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Born into chaos: How founding conditions shape whether ventures survive or thrive when experiencing environmental change

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Abstract

Research Summary: Integrating research on the persistence of founding conditions and the effects of environmental change, we explore how a venture's performance outcomes following environmental change depend on the venture's environmental conditions at founding. Using a unique sample of 1,060 new ventures from a comprehensive survey of university alumni, our analysis indicates that the interaction of high environmental dynamism at founding and a functionally diverse founding team is beneficial to venture survival when environmental dynamism increases over time. However, the same founding conditions result in a decreased likelihood of positive exit when environmental dynamism decreases.

Managerial Summary: This study examines the interplay between environmental change and internal team composition, revealing how best to benefit from the potential created by environmental change. We find that (relative to functionally homogenous teams) founders that assemble more functionally diverse teams survive longer when facing increasing environmental dynamism. In contrast, a more functionally homogenous team is better able to capture opportunities when environmental dynamism decreases after founding. While predicting the course of environmental change is difficult, entrepreneurs who can synchronize their predictions of change with their decisions regarding team composition can

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enable better venture performance. This study also highlights the importance of developing capabilities to enable flexibility in decision-making processes, which are often inflexible, limiting the ability to take advantage of unique opportunities provided by environmental change.

KEYWORDS
entrepreneurship, environmental change, environmental dynamism, firm performance, teams

1 | INTRODUCTION

As ventures grow and mature, they must navigate the opportunities and challenges presented by environmental change. Recently, scholars have emphasized the importance of expanding research on the enabling role of environmental change (Davidsson, Recker, & von Briel, 2020; Kimjeon & Davidsson, 2021). Prior research of that kind has revealed, in particular, how environmental change can influence ventures' performance outcomes (Eberhart, Eesley, & Eisenhardt, 2017; Hmieleski & Baron, 2008; Hmieleski, Carr, & Baron, 2015; Shepherd, Douglas, & Shanley, 2000). For example, changing environmental conditions affect ventures' ability to deliver innovative products and services (Bu & Cuervo-Cazurra, 2020; Conti, 2018), their growth rates (Abootorabi, Wiklund, Johnson, & Miller, 2021; Bartz & Winkler, 2016), and their exit outcomes (Bennett, 2019; Eberhart et al., 2017; Hiatt & Sine, 2014; Shepherd et al., 2000).

Environmental change research tends to highlight the effects of environmental change on venture performance outcomes with a focus on the influence of *recent* environmental conditions (Abootorabi et al., 2021; Bartz & Winkler, 2016; Hiatt & Sine, 2014).[1] For instance, prior work indicates that ventures are more likely to survive and grow when their recent environmental conditions are munificent (Bennett, 2019; Partridge, Rohlin, & Weinstein, 2020). However, prior theory in this stream has not explored how the relationship between recent environmental change and performance outcomes is contingent on a venture's past, including its environmental conditions at founding—the type of environment a venture is "born into."

A separate stream of literature has shown that conditions at founding, including environmental conditions, may have a profound and persistent influence on ventures over time (Boeker, 1989; Marquis & Tilcsik, 2013; Stinchcombe, 1965). Studies in this stream consistently find that environmental conditions at founding persistently shape ventures' internal processes and thus venture performance outcomes (Marquis & Qiao, 2018; Simsek, Fox, & Heavey, 2015). Although this line of work has produced ample insights on the relationship between various conditions at founding and future venture performance outcomes, this stream of literature has yet to explore how environmental change over time may alter the founding period's lasting effects.

Moreover, it is clear that recent environmental conditions are a critical factor that determines the effectiveness of a venture's internal processes (Baum, Locke, & Smith, 2001; Ensley, Pearce, & Hmieleski, 2006; Hmieleski & Baron, 2008). If environmental conditions at founding have a lasting influence on ventures' internal processes, and recent environmental conditions determine the effectiveness of these processes, it is crucial for our theories of environmental change to account for both periods. To address this need, this study integrates arguments from the literature on environmental change with research on the lasting effects of the founding period. We specifically examine how environmental conditions at founding affect venture performance outcomes in the presence of environmental changes later in a venture's life. By combining these two streams of work, we generate insights that extend and refine both.

In terms of founding conditions, we study a critical environmental condition that has been found to influence the effectiveness of venture processes: environmental dynamism (Dess & Beard, 1984; Hmieleski et al., 2015;

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Hmieleski & Ensley, 2007), defined as the degree to which environmental changes are unpredictable for the decision-makers in an organization (Dess & Beard, 1984; Hmieleski & Baron, 2008; Karim, Carroll, & Long, 2016). Since environmental dynamism drives venture performance through its effects on ventures and entrepreneurs, we also examine the role of the entrepreneurial agent (Davidsson, 2015; Davidsson et al., 2020). We thus address the interplay between externally conditioned opportunities and a venture's internal ability to take advantage of those opportunities. Prior research points to founding team composition as an important factor that shapes a team's ability to capture opportunities, including those resulting from environmental change (Beckman & Burton, 2008; Eesley, Hsu, & Roberts, 2014; Leatherbee & Katila, 2020). In particular, functional diversity has been shown to exert significant influence on team dynamics and processes (Knight, Greer, & De Jong, 2020; Pelled, Eisenhardt, & Xin, 1999; van Knippenberg, De Dreu, & Homan, 2004). We focus on this facet of influence by the entrepreneurial agent. Altogether, we unpack the performance effects of the interplay of two key founding elements—founding environmental dynamism and founding team functional diversity.

Importantly, we examine the performance impact of the founding period in combination with environmental change over time. Overall, we argue that the interaction of founding environmental dynamism and founding team functional diversity tends to produce a unique set of internal processes. If these ventures subsequently experience increasing environmental dynamism, we hypothesize that they will benefit from the persistent processes formed at founding under the more recent increasingly dynamic environmental conditions. However, if these same ventures experience decreasing dynamism, the persistent processes formed in the dynamic founding environment will lose their fit as environmental dynamism decreases and, we argue, venture performance outcomes will suffer. Broadly, we hypothesize that recent environmental change enables improved performance when it fits with internal processes formed at founding.[2]

We test our hypotheses using a unique venture-level dataset generated from a survey of university alumni, which contains 1,060 entrepreneurs across multiple decades of venture foundings. We focus on two key outcomes for ventures: survival and high performance. We find that the interaction of founding environmental dynamism and founding team functional diversity is associated with ventures surviving longer when environmental dynamism *increases* over the lifetime of the venture. In contrast, the interaction of founding environmental dynamism and founding team functional diversity is associated with a decrease in the likelihood of achieving a positive exit when environmental dynamism *decreases* over the lifetime of the venture.

Our theory and findings provide two significant contributions to the environmental change literature. First, we contribute to research on environmental change that has often investigated the impact of environmental change by considering the influence that recent environmental conditions exert on the focal ventures (Bennett, 2019; Kimjeon & Davidsson, 2021; Schmitt, Rosing, Zhang, & Leatherbee, 2018; Venkataraman & van de Ven, 1998). We extend this stream of research by providing evidence of a relationship between environmental dynamism at founding and the venture's ability to benefit from subsequent environmental change.

Our second contribution to this literature is to extend prior theory by revealing a connection between a venture's internal conditions and its ability to benefit from environmental change. Prior environmental change research focuses on how the benefits of environmental change accrue to ventures as a result of recent environmental conditions (Bartz & Winkler, 2016; Roundy, Harrison, Khavul, Pérez-Nordtvedt, & McGee, 2018; Schmitt et al., 2018), leaving the role of internal factors largely unexplored. Specifically, we argue and find evidence that environmental dynamism at founding shapes venture outcomes in the wake of recent environmental change and that the lasting influence of founding environmental conditions on internal processes appears to underlie this relationship. Thus, this study theorizes and finds evidence that whether a venture can take advantage of an environmental change partially depends on both environmental conditions at founding and internal factors.

Finally, we contribute to the research examining the founding period's lasting effects (Marquis & Tilcsik, 2013). Complementing recent research in this stream investigating how ventures can adapt or repurpose founding processes to complement environmental change (Alexy, Poetz, Puranam, & Reitzig, 2021; De Cuyper, Clarysse, & Phillips, 2020), our findings highlight that the persistent effect of environmental dynamism at founding can

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advantage ventures when recent environmental dynamism continues to resemble that at founding. We also refine prior theory by arguing and finding evidence that the persistent influence of the founding period can lead to worse venture outcomes when recent environmental conditions clash with those at founding. Thus, we contribute to a growing stream of research indicating that while founding processes may persist, their roles are fluid, especially as surrounding contexts change (Simsek et al., 2015; Sinha, Jaskiewicz, Gibb, & Combs, 2020; Snihur & Zott, 2020).

2 | LITERATURE REVIEW AND HYPOTHESES

While the broader environmental change research often focuses on the creation of ventures (Davidsson, 2015; Hiatt, Sine, & Tolbert, 2009; Kimjeon & Davidsson, 2021; Shane, 2000; Sine & David, 2003), a subset of this stream indicates that environmental change can also shape performance outcomes. Studies specifically analyzing the relationship between environmental change and venture performance outcomes tend to highlight the influence of rapidly onsetting, discrete environmental jolts (Shepherd et al., 2000; Venkataraman & van de Ven, 1998). In particular, many studies have examined how venture performance outcomes are affected by regulatory jolts (Conti, 2018; Eberhart et al., 2017; Eesley, 2016; Lynskey, 2006), sudden macroeconomic jolts (Bartz & Winkler, 2016; Cao & Im, 2018), and sociopolitical shocks (Dimitriadis, 2021; Hiatt & Sine, 2014). However, a recent stream suggests that even subtler environmental changes can significantly affect venture outcomes (Abootorabi et al., 2021; Bennett, 2019). For instance, a study of the shale boom in the United States indicated that annual increases in energy sector employment were associated with increasing sales and survival rates for ventures (Partridge et al., 2020). Overall, prior research has unpacked environmental change's ability to shape venture outcomes by focusing on the impact of recent environmental conditions encountered by ventures.

A second stream emphasizes that founding environmental conditions shape the processes developed by entrepreneurs at the time of founding (Boeker, 1989; Marquis & Tilcsik, 2013; Stinchcombe, 1965).[3] A venture's initial processes are quickly cemented and embedded in beliefs about how to operate (Bettenhausen & Murnighan, 1985; Boeker, 1989; Bu & Cuervo-Cazurra, 2020). Once established, processes and routines often become difficult or costly to change, especially when integrated into the ventures' structure and culture (Hannan, Baron, Hsu, & Kocak, 2006; Hannan & Freeman, 1984; Howard-Grenville, 2005). The persistence of founding processes is further reinforced as ventures grow and develop through employee turnover. For example, ventures seek to hire compatible individuals who fit within the venture while simultaneously pushing out incompatible employees (Beckman & Burton, 2008; Burton & Beckman, 2007).

A third stream suggests that certain environmental conditions are more favorable because they are better aligned with a venture's established internal features, such as its strategies and processes (Baum et al., 2001; Bayus & Agarwal, 2007; Chandler, Honig, & Wiklund, 2005; Hmieleski et al., 2015). For example, a study of high-growth new ventures indicated that environmental dynamism influenced performance through its impact on the effectiveness of a previously entrenched leadership style (Ensley et al., 2006). Overall, these second two streams suggest that a venture's internal features are shaped by its environmental conditions at founding and that the persistence of these features may underlie a venture's ability to benefit from environmental change over time.

The second stream reveals that founding conditions shape processes at the time of founding. However, the third stream indicates these enduring processes influence subsequent performance based on their alignment with recent environmental change. In combination, these two streams suggest that environmental conditions at founding may play a critical role in determining how ventures respond to environmental change later in a venture's life. By focusing on recent environmental conditions, current theories on the enabling role of environmental change do not adequately account for the continued influence of founding environmental conditions on venture performance. To fill this gap in understanding, it is important to examine how a venture's environmental conditions at founding shape performance outcomes as its environment changes over time.

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2.1 | The persistent effects of environmental dynamism at founding

To explore whether and when a venture can benefit from environmental change, this article examines the lasting influence of environmental dynamism at founding. To have any effect, environmental dynamism at founding must influence an entrepreneurial agent, and we focus on its relationship with the founding team as a particularly powerful agentic force. Prior work indicates that the founding team is a potent force in shaping the enduring internal processes from the founding period (Alexy et al., 2021; Simsek et al., 2015).[4] For example, an analysis of high-tech ventures found that the initial occupant of a particular role at a venture shapes the expectations for how to behave in that role moving forward (Burton & Beckman, 2007).

Founding teams' initial behavior has lasting consequences, yet founding teams tend to behave differently based on their composition (Beckman & Burton, 2008; Knight et al., 2020). Functionally diverse teams develop unique processes as compared to their more homogenous counterparts. For example, functionally diverse teams tend to seek out and exchange large amounts of information because they have a wide variety of viewpoints (Phillips, Mannix, Neale, Gruenfeld, & D., 2004; van Knippenberg et al., 2004). Additionally, functionally diverse teams tend to have a broader focus, attending to several areas such as sales, marketing, manufacturing, and distribution. In contrast, more technically focused teams selectively focus on R&D and innovation challenges (Eesley et al., 2014). Finally, functionally diverse teams also seem to develop more rigorous analyses and engage in more boundary-spanning behaviors, further enhancing their information advantage over more homogenous teams (Milliken & Martins, 1996; van Knippenberg et al., 2004). Overall, functionally diverse teams appear to collect and consider a wider variety of information and perspectives, resulting in more comprehensive discussions than their homogenous counterparts.

