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Innovation at the interface: A configurational approach to corporate venture capital

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ABSTRACT

This study explores how corporate venture capital (CVC) units can be configured to effectively achieve innovation performance and succeed amidst the tensions they face at the intersection of the corporate and venture domain. Using a fuzzy-set qualitative comparative analysis (fsQCA) of 30 dedicated CVC investment arms, we analyze how successful units configure their internal arrangements in response to these tensions and generate various innovation outcomes for their parent organizations. We identify four different solutions for effective CVC unit configurations, highlighting that explorative and exploitative innovation success require different setups. Moreover, we find that more mature and explorative CVC units distance themselves via buffering from their corporate sponsor, while at the same time increasing their efforts to maintain deliberate connections via bridging to representatives of the very same corporate environment they stem from. For ambidextrous CVC units, a more dynamic setup that allows corporate leadership to selectively initiate collaboration with the corporate core when beneficial while facilitating distancing at other times proved successful. Our study contributes new evidence and theory on how CVC units can navigate tensions and balance competing demands at the interface of the corporate and venturing domains.

Executive summary

Missing from the robust debate over how corporate venture capital (CVC) units ought to be organized for success is a more comprehensive appreciation of the ongoing tensions that CVC units face. By highlighting the inconsistent organizational goals and conflicting demands these dedicated investment arms face at the intersection of the corporate and venture worlds, we provide a nuanced view of how CVC units can effectively be operated. Using a fuzzy-set qualitative comparative analysis (fsQCA) of 30 dedicated CVC investment arms, we explore how successful units configure their internal arrangements in response to divergent demands and tensions vis-à-vis the corporate parent and the ventures they are mandated to invest in. Extending the literature on CVC, we identify four different solutions for effective CVC unit configurations and find that explorative and exploitative innovation success demand different set ups. Moreover, we find that especially more mature and explorative CVC units engage in dynamic responses, distancing

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themselves from their corporate sponsor (buffering) while at the same time increasing their efforts to maintain deliberate connections to representatives of the very same corporate environment they stem from (bridging). These and other findings will be discussed, and our rich narratives explain how successful CVC units can be employed effectively to achieve various innovative outcomes.

1. Introduction

Corporate venture capital (CVC) has gained widespread recognition as a tool to stimulate external innovation (Basu et al., 2016a; Souitaris et al., 2012). Unlike independent venture capital (IVC) firms, which primarily pursue financial objectives, large corporations create dedicated CVC units predominantly as a strategy for external innovation (Ernst et al., 2005). As a result of varying foci (Hill and Birkinshaw, 2008) and contingent on a CVC program's life cycle (Ma, 2020), investments are used as a means to fill gaps in innovation pipelines (Dushnitsky and Lenox, 2005; Paik and Woo, 2017), as a window to new technologies (Benson and Ziedonis, 2009; Maula et al., 2013), as real options (Ceccagnoli et al., 2018; Van De Vrande and Vanhaverbeke, 2013), and for ecosystem building, particularly in competitive and rapidly changing industries (Basu et al., 2011; Sahaym et al., 2010). Despite a wealth of research exploring the diverse motivations behind CVC, a critical consensus regarding corresponding performance implications remains elusive (Allen and Hevert, 2007; Huang and Madhavan, 2020; Yang et al., 2014). A significant source of divergence in CVC performance can be attributed (in part) to the immense variation in organizational setups and heterogeneity of CVC units, an area that is receiving renewed attention in the literature (Balz et al., 2023; Shankar et al., 2024; Souitaris et al., 2012). However, a clear distinction between "good" and "bad" (i.e., successful vs. unsuccessful) organizational setups of CVC units is still lacking—an understanding that holds the potential to illuminate the underlying causes of CVC performance disparities.

We propose that unraveling the CVC performance puzzle, along with understanding the associated structural setups, requires a nuanced examination of the role CVCs play at the intersection of the corporate and IVC domain. CVC units are specialized investment arms of established companies that acquire minority stakes in startups. They represent corporate subunits uniquely tasked with blending these two domains together through their organizational arrangements and structure (Souitaris et al., 2012). This position exposes CVC units to significant tensions in managing contradictory goals and multiple stakeholder expectations. Indeed, in a recent review of the CVC literature, Jeon and Maula (2022) identified several areas of tension arising from varying performance criteria of numerous stakeholders, conflicting demands inherent in straddling two distinct worlds, and the divergent perceptions of CVC units—all of which pose considerable implications for CVC operations. Given the multifaceted nature of these tensions and the resource dependency on the corporate parent, we contend that the configuration of structural arrangements at the interface with the corporate sponsor plays a pivotal role in determining the ultimate success of CVC units (Basu et al., 2016a; Hill and Birkinshaw, 2014; Thornhill and Amit, 2001). Previous research explains the inherent heterogeneity in CVC practices due to their isomorphic behavior of seeking legitimacy from either the corporate parent or the venture capital industry (Souitaris and Zerbinati, 2014; Souitaris et al., 2012). Initial findings also shed light on the complex interplay of both structural and operational factors that can have significant implications for CVC unit performance (Basu et al., 2016b; Bendig et al., 2024; Drover et al., 2017) and determine whether CVC units' innovation outcomes are closely aligned with the parent company's current core business or explore beyond it (Hill and Birkinshaw, 2014; Lee et al., 2018). In light of these insights, our research question emerges: *In response to diverging demands from multiple organizational constituencies, how can CVC units be configured to effectively achieve innovation performance?*

Empirically, we employ an inductive theory-building approach based on fuzzy-set qualitative comparative analysis (fsQCA) to account for the multifaceted and complex nature surrounding the organizational setup of CVC units (Douglas et al., 2020; Fiss, 2011; Ragin, 2008). We analyze a total of 30 CVC units and focus on their structure and practices by collecting documentary evidence and conducting 76 interviews with senior-level executives. In particular, we investigate the relationship and organizational interfaces between the CVC unit and its corporate parent by analyzing its vertical and horizontal autonomy, leadership involvement, and collaboration. Using a configurational approach, we are able to compare the features and setups of successful and unsuccessful CVC units.

We find that young CVC units seeking exploitative innovation tend to align closely with their corporate sponsors and conform to established norms to succeed. By contrast, more mature CVC units and those seeking explorative innovation are forced to respond to more pronounced tensions as they pursue goals more aligned with the contrasting IVC domain. They are characterized by their ability to skillfully manage relationships among different stakeholders and consequently regulate the distance to both the corporate and IVC domains. Our study design allows us to additionally check for ambidextrous CVC units, i.e., units that simultaneously produce explorative and exploitative innovation for their parent company. We find that such CVC units need a more dynamic setup that allows them to selectively initiate collaboration between portfolio companies and the corporate core business when it is deemed mutually beneficial, and to maintain distance between them when it is not. To aid us in explaining their behavior, we leverage the concepts of buffering and bridging (Meznar and Nigh, 1995). Successful CVC units employ bridging to maintain connections to representatives of the sponsor they stem from while using buffering mechanisms to distance themselves from their originating domain. They therefore engage in seemingly contradictory push-pull behaviors to navigate the conflict-prone setting of following the conformity demands from multiple constituencies.

Our findings contribute to the literature on CVC in multiple ways. We join a nascent stream of research that qualitatively investigates the inner workings of CVC units and sheds light on the heterogeneity of organizational arrangements and strategies across a plethora of firms (Basu et al., 2016a; Shankar et al., 2024; Souitaris and Zerbinati, 2014). We offer a comprehensive and fine-grained perspective on the role of CVC units given the complex and divergent demands of a wide range of stakeholders in order to address the inconclusive results of the literature on CVC performance. While prior literature theorizes that CVC units confronted with multiple institutional demands ultimately choose to align with one of the environments (Souitaris et al., 2012), we argue that in order to achieve

high performance regrading varying innovation outcomes, and because of the CVC unit's unique position, it aligns with both environments to different degrees contingent on contextual factors with multiple local optima (e.g., Fisher et al., 2016; McKnight and Zietsma, 2018; Zhao et al., 2017). Extending this line of analysis (Basu et al., 2016a; Souitaris and Zerbinati, 2014), we link the structure and practices of CVC units to two different strategic outcomes—exploitative and explorative innovation (Hill and Birkinshaw, 2014)—and assess their performance through a novel approach that forms set memberships by considering case context and leverages rich qualitative data (Tóth et al., 2017). We are thereby able to account for the above-mentioned heterogeneity and study the performance implications of diverging structural arrangements. We draw on Basu et al. (2016a), who suggest that the alignment between structural arrangements and the resulting relationship to the corporate parent and external search can have considerable performance implications. We portray CVC units as uniquely positioned between distinct constituencies that provide these organizations with room for how to arrange their organizational structure accordingly. By introducing the concepts of buffering and bridging to the CVC literature, we draw connections to organizational theory and the seminal work by Meznar and Nigh (1995), who show how public affairs activities buffer (i.e., protect an organization from the external environment) and bridge (i.e., adapt to conform with external expectations) in boundary-spanning activities. By integrating previous research from the fields of entrepreneurship and strategic management, we offer a more nuanced explanation of CVC designs and performance for various innovation outcomes, enabling better comparisons across CVC programs (Hill and Birkinshaw, 2014). In addition, we discuss managerial implications and offer insights into practical applications and future research directions.

2. Tensions in corporate venture capital: theory and evidence

Corporate venture capital refers to direct minority equity investments made by established corporations in privately held entrepreneurial ventures (Dushnitsky and Lenox, 2005) with predominantly strategic objectives (Ernst et al., 2005). These investments are typically carried out and managed through dedicated organizational units (e.g., Basu et al., 2016a; Hill and Birkinshaw, 2008). By seeking strategic returns for their corporate parent while accepting the risks associated with venture capital, these CVC units differ fundamentally from traditional IVC partnerships seeking purely financial returns (Chesbrough, 2000) and hence face additional challenges and tensions.

2.1. CVC units as a means to drive corporate innovation

CVC investments are primarily associated with strategic returns that outweigh the importance of financial returns (e.g., Chesbrough, 2002; Huang and Madhavan, 2020). Large corporations and entrepreneurial ventures typically differ substantially in the way they operate and make decisions (Siegel et al., 1988), and especially innovate (Freeman and Engel, 2007). CVC units are established precisely to bridge this gap, reconciling the professional logics of the startups in which they invest with the demands of their corporate parent (Siegel et al., 1988) and creating mutually beneficial synergies where each side can insource what they lack and benefit strategically from the other side's strengths (Ernst et al., 2005). Indeed, a recent meta-analytic study by Huang and Madhavan (2020) shows that CVC activities can lead to significant improvements in corporate strategic performance, including product and technological innovation outcomes. It is notable that a less substantial relationship was found between CVC activities and long-term financial performance outcomes.

Nevertheless, due to its complex and abstract nature, a comprehensive understanding of the exact strategic benefits of CVC activities for its parent organization remains underdeveloped, with initial research vaguely investigating the motivation to "gain a window onto valuable, novel technologies so as to improve firm innovative efforts" (Dushnitsky and Lenox, 2005, p. 616) or "enhance (the) ability to innovate" and "open new markets" (Ernst et al., 2005, p. 238). Recently, however, a more nuanced perspective has emerged. For instance, Danneels and Miller (2023) describe different direct (direct access to/direct acquisition of venture technology) and indirect pathways (long-term sensing and shaping of future opportunities) through which CVC activities can contribute to the strategic renewal of established corporations. Shankar et al. (2024) focus on the search function of CVC units and find heterogeneous processes through which established firms can employ CVC units to search for external knowledge and technology from the entrepreneurial environment.

The impact of CVC activity on corporate innovation performance has been identified as either exploitative or explorative in nature (e.g., Rossi et al., 2020a, 2020b; Schildt et al., 2005). Exploitative outcomes are close to the corporate core business, including improvement of the parent firm's operational excellence (Weber et al., 2016), investments in startups from related markets and technological domains (Hill et al., 2009; March, 1991), and an increased recognition in the rest of the corporation of the importance of new business development (Hill et al., 2009). In contrast, explorative outcomes involve the creation of options and investments in new technological and commercial opportunities that have the potential to disrupt the existing model (e.g., Hill and Birkinshaw, 2014; Ma, 2020; Van De Vrande and Vanhaverbeke, 2013) and in technologies and markets relatively unrelated to the current corporate domains (Hill et al., 2009; March, 1991). In some cases, CVC units may even pursue these two distinct innovation foci simultaneously (Hill and Birkinshaw, 2014). However, this is easier said than done, and the tension between exploration versus exploitation-focused activities is among the most studied topics in the CVC literature (Jeon and Maula, 2022).

2.2. Tensions in CVC: between the corporate and the venturing domain

CVC units encounter inconsistent organizational goals and conflicting institutional demands at the intersection of the corporate and IVC domains, with both carrying distinct institutional logics, meanings, and ways of doing things (Ahlfänger et al., 2020; Jeon and

Maula, 2022; Pahnke et al., 2015). Institutional logics are defined as "the socially constructed, historical patterns of material practices, assumptions, values, beliefs, and rules by which individuals produce and reproduce their material subsistence, organize time and space, and provide meaning to their social reality" (Thornton and Ocasio, 1999: p. 804). To function effectively, CVC units need to reconcile both the corporate logic and the professional logic of the IVC domain (Siegel et al., 1988).

On the one hand, CVC units are embedded in the corporate hierarchy and rely on the resources of the corporation as its sole limited partner (Dushnitsky and Lenox, 2005). Their existence is inextricably tied to the demands of the corporate parent, and hence the parent dictates the basis of their inaugural norms and logic. Life under a corporate logic is defined by unique patterns and conventions; for example, membership is largely defined by executive experience within the corporation and legitimacy is derived from commercial and technical success or the market position of a firm. Corporations themselves are characterized by complex hierarchies, dispersed authority, organizational stability, and a vigorous focus on profit maximization (Thornton et al., 2012). This corporate logic also influences the structural arrangements and practices of the CVC program, as the CVC unit's performance may depend on idiosyncratic resources and capabilities from the corporate core business. For example, the CVC unit may be operationally driven by the requirements of business units (BUs) (Basu et al., 2016a) and must adapt accordingly to the corporate parent's authority structure and strengths, oftentimes resulting in operational constraints. Similarly, CVC units often derive their legitimacy from initiatives driven by the top management team (TMT), and their mandate to source external innovation may depend on the support and attention given to CVC investments by senior management (Maula et al., 2013).

On the other hand, the corporate logic that informs CVCs at their inception may conflict with the professional logic normally surrounding the ventures in which they invest. This IVC domain is characterized by entrepreneurial experience, investment track records, and flat hierarchies that emphasize speed of decision-making in novel and unpredictable markets that are difficult to forecast (Fisher et al., 2017). Furthermore, many traditional IVC practices, such as their elevated risk propensity or long-term investment horizons, clash with those of corporate norms (Dushnitsky and Shapira, 2010; Hill et al., 2009). The performance of CVC-backed startups hinges on their ability to exploit corporate resources and capabilities (Alvarez-Garrido and Dushnitsky, 2016; Balachandran, 2024; Park and Steensma, 2012), such as access to customers, technological know-how, reputation, and/or industry expertise (Keil et al., 2010). However, as Pahnke et al. (2015) argue, the prevailing corporate culture and working methods can hinder startups from accessing and deploying corporate resources idiosyncratically, regardless of the fact that this is the key argument for CVC syndication in the first place (Keil et al., 2010). Managing the organizational interface between the CVC unit and the corporate parent thus becomes crucial for CVC managers—not only to access resources and capabilities that are vital to the CVC units' value proposition, but also in managing expectations and extracting value for the corporate parent to ensure the unit's own long-term survival and success (Kohut et al., 2021; Ma, 2020).

