

Learning to let go: Social influence, learning, and the abandonment of corporate venture capital practices

Vibha Gaba
Entrepreneurship and Family Enterprise Area
INSEAD
1 Ayer Rajah Avenue
Singapore 138676
vibha.gaba@insead.edu
Tel: +65 6799 5268

Gina Dokko
Graduate School of Management
University of California, Davis
One Shields Avenue
Davis, CA 95616
gdokko@ucdavis.edu
Tel: 530-752-6280

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ABSTRACT

This study examines the abandonment of organizational practices. We argue that firm choices in implementing practices affect how firms experience a practice and their subsequent likelihood of abandonment. We focus on utilization of the practice and staffing, i.e. career backgrounds of managers, as two important implementation choices that firms make. The findings demonstrate that practice utilization and staffing choices not only affect abandonment likelihood directly but also condition firms' susceptibility to contagion pressures to abandon when social referents do. Our study contributes to diffusion research by examining practice abandonment – a relatively unexplored area in diffusion research – and by incorporating specific aspects of firms' post-adoption choices into diffusion theory.

INTRODUCTION

When to adopt new practices and when to abandon them are key strategic decisions for firms. The adoption and diffusion of market strategies (Aime, Johnson *et al.*, 2010; O Neill, Poudier *et al.*, 1998), HR practices (Boxenbaum and Battilana, 2005), organizational structures (Burns and Wholey, 1993; Palmer, Jennings *et al.*, 1993) and other administrative practices (Fiss, Kennedy *et al.*, 2010; Young, Charns *et al.*, 2001) play an important role in competitive positioning and advantage. In studies about a wide variety of practices, a common theoretical finding is that organizations adopt new practices based not only on functional expectations, but also in response to social and institutional pressures (DiMaggio and Powell, 1983; Strang and Macy, 2001). Much less is known about why firms *abandon* practices they had formerly adopted (Abrahamson and Fairchild, 1999). The few studies of practice abandonment have mostly tested if abandonment processes follow a symmetrical pattern of mimesis and contagion (e.g. Burns and Wholey, 1993; Greve, 1995), such that firms abandon previously adopted practices when their social referents do. However, unlike adoption decisions where firms make inferences based on other firms' behavior, they have their own direct experience to contend with when deciding to abandon practices. Firms' implementation of a practice, including staffing choices and the level of utilization of the practice over time can influence what firms learn and how they respond to contagion pressures. Therefore, we ask how firms' implementation of adopted practices in conjunction with contagion pressures affects abandonment decisions.

Why do firms abandon practices once they have been adopted? Performance of a practice seems like an obvious reason to abandon, yet it is not always easy to evaluate. Practices can be complex, i.e., subject to multiple goals, or poorly theorized or embedded in other organizational systems, making performance difficult to evaluate and subject to political or social interpretation.

Also, even if a practice's past performance is known, its future performance or the performance of replacement practices can be uncertain. For example, abandoning a product market strategy can prevent future losses if the strategy is no longer congruent with market conditions, or it can make room for a better strategy (Greve, 1995). Abandonment can also occur when an adopted practice does not meet the functional needs of a firm, e.g., Burns and Wholey (1993) found that hospitals with more outpatient diversity were less likely to abandon matrix management structures, because matrix structures are better suited to handling complex client needs. Second, some practices may become discredited after adoption, leading firms to abandon as a result of a collective learning process (Abrahamson and Fairchild, 1999). Finally, firms can adopt for legitimacy reasons alone, especially later adopters (Palmer *et al.*, 1993; Tolbert and Zucker, 1983). These adopters, who mimic prior adopters or other social referents, may be more likely to abandon when others do, having implemented the practices in a symbolic way (Meyer and Rowan, 1977). Therefore, reasons for abandonment could mirror reasons for adoption.

However, in focusing on symmetrical patterns of adoption and abandonment, previous studies have been more concerned with parallel mechanisms and replacement of practices than abandonment as a standalone event of theoretical interest. For example, Abrahamson and Fairchild (1999) study how discursive practices drive the rise and fall of management practices, and Greve (1995) investigates the abandonment of the "easy listening" radio format but also its simultaneous replacement by the "adult contemporary" format. These studies show that abandonment is subject to social and contagion influences, but it is not clear if organizations are really abandoning a practice or simply eager to replace it with something new. Therefore, in order to understand abandonment, it is useful to consider abandonment as a standalone event.

Moreover, prior research on abandonment has primarily focused on the rise and fall of practices at the population level, rather than considering conditions within firms. Recent diffusion research suggests that rather than adopting practices wholesale, organizations often modify practices as they implement them (Ansari, Fiss *et al.*, 2010; Boxenbaum and Battilana, 2005). The choices they make in implementation affect how adopted practices operate (Dokko and Gaba, 2012), and might also affect their likelihood of being eventually abandoned. Regardless of the reason for adoption, once an adoption decision is made, abandonment decisions are complicated by the way in which a practice is implemented and operated. Investments that firms make in staffing and managing a practice, the extent to which the practice is used in an organization and the integration of the practice into existing power and social structures of the organization might all influence a firm's propensity to abandon (Ansari *et al.*, 2010). Further, individuals who manage the practice in an ongoing way shape the outcomes of the practice, and also how the outcomes are perceived by the firm. Thus, in order to study abandonment of practices, we also need to look inside of firms and account for how practices are implemented.

In this study, we focus on practice utilization and staffing choices two important aspects of implementing a practice, and propose that these factors will influence abandonment decisions. Managers who implement and run practices influence the goals and operational strategies of practices (Boxenbaum and Battilana, 2005; Dokko and Gaba, 2012). Managers bring skills and knowledge from their prior work experience, and they also bring mental models that can affect the way they perceive the environment (Dokko, Wilk *et al.*, 2009), i.e. what information is relevant and who are appropriate social referents. Thus, we propose that the career backgrounds of implementing managers influence both the likelihood of abandoning a practice, and also the reference group the firm responds to. Next, experience in using a practice may affect propensity

to abandon a practice. Utilization of a practice enables experiential learning to occur, and can also commit the organization to the practice by claiming resources and managerial attention (Ocasio, 1997). Furthermore, in order to actually use a practice, it must be implemented in a substantive way, as opposed to a symbolic way, and may become integral to an organization's routines or strategy such that abandonment becomes problematic.

We investigate these issues in the context of corporate venture capital (CVC) practices in U.S. IT firms. CVC serves as an excellent context to study practice abandonment because the VC practices adopted by corporations could be implemented in a variety of ways. Firms utilize their CVC units to varying degrees, and there is variance in the extent of CVC activity and backgrounds of people hired to staff CVC units. We find that abandonment decisions are influenced by both contagion processes and by firm implementation choices. We contribute to theory about practice abandonment by incorporating specific aspects of firms' post-adoption choices. Understanding practice abandonment can yield theoretical insights into the temporal instability of organizational practices and into why and how reasonable practices are discarded or discredited. In reality, only a small minority of organizational practices actually become institutionalized; most end up fads or fashions (Strang and Macy, 2001). Second, we theorize how implementation of a practice affects its susceptibility to external influence, and we clarify how the staffing and utilization choices a firm makes interact with contagion pressures for abandoning a practice. We show that these choices have direct consequences, not only for a firm's propensity to retain a practice, but also for the weight they attach to abandonment decisions of their social referents. Finally, we show how the staffing of a practice affects the reference groups that firms respond to in abandonment decisions.

CORPORATE VENTURE CAPITAL

In the 1990s, CVC units became an increasingly popular vehicle for making external equity investments in entrepreneurial startups and were diffused widely among established firms (Gaba and Meyer, 2008; Gompers, 2002). These units were formed to perform venture capital practices of finding, funding, and guiding entrepreneurial startups. They are structured and managed differently than traditional in-house corporate R&D functions and typically report to the corporation's top executive team. Some firms design their units as separately organized, staffed, and budgeted subunits. Other CVC units are wholly owned subsidiaries of the corporation. In other cases, CVC units are housed in formal partnerships between an independent venture capital (IVC) firm and the corporation (Gompers, 2002).