However, founding teams do not operate in a vacuum. The team's internal processes are also influenced by what works well under particular environmental conditions, highlighting the importance of considering environmental dynamism at founding in conjunction with founding team functional diversity (Boeker, 1989; Stinchcombe, 1965). For example, in stable environments, fast, centralized decision-making and increased routinization are associated with high performance, whereas in dynamic environments, slower, decentralized decision-making and increased creativity and flexibility are favored (Davis, Eisenhardt, & Bingham, 2009; Eisenhardt & Tabrizi, 1995). When operating in dynamic environments, functionally diverse founding teams will likely adopt processes that enable them to manage the unique challenges of their founding environment.

The uncertainty inherent in dynamic environments rewards ventures for being flexible and maintaining optionality. Additionally, environmental dynamism accentuates functionally diverse teams' tendency to engage in intense debate because they have more varied positions when in dynamic environments (Qian, Cao, & Takeuchi, 2013). When debating their divergent perspectives, teams may uncover doubts about decision-making, thereby decreasing confidence (Bakker & Shepherd, 2017). Overall, ventures founded in dynamic environments by functionally diverse founding teams are likely to adopt risk-averse processes because of the combined influence of their internal team dynamics and the benefits of flexibility.

The processes adopted by functionally diverse founding teams in dynamic founding environments will likely be rewarded by the founding environment, facilitating their persistent use over time. When navigating the challenges of dynamic environments, making accurate predictions about the future is inherently difficult (Davis et al., 2009; Hmieleski & Baron, 2008). Risk-averse processes can facilitate performance by making teams slower to commit to their initial plans, enabling ventures to make productive changes as the unpredictable future unfolds. By contrast, more rigid or aggressive teams commit resources too quickly, and the unpredictability of dynamic environments exacerbates the risks of biased or untested assumptions and ineffective information processing, resulting in poor outcomes (Finkelstein, Hambrick, & Cannella, 2009; C. C. Miller, 2008). More risk-averse processes may mitigate these risks by promoting a more carefully implemented approach and thus are rewarded in dynamic environments (Bourgeois & Eisenhardt, 1988).

Thus, the unique processes adopted by ventures in dynamic founding environments founded by functionally diverse teams will likely enable them to excel in dynamic environments (Keck, 1997). Risk-averse processes likely

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have many distinct influences on team dynamics. However, one readily observable consequence of risk-averse processes resulting from increased discussion and doubt among founding team members is a reduction in decision-making speed (Hambrick & Mason, 1984; Nadolska & Barkema, 2014; Wiersema & Bantel, 1992). Moreover, Bakker and Shepherd (2017) argue that higher levels of environmental dynamism likely accentuate a team's tendency to doubt and discuss in greater detail further reducing decision-making speed. While the unique processes adopted by functionally diverse teams founding ventures in dynamic environments may have many effects, one highly visible implication of these processes is slower decision-making.

Overall, when processes are linked with success in the founding environment, they are likely to be used repeatedly in the formative period of the venture's life. Consequently, these processes become embedded in the venture's routines, guiding future expectations and behavior.[5] Thus, a functionally diverse founding team in a dynamic founding environment is especially likely to produce the unique set of persistent processes discussed above.

2.2 | Environmental change, persistent founding processes, and outcomes

Because the interaction of a functionally diverse founding team and a dynamic founding environment creates unique and enduring processes, their interaction is likely to shape a venture's ability to take advantage of subsequent environmental change. Although a venture's environment changes over time, the processes implemented at founding frequently can be stubbornly persistent (Aime, Johnson, Ridge, & Hill, 2010; Shinkle & Kriauciunas, 2012). However, their persistence does not imply that they maintain their fit with a venture's most recent environmental conditions. On the contrary, the persistent processes are likely to complement only one set of environmental conditions, because dynamic environments favor a different set of decision-making processes than stable ones (D. Miller & Friesen, 1984). Consequently, the direction of the environmental change in dynamism influences whether a venture's persistent founding processes maintain a fit with the environment over time and thus shape the venture's ability to benefit from environmental change.

Whether a venture's persistent founding processes are positively or negatively related to subsequent outcomes depends on the direction of the change in environmental dynamism. On the one hand, if a venture's environment becomes even more dynamic, the venture is likely to benefit from the persistent founding processes formed in the dynamic founding environment. For instance, ventures experience increased survival rates and growth when their internal processes are well aligned with their recent environment (Bayus & Agarwal, 2007; Ensley et al., 2006). When recent environmental conditions resemble the founding environment, processes are likely to remain aligned, especially since both moderate and high levels of dynamism tend to favor cautious yet flexible processes (Becherer & Maurer, 1997; Davis et al., 2009). Moreover, accumulating experience in dynamic environments allows ventures to exploit their founding processes when environmental dynamism increases over time, incrementally improving their founding processes (March, 1991). Over time, ventures may achieve better outcomes because their experience operating in similar environmental conditions remains relevant (Nadolska & Barkema, 2014; Stan & Vermeulen, 2013).

An increasingly dynamic environment would disproportionately reward the risk-averse processes established by functionally diverse teams in dynamic founding environments. Increased dynamism only intensifies the challenges found in a dynamic founding environment. Information becomes even less predictive, and the risks of biased decision-making are exacerbated. The gradual refinement and continued use of these initially beneficial risk-averse processes help offset these challenges. Altogether, we predict that ventures founded by functionally diverse teams in dynamic environments will benefit from increasing environmental dynamism because such ventures can leverage prior experience and continue to exploit their unique and persistent founding processes:

> **Hypothesis (H1a).** When ventures experience increasing environmental dynamism after founding, the interaction of environmental dynamism at founding and diversity in the founding team's functional structure is associated with increased venture survival length.

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Hypothesis (H1b). When ventures experience increasing environmental dynamism after founding, the interaction of environmental dynamism at founding and diversity in the founding team's functional structure is associated with an increased likelihood of positive exit.

On the other hand, a venture's environment could also become more stable. This environmental change would represent a shift toward a more predictable environment, which contrasts strongly with the high levels of environmental dynamism that characterized the founding environment. The persistent processes established at a venture's founding continue to exert influence, even when environments change (Marquis & Qiao, 2018; Shinkle & Kriauciunas, 2012; Wang, Du, & Marquis, 2019). In a study of Chinese entrepreneurs, Marquis and Qiao (2018) demonstrate that persistent beliefs from the cultural revolution in China reduce the likelihood that Chinese entrepreneurs pursue internationalization strategies despite changes in the government's views on foreign capital and expansion.[6] Similarly, ventures with functionally diverse founding teams in dynamic environments will likely continue to rely on their initial processes even in an environment that has become less dynamic.

Processes devised at founding are likely to persist in the face of environmental change, yet these processes do not necessarily continue to fit the most recent environmental conditions. Instead, environments with low levels of dynamism, that is, stable ones, tend to favor distinct processes from those in highly dynamic environments (Baum et al., 2001; Ensley et al., 2006; Hmieleski & Baron, 2008). For example, studying a random sample of American ventures, Hmieleski and Baron (2008) found that implementing business model changes was positively related to venture growth in dynamic environments but that this relationship became negative for ventures operating in stable ones. Therefore, venture outcomes are likely to worsen when ventures continue to adhere to previously formed processes while the environment changes from one state to another. Misalignment between internal processes and surrounding environmental conditions contributes to declining growth, obsolescence, and reduced probability of survival (Barron, West, & Hannan, 1994; Naman & Slevin, 1993; Sørensen & Stuart, 2000).

The risk-averse processes of functionally diverse teams founded in dynamic environments are unlikely to provide similar benefits if the environment becomes less dynamic over time. When environments are less dynamic and thus relatively predictable, being more aggressive may produce better outcomes. In these less dynamic environments, past experience is often relevant to future decisions, so the risks of untested assumptions are lessened (C. C. Miller, 2008). Moreover, when ventures can readily anticipate the future, they do not necessarily benefit from taking their time to be cautious. Instead, ventures may arrive at similar decisions by simply relying on heuristics, making faster and more effective decisions (Bingham & Eisenhardt, 2011). Overall, the continued use of risk-averse processes when environmental conditions have become less dynamic likely produces fewer benefits and may instead detract from a venture's ability to respond effectively to opportunities. Therefore, when a venture's environment becomes less dynamic over time, the persistence of founding processes created by functionally diverse teams in dynamic founding environments will likely produce worse venture outcomes. Overall, we predict:

Hypothesis (H2a). When ventures experience decreasing environmental dynamism after founding, the interaction of environmental dynamism at founding and diversity in the founding team's functional structure is associated with decreased venture survival length.

Hypothesis (H2b). When ventures experience decreasing environmental dynamism after founding, the interaction of environmental dynamism at founding and diversity in the founding team's functional structure is associated with a decreased likelihood of positive exit.

Overall, the persistent effect of the intersection of environmental dynamism at founding and diversity in the founding team's functional structure can lead to better and worse venture outcomes. Figure 1 illustrates the conceptual framework we have put forth. The direction of the relationship is determined by the evolution of the venture's environment over time. (H1a) and (H1b) argue that if the initial environment becomes even more dynamic,

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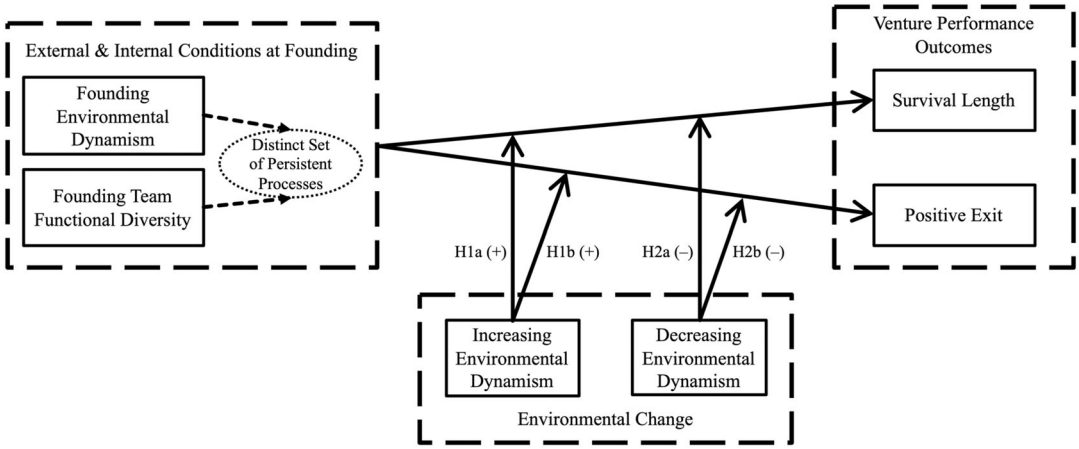

FIGURE 1 Conceptual model

the persistent effects of the interaction between the founding environment and the founding team yield compounding benefits over time. The persistent founding processes, developed to fit the initial dynamic environment, can be further exploited when the environment becomes more dynamic. In contrast, (H2a) and (H2b) argue that when a dynamic founding environment stabilizes, the persistent processes developed to fit the dynamic environment will likely be inappropriate for more recent stable environmental conditions. In sum, the environmental dynamism at founding persistently influences ventures' internal processes (Marquis & Tilcsik, 2013; Simsek et al., 2015). Thus, the direction of environmental change likely influences whether the persistent effects of environmental dynamism at founding are beneficial for venture outcomes.

3 | DATA AND METHODS

3.1 | Data

We analyzed the relationship between longitudinal environmental change and venture outcomes using data from an alumni survey. The final sample consists of 1,060 ventures founded from 1960 to 2011. These ventures are operating in 19 industries ranging from agriculture to energy and utilities, increasing the generalizability of our results relative to single-industry studies.

We rely on an alumni survey for three reasons. First, respondents generally trust alumni surveys more. The survey was administered through official university channels, further boosting its credibility to the respondents and thus producing higher response rates (Burt, 2001; Eesley & Lee, 2021; Hsu, Roberts, & Eesley, 2007; Lerner & Malmendier, 2013). Second, by surveying all living alumni, our sample was likely to have a lengthy time horizon, allowing analysis of varied founding and recent environmental conditions. Third, an alumni survey is advantageous because it enables gathering data from a well-defined population of individuals. By surveying the entire population (all living alumni), this alumni survey avoids bias resulting from selecting on success. We polled all alumni who could have founded a venture, thus avoiding any outcome-based selection, which often affects other data sets on ventures (e.g., datasets comprised of companies with venture backing or accelerator experience).

Although alumni surveys reduce success bias, they may still be affected by two types of sample selection bias. The first type is nonresponse bias resulting from individuals choosing not to complete the survey. The second type of selection bias originates from not all confirmed entrepreneurs providing detailed information on their ventures.[7]

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Our analysis explicitly addresses the second form of sample selection bias by utilizing a two-stage Heckman probit–probit regression. The two-stage model analyzes the relationship between the independent variables and the outcomes of interest, conditioned on the likelihood of respondents providing detailed venture information, estimated in the first-stage analysis.