2.3. *Responding to tensions: managing the interface between CVC and corporate parent*

Originating in the CVC literature (Basu et al., 2016a; Hill and Birkinshaw, 2008, 2014; Souitaris et al., 2012) and drawing on a recent systematic literature review identifying key tensions in CVC activities (Jeon and Maula, 2022), we select two relevant structural interfaces between the CVC unit and the corporate parent through which CVC units can manage conflicting expectations and demands: (a) *the interface between the CVC unit and the corporate's top management team (TMT)*, and (b) *the interface between the CVC and the corporate's business units (BU)*. In the following, we outline both dimensions and their relevance for CVC units' performance by drawing connections to prior literature. We also discuss (c) *the maturity* of the CVC unit in our analysis as an important contextual factor that determines how CVC units should be configured to function effectively. Moreover, regarding our research question, and given that explorative and exploitatively oriented CVC units benefit from different structural and operational setups (e.g., Hill and Birkinshaw, 2014; Lee et al., 2018), we will also illustrate the current (limited) understanding regarding how the strategic focus of a CVC unit determines which configurations lead to increased innovation performance.

2.3.1. *CVC-TMT interface*

While from a leadership perspective CVC investments can provide timely information on emerging and potentially disruptive technology innovation and business models (Christensen and Rosenbloom, 1995; Maula et al., 2013), previous literature describes the involvement of top management as a double-edged sword for the functioning of a CVC unit. On the one hand, the inclusion of senior executives and TMT members as part of the investment decision committee is seen as allowing CVC units to gain legitimacy within the core business and align their process with the parent company (Strebulaev and Wang, 2021). On the other hand, CVC units with overly complex, multi-stage decision-making processes may become too slow in comparison to IVC investors (Strebulaev and Wang, 2021). High levels of decision-making autonomy may also serve as a form of intrinsic motivation for CVC managers, positively affecting unit performance (Fischer et al., 2019).

When CVC units are allowed to become autonomous and distance themselves from the corporate parent's operations, top managers still need to exercise control to avoid opportunistic behavior and strategic fragmentation (Sahaym et al., 2016). Lee et al. (2018) show that the explorative innovation performance of CVC units benefits from greater autonomy from the corporate core business and the implied increased managerial decision-making power, while the opposite is the case for exploitative innovation. Insights from institutional theory, however, suggest that the role of leadership becomes particularly accentuated when organizations face complex and conflicting external pressures (Greenwood et al., 2011) that require "leaders who are able to understand, and are sensitive to, the expectations and requirements of (different) constituencies" (p. 356). Following this line of reasoning, it becomes imperative for corporate leaders to act with particular sensitivity in CVC contexts where the strategic focus of a CVC unit is not aligned with the strategic needs and focus of the corporate BUs as representatives of the firm's core business. While the importance of ambidexterity in

leadership tasks has been widely recognized, i.e., the ability to reduce and increase variance in follower behavior (Rosing et al., 2011), there is a lack of evidence on how exactly corporate leaders can give their CVC units the right amount of autonomy to allow them to openly explore new forms of innovation without straying too far from a firm's core.

2.3.2. CVC-BU interface

What distinguishes CVC investments from traditional IVC is the promise to add value to the venture by providing access to corporate resources and capabilities and leveraging a corporation's network primarily through interactions with its BUs (Di Lorenzo and van de Vrande, 2019; Paik and Woo, 2017). A CVC unit's success thus hinges on its relationship with corporate actors to manage shared interests and meanings between corporate interests and entrepreneurial concerns (e.g., Shankar et al., 2024; Souitaris et al., 2012). Pahnke et al. (2015) have shown that funding sources with different institutional logics (i.e., corporate, state, and IVCs) differently impact innovation outcomes of sponsored ventures. Thus, the right balance must be struck between CVC corporate integration and autonomy to ensure that the needs of the startup partners are not marginalized and the demands of the corporate BUs do not become overwhelming, while at the same time ensuring that the resulting innovation does not focus solely on the needs of the IVC domain and miss the needs of the corporate core.

The structural and decision-making autonomy of CVC units in managing BUs interference has received plenty of scholarly attention ever since the inception of CVC research (e.g., Hill et al., 2009; Keil, 2004; Siegel et al., 1988). Autonomy is usually considered necessary to provide an environment for effective CVC investments since it safeguards a CVC unit from corporate roadblocks and a culture that does not align with entrepreneurial practices. Subsequent CVC research has recognized the importance of structural characteristics and categorizes CVC units as either structurally differentiated or integrated, reflected in their degree of horizontal autonomy (Lee et al., 2018) and the dominance of a particular constituency. Prior literature associates more independence with the IVC model (since IVCs generally enjoy a high degree of autonomy from investors) and less with the corporate model (because the corporate parent dominates the decision-making within the CVC unit) (Hill et al., 2009). Accordingly, we regard mimicking the IVC model with high independence and greater autonomy from the BUs as a way CVC units can try to avoid extensive exposure to internal corporate norms and demands, while we see greater integration and low horizontal autonomy from the BUs as a way to shield the CVC unit from demands of the IVC domain.

In addition to structural considerations, research suggests that tensions arising from the coexistence of multiple (and sometimes divergent) environmental pressures and conflicting internal demands can frequently be resolved by formal and informal collaboration between different constituencies (Ramus et al., 2017). Empirical evidence shows the importance of the interplay of a CVC unit's relationships with both corporate executives and BUs, especially in cases where CVC units produce both explorative and exploitative innovation outcomes simultaneously (Hill and Birkinshaw, 2014). When organizational members work together and create ties, they can effectively interact in so-called “spaces of negotiation” (Battilana et al., 2015) and engage in category-spanning collaborations to settle tensions and make trade-offs arising from conflict (Canales, 2014; Wry et al., 2014). With respect to collaborative approaches in asymmetric partnerships between corporate firms and startup partners, recent research emphasizes the role of a dedicated CVC internal business development teams as an operational key link between startup firms and both TMT and BU managers (Prashantham and Madhok, 2023) and as a translator between the corporate and startup worlds to enhance co-creation (Nobari and Dehkordi, 2023). Thus, the role of a dedicated CVC management team is not only to facilitate knowledge flows among TMT, BU, and the CVC investment arm, thereby improving internal decision-making, but also to support new venture growth and shape entrepreneurial ecosystems (Gutmann et al., 2023). Given its integrative role, the role of a dedicated business development team for CVC performance may be even more important in cases where a CVC unit has been structurally separated from the parental company's core business, and thus potentially de-coupled from the corporate operational logic, but at the same time is engaged in business development activities that are directly relevant to the ongoing operations of the company's core business.

2.3.3. CVC maturity

An important contextual factor that may influence the optimal configuration of a CVC unit is the maturity or age of the unit, i.e., the design and strategic orientation of a CVC unit is the result of a dynamic process rather than a static decision and may therefore change over time. In general, the CVC industry is subject to considerable fluctuations not only in terms of investment waves but also in terms of the creation and closure of CVC investment arms (Gompers and Lerner, 2001). The shorter life cycles of CVC units compared to their IVC counterparts (Gompers and Lerner, 1998) suggest that CVCs are under strong performance pressure and scrutiny from the corporate core. Sometimes CVC entry decisions are driven primarily by the desire to address the parent's most pressing innovation weaknesses, and sometimes investments are terminated when these were sufficiently addressed without moving on to other strategic endeavors (Ma, 2020). In other cases, CVC units may evolve or adapt over time to better address the needs of both the corporate parent and the entrepreneurial partners, or to reorient and pursue alternative strategic goals (Weber and Weber, 2005). However, while it would be reasonable to expect that the performance of CVC units would therefore increase over time and thus influence their longevity, the age of a CVC unit surprisingly does not seem to correlate with its strategic performance (only with its financial performance) (Hill and Birkinshaw, 2014). These insights from prior research on the topic suggest a complex interplay between CVC unit configurations and designs, their maturity, and overall effectiveness.

3. Methodology

3.1. Neo-configurational approach and fuzzy-set QCA

Building upon a neo-configurational perspective (Misangyi et al., 2017), the focus of this study is to develop a richer understanding of the structural arrangements of CVC units operating under tensions and pressure from distinct constituencies. A neo-configurational approach resonates with the theoretical demands of our study and offers a rich methodology for dealing with combinations of organizational arrangements that align or differ in a multitude of ways (Fiss, 2007; Grandori and Furnari, 2008; Meyer et al., 1993). Empirically, we employ a fuzzy-set qualitative comparative analysis (fsQCA). Based on QCA methodology that was originally intended to identify qualitative patterns (Miller, 2018), this technique allows for examining the effect of different organizational characteristics and dimensions on a related outcome (Ragin, 2008). While an in-depth explanation of fsQCA is beyond the scope of this paper, it is worth noting two features that are particularly relevant. First, fsQCA allows us to analyze how combinations of multiple variables influence an outcome (Fiss, 2007). This feature plays a crucial role when analyzing organizational arrangements with complex and asymmetric causality where "variables found to be causally related in one configuration may be unrelated or even inversely related in another" (Meyer et al., 1993, p. 1178). The configurational approach embedded in fsQCA thereby helps us to capture the link between the coherence of organizational and environmental factors and organizational effectiveness—an omnipresent mystery in the CVC literature. Second, fsQCA crucially does not assume unifinality (a single optimal configuration) but allows for equifinality (more than one configuration path leading to a desired outcome) (Fiss, 2007; Miller, 2018). This capability is especially important as it accounts for complex causality and conjunctive phenomena reflecting our desire to understand interdependencies among CVC units' setups.

3.2. Sample and data source

In set-theoretical approaches, case selection proceeds by purposive sampling (Fiss, 2007; Ragin, 2000). Informed by prior CVC literature, we constructed a sample of CVC units based on the following criteria for case inclusion: (1) each was a dedicated and specialized program or unit seeking minority investments in innovative ventures; (2) the unit was established and fully backed by a corporation, which served as the only "limited partner"; (3) each unit had invested in at least ten ventures since its launch to ensure some extent of performance evaluation was possible and a genuine CVC operation was underway; and (4) the unit was active at the time of this study to reduce recall or reporting bias. By purposefully diversifying the selection of cases to allow for variance in factors such as industry, geographic region, and size, we captured a rich, heterogeneous sample of CVC units that allows us to examine performance differences under different conditions.

Our sample includes 30 cases for which we collected both primary and secondary data. This mid-sized sample allowed us to have close relationships with our cases and exploit their qualitative richness while simultaneously possessing enough variance to compare cases (Greckhamer et al., 2013; Wagemann et al., 2016). The primary data are drawn from semi-structured in-depth interviews with senior-level executives of CVC units. Interviews were conducted between 2018 and 2022 via telephone or in-person, which resulted in 76 interviews of 92 h in total duration with about 1800 pages of text transcribed verbatim. We further collected documentary evidence from both internal (press releases, brochures and presentations, guidelines, internal memos, employee profiles) as well as external sources (press coverage, website information), resulting in about 1350 pages of archival data. The collection of data from several sources facilitated data triangulation and increased the validity of the research results. A description of the cases and the interview partners can be found in Table 1.

To increase our confidence in the data, we took several procedural steps. First, when conducting interviews, we contacted multiple informants to ensure both the reliability and validity of the information collected (Kumar et al., 1993). Second, similar to Souitaris et al. (2012) and Hill and Birkinshaw (2014), we treated case company employees as additional informants and followed up with them via email, obtaining further clarification and confirmation of our data points. Third, we involved non-incumbent raters (two former senior corporate venture capitalists) who were knowledgeable about the cases and the CVC industry to validate the data obtained from the primary respondents, thereby demonstrating that the data have face validity for independent practitioners (Podsakoff et al., 2012; Spector, 2006). In our study, we achieved an intercoder reliability value of 0.82 (Krippendorff's alpha) (Hayes and Krippendorff, 2007). This indicates a high degree of agreement between coders in classifying and coding our data, as an intercoder reliability coefficient of 0.8 or more is generally considered reliable when it comes to drawing substantive conclusions from the data (Krippendorff, 2004). Fourth, we involved counterbalancing question orders and ensured respondent anonymity (Podsakoff et al., 2003). Finally, we based the causal conditions on factual data (e.g., reporting line), which are relatively impervious to most biases (Spector, 2006).

3.3. Measurement and calibration

Calibration of the data is a necessary prerequisite for conducting an fsQCA (Ragin, 2008). The calibration transforms the qualitative data into set memberships. We build our mixed-calibration approach (described below) on extant literature about CVC. In our analysis, we consider two different outcome conditions to capture the innovative performance of the CVC units (explorative and exploitative innovation) and five causal conditions (two of which describe the organizational arrangements on the CVC-TMT interface, two describe organizational arrangements on the CVC-BU interface, and one describes the contextual condition CVC unit maturity). Table 2 offers an overview of our variables and their calibration, while Table 3 offers the calibration table for each case (the detailed calibration criteria for all causal conditions can be found in Appendixes A and B; see Appendix C for an illustrative example of the coding of the outcomes).

Table 1
Description of 30 cases studied.

Case name	Parent firm (2019)				Setup of CVC unit[a]	Fund size/yearly investment amount (EUR)	Year CVC unit founded	Principal informants (# interviews)
	Industry	Revenue range (EUR)	# of employees (k)	Headquarters (country)				
Case 1	Conglomerate	>100 bn	280	USA	Department	100 m yearly	2013	Senior Investment Manager (2)
Case 2	Conglomerate	75–100 bn	380	Germany	Separate entity	1 bn fund	1995	Senior Investment Manager 1 (1); Senior Investment Manager 2 (1); Managing director 1 (1); Managing director 2 (1)
Case 3	Electronic	<25 bn	13	USA	Department	Not disclosed	2002	Managing director (2); Head of Startup Ecosystem (1)
Case 4	Consumer goods	<25 bn	53	Germany	Department	150 m fund	2007	Head of corporate venturing (2); Innovation manager (1); Director of Corporate Venturing (1)
Case 5	Machinery	<25 bn	1	Germany	Separate entity	Not disclosed	2015	Chief venture officer (1); Investment manager (1)
Case 6	Media	<25 bn	16	Germany	Separate entity	Not disclosed	2014	Managing director 1 (1); Managing director 2 (1)
Case 7	Automotive	25–50 bn	105	Sweden	Separate entity	No dedicated amount	1998	CFO (1); Investment director 1 (1); Investment director 2 (1)
Case 8	Transportation	25–50 bn	306	Germany	Separate entity	Not disclosed	2013	Investment director (1); Senior manager venture development (1); Senior Investment Manager (1)
Case 9	Machinery	25–50 bn	147	Switzerland	Department	50 m yearly	2009	Managing director (2); Senior Vice President (1)
Case 10	Tele-communication	25–50 bn	120	Spain	Department	Not disclosed	2006	Managing director 1 (1); Managing director 2 (1); Managing director 3 (1); Managing director 4 (1)
Case 11	Machinery	<25 bn	15	Germany	Separate entity	40 m fund	2016	Investment manager (1); Managing director (1)
Case 12	Chemicals	<25 bn	4	Belgium	Department	100 m fund	2005	Managing director 1 (1); Managing director 2 (1)
Case 13	Electronics	50–75 bn	107	USA	Department	Not disclosed	1991	Investment manager (3); Senior managing director (1)
Case 14	Automotive	<25 bn	38	Germany	Separate entity	15 m yearly	2015	Head of venturing and partner (1); Head of strategy (1)
Case 15	Automotive	75–100 bn	390	Germany	Separate entity	200 m fund	2009	Investment partner (1); Open innovation manager (1); Vice President (2)
Case 16	Oil & Gas	>100 bn	73	USA	Separate entity	500 m yearly	2012	Managing director 1 (1); Managing director 2 (1)
Case 17	Automotive	75–100 bn	70	South Korea	Department	500 m yearly	2006	Investment manager (2): Investment analyst (1)
Case 18	Tele-communication	25–50 bn	150	France	Department	Not disclosed	2015	Principal (1); Investment manager (1)
Case 19	Health care	25–50 bn	69	USA	Separate entity	500 m fund	2009	Senior Investment Manager (1); Investment manager (1)
Case 20	Aviation	75–100 bn	153	USA	Department	Not disclosed	2017	Senior managing director (1)
Case 21	Electronics	<25 bn	35	USA	Separate entity	Not disclosed	2000	Senior managing director (1); Investment director (1)
Case 22	Chemicals	25–50 bn	117	Germany	Department	Not disclosed	2015	Vice President (1); Managing director (1); Investment manager (1)
Case 23	Electronics	>100 bn	90	South Korea	Department	150 m fund	1999	Investment manager (1)
Case 24	Automotive	>100 bn	133	Germany	Separate entity	0.8 bn fund	2002	Investment manager (1); Investment manager (1)
Case 25	Automotive	25–50 bn	240	Germany	Department	Not disclosed	2018	Investment manager (1); Investment manager (1)
Case 26	Chemicals	75–100 bn	110	Germany	Separate entity	250 m fund	2002	Managing director (2); Investment manager (1)
Case 27	Banking	<25 bn	40	Germany	Separate entity	Not disclosed	2005	CEO (1); Managing director (1); Investment manager (1);
Case 28	Manufacturing	<25 bn	14	Germany	Department	Not disclosed	2018	Head of corporate venturing (1); Investment manager (1)
Case 29	Banking	<25 bn	2	Germany	Department	Not disclosed	2016	Managing director (1); Senior Investment Manager (1);
Case 30	Insurance	<25 bn	2	Germany	Department	Not disclosed	2017	Managing director (2); Investment manager (1)

[a] CVC units are either strongly imbedded in the corporation as a department or organized as a separate legal entity.

