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AMBIDEXTERITY AND SURVIVAL IN CORPORATE VENTURE UNITS

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KEYWORDS: ambidexterity; corporate venture capital; corporate venture unit; relational context; survival

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ABSTRACT

Corporate venture (CV) units constitute vehicles through which firms may act ambidextrously thereby increasing their longevity, but they suffer from a high failure rate. We examine why and how some CV units last significantly longer than others. We argue that CV units endure by developing an ambidextrous orientation themselves – they build new capabilities for the parent firm, while simultaneously leveraging its existing strengths. And we argue that CV units become ambidextrous by nurturing a supportive relational context, defined by the strength of their relationships with three different sets of actors – parent firm executives, business unit managers, and members of the venture capital community. Using primary data collected from 95 CV units over a three-year period, we test and find support for these arguments.

An important driver of firm success in fast-changing markets is *ambidexterity* - the capacity to capitalize on an existing set of resources and capabilities whilst at the same time developing new combinations of resources to meet future market needs (Duncan, 1976; Gibson & Birkinshaw, 2004; Tushman & O'Reilly, 1996). Although ambidexterity has been examined in multiple ways, the emerging consensus among strategic management and organizational scholars is to frame it in terms of the competing demands for exploration and exploitation (Gupta, Smith, & Shalley, 2006; Raisch & Birkinshaw, 2008): where exploration involves 'experimentation with new alternatives' with returns that are 'uncertain, distant and often negative', and exploitation is the 'refinement and extension of existing competencies, technologies and paradigms' with returns that are 'positive, proximate, and predictable' (March, 1991: 85).

Prior research using empirical data (Leonard Barton, 1992; McNamara & Baden-Fuller, 1999) and modeling techniques (Davis, Eisenhardt, & Bingham, 2009) has shown that a strong focus on exploitation tends to drive out exploration, which in the long term results in stagnation and profitability problems. Accordingly, much of the ambidexterity literature seeks to identify ways to help firms enhance their capacity for exploration without sacrificing their exploitation abilities. Proposed approaches include setting up a separate 'exploration' unit (e.g. a research lab or new venture operation), fostering a supportive culture for new ideas, and improving top management's ability to allocate resources towards exploration-oriented opportunities (Gibson & Birkinshaw, 2004; Tushman & O'Reilly, 1996; Tushman, Smith, Wood, Westerman, & O'Reilly, 2010).

In this paper we focus on one common approach to enhancing firm ambidexterity, namely the establishment of a corporate venture (CV) unit, viz. a distinct entity controlled by the firm that has responsibility for investing in and developing new business opportunities (Block &

MacMillan, 1993). The prevailing view is that firms typically establish CV units to enhance their capacity for exploration, which is manifested in such specific goals as providing a ‘window’ on new technological opportunities, creating new growth options, and fostering a more entrepreneurial culture (e.g., Burgelman, 1983; Basu & Phelps, 2009; Dushnitsky & Lenox, 2006; Kanter, 1985; Wadwha & Kotha, 2006). However, such goals are seldom achieved: the overall success rate of CV units is regarded as poor, with many being closed down early and others struggling to meet their expectations. Paradoxically, a common problem with CV units is that they are frequently seen as *too* exploratory, investing in activities perceived as being either too far from the firm’s core business or too hard to integrate into its operations (Burgelman & Valikangas, 2005; Chesbrough, 2000; Gompers & Lerner, 1998).

The current paper explores these issues through the research question: *why and how do some CV units survive while others do not?* Our research seeks to shed light on the specific challenges of managing a CV unit within a large firm, as well as how such activities contribute to the firm’s broader quest for ambidexterity. We make two core arguments.

First, we argue that *CV units endure by – themselves - developing an ambidextrous orientation*. Their primary function, of course, is to build new business opportunities for their parent firm. But, unlike independent venture capitalists (VCs), they are expected to do so by building on certain firm resources (e.g. technologies, capital, people, the corporate brand), and to seek out ways of exploiting the fruits of their investments for the parent firm (e.g. by integrating new ventures into existing lines of business). It is their ability to reconcile the competing demands for exploration and exploitation, we suggest, that proves critical to the survival of CV units. While some CV units focus too closely on opportunities that are not linked to the core strengths of the firm, others stay too close to the parent and fail to create sufficiently new sources

of value. Long-term success for a CV unit involves charting a careful course between these two extremes.

Second, we adapt the notion of contextual ambidexterity (Ghoshal & Bartlett, 1994; Gibson & Birkinshaw, 2004) to the particular circumstances of the CV unit as a boundary-spanning entity and argue that *CV units become ambidextrous by nurturing a supportive relational context*. The relational context of the CV unit is defined as the set of relationships with the key resource holders, internal and external to the firm, in which the unit is embedded. This relational context – which is distinct from the behavioral context construct that informs current understandings of contextual ambidexterity - facilitates the resource flows that enable the CV unit to simultaneously build new capabilities whilst also using the existing ones of the parent firm, in order to chart the course described above.

Using a unique body of data from 95 CV units, we test and find support for both these arguments. Our dataset overcomes crucial limitations of previous studies in this domain: it includes both internally- and externally-oriented venture units (Sharma & Chrisman, 1999); and it incorporates measures of strategic and organizational antecedents of ambidexterity not available from archival sources (Dushnitsky, 2006; Maula, 2007). It represents, to the best of our knowledge, the most systematic study of CV units from *primary* sources to date.

Overall, then, our paper makes two contributions. First, departing from conventional wisdom on CV units, we adopt an ambidexterity lens to provide new empirical evidence for why and how some CV units survive while others do not. Most prior literature has framed CV units as principally exploration-oriented entities, focusing on their innovation-related roles. We find that CV units in fact need to strike a delicate balance between exploring new opportunities and exploiting existing capabilities. This suggests some practical implications for executives who

manage corporate venturing activities. Second, we contribute to the academic literature on ambidexterity by providing insights into how a discrete organizational unit may need to be ambidextrous in its own right (rather than simply focused on exploration *or* exploitation) if it is to contribute to the firm's long-term success. We also develop a novel perspective on *how* ambidexterity is achieved within boundary-spanning units, through advancing the notion of a relational context.

THEORY AND HYPOTHESES

Exploration, Exploitation and Ambidexterity

The literature on firm ambidexterity has grown dramatically in recent years (see reviews by Lavie, Stettner, & Tushman, 2010; Raisch & Birkinshaw, 2008; Simsek, Heavey, Veiga, & Souder, 2009), and different points of view have emerged on a number of fundamental issues. It is therefore important to clarify our position on two key matters.

First, exploration and exploitation can be conceptualized either as poles on a single continuum or as discrete variables. Exemplifying the former, one common approach uses a single search distance (Cyert & March, 1963) dimension whereby local search is equated with exploitation and distant search with exploration (e.g. Martin & Mitchell, 1998; Rosenkopf & Nerkar, 2001). Here, exploration and exploitation are viewed as fundamentally incompatible – i.e. as representing trade-offs to firms (Gupta et al., 2006). The alternative approach, which is more dominant in ambidexterity literature and which we adopt here, is to conceptualize exploration and exploitation as distinct and separable modes of activity (e.g. He & Wong, 2004; Koza & Lewin, 1998; Rothaermel & Deeds, 2004): where exploration involves the development of capabilities for the firm, while exploitation involves the use of existing firm capabilities

(Danneels, 2002; Katila & Ahuja, 2002). Conceptually, this approach permits the possibility of synergies between exploration and exploitation (Cao, Gedajlovic, & Zhang, 2009).

Second, different points of view exist on how the exploration-exploitation duality can be most effectively managed. The most well-known approach to doing so is *structural separation*, which involves creating exploration-oriented units (e.g. a research lab or CV unit) to work alongside established exploitation-oriented units (e.g. a manufacturing plant or sales force). The task of integrating their respective contributions is assigned to top management (Benner & Tushman, 2003; Galbraith, 1982; Tushman et al., 2010; Tushman & O'Reilly, 1996).

More recently, other approaches have been suggested. These include: *temporal separation*, which involves an organization switching back-and-forth over time between exploration and exploitation (Puranam, Singh, & Zollo, 2006; Siggelkow & Levinthal, 2003); *inter-organizational specialization*, through which organizations engage in joint ventures, alliances and acquisitions to complement the (typically exploitative) dominant modality of their activities (Lavie & Rosenkopf, 2006; Lin, Yang, & Demirkan, 2007); and the creation of a *supportive organization context* that provides the cues encouraging individuals to make choices about dividing their time between exploration and exploitation (Gibson & Birkinshaw, 2004; Gulati & Puranam, 2009). There are merits to all these approaches, which we do not view strictly as alternatives; rather, we expect firms to utilize various combinations thereof in seeking to become ambidextrous.

Moving to the specific setting under investigation here, CV units are typically positioned in the literature as singularly exploration-focused: they focus on the financing and development of “new business ventures” (De Bettignies & Chemla, 2008), that “fall outside the scope of the current concept of strategy” (Burgelman, 1983: 61). However, a closer look at the activities of

CV units suggests that they can embody both explorative and exploitative modes of activity (Campbell, Birkinshaw, Morrison, & van Basten Batenburg, 2003; Hill & Birkinshaw, 2008; Keil, Maula, Schildt, & Zahra, 2008; Schildt, Maula, & Keil, 2005; Tidd & Taurins, 1999; Williams & Lee, 2009). Combining these modalities permits them to focus on their new business development activities whilst also ensuring that their work builds on and is integrated with that of the rest of the firm (Lawrence & Lorsch, 1967). And for this to happen, we suggest, a supportive relational context needs to embed the CV unit.