Firms establish CVC units with two main objectives: financial returns and strategic returns. Although firms are undoubtedly enticed by the potential for financial returns of venture capital investing, most corporations claim that their foremost objectives are strategic: learning about new (and potentially disruptive) technologies, gaining access to new markets and business models, and identifying prospective acquisition targets (De Clercq, Fried *et al.*, 2006). While investors can assess their financial return on their investments by looking to IPO (initial public offering) markets, strategic returns from CVC units are less clear; they are long term, potentially risky, and not easily quantifiable (Gaba and Bhattacharya, 2012). Even financial returns for CVCs can be subject to uncertainty for long periods of time. Startup investment typically happens over multiple rounds, usually linked to the achievement of milestones, over a period of years. Thus, evaluating the performance of a CVC practice is not a matter of straightforward measurement, but instead involves qualitative assessment and interpretation of strategic outcomes and uncertain projections of future financial returns, which could affect the likelihood of practice abandonment.

Recent research on CVC provides useful insights into the challenges, and benefits of adopting CVC units. Upon adoption, many firms found it challenging to create unambiguous value from their CVC operations. Scholars highlight a number of implementation challenges, including inexperienced managers, complex objectives, lack of timely access to investment opportunities, failure to build relationships with independent venture capitalists and an unstable environment characterized by rapid expansion and contraction of aggregate investment activity (Chesbrough, 2000; Gompers and Lerner, 2000; Meyer, Gaba *et al.*, 2005). Despite the implementation challenges, CVC units promise substantial rewards to a firm that avoids or overcomes these challenges. For example, studies have found that CVC activity is linked to high rates of knowledge creation and technological innovation for established firms (Dushnitsky and Lenox, 2005; Wadhwa and Kotha, 2006).

Abandonment of corporate venture capital units

The unprecedented 1990s boom in the venture capital industry encouraged many corporations to adopt CVC units (Gaba and Meyer, 2008). The corporate share of overall venture capital investing rose rapidly from 2 percent in 1994 to 15 percent in 2000 and nearly \$16 billion was invested by more than 300 corporations¹. Then, economic recession and the collapse of equity and IPO markets in 2000 ended the boom in the venture capital industry. During the first quarter of 2001, CVC investments fell 81 percent, and many firms shut down their programs, though unlike previous waves of abandonment, a number of units were retained, and CVC practices appear to be a more permanent part of some corporations' strategies and to be generally accepted as an unexceptional organizational practice. Figure 1 shows the dollar amount of investments as well as the number of information technology firms making CVC investments each year during the time period of our study.

¹ Venture Economics, 2005. <http://ventureeconomics.com>

*****Insert Figure 1 here*****

The relatively brief history of CVC units during the 1990s was marked by both enthusiasm and by subsequent disillusionment (Chesbrough, 2000). A veteran venture capitalist² suggested that firms' interest in CVC did not necessarily follow through to implementation, saying, "Everybody uses the same rhetoric but when you get into the actual implementation you find it much more difficult. Quite frankly in the last 12-18 months corporations watching other corporations making venture capital investments, say, 'hey, what about us?' And to me, in many ways, this is more to do with envying a neighbor's car than a thoughtful process of what kind of transportation do we need." In addition to these contagion processes, once CVC practices are adopted, objective performance is difficult to assess, and future performance is difficult to project, given the risky nature of startup investment and the difficulty of accounting for strategic benefits (Benson and Ziedonis, 2009; Dushnitsky and Lenox, 2006). The boom and bust nature of CVC units speaks to the difficulty in capturing unambiguous gains from the practice.

We define abandonment of CVC units as cessation of all the new investment related activity in entrepreneurial startups. Abandonment is generally accompanied by the dissolution of a distinct structural entity that was initially created for the purpose of investing in external entrepreneurial startups.

THEORY

Relative to our broad knowledge about practice adoption, understanding about practice abandonment is thin. The very few studies of practice abandonment have proposed both functional explanations, i.e. the practice does not address the organization's needs or aspirations (Burns and Wholey, 1993; Gaba and Bhattacharya, 2012), and contagion explanations, i.e. social referents are abandoning the practice (Burns and Wholey, 1993; Greve, 1995; Knoke, 1982). In

² Private comments to author.

addition to functional and contagion explanations, choices that firms make in implementation of a practice should also influence abandonment decisions. Because repeated use of a practice implies a substantive implementation of the practice, and because managers' career backgrounds influence the way that practices are implemented and managed (Boeker, 1997; Dokko and Gaba, 2012), we focus on utilization of practices and staffing choices as additional determinants of practice abandonment. Moreover, practice utilization and staffing not only affect abandonment directly, they should also condition susceptibility to contagion pressures, and which social referents matter for contagion pressures. Below, we discuss the reference groups that exert contagion pressure, and then present arguments for the effects of staffing and practice utilization on abandonment. We then hypothesize about how these choices moderate contagion pressures for abandonment.

Contagion pressure for practice abandonment

Contagion processes that operate on practice adoption should also operate on abandonment (Greve, 1995). Contagion is a form of interorganizational influence that can involve institutional and social learning processes. In uncertain situations, boundedly rational managers look to referent firms to make decisions (Peteraf and Shanley, 1997), and given the uncertainty related to the performance of some practices, managers can feel contagion pressures to abandon. Especially when adoption of a practice was symbolic instead of substantive (Meyer and Rowan, 1977), or was the result of following fashion or bandwagon processes (Abrahamson and Rosenkopf, 1997), firms can be susceptible to abandonment influences from referent firms. Social proof or informational influence processes can also lead firms to assume that prior adopters have better information (Cialdini, 1993; Rao, Greve *et al.*, 2001). When others start to

abandon a practice, especially a complex practice whose benefit is ambiguous or uncertain, it can be taken as social proof that a practice is not valuable or worthwhile.

Though contagion has been shown to operate in abandonment decisions (Greve 1995), much of the research on diffusion or abandonment of practices has been unspecific about the sources of contagion, i.e. the organizational populations that form the basis of social comparison, usually taking the underlying assumption that industry peers are the appropriate reference group. Contagion works through observation and direct contact (Greve, 1998), so other players in the same industry and geography form a natural reference group for a firm (e.g. Burns and Wholey, 1993). Firms pay attention to other firms in the same industry because they compete in the same markets and perform similar or complementary activities. This attention can manifest as observation, as firm monitor other industry players' decisions or activities. Firms can also have direct contact with other firms in their industry through market relationships (Young *et al.*, 2001) or other general contagion mechanisms such as job mobility (Williamson and Cable, 2003), or co-membership in industry associations (Kraatz, 1998) that serve as conduits for contagion influences.

However, firms can have multiple reference groups. For example, Greve (1995) finds that organizational units are more susceptible to influence from other units in the same corporation and also from non-competing market contacts than from direct competitors when abandoning product market strategies. For practices that originate outside of an industry, the originating population should also serve as a natural social referent for the practice. Independent venture capital (IVC) partnerships were the origin of CVC practices, with contagion occurring across as well as within the population boundary (Gaba and Meyer, 2008). Since CVC units emulate practices of independent VCs, CVC units could perceive IVCs as a relevant target for

social comparison. Because VC practices are complex and not well theorized (Gaba and Meyer, 2008), firms may find IVCs as practice experts particularly relevant for social comparison, such that IVC closures and abandonments exert influence on firms to abandon CVC practices and close their units. Therefore, in the context of CVC abandonment, we expect a baseline effect of contagion influences from both industry (IT firms) and practice (IVC) referents.

Effects of practice implementation choices on practice abandonment

In addition to contagion effects from social referents, a firm's management of a practice should affect its abandonment decisions. The choices they make in implementing a practice have consequences for learning and also integrating a practice into a firm. First, experience is a fundamental source of learning (Argote and Miron-Spektor, 2011). Firms choose how much they will use a practice, and repeated exercise of a practice increases expertise and facility with the practice, as well as typically reducing costs (Argote, 1999). As firms spend time conducting a practice, they accumulate knowledge, enhance capabilities, and reduce uncertainty associated with the practice (Argote, Beckman *et al.*, 1990; Levitt and March, 1988). Additionally, gaining experience with a practice often requires investment that can signify commitment to the practice. Firms that commit funds and other resources to a practice should intend for the practice to be a strategically relevant activity, to the extent that strategy drives resource allocation (Burgelman, 1983; Noda and Bower, 1996). As firms gain expertise with a practice through repeated utilization and commit to it through repeated investment, they should be less likely to abandon it, all else equal.

Hypothesis 1: A greater amount of practice utilization will have a negative effect on practice abandonment.