Table 2
Coding procedure and set membership calibrations.

Category	Condition	Definition	Coding scheme & set membership calibration	Key sources
Explorative innovation performance [outcome]	Creation of options on emerging technologies for parent firm	Describes the extent to which CVC investments create options for the parent firm that allow them to get acquainted with an emerging technology	Fully in ["1"] if CVC provided evidence of creating options on emerging technologies for parent firm	Hill et al., 2009; Van De Vrande and Vanhaverbeke, 2013; Ceccagnoli et al., 2018
	Investments in disruptive technologies	Describes the extent to which the parent firm gains exposure to disruptive technologies that potentially cannibalize existing technologies	Fully in ["1"] if CVC provided evidence of investments in startups with disruptive potential to the parent organization's core business/technology	Hill and Birkinshaw, 2014; Ma, 2020; Rossi et al., 2020a; Van De Vrande et al., 2011
	Investments in (technological/ market) domains relatively unrelated to the current corporate domains	Describes the degree of venturing in novel (technological/ market) domains	Fully in ["1"] if CVC provided evidence of CVC activity in domains relatively unrelated to the corporate parent's core business	Hill et al., 2009; March, 1991
Exploitative innovation performance [outcome]	Improvement of parent firm's operational excellence	Describes the extent to which the relationship with the invested startups has helped improve the execution of the parent firm's operations (e.g., improvement in product quality or reduction in cost)	Fully in ["1"] if CVC provided evidence of portfolio companies improving the execution of the corporate parent's operations	Weber et al., 2016
	Increased recognition in rest of corporation of the importance of new business development	Describes the extent to which an entrepreneurial culture shall be fostered through a CVC	Fully in ["1"] if CVC provided evidence of activities and investments that fostered entrepreneurial culture to establish new business within the parent firm	Hill et al., 2009
	Investments in (technological/ market) domains related to the current corporate domains	Describes the degree of venturing in known (technological/ market) domains	Fully in ["1"] if CVC provided evidence of CVC activity in domains related to the corporate parent's core business	Hill et al., 2009; March, 1991
CVC-TMT interface	Vertical autonomy [condition]	Describes the extent to which CVC unit managers have the authority to make investment decisions independent from the corporate TMT	Four-value-scheme between fully out ["0"] (TMT approval required for all deals) to fully in ["1"] (CVC unit is permitted to invest without TMT approval)	Hill et al., 2009; Lee et al., 2018
	Leadership involvement [condition]	Describes the access of the CVC unit to the corporate TMT	Two-value-scheme between fully out ["0"] (no direct reporting to the corporate TMT) to fully in ["1"] (direct reporting to the corporate TMT)	Banker et al., 2011; Sahaym et al., 2016
CVC-BU interface	Horizontal autonomy [condition]	Describes the extent to which other BUs of the parent company are involved in the investment decision-making process and have the ability to veto or influence a deal	Four-value-scheme between fully out ["0"] (BU approval required for all deals) to fully in ["1"] (CVC unit is permitted to invest without BU approval)	Hill et al., 2009; Souitaris and Zerbinati, 2014; Souitaris et al., 2012
	Collaboration [condition]	Describes the collaboration between CVC unit and BUs	Two-value-scheme between fully out ["0"] (absence of a dedicated business development team) to fully in ["1"] (presence of a dedicated portfolio development team)	Biniari, 2012; Souitaris and Zerbinati, 2014; Souitaris et al., 2012
CVC context	Maturity [condition]	Describes the maturity and experience in terms of age of the CVC unit	Four-value-scheme between fully out ["0"] (less than one CVC life cycle) to fully in ["1"] (more than three CVC life cycles)	Ma, 2020

Table 3
Calibration table for fuzzy-set qualitative analysis.

Case ID	CVC-TMT interface		CVC-BU interface		Context	Outcomes	
	Vertical autonomy	Direct reporting	Horizontal autonomy	Business dev. team	Maturity (mature)	Explore	Exploit
Case 1	0.67	1	0.67	0	0.33	0.67	1
Case 2	0.67	1	1	1	1	1	0.33
Case 3	0	1	1	1	1	0.33	0.67
Case 4	0	1	0	1	0.67	0.33	0.33
Case 5	0.33	1	1	0	0	0.67	1
Case 6	0.67	1	0.67	0	0.33	1	1
Case 7	0.33	0	0.67	1	1	0	0.67
Case 8	0	1	1	1	0.33	0.67	0.33
Case 9	0	0	0	0	0.33	0.33	1
Case 10	0	0	0.33	0	0.67	0.33	0.67
Case 11	0	1	1	0	0	1	0.67
Case 12	1	1	0.33	1	0.67	0.67	0.67
Case 13	0.67	1	1	1	1	1	0.33
Case 14	0	1	0	0	0	0.33	0.33
Case 15	0	1	0.33	1	0.33	1	0.67
Case 16	0.33	1	0	0	0.33	0.33	1
Case 17	0.67	0	0.33	1	0.67	1	0.67
Case 18	0	0	0.33	0	0	1	0.67
Case 19	0	0	0.67	1	0.33	0	1
Case 20	0	0	0.67	1	0	0.33	0.67
Case 21	0	0	0.67	1	1	0.33	1
Case 22	0	1	0	0	0	0.67	0.33
Case 23	1	1	1	1	1	0.67	0.33
Case 24	1	1	1	1	1	1	0.33
Case 25	0.33	0	1	0	0	0.33	0.33
Case 26	1	1	1	1	1	1	0.67
Case 27	1	1	0.67	1	1	0.67	0.33
Case 28	0.33	1	0.33	1	0	0.33	0.33
Case 29	0	0	0.33	0	0.33	0.33	0.67
Case 30	0	1	0	1	0.33	0.33	1

3.3.1. Outcome conditions

Measuring the innovation performance[1] of CVC units is a challenging endeavor. This is illustrated in the vast heterogeneity of performance measures in the academic literature and the ambiguity regarding the performance outcomes of CVC investments (e.g., Alvarez-Garrido and Dushnitsky, 2016; Hill and Birkinshaw, 2014; Huang and Madhavan, 2020; Thornhill and Amit, 2001).

A fundamental assumption of this study is a detailed and configurational understanding of the perceived innovation performance (i.e., outcome) of a CVC unit, which cannot (or only partly) be captured by conventional measures (see Huang and Madhavan's (2020) work on the multiplicity of performance outcomes). Moreover, fsQCA is considered an asymmetric research method that allows us to understand the fine-grained and complex interplay of different antecedent conditions and how they impact specific outcomes (Douglas et al., 2020). Therefore, effective use of the fsQCA methodology requires that the respective outcome variables can be coded into unambiguous (fuzzy or crisp) set memberships (Pappas and Woodside, 2021), which is different to other methodological approaches. Consequently, for our purposes, we find it inadequate to measure CVC innovation performance based on an aggregated multi-item Likert-scale (as in the previous CVC literature, which, unlike our study, often uses regression models (e.g., Garrett and Covin,

[1] To develop a performance outcome measure, we deliberately limited our analysis to strategic performance in general and innovation performance of CVC units for their parent organization in particular. There are several reasons for this. First, while sometimes also purely financial outcomes may play a role (Chesbrough, 2002), prior literature shows that firms pursue CVC investments are predominantly initiated for strategic reasons and with the objective to create synergies between corporations and portfolio firms (Chesbrough, 2000, 2002; Dushnitsky and Lenox, 2006). Second, related research has shown that corporate venturing formats focused primarily on financial objectives function significantly differently, with fewer collaborative touchpoints and especially less need for strategic alignment than their more strategic counterparts (Shankar and Shepherd, 2019). This suggests that our research design, which focuses primarily on the design of interfaces between the venturing domain and the core business, may produce potentially misleading results when applied to financial outcomes and objectives. Third, while there is also some ambiguity about what it means to pursue CVC investments for strategic reasons (Covin and Miles, 2007), we found it particularly difficult to compare financial performance outcomes across CVC entities, as we found that some setups differ drastically. For example, while some of our respondents, similar to conventional investors, have immediate insight into their CVC units' financial returns, which they may even reinvest, others told us that they only have a defined budget, with returns on investments booked directly through the CFO, who does not share detailed financial insights. Finally, during the data collection process, several of our respondents often signaled to us a greater willingness to discuss strategic implications than financial metrics, with some even directly stating that they could not discuss any financial performance. To avoid dropout rates and biased results, we therefore decided to focus primarily on the strategic perspective. However, as detailed in the respective subsection at the end of our paper, we recognize that focusing solely on strategic performance in general, and the innovation performance of CVC units in particular, presents its own set of limitations.

2015; Hill et al., 2009)). This is because such Likert-scales can consist of multiple items that refer to related but different concepts, which may be closely related, but which do not refer to the exact same type of innovation outcome and is therefore not applicable to an fsQCA research design requiring clear set memberships. Moreover, the assessment of innovation performance depends on the specific objectives and expectations of a CVC unit, which leads to an even more complex assessment of whether a CVC unit is performing well or not (Garrett and Covin, 2015; Weber et al., 2016).

Based on this reasoning, and in an attempt to balance the necessary specificity and breadth of innovation outcomes, we decided to develop measures for two of the most cited dimensions of CVC innovation performance (e.g., Keil et al., 2016; Lee et al., 2018), namely explorative and exploitative innovation. Specifically, considering how March's (1991) concepts of exploration and exploitation have been interpreted and applied in the CVC context in the past (e.g., Hill and Birkinshaw, 2014; Ma, 2020; Rossi et al., 2020a; Selnes and Sallis, 2003; Van De Vrande et al., 2011; Weber et al., 2016), we examined the interview data using Generic Membership Evaluation Templates (GMETs) (Tóth et al., 2017) that helped to transform qualitative data into fuzzy sets. GMETs are tailored primarily for the analysis of qualitative data in cases where quantitative anchors are not available. They transparently capture our interpretation of each case, context-specific descriptions of the outcomes, the direction of the membership, and illustrative quotes supporting our assessment. GMETs are therefore suitable to apprehend hard-to-quantify outcomes such as innovation performance. Such methods of transforming qualitative data into set memberships have become more prominent in the literature (de Block and Vis, 2019; Waldkirch et al., 2021) and prove a suitable way to differentiate between strategically performing cases and those that are not.

Accordingly, for each of the 30 cases, we created a GMET that included outcomes for both explorative and exploitative innovation performance. Each outcome consists of three items (see Appendix C for an illustrative example). For each of the items, we wrote a short assessment supported by interview quotes and knowledge from secondary data. Each item was discussed among the authors until consensus was reached (Miles et al., 2014). To aggregate the items into the two outcome conditions, we took the overall number of items that would fall into membership (rated as positive or negative), providing us a performance value between 0 and 3 for both outcomes. As the literature cannot provide guidance on what anchor values associated with an overall innovation performance score should be, the fsQCA literature recommends empirical calibration as a means to determine set memberships (Crilly, 2011). This is appropriate since the goal of calibration is to identify meaningful groupings of cases that can be informed by substantial case knowledge if the empirically derived threshold values represent logical and meaningful values external to the sample (Rihoux and Ragin, 2012). The validity of the inference is hence assured by case knowledge. Accordingly, we devised a four-value scheme to calibrate the direct value of the GMETs relative to high innovation performance (Ragin, 2009). A value of 3 per outcome was calibrated as "fully in" relative to the high performer condition and assigned a membership score of 1, whereas values of 0 were calibrated as "fully out" and assigned a membership score of 0. A value of 2 was calibrated as "more in than out" relative to the high performer condition and assigned a membership score of 0.67, whereas the value 1 was calibrated as "more out than in" and assigned a membership score of 0.33.

3.3.2. Causal conditions

To determine optimal organizational arrangements of CVC units for achieving explorative and/or exploitative innovation outcomes, we include four conditions in our analysis reflecting the interfaces between CVC and corporate parent: (a) the *CVC-TMT interface* is represented by vertical autonomy and leadership involvement through direct reporting activities, while (b) the *CVC-BU interface* is represented by horizontal autonomy and collaboration through a dedicated business development team. While autonomy (or its absence) at both interfaces is structural in character, we understand leadership involvement and collaboration as being of a more operational nature. Moreover, to further understand the contextual conditions under which CVC units operate, we include an additional (c) *contextual condition* corresponding to the age and implicit maturity of the CVC units in our analysis.

Following Hill et al. (2009), we divided the measure of autonomy into vertical and horizontal components. To determine the degree of *vertical autonomy,* we evaluate the extent to which CVC unit managers have the authority to make investment decisions independent of the corporate TMT (Hill et al., 2009). To calibrate the data for this condition, we applied a four-value-scheme, which is "especially useful in situations in which researchers have a substantial amount of information about cases" (Ragin, 2009, p. 90). The validity of any eventual inference is hence assured by case knowledge. The qualitative data was coded between 0 (TMT approval required for all deals) to 1 (CVC unit is permitted to invest without TMT approval). Quotes such as "the corporate C-level makes the investment decision" indicate a low degree of vertical autonomy and were coded with 0, whereas quotes like "the authority to invest rests solely on the CVC unit to make the call" provided evidence for a high degree of vertical autonomy and were coded with 1. Quotes such as "Depending on the amount, we can either make the decision ourselves …within our investment team. When we want to invest beyond a certain threshold amount, we would then approach our investment committee (…) two-thirds of the investments go without the investment committee" indicate a relatively high degree of autonomy but with some limitations, and were coded with 0.67. Quotes such as "We have to have a business sponsor and a champion in our investment committee. Those are the ones that make it over the line" indicate a relatively low degree of vertical autonomy but with some freedom of action, and were assigned the value of 0.33.[2]

The degree of *horizontal autonomy* was similarly operationalized following Hill et al. (2009) and assesses how extensively other BUs of the parent company are involved in the investment decision-making process and have the ability to veto or influence a deal. Like with vertical autonomy, the degree of horizontal autonomy was coded on a four-value scheme between 0 (approval required from the BU for all deals) to 1 (CVC unit is permitted to invest without BU approval). Quotes such as "when we invest, we need to get the buy-in

[2] All the quotes on which the calibration of causal conditions is based can be found in Appendix B.

from the business unit" indicated a low degree of horizontal autonomy (coded with 0), while quotes such as "we don't need to get the business unit approval" indicated high degrees of horizontal autonomy (coded with 1). Severe or slight limitations on horizontal autonomy, as indicated by the quotes, "Having the stamp of approval from [the business units] saying, 'We need this,' will streamline that conversation quite a bit" and "The business units are consulted by that portfolio development team … but we don't ask for their blessing" are accounted for by scores of 0.33 and 0.67, respectively.