To form the sample, the authors distributed a survey to all 142,496 living alumni from Stanford University in 2011. Overall, the survey generated 27,780 individual responses for a response rate of 19.5%. The response rates are similar across gender, departments, and graduation year (Eesley & Miller, 2018; Lee & Eesley, 2018). Of the responses, 3,043 confirmed entrepreneurs founded an entrepreneurial venture and provided information on the founding year, industry, location, and venture outcomes. Among the confirmed entrepreneurs, 1,060 provided detailed information on founding composition, comprising our final sample. The sample of confirmed entrepreneurs was updated in 2012 with data from Compustat (public companies) and Dun & Bradstreet (private companies), which were used to verify respondents' self-reported data on venture outcomes.[8]

3.2 | Dependent variables

We examined two types of positive life outcomes for ventures. First, ventures can survive a long time. Therefore, we examine the length of time a venture survives (*Survival Length*). We measure survival length as the length of time between a venture's founding and the last year of its operation, measured in years. Survey respondents indicated the year their venture was founded and reported the last year during which the venture was independently operational. If the venture was currently operating independently at the time of the survey, we used the survey year. Finally, we used the natural log of survival length due to the skewed distribution.

Second, ventures may go beyond merely surviving to achieve a positive exit (*Positive Exit*). We measure positive exits as a binary variable that equals one if a venture underwent an observed initial public offering (IPO) or an acquisition liquidity event and zero if it did not. Although prior research on environmental change has often focused on survival as an outcome, other entrepreneurship research points to the importance of positive exits (Arora & Nandkumar, 2011; Howard, Kolb, & Sy, 2021; Shane & Stuart, 2002). We consider both outcomes in this study to develop a fuller understanding of the role of environmental change. Despite significant heterogeneity among various positive exits, achieving a positive exit is a substantial success milestone for a venture, with significant meaning to a venture's stakeholders (Hannan et al., 2006; Ozcan & Eisenhardt, 2009). Furthermore, positive exits are often used as an indicator of performance in multi-industry studies, as they facilitate comparison across industries (Beckman & Burton, 2008; Beckman, Burton, & O'Reilly, 2007; Eesley et al., 2014). We initially coded survey respondents' self-reported venture outcomes to construct this measure. Then, we verified the self-reported acquisitions of survey respondents using supplementary data from Compustat and Dun & Bradstreet to create a dummy measure for positive exits.[9]

3.3 | Independent variables

Diversity in the founding team's functional structure is operationalized by the number of distinct founding team functional roles (*Founding Team Functional Diversity*).[10] In addition to its theoretical relevance, a structural measure of functional diversity provides an empirical benefit. Other measures of functional diversity that focus on human capital, such as background, are tied to the specific individual in the role. Moreover, we are limited in our ability to verify the retention of specific individuals. However, prior work indicates that the initial structure of the venture can persist despite individual turnover (Beckman & Burton, 2008). Thus, though the human capital of a venture's strategic decision-makers may change, the team's structure will likely persist during the sensitive period in which a venture's initial processes would be formed. To capture this measure of functional diversity, respondents were asked

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to provide their role at the venture's founding and the roles of their cofounders. To standardize who was delineated as part of the founding team, the survey specifically instructed respondents to designate as members of the founding team only those individuals whom all other cofounders would agree were part of the founding team. Respondents were able to identify multiple roles for each team member. These answers were then coded into several major functional areas. Six functional areas are identified in Beckman and Burton (2008): sales and marketing, general administration, engineering, operations, business development, and finance. In addition to these six, one role was added—company head (including CEO, chairman, president, and sole proprietor/owner), because the academic interest in and measurement of the "CEO effect" on venture outcomes has become increasingly prevalent (Hambrick & Quigley, 2014).

Consistent with prior research, we define environmental dynamism as the degree to which changes in key performance indicators (e.g., value-added, profit, customer acquisition) are unpredictable or unexpected by venture managers (Dess & Beard, 1984; Karim et al., 2016). We also follow several other studies by operationalizing environmental dynamism at the industry-level (Ensley et al., 2006; Garg, Walters, & Priem, 2003; Hmieleski & Baron, 2009; Karim et al., 2016). The underlying measure of industry-level economic output chosen to calculate environmental dynamism in this study is value-added, the gross output of an industry or a sector less its intermediate inputs (*Environmental Dynamism*).[11] Value-added was chosen because it is a relevant indicator for industry-level performance. It is also easily measured and accessible at the industry level for all the industries analyzed in this study. The industry dynamism for a given focal year and industry is calculated as follows. For each year in the sample, a regression of value-added on time is calculated for a researcher-chosen number of years before the focal year. Then, the industry dynamism in year t is computed by dividing the standard error of the time coefficient (β_1 in Equation (1)) by the average value-added over the researcher-specified window before year t. The results are reported using a 5-year window.

$$y_t = \beta_0 + \beta_1 t + \epsilon_t \quad (1)$$

We collected annual industry-level value-added data from the Bureau of Economic Analysis (BEA) and matched it with the 19 industries in the sample. We utilized the BEA database for a few reasons. First, the BEA database provides data on value-added by industry, with each industry defined using four-digit NAICS codes. Furthermore, the BEA adjusts industry value-added data for inflation, and the industries were consistently defined based on the 2007 NAICS codes.[12] Using the value-added data from the BEA, we conducted the Dess and Beard (1984) regression over each year in the study and industries using a 5-year window. Each venture's founding environmental dynamism was determined to be the corresponding industry dynamism measure for its industry in the venture's year of founding (*Founding Environmental Dynamism*).[13] For robustness, we also conducted the regressions with 3- and 7-year windows, and the industry dynamism measure was generally consistent.

On average, more uncertain industries, such as Software (average industry dynamism = 0.930), generally have a higher industry dynamism than that of more stable industries, such as Management and Finance Consulting (average dynamism = 0.836). Industry dynamism still changes significantly over time within a given industry. For instance, throughout the 1990s, Software averaged an industry dynamism of 0.91, which is in line with the industry's average level throughout the entire sampling period. However, in 2003, the year after the dot-com bubble crash reached its low, the industry dynamism of the Software industry reached its peak (industry dynamism = 2.363). The 5-year backward-looking window of 2003 used for calculating the industry dynamism measure encompassed the height of the dot-com bubble in 2000 and its crash over the next 2 years. Consequently, in 2003, it would have been especially challenging to make predictions about the Software industry that year, and the high level of industry dynamism reflects that. Figure 2 provides a visualization of the difference in industry dynamism between these 2 years in the Software industry. Similarly, even though uncertain industries are more dynamic on average, any industry can experience high levels of industry dynamism in a given year because the measure tracks the unpredictability of industry-level outputs that vary from year to year. For example, Management and Finance Consulting experienced higher industry dynamism (industry dynamism = 1.400) than Software (industry dynamism = 1.010) in 2010, just after the Great Recession disrupted the financial markets.

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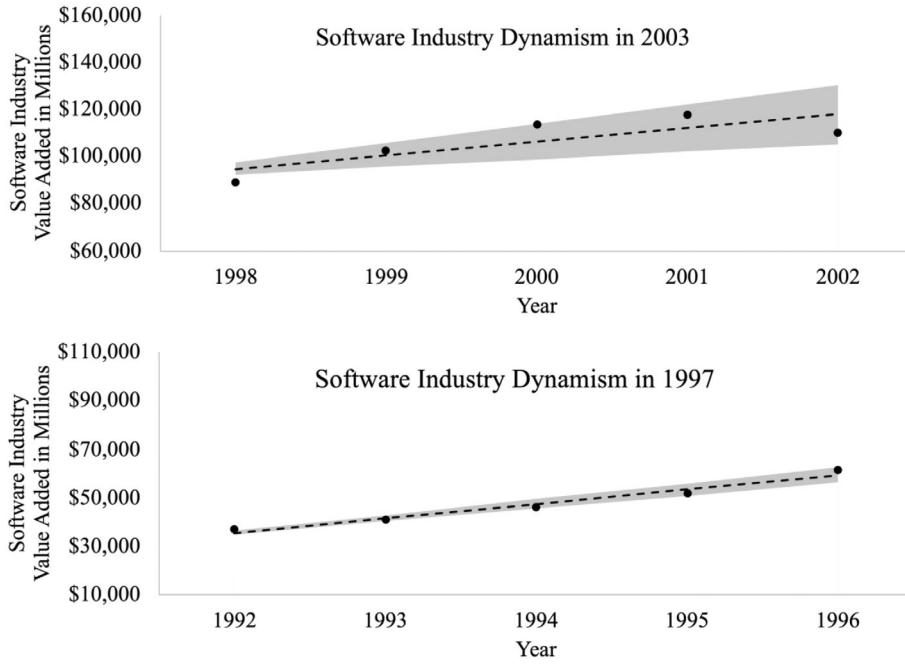

FIGURE 2 Software industry dynamism in 2003 and 1997. The figures visualize the regressions for calculating the environmental dynamism measure in the Software industry for two different years, 2003 (top) and 1997 (bottom). For reference, to calculate a focal industry-year's environmental dynamism, regress value-added on time for a researcher-chosen number of years before the focal year. The environmental dynamism in year *t* is then computed by dividing the standard error of the time coefficient (β_1 in Equation (1)) by the average value-added over the researcher-specified window before year t. Each chart above therefore shows the 5 years of value-added for the Software industry preceding the focal year for which the environmental dynamism is being calculated. The dotted line represents the estimated regression line, and the gray shaded area is a representation of the standard error for each regression's time coefficient. The top chart depicts the Software industry dynamism regression for the focal year of 2003. The preceding 5 years comprise the heights of the dot-com bubble in 2000 along with its crash over the next 2 years. As a result, in 2003, it would have been very difficult to make predictions about the Software industry that year, and the high level of industry dynamism reflects that. In contrast, the bottom chart depicts the Software industry dynamism regression for the focal year of 1997. The preceding 5 years demonstrated relatively stable growth in the industry.

To measure how a venture's environmental dynamism changed after its founding, we calculated each venture's *Recent Environmental Dynamism*. Recent environmental dynamism is equal to the industry dynamism during the venture's last year of operation or during 2011 if the venture was operational when the survey was issued. Finally, the overall change in environmental dynamism was calculated by subtracting industry dynamism at founding from the measure of recent environmental dynamism. A positive value of change in environmental dynamism implies that a venture's environment has become more dynamic since its founding, and vice versa for a negative value. In the regression analysis, the "Increasing Environmental Dynamism" subset of ventures includes ventures with a positive change in dynamism. The "Decreasing Environmental Dynamism" subset includes ventures with a negative change in dynamism. Figure A1 in the appendix provides a visualization of the industry dynamism of the three most represented industries in the data.

3.4 | Control variables

Past research has found that team-level factors, including *Team Size*, *Industry Experience*, and *Mean Age*, affect venture outcomes by shaping a team's cognitive processes and information-processing capability (Beckman et al., 2007;

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Eisenhardt & Schoonhoven, 1990; Smith et al., 1994). In this study, we control for all those variables. Moreover, backing by venture capitalists or angel investors is a strong predictor of venture success (Chang, 2004; Shane & Stuart, 2002). Therefore, we control for whether a venture was funded by venture capitalists or angel investors with a dummy variable (*VC/Angel Funded*). This variable was self-reported by survey respondents and subsequently verified using secondary sources such as Crunchbase. Results are also robust to controlling for funding using a continuous variable of funds raised. Whether a venture pursues a strategy based on innovative technology has been linked to a venture's trajectory (Eesley & Roberts, 2012; Marx, Gans, & Hsu, 2014). Thus, we control for *Venture Innovation Strategy*. This measure comes from a survey question asking respondents to rate on a Likert scale to what degree innovation was the primary source of the venture's competitive advantage. Research also suggests that the role of recent environments must be accounted for (Kimjeon & Davidsson, 2021). We thus control for the recent environmental dynamism described above.

Regarding venture-level variables, we control for venture age (*Founding Year*) and the number of employees in the last year of operation self-reported on the survey (*Number of Employees*). Additionally, conditional on model convergence, we include *Industry Fixed Effects* and *Regional Fixed Effects*[14] to account for the industry-related and the region-related unobserved heterogeneity. Lastly, we control for the respondent's graduation year, as the university could have developed unique characteristics in different eras that might influence a respondent's perceptions and learning (*Graduation Year*).

3.5 | Analyses

We examine how founding environmental dynamism and founding team functional diversity jointly influence whether subsequent environmental changes are associated with improved venture outcomes. We rely on two separate models to estimate the two distinct venture outcomes: survival length and likelihood of positive exit. When analyzing survival length, we used fixed effects OLS regressions. We used the semiparametric Cox proportional hazards regression method to analyze the likelihood of a positive exit. In these regressions, ventures are classified as "at risk" of a positive exit at their founding, and ventures exit the risk set either through death or a positive exit. An advantage of this Cox regression model is that it facilitates handling right-censored ventures, namely all ventures still in operation at the time of the survey in 2011. The Cox model includes right-censored ventures in the set of ventures "at-risk" until 2011, at which point the model classifies them as censored, which is distinct from failed (Morita, Lee, & Mowday, 1993).[15] For the Cox hazard regression, reported coefficients are hazard ratios. Coefficients greater (less) than one signify a positive (negative) relationship with the likelihood of achieving a positive exit.