Ambidexterity and CV Unit Survival

We focus first on the relationship between ambidexterity and the survival of the CV unit. Survival is an appropriate dependent variable for our study for two reasons. First, CV units are highly prone to premature closure which makes survival the key criterion of success over their first few years of operation (Burgelman & Valikangas, 2005; Campbell et al., 2003; Fast, 1979, 1981; Gaba, 2007). Research into the VC industry (on which many CV unit practices have been built) shows that most VC funds require seven or eight years before they are able to show a yield on their start-up investments (Gompers & Lerner, 1998, 2001). However, the cycle of change in large organizations is shorter, with the average tenure of the CEO of a large company being only six years (Kaplan & Minton, 2006), and changes in strategy occur at least this frequently. It is therefore likely that executives in large organizations will make strategic decisions regarding the fate of their CV units *before* those units have had time to show whether they have been successful or not (Burgelman & Valikangas, 2005; Dushnitsky, 2006).

The second reason we focus on survival is that CV units, by their nature, are created to meet multiple and varying objectives (e.g., one may focus on financial return, another may focus on strategic criteria; Campbell et al., 2003; Hill & Birkinshaw, 2008; Maula, 2007), so survival is

the only truly common objective across our sample. It also helps that survival can be measured objectively, and at a separate point in time than the other variables, whereas other measures of performance tend to be subjective.¹

We suggest that CV units will increase their prospects for survival to the extent that they develop an ambidextrous orientation. There are three parts to our argument. *First*, capability-building takes place over time and through a path-dependent process, which suggests that CV units will be most effective when they invest in activities that build on *and* extend the firm's core capabilities (cf. Gompers & Lerner, 1998; Keil et al., 2008; Schildt et al., 2005; Sykes, 1986; Thornhill & Amit, 2001). In order to identify new combinations (Schumpeter, 1934) for the parent organization, the CV unit will need to possess sufficient absorptive capacity (Cohen & Levinthal, 1990) to identify and evaluate new opportunities. The foundations for these activities reside in the existing knowledge and competence bases to which the CV unit has access.

The interplay between drawing on existing capabilities and developing new ones may also enable CV units to develop unique or unusual resource combinations that result in competitive advantage (Eisenhardt & Martin, 2000). Katila and Ahuja (2002) find a similar synergistic effect for the combination of new knowledge with knowledge that is already known to a firm. Drawing on, but also extending, the core capabilities of the parent firm may present new value creation opportunities to the firm that are fairly unique to corporate venturing within the private equity investment domain (Dougherty, 1995).

Second, the extent to which CV units integrate their activities with those of other units in the organization is likely to increase their chances of survival. One of the core principles of organization design is that high levels of differentiation need to be matched with high levels of integration (Lawrence & Lorsch, 1967; Thompson, 1967). CV units, by their nature, tend to

become relatively isolated from the mainstream activities of the organization, and in extreme cases such units may be spun off. For example, Nokia Venture Partners was renamed BlueRun ventures in 2005, when Nokia reduced its ownership to a minority stake, to reflect that the operation had become ‘an independent, globally focused fund’ (Haley, 2005). To avoid this happening, managers of CV units will often work hard to build linkages between their unit and other parts of the parent organization - for example, by putting senior line executives on their venture boards (Hansen & Birkinshaw, 2007). Such linkages increase the flow of technology, people and capital between the CV unit and the parent firm, making it easier for the CV unit to capitalize on the organization’s existing capabilities (and vice versa). Without demonstrable exchanges of this nature, the relevance of the CV unit to the parent firm quickly comes into question.

Finally, overlaying these capability and integration based arguments; we suggest ambidexterity may play an important *symbolic* role in engendering perceptions of legitimacy amongst CV units’ key constituencies, enabling their survival (Meyer & Zucker, 1989; Oliver, 1991). Like independent ventures with a ‘liability of newness’ (Stinchcombe, 1965), CV units often suffer from a lack of legitimacy within their institutional field because of the paucity of established models of corporate venturing (Chesbrough, 2000), and this reduces their likelihood of survival (Aldrich & Fiol, 1994). An ambidextrous positioning (and associated discourse) may help a CV unit to overcome both cognitive and socio-political obstacles to engendering legitimacy (Suchman, 1995), enabling it to be both better understood and more accepted by internal and external constituencies. Specifically, ambidexterity may privilege their gaining of legitimacy through ‘optimal distinctiveness’ (Lounsbury & Glynn, 2001: 552): ‘that is, to balance the need for strategic distinctiveness against that of normative appropriateness’.

Ambidexterity may also help overcome the cognitive obstacles of entrenched identity beliefs, through framing the new initiatives of the CV unit along existing schemas compatible with – or at least not in opposition to – valued identities in the parent company and amongst VC communities (Czernich, 2004; Dougherty & Hardy, 1996; Fiol, 1991; Reger, Gustafson, Demarie, & Mullane, 1994).

Collectively, these arguments suggest a duality between exploration and exploitation in a corporate venturing setting: an exclusive focus on exploitation by the CV unit is likely to cause the unit to be folded back into the parent company, and an exclusive focus on exploration is likely to cause the unit to be spun off (Burgelman, 1984; MacKenzie, 1996). The simultaneity of high levels of exploration and exploitation optimizes the chances of CV unit survival. We therefore suggest the following hypothesis:

Hypothesis 1. The higher the level of venturing ambidexterity (i.e. the interaction of exploitation and exploration), the higher the likelihood of survival of the CV unit.

Relational Context and Ambidexterity

How does an organization or unit achieve ambidexterity? As we have already discussed, the CV unit is *by definition* structurally separated from the rest of the organization, in that it exists as a semi-autonomous entity with its own line of reporting into the parent. Hence, our focus here is on the contextual (especially, the social) characteristics that make it possible for a CV unit to build new capabilities whilst also integrating its activities with those of the rest of the firm. This approach does not deny the role of CV unit formal structure, and we control for several structural variables in our analysis. Nonetheless, we propose that the particular nature of CV units as structurally separate, boundary-spanning entities makes a context-based explanation of ambidexterity particularly compelling.

A relational perspective on context. Our theoretical arguments focus on the CV unit's relational context - the specific set of ties, internal and external to the firm, with key resource holders, in which the unit is embedded. We use the term *relational* to refer to ties that are embedded in social relationships, are typically long-term in nature, and are evaluated on a subjective basis; as distinct from *transactional* ties that are relatively arms-length, short-term, and objectively evaluated (c.f. MacNeil, 1974; Poppo & Zenger, 2002; Rousseau, 1995; Uzzi, 1996, 1997).²

Given the fast pace and unpredictability of the corporate venturing world, a purely transactional approach would not be effective: contracts would lack the requisite flexibility (and redrafting would likely prove expensive), and counterparties would lack sufficient sense of mutual obligation to be willing to provide the give-and-take necessary for the CV unit to operate effectively. The essence of ambidexterity in a CV unit is that managers make choices on an ongoing basis as to how best divide the work of the venture unit between exploration-focused and exploitation-focused activities. Shifts in priority between the two modes are frequently required. Such choices require careful judgment and considerable flexibility on the part of CV unit managers, and will therefore require a certain amount of give-and-take on the part of those individuals with whom the CV unit interacts. In such a context, a relational approach is likely to be superior. More embedded relationships, which promote resource pooling, cooperation and fast-paced adaptation (Uzzi, 1996, 1997), reduce the costs of effecting frequent shifts in orientation. Furthermore, the foundation of high trust and reciprocity that underlies relational ties means that such ties function better than transactional ties where expected pay-offs are more distant and/or evaluated more subjectively.

A relational view of context differs significantly from the concepts of *structural context* (Bower, 1970), in which behavior is shaped by formal rules and incentives, and *behavioral context* (Ghoshal & Bartlett, 1994), in which behavior is shaped by the tacit norms and values of the organization. Here, instead, context is characterized by a combination of access to resources from other actors (Pierce & White, 1999; Pfeffer & Salancik, 1978) *plus* the normative and social cues these actors provide. This combination of resource dependency and social support is highly relevant to the boundary-spanning context of the CV unit, in terms of the complex web of relationships it builds with other actors to ensure its survival (Chesbrough, 2000; Dushnitsky, 2006; Maula, Autio, & Murray, 2005).

Principal sets of stakeholders. We suggest that three principal sets of resource holders define the CV unit's relational context - the senior managers in the parent firm, the managers in the other business units of the parent firm, and members of the VC community. Although some CV units may also engage with additional parties (such as entrepreneurial young firms, university scientists, suppliers or consumers), our research interviews suggested that these three sets of actors represent the principal network of resource holders with which CV units typically engage.