In addition to a firm's utilization of a practice, staffing choices are key components of a firm's implementation of a practice. When firms select people to staff adopted practices, the

choices they make have consequences for how the practice operates and what goals are prioritized (Dokko and Gaba, 2012). Individuals carry knowledge and skill from prior career experiences as well as mental models about what behaviors and outcomes are appropriate and valued (Lant, Milliken *et al.*, 1992; Marquis and Tilsik, 2013; Phillips, 2005). Skill that is specific to a particular aspect of a job can be transferred to other jobs that share that aspect (Castanias and Helfat, 2001). For example, firm-specific skills acquired in one job can be productively transferred to another job in the same firm and industry-specific skills can be productively used in other jobs in the same industry (Harris and Helfat, 1997). However, when individuals' prior career experience contains goals and values that conflict with those of their current employer, it can be difficult for them to recognize the differences and adjust behavior, even to the extent that their personal performance can suffer (Dokko *et al.*, 2009).

Career backgrounds of the managers who implement and conduct practices can affect practice abandonment by affecting the level of specific expertise that the firm has in the adopted practice and by affecting how much they vary the practice to fit the adopting firm. Two dimensions of career background that could matter to practice abandonment are firm-specific experience and practice-specific experience. Internal hires have firm-specific experience that gives them knowledge about the firm's structure and systems, insight into the culture and social structures of the firm, and pre-existing social ties that can be used to get things done (Groysberg, Lee *et al.*, 2008; Huckman and Pisano, 2006; Kleinbaum, 2012). This firm-specific knowledge enables managers to better integrate the adopted practice into the firm and enables effective internal management of an adopted practice, such that any initiative that requires approval or integration with other of the firm's practices has a better chance of succeeding. Further, internal hires might be better able to position the unit's outcomes as good performance. CVC unit

performance, like most complex practices, is multi-faceted. Though past financial returns should be relatively easy to assess, CVC investment is highly risky and future returns are uncertain. Even current investments can take years to for outcomes to be realized. Strategic returns from technological learning are similarly difficult to assess and quantify, and internal hires should be better able use their firm-specific knowledge to position outcomes as evidence of success. Second, internal hires are more likely customize the practices to the needs of the adopting firm. For example, Dokko and Gaba (2012) found that CVC units with a higher proportion of internal hires are more likely to adjust practices to fit an adopting firm, while those with a higher proportion of practice experts are more likely to faithfully replicate the IVC form of VC practices. Customized practices should be better integrated into an adopting firm and less likely to be abandoned. Therefore, we expect that practices that are staffed with internal hires will be less likely to be abandoned.

Hypothesis 2: Staffing a practice with internal hires will have a negative effect on practice abandonment.

Staffing a practice with managers who have practice-specific career backgrounds should also reduce the likelihood of practice abandonment. Especially for practices that are not well-theorized, e.g. VC practices, staffing can be a key way in which tacit knowledge and skills related to a practice are acquired. Implementation of complex practices require intuition, judgment, and skills that are best learned through experience or close social ties, and a practice-specific career background can provide both. In addition to providing practice expertise, a work background in a practice can provide social ties to other practitioners of the practice. Individuals who move retain ties to former co-workers and create knowledge conduits between their old and new employers (Corredoira and Rosenkopf, 2010). Former co-workers and work contacts can provide ongoing support and learning about the state of the art in the practice, and enable practice

expertise and legitimacy to develop in the adopting firm. Managers with practice expertise can contribute to the smooth functioning of an adopted practice, such that the practice becomes a non-problematic, routine organizational practice. For example, firms adopting six sigma practices can hire a certified “black belt” who can assure accurate implementation of a six sigma program, and hiring such experts is a key success factor for six sigma (Kwak and Anbari, 2006). Once successfully implemented, inertial forces can favor continuation of the practice, regardless of practice performance (Burgelman, 1994). Moreover, the legitimacy and expertise that practice experience brings to a complex adopted practice might influence the interpretation of ambiguous performance. Therefore, staffing an adopted practice with managers who have career backgrounds in the practice should reduce the likelihood of practice abandonment.

Hypothesis 3: Staffing a practice with practice hires will have a negative effect on practice abandonment.

Practice utilization and staffing shape response to abandonment pressures

Not only should practice utilization and staffing have direct effects on abandonment, we expect these choices to affect firms’ responses to contagion pressures from external sources. First, the expertise gained by firms as they repeatedly conduct a practice should give the firm confidence about their knowledge of the practice such that they become relatively independent of external influences. Practice experience in multi-unit firms has been shown to affect the practice adoption decisions of individual business units of the firm, sheltering business units from contagion pressure from competitors (Simon and Lieberman, 2010). Though experience with a practice does not preclude observation of or attention to other firms that use the practice, it should reduce a firm’s propensity to imitate other firms in regards to abandonment. Moreover, maintaining a practice while others are abandoning might be seen as a source of strategic distinctiveness for firms with expertise in the practice. For abandonment decisions, firms with

greater experience with a practice have reduced uncertainty about how the practice operates and how it generates performance. Instead of relying on other firms for cues about the value of a practice, firms that repeatedly operate of the practice can rely on their own track record to assess the practice's value.

Second, the experiential learning they gain is specific to the firm, i.e. repeated utilization of a practice enables inference about the practice's effect on that firm's performance. Firms that have accrued substantial experience in a practice may see other firms' actions concerning the practice as less relevant to their own decision-making because they have their own set of actions and results that are specific to their own particular circumstances to refer to when making decisions about practice abandonment. With respect to corporate venturing, each investment that a CVC unit makes provides information that enables the firm to gain specific knowledge about how the practice works within the structure and strategy of the parent corporation and how useful the practice is to the firm's objectives. With firm-specific CVC expertise, a firm should see other firms' abandonment decisions as less relevant to their own. Therefore we predict that higher level of investment activity by CVC units will buffer contagion pressure for abandonment.

Hypothesis 4: A greater amount of practice utilization will attenuate contagion pressures for practice abandonment.

As discussed earlier, firms have multiple reference groups that they attend to for making abandonment decisions. However, all reference groups might not be equal in their claims on managerial attention. The managers who conduct practices not only prioritize goals and enact operational strategies, they also play a key role in deciding what information from the environment to attend to. Managerial attention is a scarce resource (Cyert and March, 1963), and managers' actions and decisions depend on where they focus their attention (Ocasio, 1997).

Career background can shape selective attention, such that information that is congruent or resonant with prior work experience is salient, because expertise and pre-existing cognitive structures or mental models make stimuli easier to notice and encode (Ocasio, 2011). Thus, attentional orientation, i.e. "...the degree of attention paid to some category of stimuli" (Cho and Hambrick, 2006: 455), toward a particular reference group is a function of career background. Moreover, attentional orientation leads to action based on the actions of the salient reference group (Eggers and Kaplan, 2009), and managers of a practice act and make decisions that reflect the actions and decisions of their salient reference group (Greve, 1998). Though managers of an adopted practice do not necessarily make abandonment decisions; the information and perspective they provide to top managers influence decision-making by directing attention or highlighting particular aspects of the environment that can make abandonment seem more or less desirable. Moreover, they can make operational decisions based on their career backgrounds that suggest a course of action to top management decision-makers. For example, the investment opportunities CVC managers pursue or present to top management might be limited by following the opportunities that their social referents pursue. Therefore, staffing a practice with internal hires or practice hires can have consequences that go beyond the work done or goals pursued: this decision can also influence firm's response to external information or institutional pressure.

In the case of practice abandonment, firms notice the actions of their reference groups, but their responses can be amplified or attenuated according to the salience of the reference group. Given a baseline propensity to abandon if either industry referents or practice referents do, a practice staffed with internal hires should be more sensitive to the actions of the industry reference group because it occupies the attention of the practice's managers. Since managers are cognitively limited, amplified attention to the industry reference group should be accompanied

by attenuated attention to other reference groups, i.e. the practice reference group. Therefore, contagion pressure from abandonments in the industry reference group should be amplified for practice staffed with internal hires, while contagion pressure originating from the practice reference group should be attenuated. Likewise, having practice managers with an attentional orientation toward the practice reference group should result in increased sensitivity to abandonments in the practice reference group, and decreased sensitivity to abandonments in the industry reference group.