Our analysis also employs Heckman selection models to address the selection bias associated with the selective revealing of detailed venture info (Certo, Busenbark, Woo, & Semadeni, 2016; Heckman, 1979).[16] If respondents who created less successful ventures were less likely to provide information on their ventures for inclusion in the final sample, our coefficients might be biased. To address this concern, we use Heckman maximum likelihood models to address sample selection bias for the analyses of survival length and positive exit.[17] The first stage of the Heckman model adjusts for this potential bias by estimating the probability that a respondent provided detailed venture information for inclusion in the final sample of 1,060 ventures.

For the first stage, Heckman models require the identification of a variable that affects sample selection—in this case, the revealing of detailed venture information—but that has no direct effect on postentry outcomes, thereby meeting the exclusion restriction. Our analysis relies on the age of the respondents. The older someone is at the time of the survey, the more willing they may be to reveal information about their entrepreneurial efforts. Older respondents tend to have more entrepreneurship experience than younger respondents.[18] With fewer experiences to discuss, these younger respondents are more likely than older individuals to highlight their successful ventures and downplay their failures. However, a respondent's age at the time of the survey should have no bearing on whether their ventures were successful. In sum, respondent age at the time of the survey likely affects sample selection but

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should have no direct effect on venture outcomes, thus meeting the exclusion restriction. The results of the first stage are included in appendix Table A2.

The second stage regresses our dependent variables on the independent variables of interest and an additional parameter, the Inverse Mills Ratio, calculated using the results of the first stage. The Inverse Mills Ratio adjusts the second-stage analysis for the influence of sample selection (Eesley, 2016; Naldi & Davidsson, 2014; Wang, Pahnke, & McDonald, 2022). In the present study, selection into the final sample results from survey respondents selectively revealing detailed information about their ventures. The dependent variables in the second stage of the Heckman models are either survival length, a continuous variable, or positive exit, a dummy variable. Therefore, we use the Heckman OLS regression to analyze survival length and Heckman probit regression to analyze positive exit.

4 | RESULTS

Table 1 provides the descriptive statistics and pairwise correlations. The three most well-represented industries are Management and Finance Consulting (22.7% of the sample), Drugs, Biotech, and Medical Devices (11.8%), and Software (10.2%). The appendix includes an industry and outcome breakdown of ventures in the sample in Tables A3 and A4, respectively. The descriptive statistics (Table 1) show that 9.1% of the sample achieved a positive exit before 2011 and survived for an average of 8 years as an independent entity. The average founding team contains two founders spread across 1.5 functional roles. The average venture was founded in an environment characterized by relatively mild dynamism (0.89 compared to 0.94, which is the average dynamism between 1960 and 2011 across all industries). The average age of a team member is 41, with just under 9 years of industry experience.

In line with expectations, the number of employees and founding team size exhibit positive correlations with positive exits. Interestingly, Angel/VC funding exhibits a slight correlation with survival length (0.003) but a larger correlation with positive exit (0.309). Moreover, the later the founding year, the less likely the venture will survive a long time or achieve a positive exit. Finally, founding team size and the diversity in the founding team's functional structure are correlated (0.696), but there is potential for variety in the number of distinct functional roles in a founding team of a given size.[19] For example, a founding team of four may have the maximum number of distinct functional roles (seven). However, it may have only two distinct functional roles or even one (e.g., a founding team comprising four engineers). The founding team may be purposefully assembled this way, as a lack of diversity in the founding team's functional structure can prove advantageous when pursuing specific strategies (Eesley et al., 2014). Overall, the descriptive statistics are in line with expectations.

4.1 | Main results

Models 1 and 2 of Tables 2 and 3 report the results of the analysis of the subsample of ventures facing increasing environmental dynamism. (H1a) and (H1b) argue that the interaction of founding environmental dynamism and diversity in founding team functional structure will be positively associated with venture survival length and positive exits, respectively, when the environment becomes more dynamic. Overall, H1a is supported, whereas (H1b) is not.

Our results indicate that increasing environmental dynamism is related to a meaningful increase in how long ventures survive for ventures created in dynamic environments with diversity in their founding team structure (H1a). The results from the fixed effects OLS regression Model 1 of Table 2 indicate that the interaction of environmental dynamism at founding and founding team functional diversity is significantly positively related to survival length when a venture's environment increases in dynamism ($\beta = .212$, $p = .010$). Results from the Heckman selection regression provide additional support for this positive relationship ($\beta = .385$, $p = .002$). Moreover, our results indicate that this positive relationship is of practically meaningful magnitude. Considering a hypothetical founding team with three functional roles, the fixed effects OLS regression results (Model 1 of Table 2) indicate that a 1 *SD* increase

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TABLE 1 Variables, descriptive statistics, and correlations

	Variables, descriptive statistics, and correlations							
	Variable	**Mean**	***SD***	**1.**	**2.**	**3.**	**4.**	**5.**
1.	Positive exit	0.091	0.288					
2.	Logged survival length	2.044	0.948	0.265				
3.	Founding team functional diversity	1.465	0.710	0.039	0.283			
4.	Founding environmental dynamism	0.893	0.747	−0.044	0.017	−0.006		
5.	Team size	1.920	1.124	0.023	0.283	0.696	0.022	
6.	Mean age	41	9.637	−0.129	−0.085	−0.001	−0.022	−0.015
7.	Log (industry experience)	2.160	0.911	−0.007	−0.051	−0.034	−0.043	−0.057
8.	Log (number of employees)	1.527	1.641	0.301	0.497	0.389	0.038	0.480
9.	VC/angel funded	0.132	0.338	0.003	0.309	0.302	−0.010	0.318
10.	Founding year	1999	9.987	−0.804	−0.205	−0.043	0.017	−0.013
11.	Graduation year	1988	12.873	−0.485	−0.089	−0.037	0.054	0.003
12.	Recent environmental dynamism	1.056	0.578	0.018	−0.111	−0.092	0.491	−0.102
13.	Firm innovation strategy	0.578	0.494	0.035	0.108	0.161	0.010	0.135
	Variable	**6.**	**7.**	**8.**	**9.**	**10.**	**11.**	**12.**
7.	Log (industry experience)	0.599						
8.	Log (number of employees)	−0.080	−0.016					
9.	VC/angel funded	−0.033	−0.056	0.373				
10.	Founding year	0.220	0.107	−0.248	0.051			
11.	Graduation year	−0.479	−0.324	−0.163	0.053	0.568		
12.	Recent environmental dynamism	0.029	0.037	−0.155	−0.144	0.078	0.041	
13.	Firm innovation strategy	0.020	0.042	0.125	0.172	−0.036	−0.005	−0.033

in founding environmental dynamism is associated with a venture remaining operational for an additional 1.3 years when its environment becomes more dynamic over time.

Our results do not provide strong evidence that increasing environmental dynamism is related to an increased likelihood of positive exit for ventures created in dynamic environments with diversity in their founding team structure (H1b). The coefficient for the Cox hazard regression interaction term in Model 2 of Table 2 is quite sizable and greater than one, suggesting a positive relationship ($\beta = 9.112$, $p = .133$). However, we lack support for our prediction using the Heckman selection regression shown in Model 2 of Table 3 ($\beta = 0.644$, $p = .614$). Although the directions of the coefficient of the interaction term across both the Cox hazard regression and the Heckman selection regression each indicate a positive relationship with both venture outcomes as hypothesized, the regression analysis does not provide strong statistical evidence of a relationship. Therefore, we lack support for (H1b).

Models 3 and 4 of Tables 2 and 3 analyze the subsample of ventures facing decreasing environmental dynamism. (H2a) and (H2b) argue that when a venture's environment has become more dynamic, the interaction of founding environmental dynamism and diversity in the founding team's functional structure will be positively associated with venture survival length and positive exits, respectively. (H2a) is not supported, but (H2b) is supported.

Our results do not provide evidence that decreasing environmental dynamism is related to a decrease in how long ventures survive for ventures created in dynamic environments with diversity in their founding team structure (H2a). Both the fixed effects OLS regression in Model 3 of Table 2 ($\beta = .025$, $p = .848$) and the Heckman selection regressions in Model 3 of Table 3 ($\beta = -.181$, $p = .195$) fail to provide statistical evidence of the hypothesized negative relationship.

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TABLE 2 Standard fixed effects OLS and Cox hazard analysis predicting postentry outcomes for ventures

Cox proportional hazard and OLS regression				
Model DV	**Model 1 (OLS) Survival length Increasing environmental dynamism**	**Model 2 (Cox) Positive exits Increasing environmental dynamism**	**Model 3 (OLS) Survival length Decreasing environmental dynamism**	**Model 4 (Cox) Positive exits Decreasing environmental dynamism**
Variables				
Founding team functional diversity	−0.148 (.052)	0.442 (.519)	0.040 (.802)	3.778 (.048)
Founding environmental dynamism	−0.282 (.017)	0.111 (.466)	−0.007 (.978)	9.039 (.045)
Functional diversity × founding environmental dynamism	0.212 (.010)	9.112 (.133)	0.025 (.848)	0.389 (.072)
Team size	0.004 (.906)	0.596 (.213)	−0.124 (.036)	1.167 (.491)
Mean age	0.001 (.715)	1.053 (.428)	−0.002 (.815)	0.987 (.748)
Log (industry experience)	−0.010 (.713)	0.934 (.839)	0.035 (.583)	0.849 (.517)
Log (number of employees	0.025 (.092)	2.395 (.000)	0.120 (.000)	1.438 (.002)
VC/angel funded	0.160 (.088)	0.768 (.727)	0.049 (.730)	2.086 (.127)
Founding year	−0.051 (.000)	1.050 (.447)	−0.041 (.000)	1.036 (.373)
Graduation year	0.001 (.834)	0.928 (.187)	−0.005 (.441)	0.997 (.922)
Recent environmental dynamism	−0.150 (.131)	0.061 (.023)	0.262 (.411)	0.040 (.016)
Firm innovation strategy	−0.039 (.322)	1.863 (.477)	0.087 (.406)	1.498 (.406)
Constant	104.030 (.000)		94.205 (.000)	
Industry fixed effects	Yes	Yes	Yes	Yes
Regional fixed effects	Yes	No	Yes	Yes
N	263	396	190	304
R^2	.749		.482	
χ^2		135.785		78.683

Note: *p*-Values in parentheses. In Models 1 and 3, positive (negative) coefficients signify a positive (negative) relationship with the model's DVs. In Models 2 and 4, coefficients are hazard ratios, and a hazard ratio greater (less) than one signifies an increased (decreased) hazard. Regional fixed effects were removed from the analysis in Model 2 due to insufficient within-sample variation.

Our results do offer evidence that decreasing environmental dynamism results in a reduced likelihood of positive exit for ventures created in dynamic environments with diversity in their founding team structure (H2b). Both the coefficient less than one in the Cox hazard regression in Model 4 of Table 2 ($\beta = .389$, $p = .072$) and the negative coefficient in the Heckman selection regression in Model 4 of Table 3 ($\beta = -.773$, $p = .001$) provide evidence of a statistically significant negative relationship between the interaction term and the likelihood of positive exit. Moreover, the magnitude of the coefficient in the Cox hazard model indicates that this negative relationship is practically relevant. Consider again a founding team with three functional roles. For such a founding team, our results indicate

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TABLE 3 Heckman sample-selection analysis predicting postentry outcomes for ventures

Heckman probit/probit regression				
Model DV Variables	Model 1 (OLS) Survival length Increasing environmental dynamism	Model 2 (probit) Positive exits Increasing environmental dynamism	Model 3 (OLS) Survival length Decreasing environmental dynamism	Model 4 (probit) Positive exits Decreasing environmental dynamism
Founding team functional diversity	−0.128 (.277)	−0.628 (.555)	0.203 (.232)	1.058 (.000)
Founding environmental dynamism	−0.497 (.007)	−0.639 (.795)	0.362 (.188)	1.743 (.000)
Functional diversity × founding environmental dynamism	0.385 (.002)	0.644 (.614)	−0.181 (.195)	−0.773 (.001)
Team size	−0.064 (.161)	0.421 (.311)	−0.105 (.097)	−0.009 (.941)
Log (industry experience)	−0.080 (.025)	−0.390 (.231)	0.023 (.714)	−0.020 (.846)
Log (number of employees)	0.055 (.014)	0.655 (.001)	0.143 (.000)	0.230 (.000)
VC/angel funded	0.182 (.265)	0.390 (.742)	−0.047 (.788)	0.868 (.002)
Founding year		−0.042 (.310)		−0.021 (.064)
Recent environmental dynamism	−0.193 (.190)	−1.732 (.199)	0.285 (.407)	−0.582 (.274)
Firm innovation strategy	−0.026 (.671)	1.788 (.068)	0.141 (.209)	0.174 (.409)
Intercept	3.340 (.000)	77.612 (.991)	2.158 (.005)	38.607 (.091)
Industry fixed effects	Yes	Yes	Yes	No
Regional fixed effects	Yes	No	Yes	Yes
N	386	386	463	358
Log-likelihood	−399.056	−255.575	−441.471	−307.549

Note: *p*-Values in parentheses. Positive (negative) coefficients signify a positive (negative) relationship with the model's DVs. The regressions were conducted on a subsample of ventures founded at least 3 years before the survey to mitigate concerns about right-censored ventures. Industry fixed effects were removed from the analysis in Model 3, and regional fixed effects were removed from Model 2 due to insufficient within-sample variation for the subsample of ventures analyzed in each model, respectively. Finally, the founding year control was dropped from Models 1 and 3 due to collinearity.

that the same 1 *SD* increase in founding environmental dynamism is associated with a 28% decrease in the likelihood of positive exit when a venture's environment becomes less dynamic over time. The discussion explores the implications of these results.