Although the relationships the CV unit has with these sets of actors are each important in their own right, the real value comes from how they are used in combination. Indeed, it is useful to conceptualize the CV unit as a broker that draws on its social capital to seek out ways of bringing together insights and resources held by disparate actors with a view to creating new sources of value (Hargadon, 2002; Hargadon & Sutton, 1997; Obstfeld, 2005). By way of example, one CV unit manager in our sample became aware of an interesting start-up venture through his contacts in the VC community. He was able to broker a commercial relationship

between the start-up and one of the firm's business units. He also persuaded the parent firm to invest in the start-up as part of a syndicate of VCs. This venture, which turned out to be highly successful, was thus made possible because the CV unit manager had developed strong relationships with all three sets of actors; was aware of their very different needs and priorities; and was able to put together an opportunity for value creation that others were unaware of.

Two features of this brokerage role are particularly relevant to the challenge of developing an ambidextrous orientation in CV units. First, brokerage helps CV units to overcome one of the biggest challenges of ambidexterity, namely resource scarcity. While exploration and exploitation are potentially incompatible when critical resources are scarce (Cao et al., 2006; Gupta et al., 2006), brokerage via a supportive relational context allows CV units to tap into a broader set of resources than those that they control in order to pursue relevant investment opportunities. Consequently, CV units will encounter to a lesser degree the zero-sum game between exploration and exploitation facing other units in the parent company which seek to access (primarily internal in origin) resources.

Second, each set of actors in the CV unit's network has attributes that can benefit both exploration *and* exploitation. At first glance, one might expect the CV unit to 'explore' through its relationship with the VC community and to 'exploit' through its relationships with other parts of the parent firm. However, a closer look suggests a more nuanced story: relationships with parent firm executives and with business unit managers are important for gaining access to investment capital, distribution channels, production facilities, R&D stocks, market intelligence and technology forecasts; while relationships with executives in the VC community give them access to capital for co-investment, new investment ideas, and a range of investing and enterprise-nurturing capabilities (Block & MacMillan, 1993; Maula et al., 2005; Siegel, Siegel,

& MacMillan, 1988; Sykes, 1986). In addition, both internal and external parties may supply legitimacy to CV units (Keil, Maula, & Wilson, 2010; McNally, 1997). In other words, the stronger and more multi-faceted the relational context of the CV unit, the more likely it will be to secure the diversity of inputs it needs to become truly ambidextrous.

In sum, these features indicate how ambidexterity in a CV unit is possible. A supportive relational context enables a CV unit to avoid getting mired exclusively in one learning mode, and thereby to retain a balance between exploration and exploitation. And, as many of the critical resources required for corporate venturing are secured from other parties, the resource constraints that would exist in a typical organization are mitigated for CV units. In sum, we suggest that the resource flows brokered by CV units across their networks of relationships enable them to function ambidextrously on behalf of their parent companies:

Hypothesis 2. A positive three-way interaction occurs between the strength of a CV unit's relationships with (a) senior executives in the parent firm, (b) other business units, and (c) the VC community, and the unit's level of venturing ambidexterity.

Relational Context, Ambidexterity and Survival

Finally, we hypothesize that ambidexterity mediates the relationship between CV unit relational context and CV unit survival. This hypothesis centers around the notion that ambidexterity is a meta-capability that develops gradually over time (Gibson & Birkinshaw, 2004). In other words, we do not expect the impact of strong ties with key constituencies to generate immediate and direct survival benefits for CV units. Building a fertile relational context provides a necessary, but not sufficient, foundation for CV unit survival. Instead, strong ties between a CV unit and its key constituencies create the conditions that enable CV units to simultaneously manage exploration-focused and exploitation-focused activities. By achieving an

appropriate mix between utilizing existing capabilities and building new ones, CV unit managers enhance the odds that their unit will survive.

The nature of this causal path, however, is that it is likely to transpire slowly. A number of authors have recently characterized ambidexterity as a dynamic capability (e.g. Güttel & Konlechner, 2009; Jansen, Tempelaar, Van den Bosch, & Volberda, 2009; O'Reilly & Tushman, 2008), noting the importance of developing routines that enable the firm (or the CV unit, in this instance) to "consciously ... orchestrate firm assets in a repeatable way" (O'Reilly & Tushman, 2008: 201). Such routines typically develop over a period of months or even years.

Thus, in our setting, building the embedded ties with key stakeholders that provide the high levels of trust, fine-grained information transfer and joint problem-solving (Uzzi, 1996, 1997) required to support corporate venturing activities takes time for a CV unit to effect. Turning the resource flows resulting from such ties into viable entrepreneurial resource combinations takes time too, as do efforts to legitimate and broadcast these internally within the parent corporation.

In sum, we expect a CV unit's relational context to influence CV unit survival *through* the development of ambidexterity. If sufficient time is not given for a CV unit to develop the relational context that underlies its brokerage of critical resource flows, and to turn these resource flows into valued combinations which can then be observed by key decision-makers, this crucial survival-enhancing path will be disrupted. The premature closure of a CV unit, before it is able to realize its potential to its parent company, may then (and does frequently) result (Fast, 1979, 1981; Gaba, 2007). Stated formally:

Hypothesis 3. Venturing ambidexterity mediates between the relational context and the likelihood of survival of the CV unit.

METHODOLOGY AND ANALYSIS

Research Design and Sample Composition

The research consisted of three phases. The first two phases were conducted in the second half of 2001 at the height of the corporate venturing boom³; the final phase was conducted in late 2003 during the downturn in corporate venturing. The first phase comprised exploratory interviews with 50 individuals in 40 CV units across eight countries, with the intention of understanding current practices pertaining corporate investment in corporate venturing. The second phase, building on the insights from the interviews, was a survey of managers of CV units. The sampling frame comprised CV units listed in the Corporate Venturing Directory and Yearbook 2001. A number of additional units with which we were familiar were also included in the sampling frame. Together these sources yielded 447 potential respondents to whom mail surveys were distributed. The most senior manager of each of these 447 CV units was the subject of our communication. Follow-up calls and further investigation found 120 CV units to be inactive, resulting in a potential pool of 327 CV unit respondents. Responses were received from the heads⁴ of 95 units: an eventual response rate of 29%.

The sample represented a broad cross-section of industries. Many responding CV units (48 percent) were from high-technology sectors, such as telecommunications, biotechnology, pharmaceuticals, electronics and IT. The remainder (52 percent) was from a variety of sectors, including oil and gas, automotive, manufacturing, consumer goods, transport and professional service sectors. The bulk of respondents were from Europe (48 units) and North America (44 units); the remaining three units were from Asia.

Respondents and non-respondents were compared along a number of indices for which comparative data was available. ANOVAs and cross-tabs did not find significant differences for

the age, monetary budget, average annual number of investments, number of employees, or preference for 17 types of funding (e.g. start-up funding, first stage funding, and so on) between responding and non-responding units. Significant differences were found in two areas: the proportion of European respondents was somewhat higher than expected, whilst fewer than expected responses were received from North American CV units ($\chi^2 = 39.56, p = .000$); and the proportion of respondents expressing a preference for seed funding was higher than amongst non-respondents ($\chi^2 = 6.70, p = .010$). Overall, these analyses suggest that respondents were not substantively different from non-responding units in our sampling frame.

The third phase of the research was conducted in December 2003 to ascertain how many CV units had survived the severe downturn in venturing activity that took place during 2002 and 2003. Follow-up phone calls were made to the managers of the CV units that had participated in the mail survey. They were asked whether their CV unit was still active. If the CV unit was no longer active, respondents were asked to recall the month and year in which the unit ceased operations. Of the 95 CV units in the sample, we were able to speak with a person from 81 of the units (85% of the sample). For the remainder, archival and web searches were used to ascertain the status of the unit. Of the original sample, 22 CV units (23%) were found to have closed down subsequent to the survey, while the remaining 73 (77%) were still active.

Dependent and Independent Measures

The bulk of our measures are derived from the 2001 mail survey. As no other studies (to our knowledge) had used survey methodologies to examine the structures and management practices in contemporary CV units, we developed the measures drawing on prior literature where possible, as well as on constructs emerging from the exploratory interviews. Using our final sample, we conducted numerous analyses (described below) to verify that our measures

were sound. Table 1 details the operationalization of the multi-item measures, and their properties. PCA demonstrated all items to load on a single factor in each measure, and Cronbach's alphas were all within acceptable levels (ranging from .66 to .87).

Insert Table 1 about here

Survival. A CV unit was considered to be a survivor if it was still active (i.e. continuing to invest in ventures) within its original parent company in December 2003. This date was chosen on the basis of our judgment about how the corporate venturing industry was evolving at that time. During 2002 and 2003 parent companies we were in contact with had reviewed their CV operations as a result of the dotcom crash, and the CV unit managers, in turn, had been required to justify why their unit should continue to operate. Such reviews had begun to tail off in the latter part of 2003, so we chose December 2003 as the date to take stock of which units had survived and which had not. It is worth noting that during this 'third wave' (during the 1990s and ending with the dotcom crash) of corporate venturing, the average longevity of CVC units was only 2.2 years (Dushnitsky, 2012), and that in general CV units are particularly susceptible to closure in their early years of operation (Gompers & Lerner, 1998). Thus, our two-year window between survey and follow-up appears to provide a reasonable timeframe over which to capture a significant portion of survival decisions for units in our sample. The dummy variable was coded '1' if a CV unit was still active late in 2003 (i.e. a survivor unit), and '0' where it was not (i.e. a non-surviving unit).⁵

Venturing ambidexterity. We chose to develop new measures for the constituent elements of ambidexterity, viz. exploration (building new capabilities for the parent firm) and exploitation (making better use of the existing capabilities of the parent firm) (cf. Danneels,

2002; Katila & Ahuja, 2002). This decision was informed by the absence of any widely accepted measure of ambidexterity at the time, and the focus of extant measures on organizational levels of innovation (Atuaheme-Gima & Murray, 2007; He & Wong, 2004; Lubatkin, Simsek, Ling, & Veiga, 2006; O'Reilly & Tushman, 2004). The latter focus is inconsistent both with a unit level of analysis and with the broad and varied mandates of CV units (Campbell et al., 2003; Chesbrough, 2002; Keil, 2002; Maula, 2007), in which innovation is seldom the exclusive component. We hence developed exploration and exploitation measures tailored to the CV setting based on a three-step process. This process combined the grounded development of items through interviews with CV unit managers, as well as scholarly expert ratings of the proposed items for congruence with March's (1991) definitions of exploration and exploitation.