Hypothesis 5a: Staffing an adopted practice with internal hires will amplify contagion pressure from abandoners in the industry reference group and attenuate contagion pressure from abandoners in the practice reference group

Hypothesis 5b: Staffing an adopted practice with practice hires will amplify contagion pressure from abandoners in the practice reference group and attenuate contagion pressure from abandoners in the industry reference group

METHODS

Sample and Data

We constructed our sample using the *Corporate Venturing Yearbook and Directory* (2000, 2001, 2002). The Directory lists all firms with an active CVC unit along with information about the year of establishment of the CVC unit. To account for unobserved industry heterogeneity, we restricted our sample to include only IT sector firms that had established CVC units with dedicated staffing.³ This procedure resulted in a sample of 93 IT firms with CVC units. However, due to missing data from *VentureXpert* or incomplete biographical information, our final sample reduced to 70 CVC units over the time period 1992-2008⁴. For the analyses of CVC

³ We used the National Science Foundation's definition of the IT sector (NSF, 2000) as comprising the following five industry sub-sectors: (1) Office, Computing and Accounting Equipment (SIC code 357), (2) Communications Equipment (SIC code 366) (3) Electronic Components (SIC code 367), (4) Communication Services (SIC codes 481-484, 489), (5) Computing and Data Processing Services (SIC code 737).

⁴ 1992 is the earliest date for founding of contemporary CVC units in our sample. Though some IT firms had earlier incarnations of CVC units, those earlier activities were generally abandoned after few years.

abandonment, the 70 adopters of CVC units comprise the risk set for the abandonment decision. 19 out of these 70 firms, about 27% of the firms, abandoned their CVC unit during the time period of the study. The time of entry into the risk set is conditional on the year of adoption of CVC units so we have an unbalanced panel of observations.

Dependent Variable

We rely on the VentureXpert database to code the abandonment of the CVC units over time. VentureXpert classifies the investment status of every CVC unit as ‘Defunct’, ‘Inactive’, or ‘Actively Seeking New Investments.’ While the database provides the current investment status of a CVC unit, it does not specify the date in which the status changed. Therefore, as a first step, all CVC units are classified as ‘Defunct’ or ‘Inactive’ were coded as abandoned, while those coded as ‘Actively Seeking New Investments’ were coded as having retained their CVC unit. For those CVC units classified as abandoned, we used the date of its last investment from VentureXpert to identify the year of abandonment. Next, we checked the pattern of investments by CVC units in entrepreneurial startups to re-evaluate our coding. Some CVC units, despite being classified as ‘Actively Seeking New Investments’ had ceased to make new investments in startups. In open-ended interviews with managers responsible for these units, we were told that when IT firms cease new investments in startups for at least two calendar years, they almost always abandon their CVC unit. We chose to be more conservative and recoded any firm classified as active as having terminated the CVC unit if they had not made any new investments for at least four years. We coded the first year in this interval as the year of abandonment. We performed additional checks to ensure the overall accuracy of this coding. First, we verified our coding through Lexis-Nexis searches, industry newsletters, and firms’ websites to confirm that there was no mention of CVC activity. Second, for firms classified as having abandoned their

CVC units, we confirmed that the firm had not made any new investments after its coded termination date up until 2008. The variable *CVC Abandonment*, takes on a value of 1 in the year of abandonment, and is 0 otherwise.

Independent Variables

We measure practice implementation through practice utilization and staffing choices. To test Hypothesis 1 we created a variable *CVC utilization*. In the traditional VC model, investors – whether independent or corporate – invest multiple rounds in a portfolio company which signifies their commitment to the investment activity (Gompers and Lerner, 2004). We cumulate the number of investments rounds by each CVC unit invested as a measure of *CVC utilization*. We used the VentureXpert database to obtain these data.

The other major predictor variables in this study are CVC managers' career experience. The *Corporate Venturing Yearbook and Directory* identifies the names of key personnel in the CVC units. The 70 CVC units in our sample were associated with 295 unique individuals. For these 295 individuals, we used their name and the name of the CVC unit to conduct internet searches for their biographical information available online. The internet searches were conducted between November 2008 and July 2010. We found at least some biographical information for 93% of them (273 individuals). Typical sources of biographies included firm websites, SEC filings and professional networking sites like LinkedIn. In addition to individuals whose biographies could not be found, individuals might also be missing from our sample because their names were so common they could not be uniquely identified (e.g. Mike Smith). Many people have biographies available from multiple sources, and when different sources contained unique work history information, we recorded them separately. We recorded 610 biographies for the 273 managers.

We reconstructed each manager's work history with separate records for each job found, with dates of employment or chronological ordering, if available. The reconstructed work histories yielded 1375 separate job records, including separate listings for title changes. Of the 1375 job we identified, 754 jobs preceded the CVC jobs, 319 jobs were held after the CVC job, and the remaining 302 job records represented the CVC job itself⁵. We coded 754 prior jobs to capture different types of experience and used this coding for our independent variable.

In order have a longitudinal measure of the experience of managers in a CVC unit, we reconstructed the composition of managers in each unit in each year of our sample. Though each manager's prior experience is fixed, by definition, during his or her tenure in a CVC unit, the changing composition of the unit as managers enter and leave the CVC unit leads to temporal change in this variable. Though start and end dates were not available for all CVC unit jobs, both were available for 200 individuals (73% of the 273 managers). An additional 38 managers' biographies listed either the start or end date for the CVC job. Typically, end dates were available while start dates were not available because biographies tended to be more specific about recent jobs than about jobs in the more distant past, or that the job immediately following the CVC job provided information on its start date. For these reasons, we supplemented the sample by assuming that the manager started in the CVC job the first year his or her name appeared in the *Directory*. It is less clear why start dates would be available while end dates were missing, but this condition generally resulted from the absence of recent biographies on the manager. Therefore, we assumed that the manager left the CVC job just after the last year his or her name appeared in the *Directory*. Using these assumptions, the analysis sample increased to 238 managers (87% of the 273 managers).

⁵ Some individuals had multiple job titles during their tenure in the CVC unit, e.g. one person went from job title "Business Development Manager" to "Investment Manager."

Using these data, we created variables *Internal Hires* and *IVC Hires* to test Hypotheses 2 and 3. We classified as *Internal Hires* all CVC managers whose job immediately preceding their first CVC job was in the adopting firm itself. We expressed this variable in proportion terms – as the proportion of internal hires working in the CVC unit. We measured *IVC Hires* as the proportion of personnel in a CVC unit who had prior experience in independent venture capital firms. As part of the job-level coding, we coded IVC experience for each person by examining job titles and employers for prior jobs, e.g., a General Partner at Frontier Ventures was coded as an IVC job.

For both variables, we created annual panels for proportions of CVC personnel with firm-specific and practice-specific career experience using the CVC job start and end dates. It should be recognized that we treat firm-specific and practice specific career experience as independent, such that individuals and CVC units can have both. For internal hires who also have IVC backgrounds, both types of experience are accounted for. We make this choice because one type of experience does not obviate the other, and it is possible to attend to multiple reference groups at once, though with varying degrees of focus (Greve, 1995).

Our baseline model includes contagion influences emanating from both industry and practice reference groups. For contagion from the industry reference group we measure the number of *CVC exits* in the same 4-digit industry and geographic state as the focal firm (Greve, 1998). By confining this measure to similar and proximate others, we recognize that firms tend to pay greater attention to more comparable organizations (Haveman, 1993). Next, to measure the contagion pressures from the practice reference group, we calculated the number of *IVC exits* from the IVC industry per year. Both contagion measures are lagged by one year.

We also include a number of CVC unit level and firm level control variables in our analysis. CVC units that are geographically closer to VC clusters are better positioned to identify investment opportunities and may also find it easier to staff their CVC units (Gaba and Meyer, 2008); hence, we include *CVC unit in IVC clusters* as a dummy variable if the CVC unit is situated in one of the three primary IVC clusters (Silicon Valley, Route 128, and New York). Second, we measure *Age of CVC unit* as the number of years since founding of the CVC unit. The founding date was obtained from the *Corporate Venturing Yearbook and Directory*. We cross-checked this date with information on the date of first investment by the IT firm from VentureXpert.⁶ Third, CVC unit financial performance can be an important driver of abandonment decisions. Since firms generally do not disclose CVC investment returns, we adopt the usual approach and measure performance indirectly by examining the status of each venture in which the CVC unit invested (Gompers and Lerner, 2004; Hochberg, Ljungqvist *et al.*, 2007). Thus *Proportion of successful companies* is defined as the annual cumulated number of the ventures in the CVC portfolio that ended in an IPO or an acquisition divided by the cumulated number of ventures in its portfolio. We complement this “success” measure of performance with a “failure” measure: the variable *Proportion of defunct companies* is similarly defined as the proportion of defunct ventures in the CVC unit’s portfolio. Fourth, since VC practices entail frequent interaction with startups and intensive monitoring, we include *Median distance between portfolio companies and CVC unit* to account for differential agency costs.