5 | ADDITIONAL ANALYSIS: EVIDENCE OF THE PERSISTENT EFFECTS OF ENVIRONMENTAL DYNAMISM AT FOUNDING

We cannot directly examine each venture's decision-making processes to determine if ventures founded in dynamic founding environments by functionally diverse founding teams adopt risk-averse processes. However, we can check

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indirectly for evidence by examining a readily observable downstream implication of adopting risk-averse processes: slower decision-making (Bakker & Shepherd, 2017; Nadolska & Barkema, 2014). Suppose our results indicate that ventures founded in dynamic founding environments by functionally diverse founding teams persistently make slower decisions. Such results provide indirect evidence of adopting a persistent set of risk-averse processes.

We conduct two analyses to test for indirect evidence that ventures founded in dynamic founding environments by functionally diverse founding teams have reduced decision-making speed. First, recent research has emphasized the strategic importance of timing for entrepreneurship (Wood, Bakker, & Fisher, 2021). Building on this premise, if ventures founded in dynamic founding environments by functionally diverse founding teams consistently make slower decisions over time, these ventures should have worse outcomes in terms of survival and positive exits than other ventures when fast decision-making is essential. Second, if ventures founded in dynamic founding environments by functionally diverse founding teams make slower decisions, these ventures should also take longer than other ventures to accomplish milestones. Results indicating that affected ventures experience persistently slower decision-making suggest that ventures founded in dynamic founding environments by functionally diverse founding teams adopt a unique set of risk-averse processes and provide evidence of the persistent influence of these processes.

For the first set of analyses, ventures are split into two groups based on whether they indicated that fast product development was a critical competitive advantage for the venture. Specifically, we relied on respondents' answers to the survey question, "to what extent do you agree that 'quick iteration, multiple product releases' was a leading source of your competitive advantage?" A response of "Agree" or "Strongly Agree" indicated that fast product development was a key advantage, and "Disagree" or "Strongly Disagree" meant it was not. If ventures founded in dynamic founding environments by functionally diverse founding teams adopted a persistent set of risk-averse processes that resulted in slower decisions, one would expect the coefficient of the interaction between founding environmental dynamism and diversity in founding team functional structure to be significantly smaller for the ventures that relied on fast product development. A Z-test of the coefficients from this analysis presented in Table A5 supports this conclusion for both survival length and positive exits. The results in Models 1 and 2 of Table A5 indicate that the focal interaction term is associated with a shorter length of survival for ventures reliant on fast product development than for those that are not ($\beta_{reliant} = -.085 < \beta_{not\ reliant} = .023$; $p = .087$). The results comparing the standardized model coefficients in Models 3 and 4 of Table A5 provide additional support. These results indicate that the focal interaction term is associated with a decreased likelihood of positive exit for ventures reliant on fast product development than for those that are not ($\beta_{reliant} = -1.033 < \beta_{not\ reliant} = .589$; $p = .001$).[20] The results of these analyses provide suggestive evidence that being founded in a dynamic founding environment by a functionally diverse founding team has a lasting effect on a venture's internal processes.

For the second set of analyses, we examined whether ventures founded in dynamic founding environments by functionally diverse founding teams took longer than average to receive angel or venture capital funding than ventures founded under different conditions—the results from Model 5 of Table A5 support this conclusion. The coefficient on the interaction term between founding environmental dynamism and diversity in founding team functional structure is significantly negative, indicating that these ventures take longer to receive funding ($\beta = 1.248$, $p = .037$). These results provide additional evidence suggesting that being founded in a dynamic founding environment by a functionally diverse founding team creates a unique set of processes with a persistent effect on venture outcomes.

These two sets of results indicate that ventures founded in a dynamic founding environment by a functionally diverse founding team make slower decisions than their counterparts founded under different environmental or internal conditions. The confirmation of slower decision-making indirectly supports our argument that ventures founded in dynamic founding environments by functionally diverse founding teams likely adopt a unique and persistent set of risk-averse processes. Overall, the additional analysis provides some supporting evidence that the combination of founding environmental dynamism with founding team functional diversity exerts a persistent influence on a venture's internal processes. Additional sensitivity and robustness tests can be found in the appendix in Tables A6–A11. For example, alternative specifications for our dependent variables and measures of environmental dynamisms are examined, and various alternative explanations for the observed relationships are addressed.

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6 | DISCUSSION

Prior research has investigated how environmental change influences venture outcomes as a result of differences in the favorability of recent environmental conditions across firms (Abootorabi et al., 2021; Bartz & Winkler, 2016; Bennett, 2019; Hiatt & Sine, 2014; Kimjeon & Davidsson, 2021; Partridge et al., 2020). However, we have limited insight into how a venture's ability to benefit from environmental change may be contingent on environmental conditions at founding. This article argues that environmental dynamism at founding shapes a venture's internal processes and thus influences whether ventures can benefit from environmental change later in a venture's life.

We hypothesized that the interaction of founding environmental dynamism and founding team functional diversity would be associated with better performance outcomes when environmental dynamism *increases* over the lifetime of the venture. In contrast, we hypothesized that the interaction of founding environmental dynamism and founding team functional diversity would be associated with worse performance outcomes when environmental dynamism *decreases* over the lifetime of the venture. Our results indicate that the interaction of diversity in the founding team's functional structure and environmental dynamism at founding is associated with longer survival, but not an increase in the likelihood of positive exit, when ventures experience increasing environmental dynamism. However, when ventures experience decreasing environmental dynamism after founding, the interaction of founding diversity in founding team functional structure and environmental dynamism at founding is associated with a reduced likelihood of positive exit, but not with shorter survival. Our post hoc analysis sheds some light on the processes underlying these results. Our analyses indicate that ventures can only benefit from recent environmental change when this change promotes a continued alignment between the recent environmental conditions and the enduring processes formed under the influence of the founding environment.

Although survival is determined by the relative comparison of a venture's economic performance against an entrepreneur's opportunity costs, positive exits are influenced mainly by venture performance (Arora & Nandkumar, 2011; Gimeno, Folta, Cooper, & Woo, 1997). Thus, when factors influence economic performance more than opportunity costs, they are likely to influence both marginal and high performance (Cooper, Gimeno-Gascon, & Woo, 1994; Gimeno et al., 1997). The fit between a venture's persistent internal processes and its surrounding environment strongly influences the venture's economic performance (Naman & Slevin, 1993). However, the fit between a venture's processes and its environment should not affect entrepreneurial opportunity costs, which are instead dependent on the individual characteristics of the venture's entrepreneurs. Thus, the persistent founding processes should be related to both survival and positive exits in similar ways in the wake of a recent environmental change.

Additionally, prior research on the differential drivers of venture outcomes helps to understand the asymmetry of our results with respect to survival and high performance. Prior work argues that when factors influence economic performance more than opportunity costs, they are likely to influence both marginal and high performance (Cooper et al., 1994; Gimeno et al., 1997).[21] However, our results point to a key insight that environmental dynamism may have asymmetric effect on opportunity costs and external stakeholders perceptions producing an asymmetry in venture performance outcomes. Changing dynamism may influence external stakeholders' perceptions of ventures and entrepreneurs' opportunity costs in asymmetric and counter-intuitive ways when we neglect the impacts of environmental dynamism.

For example, on the one hand, when environmental dynamism increases, external stakeholders' perception of ventures may deteriorate as they seek out lower-risk investments, reducing the likelihood of acquisitions and IPOs, even if ventures achieve strong economic performance. In addition, high-performing ventures may have more financial slack to choose more opportune timing for M&A or IPO transactions relative to a more dynamic environment. Unlike the reduced likelihood of positive exit when environmental dynamism increases, the benefits of processes formed at founding remaining aligned with recent environmental conditions may enable ventures to survive longer as they wait for better timing to exit. On the other hand, when environmental dynamism decreases, decisions regarding survival may be affected because entrepreneurs' opportunity costs are likely to increase. For instance, stable conditions increase opportunities in wage employment. If opportunity costs are high, they may be the dominant factor

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governing decisions regarding survival rather than the marginal negative influence of misaligned processes. Future research building on this work could fruitfully explore this tension in greater detail.

This study's theory and findings make two contributions to environmental change research and an additional contribution to the literature on the lasting influence of a venture's founding. First, we contribute to research on environmental change by highlighting how conditions at founding, including both environmental dynamism and founding team composition, have a lasting impact on a venture's ability to benefit from environmental change. Prior research on environmental change and venture performance unpacks the effect of change based on the impact that the recent environmental conditions have on ventures (Bennett, 2019; Eberhart et al., 2017; Kimjeon & Davidsson, 2021). We confirm that a venture's recent environmental conditions are related to venture outcomes, yet our findings show that looking at recent environmental conditions alone is misleading. Thus, we expand this literature by highlighting the importance of accounting for environmental conditions at founding, including environmental dynamism. We provide evidence of a link between founding environmental conditions and venture outcomes in the wake of recent environmental change. Thus, we add nuance to our understanding of the performance implications of environmental change, improving our understanding of how environmental change may differentially influence the outcomes of specific types of ventures. While this study focuses on the founding period, prior research has highlighted the lasting influence of other periods in a venture's life (Marquis & Tilcsik, 2013). Future research may explore how the relationship between environmental change and outcomes depends on the conditions at other sensitive periods in a venture's life, such as its first round of funding or the replacement of the founder-CEO. Such analysis may show how prior exposure to specific environmental conditions may enable ventures to cope better with similar conditions in the future.

We make a second contribution to environmental change research by highlighting the critical role that the conditions within a venture play in determining whether the venture benefits from environmental change. Prior environmental change research has focused primarily on how changing environmental conditions influence the ability of ventures to achieve certain outcomes (Bartz & Winkler, 2016; Dimitriadis, 2021; Partridge et al., 2020). Although a related stream of research highlights differential venture performance in various environmental states (e.g., cross-sectional comparison of ventures operating in stable vs. dynamic environments) as a result of internal conditions, these studies do not theoretically or empirically address the explicit performance implications of a venture experiencing environmental change over time (Chandler et al., 2005; Eisenhardt & Schoonhoven, 1990; Ensley et al., 2006; Hmieleski & Baron, 2008). Integrating environmental change research and research on the effect of founding conditions, we argue that the lasting influence of environmental dynamism at founding on a venture's internal processes can determine how a venture performs when experiencing environmental change. This study suggests that recent environmental change alters the effectiveness of a venture's internal processes, thus addressing the previously unexplored tension implicit in cross-sectional research that examines distinct environmental states and highlighting the role that internal conditions play in determining a venture's ability to benefit from environmental change.

Finally, this study contributes to the literature investigating the lasting influence of founding conditions by indicating that the direction of the persistent influence of environmental conditions at founding on ventures' outcomes depends on how the venture's environment changes over time. The fit between a venture's persistent internal processes and its recent environmental conditions appears to underlie our findings. Whereas prior research traditionally emphasized the stability of the founding period's lasting influence (Stinchcombe, 1965), more recent research has begun investigating how the founding period's lasting effects can change over time (Alexy et al., 2021; De Cuyper et al., 2020; Sinha et al., 2020). For example, a misalignment between a socially oriented hybrid organization and its increasingly for-profit institutional environment leads to the repurposing of processes formed at founding, such as hiring and resource-acquisition processes, as a means to legitimate organizational changes (De Cuyper et al., 2020). Such studies have pointed to the adaptability of processes formed at founding; however, our results provide evidence that the misalignment of persistent founding processes can negatively influence the likelihood of a positive exit. If the persistent processes that become embedded in beliefs and routines at founding cease to fit with a venture's environment as it changes over time, venture outcomes can worsen as a result. Thus, we provide theory and evidence that persistent founding processes may improve performance when they continue to fit a venture's environment.[22]

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Some limitations to this study also open avenues for future research. First, our study is based on a data set comprised of Stanford alumni. Ventures created by Stanford alumni may not be representative of ventures in general because Stanford alumni, like alumni of other research-intensive universities, have greater access to resources and greater opportunity costs, which leads to their being more financially motivated than other founders. Supporting this conclusion, 47% of the sample had either outside equity financing or an expressly stated financial motive to create a venture. Thus, although ventures in the sample are likely interested in survival and heavily motivated to pursue positive exits, other ventures may have different goals.[23] We encourage future research to validate these findings in other settings and to explore additional outcome measures such as venture growth, profitability, and innovation.