First, we listened to how our interview respondents described the value-adding part of their work, and we developed a list of pertinent activities. For example, the head of British Telecom's Brightstar CV unit described such activities as making better use of the parent company's technologies, and providing opportunities for talented but frustrated engineers, whereas the head of Siemens' Mustang Ventures emphasized such activities as providing a window on new technologies and creating breakthrough technologies for Siemens Corporation. Second, we reviewed and condensed this list by iterating back and forth between the phrases our interviewees used and concepts we were able to draw from the CV literature. Once we had our draft items, we checked their wording with two CV unit managers (who were not in the interview sample). Third, we performed a q-sort procedure, whereby four expert scholars familiar with both the corporate venturing and ambidexterity literatures assessed the draft items for their congruence with the constructs of exploration and exploitation. This process resulted in the development of two scales (see Table 1 for the specific wording of items).

Use existing capabilities (exploitation). A four-item measure which examined exploitative CV unit objectives resulted from the three-step development process described above. The items were concerned with CV unit mandates involving the effective utilization of the parent company's assets and capabilities in broad (e.g. "better use of existing corporate assets"), with the parent company's human asset utilization in particular (e.g. "retention and motivation of our employees" and "source of funding for internal entrepreneurs"), and with monetizing the existing technologies and intellectual capital of the parent company ("e.g. creation of spin-out companies").

Build new capabilities (exploration). This three-item measure examined the extent to which CV units strove to develop new capabilities for the parent company, e.g. by creating new breakthrough technologies and providing a window on emerging technologies (Dushnitsky & Lenox, 2006).

Ambidexterity. We examined the psychometric properties of the exploitation and exploration measures using confirmatory factor analysis (CFA). We compared our proposed two-factor model (with each item constrained to load only on its anticipated factor) to an alternative one-factor model using AMOS. The proposed two-factor model demonstrated good fit with the data ($\chi^2 = 22.39$, $df = 13$, $p = .05$; $CFI = .91$; $RMSEA = .09$), while the alternative one-factor model exhibited poor fit ($\chi^2 = 78.69$, $df = 14$, $p < .001$; $CFI = .39$; $RMSEA = .22$). This suggests that exploration and exploitation are both theoretically and empirically distinguishable in the CV unit context. Convergent validity was also indicated by all item loadings being significant ($p < .05$) and in the expected direction in the two-factor model.

Analytically, we operationalized ambidexterity as the product of exploration and exploitation (c.f. Atuahene-Gima & Murray, 2007; Gibson & Birkinshaw, 2004; Jansen, Van den

Bosch, & Volberda, 2005, 2006). This approach is consistent with our predictions regarding synergistic effects of high levels of both exploration and exploitation in CV units. Alternative, less frequently used operationalizations of ambidexterity include: (1) the ‘balance’ between using existing capabilities and building new capabilities; and (2) ‘additive’ measures examining total levels of exploration and exploitation (He & Wong, 2004; Lubatkin et al., 2006). We conducted robustness checks against these alternative operationalizations in post-hoc analyses.

Relationship with senior executives (in the parent firm). To assess the strength of a CV unit’s relationship with its parent firm executives, we asked CV unit managers to indicate how frequently members of the unit communicated with: (1) the senior executives to whom the CV unit reported, and (2) other senior executives in the corporate parent. In constructing these items, we follow in an established tradition whereby the frequency of interaction between ties is taken as a proxy of the strength of their relationship.⁶

Relationship with business units. Per the senior executive relationship measure, CV unit managers indicated (along three items) how frequently they communicated with executives, technical/R&D people and managers in the firm’s other business units.

Relationship with the VC community. CV unit managers rated the frequency of communication between the unit and members of the VC community (a two-item measure).

Control Measures

Finally, a number of control measures were utilized in the analyses. Single-item measures for the *number of full-time employees* (or equivalent part-time employees) in the CV unit, the *age of the unit* (in years), and the *number of investments* the unit had undertaken, were used to control for possible ‘economies of scale’ and ‘learning curve’ effects on CV units - potentially enabling both the creation of venturing ambidexterity and CV unit survival.

We also created three dummy variables. A *hi-tech sector* variable identified whether or not each parent company's main line of business was in a high-technology industry (i.e. electronics and computing; telecommunications; and biotechnology, medical and pharmaceutical industries). Another dummy variable, *financing structure*, examined whether a CV unit's investments were subject to internal review (coded '1'), or were financed via a closed fund or a 'separate pot' of money (coded '0'): a structural dimension which may affect units' relationships with internal constituencies, as well as their latitude to engage in investments diverging from parent company strategy and investment practice. Finally, *CVC (corporate venture capital) investments*, examined whether a CV unit had investments recorded in the VentureXpert database in the two-year period prior to the survey (coded '1' where it did, '0' where it did not). This measure indicates whether a unit invested in external investments, a key dimension in CV unit typologies (Sharma & Chrisman, 1999). As a complementary measure, a three-item *internal investments* measure captured the relative emphasis placed by a CV unit on internally-generated investments.

The *autonomy* of CV units was assessed along two dimensions. *Autonomy (vertical)* – a four-item measure – assessed the extent to which CV unit managers had the authority to make various types of investment decisions. *Autonomy (horizontal)* examined how extensively other business units within the parent company were involved in decision-making on the CV unit's investments. Three items identified arenas for CV unit decision involvement with business units.

We also attempted to control for the impact of *perceived CV unit performance* on the ambidexterity and survival of CV units. Respondents were asked to assess the performance of their CV unit on dimensions identified in the exploratory interviews. CV unit managers rated the performance of their unit against expectations over the past 3 years (or its period of operation, if

shorter) on 18 items, reflecting a broad range of objectives. When factor analyzed, we found 4 items to consistently load on a *strategic performance* dimension and 3 items to load on a *financial performance* dimension. Additionally, we produced a multiplicative interactive measure (*strategic X financial performance*), to control for the possibility that CV units might be expected to achieve a mix of both strategic objectives and acceptable levels of financial return. These three performance measures were included as control variables when testing H1.

Checks for Common Method Bias

As our survey data may be prone to single-source, common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), we took a number of steps to assure ourselves that such biases did not pose a significant threat to our analyses. Most critically, as mentioned previously, we gathered CV unit survival data as a relatively objective independent outcome measure for the CV units. This data was collected two years after all other data, so the responses we received were unlikely to be influenced by the earlier round of data collection.

Additionally, we investigated the threat posed by common method variance within the mail survey by subjecting the data to a Harman one-factor test. We conducted principal component analysis (PCA) on all items making up our six independent and dependent variables. Six factors were found with eigenvalues greater than 1.00. In total, these explained 75 percent of the variance, with the first factor accounting for only 26 percent of the total variance. If common method bias were a serious problem in our data, one factor accounting for most of the covariance in the independent and dependent variables should have emerged (Podsakoff et al., 2003).

Furthermore, we collected archival data from the VentureXpert database to act as a validity check on the investment history data reported by survey respondents. The self-reported responses were highly consistent with the VentureXpert data (for the 71 units for which data was

available), thus providing us with a fair degree of comfort in the accuracy of the self-reported measures. Specifically, both the number of CV unit investments reported by respondents and the proportion of the portfolio experiencing liquidity events reported highly significant correlations ($p = .000$) with the comparable VentureXpert data.

Analysis

We tested our hypotheses with path analysis via the Mplus software (Muthén & Muthén, 1998-2007). Specifically, we used maximum likelihood estimation with robust standard errors. Path analysis via Mplus was deemed well-suited to simultaneously testing the hypothesized interaction and mediation effects within our fairly small dataset, which combined continuous and binary outcome variables. Due to the limited sample size, we used mean scores as single indicators of the latent constructs in our model.

As our hypotheses involve testing interaction terms, we mean-centered the independent variables in order to reduce the threat of multicollinearity (Aiken & West, 1991). An inspection of the variance inflation factor (VIF) indices, with mean values approximating 2.00, indicated these to be well within accepted limits (typically, VIF's below 10, or a more conservative threshold of 5.00) (Cohen, West, Cohen, & Aiken, 2002; Kutner, Nachtsheim, & Neter, 2004). In addition, no obvious problems regarding the stability of coefficient estimates and their standard errors across models (Kutner et al., 2004) were discernable. Accordingly, multicollinearity does not appear to be of significant concern.