The structural distance between the corporate TMT and the CVC unit influences the intensity of interaction and communication and thus the ability to exchange information (cf. Banker et al., 2011). Therefore, to assess whether the CVC unit has access to the corporate TMT—a relationship that enables leadership to perceive and manage the demands of multiple stakeholders, act as a mediator between the two, and provide legitimacy for the CVC unit's actions—we operationalized leadership involvement based on the *reporting structure* of the CVC unit. The condition was coded on a two-value scheme between 0 (no direct reporting of the CVC unit to the corporate TMT) and 1 (direct reporting to the TMT). For instance, "we are three levels below the corporate board" indicated indirect reporting and was coded with 0, while "We report to the corporate CEO" indicated direct reporting and was coded with 1.

Drawing on our empirical data, we assessed collaborative operational linkages between CVC units and BUs by the presence of a *dedicated business development team* because our interviews revealed an increased intensity of collaboration between the CVC unit and the BU when such a team exists. This team is responsible for fostering partnerships between a portfolio venture and the BU and therefore creates strong interactions between the BU and the CVC unit itself. As one principal informant states, "The portfolio development team understands where and how to connect to people in the business units to get that leverage and strategic benefit." The existence of a dedicated business development team was operationalized as a dichotomous variable and thus coded on a two-value scheme where 0 stands for its absence and 1 for its presence. Statements such as "there's no split between an investment manager and a development manager" were treated as evidence of the absence of a dedicated portfolio development team (coded with 0), while remarks such as "we have a development team and their focus is only on helping the business units to cooperate with startups" indicated the presence of a dedicated portfolio development team (coded with 1).

We operationalize CVC units' *maturity* by utilizing the age of the CVC unit. Since experience, reputation, and organizational learning are decisive for our analysis, we utilize the foundation year of the first CVC unit (which might have had a different strategy or name compared to the current CVC unit). To determine the founding year of the first CVC unit, we collected publicly available data. In particular, we searched the website of the CVC unit and searched for newspaper articles, magazine articles, and press releases, and validated the findings with the principal respondents. The continuous measure of *maturity* was calibrated by integrating both the observed median life cycle of CVC units (Ma, 2020) and the average life cycle of IVC funds (Gompers and Lerner, 2001) to account for both the corporate origin of CVC units and the increasing assimilation to IVC-style fund structures. We decided to use a typical four-value scheme that represents both the CVC and IVC life cycle by using 12 years (average IVC fund life) as a midpoint and 6 years (average CVC life cycle) as a quarterly split. We coded units younger than 6 years as 0, those 6 years and older but younger than 12 years as 0.33, those 12 years and older but younger than 18 years as 0.67, and those 18 years or older as 1.

3.4. Analysis

As mentioned, fsQCA allows us to analyze whether relations between certain causal conditions and a particular outcome exist. In fsQCA, the existence of such connections is assessed through a necessary and sufficiency analysis of subset relations using Boolean logic and algebra (Ragin, 2000, 2008).[3] Similar to other fsQCA studies (e.g., Crawford et al., 2024; Speldekamp et al., 2020), we performed a split analysis to test for variations in our configurations across cases. Specifically, we ran all of our analyses two times: once for each outcome (i.e., exploitative and explorative innovation) to test whether configurational solutions differ across strategic objectives. The fsQCA analysis was conducted using fs/QCA 4.0 software.[4] No simplifying assumptions were made.

3.4.1. Necessity analysis

Necessary conditions are identified by calculating the consistency value of the conditions with respect to each of the two outcome variables (presence and absence). An individual condition is considered necessary when the consistency takes the value of 1.0 and considered almost necessary for values between 0.90 and 0.99 (Greckhamer et al., 2018; Ragin, 2008; Schneider and Wagemann, 2012).

3.4.2. Sufficiency analysis

To identify configurations of conditions that are sufficient to lead to explorative or exploitative innovation performance in CVC, a truth table with 2^k lines is created of all theoretical possible configurations where k represents the number of causal conditions. Thus, in our analysis, the truth table consists of 32 rows (see Tables 4a and 4b for each outcome variable). Following Greckhamer et al. (2018), the number of theoretical configurations is reduced by applying a minimum frequency threshold of two observations to account for the number of cases. Thus, theoretically feasible combinations not observed in the data sample are excluded, and parsimony of the findings is ensured by applying a relatively high-frequency threshold. Next, the consistency values of each combination were analyzed to identify combinations that explicitly resulted in the presence of the outcome. Following prior studies (Ragin, 2000, 2008),

[3] Please refer to Fiss (2011), Greckhamer et al. (2018) and Schneider and Wagemann (2010) for more detailed elaborations on fsQCA's analytical properties.

[4] The software can be accessed via http://www.socsci.uci.edu/~cragin/fsQCA/.

Table 4a
Truth table for outcome exploration (some rows are not displayed as they contain no cases).

Vertical autonomy	Direct reporting	Horizontal autonomy	Business dev. team	Maturity (mature)	n	Raw consist.	PRI consist.	SYM consist
1	1	1	1	1	6	0.938202	0.924138	1
0	0	0	0	0	3	0.709402	0.496296	0.496296
0	1	0	1	0	3	0.709402	0.496296	0.496296
0	1	0	0	0	3	0.597598	0.333333	0.496296
0	1	1	0	0	2	1	1	1
1	1	1	0	0	2	1	1	1
0	0	1	1	0	2	0.39521	0.246269	0.246269
0	0	1	1	1	2	0.33	0.197605	0.197605
0	1	1	1	0	1	1	1	1
1	1	0	1	1	1	1	1	1
0	0	1	0	0	1	0.795181	0.492537	0.492537
0	0	0	0	1	1	0.744361	0	0
0	1	0	1	1	1	0.744361	0.492537	0.492537
0	1	1	1	1	1	0.711207	0.596386	0.744361
1	0	0	1	1	1	0.67	0.67	0.67

Table 4b
Truth table for outcome exploitation (some rows are not displayed as they contain no cases).

Vertical autonomy	Direct reporting	Horizontal autonomy	Business dev. team	Maturity (mature)	n	Raw consist.	PRI consist.	SYM consist
1	1	1	1	1	6	0.496255	0.112211	0.166667
0	0	0	0	0	3	1	1	1
0	1	0	0	0	3	0.597598	0.498127	0.661692
0	1	0	1	0	3	0.854701	0.748148	0.748148
0	1	1	0	0	2	0.858369	0.835	1
1	1	1	0	0	2	1	1	1
0	0	1	1	0	2	1	1	1
0	0	1	1	1	2	1	1	1
0	0	1	0	0	1	0.795181	0.000001	0.000001
0	1	1	1	0	1	0.744361	0	0
0	0	0	0	1	1	1	1	1
1	0	0	1	1	1	1	1	1
0	1	0	1	1	1	0.744361	0.492537	0.492537
1	1	0	1	1	1	1	1	1
0	1	1	1	1	1	0.857759	0.507463	1

we applied a 0.8 consistency value as the cutoff value for the presence of the outcome. To avoid simultaneous subset relations of configurations in both the presence and the absence of the outcome, we calculated the proportional reduction in inconsistency (PRI). Only configurations with a PRI above the recommended minimum value of 0.70 were included in our solutions (Greckhamer et al., 2018). We further distinguish between core and peripheral conditions (sometimes referred to as "contributing conditions") (Greckhamer et al., 2018).

4. Results

4.1. Necessary conditions for CVC innovation performance

None of the conditions has a consistency value above 0.9, indicating that neither the presence or absence of any single condition can be considered as (almost) necessary for high or low explorative or exploitative innovation performance in CVC units (Greckhamer et al., 2018; Ragin, 2008; Schneider and Wagemann, 2012) (see Appendix D for the full necessity analysis).

4.2. Sufficient conditions for CVC innovation performance

In Fig. 1 (intermediate solution), we display six individual configurations (C1—C6) associated with CVC performance in terms of exploitative or explorative innovation (and one configuration (C7) that was associated with the absence of explorative innovation). The overall solution consistency ranges between 0.89 and 0.94 and the overall solution coverage ranges between 0.22 and 0.55. This indicates that these configurations bring about the outcome between 89 % and 94 % of the time and account for between 22 % and 55 % of the instances of these outcomes (Ragin, 2008). In addition, we present raw and unique coverage of each configuration. Raw coverage refers to the proportion of cases that show the specific configuration as well as the specific outcome. Unique coverage indicates how much of a given outcome is only covered by that specific configuration (Schneider and Wagemann, 2012). The identical

	Exploit				Explore		~ Exploit	~ Explore
Configuration of CVC units	*Young guided exploiters*		*BU collaborator*	*Young ambidextrous*		*Autonomous corporate explorer*	*|- none -|*	*(similar C3)*
	C1	**C2**	**C3**	**C4**	**C5**	**C6**		**C7**
(a) CVC-TMT interface								
Vertical autonomy	⊗	⊗	⊗			●		⊗
Direct reporting	⊗	●	⊗	●	●	●		⊗
(b) CVC-BU interface								
Horizontal autonomy	⊗	⊗	●	●	●	●		●
Business dev. team	⊗	●	●	⊗	⊗	●		●
(c) CVC context								
Maturity (mature)	⊗	⊗		⊗	⊗	●		
Raw Coverage	0.12	0.11	0.16	0.16	0.17	0.28		0.22
Unique Coverage	0.12	0.11	0.16	0.16	0.17	0.28		0.22
Consistency	1.00	0.86	1.00	0.90	0.90	0.94		0.89
# of successful cases	3	2	4	4	4	6		4
ID of successful cases	(9; 18; 29)	(15; 28)	(7; 19; 20; 21)	(1; 5; 6; 11)	(1; 5; 6; 11)	(2; 13; 23; 24; 26; 27)		(7; 19; 20; 21)
Overall Solution Consistency			**0.94**			**0.92**		**0.89**
Overall Solution Coverage			**0.55**			**0.45**		**0.22**

Core conditions denoted by ⬤ (presence) and ⊗ (absence); peripheral conditions denoted by ● (presence) and ⊗ (absence); Blanks cells indicate the condition can be either present or absent; Consistency threshold: .8; Frequency threshold: 2;

Fig. 1. Sufficient configurations.

raw and unique coverage values imply the uniqueness of these configurations (cf. Crilly, 2011).

To increase our understanding of the configurations, we identify the cases that belong to each configuration. We select cases with a membership of at least 0.5 in the respective configuration. Membership in a configuration is equal to the minimum degree of a membership in any condition which contributes to the configuration. The minimum membership score "indicates degree of membership of a case in a combination of sets. Its use follows 'weakest link' reasoning" (Ragin, 2009). In principle, no case can have a membership score >0.5 in more than one configuration (Ragin, 2008). However, because we are analyzing multiple outcome variables, some CVC units may be equally present in multiple configurations.

Drawing on a rich set of case data, the configurations that perform well in terms of exploitative or explorative innovation are described in more detail below.

4.2.1. Configurations 1 and 2: young guided exploiters

The first two configurations, C1 and C2, are characterized by a strong involvement of the corporate TMT (low vertical autonomy) and the BUs (low horizontal autonomy), which ties the CVC unit closely to both the control of the corporate TMT and the particular demands of the BUs. *Cases 9*, *18*, and *29* (for C1) and *Cases 15* and *28* (for C2) reflect these configurations, which were found to be particularly effective for their parent company in terms of producing exploitative forms of innovation. In addition, given the tight (structural) integration of these two configurations at both the interface with the TMT and the corporate BUs, and the relatively young age of the CVC units representing them, we label these configurations as "*Young guided exploiters*."

The purpose of these CVC units is to bring in startup innovation from the outside and insource their technological solutions to ensure that their parent company maintains technological leadership. As explained by the Investment Manager of Case 15, "It is to help [the corporate parent] to achieve technological leadership, with the help of innovation that comes out of startups…." The focus is on technological solutions that can immediately help the current needs of the company and its existing customers. A Senior Investment Manager from Case 29 offered this as the raison d'être of their CVC unit: "We were very close to the core business because we said that this is the only area where we really have sufficient expertise." Given their young age and the proximity to the current core business—and thus a certain overlap and competition with other corporate innovation and entrepreneurial initiatives—*Young guided exploiters* face a major challenge in securing the necessary resources and building the needed legitimacy within the corporation to ensure current and future operations. As a result, these configurations prioritize the needs of their corporate parent and the need to meet potential KPIs, even at the expense of the needs of their portfolio companies when necessary: "The purpose of [the CVC unit] is to accelerate the innovation for [the corporate]. So, at the end of the day, it's about innovation and speed" (Senior Vice President, Case 9). Thus, both C1 and C2 appear to benefit from close structural integration with the top management team and the business units. At both interfaces, there is a significant corporate say in decision-making and whether or not investments are made. This gives the CVC units legitimacy within their parent company in the early stages, as a Senior Vice President for Case 9 explained: "We have an investment committee that is comprised of the Chief Technology Officer, the head of operations, and a relevant business unit manager. They approve a deal. Above a certain dollar threshold, it goes up to the CEO and the CFO." Configurations 1 and 2 differ in that C2 is an even more extreme version of C1, in which the CVC unit is not only structurally integrated at both interfaces with the TMT and the BUs, but C2 is also explicitly operationally integrated, i.e., C2 (unlike C1) is required to report regularly to the top management team and has a business development team that increases due diligence while fostering the connection to the parent company's current business: "For the last year and a bit, we have a [development] team… and their focus is indeed only helping [the corporate parent] to cooperate with startups" (Open Innovation Manager, Case 15).

However, our data also reveal the limitations of tightly integrated *Young guided exploiters*, which despite their strengths in producing exploitative innovation seem to have difficulty with types of innovation that go beyond their parent corporation's current business. The Managing Director of Case 29 noted, "We made sure to stay very close to our core business because we said that only there do we truly have sufficient expertise and know-how." Later in the interview he offered this observation: "We're constantly under the microscope, with every move scrutinized by the top management and the BUs, but nobody is really in the lead. It's like trying to dance with two left feet." This illustrative quote offers a clue as to why C1 and C2 do not score highly in terms of more explorative forms of innovation—it appears that these CVC units' pursuit of legitimacy within their host corporations comes at the expense of the CVC units' legitimacy within the IVC domain.

4.2.2. Configuration 3 (and 7): BU collaborator

Configuration 3, observed in *Cases 7*, *19*, *20*, and *21*, is characterized by purposeful interactions at both the CVC-TMT interface (low vertical autonomy; no direct reporting) and the CVC-BU interface (high horizontal autonomy; a dedicated business development team). Similar to C1 and C2, CVC units in C3 effectively source exploitative innovation for their corporate parents. However, due to their more participatory (and less hierarchical) approach to interacting with the corporate BUs, we label them as "*BU collaborator*." This configuration can include both relatively mature (*Cases 7* and *21*) and younger CVC units (*Cases 19* and *20*).