Additionally, while the survey design offers several advantages over archival studies, the data collection occurred at one point in time and thus did not follow the ventures contemporaneously. Thus, we encourage future scholars to seek data sources that enable them to map out a more continuous venture trajectory. Continuous observation will facilitate an improved understanding of how persistent founding processes evolve and disappear over time and could aid in efforts to understand the antecedents and consequences of top management team turnover (Cho & Shen, 2007). More work is needed that would examine team formation processes that benefit from environmental change and foster flexibility, as well as a more detailed examination of the links between internal change processes and venture performance.

Finally, our data enabled us to produce only indirect evidence of the relationship between the environmental dynamism at founding and a venture's internal processes. Although we are unable to observe all the ventures' internal processes directly, our results indicate that these internal elements can play a significant role in determining how a venture fares in the face of environmental change. Specifically, our analysis indicates that the interaction of founding team functional diversity and founding environmental dynamism is related to decision-making speed. A direct investigation of the interplay between environmental change, ventures' internal processes, and venture outcomes is a promising area for future research. In particular, such research would complement prior work indicating that environmental dynamism influences decision-making speed and could test recent theory regarding the importance of decision-making speed (Bakker & Shepherd, 2017; Wood et al., 2021). More broadly, scholars could build bridges to related work that has examined how entrepreneurs can take advantage of uncertain, high-velocity environments (Eesley & Lee, 2022), different institutional environments (Eesley, Li, & Yang, 2016; Wu, Eesley, & Eisenhardt, 2020; Wu, Eesley, & Yang, 2022), and the organizational strategies and forms best suited to innovation in these environments (Bremner & Eisenhardt, 2022; Furr & Eisenhardt, 2021; Rathje & Katila, 2021).

7 | CONCLUSION

This study investigates how environmental dynamism at founding influences a venture's ability to benefit from recent environmental change. We expand our understanding of environmental change by revealing that the performance implications of recent environmental change are dependent on environmental conditions at founding and on factors within ventures. Our findings build on prior research that has explored the enduring influence of the founding period, by suggesting that founding processes can allow ventures to benefit from environmental change but only when they remain aligned with more recent environmental conditions. Building on prior research investigating the general effect of environmental change on ventures, this study indicates that environmental conditions from the distant past, including environmental dynamism at founding, may determine whether each entrepreneur's "ship" can float with environmental change's rising tide.

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ENDNOTES

[1] Although we are discussing environmental change, some of the studies cited in this stream of research theorize and empirically examine cross-sectional comparison of environmental states (Hmieleski et al., 2015; Hmieleski & Baron, 2008). However, we argue that these studies' findings inform our understanding of the effects of within-context environmental change, and we thus include them in our discussion of environmental change research more broadly.

[2] While this study focuses on the enabling role of environmental change, we also include a discussion of the potential downsides of environmental change to further refine our understanding of its benefits.

[3] The process by which founding conditions exert a lasting influence on a venture long after founding is often referred to as "organizational imprinting."

[4] Whereas prior research uses the term "founding team" to denote several distinct constructs (Knight et al., 2020), the present study defines a founding team as the group of people who joined the venture at the start and whom all other cofounders would agree were part of the founding team. Based on this definition, not all early employees are founders. In fact, our data distinguishes explicitly between being a founder and being an early employee.

[5] Without environmental dynamism or functional diversity at founding, the same unique set of processes is unlikely to be developed. Similarly structured founding teams would be expected to develop different entrepreneurial experiences and beliefs under the influence of different founding environments and thus adopt different founding processes (Ellis, Aharonson, Drori, & Shapira, 2017). Moreover, even when operating in similar environments, teams with different levels of functional diversity will behave differently, making them less likely to adopt the same processes (Finkelstein et al., 2009; Pelled et al., 1999).

[6] The cultural revolution was an incredibly unique historical event. It remains to be seen if the persistence of founding processes is connected to venture outcomes in other contexts with more typical environmental changes.

[7] A t-test of the difference in means between those respondents who provided detailed venture information and those who did not indicated significant differences across several variables of interest, including the rate of positive exits. The results of this difference-in-means test are included in the appendix Table A1.

[8] For respondents who indicated that they founded multiple ventures, one of the ventures was randomly selected, and detailed information about this venture was requested.

[9] Prior research on positive exits has expressed concern for "value-negative" acquisitions where ventures are acquired in "fire sales" for very low valuations. To exclude these acquisitions, acquisitions of very recently founded ventures or those with no revenues are removed from the final construction of the dependent variable (Arora & Nandkumar, 2011; Eesley et al., 2014). However, in the most prominent industries, particularly in Software, fast acquisitions soon after founding or acquisitions of firms with limited revenue do not necessarily indicate value-negative acquisitions. Given the challenge of correctly identifying and excluding "value-negative" from the sample, we report our main results for positive exits, including all acquisitions. We ran additional analysis excluding acquisitions of either very recently founded ventures, ventures with zero or no reported revenues, or both, and the results were consistent.

[10] Following prior research, we include sole founders in our operationalization of the diversity in the founding team functional structure (Beckman & Burton, 2008; Eesley et al., 2014).

[11] Using Census data, Dess and Beard (1984) acquired information on industry value-added, sales, profit margins, and employment. We follow subsequent work and focus on value-added.

[12] We initially considered creating the measure using data from the Compustat database. However, Compustat did not have data on the variables, such as value-added, used to calculate industry dynamism for the industries represented in our study.

[13] We multiply the resulting measure by 100 to make the survival analysis more interpretable.

[14] Regions include the Northeast, Midwest, South Atlantic, South, Mountain West, Pacific, and international.

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[15] To address tied events, we use Efron's partial likelihood function (Efron, 1977). Additionally, the Cox model assumes that the effect of any covariate is constant over time. In order to verify that our model satisfies this proportionality assumption, we rely on (Grambsch & Therneau, 1994) diagnosis and calculate the scaled Schoenfeld residuals. Results confirmed that the proportionality assumption holds.

[16] Though the Heckman models account for selection bias resulting from survey respondents' self-selection into providing detailed information about their ventures, our analysis may still be affected by a separate form of selection bias: nonresponse bias, resulting from individuals choosing not to respond to the survey at all.

[17] However, these models are sensitive to right-censored ventures, that is, ventures that were still operational at the time of the survey in 2011. To mitigate the right-censoring issue, we include only those ventures founded at least 5 years before the survey in the Heckman selection regression, providing a reasonable window after founding for positive exits and survival.

[18] We empirically confirmed our argument that older individuals have longer entrepreneurship track records than younger individuals at the time of the survey with additional analysis. On average, entrepreneur respondents over 50 reported they had created approximately one additional venture compared to respondents under 30 (respondents over 50 had created 1.89 ventures, whereas respondents under 30 had created 1.00 ventures). Furthermore, this analysis revealed that respondents over 50 were 47% more likely to have founded more than one venture than those under 30.

[19] Figure A2 in the appendix depicts the different number of roles a founding team of a given size may have.

[20] The Z-test uses the exponentiated coefficients from the Cox hazard regression in Table A5 in the appendix for comparison.

[21] On the one hand, high performance depends primarily on the economic growth of the venture (Arora & Nandkumar, 2011; Gimeno et al., 1997). Positive exits, this study's measure of high performance, also depend on external stakeholders' perception of the venture, for example, potential investors and acquirers (Gulati & Higgins, 2003). On the other hand, survival is a function of both a venture's economic performance and an entrepreneur's opportunity costs (Cooper et al., 1994; Dahlqvist, Davidsson, & Wiklund, 2000; Gimeno et al., 1997).

[22] However, we also caution that these same processes might have damaging consequences when an environmental change results in misalignment.

[23] For example, social or mission-oriented ventures or nonprofits may not be motivated to pursue positive exits.

[24] We also attempted to utilize industry operating profit. However, the sample size for these regressions is significantly reduced because the BEA only began producing annual profit measures by industry starting in 1987. In contrast, the BEA has value-added data beginning in the 1950s. With the reduced sample, the hypotheses were not supported. However, when we truncated the sample while still employing the environmental dynamism measure used in the main analyses of the paper (calculated using value-added as the underlying industry metric), the hypotheses were also not supported. These results suggest that the reduced sample may lack the power to detect the hypothesized effects.

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APPENDIX

SENSITIVITY AND ROBUSTNESS CHECKS

Decisions about operationalizing the dependent variable and environmental dynamism involved some choices by the researchers, so we conducted two sensitivity checks. First, we ran regressions using alternative specifications for our dependent variable of positive exits. While the main results include all IPOs and acquisitions in operationalizing positive exits, prior research has been concerned about the potential for "value-negative" acquisitions where ventures are acquired at very low valuations, which are not indicative of success (Arora & Nandkumar, 2011; Eesley et al., 2014). These studies exclude those where ventures were rapidly acquired, specifically within 3 years of founding, and those where the venture had no revenue from their definition of positive exits. We ran sensitivity checks excluding those ventures acquired too quickly from positive exits using 1-, 2-, and 3-year windows from founding and excluding ventures with no revenue. Results were consistent across all alternative specifications of positive exits.

Second, we ran regressions using an alternate specification for the environmental dynamism measure. Instead of utilizing value-added by industry as the underlying measure, we relied on gross industry output, typically defined as an industry's total revenue or sales. When using the gross output to calculate environmental dynamism, the results were consistent with Hypotheses (H1a) and (H2b), both continuing to receive support. These results are included in Table A6 of the appendix.[24]

Beyond these sensitivity checks, we ran robustness checks to address several other potential concerns with the sample and methods. First, there may be a concern that our results are driven by differences between solo founders versus actual "teams" of people. We ran a subsample analysis to address this concern, including only ventures with founding teams of two or more people. Despite significantly reducing the sample size ventures, the results are largely consistent. Table A7 in the appendix displays these results.

Another concern is that diversity in the founding team's functional structure is correlated with the size of the founding team. To address this potential issue, we first calculated the variance inflation factors (VIFs) across our independent variables: the average VIF is 1.91, and the VIFs on team functional diversity and team size are 2.00 and 2.21, respectively. Additionally, we tested the stability of both the coefficients and the power of our analysis by re-running our analysis after dropping the team size variable and adding an interaction term between team size and diversity in the founding team's functional structure. Results are highly similar across the board.

Third, one might be concerned with endogeneity as savvy entrepreneurs can choose when to create their ventures according to environmental conditions. In other words, the unobserved heterogeneity associated with entrepreneurial capability might determine both one's founding conditions and postentry outcome. In addition to the entrepreneur-specific controls we included in the regressions, we conducted a subsample analysis on young founding teams, which we argue comprise less savvy and less resourceful entrepreneurs. Limited by experience and resources, they are thus less likely to pick their founding environment strategically. Specifically, we examined a subset of ventures whose founding teams had a relatively young mean age, and the results hold. These results are showcased in Table A8 in the appendix.

Additionally, there may be a concern that we did not control for team interdependence, especially given that we argue that the persistence of a unique set of decision-making processes is based in part on team composition. Focusing on the team may be misguided if only one person makes all the decisions. To address this concern, we used the degree to which survey respondents indicated that the founding team composed a competitive advantage as a proxy for interdependence. The results of analyses using this proxy as a control variable were consistent with the main results and can be found in Table A9 in the appendix. We also ran results for the subsample of ventures where respondents indicated either "Agree" or "Strongly" agree to the team as a source of their competitive advantage, and the results were consistent.

Finally, there may be additional concerns about the positive exits dependent variable. First, some ventures in the sample went out of operation soon after founding. There is not enough observation time to determine whether the

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TABLE A1 Difference in means across respondents who provided detailed information about their entrepreneurial ventures and those who did not

Difference in means					
	Variable	**Detailed info**	**No detailed info**	**Difference**	***p*-Value**
1	Venture failure	15.2%	19.4%	−4.2%	.00
2	Survival length	2.04	2.19	−0.14	.00
3	Positive exits	9.10%	7.40%	1.70%	.10
4	Founding team functional diversity	1.47	1.49	−0.02	.44
5	Founding environ. dynamism	0.89	0.81	0.08	.00
6	Team size	1.92	2.02	−0.10	.05
7	Mean age	41	40	1	.06
8	Log (industry experience)	2.16	2.02	0.14	.00
9	Log (number of employees)	1.53	1.72	−0.20	.00
10	VC/angel funded	0.13	0.05	8.30%	.00
11	Founding year	1999	1997	1.8	.00
12	Graduation year	1988	1987	0.1	.82
13	Respondent age	40	25	15	.00
14	Total ventures founded by respondent	1.99	2.13	−0.14	.01
15	Number of ventures founded before focal venture	0.58	0.60	−0.02	.56

Note: The difference column is "Detailed Info" minus "No Detailed Info."

persistent influence of a venture's founding conditions on the venture's internal processes would play a substantial role in the venture's ability to achieve a positive exit. Therefore, one alternative explanation is that our results are driven by the short-term failures of the affected ventures rather than the long-term inability of surviving ventures to achieve a positive exit. To further investigate the validity of our argument concerning the persistent influence of processes embedded at founding, we conducted the regressions for ventures that survived beyond the third year. The previous significant results maintain their significance.