FINDINGS

Means, standard deviations, and correlations among the variables are shown in Table 2. This table indicates that, in terms of the antecedents of ambidexterity, none of the separate

measures of CV unit relationships with the three constituencies are significantly correlated with exploitation; all are, however, significantly correlated with exploration. Additionally, although exploration and exploitation are not significantly correlated with CV unit survival, relationships with parent firm executives ($r = .21, p < .05$) and with the VC community ($r = .26, p < .05$) are.

Insert Table 2 about here

Structural models. In testing our first two hypotheses, we first tested the fit of the hypothesized model. This model was compared to four other nested models: (a) a null model (model 1), in which all covariances were set to zero; (b) a baseline model (model 2) from which both the higher-order interaction effects posited in H1 and H2 were omitted; (c) a model (model 3) that included the posited H1 two-way interaction between venturing ambidexterity and survival; and (d) a model (model 4) that included the posited H2 three-way interaction between relationships with stakeholders and venturing ambidexterity. The Satorra-Bentler scaled chi-squared difference test, which is suited to robust maximum likelihood estimation via numerical integration, was used to compare the models (Muthén & Muthén, 2009). The results are shown in Table 3, indicating the hypothesized model to demonstrate superior fit to the more parsimonious comparison models.

Insert Table 3 about here

Having tested its fit and finding no signs of mis-specification, the hypothesized model allowed us to test our hypotheses. The results of this model, showing the standardized maximum likelihood parameter estimates and their statistical significance levels for the tests of H1 and H2, are summarized in Figure 1. Overall, strong support is provided for our first two hypotheses.

Insert Figure 1 about here

In support of H1, venturing ambidexterity was significantly and positively associated with CV unit survival ($\beta = 6.36, p < .01$). While not hypothesized, exploration evidenced a marginally significant, positive effect on CV unit survival ($\beta = 2.86, p < .10$), while exploitation showed no significant direct impact on survival ($\beta = -0.95, p = .28$).

H2, positing a positive relationship between CV unit relational context and degree of venturing ambidexterity, was also supported. The coefficient of the three-way relational context interaction (i.e. joint contact with members of all three communities) on venturing ambidexterity was positive and significant ($\beta = .08, p < .01$). While not hypothesized, the direct effects of relationships with these three constituencies on ambidexterity were also positive and significant (executives: $\beta = .88, p < .05$; business units: $\beta = .95, p < .05$; venture capitalists: $\beta = 1.14, p < .001$). These relationships hence also contribute independently to venturing ambidexterity.

Insert Figures 2a & 2b about here

Plotting this three-way interaction graphically facilitates further insight into the nature of the conditional effects of interaction with senior executives, other business units and members of the VC community on venturing ambidexterity. Figures 2a and 2b display these relationships, representing each of the three variables at one standard deviation from its (centered) mean (Aiken & West, 1991; Jaccard & Turrisi, 2003). From a comparison of the charts, it is evident that increases in venturing ambidexterity were associated with greater contact with VCs, senior executives and other business units (refer to the upward-sloping lines in both figures). Furthermore, from Figure 2b it is evident that (consistent with our predictions in H2) the highest

levels of venturing ambidexterity occur when relationships with all three constituencies are strong.

Test for mediation. Hypothesis 3 posits that venturing ambidexterity mediates the three-way interactive relationship between a CV unit's relational context and its likelihood of survival. We tested for such an indirect effect following the procedure outlined in Kline (2005): the coefficients for H1 and H2 were multiplied, and then subject to the Sobel test (1982, 1986). The finding was marginally significant ($z = 1.93, p = .053$; one-tailed), suggesting that ambidexterity may indeed mediate between CV units' relational context and their likelihood of survival.

Robustness checks. We also tested the sensitivity of our analyses regarding H2 to alternative operationalizations of ambidexterity.⁷ Specifically, we compared the findings using our multiplicative ambidexterity measure against measures reflecting 'balance' and 'additive' (He & Wong, 2004; Lubatkin et al., 2006) conceptions of ambidexterity. The 'balance' measure used the absolute difference between the exploration and exploitation scores of each unit; the 'additive' measure addressed the total levels of exploration and exploitation in each unit. The three-way relational context interaction ($\beta = -1.19, p < .01$) was found to be negatively and significantly related to exploration-exploitation 'balance'. Employing the additive measure for ambidexterity resulted in non-significant findings for H2.

In all, these robustness tests indicate that the synergistic interaction of exploration and exploitation – whose roots lie in strong relationships with multiple key constituencies - is critical to CV unit survival. This synergistic effect proves vital, rather than the total levels of exploration and exploitation within the CV unit, or the balance between the two. While this appears to contradict a small set of studies that have found consistent effects across more than one operationalization of ambidexterity (He & Wong, 2004; Lubatkin et al., 2006), it is congruent

with a recent conceptual recognition of differing ‘ambidexterity dimensions’, with potentially divergent antecedents and performance implications (Cao et al., 2009).

DISCUSSION AND CONCLUSIONS

Three important findings emerged from this research. First, survival was more likely in those CV units that rated high on using existing firm capabilities and building new firm capabilities. Second, ambidextrous CV units were characterized by high levels of interaction between the CV unit managers and three sets of actors (senior executives, other business units, members of the VC community), with the more ambidextrous CV units devoting high levels of attention to all three. Third, acting ambidextrously to some extent mediated between the strong relationships built by CV units with these three constituencies, and their increased odds of survival within the parent organization. We now consider the implications of these findings for the literatures on ambidexterity and corporate venturing.

Implications for Ambidexterity

This study complements the small but growing literature concerned with understanding the internal mechanisms through which organizations achieve ambidexterity. Our study reinforces an important point which sometimes gets overlooked, namely that an exploration-oriented unit does not *only* explore – it must also develop the capacity to integrate its activities with those of its exploitation-oriented sibling units (Lawrence & Lorsch, 1967). In some organizational settings, the process of integrating activities across units is relatively straightforward. However, our research shows that, for CV units, the nature of integration required is sufficiently challenging that it necessitates – in itself - a form of intra-unit

ambidexterity. By this logic, ambidexterity can be viewed as a ‘nested’ phenomenon that exists at multiple levels of analysis within the organization (Raisch & Birkinshaw, 2008).

One key contribution of this study is to show how a unit’s ‘relational context’ is an important antecedent of ambidexterity. As this construct is new to the ambidexterity literature, it is useful to give some thought to the boundary conditions around its use – that is, to understand the settings where relational context, rather than behavioral context, is important.

We regard CV units as a type of ‘boundary spanning’ unit (Thompson, 1967) that buffers the technical core of the firm from the turbulent business environment in which it is operating. Such boundary spanning units (including, for example, alliances and joint ventures, and business development units) typically have ostensibly ‘exploratory’ charters and provide linkages to various external actors. And, as noted above, they have to integrate their activities with those of technical core units. This often requires a level of ambidexterity on the part of the boundary spanning unit itself.

Thompson (1967), of course, contrasted boundary spanning units with ‘technical core’ units that perform vital efficiency-oriented activities such as manufacturing, and typically have charters that are more exploitation-oriented. While both types of units will potentially benefit from developing a degree of ambidexterity, their primary roles and particular circumstances differ fairly considerably. In particular, boundary spanning units are typically externally-facing, lack formal structures, employ relatively small numbers of people, and are designed to be flexible, or even temporary; whereas technical core units are typically internally-facing, less flexible, and much larger.

Accordingly, we propose that boundary-spanning units potentially achieve ambidexterity through their relational context, while technical core units are more likely to attain ambidexterity

through their behavioral context. The optimal balance between exploration and exploitation may also differ between these types of units, as well as over time. In addition, whilst technical core units face the risk of gradually becoming obsolescent if they fail to adapt, boundary spanning units typically face a far more immediate threat of closure should their performance falter, or priorities in the organization change: survival of the latter units being a crucial short-term priority. Ambidexterity may provide a critical means through which boundary spanning units enhance their likelihood of survival within the firm. In contrast, market performance may be a more significant outcome of contextual ambidexterity to technical core units. These propositions are outlined in Table 4 and constitute a subject for future research.

Insert Table 4 about here

While these arguments suggest a dichotomy between boundary spanning and technical core units, we recognize that there is rarely as pure a distinction in the real world. Organizational units may exhibit a combination of relational context and behavioral context routes to ambidexterity. Moreover, structural mechanisms may also be at work *within* organizational units. For example, Adler, Goldoftas, and Levine (1999) observed micro-level design features such as job-enrichment, switching and partitioning, all of which were intended to help production line workers to achieve a balance between flexibility and efficiency. So, while our study provides some useful new insights, it also opens up an important avenue for future research, namely to elucidate the conditions under which relational, behavioral, and structural mechanisms work alone or together to foster unit level ambidexterity.

Another key feature of our study was to highlight access to resources as a facilitator of ambidexterity. Gupta et al. (2006) argued that one way to transcend the inherent tradeoffs between exploration and exploitation might be to relax the assumption of limited resources. Our

study provides a very clear example of how this idea might work in practice. Resource brokering strategies may provide one means through which organizations and their units may potentially overcome trade-offs imposed by resource scarcity (Cao et al., 2009).