While *BU collaborators* may focus primarily on technology and market areas close to the company's current core business, these CVC units tend to take a slightly more medium- or long-term view, with a mindset focused on future-oriented product and service development: "We're tasked with really doing and pursuing new forms of innovation that the business couldn't or wouldn't pursue on their own but still fit in the strategic scope of what we do as a company" (Managing Director, Case 20). In order to maintain a loose link to the needs of their parent company–while avoiding the rigidity of daily BU activities and retaining the flexibility to move more freely in the IVC domain–*BU collaborator* units are only operationally linked to the BUs, gaining greater autonomy to engage in business beyond immediate and short-term needs. With respect to responding to the needs of the BUs, the Investment Director for Case 7 noted, "We spent a lot of time mapping their needs very carefully, and then tried to go out and find those, but then you find something totally

different that is even more interesting." While formal sponsorship or BU approval is no longer required, C3's investment focus is still aligned with BU technology forecasts through operational and informal channels. "Nowadays, we talk to them all the time through this spider web of interactions, connections, and relations," Case 7's Investment Director shared. Those links "help us—when we find things—to calibrate if it's interesting." He was quick to add that the loosening of ties to the BUs reflects the realities of how more mature CVC units work. At the same time, the BU staff maintains close structural integration with the TMT interface, ensuring buy-in and resource allocation even though it is not tied to the immediate short-term needs of the corporate parent. In this way, the TMT acts as a powerful signal to other corporate members to follow and collaborate with the CVC unit's new venturing initiatives.

In summary, we found that for the *BU collaborator*'s approach to be successful, the portfolio companies need to be protected from excessive corporate BU influence to avoid slowing them down or moving them away from their mid- or long-term vision. In addition, several interviewees acknowledged that this approach requires external expertise to help corporations take a more IVC-like perspective on deals because "internal corporate lawyers just don't understand the venture space and don't understand risk." (Managing Director, Case 19). In consequence, the theme of protection from the corporate core ran through the comments of several interviewees; as the Managing Director of Case 19 vividly put it, "There's no shortage of corporate personnel that would like to spend hours and hours and hours of our portfolio companies' time just sucking their brains dry." Probably as a form of self-protection, we recognized in the BU staff units a distancing from the corporate domain—reflected in the structural disintegration of the CVC unit from the BU interface—and began to refer to this as structural *buffering*. At the same time, to avoid distancing themselves too far from the corporate core business, BU collaborators not only maintain a strong connection to the TMT interface through structural integration, but also maintain a loose but robust connection to the BU interface through a dedicated business development team. We consequently started to refer to this behavior as *bridging*, i.e., primarily *operational* efforts to maintain connections with representatives of the domain they stem from. The Managing Director of Case 20 offered the following depiction of the *BU collaborator*: "We have portfolio development teams and dedicated focal points for each portfolio company. They are touchpoints that they can always go to on a daily basis to really help break down and navigate the big corporate."

Interestingly, the CVC units present in the *BU collaborator* are almost identical to Configuration 7, which refers to the absence of more explorative forms of innovation. This finding suggests that C3 may be useful for a relatively long-term vision of innovation, but only as long as it has at least some connection to the company's current core business: "It's more along the lines of 'I'm going to invest in companies that have interesting solutions that can allow our organizations to run their operations more efficiently and effectively'" (Investment Manager, Case 19). However, for investments in truly explorative innovations with an even higher degree of novelty, disruptive potential, or business model innovation, the use of *BU collaborator* units seems contraindicated.

4.2.3. Configurations 4 and 5: young ambidextrous

This configuration, observed in *Cases 1*, *5*, *6*, and *11*, is the only one that appears to be equally effective in pursuing both exploitative (Configuration 4) and explorative innovation (Configuration 5). In addition, because the CVC units represented by the respective cases are 4 to 7 years old since their inception and thus relatively young compared to other units in our sample, we label this configuration as "*Young ambidextrous*." The configuration is characterized by a loose coupling with the parent company's core, i.e., an operational integration at the interface with the corporate TMT via a direct reporting structure, but at the same time a lack of integration at the BU interface (horizontal autonomy; absence of a dedicated business development team). In addition, the configuration remains neutral on whether these CVC units should be vertically autonomous from the corporate TMT, signaling that this detail is of little relevance for units of this type.

We better understand the different strategic roles that *Young ambidextrous* units can embody for their corporate parent by looking at our rich qualitative data. For example, CVC units in this configuration take a primarily explorative stance, focusing on investments in portfolio companies that have the potential to shape or even disrupt the future of the industry. The Senior Investment Manager from Case 1 describes their unit's priorities this way: "What we're looking for is the startup companies that are going to revolutionize the industry or are going to make a major difference to how the industry functions and operates." He added, "We want to be there when those industry changes happen with those companies that are making it happen." At the same time, while it may seem contradictory that CVC units with such a pronounced explorative stance can also be effective in exploitative innovation, we also find evidence that their exploitative function is enabled by the fact that these CVC units focus on highly future-oriented investments in startups with disruptive innovation and technology—but mostly with a low level of market diversification and a focus on existing markets and businesses of the parent company. In this way, the CVC units become a kind of "disruption radar" for existing corporate domains, sometimes also with direct relevance to the current core business. As the Investment Manager for Case 11 put it, "We see ourselves as part of the innovation strategy … we aim to facilitate new business development. And at the same time, always keeping track of the business potential that is behind and that might be linked to [the corporate]."

In addition, respondents revealed that exploitative innovation outcomes from these *Young ambidextrous* units can also occur when portfolio companies happen to coincidentally meet the immediate needs of the corporate parent and thus can be immediately implemented in corporate operations (or at least help to understand the developments in the current business fields of the corporate). The Managing Director in Case 6 sums up such fortuitous secondary spillover effects and their impact on exploitative innovation to the corporate core:

> *The core element behind all we do on the venture level is to generate a financial return. In addition to that, we want to use these investments to learn more about certain industries, certain trends in the market… When we invest in this new company, of course, we also look into how we can actually also use this technology and implement it in [the parent company]. For example, we invest into [portfolio company] which helped to improve the quality of [parent product] by 8 %.*

To serve these multiple roles for its corporate sponsor, the main challenge for CVC units in this configuration is to maintain the necessary distance from the corporate core to effectively venture into more explorative areas, while at the same time retaining the ability to selectively engage with the corporate core and jointly exploit innovative outcomes within the corporate parent whenever it is beneficial and opportune for both the portfolio company and the corporate core to do so. The Managing Director from Case 11 aptly describes the degree of uncertainty inherent in such an investment approach: "It's a very case-by-case thing. At the point in time when we do an investment, very often it's not clear if a partnership actually gets established or if we can develop a new product with that startup. What we do check is if there is a certain interest for partnership that might potentially be established."

In summary, the results of our sufficiency analysis and our qualitative data show that ambidextrous outcomes by CVC units are best achieved by buffering the CVC unit from any BU influence in the first place, thus creating a high degree of horizontal autonomy. This was seen as necessary because investing in startups with solutions that are not sufficiently aligned with the company's existing products and business model deviates from the company's short-term, profit-maximizing business logic. As a result, such investment decisions are difficult to understand and evaluate from a business unit perspective. As the Chief Venture Officer in Case 5 noted, "We couldn't do [CVC investments] inside the corporation because then we would be limited in our investment focus and we would be forced to using only what the organization can offer to us… It's my responsibility to keep these [startup] guys focused on achieving their goals and not to make these [corporate BU] guys happy." Nevertheless, to allow for the simultaneous production of more exploitative innovation outcomes, the CVC unit does not "burn all bridges" to the parent company, but instead has deliberate operational interactions among the CVC unit, its portfolio companies, and the core corporate business that are selectively facilitated primarily by the corporate TMT. *Young ambidextrous* CVC units typically maintain a direct reporting line to the TMT to keep them updated about their strategic (and financial) performance in their eyes. For instance, as Senior Investment Manager in Case 1 notes, "We measure [our impact] every six months," adding that this *operational bridge* was deemed necessary to maintain the trust needed from the TMT to continue their operations with a relatively high degree of autonomy. In addition, the direct line to the TMT also functions as an initiator of occasional collaborations between the CVC unit and the BU when they see an opportunity to leverage startup innovation in the operations of the corporate entities (e.g., by integrating startup technology into product innovations). The Chief Venture Officer in Case 5 describes how this works:

> *[The parent] has an extensive R&D unit that develops new products. We regularly arrange meetings with them and demonstrate our portfolio to evaluate if they can collaborate with our ventures to build new products.*

Our analysis shows that ambidexterity in CVC units—the parallel generation of explorative and exploitative innovation outcomes for the corporate parent—can be achieved if a TMT strongly believes in the initiative, supports it, and understands the inherent limitations. As the Managing Director in Case 6 shows, it would be unreasonable to expect IVC-level returns from a CVC unit that must always keep at least one eye on its corporate core:

> *… over the past years we had a couple of outliers with a very good return …. We were very happy with it, but it's not that we achieved the exit multiples, like the champions league of venture capitalists would achieve. However, we built certain new products in collaboration with our ventures that have a huge impact on [our parent].*

4.2.4. Configuration 6: autonomous corporate explorer

Configuration 6, which is embodied in *Cases 2*, *13*, *23*, *24*, *26*, and *27*, is characterized by a high vertical and horizontal autonomy with a direct reporting line to the corporate TMT and a dedicated business development team. In contrast to other configurations, Configuration 6 is optimized to focus on mainly explorative forms of innovation and experiences high levels of independence from both the CVC-TMT interface and the CVC-BU interface. Moreover, this configuration is the only one that refers primarily to more mature CVC units, and most of our respondents indicate that this development toward more autonomy wasn't a linear one and was driven by a desire to participate in better deals from a financial as well as strategic perspective. Thus, we denominate this configuration as "*Autonomous corporate explorers*."

Autonomous corporate explorers focus their investments mainly on startups with both major technological and market potential. Similar to traditional IVC, they aim to identify and support the most promising ventures, either to participate financially in their success or to grow and diversify the company. The company's current core business is not much of a concern in this approach, as an Investment Manager in Case 23 makes clear: "We're looking to explore new markets and products that aren't even on the radar of anyone in [the corporate], but where we think, based on megatrends that we see, that we'd like to stay close to, where seven to 10 years down the line could be big business opportunities." While CVC units of this configuration follow a similar logic to traditional IVC, they are said to be differentiated by the unique expertise, assets, and access to their internal and external corporate networks that they can offer to their portfolio companies:

> *[The CVC unit] is a path-finding arm for [the corporate parent] where we will deliver financially attractive venture-style returns to [the corporate] while executing upon strategically relevant deals where we can add unique differentiated value to the portfolio companies.*
> (Senior Managing Director, Case 13)

However, while this logic sounds very intuitive, most CVC respondents report that it is unfortunately often easier said than done. In addition to the lack of venture-like speed of decision-making in the corporate domain, the demands on the BU were often said to vary too much to develop the sound investment theses required to identify disruptive opportunities and participate in deals that were being guarded by top-tier IVCs. As the Investment Manager for Case 13 observed, "In some corporate structures it hasn't been possible for a

CVC group to operate in a way that they need to—at the speed of entrepreneurship, and with the freedom to move that they need." To respond to the requirements of the IVC domain, links to the BU were largely discarded by CVC units in Configuration 6, again reflecting a strong tendency to *buffer* from the corporate audience in favor of the IVC domain. Whereas in most other configurations the CVC remains strategically aligned to various aspects of the corporate domain, in Configuration 6 the CVCs are set up so that their portfolio startups are "entirely walled off from the corporation" (Investment Manager, Case 13).

Respondents in this configuration pointed to the need to adapt in order to be taken seriously by startups and other members of the IVC domain. This adaptation process was said to affect the entire organizational setup, ranging from decision-making authority and compensation schemes to performance targets and human and financial commitment. This CVC configuration therefore typically embraces IVC practices, including having financial targets ("our goal is to be in the top quartile" (Investment Manager, Case 23)) and incentives ("We have full setup such as any other institutional VC, carry for the team" (Director, Case 24)) and thereby lets strategic and financial goals co-exist. The Investment Manager of Case 13 described "getting exits" as "the Holy Grail in the venture business":

> *The challenge is one of navigation, because I roll my eyes when [some CVC] say … "Oh, I don't really care about returns. Returns don't matter at all." (…) I was like, "Well, you just shot yourself in the head, buddy, because what entrepreneur isn't going to want to make money?"*

Because of the competition with IVCs to attract the most promising startups with the highest technological and market potential, some of our interviewees point to the need to create distinct value propositions that help differentiate the CVC unit. This value proposition is paradoxically tied to the idiosyncratic resources, capabilities, and networks of the corporations from which these units have distanced themselves, thereby increasing the need for a bridge back to the corporate parent. The Senior Principal of Case 13 was quick to observe that "the only way we could ever compete with the likes of Sequoia [Capital] is by virtue of us having differentiated value beyond our dollars, and that's predicated upon needing to leverage the corporation. I don't see why any entrepreneur would otherwise work with us." In order to deliver on this unique value proposition, CVC units in Configuration 6 fall back on strong links to the corporate TMT (direct reporting as core condition) and to the BUs (through a dedicated business development team). But distinct from other configurations that leveraged a business development team, the teams in this configuration instead depend on the whole corporate ecosystem to support startup innovation. The Investment Principal for Case 2 saw this as embracing a "startup first" mentality that eschewed closer BU collaboration in favor of connecting the startups directly to the customers of the corporation.

In sum, Configuration 6 resembles most clearly the IVC counterpart through complete structural autonomy (i.e. *buffering*) and a strong link toward the IVC domain. However, and in contrast to IVC, the idiosyncratic resources and capabilities of the corporate are leveraged beyond company boundaries and are not only used to get into deals but shape the IVC industry as a whole. CVC units in Configuration 6 rely on broad TMT support and dedicated personnel to not only manage relationships with the BUs but actively find suitable opportunities for their portfolio companies to profit from collaborations (i.e. *bridging*). The Investment Manager for Case 13 channeled JFK in summing Configuration 6: "Ask not what your portfolio company can do for you, but what you can do for your portfolio company."

4.3. Robustness checks

We engage in additional analysis to check the robustness of our results. Findings can be considered robust when relatively small changes in the chosen decisions result in similar enough findings regarding necessity and sufficiency and lead to similar enough interpretations of the paths identified (Schneider and Wagemann, 2012).

To check robustness, we first test whether different consistency thresholds result in substantially different outcomes. Following best practices proposed by Greckhamer et al. (2018), we conduct a PRI analysis, using the minimum PRI score threshold of 0.5 (as all values below indicate significant inconsistency). In addition, we also apply a higher threshold of 0.75 (cp. Frambach et al., 2016; Misangyi and Acharya, 2014). Secondly, consistent with Crilly (2011), we choose a higher consistency threshold of 0.85 that represents a gap in the raw consistency presented in the truth table. Third, we run the analysis with maturity calibrated based on the number of investment cycles a CVC has been through. Since venture capital firms on average raise capital every five years (Gompers et al., 2008), we calibrate maturity based on the number of investment rounds a CVC has raised. Finally, we run a split analysis for both a subset of our more immature and mature CVC units to see whether configurations emerge that did not meet the consistency threshold for both.

Most of our robustness results differ little or not at all from the initial results and lead to the same overall conclusions, indicating overall robust results (Meuer et al., 2015). Only implications derived from C2 should be treated with some caution, as this configuration was not present in most of our solutions derived from the robustness check. However, we don't consider this problematic as C2 is considered a variation of the robust C1 (see Appendix E for a summary of all robustness checks).

In addition, because our two outcome conditions are not mutually exclusive, and because some CVC units were found to be ambidextrous (Rossi et al., 2019, 2020b), we develop an additional binary outcome measure of ambidexterity to check the robustness of these results. We consider a CVC unit to be ambidextrous if both exploration and exploitation outcomes scored 0.67 or higher individually. We code such ambidextrous cases as 1 ("fully in") and cases that did not successfully pursue exploration and exploitation simultaneously as 0 ("fully out"). This robustness check confirms our choice to label configurations C4 and C5 as "ambidextrous."

5. Discussion

We examine how CVC units organize themselves to produce either exploitative or explorative forms of innovation for their corporate parent, thereby regarding structural arrangements as responses to incompatible and conflicting demands from the corporate

parent and IVC domain. In particular, we analyze the intertwining of (a) *the interface between CVC unit and TMT* and (b) *the interface between CVC unit and BU* under (c) *contextual factors* as response mechanisms to produce either exploitative or explorative innovation performance. Our findings are summarized in Fig. 2 and will be discussed below.