There may also be concerns about positive exits for ventures founded in the distant past because the popularity of these exit strategies rose significantly throughout the 1970s. Therefore, including ventures founded before that may bias the sample. The accuracy of respondents answering questions about the distant past may also be called into question. Consequently, we ran regressions, excluding all ventures founded before 1982, and the results remained consistent. We used 1982 since we identified an increasing proportion of ventures exited via IPOs and acquisitions this year. A final concern regarding timing may be that the heterogeneity in the timing of firm deaths and positive exits may bias results. For example, one may be concerned that different processes govern undergoing an IPO after 5 years instead of 15 years. To address this concern, we considered how long a venture survived and whether it underwent a positive exit within a fixed time since its founding. Ten, eleven, and twelve-year windows after founding were used, and the results were again consistent. Tables A10 and A11 in the appendix report the results of this analysis.

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TABLE A2 Results of the first-stage regression for the Heckman probit model

Heckman probit/probit model: First stage				
Model DV Variables	Model 4 (OLS) Survival length Increasing environ. dynamism	Model 3 (probit) Positive exits Increasing environ. dynamism	Model 2 (OLS) Survival length Decreasing environ. dynamism	Model 1 (probit) Positive exits Decreasing environ. dynamism
Mean age	0.004 (.819)	0.009 (.652)		−0.009 (.575)
VC/angel funded	0.280 (.343)	0.386 (.193)	0.673 (.003)	0.616 (.006)
Graduation year	0.030 (.000)	0.007 (.285)	0.004 (.616)	−0.011 (.051)
Respondent age	0.029 (.095)	0.008 (.676)	0.038 (.000)	0.011 (.441)
Intercept	−60.872 (.000)	−13.991 (.284)	−8.452 (.545)	22.178 (.054)
Industry fixed effects	Yes	Yes	Yes	No
Regional fixed effects	Yes	No	Yes	Yes
Rho	1.071	0.019	0.316	7.944
N	386	386	463	358
Log likelihood	−399.056	−255.575	−441.471	−307.549

Note: *p*-Values in parentheses. The dependent variable here is selection into the final sample of 1,060 ventures that provided the detailed information used in the regression analysis of this article. Positive (negative) coefficients indicate a positive (negative) relationship with the model's DV. For the Heckman model to converge, regional fixed effects were dropped from Model 2, mean age was dropped from Model 3, and industry fixed effects were dropped from Model 3.

TABLE A3 Breakdown of industry for ventures included in sample

Industry breakdown		
	Industry	Percentage of sample
1.	Academia and research	1.70
2.	Aerospace	2.78
3.	Agriculture	1.35
4.	Architecture	3.95
5.	Arts	3.14
6.	Chemicals, materials	0.90
7.	Clinics	6.82
8.	Consumer products	3.41
9.	Drugs, biotech, medical devices	11.75
10.	Energy, electric utilities	6.28
11.	Finance	5.92
12.	Government, politics, and public policy	0.54
13.	Machinery	4.66
14.	Management and Finance Consulting	22.69
15.	Other manufacturing	2.33
16.	Publishing, schools	8.61
17.	Software	10.22
18.	Sports and fitness	1.17
19.	Telecommunications	1.79

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TABLE A4 Breakdown of the performance of ventures included in final sample

Information on ventures in final sample		
	Variable	**Statistic**
1.	Percent of ventures IPO	2.06%
2.	Percent of ventures acquired	7.09%
3.	Percent of ventures with positive exit	9.15%
4.	Percent of ventures failed	15.16%
5.	Percent of ventures raised funding	13.18%
6.	Average funds raised	$3,845 (thousand)
7.	Median funds raised	$10 (thousand)

Note: All exits (i.e., IPOs and acquisitions) were favorable exits in the final sample. Therefore, there is no difference between using a dependent variable consisting of all IPOs and acquisitions or only IPOs and favorable acquisitions.

TABLE A5 Post hoc analysis of evidence of founding imprint's content

Evidence of imprint linked to slower decision-making					
Model DV **Variables**	**Model 1 (OLS)** **Survival length** **Not reliant**	**Model 2 (OLS)** **Survival length** **Reliant**	**Model 3 (cox)** **Positive exits** **Not reliant**	**Model 4 (cox)** **Positive exits** **Reliant**	**Model 5 (logit)** **Above Avg. time to VC funding** **Full sample**
Founding team functional diversity	0.007 (.906)	−0.079 (.425)	0.985 (.974)	2.062 (.080)	−1.792 (.012)
Founding environ. dynamism	−0.041 (.555)	0.130 (.281)	0.722 (.718)	4.983 (.027)	−2.939 (.055)
Functional diversity × founding environ. dynamism	0.023 (.545)	−0.085 (.225)	1.802 (.156)	0.356 (.003)	1.248 (.037)
Team size	−0.053 (.085)	0.050 (.384)	1.229 (.346)	1.312 (.241)	−0.001 (.998)
Mean age	0.002 (.710)	0.009 (.258)	1.044 (.312)	0.976 (.645)	−0.030 (.579)
Log (industry experience)	0.025 (.467)	−0.062 (.227)	0.858 (.593)	1.013 (.962)	−0.234 (.459)
Log (number of employees)	0.062 (.000)	0.025 (.342)	1.657 (.000)	1.702 (.000)	0.053 (.293)
VC/angel funded	−0.158 (.080)	0.014 (.900)	1.617 (.436)	1.524 (.381)	−0.100 (.033)
Founding year	−0.049 (.000)	−0.045 (.000)	1.010 (.791)	1.054 (.209)	2.013 (.011)
Graduation year	−0.002 (.498)	−0.000 (.988)	1.030 (.362)	0.995 (.890)	
Recent environ. dynamism	0.546 (.000)	0.367 (.000)	0.130 (.005)	0.608 (.388)	
Firm innovation strategy	0.042 (.381)	0.077 (.436)	0.653 (.358)	1.698 (.379)	
Constant	104.056 (.000)	91.874 (.000)			96.588 (.121)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Regional fixed effects	Yes	Yes	Yes	Yes	Yes
N	363	145	539	220	126
R^2	.615	.613			
χ^2			94.040	93.046	
Log likelihood					−62.15

Note: *p*-Values in parentheses. Subsample of "Reliant" ventures rely on fast product cycles for a competitive advantage; those "Not Reliant" indicated they do not. In Models 1 and 2, positive (negative) coefficients indicate a positive (negative) relationship with the model's DVs. Models 3 and 4's coefficients are hazard ratios, and a hazard ratio greater (less) than one indicates an increased (decreased) hazard.

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TABLE A6 Robustness check using the alternate specification for environmental dynamism where the dynamism measure is constructed from gross industry output

Cox proportional hazard and OLS regression				
Model DV	**Model 1 (OLS) Survival length Increasing environ. dynamism**	**Model 2 (cox) Positive exits Increasing environ. dynamism**	**Model 3 (OLS) Survival length Decreasing environ. dynamism**	**Model 4 (cox) Positive exits Decreasing environ. dynamism**
Variables				
Founding team functional diversity	−0.233 (.020)	1.807 (.456)	−0.004 (.976)	2.796 (.024)
Alt. founding environ. dynamism	−0.181 (.113)	0.462 (.613)	−0.002 (.984)	2.129 (.035)
Functional diversity × alt. founding environ. dynamism	0.083 (.128)	1.379 (.576)	0.031 (.614)	0.724 (.116)
Team size	0.051 (.306)	1.071 (.845)	−0.085 (.093)	1.231 (.351)
Mean age	−0.005 (.456)	0.989 (.876)	0.003 (.657)	0.959 (.364)
Log (industry experience)	−0.021 (.670)	1.445 (.439)	0.068 (.251)	1.314 (.317)
Log (number of employees)	0.056 (.019)	1.167 (.495)	0.103 (.000)	1.348 (.002)
VC/angel funded	−0.114 (.348)	3.693 (.162)	0.093 (.459)	1.553 (.346)
Founding year	−0.042 (.000)	1.232 (.016)	−0.040 (.000)	1.106 (.005)
Graduation year	0.001 (.826)	1.015 (.758)	−0.004 (.407)	0.998 (.932)
Alt. recent environ. dynamism	0.189 (.001)	0.267 (.010)	0.483 (.000)	0.102 (.000)
Firm innovation strategy	−0.015 (.853)	0.288 (.163)	0.075 (.379)	1.870 (.201)
Constant	84.718 (.000)		90.351 (.000)	
Industry fixed effects	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes
N	176	254	201	297
R^2	.509		.576	
χ^2		100.516		136.171

Note: *p*-values in parentheses. Dynamism is operationalized using an industry's gross output. In Models 1 and 3 positive (negative) coefficients indicate a positive (negative) relationship with the model's DVs. Model 2 and Model 4's coefficients are hazard ratios, and a hazard ratio greater (less) than one indicates an increased (decreased) hazard.

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TABLE A7 Robustness check for ventures with two or more founding team members

Cox proportional hazard and OLS regression				
Model DV	**Model 4 (OLS) Survival length**	**Model 3 (cox) Positive exits**	**Model 2 (OLS) Survival length**	**Model 1 (cox) Positive exits**
Variables	**Increasing environ. dynamism**	**Increasing environ. dynamism**	**Decreasing environ. dynamism**	**Decreasing environ. dynamism**
Founding team functional diversity	−0.196 (.087)	0.960 (.869)	0.247 (.308)	1.195 (.585)
Founding environ. dynamism	−0.417 (.065)	0.999 (.998)	−0.047 (.926)	1.013 (.984)
Functional diversity × founding environ. dynamism	0.262 (.042)	1.240 (.386)	−0.059 (.780)	0.846 (.556)
Team size	−0.022 (.646)	1.013 (.899)	−0.030 (.720)	1.020 (.841)
Mean age	0.010 (.175)	1.076 (.000)	0.005 (.703)	0.975 (.101)
Log (industry experience)	−0.082 (.113)	1.101 (.405)	0.061 (.526)	0.958 (.699)
Log (number of employees)	0.061 (.045)	1.129 (.067)	0.122 (.008)	0.957 (.489)
VC/angel funded	0.027 (.854)	1.194 (.550)	0.115 (.562)	0.953 (.817)
Founding year	−0.049 (.000)		−0.036 (.009)	1.254 (.000)
Graduation year	0.009 (.081)	1.075 (.000)	−0.007 (.545)	0.979 (.117)
Recent environ. dynamism	0.181 (.324)	0.990 (.973)	1.311 (.011)	0.029 (.000)
Firm innovation strategy	0.030 (.711)	0.971 (.871)	0.171 (.289)	1.241 (.313)
Constant	82.334 (.000)		86.417 (.000)	
Industry fixed effects	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes
N	118	175	109	172
R^2	.710		.539	
χ^2		228.024		85.938

Note: *p*-Values in parentheses. In Models 1 and 3, positive (negative) coefficients indicate a positive (negative) relationship with the model's DVs. Models 2 and 4's coefficients are hazard ratios, and a hazard ratio greater (less) than one indicates an increased (decreased) hazard. Ventures in this subsample are required to have at least two founding team members.

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TABLE A8 Robustness checks for ventures with relatively young founding teams

Cox proportional hazard and OLS regression				
Model DV	**Model 1 (OLS) Survival length Increasing environ. dynamism**	**Model 2 (cox) Positive exits Increasing environ. dynamism**	**Model 3 (OLS) Survival length Decreasing environ. dynamism**	**Model 4 (cox) Positive exits Decreasing environ. dynamism**
Variables				
Founding team functional diversity	−0.277 (.027)	1.114 (.708)	0.174 (.473)	1.894 (.089)
Founding environ. dynamism	−0.644 (.001)	0.540 (.105)	0.004 (.990)	1.839 (.226)
Functional diversity × founding environ. dynamism	0.431 (.001)	1.460 (.145)	−0.002 (.990)	0.604 (.087)
Team size	0.002 (.970)	0.753 (.034)	−0.161 (.052)	1.073 (.485)
Mean age	−0.004 (.672)	1.058 (.003)	−0.035 (.042)	1.022 (.364)
Log (industry experience)	−0.031 (.481)	1.138 (.207)	0.103 (.248)	0.914 (.470)
Log (number of employees)	0.056 (.016)	1.021 (.696)	0.132 (.002)	0.998 (.971)
VC/angel funded	0.172 (.278)	1.305 (.403)	−0.003 (.989)	0.745 (.258)
Founding year	−0.046 (.000)		−0.038 (.002)	1.182 (.000)
Graduation year	0.002 (.703)	1.121 (.000)	−0.006 (.523)	1.015 (.277)
Recent environ. dynamism	−0.087 (.517)	1.427 (.093)	0.378 (.434)	0.031 (.000)
Firm innovation strategy	−0.029 (.674)	1.429 (.028)	0.133 (.389)	1.069 (.745)
Constant	90.532 (.000)		90.604 (.000)	
Industry fixed effects	Yes	No	Yes	Yes
Region fixed effects	Yes	No	Yes	Yes
N	143	201	122	175
R^2	.728		.515	
χ^2		159.560		215.366

Note: *p*-Values in parentheses. In Models 1 and 3, positive (negative) coefficients indicate a positive (negative) relationship with the model's DVs. Models 2 and 4's coefficients are hazard ratios, and a hazard ratio greater (less) than one indicates an increased (decreased) hazard. Ventures in this subsample have founding teams with a mean age less than 40, just below the average mean age across all ventures.