Moreover, the resources that a CV unit draws from its stakeholders do not only include tangible ones. Instead, flows include resources of a symbolic, legitimating nature. Literature on ambidexterity has to date focused on functionalist accounts of the performance-enhancing effects of ambidexterity, ignoring symbolic accounts of the rhetorical role ambidextrous actions and discourse may play in legitimating organizations and their units. In the CV setting, the value optimal distinctiveness (Lounsbury & Glynn, 2001), i.e. balancing strategic distinctiveness against normative appropriateness, to mitigating cognitive and socio-political challenges to CV unit legitimacy is readily apparent. It seems likely to us too that an interplay occurs between ambidexterity, legitimization and stakeholder relationships at the broader organizational level, and we encourage research that seeks to develop more constructivist understandings of the antecedents and effects of organizational ambidexterity.

Finally, by focusing on resource access we are able to provide additional insight into the roles of senior managers in fostering ambidexterity. It has been established that senior managers have to learn to overcome cognitive contradictions (Eisenhardt, Furr, & Bingham, 2010; Smith & Tushman, 2005) and to build appropriate coordination mechanisms (Andriopoulos & Lewis, 2009; Jansen et al., 2009; Tushman et al., 2010) to generate an appropriate mix of exploration and exploitation. Our research suggests, in addition, that they need to attend to the processes through which resources are acquired, combined and transformed to generate ambidextrous outcomes - processes that have to date received limited attention in ambidexterity literature (for a recent exception, see Jansen, Simsek, & Cao, 2012).

Implications for Corporate Venturing

Our study builds on an emerging view that CV units embody explorative and exploitative modes of activity. While their role in investing in new ventures makes CV units prone to being labeled as exploration-focused, some recent authors (Hill & Birkinshaw, 2008; Keil et al., 2008; Schildt et al., 2005; Williams & Lee, 2009) have noted that some venture units may instead focus on better exploiting the capabilities and assets of their parent companies. We extended this argument by suggesting that CV units may, in fact, increase their odds of survival by simultaneously combining these modes of activity.

In finding support for the proposition that surviving CV units exhibit ambidexterity, we demonstrated that the simultaneity of exploration and exploitation as modes of learning might have positive consequences for corporate venturing activities. Resonating with studies indicating that CV units may function best when they invest in ventures that are moderately related to the existing business of the parent firm (e.g. Burgelman, 1984; Gompers & Lerner, 1988; Hill, Maula, Birkinshaw, & Murray, 2009; Sykes, 1986), the findings of this study suggest that a more nuanced understanding of the interplay of exploration and exploitation may be warranted in such units.

As a second contribution to corporate venturing literature, our study suggests that ambidexterity may be a useful lens through which to address the topic of CV unit survival. It bears repeating that we are concerned here with the relationship between ambidexterity and the survival, rather than any other dimension of ‘success’, of CV units. Given the wide-spread perception of CV units as highly vulnerable entities that are frequently terminated before they are able to demonstrate returns (Burgelman & Valikangas, 2005; Fast, 1981; Gaba, 2007), their survival is of significant interest. Of course, not all surviving CV units will end up performing

well, but the mortality rates of young, unproven CV units are sufficiently high (Dushnitsky, 2012) that there is perceived to be a greater risk in killing off high-potential units than falsely prolonging the lives of low-potential units.

Having said this, the implications of venturing ambidexterity on other measures of CV unit ‘success’ warrant future investigation. To recall our earlier arguments, we suggested that ambidexterity enhances the odds of CV unit survival for two reasons. From a *substantive* vantage point, we argued that parent companies benefit most from pursuing resource combinations that simultaneously draw on and extend their existing capabilities and assets. From a *symbolic* perspective, we argued that acting ambidextrously may help garner cognitive and socio-political acceptance for CV units, thereby allowing greater tolerance of the ‘disruption’ they may cause to an organization’s operating systems (Burgelman, 1984).

A *third* mechanism that may contribute to the observed positive relationship between venturing ambidexterity and CV unit survival may be that of ‘entrenched’ relationships⁸ with stakeholders. In other words, a deeply-embedded set of relationships between a CV unit and its stakeholders inside and outside the parent company may encourage escalation of commitment to the venture unit (Brockner, 1992; Staw, 1981), making it hard to foreclose even where the unit is not performing well (Sull, 2003). On an anecdotal basis, we have seen some evidence of this phenomenon, notably where a CV unit was established as a legal entity with financing from external VCs. In cases where the CV unit is wholly-owned, our anecdotal evidence suggests corporate parents do not fall into the escalating commitment trap, and will quickly kill a CV unit that does not appear to be adding value to the corporate portfolio (Chandler, 1991). Taken as a whole, the survival of low performing or low potential CV units is clearly possible, but we believe it is not likely to be a wide-spread mechanism given the short duration of most CV units

in this third wave of corporate venturing (Dushnitsky, 2012), and thus the limited potential for relationships to become highly ‘entrenched’.

Finally, in terms of the practical implications of the association between relational context and ambidexterity, we observe that ambidexterity may be achieved through engagement by CV units with all three constituencies examined here - parent company executives, members of other business units, and members of the VC community. While it is now standard practice in other areas of organization research to characterize informal organizations in terms of individual networks (e.g. Burt, 1992; Granovetter, 1973, 1985), there has been, until recently, very little attention paid to such approaches in corporate venturing research (cf. Keil *et al.*, 2010). Instead, researchers have focused on traditional structural measures such as the reporting lines or the level of operating autonomy of the CV unit (e.g. Galbraith, 1982; Siegel *et al.*, 1988; Sykes, 1986). One potential contribution of this study, then, in examining the relational context of the CV unit, is to reorient corporate venturing research towards a richer characterization of the social context in which it operates.

It should be noted, however, that the link between venturing ambidexterity and relational context is likely to be one of reciprocal causality. Engaging with executives, other business units and VCs enables CV units to broker the tangible and intangible resources they need to operate ambidextrously, while acting ambidextrously may, in turn, facilitate stronger relationships between CV units and their key internal and external constituencies. Unfortunately, given the cross-sectional nature of our data on CV unit relational context and ambidexterity, we were unable to test for reciprocity in the relationships between these constructs. We encourage longitudinal research that may seek to understand potential feedback cycles at play between

venturing ambidexterity, its relational antecedents, and legitimacy in the eyes of venturing constituencies.

Limitations and Extensions

Finally, a number of limitations should be acknowledged. One key factor is the specific time period over which our study was conducted, viz. 2001-2003. This represented a particularly volatile period in the recent history of corporate venturing. In 2000, some 500 corporations invested in excess of \$20 billion in CVC activity (Maula & Murray, 2002). The volume of activity then declined substantially with the bursting of the ‘dotcom bubble’, but has risen again in recent years (Dushnitsky, 2006; Maula, 2007). Future studies hence need to establish the robustness of our findings over different (and less volatile) time periods.

In addition, a number of methodological limitations stem from systemic obstacles to collecting valid and verifiable data on CV units (Dushnitsky, 2006; Gompers & Lerner, 1998; Maula, 2007). Developing a valid sampling frame presents a particular challenge where both internally- and externally-oriented CV units are of interest; there are no legal requirements for public companies to report the existence of a CV unit where this is not established as a separate legal entity. We relied principally on the CV units listed in the Corporate Venturing Directory and Yearbook (2001) in drawing up our sampling frame, but we also took a number of steps to counteract any potential bias towards over-sampling externally-oriented units. These included: asking the 50 individuals we interviewed, and working with executives at industry associations, to identify additional CV units; attending prominent corporate venturing conferences to further our search for additional units; and conducting an extensive web-based search for further units. Our relatively small sample size (95 CV units) also constrains our analysis.

Furthermore, the limited nature of public reporting on corporate venturing outcomes (and the confidentiality attached by firms to these activities), and the dearth of archival data on the internal characteristics of CV units, necessitated a reliance on (mainly new) self-reported measures. It should be noted, however, that we undertook to supplement these with, most importantly, survival data, as well as VentureXpert data on the units' investment histories. As pertains to our new measures, a number have reliability indices marginally below the customary .70 cut-off, including the measure for exploitation. Following Cortina (1993), advising against the routine rejection of alphas below .70 if the measures have desirable characteristics, such as meaningful coverage of a new content domain, we retain these measures in our analyses. In a related vein, our measure for ambidexterity is also new, devised for application to CV units, as well as to address the multiple considerations described in the Methods section. Careful thought went into the construction of our ambidexterity measures, and we undertook multiple steps to ensure their appropriateness. Future studies should however test the robustness of our findings to different measures of ambidexterity. Such measures should also attempt to more directly examine actual levels of exploration and exploitation demonstrated by CV units, rather than (per our formulation in this study) the importance of explorative and exploitative mandates to individual CV units.

In addition to the above, further extensions that would be warranted include: detailed (and longitudinal) studies on the processes of resource acquisition and combination by CV units; the roles of building and using capabilities in achieving other corporate venturing objectives (such as strategic and financial performance indicators); and the practical implications of our findings of CV unit ambidexterity for designing resource allocation and human resource systems for CV units.