Next, we include a number of firm-level controls using Compustat data that could account for CVC abandonments. First, older firms may be encumbered by structural constraints and find it difficult to assimilate new practices. Therefore, we control for *Firm age* as the age of the firm in years at the time of CVC unit establishment. Second, we control for *Firm size*, using data on

⁶ With annual data, the age of CVC unit also captures age-dependence in the baseline hazard rate.

firm sales. Larger firms have more resources that could be allocated to a CVC unit, which could result in a lower likelihood of CVC abandonment. Third, firms with more slack resources are more likely to experiment in pursuit of new opportunities (Levinthal and March, 1981), and may find it easier to sustain CVC units over time. Accordingly, we control for *Firm slack*, measured as firm's current ratio (the ratio of current assets to liabilities), which represents the liquid resources uncommitted to liabilities (Bromiley, 1991). Finally, firms that exhibit better performance may attract higher caliber personnel, who might implement practices differently from lower caliber personnel. Better performing firms also tend to have a greater appetite for risk (March and Shapira, 1987), which could influence their abandonment decision. Therefore, we control for *Firm performance* as income before extraordinary items plus depreciation.

To control for the effect of booms and busts in the venture capital industry on CVC abandonment, we use *Return on NASDAQ*. This variable captures movements in the public equity markets and is measured as the value-weighted annual return on the NASDAQ (including dividends). Finally, since CVC abandonment may be driven by the availability of startups to invest in we control for the *Availability of investment opportunities*. This variable from the *National Venture Capital Association* measures the number of portfolio companies in existence each year. Table 1 provides summary statistics and correlations for the independent variables.

*****Insert Table 1 here*****

Model Estimation

We use a discrete-time event history methodology to model CVC abandonment. Discrete time event history is an appropriate choice for our data because abandonment information is only available by year. CVC units enter the risk set in the year of adoption. CVC units that are lost due to missing data, or retained until 2008, contribute to the regression model exactly what is

known about them (Allison, 1982). Our dependent variable $P_i(t)$ is the discrete-time hazard that a firm abandons CVC unit i at time t , given that it is at risk of doing so. $P_i(t)$ is related to the covariates by the following equation:

$$P_i(t) = \Phi[\alpha + \beta_1 x_{i1}(t) + \dots + \beta_k x_{ik}(t)] + v_i(t)$$

where Φ is the cumulative density function and the x_i 's are covariates that affect the abandonment decision. We assume that $\Phi(\cdot)$ the cumulative density function for the error term, is normally distributed and use a probit model to estimate the probability of abandonment in a given year within a pooled sample (Allison, 1982).

RESULTS

*****Insert Table 2A here*****

Model 1 in Table 2A is our baseline model and includes the two contagion variables (*CVC exits* and *IVC exits*) as well the other control variables. We find that *CVC exits* in the same industry and geographic state strongly and positively affect *CVC abandonment* by the focal firm. Thus, in accordance with the prior research on practice abandonment, we find evidence for a reverse diffusion process (Abrahamson and Fairchild, 1999; Greve, 1995). At the same time in Model 1, the coefficient on *IVC exits* is also positive and significant. This suggests that industry peers are not the only referent group that firms look to in their abandonment decision; IT firms are positively influenced by the abandonment decisions of both their industry and their practice reference groups, which confirm our baseline expectation.

Model 2 examines the impact of *CVC utilization* and *CVC staffing choices* (*Internal hires* and *IVC hires*) on the likelihood of abandonment for a focal CVC unit. Hypothesis 1 argued that as firms gain experience with a practice through utilization they are less likely to abandon it. The negative and significant coefficient on *CVC utilization* indicates that firms that accumulate

experience by investing in a large numbers of entrepreneurial startups are less likely to abandon their CVC units, as predicted, controlling for practice performance. Hypotheses 2 and 3 argued that the staffing choices made with respect to the adopted practices are consequential for abandonment. CVC units staffed with a higher proportion of internal hires can enable effective implementation of the practice through customization. Similarly, CVC units staffed with a higher proportion of individuals with IVC experience can ensure smooth functioning of the VC practice in a corporate context. We find a positive and significant coefficient on *Internal hires*, which suggests that the CVC units with higher proportion of internal hires are more likely to be abandoned. Thus, Hypothesis 2 is not supported. On the other hand, a negative and significant coefficient on *IVC Hires* suggests that CVC units with a higher proportion of individuals with IVC experience are less likely to be abandoned, supporting Hypothesis 3.

Interaction of CVC utilization with CVC exits and IVC exits.

Hypothesis 4 predicted that greater experience with CVC activity will attenuate contagion pressures for abandoning the CVC units. To evaluate this, we interact *CVC utilization* with the two contagion variables. Given the high collinearity between *IVC exits* and *CVC exits* ($= 0.43$), we include these interactions one at a time, rather than simultaneously.

***** Insert Table 2B about here *****

Model 3 in Table 2A interacts *CVC utilization* with *CVC exits* while Model 4 interacts *CVC experience* and *IVC exits*. We obtain a negative coefficient for the interaction of *CVC utilization* and *CVC exits* and a positive coefficient for *IVC exits* with *CVC utilization*. The interaction term with *IVC exits* is statistically significant but the interaction term with *CVC exits* is not. However, in nonlinear models, an interaction term's coefficient and standard error are not particularly informative (Hoetker, 2007). In models with limited dependent variables, the effect of the

interaction term (and of the standard error) depends not only on the interaction term's coefficient but also on the coefficients for the two effects and on the values of all other variables (Ai and Norton 2003). As a result, neither sign nor significance of the interaction coefficients in Model 3 and 4 is indicative of the actual direction and significance of the interactions (Greene, 2010; Hoetker, 2007). Therefore, in Table 2B we follow best practices (cf. Greene, 2010; Wiersema and Bowen, 2009) and assess the attenuating effect of *CVC utilization* by calculating the marginal effects of *CVC exits* and *IVC exits* and examine how it changes with various levels of *CVC utilization*.

Columns (1) and (2) in Table 2B show (respectively) the marginal effect of *CVC exits* and *IVC exits* at seven different levels of *CVC utilization*. Marginal effects and the corresponding standard errors are calculated (via the Delta method) using estimates from Models 3 and 4. As *CVC utilization* increases from three standard deviations below to three standard deviations above the mean, the marginal effect of *CVC exits* remains statistically significant and declines consistently. The marginal effect of *IVC exits* on the other hand, while statistically significant for all values of *CVC utilization*, remains more or less unchanged as *CVC utilization* increases. Only when the *CVC utilization* is three standard deviations more than the mean does the effect of *IVC exits* declines. Based on the coefficient and standard errors reported in Table 2A, we can test whether these marginal effects are significantly different from one another. For *CVC exits* we can reject the hypotheses that any two marginal effects are the same. For *IVC exits*, the marginal effect of *IVC exit* is significantly lower only if *CVC utilization* is three standard deviations above its mean. This suggests that the contagion pressures from the *IVC exits* are only attenuated at very high levels of *CVC utilization*. Taken together, these results provide partial support for

Hypothesis 4: experience gained by conducting a practice makes a firm relatively immune to contagion influences from industry peers but not so much from practice experts.

***** Insert Table 3A about here *****

Interaction of internal hires with CVC exits and IVC exits.

Models 1 and 2 in Table 3A test Hypothesis 5a that a greater proportion of internal hires amplifies the contagion influences from the industry peers but attenuates the influence of IVC exits. Model 1 includes the interaction between *Internal hires* and *CVC exits* while Model 2 includes the interaction with *Internal hires* and *IVC exits*. We obtain a negative coefficient for the interaction of *Internal hires* with *CVC exits*, and a positive coefficient for its interaction with *IVC exits*. As for CVC utilization, the interaction term coefficients are not informative of the direction or true significance of the relationship, so we again check the marginal effects.