We find that the performance of CVC units is closely tied to their interactions with the corporate parent, a relationship that is modulated by the unit's maturity and its strategic focus. Specifically, CVC units producing mainly exploitative innovation tend to be closely tied to the corporate parent, relying on tight structural integration at the CVC unit's interface with the corporate TMT and its established norms to attain operational legitimacy. Less mature exploitative CVC units also rely on tight integration at its interface with the corporate BUs, while others gravitate toward greater decision-making autonomy from the business units and embrace a more collaborative approach. In summary, units pursuing exploitative innovation maintain proximity to their corporate parent, while those pursuing explorative innovation adopt a more maverick stance, actively managing the inherent tensions while departing from traditional corporate directives. Ambidextrous units—capable of producing both types of innovation—do so by distancing themselves from the corporate business in order to maintain their ability to produce explorative innovation, while relying on TMT help to selectively reconnect with the corporate BU whenever it is opportune and startup innovation can be exploited within the corporate core operations and products. Our findings underscore the remarkable heterogeneity of effective CVC configurations for varying innovation outcomes. Furthermore, they shed light on the underlying mechanisms that determine local optima, which are intricately influenced by both the objective and the maturity of a given CVC unit and can be interpreted by borrowing explanations from existing theories and literature.

Borrowing from organizational theory (Meznar and Nigh, 1995) as well as research on corporate incubation (Amezcua et al., 2013), we propose several explanations for our findings. First, more mature and explorative CVC units seem to be more distanced from the influence of the corporate parent through an increased independence—especially at their interface with corporate BUs—thereby engaging in a defiance strategy toward corporate demands. This behavior serves as a *buffering* mechanism, and we propose that the necessity of doing so can be explained by an interplay of various factors. It is a well-established principle that organizational subunits pursuing explorative innovation goals can separate themselves from the corporate core to operate in dual modes, embodying the concept of "structural ambidexterity" (O'Reilly and Tushman, 2004). This separation allows these independent units to innovate without the constraints of existing corporate logics, fostering an environment for more explorative innovation. Similarly, it was found previously that CVC units' exploration capability is positively impacted by its relationships with the venture capital community (Hill and Birkinshaw, 2014). More explorative CVC units prove their worth by setting aside the immediate business needs of their corporate parents to discover new aims, which forces them to deviate from their established corporate logics and adapt more to the novel IVC domain. Thus, borrowing from theory on structural hybrid organizations (Perkmann et al., 2019), we theorize that their ability to pursue more explorative innovation results from explicit deviance from the more exploitative goals imposed by the business unit. This involves creating distinct organizational spaces separate from the corporate day-to-day operations to engage with an alternative professional logic. Such hybrid spaces enable CVC units to better position themselves to compete with IVC partnerships for deal participation (Perkmann et al., 2019). Moreover, Ma (2020) has argued that performance criteria deviate across life cycles as expectations on the role of the CVC unit change, which explains why we found that more mature CVC units primarily pursue explorative innovation goals. In contrast to the structurally disintegrated explorative CVC units, less mature and primarily exploitative CVC units are more strictly related to the business units' needs from which they draw legitimacy. This explains why they are more tightly integrated with the CVC-TMT and CVC-BU interfaces in order to avoid legitimacy issues and internal resistance by corporate stakeholders that may see CVC investments otherwise as a waste of resources (Keil et al., 2008) or even a threat to the corporate core (Basu and Wadhwa, 2013).

Second, similar to the requirement to use a buffering mechanism depending on the maturity and the strategic focus, we find that the requirement for operational bridging mechanisms is not stable but context-dependent. We theorize that both leadership involvement and collaboration at the intersection with the TMT and BU serve as *bridging* mechanisms and become more important when simultaneously buffering from the corporate parent. In other words, high-performing CVC units that dominantly pursue agendas that deviate from their corporate parent's norms (by possessing horizontal and vertical autonomy) need to bridge to constituents from their corporate parent the more they buffer. We argue that bridging mechanisms are strategic responses to reconcile conflicting institutional processes and that they are necessary to maintain a connection between the CVC unit and the focal firm while at the same time loosening other institutional attachments (Oliver, 1991). Specifically, in line with the literature on managing institutional complexity, i.e., the challenges posed by incompatible prescriptions from multiple institutional logics (Greenwood et al., 2011), we show that the involvement of corporate leaders is crucial for effective CVC. Executives need to be able to understand how the needs of their CVC units differ from those of their other business activities, and their involvement helps legitimize the goals of the CVC unit and sets clear expectations among representatives—especially in cases where CVC units generate more exploratory innovations that deviate from the firm's current business reality. Similarly, collaboration with BUs, whether initiated by the CVC units themselves or indirectly through the TMT, allows for an intensive interaction between the venture and corporate representatives. This allows these actors from conflicting logics to temporarily combine logics in order to exploit eventual complementarities, without however necessarily aiming always for a midpoint between logics (Smets et al., 2015).

We conclude that these two mechanisms—buffering and bridging—are most important in mature and explorative innovation-seeking organizations that deviate from corporate norms. Young and exploitative innovation-seeking CVC units deviate fully from these mechanisms and tend to be tightly integrated into their parent organization to first build their legitimacy among stakeholders and build reputation. Other CVC units only deviate partially from these findings, contingent on their unique contexts. For instance, when exploitative CVC units turn their focus from the immediate demands of the corporate core toward more mid- and long-term oriented issues, they search for more collaborative forms of connecting with the corporate BUs while remaining tightly integrated

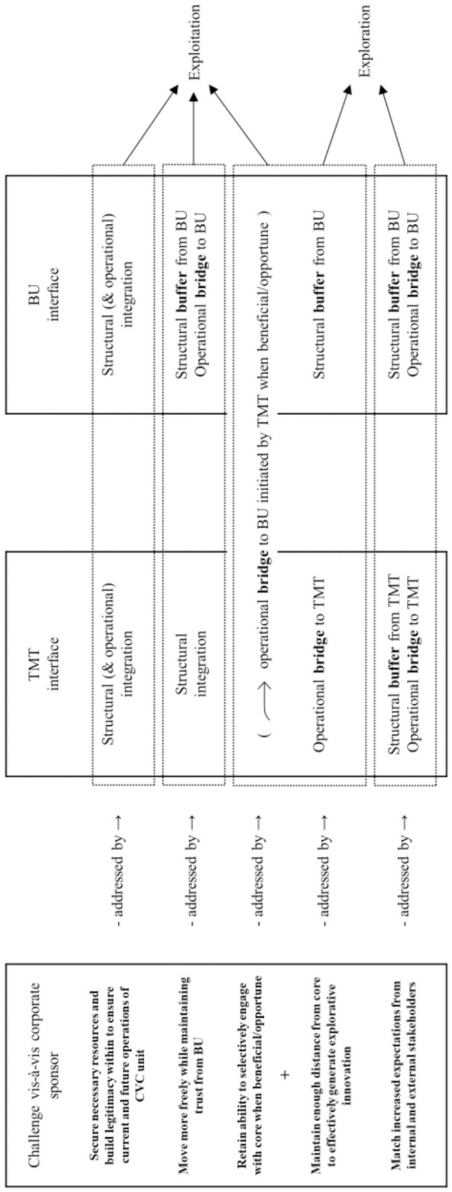

Fig. 2. Configurational solutions and their explanation.

at the CVC-TMT interface. This can be explained by borrowing from the literature on (structural) hybrids, where it is a frequently described phenomenon that collaboration between members of alternative institutional logics can lead to conflict or even paralysis in decision-making due to substantial differences in goals and objectives (e.g., Greenwood et al., 2011; Pache and Santos, 2010; Perkmann et al., 2019). As a result, collaboration strategies might be more feasible when the CVC unit is recognized as an established player and possesses a certain degree of autonomy by the BUs, and at the same time enjoys support through the TMT signaling additional legitimacy. Moreover, in designing ambidextrous CVC units that allow for the production of both exploitative and explorative forms of innovation for their corporate parent, a more dynamic setup should be chosen, i.e., systems that buffer the units from the corporate core most of the time, but allow CVCs to connect to the core BUs when opportune for both sides, thus selectively allowing the exploitation of innovative outcomes within the corporate core through channels initiated by the corporate TMT. Thus, our article also shows real-world examples of CVC units that only temporally separate themselves from their corporate parents (Hill and Birkinshaw, 2014) in order to switch back and forth over time between more explorative and exploitative forms of innovative outcomes (Puranam et al., 2006; Siggelkow and Levinthal, 2003).

5.1. Contributions to entrepreneurial finance and strategical management literature

We contribute to ongoing discussions in the CVC literature on entrepreneurial finance (Drover et al., 2017). First, we link structural arrangements of CVC units to their strategic performance, as commonly called for across the CVC literature (Basu et al., 2016a; Souitaris and Zerbinati, 2014; Souitaris et al., 2012). More precisely, we assess CVC units' innovation performance through a novel approach that leverages rich qualitative data by considering case context and forming set memberships (Douglas et al., 2020; Tóth et al., 2017). We are thereby able to account for the heterogeneity inherent in CVC setups and study performance implications of diverging structural arrangements. We draw on Basu et al. (2016a), who suggest that the alignment between structural arrangements and the resulting relationship to the corporate parent and external search can have a considerable impact on performance.

Second, we contribute by highlighting how CVC units need to adapt their organizational arrangements in relation to their strategic focus. While prior literature theorizes that CVC units, faced with competing institutional demands from both their corporate context and the IVC domain, will align their structural design in the long run with one of the environments, depending on with whom they seek legitimacy (Souitaris et al., 2012), we regard the CVC unit's structural arrangements and responses to permanent tensions as a matter of degree contingent on contextual factors with multiple local optima (e.g., Fisher et al., 2016; McKnight and Zietsma, 2018; Zhao et al., 2017). Specifically, by distinguishing between explorative and exploitative forms of innovative outcomes, we provide a new lens for a more nuanced explanation of CVC designs and performance, allowing for better comparisons across CVC programs (Drover et al., 2017). Prior CVC literature principally distinguishes CVC units according to their level of autonomy from the corporate parent or their overarching objective (Keil et al., 2016; Lee et al., 2018). In contrast, we offer preliminary insights into the heterogeneity present within CVC and extend current knowledge regarding the architecture of CVC units. As our configurations show, there is no one-size-fits-all for either exploitative or explorative innovation-seeking CVC units, providing (further) evidence to our underlying notion that the organizational reality of a CVC unit is more complex than earlier research portrayed.

Third, drawing on Meznar and Nigh (1995), we introduce the concept of *bridging* and *buffering* to the CVC literature. Most successful CVC units (with the exception of C1 & C2) tend to employ different mechanisms of distancing themselves from their corporate parent (buffering) while still maintaining links to the corporate interfaces in the form of collaboration and leadership involvement (bridging). Given that there is an emerging discourse on how the distinct corporate logic and the professional logic within the IVC domain can be reconciled within CVC units (e.g., Ahlfänger et al., 2020; Pahnke et al., 2015; Shankar et al., 2024; Souitaris et al., 2012), our findings could also be interpreted as similar to Perkmann et al. (2019). Thus, we give a new direction to the research on CVC units by showing how they act as structural hybrids, integrating logics locally within a bounded space to leverage corporate logics for the benefit of the external startups without hybridizing the existing logic inside the corporate host organization (Perkmann et al., 2019), as we illustrate the bridging and buffering mechanisms inherent in the organizational design of the hybrid. Moreover, we extend and deepen this discourse, both in general on structural hybrids and specifically with respect to CVC units, by showing that they can be configured in multiple equifinal setups to effectively act between corporate logics and the logics normally surrounding the ventures in which they invest, contingent on the specific context and the exact strategic intentions of the focal organization.

Finally, given the location of CVC units at the boundary with the strategic management domain and our choice of outcome variables from the realm of ambidexterity theory, we also show how they can be configured to optimally contribute to different strategic outcomes. Thus, our findings may also contribute to the ongoing discussion of how firms can organize themselves dynamically and use CVC investments to build an "external corporate venturing capability," i.e., an "ability to develop new capabilities and to reconfigure existing capabilities in the process of building new business areas outside of the current business focus of the corporation" (Keil, 2004; p. 809).

5.2. Limitations and future research

We shed light on the tensions CVC units face and highlight the need that in order to achieve innovation performance, CVC managers must balance demands and expectations from two distinct worlds simultaneously as a function of a CVC unit's strategic focus and maturity. We use these findings to better inform the literature on CVC and its quest for the performance implications of these programs (Huang and Madhavan, 2020; Ma, 2020).

For the purpose of this study, we made several assumptions. First, we assumed that CVC units are intended to prioritize the goals of their corporate parent (i.e., strategic performance in general and innovation performance in particular), which is in line with recent

endeavors into the performance effects of CVC (cf. Huang and Madhavan, 2020). In our investigation, we did not encounter a single CVC unit that solely focused on financial metrics (similar to findings by Souitaris et al., 2012). Performance was always considered either purely strategic in nature or a mix of strategic and financial performance. This assumption leaves room for further inquiries into the dual strategic and financial objectives of CVC units.

Although our detailed case descriptions provide valuable insights into the cases we investigated, we can only partially eliminate alternative explanations. We acknowledge that our research might not encompass all potential factors that could account for high or low performance. Therefore, we suggest that further research could explore other conditions (e.g., compensation schemes, emphasis on corporate or external staff) not considered in our study. We assumed a significant degree of agency of CVC units and their management. Empirically, the degree of agency varied across cases, and unsurprisingly was often greater in those CVC units that were more mature and enjoyed more independence. Across all cases, however, we found multiple signs of agency, but we acknowledge the possibility of cases where this might not exist. Regarding the nature of the agency CVC units possess, discussions surrounding "embedded agency" in the literature on institutional change and institutional entrepreneurship (Battilana and D'Aunno, 2009; Greenwood and Suddaby, 2006; Seo and Creed, 2002) offer an interesting arena for future investigation (Dalpiaz et al., 2016; Walker et al., 2014).

The purpose of this study was not to create a typology of CVC units, but rather to understand the different mechanisms and structural arrangements CVC units leverage at the interface with the corporate parent and stress the heterogeneity inherent in these CVC units that make it difficult to generalize and quantitatively compare their outcomes. We believe that a configurational approach can extend recent qualitative inquiries that already tapped into CVC heterogeneity (Basu et al., 2016a; Shankar et al., 2024; Souitaris and Zerbinati, 2014) by providing a more holistic view of CVC units and build a bridge to quantitative inquiries. However, we acknowledge that our methodological approach is both a limitation and an opportunity for future research. Organizations are increasingly confronted with a multiplicity of demands through a more diverse stakeholder base and an ever-increasing complexity (Battilana et al., 2017). The more complexity these organizations face, the more difficult measuring their performance becomes. Hence, measuring the performance of CVC units is challenging, and our approach (which resembles that of Waldkirch et al. (2021)) leaves room for future research to create instruments that are even better able to capture CVC performance. For example, while we operationalize the innovation outcomes of CVC units through established measures and in line with theoretical definitions, our outcome conditions, each consisting of three distinct variables, and our qualitative coding process may not fully capture the results of the CVC units' activities. This limitation is particularly relevant in the case of explorative innovation performance due to its "less certain outcomes, longer time horizons, and more diffuse effects" (March, 1991, p. 73), which complicate measurement and make it more difficult to distinguish between mere efforts versus actual implementation and resulting performance-enhancing effects. However, the use of measures based on typically much less ambiguous quantitative longitudinal data structures, such as patent data assessment, also would carry significant disadvantages, as they provide only a partial view of firms' technology activities (since not all inventions are patented) (Ugur et al., 2024). We therefore invite other researchers to use our study design as a starting point to develop even more comprehensive and precise indicators to measure CVC units' innovation performance in particular and strategic performance in general. Such comprehensive measures may also include more prominently indirect and oftentimes neglected pathways to strategic benefits through CVC units' activities for their parent firms, such as increased capabilities to sense and shape future opportunities, the assessment of new markets and field domains, and other long-term and spillover effects (Danneels and Miller, 2023). However, we find such alternative measures for performance in CVC to be rather complementary and not mutually exclusive to the ones chosen in this study, as explorative innovation, in particular, refers to more long-term oriented effects (March, 1991). It would also be interesting if other researchers extended our study approach to strategic effects only secondarily related to innovation, such as positive signaling effects through an improved corporate image or the promotion of entrepreneurship within the firm (Ernst et al., 2005).