Conclusions

While corporate venturing has long been seen as a useful way of developing new business opportunities in fast-changing markets, the evidence indicates that CV units have a high failure rate. This study hence sought to examine why and how some CV units last significantly longer than others. Our research suggests two conclusions: that combined attention to actors inside and outside the boundaries of the firm enables the CV unit to simultaneously make use of existing capabilities while also building new ones; and that, through this ambidextrous orientation, the CV unit is better able to coordinate and legitimate its activities such that it enhances its odds of having an ongoing role as part of the parent firm. Thus, while CV units constitute a structural option through which firms may seek to balance exploration and exploitation, such units may paradoxically, in turn, require an ambidextrous orientation themselves in order to fulfill this role.

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FOOTNOTES

¹ Financial returns or other reasonably ‘objective’ measures of CV unit performance are notoriously hard to come by. While the VentureXpert database does enable some financial performance measures to be calculated at the venture level for many portfolio ventures belonging to CVC units, this research study includes a mix of internally-focused and externally-focused units. We are thus unable to measure venture unit level financial performance objectively across our entire sample.

² We are grateful to an anonymous reviewer for encouraging us to employ this distinction in building H2.

³ The peak of the dotcom era was April 2000, but corporate venturing activity peaked one year later; corporations were slower in making initial investments as well as in divesting (Maula, 2007; Maula & Murray, 2002).

⁴ The most frequently occurring job titles of responding CV unit heads were ‘Managing Director’ (20 respondents), ‘Vice President’ (20 respondents), ‘Director’ (12 respondents) and ‘President’ (8 respondents).

⁵ We found only six CV units to not conform clearly to our operational definitions of ‘survivor unit’ or ‘non-surviving unit’ at the time of our follow-up: of these, two had had a majority stake sold off by their respective parent companies; three were reported to be ‘operating on a reduced mandate’ or ‘winding down’; and the future of another was uncertain given the pending merger of its parent company with another firm. While we coded these units as surviving and included them in the analyses, they do not prove material to the pattern of results attained.

⁶ We recognize that the frequency of communication between a CV unit and a key stakeholder does not provide a perfect proxy of the strength of their relationship. Although this conceptualization is well established in scholarly literature (cf. Burt, 1992; Granovetter and colleagues, 1973, 1995, 2009; Hansen and colleagues, 1999, 2004, 2005; Reagans, 2005), and we believe that this proxy will for the most part provide a reasonable indication of relationship strength, exceptions are certainly conceivable. For example, long-standing, close relationships may perhaps be maintained with relatively lesser communication than newer relationships, and in some instances frequent communication may also be an indicator of monitoring activities between parties. In respect of the latter, including control variables for the degree of CV unit autonomy should mitigate against such a role affecting our analyses.

⁷ Equivalent analyses were not conducted for H1 as the alternative conceptions constitute linear combinations of the lower-order direct effects of exploration and exploitation on survival already tested for.

⁸ We are grateful to action editor, Laura Poppo, for drawing this alternative explanation to our attention.

TABLE 1.
Multi-Item Measures

Construct	Items	Response Format	Reliability	Eigenvalue	% Variance Extracted
Dependent and independent variables					
Use existing capabilities (exploitation)	<p>“How important is this (venture unit) objective to the corporation?”</p> <ol style="list-style-type: none"> 1. Retention and motivation of our employees 2. Better use of existing corporate assets 3. Creation of spin-out companies 4. Source of funding for internal entrepreneurs 	3-point scale, where 1 = not at all important, 2 = minor importance, and 3 = major importance	.68	2.05	51
Build new capabilities (exploration)	<p>“How important is this (venture unit) objective to the corporation?”</p> <ol style="list-style-type: none"> 1. Creation of breakthrough technology for the corporation 2. Investment in disruptive technologies that potentially cannibalize existing technologies 3. Window on emerging technologies 	3-point scale, where 1 = not at all important, 2 = minor importance, and 3 = major importance	.70	1.86	63
Relationship with senior executives	<p>“Indicate the frequency with which you, or your team, communicate with the following individuals or units:”</p> <ol style="list-style-type: none"> 1. The senior executives in the corporate parent you report directly to 2. Other senior executives in the corporate parent / head office 	5-point scale, where 1 = daily, 2 = weekly, 3 = monthly, 4 = rarely, and 5 = never (reverse scored)	.67	1.52	76
Relationship with business units	<p>“Indicate the frequency with which you, or your team, communicate with the following individuals or units:”</p> <ol style="list-style-type: none"> 1. Executives in business units/divisions of the corporate parent 2. Technical/R&D people in the corporate business units/divisions 3. Front line/middle management in corporate business units/divisions 	5-point scale, where 1 = daily, 2 = weekly, 3 = monthly, 4 = rarely, and 5 = never (reverse scored)	.87	2.38	79
Relationship with the venture capital community	<p>“Indicate the frequency with which you, or your team, communicate with the following individuals or units:”</p> <ol style="list-style-type: none"> 1. Partner VC companies 2. Other companies or individuals in the VC community 	5-point scale, where 1 = daily, 2 = weekly, 3 = monthly, 4 = rarely, and 5 = never (reverse scored)	.86	1.80	.90
Control variables					
Internal investments	<p>“Please indicate the extent to which you do the following:”</p> <ol style="list-style-type: none"> 1. We invest in internally-generated business ideas to promote organic growth 2. We invest in internally-generated business ideas with a view to spinning them out as separate 	5-point scale, where 1 = never, 2 = only in exceptional cases, 3 = occasionally, 4 = frequently, and 5 = almost always	.73	1.97	.90

Autonomy (vertical)	<p>businesses</p> <p>3. We invest in internally-generated business ideas to leverage under-utilized corporate assets (e.g. IP)</p> <p>“Please indicate the extent to which you are free to make the following decisions:</p> <ol style="list-style-type: none"> 1. Trade sale of a venture business 2. Closure/termination of a venture business 3. Decision to pursue IPO for venture business 4. Establishment of investment criteria for new businesses 	<p>Decision made exclusively by unit managers (=1); with ratification by or consultation with corporate board/executives (=2); or primarily by corporate board/executives (=3) (reverse scored)</p>	.86	2.81	.70
Autonomy (horizontal)	<p>“If a potential business venture is in the domain of an existing business unit, to what extent do you do the following:</p> <ol style="list-style-type: none"> 1. Seek their cooperation in working with us on the business venture 2. Require their approval/sign-off before we make an investment 3. Try to encourage them to retain ownership of the venture, even if we provide funding 	<p>Decision made exclusively by unit managers (=1); with ratification by or consultation with corporate board/executives (=2); or primarily by corporate board/executives (=3) (reverse scored)</p>	.66	1.86	.62
Strategic performance	<p>How well does the unit deliver on this objective?”</p> <ol style="list-style-type: none"> 1. Creation of breakthrough technology for the corporation 2. Investment in disruptive technologies that potentially cannibalize existing technologies 3. Development of strategic relationships with external suppliers/customers/competitors 4. Source of funding for internal entrepreneurs 	<p>5-point scale, where 1 = below expectation, 3 = equal to expectation, and 5 = above expectation</p>	.74	2.27	.57
Financial performance	<p>“How well does the unit deliver on this objective?”</p> <ol style="list-style-type: none"> 1. Financial return to the corporation (e.g. IRR) 2. Contribution to top-line growth 3. Increased valuation of corporate stock 	<p>5-point scale, where 1 = below expectation, 3 = equal to expectation, and 5 = above expectation</p>	.72	1.43	.72

TABLE 2.
Means, Standard Deviations, and Correlations

Variable	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Dependent Variable																		
1. CV unit survival ^a	.77	-																
Independent Variables																		
2. Use existing capabilities (Exploitation)	1.75	.51	-.05															
3. Build new capabilities (Exploration)	2.36	.55	.18	.16														
4. Relationship with senior executives	3.43	.75	.21	.02	.31													
5. Relationship with business units	3.41	.95	.17	.04	.42	.57												
6. Relationship with venture capital community	3.49	.98	.26	-.18	.21	-.02	.22											
Control Variables																		
7. Age of unit	4.47	5.20	.05	-.01	.03	-.04	-.09	.00										
8. Hi-tech sector ^b	.51	-	-.09	-.19	-.09	.09	.06	.03	.24									
9. CVC investments ^c	.76	-	.27	-.24	.13	-.04	-.08	.39	.13	-.02								
10. Number of investments	40.39	121.5	.14	.03	.07	.18	.18	.22	.30	.20	.15							
11. Number of unit employees	16.73	38	-.03	.10	.08	.20	.21	.08	.09	.15	.01	.81						
12. Internal investments	2.19	.97	-.15	.55	-.05	.10	.01	-.34	.03	-.04	-.30	-.06	.02					
13. Financing structure ^d	.35	-	-.18	-.14	.10	.13	.13	-.06	.08	.10	-.10	.19	.13	.01				
14. Autonomy (horizontal)	3.42	1.55	.11	-.11	-.20	-.28	-.12	.01	-.02	.04	.06	.00	.01	-.14	-.11			
15. Autonomy (vertical)	2.13	.57	.22	-.17	-.20	-.14	-.13	.25	.09	.01	.05	.11	-.01	-.31	-.16	.35		
16. Strategic performance	3.36	.60	.34	.11	.36	.09	.14	.40	.08	-.09	.43	.14	-.03	.01	-.16	-.03	-.01	
17. Financial performance	3.07	.61	.18	.16	.09	-.04	-.01	.18	.22	.03	.11	.23	.11	.13	.01	-.14	.05	
																	.20	

n = 95 (CV units) ^aDummy variable (1 = surviving unit) ^bDummy variable (1 = parent company in a hi-tech sector) ^cDummy variable (1 = unit active in VentureXpert database) ^dDummy variable (1 = all financing decisions on venture investments made by parent company) All correlations with absolute values greater than .21 are significant at the .05 level.