Columns (1) and (2) of Table 3B reports the marginal effects of *CVC exits* and *IVC exits* at various levels of *Internal Hires*, where these effects are calculated based on the estimates from Models 1 and 2 in Table 3A respectively. Here we obtain contrasting results and mixed support. The results show that, as hypothesized, the marginal effect of CVC exits on the focal firm’s exit propensity increases as the proportion of internal hires in a CVC unit increases. However, the marginal effect of IVC exits also increases monotonically with the proportional of internal hires. Further testing the equality of marginal effects, we find that the marginal effect of both CVC and IVC exits increases significantly as the proportion of internal hires increases in magnitude. That is, regardless of the source of contagion, firms with a higher proportion of internal hires are more susceptible to contagion pressures. This finding provides only partial support for H5a.

***** Insert Table 3B about here *****

Interaction of IVCs hires with CVC exits and IVC exits.

Next, Models 3 and 4 in Table 3A test Hypothesis 5b that higher proportion of individuals with IVC experience with attenuate the contagion influences of IT industry peers but amplify the influence of IVC firms. Model 3 shows the interaction of *IVC Hires* with *CVC exits* while Model 4 shows the interaction of *IVC Hires* with *IVC exits*. Once again, we present marginal effects to facilitate interpretation of the interaction term coefficients.

In columns (3) and (4) of Table 3B we report the marginal effects of *CVC exits* and *IVC exits* at various levels of *Proportion of IVCs* where these effects are calculated based on the estimates from Models 3 and 4 respectively. The results show that as the proportion of individuals with IVC experience in a CVC unit increases, the marginal effect of CVC exits on the focal firm's exit propensity declines but the marginal effects of IVC exits increases monotonically. Further, we can confirm that the decline (increase) in the marginal effects of CVC exits (IVC exits) is significant as the moderating variable increases. Thus, we find support for Hypothesis 5b: that staffing a CVC unit with IVCs attenuates contagion from CVC exits but amplifies the contagion influence from IVC exits.

DISCUSSION

In this study, we expand understanding about the abandonment of practices. Though diffusion scholars have achieved a sophisticated understanding of practice adoption, we know little about practice abandonment. Existing theory about abandonments posits a contagion effect for abandonment that parallels adoption processes (Abrahamson and Fairchild, 1999; Greve, 1995). Our findings support extant theory, plus we contribute to theory about practice abandonment by accounting for the implementation choices firms make post-adoption. These choices result in variance between firms that drives both different propensities to abandon practices and the susceptibility to contagion pressures for abandonment. From a practical

perspective, abandoning practices should be a strategic decision, but we show that this decision is significantly influenced by everyday operational decisions and by the attention processes of CVC managers. Firms wanting to retain CVC practices should think carefully about the implementation choices they make, as they may be inadvertently sowing seeds of abandonment.

Managerial choices and practice abandonment

Overall, we found support for the general proposition that firms' implementation choices affect practice abandonment, over and above previously tested contagion effects. First, as a baseline, we find that abandonments by both industry and practice referents increase the likelihood that an IT firm will abandon its CVC practice. Second, consistent with our expectations, we find that utilizing a CVC unit by making investments in startups enables experiential learning that reduces the likelihood of abandonment. We also find that practice utilization buffers firms from contagion pressures for abandonment. With regard to staffing choices, we find that staffing a CVC unit with managers with IVC career backgrounds reduces the likelihood of practice abandonment, and also attenuates contagion pressure from the IT industry reference group, but amplifies pressure from the IVC reference group.

One area where our results differ from predictions is the main effect of internal hires on abandonments. We found that IT firms are more likely to abandon their CVC units when staffed with internal hires. There are two possible explanations for this unexpected finding. First, CVC jobs require practice knowledge, but they are distinct from IVC jobs in that they also require knowledge about the parent firm's objectives and requirements for the practice. In theory, either of these skill sets can be acquired on the job, without requiring direct prior job experience. However, VC practices are complex and under-theorized with little useful codified practice knowledge, so implementing these practices might require the transfer of tacit knowledge into the

firm. Former IVCs carry the tacit knowledge with them into CVC jobs, while internal hires do not, and also might not have close social ties to practice experts that enable the transfer of tacit knowledge (Reagans and McEvily, 2003). Second, though we argued that internal hires could shape the interpretation of CVC practice performance, these efforts may be insufficient to affect abandonment decisions. Internal hires prioritize strategic objectives of CVC programs over financial objectives (Dokko and Gaba, 2012), and strategic returns are often more difficult to quantify and measure (Benson and Ziedonis, 2009; Dushnitsky and Lenox, 2006), making units that prioritize strategic returns especially prone to abandonment.

The finding that internal hires increase the likelihood of abandonment calls into question the kinds of skill or knowledge needed to make adopted practices an integral part of firm. Adopting a practice usually involves some grafting of the practice into the existing organization. Firm-specific skills should enable implementing managers to understand an adopting firm's goals and priorities for an adopted practice, and unless a practice is partitioned completely from the adopting firm, firm-specific skills should be useful for integrating the practice into normal firm operations. Even if multiple types of skill are needed to make a practice sufficiently integral to a firm to reduce the likelihood of abandonment, one type of skill might trump others. The unexpected finding also provokes thought about the way practices vary as they enter new organizations or new populations (Ansari *et al.*, 2010; Gaba and Meyer, 2008), and how variation relates to eventual abandonment. An earlier study of CVC managers found that hiring internally to staff the practice results in more practice variation (Dokko and Gaba, 2012). This variation is theorized to be the result of misfit between the canonical version of the practice and the needs of the adopting organization (Ansari *et al.*, 2010), and internal hires vary practices as they attempt to create fit (Dokko and Gaba, 2012). However, the resulting practice variation may also create

tension with the core of the practice, weakening the benefits an adopting firm expected from the practice and increasing its likelihood of abandonment. Future research should explore the relationships between practice variation, skills and abandonment for a variety of practices.

With respect to interactions between practice utilization, staffing choices and reference groups, we found that CVC units are generally more susceptible to contagion pressure from the practice reference group than the industry reference group. Firms with greater CVC utilization attach less weight to the abandonment decisions of industry peers, but continue to be influenced by IVC behavior until very high levels of CVC activity are reached. In our data, CVC activity at this level is reached by firms such as Intel, IBM and Motorola, but many firms do not reach this level of independence from IVC contagion influence. Because of the complex nature of VC practices, firms may lack confidence in their expertise, until they have deep experience. Thus, IVCs may continue to be considered as having the best information about when to abandon, with IVC exits constituting strong social proof that VC practices are not worthwhile. Second, though internal hires are sensitive to abandonments by industry peers, as expected, we also find an unexpected sensitivity of internal hires to abandonments by IVCs: IVC exits have a strong positive effect on likelihood of abandonment when a CVC unit is staffed with internal hires. This effect could also be due to the difficulty of learning VC practices. Staffing a practice with a high proportion of internal hires might create uncertainty among top management decision-makers that the CVC unit possesses an adequate level of practice expertise. Because of the rapid diffusion of CVC practices, CVC expertise was not readily available in the labor market. At the same time, differences in compensation models and norms between the IVC and IT industry populations made people with IVC experience difficult to attract to CVC jobs (Dushnitsky and Shapira, 2010). Thus, firms may not have been able to hire as much VC practice experience as

desired. As a result, reliance on the activities of all reference groups could be amplified because of increased uncertainty. Future research in other settings is necessary to get a more general understanding how the acquisition of practice expertise relates to abandonments by the practices reference group, and of the role that internal hires play in making practices work in firms.

Limitations and future directions for research

Though the CVC context has many features that make it appropriate for studying practice abandonment, it also has features that might limit the generalizability of our findings to other practices. Most previous research in practice abandonment (i.e., Burns and Wholey, 1993; Greve, 1995; Knoke, 1982) has studied practices like strategy and structure that permeate organizations, making them difficult and expensive to disentangle from other organizational activities and abandon. By contrast, CVC practices function relatively independent of other parts of the organization. In fact, many CVC units are structurally separate from the organization, so when contagion pressures arise, abandonment is relatively non-disruptive. Though CVC investments can entail dissolution costs or ongoing obligations, new investment can be curtailed immediately. Though this feature of CVC units enables us to study abandonments as a standalone event, it might also prevent our study from generalizing to other types of practices. Along these lines, the theory we propose about firms' utilization and staffing of practices might not be relevant for all practices. Though most practices could involve practice-specific staffing choices, e.g. six sigma black belts would have practice expertise for six sigma practices, some practices, such as golden parachutes or poison pills are unlikely to have related staffing dedicated to the practice. However, even these practices can involve the opportunity for practice expertise by the lawyers who draft employment contracts or the boards who approve these measures, whose career backgrounds could have contained the acquisition of practice expertise. Future

research should test boundary conditions of the theory, and consider differences in practices that might drive differences in both adoption and abandonment.