While the fsQCA methodology chosen for this paper allows us to develop detailed insights into the construction of individual successful CVC units and the inductive generation of theory, this does not mean that these insights are generalizable to the average CVC unit (Douglas et al., 2020). Thus, we suggest that other researchers should attempt to replicate some of our findings across a larger number of cases, using more inferential types of statistics, in order to develop insights with a higher degree of generalizability and to ensure causality among the independent variables, their interaction, and dependent performance variables. Another shortcoming of our fsQCA approach is its limited ability to control a large number of optional CVC designs and potential success determinants (e.g., Frey and Kanbach, 2023), as the number of conditional variables should be kept low to ensure parsimony and interpretability of the results (Greckhamer et al., 2018) as well as to avoid problems due to limited diversity (Ragin, 1987; Soda and Furnari, 2012).

While our methodological approach is not able to provide longitudinal arguments, our results show configurations that are predominantly present in younger or more mature CVC units, suggesting shifts among the configurations as CVC units mature over time. It would be interesting to understand what triggers changes in CVC units' structural arrangements and processes and what effects are the result of such changes. We expect such inquiries to be able to provide a more nuanced view of corporate venturing strategies (Covin and Miles, 2007) and organizational learning (Argote et al., 2020). The evolution of CVC units would also be of interest to institutional scholars studying field-level mechanisms. Some of our respondents pointed to the fact that in order to differentiate from IVC funds, CVC units created new value propositions to startups (Gutmann, 2019; Huang and Madhavan, 2020) that IVC funds have begun to mimic themselves. While prior research has largely looked at how and when corporations adapt to the IVC logic (Gaba and Meyer,

2008), it is intriguing to understand under which circumstances these adaptation mechanisms reverse. Additionally, it's important to note that any research comparing organizations at different maturity stages might grapple with survivorship bias. Acknowledging this, our study adopted a broader calibration for the maturity dimension, encompassing practices from both the CVC and IVC domains.

Lastly, our inquiry focused on the structural interface between CVC units and the corporate parent. The study of this dyadic relationship could be extended beyond organizational structures and extend to a triadic relationship and incorporate portfolio companies into their analysis to understand which startups thrive under which CVC configuration. In this regard, it could also be possible to include a portfolio view on the investments the CVC unit undertakes and understand how portfolio companies use buffering and bridging in their interactions with the corporate investor. Extant studies on corporate incubation already outline that new ventures can profit from being protected by sponsor resources (Amezcua et al., 2013).

5.3. Managerial implications

When designing CVC units for innovation performance, there are several crucial managerial implications that suggest practitioners ought to adjust their operational strategies accordingly. Our findings underscore that heterogeneity is a defining characteristic of CVC configurations. Aligning the structural arrangements of the CVC unit is vital to facilitate productive exchanges and ensure support from both the top management team and business units. This alignment substantially impacts performance outcomes, depending on the CVC unit's strategic orientation (exploitation vs. exploration) and its maturity. Hence, practitioners are advised to avoid the temptation of applying a "one-size-fits-all" model to CVC setups. The organizational structure of CVCs is complex and cannot be simplified, regardless of whether their objective is exploitative or explorative innovation. Instead, there are several optimal setups depending on contextual factors. Our research highlights the concept of buffering and bridging as an essential aspect of CVC management. Although CVC units may benefit from some autonomy (buffering), especially from BUs, it is crucial to establish strategic links (bridging) with the corporate interface, especially in terms of collaborative and leadership aspects. This insight should encourage practitioners to rethink the structure and objectives of their CVC unit and to pursue a setup that helps the CVC unit skillfully navigate the sometimes-conflicting demands of the corporate parent and the IVC domain.

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CRediT authorship contribution statement

Magnus Schückes: Writing – review & editing, Writing – original draft, Visualization, Investigation, Conceptualization. **Benedikt Unger:** Writing – review & editing, Formal analysis. **Tobias Gutmann:** Validation, Supervision, Investigation, Data curation, Writing – review & editing. **Gerwin Fels:** Validation, Software, Methodology, Investigation, Formal analysis, Data curation.

Declaration of competing interest

None.

Data availability

The data that has been used is confidential.

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Appendix A. Calibration key

		0	0.33	0.67	1
CVC-TMT interface	Vertical autonomy	Corporate TMT approval required for all deals	No formal corporate TMT approval required but corporate TMT has a non-controlling vote in the investment committee	CVC unit has full vertical autonomy over investment decisions within certain search fields up to certain investment size threshold	CVC unit is permitted to invest within certain search fields without TMT approval
	Leadership involvement	No direct reporting to the corporate TMT		*Binary*	Direct reporting to the corporate TMT
CVC-BU interface	Horizontal autonomy	BU approval required for all deals	No formal approval required but BU must show interest in collaborating with the startup	CVC unit has full horizontal autonomy regarding investment decisions within certain search fields but BU is consulted prior to an investment	CVC unit has full horizontal autonomy regarding investment decisions within certain search fields from the BU
	Business development team	CVC unit does not have a dedicated business development team		*Binary*	CVC unit has a dedicated business development team
Contextual factors	Maturity (age of CVC unit)	<6 years	≥6 years; <12 years	≥12 years; <18 years	≥18 years

Appendix B. Calibration of dimensions

Case ID	CVC-TMT		CVC-BU	
	Vertical autonomy	Reporting structure	Horizontal autonomy	Business development team
1	"We have a quorum or a majority of votes within the venture's unit. So, we have the ability to do deals ourselves." "We can do up to 10-million-dollar initial investment entirely within the group. For anything above that we've got a growth board that we go up to. That includes the heads of the business units where we get sign off for larger investments. But that really is fairly rare."	"[The CEO of the CVC unit] is the chief innovation officer for all of [the corporate parent] although she still retains the CEO position of the CVC unit; she's still CEO of the CVC unit. Now the funding for it and the support for its existence continues to come from the CEO at the highest level of the corporate."	"The business units have one vote on the investment committee. There are five votes, the business unit has one (…) So, we do get their input but (…) they don't control the vote."	"The account managers own the investments from cradle to grave. They bring it to the investment committee for approval. They are responsible for the ongoing monitoring. They will sit on the boards or the observer positions within the investments and they will also be responsible for the interaction between the startups and the business units."
	0.67	1	0.67	0
2	"But I would say the strategy is being owned and optimized … by the [CVC unit] not by the corporate parent." "[The corporate parent says] here you have 1 billion euros or 200 million euros every year. What do you do with this money is best decided by you because you are the investment expert."	"The [CVC unit] reports to the board of [the corporate parent] which allows us to communicate directly."	"The investment decision … is made by the partners [of the CVC unit]."	"So, you typically have one person within the [business development] team who is … responsible for the startup [and] … works very closely on actual products and on a project with the startup. [In addition] there is always one [investment] team member responsible for the investment."
	0.67	1	1	1
3	"At the end of the day, it's within the investment team and the CEO that the decisions are taken. The CEO does the approval, all the time."	"The boss of the CVC unit reports to the CEO and the CFO."	"[The strategy] comes directly from the CEO, and we work with the business units, and because, as I said earlier, we really want to stay close to the market, when we do an investment."	"I cover the ecosystem, and [the rest of the team] are more experts on vertical markets; we have someone who does gaming; we have someone who does design, mobile business, and data centers, and high-performance computing (…) and we have someone creating collaborations between the corporate and the startups."
	0	1	1	1
4	"We have an investment committee, which is actually the investment decision body. It's composed of our CFO, our head of legal, our head of finance (…) Everything which comes into the investment committee has already the approval of the business units, even though nobody of the business units sits in this investment committee."	"[The CVC unit] reports, on the one hand, to the CFO, and then also to the business guys - the board members of the business." "[The CVC unit] is a corporate organization, which is one level beyond C-level."	"The business units are heavily involved, because when we invest, and if we consider an investment, we also need to get the buy-in from the business."	"We have set up our activities in two different paths. We have our business responsibilities where it is [about] focusing on the strategic value coming from the corporate [and we have people responsible] when it comes to the investment, when it comes to due diligence, negotiation of term sheets, and final contract."
	0	1	0	1
5	"In the investment committee, it is [the CEO of the corporate parent] and me and two outside advisors. And this investment committee then gives the investment manager a mandate to negotiate a certain term sheet."	"[The CVC unit] reports to the group CEO."	"There are three pillars below the holding. It's two business units and it is the [CVC unit]. And it's not that we have to support the business units. [The CVC unit] is one independent pillar that has to be relevant on their own."	"[We] have two managing partners … who are in charge of running the company (…) and we have four guys who are regionally and technically focused."
	0.33	1	1	0
6	"Depending on the amount, we can either make the decision ourselves …within our investment team. When we want to invest beyond a certain threshold amount, we would then approach our investment committee (…) two-thirds of the investments go without the investment committee."	"We report to one of our board members, so to a member of [the corporate parent's] executive board."	"Depending on the amount, we can either make the decision ourselves …within our investment team. When we want to invest beyond a certain threshold amount, we would then approach our investment committee (…) two-thirds of the investments go without the investment committee."	"We have team members who basically focus on deal flow and investments (…) but we do not have a dedicated portfolio development team."
	0.67	1	0.67	0

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Case ID	CVC-TMT		CVC-BU	
	Vertical autonomy	Reporting structure	Horizontal autonomy	Business development team
7	"The Chairman, the deputy CEO of the Group [are in the investment committee]. They make the investment decision."	"[The venture unit-CEO] reports to … [a business unit] head We are not reporting to the CFO or the finance. We are reporting to a function that both manages all connected things within [the corporate parent] but also has a lot of Innovation Labs, et cetera. We're under one of these development areas that I've talked about."	"We do involve the business units [but] we don't need [a formal approval]."	"We manage [the startup] from an ownership perspective. (…) We can also help them navigate internally, et cetera, and we have a small team that manages the relationship with the [corporate]."
	0.33	0	0.67	1
8	"We have one committee, where we have to present all ideas that we want to do. (…) This committee consists of two-thirds of the Group board, and the chief strategy officer, chief digital officer, head of M&A, head of legal, and so on."	"We have two managing directors, and one reports to the CFO, and one reports to the CTO."	"We don't need to get [the business unit's] buy-in, so it's not that, in the end, they need to sign a paper saying, 'Hey, I want to work with this startup.'"	"We have basically two streams within the team. We have the classical investment-management roles that are the guys who look after the investments from a financial perspective, and we have one stream called venture development (…) where it's more about leveraging the strategic combination between the startups and the group."
	0	1	1	1
9	"We have an investment committee that is comprised of the Chief Technology Officer, the head of operations and a relevant business unit manager. They approve a deal. Above a certain dollar threshold, it goes up to the CEO and the CFO."	"We report up through the head of R&D which is our [corporate] CTO, Chief Technology Officer."	"The way we structure the deals is that we always have a head of the investment from the [corporate] side, and then someone who is supporting it from the business unit side or from R&D."	"We do not have a dedicated development team."
	0	0	0	0
10	"The business area needs to go to the investment community with us to defend that investment." "In the investments committee, as members, there is my boss, and myself. He's the chief digital commercial officer of [the corporate parent] (…) And then we have the guy responsible for strategy and corporate development."	"My boss is the chief innovation officer. Then we have his boss. He's the chief digital commercial officer of [the corporate parent]."	"The question is: Do we have a business function? Do you have a working plan for that company?" "The business unit is not a member of the committee, but we invite each business unit, according to the opportunity that we are evaluating."	"[I do not have a business development team] in my team, but … there is a team that organizationally is [part of a separate unit], but they work for us. (…) Their job is to gather the companies and have them work with [the corporate]. They don't report to me. They report into my colleague, who manages [the separate unit]." "We are not into [the startups] day-to-day. Usually, we get involved if things are good, or if things are bad."
	0	0	0.33	0
11	"The VC committee [consists of the] CTO, CFO [and the] chief strategy officer."	"[The CVC unit] reports to the VC committee [that consists of the] CTO, CFO [and the] chief strategy officer."	"There is no link in decision-making to business units, so we don't need a sponsor or a buy-in, so it's really set up at arm's length." "There's no one allowed being in the committee that actually has operative responsibility for a certain business unit because then you would actually bring people into a conflict of interest."	"No, we don't have [a] split [between investment managers and development managers] as of today."
	0	1	1	0
12	"Again, we could make an investment decision as a venture team and say, 'Hey, we want to do an investment in this deal. We can't do that investment until we get the advisory board sign off', but they sign off on the strategic relevance. (…) The advisory board consists of	"We're part of the research and organization group and report directly to the CTO."	"We need to get [the business unit] to support a deal, but it doesn't require that there is some sort of defined agreement with the business unit. We need the business unit to say, 'Hey, this is the type of stuff, why we're excited about this startup, here's	"We've got … people who are … internal consultants … who try and help guide things to business units or understand what the business units are looking for innovation or where they could provide benefits. [And] we have a team that's more on the investment side."

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Case ID	CVC-TMT		CVC-BU	
	Vertical autonomy	Reporting structure	Horizontal autonomy	Business development team
	people from the C-level of the corporation."		the type of things we can do with the startup.'"	
	1	1	0.33	1
13	"For investments our individual wire is about $15 million (…) above we need our President of [the CVC unit]'s, and our CFO's approval, but below $15 million, our CFO and [the President] have delegated that to the investment committee."	"For us, the reporting relationship has generally been to the CEO. That's the way it is now; a few exceptions."	"We have a six-person investment committee, myself and four other senior managing directors, plus a representative of our CFO who is the controller for [the CVC unit]."	"We have investment professionals … [and] we have portfolio development [managers]."
	0.67	1	1	1
14	"We need CEO management board approval."	"Ultimately, we report to our CFO."	"We require business unit approval for the deal." "I've seen many, many CVCs say that's a disadvantage that you have to have the business unit's approval. I disagree. I disagree- I strongly disagree."	"We are in the process of setting up a [development team] … I think that's something really beneficial to have, especially once the portfolio grows."
	0	1	0	0
15	"Pretty early in the deal assessments, we get the advisory board involved. They confirm the strategic fit. Then, the decisions whether we invest in the startup is done by our team." "[The investments are] proposed by [the CVC unit] and approved by the advisory board, and effectively, in the end, also our CEO, the [corporate parent's] CEO, has to put his signature underneath."	"[The CVC unit] reports to the CEO."	"The business unit also gets involved early to confirm the strategic relevance for [the corporate]."	"For the last year and a bit, we have a [development] team… and their focus is indeed only helping [the corporate parent] to cooperate with startups. They are not part of the investment team."
	0	1	0.33	1
16	"We have to have a business sponsor and a champion in our investment committee. Those are the ones that make it over the line." "There has to be the COO … associated with championing the deal that we're bringing forward, because it's the COO who has to raise their hand and say we're going to deploy this technology, … or this is critical to helping create a future business for [the corporate parent]. There's a real business person in the room responsible for some aspect of [the corporate parent] operations that has to stand in the room and champion the deal."	"We essentially sit right under the executive office. It also took time and some successes to generate that kind of visibility that showed that venturing could be a powerful tool." "Now, it's held at the level of the CEO, but that took a while to get there."	"We have to have a sponsor [from the business unit], and they have to sign off on it."	"So far, we do not have a dedicated business development team that predominantly creates collaborations between the startups and [the corporate parent]."
	0.33	1	0	0
17	"The … approval process is we get a signature by the head of the corporate VC team … Then there is … [the division head of the] Strategy and Technology Division." "There is no corporate C-level required to approve a deal."	"Within [the corporate], on group level, there's a division called Strategy and Technology Division that we belong to." "The head of the [strategy and technology] division, he reports to the board of directors, [the chief innovation officer], within [the corporate]."	"The business units do not need to give a formal approval. [For example, it is enough if] we find the business unit is … saying, 'Okay, this is a very interesting technology.'"	"[We have open innovation managers] … that have the opportunity to create certain POCs for startups."
	0.67	0	0.33	1
18	"[In the investment committee] there is the CFO, the CSO, and our CEO is aware of the investments."	"[The CVC unit is] two levels below strategy."	"If we're doing it in collaboration with, [the business unit] then we [need an approval]. In the other cases, we just lay down the strategic benefits without formal approval from a certain business	"There's no split between an investment manager and a development manager."