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TABLE A9 Robustness checks including proxy for interdependence (team competitive advantage) as control

Cox proportional hazard and OLS regression				
Model DV	**Model 1 (OLS) Survival length Increasing environ. dynamism**	**Model 2 (cox) Positive exits Increasing environ. dynamism**	**Model 3 (OLS) Survival length Decreasing environ. dynamism**	**Model 4 (cox) Positive exits Decreasing environ. dynamism**
Variables				
Founding team functional diversity	−0.145 (.061)	0.340 (.525)	0.057 (.724)	3.580 (.060)
Founding environ. dynamism	−0.282 (.017)	0.027 (.364)	0.005 (.985)	9.690 (.038)
Functional diversity × founding environ. dynamism	0.211 (.011)	18.612 (.146)	0.016 (.907)	0.370 (.061)
Team size	0.004 (.901)	0.492 (.240)	−0.125 (.035)	1.200 (.423)
Mean age	0.001 (.695)	1.131 (.164)	−0.002 (.782)	0.978 (.587)
Log (industry experience)	−0.011 (.702)	0.785 (.615)	0.044 (.501)	0.767 (.321)
Log (number of employees)	0.027 (.089)	2.713 (.000)	0.131 (.000)	1.341 (.021)
VC/angel funded	0.157 (.098)	0.777 (.790)	0.031 (.830)	2.141 (.132)
Founding year	−0.051 (.000)	1.068 (.399)	−0.041 (.000)	1.044 (.284)
Graduation year	0.001 (.812)	0.906 (.194)	−0.005 (.426)	0.990 (.753)
Recent environ. dynamism	−0.152 (.128)	0.059 (.025)	0.285 (.377)	0.022 (.005)
Firm innovation strategy	−0.040 (.306)	0.954 (.956)	0.101 (.340)	1.534 (.368)
Team competitive advantage	−0.005 (.750)	0.822 (.605)	−0.033 (.400)	1.460 (.068)
Constant	103.771 (.000)		94.257 (.000)	
Industry fixed effects	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes
N	262	391	189	302
R^2	.749		.483	
χ^2		140.603		81.398

Note: *p*-Values in parentheses. In Models 1 and 3, positive (negative) coefficients indicate a positive (negative) relationship with the model's DVs. Models 2 and 4's coefficients are hazard ratios, and a hazard ratio greater (less) than one indicates an increased (decreased) hazard. The degree to which the founding team was indicated to be a competitive advantage is used as a control in these regression.

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TABLE A10 Robustness checks fixed time length analysis using 10-, 11-, and 12-year windows for ventures facing increasing environmental dynamism

Cox proportional hazard and OLS regression: Increasing environmental dynamism						
Model DV	**Model 1 (OLS) Survival length**	**Model 2 (OLS) Survival length**	**Model 3 (OLS) Survival length**	**Model 4 (Cox) Positive exits**	**Model 5 (Cox) Positive exits**	**Model 6 (Cox) Positive exits**
Founding team functional diversity	−0.183 (.007)	−0.195 (.004)	−0.187 (.005)	0.429 (.395)	0.069 (.009)	0.397 (.373)
Founding environ. dynamism	−0.297 (.011)	−0.293 (.021)	−0.272 (.023)	0.053 (.244)	0.002 (.055)	0.065 (.166)
Functional diversity × founding environ. dynamism	0.177 (.025)	0.156 (.055)	0.180 (.008)	3.515 (.239)	21.778 (.010)	4.079 (.087)
Team size	0.026 (.347)	0.041 (.163)	0.038 (.211)	1.075 (.797)	1.107 (.724)	0.918 (.775)
Mean age	0.001 (.798)	0.002 (.699)	−0.000 (.977)	1.169 (.003)	1.210 (.019)	1.025 (.674)
Log (industry experience)	0.029 (.331)	0.044 (.178)	0.028 (.368)	0.456 (.068)	0.393 (.237)	0.438 (.094)
Log (number of employees)	0.024 (.124)	0.024 (.155)	0.017 (.331)	3.343 (.000)	5.560 (.000)	2.660 (.000)
VC/angel funded	0.011 (.890)	−0.033 (.698)	−0.030 (.725)	1.621 (.568)	2.275 (.456)	32.643 (.000)
Founding year	−0.010 (.005)	−0.014 (.002)	−0.016 (.002)	1.154 (.159)	1.067 (.711)	1.149 (.036)
Graduation year	0.001 (.636)	0.001 (.738)	0.001 (.830)	1.047 (.375)	1.033 (.629)	0.977 (.668)
Recent environ. dynamism	−0.036 (.406)	−0.022 (.613)	−0.028 (.553)	0.180 (.252)	0.725 (.868)	3.615 (.079)
Firm innovation strategy	0.058 (.269)	0.078 (.130)	0.060 (.294)	0.377 (.216)	0.254 (.242)	0.357 (.254)
Constant	19.871 (.001)	27.420 (.000)	32.113 (.000)			
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	No
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Fixed window length	10	11	12	10	11	12
N	260	217	222	352	356	362
R^2	.206	.247	.253			
χ^2				137.283	123.847	102.346

Note: *p*-Values in parentheses. In Models 1–3, positive (negative) coefficients signify a positive (negative) relationship with the model's DVs. In Models 4–6, coefficients are hazard ratios, and a hazard ratio greater (less) than one signifies an increased (decreased) hazard. Industry fixed effects were removed from the analysis in Model 6 due to insufficient within-sample variation.

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TABLE A11 Robustness checks fixed time length analysis using 10-, 11-, and 12-year windows for ventures facing decreasing environmental dynamism

Cox proportional hazard and OLS regression: Decreasing environmental dynamism						
Model DV	Model 1 (OLS) Survival length	Model 2 (OLS) Survival length	Model 3 (OLS) Survival length	Model 4 (cox) Positive exits	Model 5 (cox) Positive exits	Model 6 (cox) Positive exits
Founding team functional diversity	−0.070 (.395)	−0.109 (.183)	−0.136 (.133)	8.113 (.012)	2.529 (.086)	6.277 (.016)
Founding environ. dynamism	0.006 (.958)	−0.061 (.516)	−0.117 (.236)	104.056 (.001)	3.850 (.027)	3.980 (.155)
Functional diversity × founding environ. dynamism	0.056 (.377)	0.068 (.272)	0.101 (.132)	0.178 (.005)	0.405 (.022)	0.300 (.051)
Team size	−0.039 (.211)	−0.043 (.201)	−0.054 (.156)	1.101 (.696)	1.142 (.517)	1.316 (.245)
Mean age	−0.002 (.731)	0.001 (.791)	−0.001 (.891)	0.932 (.212)	0.990 (.825)	0.969 (.622)
Log (industry experience)	0.025 (.434)	0.029 (.424)	0.039 (.337)	1.594 (.163)	0.951 (.857)	1.672 (.210)
Log (number of employees)	0.048 (.002)	0.058 (.001)	0.073 (.000)	1.638 (.002)	1.421 (.004)	2.194 (.000)
VC/angel funded	0.049 (.547)	0.045 (.611)	−0.031 (.755)	4.705 (.009)	3.285 (.017)	1.100 (.865)
Founding year	−0.005 (.291)	−0.009 (.059)	−0.010 (.044)	1.046 (.375)	1.009 (.815)	1.019 (.732)
Graduation year	−0.004 (.228)	−0.002 (.500)	−0.003 (.427)	1.003 (.949)	1.013 (.673)	1.052 (.278)
Recent environ. dynamism	0.049 (.346)	0.049 (.393)	0.019 (.762)	0.286 (.366)	0.298 (.275)	0.038 (.044)
Firm innovation strategy	−0.279 (.043)	−0.306 (.044)	−0.455 (.009)	3.892 (.058)	1.883 (.256)	3.723 (.058)
Constant	19.394 (.003)	24.412 (.000)	27.618 (.001)			
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Fixed window length	10	11	12	10	11	12
N	212	251	239	372	364	352
R^2	.197	.232	.277			
χ^2				88.295	81.166	86.700

Note: *p*-Values in parentheses. In Models 1–3, positive (negative) coefficients signify a positive (negative) relationship with the model's DVs. In Models 4–6, coefficients are hazard ratios, and a hazard ratio greater (less) than one signifies an increased (decreased) hazard.

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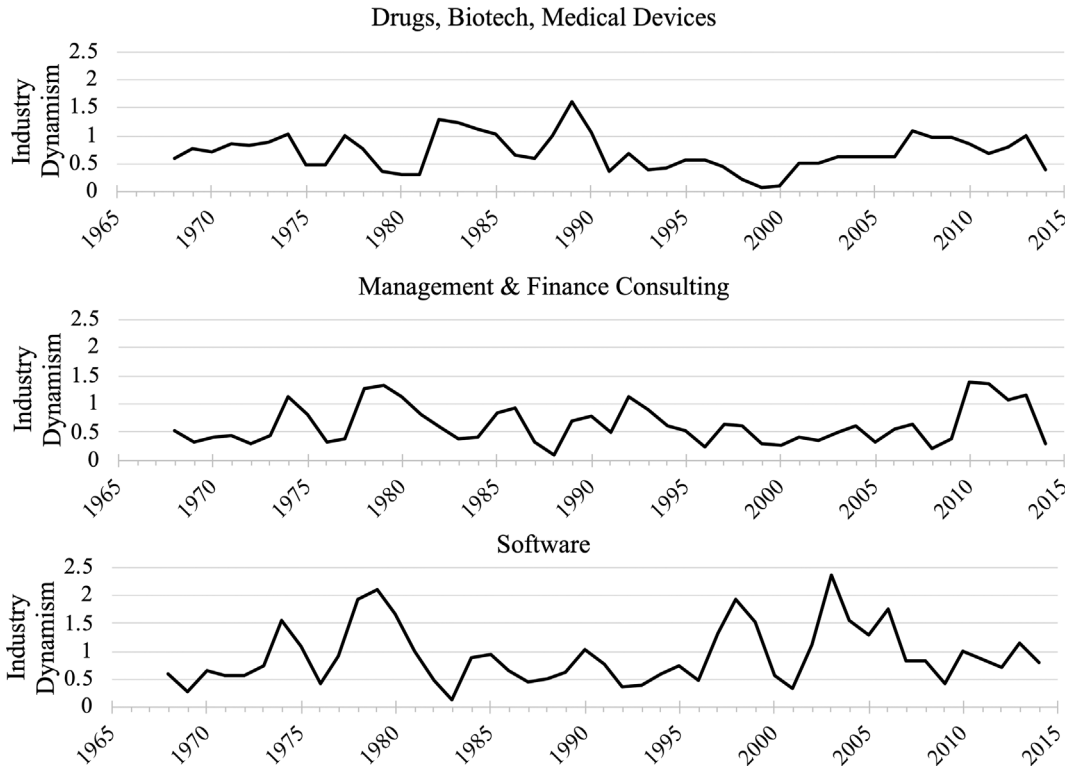

FIGURE A1 Graph of industry dynamism from 1968 to 2014 for the top 3 most represented industry in the data. The top 3 most represented industries are (1) Management and Finance Consulting Drugs (22.7%); (2) Biotech, and Medical Devices (11.8%); and (3) Software (10.2%). The units of the industry dynamism measure are 1 years. This measure is calculated as the *SD* of the slope coefficient from a regression of value-added on time divided by the mean value-added over the 5 years before the focal year.

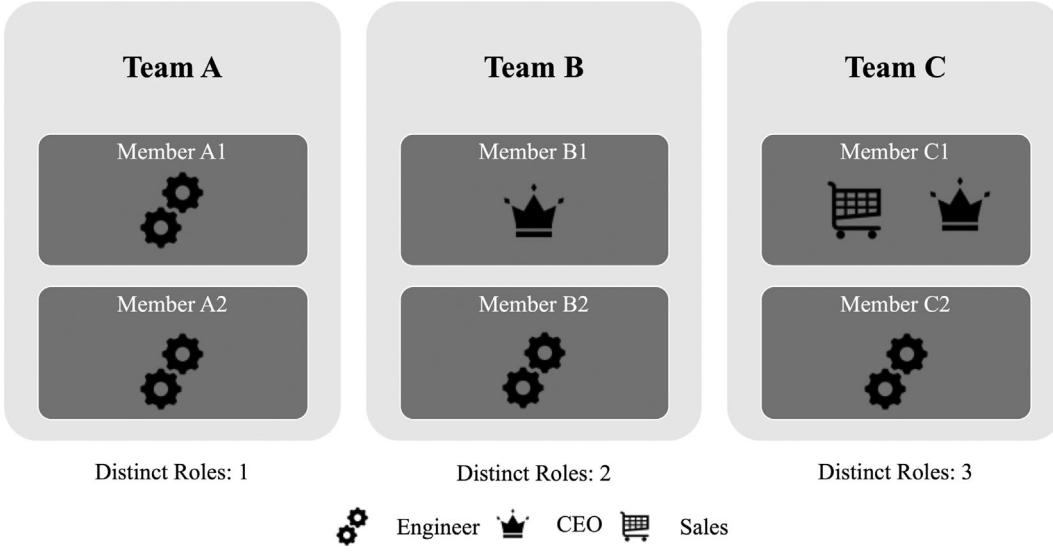

FIGURE A2 Figure depiction of the operationalization of *Founding Team Functional Diversity*

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