Contribution and implications

Our study addresses the call for further study about the conditions under which contagious abandonment is likely to occur and for the study of practice abandonment in settings that allow abandonment to be separated from replacement of practices (Greve, 1995). Most studies of practice abandonment have actually studied replacement of practices: abandonment of one practice and adoption of another to replace it. Because the few existing studies of practice abandonment have primarily dealt with practices that are necessary and integral to firms, such as strategy (Greve, 1995), or structure (Burns and Wholey, 1993; Knoke, 1982), the decision to abandon these practices must be accompanied by a concurrent decision to adopt a replacement. As a result, it has been difficult to tease apart pressures to abandon from pressures to replace a discredited or failing practice or to adopt the next one. Other research that includes consideration of practice abandonment has included it as part of a larger agenda to understand adoption and abandonment processes together – as subject to the same forces, such as bandwagon processes or aspirational processes (Abrahamson and Fairchild, 1999; Gaba and Bhattacharya, 2012). Therefore, abandonment has rarely been studied on its own. The current study recognizes that adoption events and abandonment events are fundamentally different because of the experience that organizations gain by implementing and operating practices. The choices they make beyond the adoption event materially affect abandonment processes.

Our primary contribution is to theory about practice abandonment, but our findings also have implications for research on the effects of career backgrounds. Prior research has found that individuals' career backgrounds affect not only the knowledge and social connections they bring

to their jobs, but also the mental models they bring about what activities and goals are valuable (Dokko and Gaba, 2012; Dokko and Rosenkopf, 2010; Huckman and Pisano, 2006). We show that individuals' career backgrounds are also important to the way in which practices are conducted in organizations in a way that supersedes the espoused requirements of their job, which in turn affects the survival of the practice in the organization. Our findings also suggest that career background affects not only the mental models that individuals bring, but also the social referents that individuals attend to when making decisions, which suggests that it shapes selective attention to social cues (Ocasio, 1997).

Our findings also resonate with research on the importance of individuals to firm outcomes. Though upper echelons theory delineates the effect of C-level executives and top management teams on firm outcomes (Boeker, 1997; Hambrick, 2007), other work in this stream has sought to understand the effects of mid-level managers to important firm outcomes (Burgelman, 1994; Mollick, 2012). Recent work in this stream has started to find distinctions in the effects of various roles. For instance, Mollick (2012) found that middle management roles were more consequential to performance of video game firms than innovation roles. Our study supports these earlier findings and suggests that middle managers who implement and operate practices play an important role in strategic decisions like practice abandonment.

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Figure 1: Corporate Venture Capital Investments

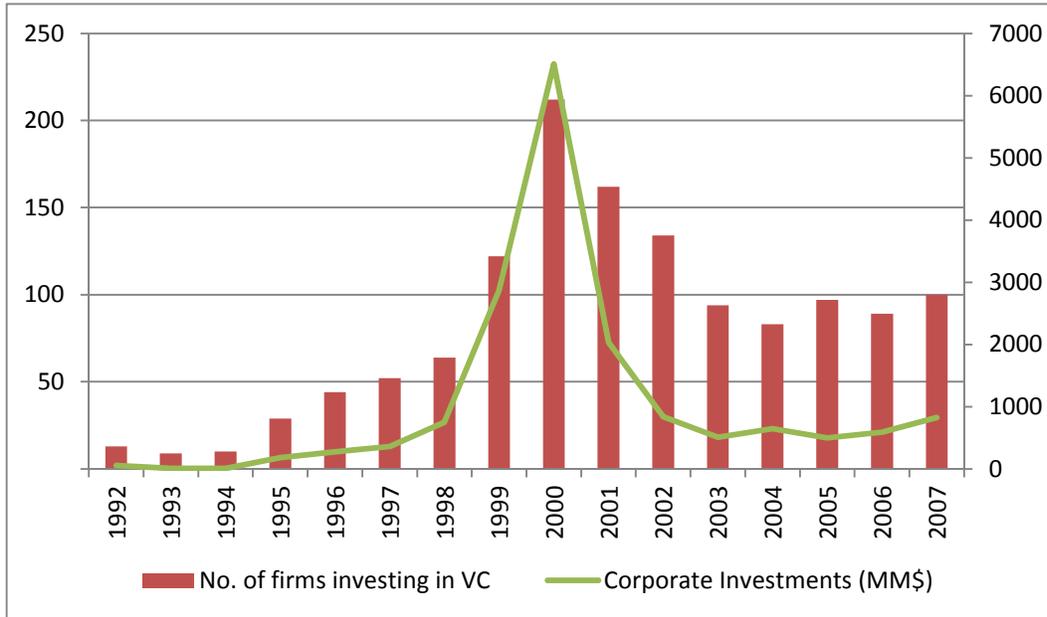


Table 1: Summary Statistics and Correlations (N = 478)

	Mean	S.D.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
<i>1. CVC utilization</i>	37.15	90	1															
<i>2. Proportion of internal hires</i>	0.64	0.43	-0.03	1														
<i>3. Proportion of IVC hires</i>	0.15	0.3	-0.05	-0.17	1													
<i>4. CVC exits</i>	0.16	0.77	-0.06	-0.04	-0.03	1												
<i>5. IVC exits</i>	21.35	15.57	0.04	0.02	-0.11	0.43	1											
<i>6. CVC unit in IVC cluster</i>	0.68	0.47	0.06	-0.05	0.05	0.09	0.07	1										
<i>7. Age of CVC unit</i>	3.34	4.24	0.34	-0.24	0.05	-0.04	0.11	0.12	1									
<i>8. Proportion of successful companies</i>	0.14	0.16	0.09	0	0.23	-0.06	-0.01	0.1	0.26	1								
<i>9. Proportion of defunct companies</i>	0.11	0.13	0.14	-0.26	-0.03	0.08	0.14	0.1	0.39	0.07	1							
<i>10. Median Distance between portfolio companies and CVC unit*</i>	5.82	2.23	0.03	0	0.02	-0.11	0	-0.29	0.02	0.12	-0.01	1						
<i>11. Firm Age*</i>	3.05	0.81	0.2	-0.07	-0.04	-0.09	-0.1	-0.23	0.12	0.08	0.19	0.18	1					
<i>12. Firm Sales*</i>	7.89	2.55	0.12	-0.01	0.07	-0.1	-0.1	-0.18	-0.11	0.07	0.12	0.24	0.37	1				
<i>13. Firm Slack</i>	0.73	0.63	-0.04	0.13	-0.15	0	0.07	0.1	-0.1	-0.06	-0.17	-0.16	-0.21	-0.41	1			
<i>14. Firm performance</i>	895.31	2726.76	0.31	-0.03	-0.02	-0.09	-0.21	-0.05	0.12	0.15	0.05	0.1	0.29	0.37	-0.07	1		
<i>15. Availability of investment opportunities**</i>	5.36	2.05	0.09	0.07	-0.13	0.06	0.18	0.13	0.33	0.08	-0.02	0.01	-0.15	-0.11	0.08	0.04	1	
<i>16. Return on NASDAQ</i>	0.15	0.36	-0.06	0.05	0.03	-0.29	-0.63	-0.01	-0.19	-0.04	-0.21	-0.02	-0.05	0.05	0.01	0.12	0.32	1