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Case ID	CVC-TMT		CVC-BU	
	Vertical autonomy	Reporting structure	Horizontal autonomy	Business development team
			unit." "Having the stamp of approval from [the business units] saying, 'We need this,' will streamline that conversation quite a bit."	
	0	0	0.33	0
19	"Our investment board is made up of [corporate] senior executives… They give a thumbs-up or thumbs down." "We have three of our commercial leads in [the investment committee] - our top two business unit leaders, … our regional business unit leaders. We have our CFO. We have one of our corporate counsel."	"The fund reports into our head of strategic planning, who reports to the CFO."	"We do not need formal approval from the business units." "We do, obviously, talk about [a startup-business unit collaboration plan] before the investment, but it's all done post-investment and separate from the investment. We want to keep those very, very separate."	"We have employed one person that is responsible for creating the collaborations between the startup and the business unit."
	0	0	0.67	1
20	"I … have a monthly review with our investment committee, which is the chief executive officer, chief technology officer, and chief financial officer of the [corporate parent] company … They approve the deals that we bring forward."	"As of today, there is no direct reporting to the board level."	"The business units are consulted by that portfolio development team … but we don't ask for their blessing."	"We think of the team in two units - an investing team and a portfolio development team."
	0	0	0.67	1
21	"The final vote going to the execs would be our CFO, CEO, CTO … [They] have to sign off on the investment to get it approved."	"Right now, we report to the [head of] strategy and M&A [which reports to the CEO]."	"Not that [the business units] have veto power or that they're dictating the areas we can invest in." "It's just double checking [with the business units], making sure that we're not stepping on anybody's toes internally because there's a lot of programs going on at any one time at [the corporate parent]."	"We have a dedicated business development [team]."
	0	0	0.67	1
22	"At the corporate level, we have to have the CEO and CFO support … we've got to get the CEO and CFO on board [to get an approval]" "No deal … will get done without the support of the President of business units. We will need his support, which we have a process for getting that support."	"When you go to [the BUs] for approval, the perception is that they slow you down, potentially, making less than ideal decisions. On the other hand, you then have the buy-in of that team who will then support you, and who knows why you did the investment and should be supportive of it in the future."	"[The head of the venture group] reports to the CEO of the [the corporate]."	"No, we don't [have a dedicated business development team]. That's a great function to have on corporate venture teams. We don't."
	0	1	0	0
23	"No one from the top management team needs to approve a deal."	"[The CVC unit] reports directly to the CFO."	"We don't require business unit approval or a sponsor for an investment decision. We make those decisions within the venture team."	"We have a platform team that works with our portfolio companies on business development efforts; finding partners, working on pricing strategy, things like that."
	1	1	1	1
24	"We make it all of the investment decisions solely within the venture team."	"There are three board members that the CVC unit reports to. This is the CFO of the [corporate], this is the board member for our development and research area. And there is a board member that has a quite broad role being responsible for all of the brands and all of the digital businesses within the [corporate]. The fourth member that we are reporting to is the leader of the [corporate] strategy."	"We make all of the investment decisions solely within the venture team."	"We have a division of work as in every fund, a hierarchy where there are partners, there are principals and associates focusing on our… focusing on our investment activities. Then we have operational roles such as CFO, team assistance. And then we have the platform team, focusing on the value-adding activities. These teams are split."

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Case ID	CVC-TMT		CVC-BU	
	Vertical autonomy	Reporting structure	Horizontal autonomy	Business development team
25	1 "We have three full-time members of the investment committee, which is the Vice President of M&A, a managing director, and the CTO of [the corporate]. Then we have two members rotate every two years."	1 "[The CVC unit] is under the M&A department, which hangs under the CFO."	1 "The investment decision is not going to sit with the business unit, it is going to sit within the VC team and, obviously, the investment committee, who we present it to."	1 "We are still too young to have developed in that direction and created no business development team."
26	0.33 "No one from the [top management] team itself is a member of the Investment Committee. Instead, we have a so-called Advisory Board. The investments are presented there by the managing director but they are only informed."	0 "Report current deal flow to advisory board composed of members from C-level and TMT."	1 "We collaborate closely with various business units to ensure our investments align with the broader business strategy but we still are the only ones who decide where we invest and we do not need consent from the businesses."; "We informally help portfolio companies connect them to our core business, but we don't have an integrated business development team focused exclusively on connecting to the core."	0 "We have an integrated business development team that supports the development and growth of our portfolio companies."
27	1 "Our CVC unit has full autonomy when it comes to investment decisions. We have earned the trust of the parent corporation and operate independently."	1 "The strategic decisions and ventures are closely tied to the overall objectives of the organization."	1 "We are independent from the core business. Sometimes when we need expertise from a BU we contact someone and collaborate with them. But this is rather an exception. If we would coordinate everything with the core business we would be too slow."	1 "Our dedicated business development team is committed to fostering growth and driving business development for our portfolio companies."
28	1 "In the end, we need the approval of others. In fact, depending on how high the investment is, we would need the consent of two [corporate top management team members]."	1 "We report to and maintain a direct line of communication with the TMT, keeping them informed about our investment activities and the progress of our portfolio companies."	0.67 "We have found that we do not need a sponsor to get the investment approved, even if it is an exciting topic. However, because of this strong strategic alignment, it is not easy to decide what to do with it and this is why we still involve the business units here and there."	1 "We have a dedicated team that focuses on nurturing our portfolio companies and helping them realize their full potential."
29	0.33 "All our investment decisions are subject to the approval of the top management team. Their strategic insights are invaluable to our investment strategy."	1 "There is no formalized reporting structure to the TMT in place."	0.33 "While we maintain a small level of autonomy, we still often consult with specific business units that have relevant expertise for certain investments."	1 "In our structure, each investment manager is responsible for supporting and growing their respective portfolio companies, so no, we do not have dedicated business development professionals."
30	0 "Our investment decisions are guided by the top management team. Their strategic vision forms the backbone of our investment strategy."	0 "We report directly report to the CFO."	0.33 "We need a link to core business to make an investment decision. They are part of our due diligence process."	0 "We have a dedicated CVC team that works to develop our portfolio companies and help them reach their full potential."
	0	1	0	1

Appendix C. Illustrative GMET coding

Generic Membership Evaluation Template (GMET) case number:		18	
Generic Membership Evaluation Template (GMET) for:		CVC innovation performance	
Overall case description from outcome perspective	Case 18 is a corporate venture fund of a multinational telecommunications company that invests primarily in areas of the parent company's expertise, with both a short and long-term perspective. It has made 39 investments with €350 million under management.		
Dimensions	Context-specific description	Direction/effect on membership	Illustrative quote(s)
	Exploration		
Creation of options on emerging technologies for parent firm (Hill et al., 2009)	Case 18 is investing into future-oriented technologies and markets.	Positive	I think we could do the diligence on that end, because we're looking for results. We could expect KPIs to identify and manage that. If it was more core technology, like, let's say, the infrastructure technologies, we would then need a lot more technological support, because it goes into a lot more expertise, and depth than what we could potentially provide. The technology diligence, I think, requires collaboration on both ends, but who takes the majority of ownership will depend on that opportunity, and the type of need, and how deep it touches our core tech.
Investments in disruptive technologies that potentially cannibalize existing technologies for parent firm (Hill and Birkinshaw, 2014)	Case 18 was set up with a certain autonomy to make investments in disruptive technologies and avoid having buy-in from the business.	Positive	If we're too close to a business unit, then the types of deals, and opportunities we look for are too close-term. It's not disruptive. It may or may not provide a lot of insight, like future-forward thinking, because we're looking too closely for alignment with the business unit. Having the autonomy to invest in these sectors that our companies operate in, and investing outside of our scope, and investing in potentially disruptive, or competitive companies may be a good thing. Again, this is where I talked about the company's culture, risk appetite, and what they're looking for - the objective of their investment. Some groups are more closely aligned to existing business units, because their industry is being threatened. Whereas certain industries, they know that new technologies are coming, like AI, and blockchain, et cetera, where they're still considered frontier technologies.
Investments in (technological/market) domains relatively unrelated to the current corporate domains (Hill et al., 2009; March, 1991)	Case 18 invests in both technology companies that fit the parent's core, but also beyond. Within the evaluation of venture technologies, it collaborates with different people from the parent organization to make sure it is strategically relevant.	Positive	We're looking at investing in new innovative technologies, and/or business models, so, again, it focuses on the fringe … being forward thinking on where the industry is changing, and investing in those areas, so that we will be better prepared as the landscape changes.
	Exploitation		
Improvement of parent firm's operational excellence (improvement in product quality or reduction in cost)(Weber et al., 2016)	Case 18 has established formats to identify problems within the parent organization, and this paves the way for scouting ventures in these areas that help tackle these problems. However, no actual performance improvements stated.	Negative	I joined to help build this program, and then, internally, things shifted, and then this new LP structure thing came about. Before we could fully execute on that, or even push it forward, we had to stop, and slow things down until we understood how our investment activities are going to change. Having said that, I think a lot of this process will still be applicable to help build strategic partnerships and look at ways to create

(*continued on next page*)

(*continued*)

Generic Membership Evaluation Template (GMET) case number:		18	
Generic Membership Evaluation Template (GMET) for:		CVC innovation performance	
Overall case description from outcome perspective	Case 18 is a corporate venture fund of a multinational telecommunications company that invests primarily in areas of the parent company's expertise, with both a short and long-term perspective. It has made 39 investments with €350 million under management.		
Dimensions	Context-specific description	Direction/effect on membership	Illustrative quote(s)
			strategic alignments between a startup company of various shapes, and sizes, and stages included, with our business units; essentially, taking a more consultative selling approach to work together. You could call it design thinking if you'd like, but really identifying the problems, and then sourcing companies accordingly.
Increased recognition in rest of corporation of the importance of new business development (Hill et al., 2009)	Case 18 is very diligent in evaluating how the venture can help increase recognition in the rest of the parent firm of the importance of new business development, and how the parent organization can help the venture.	Positive	The needs of the startup obviously is more business development, and partnership would be my guess, but without being able to understand the needs of the corporate, it's really hard to say if this is a fit or not. I think the first step really is to facilitate conversations. I think that's the most important thing is let's start putting our ideas, and thoughts around together, and then figuring out what we could do with this together. It has to go through this process from facilitating conversations, sharing ideas, then to slowly formulate a problem or opportunity, and going down this process. I think we need to start with that before we could make any prescriptive comments. Your question, I think, is more like a one, or this or the other type binary thing. My answer to you is it depends, but we have to slowly create alignment, and interest before we could do anything in any of these spaces, regardless if it's investments and/or business development deals.
Investments in (technological/market) domains related to the current corporate domains (Hill et al., 2009; March, 1991)	Case 18 has established formats (design-thinking-driven) to identify problems and set up a consultative selling approach to bring their ventures to the business units, which drives the development of new products in existing markets, but also shapes the way these products are built.	Positive	Before we could fully execute on that, or even push it forward, we had to stop, and slow things down until we understood how our investment activities are going to change. Having said that, I think a lot of this process will still be applicable to help build strategic partnerships and look at ways to create strategic alignments between a startup company of various shapes, and sizes, and stages included, with our business units; essentially, taking a more consultative selling approach to work together. You could call it design thinking if you'd like, but really identifying the problems, and then sourcing companies accordingly.
Outcome	Explore	Exploit	
Set membership in 3-value fuzzy-set	3	2	
Calibrated value	1.00	0.67	

Qualitative anchors: Meanings attached to fuzzy values
3 Overall intense positive dimensions
2 Intense or various positive dimensions with very few negative dimensions
1 Intense or various negative dimensions with very few positive dimensions
0 Overall intense and various negative dimensions

Appendix D. Analysis of necessary conditions

Conditions	Outcomes							
	Exploit		Explore		~Exploit		~Explore	
	Consistency	Coverage	Consistency	Coverage	Consistency	Coverage	Consistency	Coverage
Vertical autonomy	0.350000	0.665000	0.491785	0.868000	0.484545	0.533000	0.240486	0.297000
~Vertical autonomy	0.754211	0.716500	0.601700	0.531000	0.695455	0.382500	0.893117	0.551500
Direct reporting	0.613158	0.582500	0.774504	0.683500	0.759091	0.417500	0.512551	0.316500
~Direct reporting	0.386842	0.735000	0.225496	0.398000	0.240909	0.265000	0.487449	0.602000
Horizontal autonomy	0.613158	0.685294	0.716714	0.744118	0.786364	0.508824	0.565992	0.411176
~Horizontal autonomy	0.560526	0.819231	0.432861	0.587692	0.513636	0.434615	0.647773	0.615385
Business dev. team	0.543684	0.573889	0.603966	0.592222	0.697273	0.426111	0.594332	0.407778
~Business dev. team	0.456316	0.722500	0.396034	0.582500	0.302727	0.277500	0.405668	0.417500
Maturity (mature)	0.524737	0.680546	0.602833	0.726280	0.635455	0.477133	0.565182	0.476450
~Maturity (mature)	0.596842	0.738762	0.565439	0.650163	0.574546	0.411726	0.675304	0.543322

Appendix E. Summary of robustness checks

Robustness test	Exploit			Explore			~Exploit	~Explore
	Young guided exploiters		BU collaborator	Young ambidextrous		Autonomous corporate explorer	|-None-|	(Similar C3)
	C1	C2	C3	C4	C5	C6		C7
Inclusion of lower PRI scores (threshold: 0.5)	Identical	Identical	Identical	Identical	Identical	Identical	/	Identical
Exclusion of lower PRI scores (threshold: 0.75)	Identical	Does not appear	Identical	Identical	Identical	Identical	/	Identical
Consistency cutoff at 0.85	Identical	Does not appear	Identical	Identical	Identical	Identical	/	Does not appear
Maturity in terms of 5 years VC investment cycles	Very similar	Does not appear	Very similar	Identical	Identical	Identical	/	Very similar
Split analysis for mature and immature CVC units	Identical	Identical	Identical	Identical	Identical	Identical	/	Identical
Ambidexterity check	Does not appear	Does not appear	Does not appear	Identical	Identical	Does not appear	/	/
~ Ambidexterity check	/	/	/	/	/	/	/	Identical

Notes: When comparing the results reported in the paper with the three robustness tests, we coded configurational solutions according to the categories developed by Meuer et al. (2015): identical if there is no change in either core or contributing condition; very similar if there is no directional change in core condition or only further specification as the previous empty condition becomes directional, or vice versa; if the configurational solution no longer appears in the robustness test, this was also indicated. Similar solutions (in case of directional change of core condition) or somewhat similar solutions (most core conditions remain stable, but some core and contributing conditions change) were not observed; irrelevant conditions for specific robustness check were marked with "/".

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