TABLE 3.
Comparison of Structural Models^{a, b}

Model	AIC	BIC	Adj. BIC	Log-likelihood	Model comparison	Δ df.	Δ χ² c
Model 1 Null Model	94.15	100.76	91.32	-44.07			
Model 2 Baseline Model (i.e. excluding hypothesized interaction effects)	89.53	157.87	60.27	-13.76	Model 2 vs. 1	28	62.27***
Model 3 Baseline Model with H2 interaction	90.99	154.92	63.61	-16.493	Model 3 vs. 1 Model 3 vs. 2	26 2	61.27*** 2.83*
Model 4 Baseline Model with H1 interaction	84.76	155.31	54.55	-10.38	Model 4 vs. 1 Model 4 vs. 2	29 1	71.47*** 80.57**
Model 5 Hypothesized Model	81.53	154.29	50.38	-7.766	Model 5 vs. 1 Model 5 vs. 2 Model 5 vs. 3 Model 5 vs. 4	30 2 4 1	83.42*** 20.97*** 8.18* 4.56*

^a All models include the control variables.

^b Models 2, 3, 4 and 5 include the appropriate lower-order terms for the tested interactions.

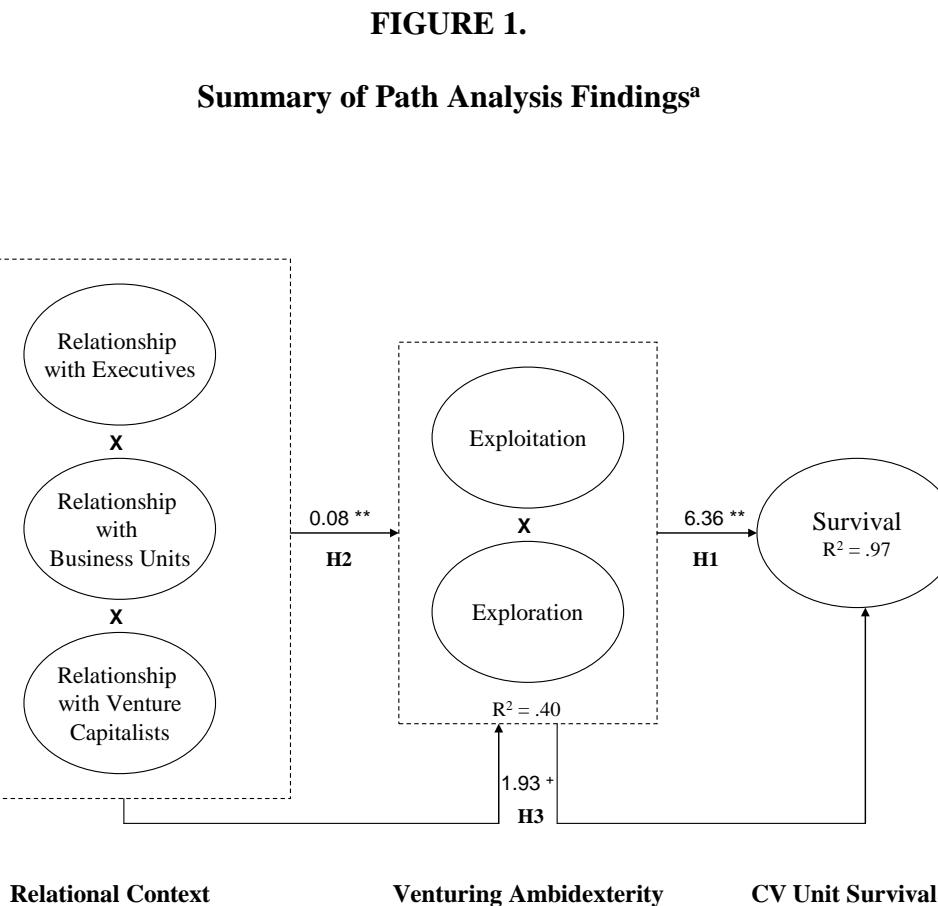
^c Satorra-Bentler scaled chi-square difference test.

AIC = Akaike Information Criterion; BIC = Bayesian Information Criterion; Adj. BIC = Sample-size adjusted Bayesian Information Criterion.

n = 95. *** p<.001 ** p<.01 * p<.05

TABLE 4.
Ambidexterity in Technical Core and Boundary Spanning Units

	Technical Core	Boundary Spanning Units
<i>Primary learning orientation</i>	Primarily exploitation	Primarily exploration
<i>Secondary learning orientation</i>	Secondary focus on exploration	Secondary focus on exploration
<i>Relationship to task environment</i>	Buffered from task environment	Deliberately interacting with task environment
<i>Primary performance imperative</i>	Efficiency imperative	Effectiveness imperative
<i>Consequences of failure</i>	Obsolescence	Closure
<i>Critical context</i>	Behavioral context	Relational context
<i>Primary source of cues</i>	Cues taken from internal parties	Cues taken from both external and internal parties



^a Standardized parameter estimates shown. This is a simplified version of the actual model, omitting the control variables, lower-order terms for the interaction effects, error terms and residual variances.

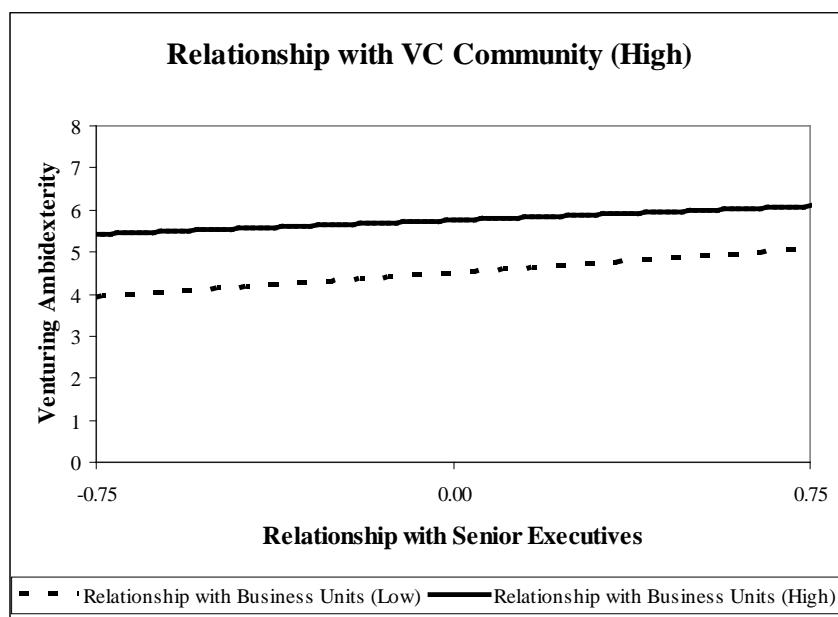
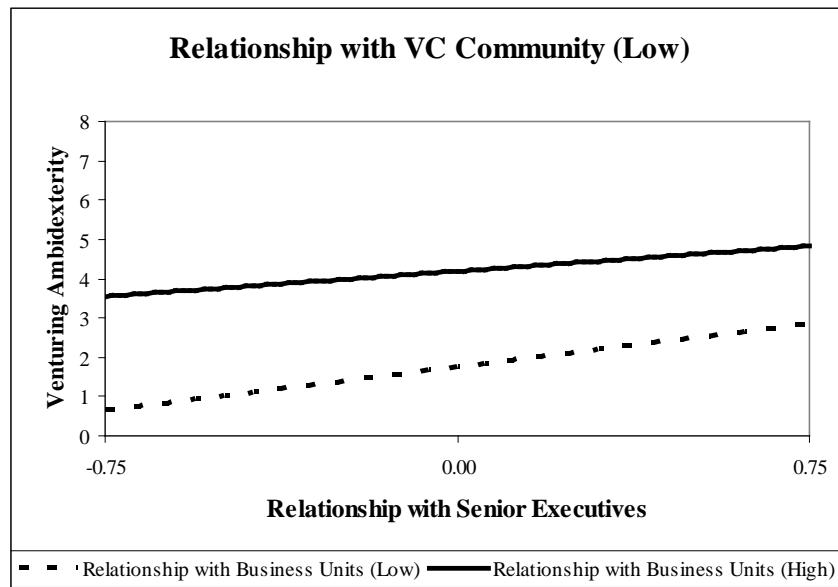
Control variables comprise age of unit, hi-tech sector, CVC investments, number of unit employees, number of investments, internal investments, horizontal autonomy and vertical autonomy. Strategic performance, financial performance, their interaction, and financing structure were included as additional controls in testing H1.

One-tailed tests.

n = 95. *** p<.001 ** p<.01 * p<.05

FIGURES 2A AND 2B.

Three-Way Interaction Effects of Relational Context on Venturing Ambidexterity^a



^a The end-points of the x-axes reflect the values for the relationship with senior executives variable at one standard deviation below and above its (centred) mean.