*: in natural logs; **: in 1000s

Table 2A: Impact of CVC Implementation Choices on CVC Abandonment

	(1)	(2)	(3)	(4)
	Prob. of abandonment	Prob. of abandonment	Prob. of abandonment	Prob. of abandonment
<i>CVC Utilization</i>		-0.019*** (0.002)	-0.016*** (0.003)	-0.044** (0.017)
<i>Proportion of internal hires</i>		1.525* (0.795)	1.563* (0.833)	1.503* (0.811)
<i>Proportion of IVC hires</i>		-1.329*** (0.081)	-1.316*** (0.084)	-1.233*** (0.082)
<i>CVC utilization*CVC exits</i>			-0.003 (0.002)	
<i>CVC utilization *IVC exits</i>				0.0006* (0.0003)
<i>CVC exits</i>	0.626*** (0.208)	0.681*** (0.228)	0.714*** (0.262)	0.690*** (0.247)
<i>IVC exits</i>	0.033*** (0.007)	0.037*** (0.009)	0.037*** (0.009)	0.032*** (0.007)
<i>CVC unit in IVC cluster</i>	-0.694*** (0.108)	-0.607*** (0.123)	-0.611*** (0.128)	-0.592*** (0.133)
<i>Age of CVC unit</i>	-0.068* (0.039)	-0.059 (0.049)	-0.061 (0.047)	-0.063 (0.047)
<i>Proportion of successful companies</i>	-3.037*** (0.972)	-2.539*** (0.654)	-2.681*** (0.572)	-2.499*** (0.693)
<i>Proportion of defunct companies</i>	0.954 (0.880)	2.428*** (0.803)	2.472*** (0.802)	2.394*** (0.847)
<i>Median distance between portfolio companies & CVC unit</i>	0.137** (0.057)	0.097 (0.103)	0.094 (0.103)	0.092 (0.096)
<i>Firm Age</i>	-0.304 (0.196)	-0.090 (0.183)	-0.093 (0.179)	-0.093 (0.194)
<i>Firm Sales</i>	-0.147*** (0.034)	-0.122*** (0.040)	-0.121*** (0.039)	-0.132*** (0.051)
<i>Firm Slack</i>	-0.315 (0.193)	-0.441** (0.213)	-0.438** (0.211)	-0.415** (0.200)
<i>Firm performance</i>	-0.000** (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
<i>Availability of investment opportunities</i>	0.013 (0.133)	0.059 (0.166)	0.062 (0.167)	0.058 (0.167)
<i>Return on NASDAQ</i>	-0.597 (0.790)	-0.769 (0.816)	-0.766 (0.821)	-0.776 (0.822)
<i>Constant</i>	-1.182 (0.719)	-3.175** (1.236)	-3.237** (1.303)	-2.877*** (1.072)
<i>No of firms</i>	70	70	70	70
<i>Observations</i>	478	478	478	478
<i>Log likelihood</i>	-38.14	-33.95	-33.88	-33.67

Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

Table 2B: Marginal effects of Contagion on CVC Abandonment at various levels of CVC utilization

<i>Range of moderating variable</i>	<i>Marginal effects of CVC exits Moderating Variable: CVC utilization</i>	<i>Marginal effects of IVC exits Moderating Variable: CVC utilization</i>
<i>Mean – 3 std. dev.</i>	0.034*** (0.006)	0.058*** (0.009)
<i>Mean – 2 std. dev.</i>	0.033*** (0.006)	0.058*** (0.009)
<i>Mean – 1 std. dev.</i>	0.032*** (0.006)	0.058*** (0.009)
<i>Mean</i>	0.030*** (0.006)	0.058*** (0.010)
<i>Mean + 1 std. dev.</i>	0.027*** (0.006)	0.057*** (0.012)
<i>Mean + 2 std. dev.</i>	0.022*** (0.005)	0.047*** (0.014)
<i>Mean + 3 std. dev.</i>	0.011*** (0.003)	0.022* (0.013)

Standard errors based on Delta-method in parentheses; *** significant at 10%; ** significant at 5%; * significant at 1%
Marginal effects are based on estimates in Columns 3 and 4 in Table 2A

Table 3A: Impact of CVC Implementation Choices on CVC Abandonment

	(1)	(2)	(3)	(4)
	Prob. of abandonment	Prob. of abandonment	Prob. of abandonment	Prob. of abandonment
<i>CVC utilization</i>	-0.020*** (0.002)	-0.022*** (0.003)	-0.019*** (0.001)	-0.019*** (0.002)
<i>Proportion of internal hires</i>	1.592** (0.685)	0.299 (0.374)	1.521* (0.809)	1.530* (0.793)
<i>Proportion of IVC hires</i>	-1.339*** (0.085)	-1.443*** (0.099)	-1.424*** (0.263)	-2.577** (1.257)
<i>Proportion of internals*CVC exits</i>	-0.033 (0.112)			
<i>Proportion of internals*IVC exits</i>		0.038*** (0.008)		
<i>Proportion of IVC*CVC exits</i>			0.103 (0.249)	
<i>Proportion of IVC*IVC exits</i>				0.026 (0.022)
<i>CVC exits</i>	0.701*** (0.170)	0.624*** (0.223)	0.675*** (0.241)	0.686*** (0.235)
<i>IVC exits</i>	0.037*** (0.009)	0.007 (0.006)	0.037*** (0.009)	0.036*** (0.009)
<i>CVC unit in IVC cluster</i>	-0.604*** (0.137)	-0.566*** (0.123)	-0.610*** (0.115)	-0.598*** (0.117)
<i>Age of CVC unit</i>	-0.060 (0.049)	-0.066 (0.049)	-0.061 (0.052)	-0.057 (0.050)
<i>Proportion of successful companies</i>	-2.526*** (0.617)	-2.656*** (0.615)	-2.593*** (0.740)	-2.527*** (0.705)
<i>Proportion of defunct companies</i>	2.422*** (0.797)	2.519*** (0.922)	2.425*** (0.798)	2.431*** (0.829)
<i>Median distance between portfolio companies & CVC unit</i>	0.094 (0.096)	0.057 (0.107)	0.098 (0.104)	0.096 (0.104)
<i>Firm Age</i>	-0.083 (0.159)	-0.061 (0.181)	-0.091 (0.185)	-0.088 (0.179)
<i>Firm Sales</i>	-0.119*** (0.037)	-0.094** (0.037)	-0.123*** (0.040)	-0.121*** (0.040)
<i>Firm Slack</i>	-0.444** (0.221)	-0.467** (0.212)	-0.442** (0.212)	-0.440** (0.214)
<i>Firm performance</i>	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
<i>Availability of investment opportunities</i>	0.060 (0.169)	0.066 (0.168)	0.058 (0.166)	0.060 (0.168)
<i>Return on NASDAQ</i>	-0.776 (0.842)	-0.692 (0.874)	-0.772 (0.822)	-0.776 (0.825)
<i>Constant</i>	-3.257*** (1.134)	-2.170*** (0.807)	-3.157** (1.272)	-3.174*** (1.228)
<i>No of firms</i>	70	70	70	70
<i>Observations</i>	478	478	478	478
<i>Log likelihood</i>	-33.95	-33.33	-33.94	-33.89

Robust standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%

Table 3B: Marginal effects of Contagion on CVC Abandonment at various levels of proportion of internal hires and IVC hires

<i>Range of moderating variable</i>	<i>Marginal effects of CVC exits</i> Moderating Variable: <i>Proportion of Internal hires</i>	<i>Marginal effects of IVC exits</i> Moderating Variable: <i>Proportion of Internal hires</i>	<i>Marginal effects of CVC exits</i> Moderating Variable: <i>Proportion of IVC hires</i>	<i>Marginal effects of IVC exits</i> Moderating Variable: <i>Proportion of IVC hires</i>
<i>Mean – 3 std. dev.</i>	0.010*** (0.003)	0.002 (0.002)	0.028*** (0.007)	0.030*** (0.009)
<i>Mean – 2 std. dev.</i>	0.012*** (0.003)	0.005** (0.002)	0.024*** (0.005)	0.036*** (0.012)
<i>Mean – 1 std. dev.</i>	0.014*** (0.003)	0.010*** (0.004)	0.021*** (0.004)	0.041** (0.017)
<i>Mean</i>	0.017*** (0.003)	0.019*** (0.005)	0.018*** (0.003)	0.048** (0.022)
<i>Mean + 1 std. dev.</i>	0.021*** (0.003)	0.032*** (0.006)	0.016*** (0.002)	0.054** (0.027)
<i>Mean + 2 std. dev.</i>	0.025*** (0.005)	0.050*** (0.007)	0.013*** (0.002)	0.062* (0.033)
<i>Mean + 3 std. dev.</i>	0.030*** (0.008)	0.073*** (0.011)	0.012*** (0.001)	0.069* (0.039)

Standard errors based on Delta-method in parentheses; *** significant at 10%; ** significant at 5%; * significant at 1%
Marginal effects are based on estimates in Columns 1-4 in Table 3A