscedasticity and clustering. The t-statistics are reported in brackets.

Variables	Full sample		
	(1)	(2)	(3)
Strategic CVC	0.663 [1.77]	0.740 [1.92]	0.951 [2.41]
Strategic CVC lead		-0.685 [-1.08]	-0.653 [-1.05]
Strategic past performance			0.315 [1.76]
CEO characteristics			
CEO ownership	-3.373 [-0.83]	-4.434 [-0.86]	-3.424 [-0.84]
Log (CEO tenure)	0.292 [1.00]	0.347 [1.12]	0.324 [1.06]
CEO-chairman	-0.582 [-1.34]	-0.524 [-1.21]	-0.505 [-1.16]
Firm characteristics			
Log (Board size)	0.454 [0.52]	0.265 [0.29]	0.280 [0.31]
Past return performance	-0.419 [-4.70]	-0.446 [-5.00]	-0.652 [-3.94]
Outside directors	-1.176 [-0.84]	-0.544 [-0.40]	-0.547 [-0.40]
Intercept	-4.034 [-1.85]	-4.001 [-1.80]	-4.144 [-1.85]
Num. Obs.	925	925	925
p-value of χ^2	0.01	0.01	0.01
% correctly classified	96.4%	96.4%	96.4%
Pseudo R ²	0.06	0.06	0.07